

Vehicle System Tools

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Brake and Steering Systems

5B-3032 Brake and Clutch Adjusting Tool

SMCS Code: 3058-025

Model: See Below

Warranty: Six Months

- Used to adjust brakes and flywheel clutches on earlier motor graders and to adjust flywheel clutches on DW10, DW15, DW20 and DW21 Tractors



Part Number	Description
5B-3032	Brake and Clutch Adjusting Tool

242-0992 Brake Gauge

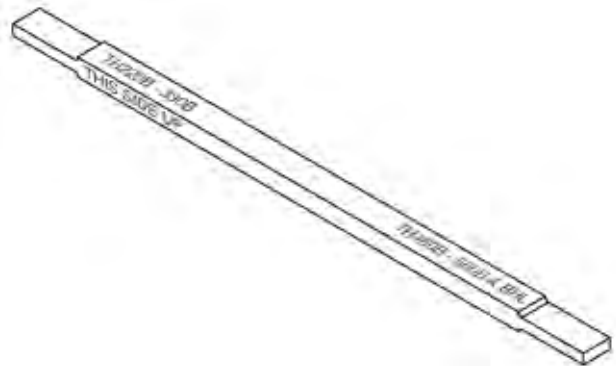
SMCS Code: 4250-082, 0763

Model: TH103 Telehandler, B-Series Telehandlers, and Backhoe Loaders

Warranty: Six Months

- Used to check brake disc wear (checks minimum thickness between brake discs)
- Easily determines if replacement is needed (if gauge fits between brake discs, they do not require replacement)
- Gauge is inserted through axle housing inspection port
- Stamped with "This Side Up" to eliminate misuse of the gauge

Overall size	6.35 mm (0.25 in) square x 180.0 mm (7.1 in) long
Material	Steel with black oxide coating



Part Number	Description
242-0992	Brake Gauge

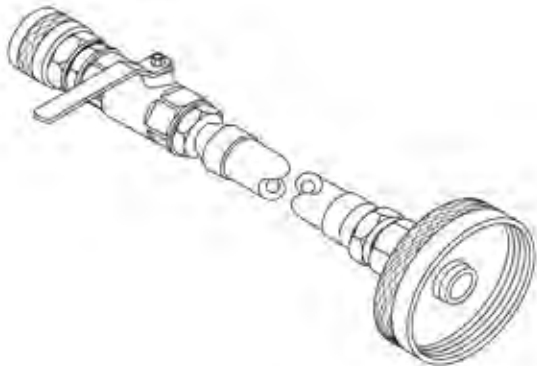
273-3148 Brake Purge Group

Essential Tool

SMCS Code: 4257

Model: TH210 (CEC1-Up, MHT1-Up), TH215 (CEG1-Up, MHS1-Up) Telehandler

Warranty: Six Months



- Used to purge air from auxiliary brake line for trailers, implements, and other similar types of equipment

Part Number	Description
273-3148	Brake Purge Group

Vehicle System Tools

5S-9925 Brake Adjusting Tool

SMCS Code: 4250-025

Model: 12F, 14, 112E, 112F and 120 Motor Graders

Warranty: Six Months



- Used to adjust brakes

Part Number	Description
5S-9925	Brake Adjusting Tool

7S-6704 Spring Compressor Assembly

SMCS Code: 4262-017

Model: 623E

Warranty: Six Months



- Used for the assembly and disassembly of spring-actuated emergency and parking brake air chamber mechanisms
- Prevents the spring jumping out when the brake chamber is being worked on
- Use with FT0586 Holding Tool
- Material: SAE 1020 Steel
- Assembly includes all items in figure

(Continued)

7S-6704 Spring Compressor Assembly (Continued)

SMCS Code: 4262-017

Model: 623E

Warranty: Six Months

Part Number	Description
7S-6704	Spring Compressor Assembly

9X-2233 Plug

SMCS Code: 4322-036

Model: 206 Excavator and 212 Excavator

Warranty: Six Months

- Used to block line between steering pump and steering valve during pressure checks and adjustments of steering pump relief valve
- Make pressure check quick and easy
- Usually not obtainable locally

Part Number	Description
9X-2233	Plug

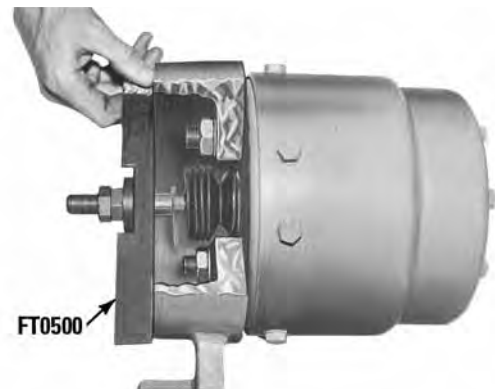
FT0500 Brake Chamber Adjustment Gauge

SMCS Code: 4262-025

Model: 769 Truck

Warranty: None

- Used to adjust air chambers
- Material: SAE 1018 Steel

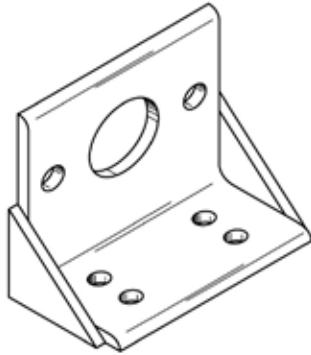


FT0586 Holding Tool

SMCS Code: 4262-017

Model: Earlier Motor Graders

Warranty: None



- Used to hold air brake chambers while being assembled or disassembled

253-0987 Brake Bleeder

Essential Tool

SMCS Code: 4251-025

Model: B-Series Telehandlers

Warranty: Six Months



- Allows brake system to be bled by one person
- Requires two 132-3056 O-ring Seals (provided) when used with hydraulic oil
- Features a self-contained, hand-pressurized pump, more than 3 m (10 ft) hose with a shutoff, pressure gauge, and quick coupler for use with other brake bleeder adapters to provide easy hookup to brake bleeder valves
- Capacity: 4 L (1 gal)

Part Number	Description
253-0987	Brake Bleeder

9U-6265 Pliers

SMCS Code: 4253-010, 0603

Warranty: Six Months

- Replaces discontinued 1P-0541 Pliers
- Used to compress brake shoe springs

Part Number	Description
9U-6265	Pliers



135-9811 Brake Spring Pliers

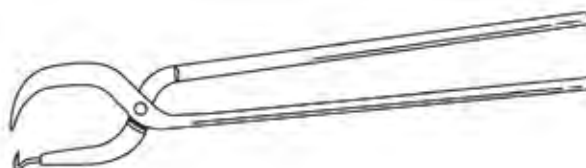
SMCS Code: 4253-010

Model: M312 Wheeled Excavators

Warranty: Six Months

- Used to remove and install extra-heavy brake springs
- Replaceable tip ensures long tool life
- Overall length: 66.0 cm (26.0 in)
- Replaceable tip: 135-9879

Part Number	Description
135-9811	Brake Spring Pliers



FT0502 Retainer Compressor

SMCS Code: 4250-012

Model: 769 Truck

Warranty: None

- Used on rear wheel brakes to compress floating Duo-Cone seal retainers into seals far enough to allow retaining ring to be installed
- Material: SAE 1020 Steel

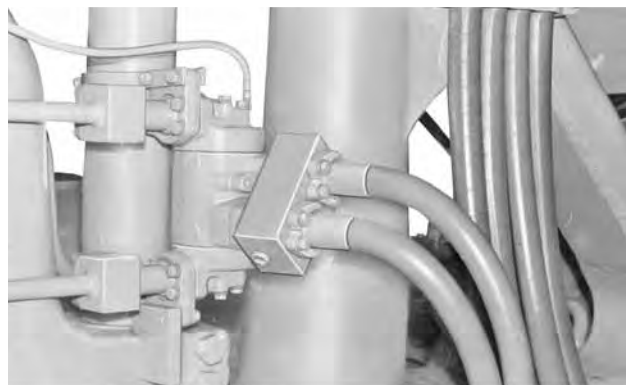


Steering Lines Adapter Tools

SMCS Code: 4302-552

Model: 631B, 641, 651 and 657 Tractors

Warranty: Six Months



- Used on tractors with steering swivel joints
- Makes it possible to tow a tractor-scraper unit with tractor wheels on lowboy and scraper wheels on the ground
- A junction block (part of steering lines adapter group) is bolted to swivel joint with steering cylinder lines bolted to junction block; junction block permits hydraulic steering oil to flow freely between steering cylinders

Part Number	Description	Quantity
1B-5174	Plug	—
4F-7226	Bolt	4
3B-4507	Lock Washer	8

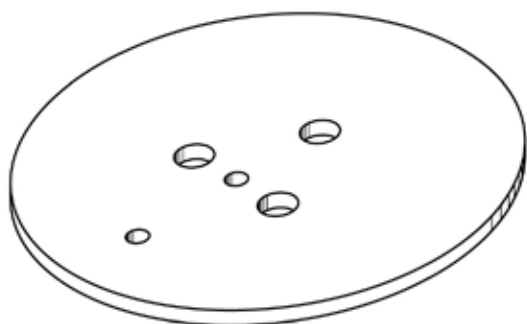
Part Number	Description	Quantity
3H-5368	Bolt	4
4J-0522	Seal (not shown)	4
4J-7570	Block	—

FT2557 Gauge Plate

SMCS Code: 4314-016

Model: PS150 and PS250

Warranty: None



- Used to provide access for measuring shim pack thickness between plate and king pin
- 123-4588 Plate should be removed from machine and modified by adding a 1/8 -12 NPTF threaded hole
- After measurement is taken and shim pack determined, plug hole with 6V-2766 Plug and reuse plate on machine

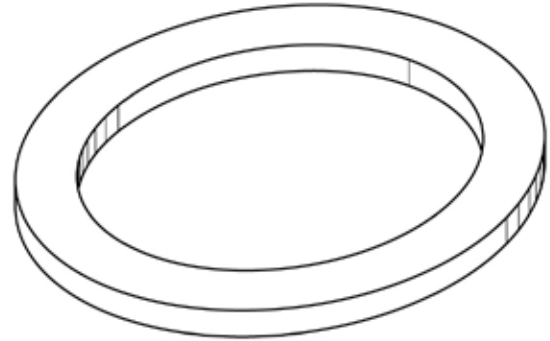
FT0510 Ring

SMCS Code: 4301-016

Model: 12, 14 Motor Graders; DW15, DW20 and 630A Tractors

Warranty: None

- Used to keep centering springs in steering gear control valve compressed while being assembled



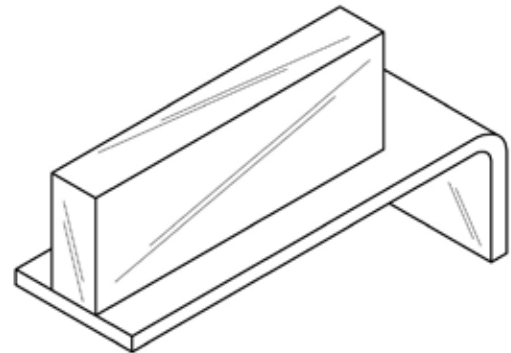
FT0508 Block

SMCS Code: 4322-036

Model: 950, 966, 980 and 988 Loaders; 824 and 834 Tractors

Warranty: None

- Used to check relief valve pressure by preventing machine from continuing its turn

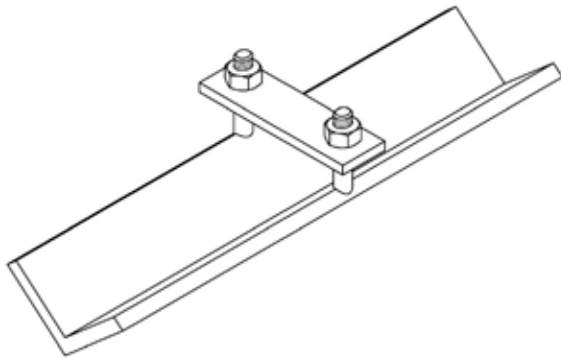


FT0509 Steering Cylinder Block

SMCS Code: 4303-009

Model: Articulated Wheel Loaders

Warranty: None



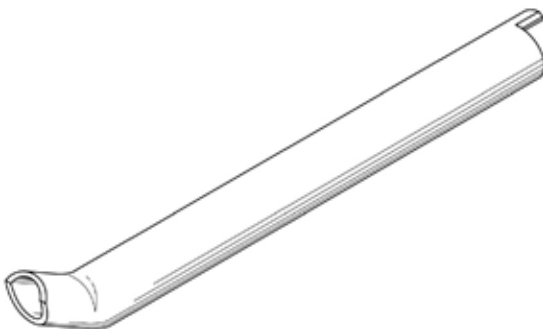
- Prevents machine from turning while service work is being performed
- Attach this block to steering cylinders on articulated wheel loaders that are not equipped with safety links

FT0918 Brake Spring Tool

SMCS Code: 4253-010

Model: 621, 627, 631C, 633C, 637, 641, 650B, 651B, 657B, 660B, and 666B Tractor-Scrapers

Warranty: None



- Used for brake spring removal and installation
- Tang end used to lift spring hook out of brake shoe pin groove; other end shaped to engage spring hook and guide it over pin
- Material: SAE 1020 Steel

1U-9360 Displacement Gauge Assembly

SMCS Code: 4258-082, 4262-082

Model: 768B, 768C, 772, 772B Track-Type Tractors, 769B, 769C, 773, 773B Off-Highway Trucks

Warranty: Six Months

- Formerly available as FT1097; inventoried due to dealer interest
- Used to measure and check piston movement in master cylinder and brake cylinder on the models listed above (9J-1254 and 9J-1255 Brake Cylinder Groups)
- Movement indicates leaking seals on pistons
- Assembly includes all items in figure

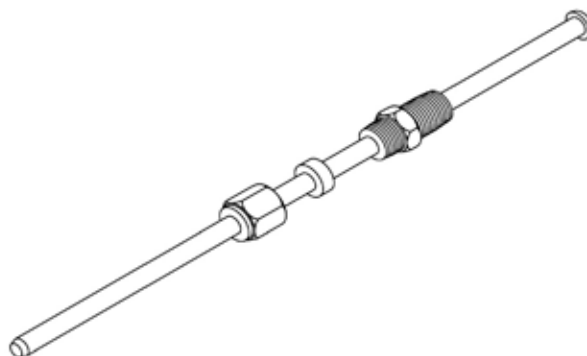
References

SENR2940, Service Manual

SENR2960, Service Manual

SENR4763, Service Manual

SENR7868, Service Manual



Part Number	Description
1U-9360	Displacement Gauge Assembly

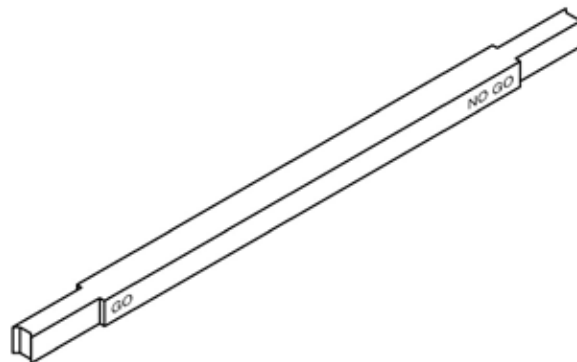
FT2504 Brake Gauge

SMCS Code: 4250-082, 0763

Model: TH62, TH63, TH82, and TH83 Telescopic Material Handler

Warranty: None

- Used to check brake disk wear and determine whether disk replacement is needed
- Checks for minimum thickness between brake disks
- Gauge is inserted through inspection port in axle housing
- Can be made from 6.4 mm (0.25 in) square bar or key stock
- Material: SAE 1018 Steel

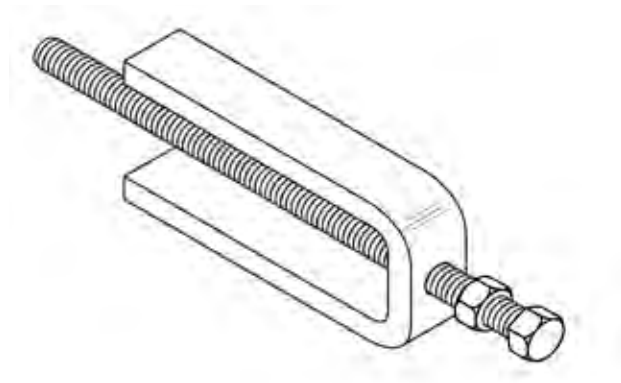


FT1048 Brake Anchor Pin Puller

SMCS Code: 4254-010

Model: IT12, 910, 920, 930

Warranty: None



- Used to pull back brake anchor pins when replacing wheel brake friction pads
- Material: SAE 1020 Steel

FT1183 Brake Piston Retainer Tool

Model: 769B, 773, 768B and 772 Trucks

Warranty: None



- Used to pressure check brake piston seals before assembling wheels
- Retain brake piston in cylinder while seals are checked with air pressure to 10.5 kg/cm² (150 psi)
- Seals can also be pressure checked in event that wheel assembly is performed on truck

5P-7428 Bearing Puller Adapter

SMCS Code: 6119-010, 4305-010

Model: 613B Scraper

Warranty: Six Months



Typical Puller Adapter

- Used with 9S-5559 Stud and 6V-3160 Hydraulic Puller to remove 7J-6862 Steering Link Bushing from draft frame

(Continued)

5P-7428 Bearing Puller Adapter (Continued)

SMCS Code: 6119-010, 4305-010

Model: 613B Scraper

Warranty: Six Months

Part Number	Description
5P-7428	Bearing Puller Adapter

FT1324 Spring Seat

SMCS Code: 4250-017

Model: 769B Truck

Warranty: None

- Used with 5S-1330 Compressor and discontinued 5S-1326 Adapter to compress rear brake piston retraction springs
- Makes operation easy and safe
- Material: SAE 1020 Steel



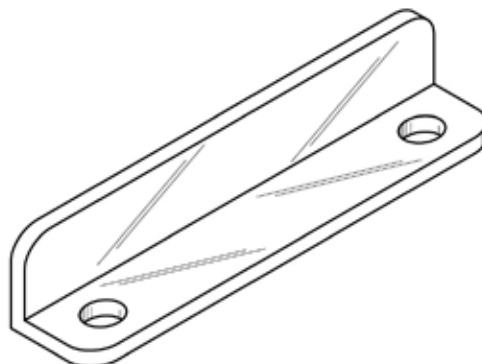
FT1416 Brake Hub Retainer

SMCS Code: 4267-010

Model: 769C Truck

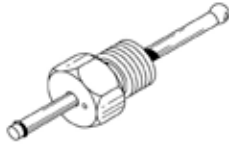
Warranty: None

- Required for installation of brake assembly on rear axle (2 required)
- With retainers holding brake hub firmly against brake housing, brake discs are properly centered on splines of inner brake hub
- Necessary to center hub for subsequent installation of wheel which must align with splines on hub and axle housing at the same time



5P-9726 Plug Gauge

SMCS Code: 4250-038
 Model: 772B, 773B, 777, 785, 789
 Warranty: Six Months



- Used to check brake disc wear on service brakes
- Installed stack height of brake disc pack is measured with brake piston in applied and retracted positions; if difference between the two measurements is 14.07 mm (0.554 in) or more, brake discs should be replaced
- Installed in place of the top 9D-6125 Brake Bleeder Screw Adapter
- Can be used with 1U-7425 Displacement Gauge Assembly for measurement reading
- Service part: 6V-5722 O-ring Seal

NOTE:

A measurement of installed stack height of brake disc pack should be taken and recorded with brakes applied after new discs have been "run in". Measurements should again be taken at prescribed intervals. If difference between initial and subsequent measurements exceed machine specifications, the brake discs should be replaced.

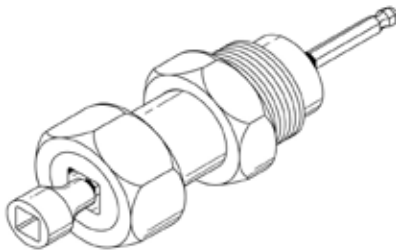
Overall length	70.0 mm (2.75 in)
Hex size	25.4 mm (1.0 in)
Thread size	7/8 - 14

Part Number	Description
5P-9726	Plug Gauge

251-6568 Brake Adjuster Assembly

Essential Tool

SMCS Code: 4261-025
 Model: 735 Articulated Truck (SN# AWR451-UP), 740 Articulated Truck (SN# AXM856-UP), 740 Articulated Ejector Truck (SN# AZZ294-UP)
 Warranty: Six Months



- Replaces 221-2589 Brake Adjuster Assembly
- Used to simultaneously adjust check nut and adjuster screw on service brakes
- Used with 1 1/2 inch wrench and 3/8 inch square drive ratchet
- Use only on trucks with mechanical slack adjusters (not for use on hydraulically operated slack adjusters)
- Use a 1 1/2 inch wrench to remove plug from service brake, install adapter, and rotate socket
- Use a 3/8 inch drive ratchet to turn 6 mm ball socket hex bit
- Designed to keep socket and hex bit perfectly aligned during adjustment procedure
- Assembly includes all items in figure

References

735/740 Articulated Truck Disassembly and Assembly Manual
 735/740 Articulated Truck, Brake System Module, in Machine Systems Test and Adjusting

Part Number	Description
251-6568	Brake Adjuster Assembly

Disc Brake Wear Gauges

Essential Tool

SMCS Code: 7473-040

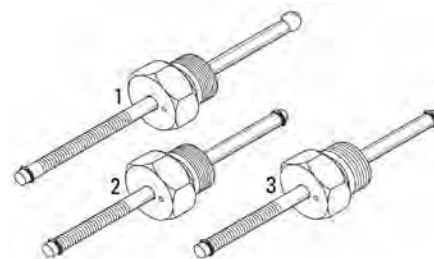
Model: See below

Warranty: Six Months

- Used to check brake disc wear on service brakes
- May be used with 1U-7425 Displacement Gauge Assembly for measurement reading
- Installed in place of brake inspection plug
- Service/Repair Part: 6V-5722 O-ring Seal

NOTE:

A measurement of installed stack height of brake disc pack should be taken and recorded with brakes applied after new discs have been "run in." Measurements should again be taken at prescribed intervals. If difference between initial and subsequent measurements exceed machine specifications, the brake discs should be replaced.



Item	Part Number	Overall Length	Hex Size	Thread Size	Tip Style	Model
1	160-1726	158.0 mm (6.22 in)	25.4 mm (1.0 in)	7/8 - 14	Ball nose	D350E, D400E, 735, and 740 Articulated Trucks; 797 and 797B Off-highway Trucks
2	344-9164	135.0 mm (5.31 in)	25.4 mm (1.0 in)	7/8 - 14	Bullet nose	733F, 775F, and 777F Off-highway Trucks
3	345-7976	135.0 mm (5.31 in)	25.4 mm (1.0 in)	3/4 - 16	Bullet nose	770 and 772 Off-highway Trucks

338-3572 Shim Kit

SMCS Code: 4269-025

Model: 966H and 972H Wheel Loaders

Warranty: Six Months

- Used to check and set adjustment of brake light switch on machines with dual brake pedals
- With 3.5 mm (.14 in) thick shims installed under pedal heel, brake lights should be ON
- With 1.5 mm (.06 in) thick shims installed under pedal heel, brake lights should be OFF
- Brake light switch adjustments are simultaneously done with shims in place under both pedals
- Shim sets are connected by a 50.2 cm (19.8 in) long chain which organizes the tooling yet allows both pedals to be checked at the same time
- Each shim is stamped by size for easy identification
- Steel components are plated for corrosion resistance and long service life



Reference

REN8855, Testing and Adjusting, 966H Wheel Loader and 972H Wheel Loader

Part Number	Description
338-3572	Shim Kit

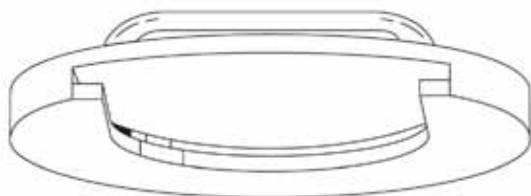
132-1415 Brake Piston Puller

Essential Tool

SMCS Code: 4256-011

Model: D250E Series II and D300E Series II Articulated Dump Trucks

Warranty: Six Months



- Used to remove brake piston
- Slides onto top of piston, fitting into piston groove
- Grips piston for easier removal — reduces repair time
- Helps eliminates potential damage to brake piston during removal

Reference

SENR9129, Service Manual

Overall diameter	79.4 mm (3.13 in)
Inside diameter (brake piston)	67.5 mm (2.66 in)
Inside groove dimension	61.3 mm (2.41 in)

Part Number	Description
132-1415	Brake Piston Puller

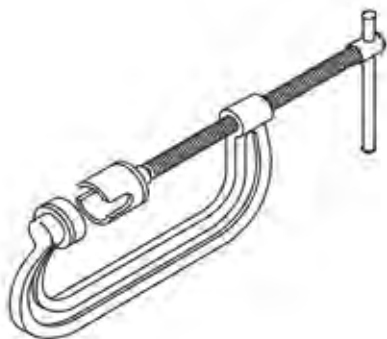
164-4622 Clamp Assembly

Essential Tool

SMCS Code: 4250-017, 4267-017

Model: 785C and 793C Large Mining Truck, 24H Motor Grader

Warranty: Six Months



- Used to compress parking brake piston guide spring
- Required to disassemble and assemble brake group
- Safely compresses guide spring
- Locates over spring and guide — prevents tool from disengaging

Clamp opening (max)	143.0 mm (5.63 in)
Clamp throat depth	89.0 mm (3.50 in)
Spring diameter (max)	34.0 mm (1.34 in)

Part Number	Description
164-4622	Clamp Assembly

292-1274 Stop Group

Essential Tool

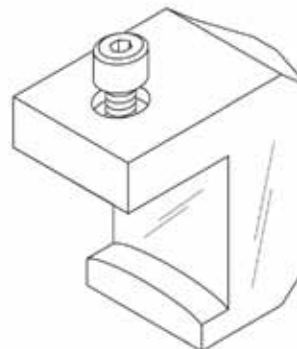
Model: 24M Motor Grader

Warranty: Six Months

- Used to stall steering pump for testing
- C-style clamp fits into bore
- Cap screw used to lock stop in place
- 8T-2223 Socket Head Bolt serviced separately
- Material: lightweight aluminum

Reference

KENR6022, 24M Machine System, Disassembly and Assembly



Part Number	Description
292-1274	Stop Group

5P-7389 Transparent Plug Assembly

5P-8678 Punch Assembly

SMCS Code: 4002-017

Model: 120G Motor Graders beginning with 87V-2262

Warranty: Six Months

- Used to determine brake wear
- Plug assembly, which contains a transparent plastic rod, is installed in spindle housing port for viewing a mark on brake piston; with brakes applied, position of mark as viewed through transparent plug assembly, is indicator of brake service life remaining; when mark is no longer visible, brake should be rebuilt
- At rebuild, punch assembly is installed in housing port and used to mark piston



Item	Part Number	Description
1	5P-7389	Transparent Plug Assembly
--	3K-0360	Seal - O-ring - STOR
2	5P-8678	Punch Assembly
Not Shown		
1	4K-2039	Seal
2	5F-9144	Seal

5P-4197 Spacer

SMCS Code: 4205-010, 4234-010
 Model: All "G" Series Motor Graders
 Warranty: Six Months



- Provides space necessary to pull front axle spindle king pins on
- Has capacity to safely withstand compression load of both 6V-3160 and 6V-3175 Hydraulic Puller at full 703 kg/cm² (10,000 psi) maximum working pressure

Part Number	Description
5P-4197	Spacer

386-3378 Tire Lifting Bracket

Model Usage: 621H, 623H, 627H
 Warranty: Six Months



European Union Compliant, CE marked

- Used to safely and easily remove and install tire assemblies on 621H, 623H and 627H series Wheel Tractor-Scrapers.
- Use with 142-1664 C-hook
- 397-4794 Roller Assemblies are black oxide coated for corrosion resistance

Specifications	
Dimensions	1775 x 1217 x 902 mm (69.9 x 47.9 x 35.5 in)
Working Load Limit	1451 kg (3200 lb)
Weight	150 kg (331 lb)

Specifications	
Part Number	Description
386-3378	Tire Lifting Bracket
Serviceable Parts	
397-4794	Roller Assembly

390-0479 Wheel Alignment Tube Assembly

Model Usage: 621H, 623H, 627H
 Warranty: Six Months



- Used to guide wheel assembly onto the spindle during installation
- Helps prevent damage to Duo-Cone seals during wheel assembly installation
- Black oxide coated for corrosion resistance

Reference

KENR9488, KENR8883 621H and 627H Wheel Tractor-Scraper
 Power Train Disassembly & Assembly

Specifications	
Dimensions	280 x 203 mm (11 x 7.9 in)
Weight	5.5 kg (12 lb)

Part Number	Description
390-0479	Wheel Alignment Tube Assembly

Spherical Ballstud Bearing Installers

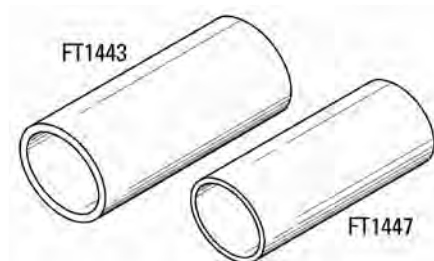
SMCS Code: 4303-017, 4318-010, 1253-017, 1253-016, 4303-010

Model: 769C, 773B and 777 Trucks

Warranty: None

- Used to remove and install spherical ballstud bearings in steering cylinders
- Material: SAE 1020 Steel

Part Number	Model
FT1443	773B and 777 Trucks
FT1447	769C Truck



FT2394 Wrench

SMCS Code: 4321-010

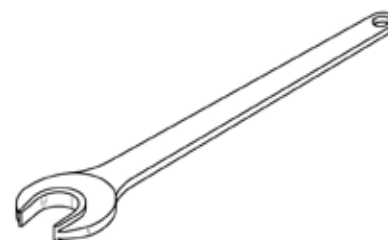
Model: 206B and 212B Excavators

Warranty: None

- Used to remove and install front steering cylinder linkage knuckles
- Made from 4C-9815 Wrench
- Standard wrench will not fit on these steering knuckles
- 32 mm (1.26 in), forged steel, straight-handled, open end, black oxide finish

Reference

SENR4322, Power Train Disassembly and Assembly Manual



9U-6736 Parking Brake Spanner Wrench

SMCS Code: 4269-025

Model: 446 Backhoe Loader

Warranty: Six Months

- Used to adjust parking brake linkage — makes adjustment much faster and easier

References

SENR3971, Service Manual

Service Magazine, April 11, 1991

Part Number	Description
9U-6736	Parking Break Spanner Wrench

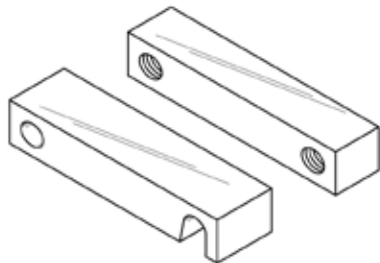


FT1578 Puller Bar

SMCS Code: 4303-011

Model: 824C Wheel Tractors; 825C and 826C Compactors

Warranty: None



- Required with two 5P-4776 Studs, two 1A-1935 Nuts, two 3K-5234 Washers, and discontinued 5P-2997 Hydraulic Puller to remove steering cylinder clevis pins
- Material: SAE 1018 Steel

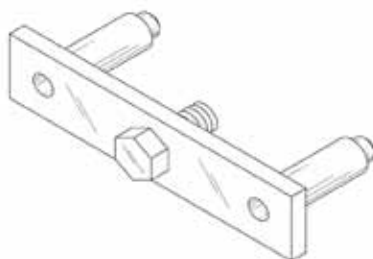
FT3053 Spanner Wrench Assembly

Essential Tool

SMCS Code: 3275-015, 5631-015-BRK, 6637-015-BRK; 3275-016, 5631-016-BRK, 6637-016-BRK

Model: RM500 Road Reclaimer/Soil Stabilizer

Warranty: None



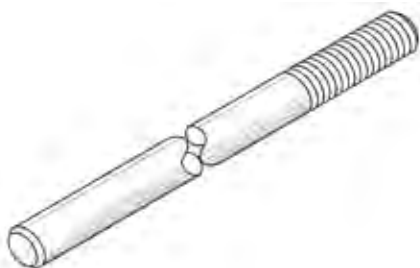
- Used to remove and install spring housing on rotor brake
- Used with 9/16 inch socket and torque wrench
- Tool rods engage two holes in spring housing for easy removal and installation
- Press and mandrel (dealer supplied) must be used to compress disc springs before using tool to loosen or tighten spring housing
- Made from SAE 1020M Steel for long service life

FT2468 Threaded Rod

SMCS Code: 4267-010

Model: 990 Wheel Loader

Warranty: None



- Used to remove and install parking brake from transfer gear case
- Remove two transfer gear case cover bolts and install two FT2468 threaded rods; parking brake can then be removed and will slide out of case along tools
- A ratchet puller, link brackets, and suitable sling will be necessary to lower parking brake to ground or work surface
- Material: SAE 4140 cold finish steel

200-4422 Spring Compressor, 200-4423 Adapter Set

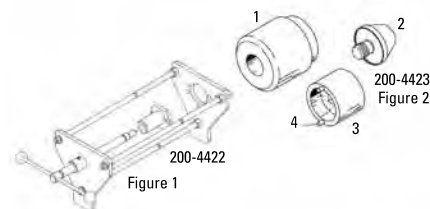
Essential Tool

SMCS Code: 4267-550

Model: D250, D300, D350, D400 Articulated Truck

Warranty: Six Months

- Used to replace parking brake activation spring
- Spring compressor is used with adapter set
- Used on Wabco parking brake actuator
- Square drive for guide (3): 1/2 inch
- Center to center pin distance: 38.1 mm (1.50 in)
- Set includes all items in Figure 2



Reference

HENR8086, Service Manual

Item	Description
1	Thrust Pad
2	Guide
3	Guide, 1/2 in square drive

Item	Part Number	Description
4	045-5106	Pin
—	200-4422	Spring Compressor
—	200-4423	Adapter Set

6V-0114 Brake Drum Gauge

SMCS Code: 6107-012

Model: 600 Series Wheel Tractor-Scrapers, with the exception of 613 and 613B

Warranty: Six Months

- Used to quickly and easily check brake drums for reusability
- Also, markings on gauge indicate whether standard or oversize brake linings will be needed

References

SEBF8035, Guideline for Reusable Parts, Inspecting and Machining Brake Drums

SMHS6826, Special Instruction, Installation of Oversize Brake Linings



Part Number	Description
6V-0114	Brake Drum Gauge

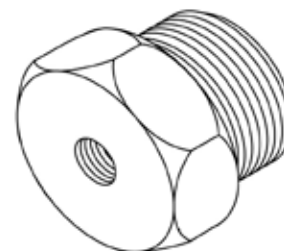
FT1800 Plug

SMCS Code: 4208-017, 4251-017

Model: 824C Wheel Tractor; 980C Wheel Loader

Warranty: None

- Replaces FT1536 Plug
- Used with 7D-5962 Bolt to remove and install brake pistons
- FT1800 Plug is 9S-4183 Plug with 12.7 mm (1/2 in) - 13-2B hole tapped through center

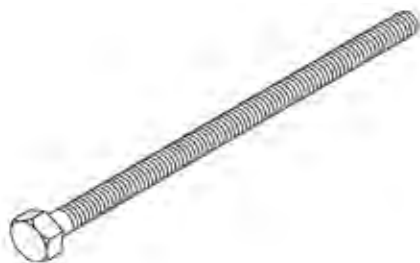


FT1451 Retraction Bolt

SMCS Code: 4262-010

Model: 641B Scrapers 65K-1150-up, 651B Scrapers 67K904-up and 657B Scrapers 68K-1201-up

Warranty: None



- Used to retract brake rotors necessary for servicing brakes or towing vehicle
- Made by extending threads on 1D-4574 Bolt
- To use retraction bolt, install 1A-7774 Flat Washer and thread it into 9D-8938 Brake Actuator to retract piston

5P-3569 Piston Press

SMCS Code: 4256-017, 4256-016

Model: 910, 920, 930 and 950 Wheel Loaders; 518 and 528 Logskidders; and Tree Harvesters

Warranty: Six Months



- Used to facilitate installation of caliper disc brake pistons
- Minimizes seal damage during piston installation

Part Number	Description
5P-3569	Piston Press

Vehicle System Tools

Steering Column Supports

SMCS Code: 7325-010

Model: 926, 926E, 936, 936E, 916, IT18B

Warranty: None



FT1868

FT1869

- Used to support platform for steering column, brake pedals and valves, and governor control pedal group when cab/ROPS is removed
- Before cab/ROPS is removed, steering column supports should be installed

Part Number	Description
FT1868	Steering Column Supports, RH
FT1869	Steering Column Support, LH

1U-9003 Brake Piston Puller

SMCS Code: 4256-017

Model: 769D, 771D, 773D, 775D, 776D, and 777D Off-Highway Trucks

Warranty: Six Months

- Used to remove and install 114-9306 Brake Pistons located in back side of brake caliper
- Can be used on other pistons having same shape and size (refer to specifications)

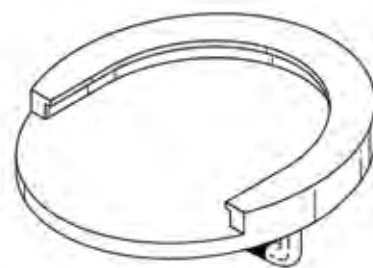
References

SENR1421, 773D Truck and 775D Quarry Truck Machine Systems

SENR1422, 769D Truck and 771D Quarry Truck Machine Systems

For use on brake pistons with	
Groove width	2.54 mm (0.1 in)
Groove outside diameter	75.1 mm (2.96 in)
Piston outside diameter	79.25 mm (3.12 in)

Part Number	Description
1U-9003	Brake Piston Puller



297-6383 Steering Spline Gauge

Essential Tool

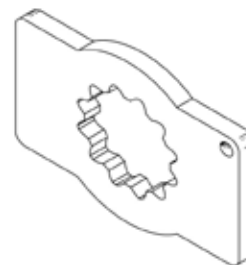
SMCS Code: 4310-040

Model: All compact, small, and medium wheel loaders

Warranty: Six Months

- Used to inspect steering column spline which fits into hydraulic metering unit
- Gauge is a go/no-go style gauge
- If gauge does not fit over spline, shaft is reusable
- If gauge fits over spline, shaft must be replaced

Part Number	Description
297-6383	Steering Spline Gauge



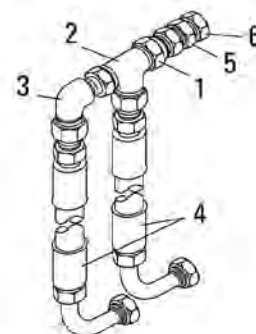
FT1973 Adapter Group, Brake Release for Towing

SMCS Code: 4250-553

Model: D4H, D5H, D6H and D7H Tractors; later D8L, D9L, D8N and D9R Tractors

Warranty: None

- Adaptable to D4H, D5H, D6H and D7H Tractors from first production; adaptable to following the models, effective with serial numbers indicated:
D9L — 14Y-3134
D8L — 53Y-3485
D8L S.A. — 4FB339NB
D8N — 5TJ1-Up and 9TC1-Up
D9R — 7TL1-Up and 8BL1-Up
- Used with FT1845 Pump Group to release brakes for towing and 123-0525 Brake Release Adapters and 123-0526 Brake Release Adapters
- See 8T-2857, 123-0525 and 123-0526 Adapters for machine usage; when tooling is installed, these adapters extend past spool bores in tractor steering valve, isolating brake circuit and allowing pump pressure to be applied directly to brake release pistons



(Continued)

FT1973 Adapter Group, Brake Release for Towing (Continued)

SMCS Code: 4250-553

Model: D4H, D5H, D6H and D7H Tractors; later D8L, D9L, D8N and D9R Tractors

Warranty: None

- With leakage minimized, brake release can be maintained with low volume pump
- Before connecting pump and adapter group to tractor steering valve, maximum pressure relief valve opening pressure must be checked and adjusted in order to prevent possible damage to brake piston seals

Checking Maximum Pressure Relief Valve Opening Pressure

1. Plug the main pressure hose where it connects to the FT1973 Adapter Group.
2. Turn the bypass valve handle to the closed position.
3. While building pressure with the pump handle, observe the relief valve opening pressure.
4. Adjust relief valve opening pressure to 410 (10 psi).

Installing Tooling on Tractor

The FT1973 Adapter Group is connected to the steering valve under the tractor seat.

5. Remove the quick-disconnect fittings from the ports marked BRK on the steering valve.
6. Install the adapters in the ports and connect the remainder of the FT1973 Adapter Group to the adapters and to the pressure hose from the pump.
7. It is usually convenient to route the pressure hose under the floorboard (leaving the floorboard loose) to the pump which is temporarily placed on the fender or deck.
8. Replace the seat and floorboard, leaving floorboard bolts out on 1 side to allow space for hose.
9. Place the FT1845 Pump Group in front of the operator in a position convenient for observing the pressure gauge, working the pump handle and with ready access to the bypass valve. Place the tractor parking brake control in the "unlocked" position.
10. Preparation for releasing the brakes is now complete. Before towing, the operator should fasten the seat belt for safety if an emergency requires brake re-application.

Brake Release and Re-application

11. Turn the bypass valve handle to the closed position.
12. Work the pump handle rapidly to produce a large volume of oil flow. This flow is sometimes necessary to cause the brake piston seals to seat.
13. Brake piston seal seating will be evidenced by a sudden rise in oil pressure. At this point, oil flow will drop to near zero and pressure will rise to maximum.
14. An occasional pump stroke will maintain maximum pressure.

NOTE:

Do not let pressure drop below 375 psi while towing. To do so will risk partial brake engagement which can result in serious damage.

15. To re-apply the brakes, turn the bypass valve 90° to fully dump oil.

NOTE:

Do not use brakes to retard the tractor. Absence of cooling oil flow will result in extensive damage to the brakes and system contamination. Brakes must be fully released while the towed tractor is moving. If an emergency calls for brake re-application, apply brakes fully and allow tractor to come to a stop before proceeding.

16. Brakes can be re-applied ONLY by turning the bypass valve to the open position. Using the steering levers and brake pedals is not effective.

Be sure to follow all other towing instructions and precautions published in the Operation and Maintenance Manual.

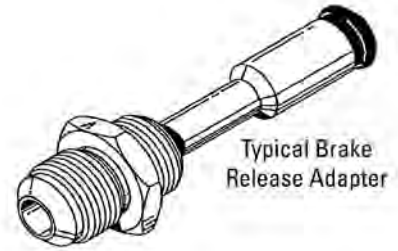
Brake Release Adapters

SMCS Code: 4267-553

Model: D8N, D9N and D9R Track-Type Tractors

Warranty: Six Months

- Used to supply oil from an external source to disengage spring applied parking brake whenever towing is required
- Used with FT1845 Pump Group, Brake System and FT1973 Adapter Group, Brake Release for Towing
- Tractors with disabled engine or power train hydraulic system cannot be moved without supplying oil to release parking brake — refer to Service Manuals and Operation and Maintenance Manuals for detailed instructions
- Adapters extend into control valve and isolate brake circuit (applies pressure directly to brake release pistons)
- Requires two adapters installed into ports of brake control valve



8T-2857 Adapter

Used for tractors with steering clutch control

- D4H, D5H, D6H, D7H (all)
- D5M: 4BR, 4JS, 3DR, 5FS
- D8N:
 - 9TC1-UP PIN
 - 1XJ1-UP PIN
- D6M: 9ZM, 2YS, 5WR, 2RN, 4GS
- D9N:
 - 1JD1-UP PIN
 - 6XJ1-UP PIN
- D8L: 53Y-3485-UP
- D9L: 14Y-3134-UP
- D8L S.A.: 4FB339NB-UP
- D9R: 8BL1-UP PIN

123-0525 Adapter

Used for (refer to Operation and Maintenance Manual for additional information)

- D8N: 5TJ1-UP PIN
- D8R (all)

123-0526 Adapter

Used for tractors with differential steering control

- D9R: 7TL1-UP
- Can also be used on D8N's and D8R's

NOTICE

Before connecting pump and adapter group, check and adjust maximum pressure setting on relief valve to prevent possible damage to brake piston seals which could occur if the system is over-pressurized.

References

SEBU6422 and SEBU6028, Service Manual Module, D8N Operation and Maintenance

SEBU6029 and SEBU6668, Service Manual Module, D9N Operation and Maintenance

SEBU6892, Service Manual Module, D9R Operation and Maintenance

[for tractors (8BL1-UP) with steering clutch control]

SEBU6923, Service Manual Module, D9R Operation and Maintenance [for tractors

(7TL1-UP) with differential steering control]

SEBU6891, D8R Service Manual Module, D8R Operation and Maintenance

Brake Release Adapters (Continued)

SMCS Code: 4267-553

Model: D8N, D9N and D9R Track-Type Tractors

Warranty: Six Months

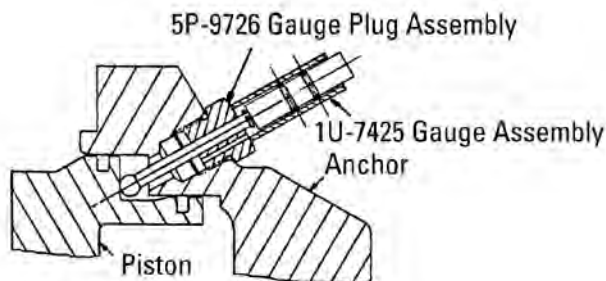
Part Number	Description	Overall Length	Engagement Depth (spot face to O-ring seal)	Connection to Brake Valve	Connection To Adapter Group	Seal For Brake Valve Passage	Seal For #8 STOR Connection	Seal for #10 STOR Connection
8T-2857	Brake Release Adapter	110 mm (4.3 in)	75.4 mm (2.97 in)	3/4-16 (#8 STOR port)	3/4-16 (#8 JIC male connector)	2J-6274 Seal	3K-0360 Seal	--
123-0525	Brake Release Adapter	110 mm (4.3 in)	74 mm (2.91 in)	7/8-14 (#10 STOR port)	3/4-16 (#8 JIC male connector)	2J-6274 Seal	--	2M-9780 Seal
123-0526	Brake Release Adapter	85 mm (3.3 in)	49 mm (1.93 in)	7/8-14 (#10 STOR port)	3/4-16 (#8 JIC male connector)	2J-6274 Seal	--	2M-9780 Seal

1U-7425 Displacement Gauge Assembly

SMCS Code:

Model: 772B/773B, 776B/777B, 785 and 789 Off-Highway Tractors and Trucks

Warranty: Six Months



- Eliminates difficulty of making brake wear measurements directly from 5P-9726 Gauge Plug (Brake wear on 772B/773B, 776B/777B, 785 and 789 Off-Highway Tractors and Trucks measured with 5P-9726 installed in service brake hydraulic port of brake anchor housing; when installed, 5P-9726 can be reached with only one hand making direct measurement very difficult)
- Allows serviceman to transport needed dimension away from vehicle for easy reading of measurement; gauge assembly placed over gauge plug to allow easy measurement of 5P-9726 rod piston; standard calipers or inside micrometer can then be used to determine plug position within tube of 1U-7425
- Brake piston travel, difference between minimum (actuated) and maximum (retracted), measured to determine percentage of brake wear
- Service Part: 6V-9028 O-ring Seal (2)

References

Technical Information Bulletin 7-22-87

Component Code 4250, Brake Wear Measurement Procedures and Specifications Service Manual

Part Number	Description
1U-7425	Displacement Gauge Assembly

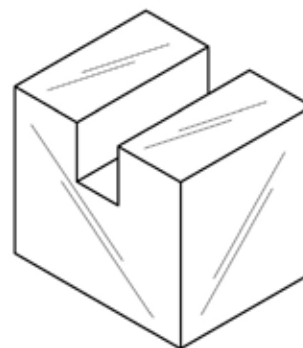
FT2616 Gauge Block

SMCS Code: 7473-040

Model: 950G, 962G Wheel Loaders

Warranty: None

- Used to measure brake wear
- Used with 6V-7030 Gauge Group
- Provides raised platform for taking measurements



Brake Disc Wear Gauges

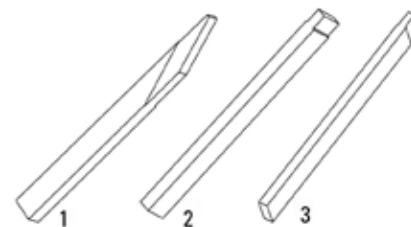
SMCS Code: 7474-040

Model: 924G and 928G Wheel Loaders

Warranty: Six Months

- Used to measure usable thickness of brake disc
- Quickly and easily determines if replacement is necessary
- Used by placing wear gauge through slot in brake housing (amount of material between step of tool and brake housing is the usable thickness of brake disc)

Item	Part Number	Model
1	221-6892	928G
2	221-6893	924G Standard
3	221-6894	924G Dual Disc



Brake Wear Gauges

SMCS Code: 7474-040

Model: 854K Wheel Dozer, 990H, 992K Wheel Loaders

Warranty: None

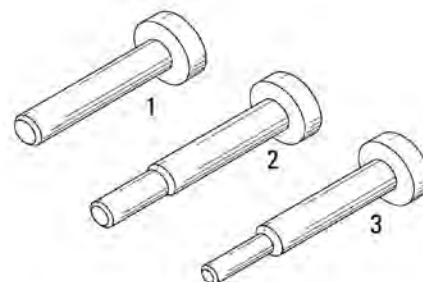
- Used to measure overall brake pad thickness
- Go/No-Go design determines if brake pad replacement is necessary
- Eliminates difficulty in making brake wear measurements
- Used while operator applies service brakes with engine stopped
- Used by removing brake inspection port at brake anchor and inserting gauge

Usage Instructions

1. Insert FT3105 Brake Wear Gauge into inspection port. If head of gauge does not reach anchor, brake wear is less than 50%.
2. If head of gauge touches anchor, insert FT3104 Brake Wear Gauge into port. If head of gauge does not reach anchor, brake wear is 50 to 75%.
3. If head of gauge touches anchor, insert FT3103 Brake Wear Gauge into port. If head of gauge does not reach anchor, brake wear is 75 to 100%.
4. If head of gauge touches anchor, brake wear is 100% and brake service is required.

Reference

Testing and Adjusting publications for
854K Wheel Dozer and 990H, 992K Wheel Loader



(Continued)

Brake Wear Gauges (Continued)

SMCS Code: 7474-040
 Model: 854K Wheel Dozer, 990H, 992K Wheel Loaders
 Warranty: None

Item	Part Number	Percent of Wear
1	FT3103	100%
2	FT3104	75%
3	FT3105	50%

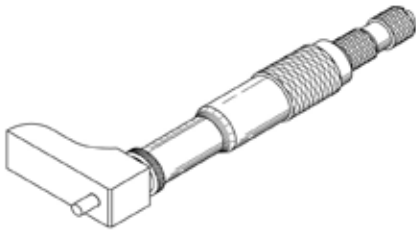


WARNING

Oil in housing can be under pressure and may be hot. To prevent personal injury stop the engine and wait five minutes to allow oil to settle before removing inspection port plug.

185-5784 Brake Wear Gauge

SMCS Code: 7473-040
 Model: 950G, 962G, and 966G Wheel Loaders
 Warranty: Six Months

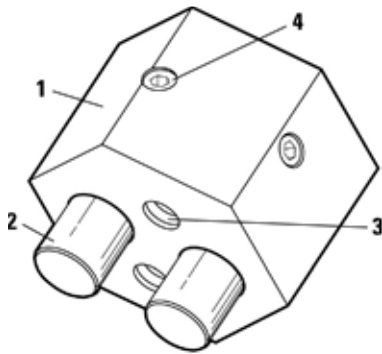


- Used to measure brake wear
- Easier to use and provides greater accuracy than tools previously available

Part Number	Description
185-5784	Brake Wear Gauge

4C-3386 Cylinder Spanner Wrench

SMCS Code: 4305-010
 Model: 785, 789 and 793 Trucks
 Warranty: Six Months



- Saves time during removal and installation of ball stud nut when servicing steering linkage and steering cylinder systems; keeps ball stud from turning
- Removal and installation of ball studs, particularly during installation, requires ball stud to be held and kept from turning when nut is being torqued; usually friction of taper alone is not enough to keep ball stud from turning

The Wrench Assembly (1) consists of a 63.5 mm (2 1/2 in) hex body that is easily held with a 63.5 mm (2 1/2 in) wrench or socket (5S-6078 Socket shown). Two 4C-4887 Pins (19.05 mm [3/4 inch] diameter) (2), and two 4C-3387 Pins (9.53 mm [3/8 in] diameter) (3) are easily positioned into or out of the hex body and retained in the desired position with detent grooves and ball spring plungers (4). The 2 different sized pins will allow the tool to be used on all ball studs used on 785 and 789 Trucks. Currently the ball studs contain 9.52 mm (3/8 in) diameter holes. Future ball studs will have 19.05 mm (3/4 in) diameter holes.

Part Number	Description
4C-3386	Cylinder Spanner Wrench

Solid Taper Reamers

Essential Tool

SMCS Code: 4305-064

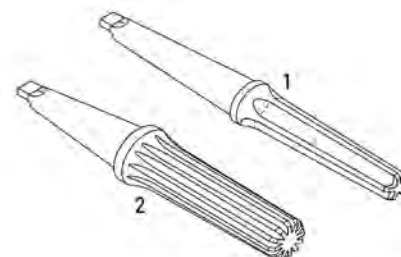
Model: 785, 789, 793, 797(A), and 797B Off-Highway Trucks

Warranty: Six Months

- Used to repair tapered steering arm linkage joints
- Can be resharpened for continued usage
- 202-8960 and 202-8961 used on 785 through 797(A) (up to 5YW-1) trucks
- 258-5684 used on 797(A) (5YW-1 and UP) and 797B (JSM-1 and UP) trucks

Reference

SEBF8271, Guideline for Reusable Parts and Salvage Operations, Salvage of Tapered Steering Bores (785-797B)



Item	Part Number	Description	Large End Diameter	Small End Diameter	Flutes	Flute Length	Taper	Overall Length	Shank
1	202-8960	Solid Taper Reamer (roughing)	84.14 mm (3.31 in)	66.37 mm (2.61 in)	5	142.2 mm (5.6 in)	1:8	393.7 mm (15.5 in)	Number 5 Morse Taper
1	202-8961	Solid Taper Reamer (finishing)	84.14 mm (3.31 in)	66.75 mm (2.63 in)	8	139.2 mm (5.48 in)	1:8	393.7 mm (15.5 in)	Number 5 Morse Taper
2	258-5684	Solid Taper Reamer	113.48 mm (4.47 in)	92.12 mm (3.63 in)	12	171.0 mm (6.73 in)	1:8	349.0 mm (13.75 in)	Number 5 Morse Taper

226-2378 Lapping Tool (Ball Stud)

SMCS Code: 4305-064, 005-020

Model: 769 through 797B Quarry and Off-Highway Trucks

Warranty: Six Months

- Used to finish-lap tapered steering arm linkage joints on steering arms, center arms, and steering boxes
- Used with 176-6538 Ball Stud Spanner Wrench (797) to rotate lapping tool or a 4C-3386 Cylinder Spanner Wrench, 5S-6078 Socket (2 1/2 inch), and 1 inch square drive ratchet is required to remove ball studs on 769 through 793 Off-Highway Trucks
- Used with 226-6624 Lapping Compound
- Laps bore to proper specifications
- Heat-treated for added durability

Reference

SEBF8271, Guideline for Reusable Parts and Salvage Operations, Salvage to Tapered Steering Bores (785-797)



Part Number	Taper	Weight	Use
265-9213	1:8 ratio	2.3 kg (5.1 lb)	769 through 777 Off-Highway Trucks
226-2378	1:8 ratio	7.4 kg (16.3 lb)	785 through 793 Off-Highway Trucks
265-9214	1:8 ratio	10.6 kg (23.4 lb)	797 Off-Highway Trucks

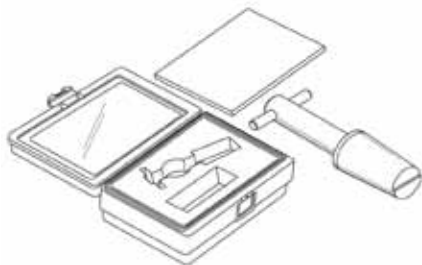
Plug Gauges with Case

Essential Tool

SMCS Code: 4305-064, 005-020

Model: 769, 770 (BZZ), 771, 772 (RLB), 773, 773F (EED), 775, 775F (DLS), 777, 777F (JRP), 784, 785, 789, 793, and 797 Off- Highway Truck

Warranty: Six Months



- Used to inspect steering arm linkage joints with a 1:8 ratio on steering arms and center arms
- Used with 280-1555 Blueing Paste (sold separately)
- Gauges have incorporated a “Go” and “No Go” step to determine wear condition of specific steering joint tapered bores
- Durable waterproof case provided with each gauge group
- Foam insert protects gauge from damage and provides storage for 280-1555 Blueing Paste (sold separately)
- Heat-treated and black-oxide coated for added durability

References

SEBF9054, Guideline for Reusable Parts, Reusability of Tapered Steering Bores (769 Through 777 Trucks and Tractors)

SEBF9055, Guidelines for Reusable Parts, Reusability of Tapered Steering Bores (784 Tractor Through 797B Trucks)

Part Number	Description	Model Usage
265-9215	Plug Gauge Group	769, 771, 772
265-9216	Plug Gauge Assembly (not serviced separately)	769, 771, 772
265-9217	Foam Block Group (serviced separately)	761, 771, 772
265-9218	Plug Gauge Group	773, 775, 777
265-9219	Plug Gauge Assembly (not serviced separately)	770 (BZZ), 772 (RLB)
265-9220	Foam Block Group (serviced separately)	773F (EED), 775F (DLS), 777F (JRP)
265-9221	Plug Gauge Group	785
265-9222	Plug Gauge Assembly (not serviced separately)	785
265-9223	Foam Block Group (serviced separately)	--
265-9224	Plug Gauge Group	789, 793, 797(A)
265-9225	Plug Gauge Assembly (not serviced separately)	789, 793, 797 (A)
265-9226	Foam Block Group (serviced separately)	--
265-9227	Plug Gauge Group	797B
265-9228	Plug Gauge Assembly (not serviced separately)	797B
265-9229	Foam Block Group (serviced separately)	--

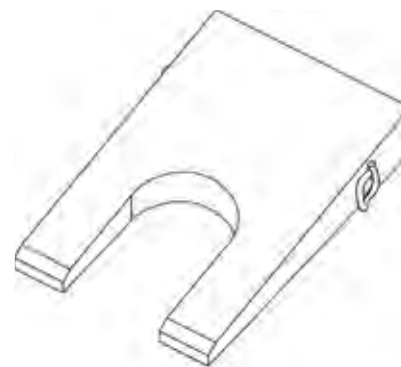
Ball Stud Removers

SMCS Code: 4305-010, 4318-010, 4329-010
 Model: 769 through 797B Off-Highway Trucks
 Warranty: Six Months

- Used to separate ball stud from steering joint
- Reduces damage to steering components (strike remover tool, no impact in steering components necessary)

References

SENR1561, Disassembly and Assembly, 769D and 771D Off-Highway Trucks
 SENR1584, Disassembly and Assembly, 773E and 775E Off-Highway Trucks
 RENR3365, Disassembly and Assembly, 776D and 777D Off-Highway Trucks
 SENR1500, Disassembly and Assembly, 784C and 785C Off-Highway Trucks
 SENR1534, Disassembly and Assembly, 789C Off-Highway Truck
 RENR2535, Disassembly and Assembly, 793C and 793C XQ Off-Highway Trucks
 RENR2588, Disassembly and Assembly, 797B Off-Highway Truck



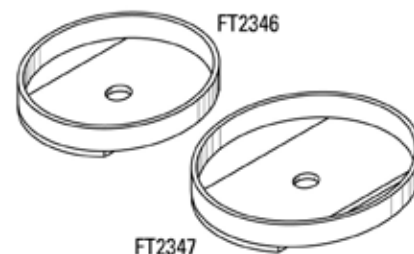
Part Number	Use	Weight
231-4902	769 and 771 Off-Highway Trucks	1.827 kg (4.03 lb)
231-4903	773 through 777 Off-Highway Trucks including 777 HAA	3.142 kg (6.93 lb)
231-4904	785 Off-Highway Trucks including 785 HAA	7.119 kg (15.69 lb)
231-4905	789 through 793 Off-Highway Trucks	8.506 kg (18.75 lb)
287-5796	797 Off-Highway Trucks	12.600 kg (27.78 lb)

Compressors

SMCS Code: 4255-017
 Model: CB-434 Compactor
 Warranty: None

- Used in disassembly of parking brake disc group
- Applied by a bolt through a hole in center of crossplate which engages a tapped hole in center of conical spring plate; tightening bolt flattens conical spring which removes force from snap ring retainer, allowing disassembly of brake

Part Number	Material	Description
FT2346	152.4 ID x 165 OD steel tube	16 mm (0.63 in) thick crossplate to withstand 6750 lb force required for front brake
FT2347	171.5 ID x 190 OD steel tube	16 mm (0.63 in) thick crossplate to withstand 7875 lb force required for rear brake

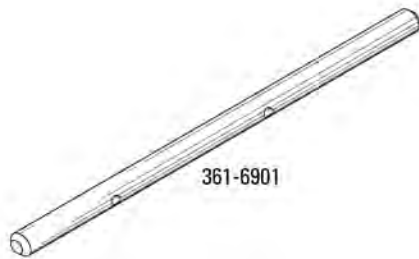


318-2943 Brake Alignment Tool Group

Essential Tool

Model: 770, 772, 773, 775, & 777 Off-Highway Trucks

Warranty: Six Months



- Used to precisely align plates and friction discs; helps eliminate damage of brake pack and mating components during brake assembly—helps ensure proper brake operation
- Versatile tool group can be easily configured to fit several different brake assemblies
- Simplifies assembly and reduces installation time
- Made of lightweight aluminum, for ease of handling
- For easy identification, aluminum components are stamped with the identification mark A, B, C, D, E, F, H, or J
- Tool assembly chart in NEHS1004 Tool Operating Manual provides precise assembly instructions for each application
- For convenience, each component is attached to main fixture assembly with a single size socket head cap screw
- Tool Group includes protective storage case 51 x 51 x 51 cm (20.0 x 20.0 x 20.0 in)

References

NEHS1004, Tool Operating Manual, 318-2943 Brake Alignment Tool for 773, 775, and 777 Off-Highway Trucks

REN8273, 770/772 Off-Highway Truck, Disassembly and Assembly Manual

REN8286, 773/775F Off-Highway Truck, Disassembly and Assembly Manual

REN8312, 777F Off-Highway Truck, Disassembly and Assembly Manual

Part Number	Description	Quantity
—	NEEG3102 Decal	1

Part Number	Description	Quantity
318-2943	Brake Alignment Tool Group	1
Service/Repair Parts¹		
292-3211	Brake Alignment Tool	1
318-2927	Storage Case Foam Insert	1
169-7372	Clear Bottle, 114 g (4 oz), 200 per box	--

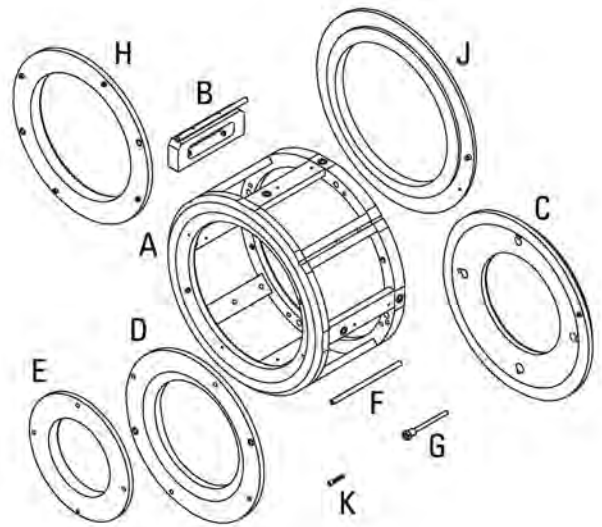
¹ Includes: Brake Alignment Tool, Storage Case Foam Insert, and NEEG3102 Decal

Tooling Chart

Tooling Chart			
Item	Description	Quantity	Used On
A	Fixture Assembly	1	All
B	Adapter Assembly	4	775 Rear (O.C.), 775 Rear (I.C.), 777 Rear (O.C.), 777 Rear (I.C.)
C	Plate Assembly	1	770 Rear (O.C.), 772 Rear (O.C.), 773 Rear (O.C.), 775 Rear (O.C.), 777 Front (I.C.), 777 Rear (O.C.)
D	Plate Assembly	1	770 Rear (I.C.), 772 Rear (I.C.), 773 Rear (I.C.), 777 Front (I.C.)
E	Plate Assembly	1	777 Front (I.C.)
F	Rod	4	770 Rear (O.C.), 772 Rear (O.C.), 773 Rear (O.C.), 770 Rear (I.C.) 772 Rear (I.C.), 773 Rear (I.C.)
G	Guide Pin Assembly	4	770 Rear (O.C.), 772 Rear (O.C.), 773 Rear (O.C.), 777 Front (O.C.)
H	Plate Assembly	1	775 Rear (I.C.), 777 Front (O.C.)
J	Plate Assembly	1	770 Rear (I.C.), 772 Rear (I.C.), 773 Rear (I.C.)
K	Socket Head Screw ¹	20	All - Quantity used varies per application

(O.C.) = Out-of-Chassis.
(I.C.) = In-Chassis.

¹McMaster-Carr part number 91251A346, 10-32 x 22.2 mm (.875 in) long.



346-8608 Brake Alignment Tool

SMCS Code: 5255-016, 012

Model Usage: 797F Off-Highway Truck

Warranty: Six months



- Used to align plates and friction discs to eliminate damage to brake pack and mating components during brake assembly.
- Simplifies assembly and reduces installation time.
- Tool is black oxide coated to increase corrosion resistance.

Specifications	
O.D.	793.7 mm (31.25 in)
Height	218 mm (8.58 in)
Weight	19.39 Kg (42.75 lb)

Part Number	Description
346-8608	Brake Alignment Tool

366-6542 Brake Alignment Tool

Model Usage: 777G Off-Highway Truck

Warranty: Six Months



- Used to align plates and friction discs to eliminate damage to brake pack and mating components during brake assembly
- Simplifies assembly and reduces installation time
- Tool is black oxide coated to increase corrosion resistance

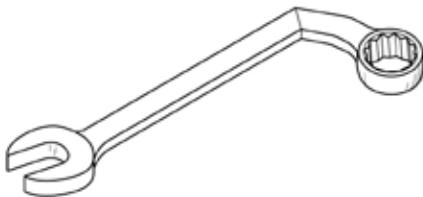
Part Number	Description
366-6542	Brake Alignment Tool

FT2812 Modified Wrench

SMCS Code: 5086-025, 5070

Model: All "D" Series Backhoe Loaders

Warranty: None



- Used to loosen and tighten torque limiter locknut during adjustment procedure
- Made from 8H-8516 Box End Wrench

References

REN3581, Testing and Adjusting 416D Backhoe Loader Hydraulic and Steering System

REN3584, Testing and Adjusting 420D, 424D, 428D, 430D, 432D, 438D, and 442D Backhoe Loader Hydraulic and Steering System

162-8231 Disc Brake Alignment Group

Essential Tool

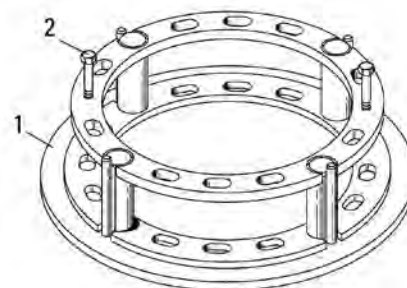
SMCS Code: 4255-024

Model: D350E and D400E Series II, 735 and 740 Articulated Dump Trucks

Warranty: Six Months

- Used to provide easy installation of disc brakes
- Aligns disc brake splines before brake package installation onto wheel station
- Diameter across pins: 351.5 mm (13.84 in)

Item	Part Number	Description
1	162-8231	Disc Brake Alignment Group
2	0S-1590	Bolt (English)



378-4530 Test and Adjust Manifold

SMCS Code: 4322-036

Model Usage: 950G, 962G, 966H, 966G, IT62G and 972H

Warranty: Six Months

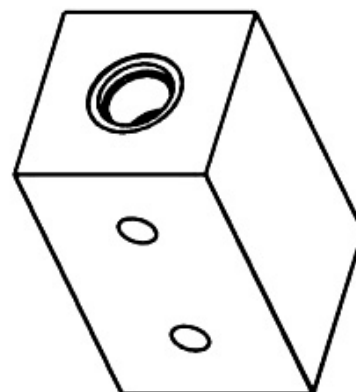
- Used with hydraulic test bench
- Allows for off-machine pressure setting of the steering crossover relief valve (129-8222)

Reference

REN4314, Test and Adjust Procedures and Specs

Specifications	
Dimensions	60 X 60 X 107.8 mm (2.36 X 2.36 X 4.24 in)
Weight	3.203 kg (7.06 lbs)

Part Number	Description
378-4530	Test and Adjust Manifold



317-5304 Adapter Bracket Assembly

Essential Tool

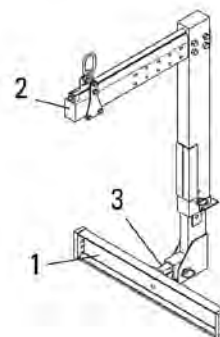
SMCS Code: 1365

Model: 795F AC Off-Highway Truck

Warranty: Six Months

European Union compliant, CE marked

- Used to remove and install 291-6885 Brake Cooler Group from 795F AC Off-Highway Truck
- Used with 226-2380 C-Frame Lifting Bracket Assembly and 226-2381 Short Slide Tube Assembly
- Adapter bracket is attached to slide tube assembly with two 8T-4779 Bolts and two 3E-9402 Washers (dealer supplied) — tighten bolts to standard torque value
- Outside ends of adapter bracket attach to brake cooler assembly with eight 8S-4755 Bolts and eight 7K-0897 Washers (dealer supplied) — tighten bolts to standard torque value
- Provides stability during brake cooler removal and installation
- Meets ANSI B30.20.2006, ASME AS 4991 2004 standards



(Continued)

317-5304 Adapter Bracket Assembly (Continued)

Essential Tool

SMCS Code: 1365

Model: 795F AC Off-Highway Truck

Warranty: Six Months

Working load limit	181.5 kg (400 lb)
Weight	75 kg (165 lb)
Length	1132 mm (44.6 in)
Height	213 mm (8.4 in)
Width	70 mm (2.7 in)

Item	Part Number	Description
1	226-2380	Multi-Purpose "C" Style Lifting Bracket Assembly
2	226-2381	Short Slide Tube Assembly (included with 226-2380 Lifting Bracket Assembly)
—	317-5304	Adapter Bracket Assembly

176-6539 Brake Motor Removal and Installation Bracket Assembly

Essential Tool

SMCS Code: 4268-010

Model: 797 Off-Highway Trucks

Warranty: Six Months

- Used to remove and install brake cooling motor from hydraulic tank
- Used with 1U-7505 Transmission Jack



Part Number	Description
176-6539	Brake Motor Removal and Installation Bracket Assembly

9U-6789 Brake Alignment Tool

SMCS Code: 4255-024

Model: 777C Truck (with optional oil-cooled front disc brakes)

Warranty: Six Months



- Used to align clutches and discs; proper alignment is critical
- Assures correct alignment of clutch plates and discs prior to wheel assembly; helps eliminate damage of clutch pack and other mating components at assembly
- Simplifies alignment and reduces installation time (correct alignment and installation assure proper brake operation)
- Used in the field without removing brakes (vertical position) or in the shop when brake is in horizontal position

Reference

SEN5693, Power Train Supplement,

777C Oil-Cooled Disc Brakes

Outside diameter	400.0 mm (15.75 in)
Inside diameter	200.0 mm (7.87 in)
Thickness	165 mm (6.5 in)
Weight	14 kg (31 lb)

(Continued)

9U-6789 Brake Alignment Tool (Continued)

SMCS Code: 4255-024

Model: 777C Truck (with optional oil-cooled front disc brakes)

Warranty: Six Months

Part Number	Description
9U-6789	Brake Alignment Tool

Hydraulic System Tools

Tools for Flushing Scraper Hydraulic Systems

Model: Wheel Tractor-Scrapers

Warranty: Six Months



- When flushing contaminated oil from hydraulic system, discontinued 6J-1685 Tube Assembly, along with other miscellaneous parts, is required to bypass cylinders to permit free flow of oil

Reference

FM055145

Vehicle System Tools

Item	Qty.	Part Number	Description	Size
1	2	6J-1685	Tube Assembly	(1 1/4 - 1 1/2 in) SAE
Other Parts Required				
2	6	1P-4579	Flange	(1 1/2 in) SAE
3	8	1A-1460	Bolt (1/2 - 13) (fork mounting hardware)	51.0 mm (1/2 in - 13 x 2 in)
4	10	1P-4578	Flange	(1 1/4 in) SAE
5	8	1D-4707	Bolt	57.0 mm (7/16 in - 14 x 2.25 in)
6	12	1P-4576	Flange	(3/4 in) SAE
7	4	0T-0318	Bolt	25.0 mm (7/16 in - 14 x 1 in)
8	12	7F-0192	Bolt	51.0 mm (3/8 in - 16 x 2 in)

Item	Qty.	Part Number	Description	Size
Other Parts Required (Continued)				
9	22	4H-4581	Plug	19.05 mm (3/4 in)
10	8	2D-1767	Plug	12.7 mm (1/2 in)
11	8	1D-4719	Nut	(1/2 in - 13)
12	4	6H-1717	Bolt	29.0 mm (1/2 in - 13 x 1 1/8 in)
13	2	3H-5521	Plate	(1 1/4 in) SAE
14	8	1D-4718	Nut	(7/16 in - 14)
15	3	3H-5522	Plate	(3/4 in) SAE
16	12	1D-4717	Nut	(3/8 in - 16)
17	1	9U-6219	Tool Box	--
Not Shown				
--	2	6H-3621	Plug	--
--	1	2P-8289	Holder Block	--

5P-7336 Bolt

SMCS Code: 5050-038, 1000-036

Model: 225B, 229, 235C, 245B

Warranty: Six Months



- Used to provide way to manually engage pilot-operated control valves when testing and adjusting excavator hydraulic systems
- Installed directly into pressure tap hole in end cover to allow variable positioning of valve without using pilot controls in cab
- Makes testing and adjusting a 1-person job instead of requiring 2
- Grade 5 bolt, 10.16 mm (4 in) long and threaded 9/16 inch-18 to fit covers on excavator control valves

Part Number	Description
5P-7336	Bolt

WARNING

Always remove the 5P-7336 Bolts immediately after completion of the testing or adjusting procedure and reinstall the 9/16 inch-18 O-ring plug before operating the machine in a normal manner. Injury to personnel and damage to equipment can result if this is not done.

Fittings for 22 mm (7/8 in) JIC Connectors

SMCS Code: 5086-036

Model: Wain-Roy Backhoe

Warranty: Six Months

- 9S-0176 Tee and 9S-0177 Union used for tapping into 22.22 mm (7/8 in) JIC connectors on Wain-Roy Backhoes to check pressure relief valve settings

Item	Part Number	Description
1	9S-0177	Union
2	9S-0176	Adapter - Tee (37°)



Portable Hydraulic Tester

SMCS Code: 3000-032, 5000-032

Model: All Models Including E and MS Series Excavators

Warranty: Six Months

- Used to test hydraulic flow, pressure, and temperature in any hydraulic system (used in field or shop by simulating system working conditions)
- Range and versatility extended with use of externally connected flow meters
- Troubleshoot or adjust hydraulic circuits at low or high flows ("Interpass" protection prevents dangerous external oil spray in event of over-pressure)
- Unit is self contained and bi-directional (easily installed into hydraulic circuit using hoses and quick disconnects)
- Uses discontinued 6V-3136 Photo Pickup and 6V-2198 Cable, saving tool accessory costs
- Uses standard batteries with automatic power-off feature
- Use 9U-5229 Adapter or 9U-5228 Adapter to reduce ports to 41.27 mm (1 5/8 in) or 33.33 mm (1 5/16 in) STOR (Straight Thread O-ring) respectively [makes a close-coupled connection with 41,000 kPa (6,000 psi) pressure rating]

References

NEHS0565, Operating Manual, Portable Hydraulic Tester

NEHS0576, Operating Manual, Portable Hydraulic Tester Repair Manual

4C-9910 Portable Hydraulic Tester	
Flow range	13.0 - 475.0 lpm (3.5 - 125.0 gpm)
Digital readout scales	Metric, US or British
Accuracy	±1% full scale over normal range
Analog output	0 - 1.5 VDC = 0 - 475.0 lpm (0 - 125 gpm)
External input socket for flow meters	0.2 - 795 lpm (0.05 - 210 gpm) range
Continuous working pressure (analog readout)	0 - 500 bar (0 - 6,800 psi)
Pressure accuracy	±1.6% full scale
Temperature (analog readout)	10° to 120° C (50° to 250° F)
Temperature accuracy	±1° C (±2° F)
Speed	0 - 6000 RPM (digital readout)
Accuracy	±1% full scale
Ports	1 7/8-12 UNF SAE O-ring
4C-9911 Flowmeter (typical)	
Flow accuracy	±1% full scale of normal range; ±2% full scale of extended range
Temperature	10° to 120° C (50° to 250° F)
Temperature accuracy	±1° C (±2° F)

(Continued)

Hydraulic System Tools

Portable Hydraulic Tester (Continued)

SMCS Code: 3000-032, 5000-032

Model: All Models Including E and MS Series Excavators

Warranty: Six Months

Part No.	Description	Normal Flow Range	Extended Flow Range	Max. Pressure	Port Size
Specifications for Flow Meters					
4C-8686	Flow Meter, 795 lpm (210 gpm)	60 - 700 lpm (15 - 180 gpm)	30 - 800 lpm (7 - 210 gpm)	350 bar (5075 psi)	1 1/2 SAE Flange
4C-8687	Flow Meter, 490 lpm (130 gpm)	45 - 450 lpm (10 - 100 gpm)	20 - 500 lpm (4 - 130 gpm)	350 bar (5075 psi)	1 1/2 SAE Flange
4C-9436	Flow Meter, 110 lpm (30 gpm)	12 - 120 lpm (3 - 25 gpm)	5 - 150 lpm (1 - 30 gpm)	420 bar (6090 psi)	1 1/16-12, 12 SAE
4C-9911	Flow Meter, 55 lpm (15 gpm)	8 - 50 lpm (2 - 12 gpm)	2 - 60 lpm (0.5 - 15 gpm)	420 bar (6090 psi)	1 1/16-12, 12 SAE
4C-9912	Flow Meter, 245 lpm (65 gpm)	20 - 220 lpm (5 - 50 gpm)	10 - 300 lpm (2 - 65 gpm)	420 bar (6090 psi)	1 5/16-12
4C-9913	Flow Meter, 380 lpm (100 gpm)	30 - 300 lpm (8 - 80 gpm)	10 - 400 lpm (3 - 100 gpm)	420 bar (6090 psi)	1 5/16-12
4C-9914	Flow Meter, 645 lpm (170 gpm)	50 - 550 lpm (12 - 150 gpm)	25 - 650 lpm (6 - 170 gpm)	350 bar (5075 psi)	1 1/2 SAE Flange

Adapters for Portable Hydraulic Tester

Adapters	
Working pressure rating	41,000 kPa (6,000 psi)
Burst pressure rating	165 MPa (24,000 psi)
Size of hex across flats	53.97 mm (2 1/8 in)

Part Number	Description	Size	Use
9U-5228	Adapter	--	Adapts 1 7/8 12 STOR male fitting to 1 5/16-12 male union
9U-5229	Adapter	--	Adapts 1 7/8 12 STOR male fitting to 1 5/8-12 male union

Service/Repair Parts

2S-4078	Seal - O-ring - STOR	41.27 mm (1 5/8 in)	--
6K-6307	Seal - O-ring - STOR	47.62 mm (1 7/8 in)	--
7M-8485	Seal - O-ring - STOR	33.33 mm (1 5/16 in)	--

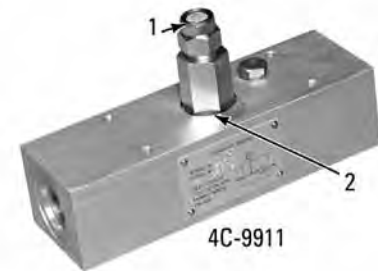
4C-9910 Portable Hydraulic Tester



Item	Part Number	Description
1	127-9353	Disc - Burst
2	4C-9625	Pressure Gauge
3	4C-9922	Load Valve
—	4C-9910	Portable Hydraulic Tester
Not shown		
—	4C-9623	Transducer
—	4C-9918	Seal Kit
—	4C-9626	Seal - Transducer

4C-9911 Flowmeter (typical)

Item	Part Number	Description
1	4C-9629	Transducer
2	4C-9626	Seal - Transducer
--	4C-9911	Flowmeter (typical)



Hydraulic Flow Testers

Model: All Models

Warranty: Six Months

Hydraulic Flow Testers

- Used to diagnose hydraulic flow, pressure and temperature symptoms in any hydraulic system, including E and MS Family Excavators
- Allows testing in field or shop; built-in load valve allows simulation of operation
- Can be used to troubleshoot or set hydraulic circuits to specifications at low or high flows
- In case of over pressure, "interpass" protection protects from dangerous external oil spray
- May be used in-line or for tee test operation
- Self-contained, bi-directional, capable of reading all parameters and loading systems regardless of flow direction; easily installed with hoses into a circuit; high pressure quick disconnects readily available from the Dealer Service Tools Division to work with these units
- Analog display of all parameters permitting quick check of hydraulic system or component performance
- Accept Cat® discontinued 6V-3136 Photo Pickup and 6V-2198 Cable to read RPM; saves tool accessory costs
- Uses standard batteries with automatic "power off" feature
- 1U-8761 Hydraulic Flow Tester discontinued and replaced by 4C-9437; 1U-9551 Hydraulic Flow Tester discontinued and replaced by 4C-9675

4C-9436 Flow Meter

- When used with hydraulic flow testers, extends their range and versatility, keeping present tooling from becoming obsolete

References

NEHS0572, Tool Operating Manual, Portable Hydraulic Tester

NEHS0573, Tool Operating Manual, Turbine Flow Meter

NEHS0576, Tool Operating Manual, Repair of Portable Hydraulic Tester

Item	Part Number	Description
1	4C-9624	Ammeter
2	4C-9625	Pressure Gauge
3	4C-9627	Load Valve, 4C-9437 Tester
Not Shown		
—	4C-9623	Transducer
—	4C-4084	Rupture Disc for 4C-9675 Tester
—	4C-4083	Rupture Disc for 4C-9437 Tester
—	4C-9626	Seal - Transducer

4C-9437 Hydraulic Flow Testers

*For cable, contact:

Webster Instruments

1290 East Waterford Avenue

Milwaukee, WI 53207

Phone: 414-769-6400

Fax: 414-769-6591

(Continued)

Hydraulic System Tools

4C-9437 Hydraulic Flow Testers (Continued)

Flow range	0 - 100 gpm or 0 - 25 gpm metric or US scales
Accuracy	±2% full scale over normal range External input socket calibrated for 4C-9436 Flow Meter only; use Cable to connect external flow meter. *Contact Webster Instruments for cable.
Continuous working pressure	0 - 420 bar (0 - 6,000 psi)
Accuracy	±1.6% full scale
Temperature (dual scale)	10° to 120° C (50° to 250° F)
Accuracy	±2% full scale
Speed, will measure	0 - 10,000 photo tach 0 - 3,000 mech. tach
Accuracy	±2% full scale
Uses discontinued 6V-3136 Pickup and 6V-2198 Cable Ports	1 5/16 in-12 UNF SAE O-ring port

4C-9675 Hydraulic Flow Tester

The 4C-9675 has the same design characteristics as the 4C-9437 except for flow capacity of 0-200 or 0-40 g/m and working pressure of 5000 psi.

Flow range (dual)	0 - 200 gpm or 0 - 40 gpm metric or US scales
Accuracy	±2% full scale over normal range
External input socket calibrated for 4C-9436 Flow Meter only; use Cable to connect external flow meter. *Contact Webster Instruments for cable.	
Continuous working pressure	0 - 350 bar (0 - 5,000 psi)
Accuracy	±1.6% full scale
Temperature (dual scale)	10° to 120° C (50° to 250° F)
Accuracy	±2% full scale
Speed, will measure	0 - 7,500 photo tach; 0 - 2,500 mech. tach
Accuracy	±2% full scale
Uses discontinued 6V-3136 Pickup and 6V-2198 Cable	
Ports	1 1/2 in SAE 4 bolt flange (XT-3)

Vehicle System Tools



4C-9437
4C-9675

4C-9436 Flow Meter

Flow range	3 - 25 gpm (1 - 30 extended range)
Working pressure	0 - 420 bar max. (6,300 psi)
Temperature	10° to 120° C (50° to 250° F)
Ports	1 1/16 in-12 SAE O-ring (#12 port)
The 4C-9436 Flow meter is not a standalone flow meter. It is a flow block with a flow/temperature transducer. It must be used with a hydraulic flow tester or another device with readout capabilities. A Cable is used to couple the flow meter to a readout device. Contact Webster Instruments for cable.	



Item ¹	Part Number	Description
1	4C-9629	Transducer
—	4C-9626	Seal - Transducer

¹Includes Item 1, Ammeter

Rupture Discs

SMCS Code: 0784

Model: Most Cat® Models

Warranty: Six Months

- Replacement discs for 2 different portable hydraulic testers; disc will blow out if over-pressure conditions have occurred in portable hydraulic tester

Reference

NEHS0508-01, instructions to replace discs

(designated as safety discs in instruction manual)

Part Number	Outside Diameter	Nominal Rupture Pressure	Pkg. Qty.	Use
4C-4083	15.875 mm (0.625 in)	41,343 kPa (6,000 psi)	4	4C-9437 and 160-2513 Portable Hydraulic Tester
4C-4084	19.913 mm (0.784 in)	41,343 kPa (6,000 psi)	4	4C-9675 and 160-2515 Portable Hydraulic Tester

Flowmeter-Testers

Warranty: Six Months

- Used to regulate hydraulic flow with built-in load valve
- Used with DataView

Repair Information

Webster Instruments

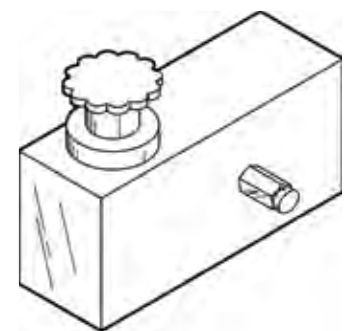
1290 East Waterford Avenue

Milwaukee, WI 53207

Phone: (414) 769-6400

Fax: (414) 769-6591

A "Return Material Authorization" number is required.



Part Number	Flow Range	Maximum Pressure	Connections
160-2513	19 - 190 lpm (5 - 50 gpm)	41,343 kPa (6,000 psi)	1 5/16-12 (No. 16) O-ring ports
160-2514	15 - 474 lpm (4 - 125 gpm)	48,230 kPa (7,000 psi)	1 7/8-12 (No. 24) O-ring ports
160-2515	57 - 682 lpm (15 - 180 gpm)	34,450 kPa (5,000 psi)	38.1 mm (1.5 in) SAE 4-bolt flange

348-9503 DHCR1500 Flowmeter

348-9504 HV1500 Load Valve

SMCS Code: 0774, 0784

Model: All Models

Warranty: Six Months



- Used together to measure hydraulic flow, pressure, and temperature in any hydraulic system
- Helps diagnosis problems within a hydraulic system
- Meets EU requirements (No CE markings required)

348-9503 DHCR1500 Flowmeter

- Flow rated up to 1500 lpm (400 gpm)
- Pressure rated up to 420 bar (6000 psi)
- Code 62 four-bolt flange connections
- Accuracy of $\pm 1\%$ of indicated reading
- Remote inputs: flow, temperature - 2, pressure - 1, speed - 1
- Quickly checks hydraulic pumps, motors, valves, cylinders, and hydrostatic transmissions
- Low battery power consumption with automatic "power off" feature
- Infra-red photo-tachometer with "on target" indicator
- Can measure flow in both directions (uni-directional when used with 348-9504 HV1500 Load Valve)

348-9504 HV1500 Load Valve

- Progressive pressure control
- High-strength aluminum body rated up to 420 bar (6000 psi)
- Includes connecting flange, seals, and bolts for use with 348-9503 DHCR1500 Flowmeter
- Pilot operated, over-pressure internal bypass valve
- Includes spare burst discs
- Uni-directional flow

Repair Information

Webster Instruments

1290 East Waterford Avenue

Milwaukee, WI 53207

Phone: (414) 769-6400

Fax: (414) 769-6591

A "Return Material Authorization" number is required.

348-9503 DHCR1500 Flowmeter	
Item	Quantity
DHCR1500 Unit	1
Cable Hose Assembly	1
LT1500-FR-F-S-6 Unit	1
Carry Case	1
348-9504 HV1500 Load Valve	
Item	Quantity
HV1500 Load Valve Unit	1
Spool	1
Carry Case	1

Part Number	Description
348-9503	DHCR1500 Flowmeter
348-9504	HV1500 Load Valve

FT1043 Blocking Cover

SMCS Code: 5050-036

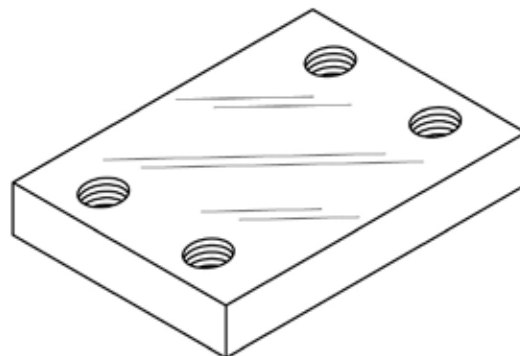
Model: D8H and D9G Tractors

Warranty: None

- Used with 9S-2000 Flow Meter when flow testing large section of D9G Tractor hydraulic system equipped with gear-type pump and D8H Tractor hydraulic pumps (9S-2000 Flow Meter discontinued)
- 4H-6807 Rubber Plug also needed when testing small section of the pumps

Reference

REG00791, Service Manual, Testing Hydraulic Systems and Components (additional parts required)

**Adapters for Hydraulic System Component Testing (Tee Test Tools)**

- The same improved adapters are recommended for use with discontinued 5P-3600 Flow Meter and discontinued 9S-2000 Flow Meter, with one additional C-2 hose assembly being required with 9S-2000 Flow Meter; refer to following tool lists and Tee Test Tool Chart for adapter components required for each machine
- All adapter components are high pressure, 103,500 kPa (15,000 psi) minimum burst pressure, fittings and, where convenient, duplication of components has been eliminated
- Some components are seldom used and have been removed from “recommended” status to an “available if needed status”
- For convenience, 5P-8687 Tool Group, consisting of an E-2 Tachometer Adapter, blocking plate assemblies, and certain special tools, is available

NOTE:

Oil flow should always be from a nipple into a valved coupler and never from a coupler into a valved nipple.

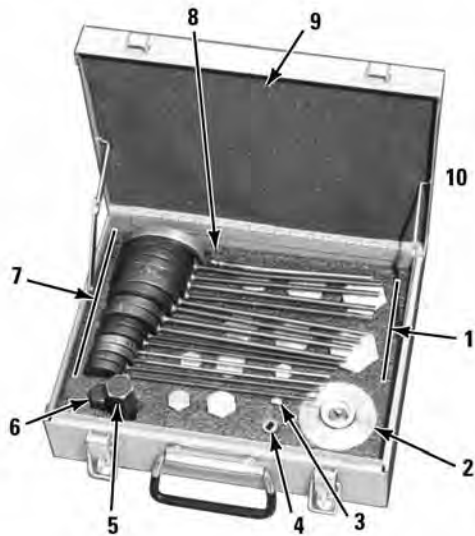
**WARNING**

Always make certain that the valved coupler on the C5 and C8 Connecting Hose Assemblies are connected to the valved nipple on the pump adapter before starting the diesel engine. If this connection is not made properly, injury to personnel or damage to the machine can occur when performing the pump test. Refer to Form REG00791-01 for procedural information for testing hydraulic systems and components.

5P-8687 Tee Test Tool Group

Model: See Charts

Warranty: Six Months



- For use with 1U-8761 and 1U-9551 Portable Hydraulic Testers (all blocking plate assemblies, most needed tachometer adapters, and 2 tool bits available under 1 part number)
- All parts stored in compact box with decal in lid for quick parts reference

Item	Part No.	Description	Qty.
1	2P-9697	Plug (7/8 in - 14 thd)	2
1	3R-6789	Cap (1 5/16 in - 12 thd)	--
1	5P-2299	Plug (1 5/16 in - 12 thd)	--
1	5P-2909	Plug (3/4 in - 16 thd)	2
1	5P-4299	Plug (1 3/16 in - 12 thd)	--
1	6J-7366	Cap (7/8 in - 14 thd)	2
1	8L-9137	Cap (1 3/16 in - 12 thd)	--
1	8S-4950	Cap (9/16 in - 18 thd)	2
1	8S-4951	Cap (3/4 in - 16 thd)	2
1	9L-8493	Cap (7/16 in - 20 thd)	--
1	9S-8895	Plug (1 1/16 in - 12 thd))	2
1	9S-8896	Cap (1 1/16 in - 12 thd))	2
1	9S-8927	Plug (9/16 in - 18 thd))	2
2	1W-2316	Adapter Assembly	--
2	4M-8303	Seal - O-ring (outside)	--
2	5P-0537	Hard Washer	--
3	5P-1758	Shaft Assembly	--
4	4N-0538	Coupling	--
5	9U-7419	Bit, 19.05 mm (3/4 in)	--
6	1P-3566	Bit, 14.28 mm (9/16 in)	--
7	4F-7391	Seal	2
7	4F-7952	Seal	2

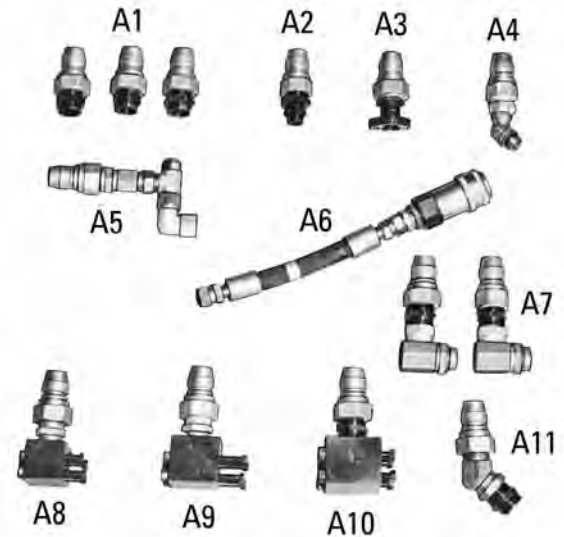
Item	Part No.	Description	Qty.
7	4J-8996	Seal	2
7	5F-1678	Seal	2
7	5F-7054	Seal	2
7	7F-8267	Seal	4
7	8F-6711	Seal	--
7	9S-7358	Plate Assembly, 12.7 mm (1/2 in)	2
7	9S-7359	Plate Assembly, 19.05 mm (3/4 in)	2
7	9S-8092	Plate Assembly, 25.4 mm (1 in)	2
7	9S-8093	Plate Assembly, 31.75 mm (1 1/4 in)	2
7	9S-8094	Plate Assembly, 38.1 mm (1 1/2 in)	4
7	9S-8095	Plate Assembly, 50.8 mm (2 in)	--
7	9S-8894	Plate Assembly, 15.87 mm (5/8 in)	2
8	5P-8686	Block — Tool Holder	--
9	6V-3073	Case - Plastic	--
10	6V-7029	Block - Top	--
--	5P-8687	Tee Test Tool Group	--

5P-8687 Tee Test Tool Group Assemblies

A — Pump Supply Line Adapter Assemblies

- Required to tap into pump supply line to provide inlet flow to flow meter
- To determine assembly number required for a machine model, refer to Section A of Tee Tool Chart, and then to list below

Part Number	Assembly Number	Description	Quantity
FT0828	A3	Filter Adapter ¹	1
¹ Used on 977H, 955H, 933F and G			



Part No.	Description	Qty.
A-1 Assembly		
2P-8336	Nipple As - High Pressure (Valved) ¹²	3
2S-4078	Seal - O-Ring STOR (SAE 1 5/8 - 12) (Part of 8S-9967) ³	1
9S-9967	Adapter	3
A-2 Assembly		
2P-8336	Nipple As - High Pressure (Valved) ¹²	3
3D-2824	O-Ring Seal ³	1
9S-7336	Adapter	1
9S-7337	Bushing	1
A-4 Assembly		
030-7976	Adapter - 45° Union	1
1P-5596	Pipe Nipple	1
2P-8336	Nipple As - High Pressure (Valved) ¹²	3
3D-2824	O-Ring Seal ³	1
A-5 Assembly		
031-5744	Adapter - Elbow, 90°	1
1P-5597	Nipple - Pipe, 25.4 x 31.75 mm (1 x 1 1/4 in) ²	1
2P-8336	Nipple As - High Pressure (Valved) ¹²	3
5P-2242	Tee - Swivel - 37° Flared	1
5P-2244	Union - Adapter - 37° Flared Swivel	1
A-6 Assembly		
004-3099	Fitting	1
2P-8337	Valved Coupler	1
3B-7257	Bushing	1
9S-0247	Hose	1
A-7 Assembly		
030-7980	Adapter, 90°	2
1P-5598	Pipe Nipple 31.75 x 31.75 mm (1 1/4 x 1 1/4 in) ¹	2
2P-8336	Nipple As - High Pressure (Valved) ¹²	3

Part No.	Description	Qty.
A-7 Assembly (Continued)		
2S-7078	O-ring Seal	2
A-8 Assembly		
1D-4717	Nut	4
1P-5597	Nipple - Pipe, 25.4 x 31.75 mm (1 x 1 1/4 in) ²	1
2P-8336	Nipple As - High Pressure (Valved) ¹²	3
4F-7391	O-Ring Seal	1
5P-3032	Adapter, 25.4 mm (1 in) hose	1
8S-9191	Bolt (4)	4
A-9 Assembly		
1D-4718	Nut	4
1P-5597	Nipple - Pipe, 25.4 x 31.75 mm (1 x 1 1/4 in) ²	1
2P-8336	Nipple As - High Pressure (Valved) ¹²	3
4F-7952	O-Ring Seal	1
5P-3033	Adapter, 31.75 mm (1 1/4 in) hose	1
7H-3472	Bolt	4
A-10 Assembly		
1D-4719	Nut	4
1P-5598	Pipe Nipple 31.75 x 31.75 mm (1 1/4 x 1 1/4 in) ¹	2
2H-6488	Bolt	4
2P-8336	Nipple As - High Pressure (Valved) ¹²	3
5P-3034	Adapter, 38.1 mm (1 1/2 in) hose	1
7F-8267	O-Ring Seal	1
A-11 Assembly		
004-4977	Elbow, 45°	1
2P-8336	Nipple As - High Pressure (Valved) ¹²	3
8S-9967	Adapter	1

(Continued)

5P-8687 Tee Test Tool Group Assemblies (Continued)

¹Use from A-7 Assembly No.

²Use from A-8 Assembly No.

³Recommended spare parts

B — Return Line Assemblies



B — Return Line Assemblies

- Return oil to hydraulic tank
- To determine assembly number required for a machine model, refer to Section B of Tee Test Tool Chart and following list

Assembly No.	Part Number	Description	Quantity
B-9	FT0794 ¹	Return Cap Assembly	1
B-11	FT1633	Return Line Cap Assembly	1
B-12	FT1634	Return Line Cap Assembly	1

¹Use 2P-8337 Valved Coupler instead of discontinued 8S-9974

Part Number	Description	Quantity
B-5 Assembly		
5P-3517	Tube Assembly	1
B-6 Assembly		
6V-0001	Seal Kit (Part of 2P-8337)	1
2P-8335	Coupler As - High Pressure	1
8S-9967	Adapter	1
B-7 Assembly		
1P-0058	Filler Return Group	1
3B-7750	Pipe Nipple	2
4J-3815	Gasket	1
2P-8337	Valved Coupler ¹	1
6V-0001	Seal Kit (Part of 2P-8337)	1
B-8 Assembly		
2P-8337	Valved Coupler ¹	1
3B-6555	Street Ell	1
3B-7257	Bushing	1
3B-7749	Nipple	1
9H-6454	Gasket	1
6V-0001	Seal Kit (Part of 2P-8337)	1
B-10 Assembly		
2P-8335	Coupler As - High Pressure	1
030-7980	Adapter, 90°	2
1P-5598	Pipe Nipple	2
2S-4078	O-Ring Seal	1
6V-0001	Seal Kit (Part of 2P-8337)	1

¹Use 2P-8337 Valved Coupler instead of discontinued 8S-9974

C — Tachometer Drive Group

- Required to attach Flow Meter Tachometer Generator to all machines which are adaptable to "Tee Testing"
- To determine assembly number required for a machine model, refer to Section C of Tee Test Tool Chart and then to list below



Part Number	Description	Quantity
C-1 Assembly¹		
1M-5061	Tachometer Drive Group	1
1B-9575	Bolt	2
3B-4505	Lock Washer	2
C-2 Assembly		
4N-0538	Coupling (Part of 5P-1759)	1
5P-1758	Shaft Assembly (Part of 5P-1759)	1
9S-0211	Clamp (Part of 5P-1759)	2
4M-8303	Seal (Part of 5P-1759)	1
9S-3032	Clamp (Part of 5P-1759)	2
5P-1759	Tachometer Adapter ²	1
9N-3018	Adapter Group (Part of 5P-1759)	1
C-3 Assembly³		
1B-2714	Bolt (1/4 in-20 x 2 1/2 in)	2
1D-4539	Bolt (5/16 in-18 x 2 1/2 in)	1
3B-4504	Lock Washer, 6.35 mm (1/4 in)	2
3B-4505	Lock Washer	2
C-4 Assembly⁴		
3B-4505	Lock Washer	2
2B-2695	Bolt (5/16 in-18 x 7/8 in)	1
2S-0424	Service Meter Group	1
1D-4539	Bolt (5/16 in-18 x 2 1/2 in)	1

Part Number	Description	Quantity
C-5 Assembly⁵		
1B-7182	Bolts	2
5P-0935	Adapter Group	1
C-6 Assembly⁶		
0S-1617	Bolt	2
8N-5945	Tachometer Drive Adapter	1
4M-8303	Seal (Part of 5P-1759)	1
9S-3032	Clamp (Part of 5P-1759)	2
9M-1974	Washer	2
C-7 Assembly⁷		
6N-1345	Tachometer Drive Adapter	1
9M-1974	Washer	2
4M-8303	Seal (Part of 5P-1759)	1
5P-1758	Shaft Assembly (Part of 5P-1759)	1
9S-3032	Clamp (Part of 5P-1759)	2
0S-1617	Bolt	2

¹ Used on very early 988 and 992 only

² Included in 5P-8687 Tool Group

³ Used on 977H, 955H, 933F and G and 966 with serial numbers below 75A-1092 only

⁴ Used on 977H machines not equipped with 2S424 Service Meters only

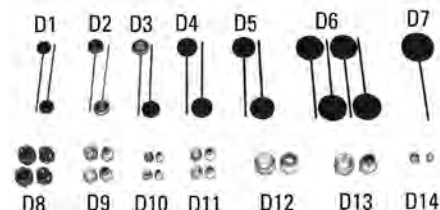
⁵ Used on D3, 910 and 931 only

⁶ Used on all U.S. production 3204 Engines

⁷ Used on 3204 Engines 10X-2936-up

D — Blocking Plate Assemblies

- Available by ordering 5P-8687 Tool Group
- Isolate various system components when troubleshooting hydraulic system
- To determine assembly number required for a machine model, refer to the Service Manual for Testing Hydraulic Systems and Components, and then to the list below



(Continued)

Hydraulic System Tools

D — Blocking Plate Assemblies (Continued)

Part Number	Description	Quantity
D-1 Assembly		
5F-7054	Seal - O-Ring	2 ¹
9S-7358	Blocking Plate Assembly, 12.7 mm (1/2 in)	2 ¹
D-2 Assembly		
4J-8996	Seal - O-Ring	2 ¹
9S-8894	Blocking Plate Assembly, 15.87 mm (5/8 in)	2 ¹
D-3 Assembly		
5F-1678	Seal - O-Ring	2 ¹
9S-7359	Blocking Plate Assembly, 19.05 mm (3/4 in)	2 ¹
D-4 Assembly		
4F-7391	Seal - O-Ring	2 ¹
9S-8092	Blocking Plate Assembly, 25.4 mm (1 in)	2 ¹
D-5 Assembly		
4F-7952	Seal - O-Ring	2
9S-8093	Blocking Plate Assembly, 31.75 mm (1 1/4 in)	2
D-6 Assembly		
7F-8267	Seal - O-Ring	4 ¹
9S-8094	Blocking Plate Assembly, 38.1 mm (1 1/2 in)	4 ¹
D-7 Assembly		
8F-6711	Seal - O-Ring	1 ¹
9S-8095	Blocking Plate Assembly, 50.8 mm (2 in)	1 ¹
D-8 Assembly		
9S-8895	Plug (1 1/16 in - 12 thd))	2 ¹
9S-8896	Cap (1 1/16 in - 12 thd))	2 ¹
D-9 Assembly		
2P-9697	Plug (7/8 in - 14 thd)	2 ¹
6J-7366	Cap (7/8 in - 14 thd)	2 ¹
D-10 Assembly		
8S-4950	Cap (9/16 in - 18 thd)	2
9S-8927	Plug (9/16 in - 18 thd)	2
D-11 Assembly		
5P-2909	Plug (3/4 in - 16 thd)	2 ¹
8S-4951	Cap (3/4 in - 16 thd)	2 ¹
D-12 Assembly		
3R-6789	Cap (1 5/16 in - 12 thd)	1 ¹
5P-2299	Plug (1 5/16 in - 12 thd)	1 ¹
D-13 Assembly		
8L-9137	Cap (1 3/16 in - 12 thd)	1 ¹
5P-4299	Plug (1 3/16 in - 12 thd)	1 ¹
D-14 Assembly		
9L-8493	Cap (7/16 in - 20 thd)	1 ¹

¹Included in 5P-8687 Tool Group

E — Special Tools

- Available by ordering 5P-8687 Tool Group
 - 2 special hex bits required to remove and install SAE O-ring plugs
 - Wrench used to couple supply line adapters and some of return line assemblies
- All Parts are included in 5P-8687 Tool Group except 0V-0455 Wrench



Assembly No.	Part Number	Description	Qty.
1	1P-3566	Bit - Tool 14.29 mm (9/16 in)	1 ¹
2	9U-7419	Bit - Tool 19.05 mm (3/4 in)	1 ¹
5	0V-0455	Wrench	1
6	6V-7029	Block (Lid)	1 ¹
6	5P-8686	Block (Tool Holder)	1
6	6V-3073	Box Assembly	1 ¹

¹Included in 5P-8687 Tool Group

Hydraulic System Tools

Tee Test Tool Charts: Hydraulic Implement System — A-1 thru A-11

Vehicle System Tools

Machine Model	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11
D3						1					
D7G		1		1							
D8K	1			1							
D9H	1			1							
D10L	1	1									
613B		1									
621	1										
621B	1										
623		1						1			
623B	1			1							
627	1										
627B	1										
631C	1										
631D	1										
633	1								1		
633D	2										1
641B	1										
650B	1										
651B											
657B	1										
660B	1										
666B	1										
814		1									
815		1									
816		1									
824	1										
824B	1										
826B	1										
834	1										
835	1										

Tee Test Tool Charts: Hydraulic Implement System — A-1 thru A-11 continued

Machine Model	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11
931						1					
941		1									
943,953		1									
951		1									
955	1		1								
977	1		1								
983	1										
518				1							
528		1									
910		1									
920		1									
930		1									
950	1										
966	1										
980	1										
988	1										
992	2						2 ²				
992C	1										1
120G					1						
130G					1						

Tee Test Tool Charts: Hydraulic Implement System — A-1 thru A-11 continued

Machine Model	A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11
140G					1						
12G					1						
14G	1				3						
16G	1				3						
215	2										
225	3										
235	3										
245	3										1{4}

¹ See "Adapter for Hydraulic System Component Testing"

² Machines with ROPS cabs only

³ Required on early machines with "Tee Taps"

{4} Machines with serial numbers 95V960-Up, 825X543-Up, 94L443-Up and 84X555-Up

Hydraulic System Tools

Hydraulic Implement System — B

Machine Model	B-5	B-6	B-7	B-8	B-9	B-10	B-11	B-12
D3				1				
D7G	1			1				
D8K	1			1				
D9H	1			1				
D10L					1			
613B		1						
621		1						
621B		1						
623		1						
623B		1						
627		1						
627B		1						
631C		1						
631D		1						
633		1						
633D		1						
641B		1						
650B		1						
651B		1						
657B		1						
660B		1						
666B		1						
814		1						
815		1						
816		1						
825B		1						
826B		1						
834		1						
835		1						
931			1					
941			1					
943, 953		1						

Vehicle System Tools

Hydraulic Implement System — B continued

Machine Model	B-5	B-6	B-7	B-8	B-9	B-10	B-11	B-12
951			1					
955			1					
977			1					
983			1				1	
518			1				1	
528				1		1		
910			1				1	
920		1						
930		1						
950		1						
966		1						
980		1						
988		1						
992			1					
992C					2			
120G		1						
130G		1						
140G		1						
12G		1						
14G		1						
16G		1						
215		1	1					
225		1	1					
235		1	1					
245		1	1					

¹Machines with ROPS cabs only

²See "Adapter for Hydraulic System Component Testing"

Hydraulic System Tools

Hydraulic Implement System — C

Machine Model	C-1	C-2	C-3	C-4	C-5	C-6	C-7
D3		1			1		
D7G		1					
D8K		1					
D9H		1					
D10L		1					
814		1					
815		1					
816		1					
824		1					
825B		1					
826B		1					
834		1					
835		1					
931					1		
941		1					
943,953						1	1
951		1					
955		1					

Hydraulic Implement System — C continued

Machine Model	C-1	C-2	C-3	C-4	C-5	C-6	C-7
977		1		1			
983		1					
518		1					
528		1					
910					1		
920		1					
930		1					
950		1					
966		1	1				
980		1					
988	1	1					
992	1	1					
120G		1					
130G		1					
140G		1					
12G		1					
14G		1					
16G		1					
215							1
245		1					

¹ Required on early machines without "Tee Taps."

Steering Systems — A-1 thru A-11

Machine Model	A-1	A-2	A-4	A-7	A-11
920		1			
930		1			
966		1			
988	1				
992C				1	
814		1			
815		1			
816		1			
621B					1
623B					1
627B					1
631D					1
633D	1				
637D					1
528			1		

Steering Systems — B thru C

Machine Model	B-6	B-9	C-2
920	1		1
930	1		1
966	1		1
988	1		1
992C	1		
814			1
815			1
816			1
621B	1		
623B	1		
627B	1		
631D	1		
633D	1		
637D	1		
528		1	1

Vehicle System Tools

2P-2349 Hose Assembly

Discontinued — Service/Repair Parts Available

Item	Part Number	Description	Quantity
1	2P-0922	Stem Assembly	2
2	3S-7116	Sleeve	2
3	5P-0182	Hose 200 cm (80 in)	—
—	2P-2349	Hose Assembly	—

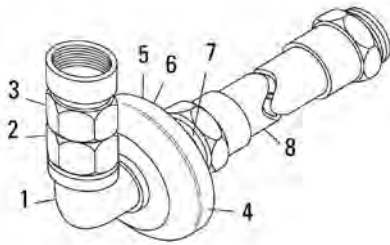


FT0794 Return Line Cap Assembly

SMCS Code: 5050-038

Model: See Tee Test Tool Charts

Warranty: None



- Use of this fabricated tool indicated under B in Tee Test Tool Chart

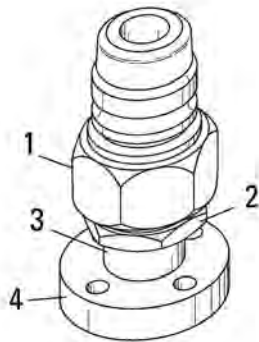
Item	Part Number	Description
1	2P-8337	Valved Coupler
2	3B-7750	Pipe Nipple
3	3B-6556	Street Elbow
4	4J-3754	Filler Cap
5	4J-3816	Plate
6	4J-3815	Gasket
7	1F-9178	Coupling (1.25 in NPT)
8	8F-2637	Flex Oil Line

FT0828 Filter Adapter

SMCS Code: 5050-038

Model: See Tee Test Tool Charts

Warranty: None



- Use of this fabricated tool indicated under A-3 in Tee Test Tool Chart

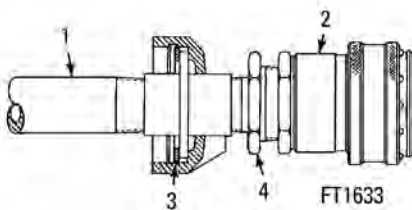
Item	Description
3	25.4 mm (1 in) Extra Heavy Pipe Nipple, 50.8 mm (2 in) Long

Item	Part Number	Description
1	2P-8336	Nipple As - High Pressure (Valved)
2	3B-7257	Bushing
4	3J-8769	Flange

Return Line Cap Assemblies

Model: See Tee Test Tool Charts

Warranty: Six Months

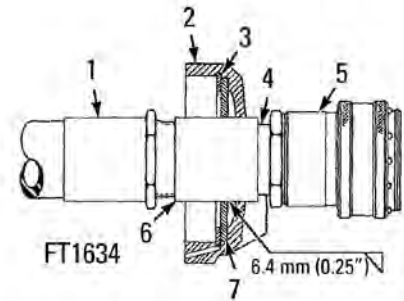


- Use of these fabricated assemblies indicated under B-12 (FT1633) and B-11 (FT1634) respectively, in Tee Test Tool Chart
- Can be used in same applications as assemblies D8 and D9 and permit easier installation of tee test flow block

Item	Part Number	Description
FT1633 Return Line Cap Assembly		
1	1P-0757	Filler Return
2	2P-8337	Coupler As - High Pressure (Valved)
3	9H-6454	Gasket
4	1P-5597	Pipe Nipple

FT1634 Return Line Cap Assembly

Item	Part Number	Description
FT1634 Return Line Cap Assembly		
1	8F-2637	Oil Line-Flex
2	4J-3754	Filler Cap
3	4J-3815	Gasket
4	3B-7750	Pipe Nipple
5	2P-8337	Coupler Assembly - High Pressure (Valved)
6	1F-9178	Coupling
7	4P-3816	Plate



Connector Plates for Hydraulic System Flushing

SMCS Code: 5050-046
 Model: Most Cat® Models
 Warranty: Six Months

- Used for flushing hydraulic systems on Cat® machines
- Used between hose flanges which are joined together during flushing process; provide sealing surface for O-ring seals in flange faces



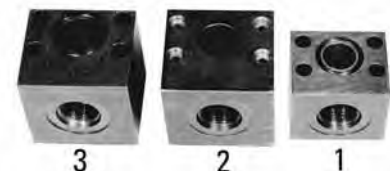
Plate	Bolt Hole Spacing	Bolt Hole Diameter	Center Hole Diameter	Thickness
5C-2268	23.80 x 50.80 mm (0.937 x 2.000 in)	10.49 mm (0.413 in)	19.05 mm (0.75 in)	5.99 mm (0.236 in)
8K-4977	27.76 x 57.15 mm (1.093 x 2.250 in)	11.99 mm (0.472 in)	25.40 mm (1 in)	6.71 mm (0.264 in)
8K-2574	31.75 x 66.68 mm (1.250 x 2.625 in)	13.13 mm (0.517 in)	31.75 mm (1.25 in)	6.35 mm (0.250 in)
5P-9707	36.50 x 79.38 mm (1.437 x 3.125 in) ¹	16.66 mm (0.656 in)	38.10 mm (1.50 in)	6.35 mm (0.250 in)

¹ Use 235 and 245 Excavators

Flowmeter Adapters

SMCS Code: 5050-038
 Model: All Models
 Warranty: Six Months

- Used to connect flowmeter into a hydraulic circuit
- Allows testing of pump flow rate without removing pump from machine, saving time and money
- Perform flow test on hydraulic systems of Cat® and competitive machines
- Each adapter is through drilled with 90° intersecting port
- 3 ports allow the adapter to be used as a straight through or 90° connection
- 2 through ports can be connected into the system, leaving third port for pressure or flow rate tap
- 1 end of the through hole and intersecting port are SAE 16 O-ring ports (1 5/16-12), making the ports compatible with Cat® high pressure fittings
- 1 series of adapter has holes for 4-bolt flanges



(Continued)

Hydraulic System Tools

Flowmeter Adapters (Continued)

SMCS Code: 5050-038
 Model: All Models
 Warranty: Six Months

- 1 series of adapter has tapped holes which allow a flowmeter to be connected to pump outlet hose
- Pressure rating: 41,340 kPa (6,000 psi)

Item	Part Number	Description
1	9U-5273	Adapter, 25.4 mm (1 in) flange
2	9U-5272	Adapter, 31.75 mm (1.25 in) flange
3	9U-5936	T-Test Adapter, 31.75 mm (1.25 in) hose
Service/Repair Parts		
--	1P-3703	D-ring used on 9U-5273
--	1P-3704	D-ring used on 9U-5272

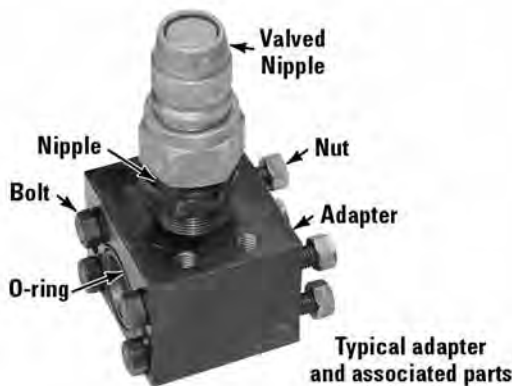
Tee Test Adapters

Model: Most Cat® Models
 Warranty: Six Months



- Used to perform Tee Tests on Cat® or competitive machines which are not equipped with Tee Test taps in pump outlet line
- Each adapter through-drilled with 90° intersecting port which allows adapter to be used as straight-through or 90° connection with remaining port being used for Tee tap
- Intersecting port and one end of through-drilled hole are tapped with NPTF threads to facilitate installation of pipe nipples and valved nipples for connection to Tee Test hose
- All 3 ports have 4 bolt holes for connecting pump outlet hoses with 4 bolt flanges; since the 4 bolt flange holes for through-drilled passage are also through-drilled, longer bolts are required to install adapters
- Bolts listed with associated parts and nuts which allow convenient storage of bolts in adapter
- Correct O-ring seal for inlet port of each adapter given in figure below
- Instructions for using adapters on future Cat® machines not equipped with Tee taps will be covered in the Service Manual

Typical Adapter and Associated Parts for Tee Test Adapters



(Continued)

Typical Adapter and Associated Parts for Tee Test Adapters (Continued)

Required Associated Parts	
Part Number	Description
5P-3033 Adapter, 31.75 mm (1 1/4 in) hose	
2P-8336	Nipple As - High Pressure (Valved)
1P-5597	Pipe Nipple, 25.4 x 31.75 mm (1 x 1 1/4 in)
4F-7952	O-ring Seal
7H-3472	Bolt (4)
1D-4718	Nut (4)
5P-3032 Adapter, 25.4 mm (1 in) hose	
1P-8336	Valved Nipple
1P-5597	Pipe Nipple, 25.4 x 31.75 mm (1 x 1 1/4 in)
4F-7391	O-ring Seal

Required Associated Parts	
Part Number	Description
5P-3032 Adapter, 25.4 mm (1 in) hose (Continued)	
8S-9191	Bolt (4)
1D-4717	Nut (4)
5P-3034 Adapter, 38.1 mm (1 1/2 in) hose	
2P-8336	Nipple As - High Pressure (Valved)
1P-5598	Pipe Nipple, 31.75 x 31.75 mm (1 1/4 x 1 1/4 in)
7F-8267	O-ring Seal
2H-6488	Bolt (4)
1D-4719	Nut (4)

146-3661 Hydraulic Test Adapter

Essential Tool

SMCS Code: 5070-036

Model: M312, M315, M318, and M320 Wheeled Excavators

Warranty: Six Months

- Used to connect flowmeter return line into hydraulic circuit
- Test pump flow rate without removing pump from machine
- Directs oil from flowmeter through oil cooler (prevents overheating during pump testing)
- Adapter is through-drilled with 90 degree intersecting port

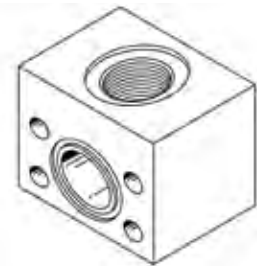
Reference

SENR6261, Testing and Adjusting

M300 Family Excavators

Hydraulic Systems

Female connection (STOR)	Dash Size - 16, 1 5/16-12 thread
Through hole connection	Code 61 Split Flange
Hole size	30.0 mm (1.181 in)
Fits flange dash size	20
Fits head size	50.8 mm (2.0 in)
Use 4J-0522	O-ring seal



Part Number	Description
146-3661	Hydraulic Test Adapter

Quick Disconnect Couplings for Hydraulic Test Equipment

Model: Most Cat® Models

Warranty: Six Months

- All quick disconnect couplings used for Cat® hydraulic test equipment summarized in chart
- Disconnects rated by operating pressure, pressure at which no failure expected to occur in normal cyclic usage
- Couplings listed within each group are interchangeable



(Continued)

Hydraulic System Tools

Quick Disconnect Couplings for Hydraulic Test Equipment (Continued)

Model: Most Cat® Models

Warranty: Six Months

Item	Part No.	Description	Type	Connection Thread (Type)	Nominal Size	Operating Pressure
1	2P-8334	Nipple	Open	1 1/4 NPT (Int)	1 1/4 in	34,500 kPa (5000 psi)
2	2P-8335	Coupler	Open	1 1/4 NPT (Int)	1 1/4 in	34,500 kPa (5000 psi)
3	2P-8336	Nipple	Valved	1 1/4 NPT (Int)	1 1/4 in	34,500 kPa (5000 psi)
4	2P-8337	Coupler	Valved	1 1/4 NPT (Int)	1 1/4 in	34,500 kPa (5000 PSI)

Hydraulic Quick Disconnect Couplings (Not Shown)

Part No.	Description	Type	Connection Thread (Type)	Nominal Size	Operating Pressure
Not shown					
2P-8335	Coupler	Open	1 1/4 NPT (Int)	1 1/4 in	12,070 kPa (1750 psi)
2P-8336	Nipple	Valved	1 1/4 NPT (Int)	1 1/4 in	12,070 kPa (1750 psi)
2P-8337	Coupler	Valved	1 1/4 NPT (Int)	1 1/4 in	12,070 kPa (1750 psi) and 34,500 kPa (5000 psi)
6V-4143	Coupler	Valved	1/8 NPT (Int)	1/4 in	41,500 kPa (6000 psi)
6V-4144	Coupler	Valved	1/4 NPT (Int)	1/4 in	41,500 kPa (6000 psi)
6V-3966	Nipple	Valved	1/4 NPT (Ext)	1/4 in	41,500 kPa (6000 psi)
6V-4142	Nipple	Open	1/8 NPT (Int)	1/4 in	41,500 kPa (6000 psi)
6V-3965	Nipple	Valved	9/16 SAE (Ext)	1/4 in	41,500 kPa (6000 psi)
6V-3989	Nipple	Open	1/4 NPT (Int)	1/4 in	41,500 kPa (6000 psi)
3P-2232	Coupler	Valved	3/8 NPT (Int)	3/8 in	20,700 kPa (3000 psi)
3P-2233	Coupler	Valved	3/8 NPT (Ext)	3/8 in	20,700 kPa (3000 psi)
3P-2234	Nipple	Valved	3/8 NPT (Int)	3/8 in	20,700 kPa (3000 psi)
3P-2235	Nipple	Open	3/8 NPT (Int)	3/8 in	20,700 kPa (3000 psi)
3P-2236	Nipple	Open	3/8 NPT (Ext)	3/8 in	20,700 kPa (3000 psi)
1P-2375	Nipple	Valved	3/8 NPT (Ext)	3/8 in	69 000 kPa (10,000 psi) ¹
1P-2376	Coupler	Valved	1/4 NPT (Int)	3/8 in	69 000 kPa (10,000 psi) ¹

¹ Normal Service Press coupled operation only

Quick Disconnect Couplings for Pressure Testing Up to 41,500 kPa (6000 psi)

Model: Most Cat® Models with pressure up to 41,500 kPa (6000 psi)

Warranty: Six Months



- Small quick disconnect couplings with good sealing ability for pressures up to 41,500 kPa (6,000 psi)
- Valved nipples can be permanently installed in test points of current Cat® hydraulic, transmission, engine oil, or cooling systems so that pressures can be quickly determined throughout machine
- 2 types of valved couplers available for connecting gauges, hoses, and snubber valves to valved nipples on machine
- 2 additional plain nipples available for hose to gauge or snubber valve to gauge connection

NOTE:

6V-0852 Protective Dust Caps are available for the 6V-3965 and 6V-3966 Valved Nipples

(Continued)

Quick Disconnect Couplings for Pressure Testing Up to 41,500 kPa (6000 psi) (Continued)

Model: Most Cat® Models with pressure up to 41,500 kPa (6000 psi)

Warranty: Six Months

Item	Part No.	Description
Valved Couplers		
1	6V-4144	Coupler Assembly Internal, 1/4 in NPT
2	301-7445	Valved Coupler, Internal, 9/16 in-18 STOR
2	6V-4143	Coupler Assembly Internal, 1/8 in NPT
Valved Nipples		
3	6V-3965	Nipple Assembly, External, 9/16 in SAE thd
4	6V-3966	Nipple Assembly, External, 1/4 in NPT
--	8T-3613	Valved Nipple, External, 1/8 in NPT
Plain Nipples		
5	6V-3989	Plain Nipple, Internal, 1/4 in NPT
6	6V-4142	Plain Nipple, Internal, 1/8 in NPT

Item	Part No.	Description
High Temp. Valved Nipples		
--	6V-4433	Valved Nipple, External, 9/16 in SAE thd
Auto Brake Fluid Valved Nipples		
--	8T-3614	Valved Nipple, External, 1/8 in NPT
--	6V-7691	Valved Nipple, External, 1/4 in NPT
Auto Brake Fluid Valved Coupler		
--	6V-7690	Valved Coupler, Internal, 1/4 in NPT
ORFC Valved Nipple		
--	8C-6416	Valved Nipple, ORFC; use with 6V-8554 Nut

Quick Disconnect Couplings and Hoses for Pressure Testing Up to 68,950 kPa (10,000 psi)

Model: M300 Series Wheeled Excavators; 953C, 963C, 973C, 933, and 939 Track Loaders; and D3C, D4C, D5C, D6R, D7R, D8R, and D9R Differential Steering Track-Type Tractors

Warranty: Six Months

- Used to diagnostically test any component or machine requiring 68,950 kPa (10,000 psi) hoses and fittings
- Highest pressure-rated hose and fittings of this type in the industry
- Rated at 4:1 minimum burst pressure

Quick Disconnect and Hoses

- Used to diagnostically test pumps and transmissions rated at 68,950 kPa (10,000 psi)
- Used with 344-7922, 344-7923, and 344-7924 Hose Assemblies
- Valved coupler and nipple will not interchange with lower pressure 41,500 kPa (6,000 psi) nipple and coupler
- Hoses made of tough thermoplastic material

Dust Cap and Plug

- Used to provide contamination protection
- Used with 187-3546 Coupler and 183-3547 Nipple
- Made of plastic compound



Pressure rating	68,950 kPa (10,000 psi)
Minimum hose burst ratio rating	4:1
Nipple threads	9/16-18, male STOR
Coupler threads	9/16-18, female STOR
Hose end threads	9/16-18, male STOR
Hose inside diameter	4.78 mm (0.188 in)

Item	Part Number	Description
1	187-3546	Quick Disconnect Coupler
2	187-3547	Quick Disconnect Nipple
3	187-9010	Dust Plug
4	187-9008	Dust Cap

(Continued)

Quick Disconnect Couplings and Hoses for Pressure Testing Up to 68,950 kPa (10,000 psi) (Continued)

Model: M300 Series Wheeled Excavators; 953C, 963C, 973C, 933, and 939 Track Loaders; and D3C, D4C, D5C, D6R, D7R, D8R, and D9R Differential Steering Track-Type Tractors
 Warranty: Six Months

Item	Part Number	Description
Not shown		
--	344-7922	Hose Assembly, 3.1 m (10.0 ft)
--	344-7923	Hose Assembly, 4.3 m (14.0 ft)
--	344-7924	Hose Assembly, 5.5 m (18.0 ft)

Quick Disconnect Couplers and Nipples

Flow Test Fittings and Thread Adapters, Hose End Fittings

Model: All Models

Warranty: Six Months

Quick Disconnect Couplers and Nipples

- Used to quickly connect high pressure hoses (extensively used for hydraulic flow testing with hydraulic test benches and portable flow meters, for hydraulic hammers on excavators, and any application where high pressure quick disconnects are needed)
- Designed as screw-to-connect high pressure fittings (will not come uncoupled during rugged use or abuse)
- Burst pressure provides 3 1/2 to 1 safety factor
- All fittings valved for clean, non-spill field application
- Dust caps and dust plugs available where dirt and other contaminants are present
- Repair kits available for all sizes and contain all seals to overhaul quick disconnects
- Used with 1U-9551 Portable Hydraulic Flowmeter and 1U-8761 Portable Hydraulic Flowmeter

Flow Test Fittings and Threaded Adapters

- Used to adapt various applications when STOR, ORFS, or metric threads are present

Hose End Fittings

- Used to make hydraulic hoses for field flow testing, test benches, or shop oil filtering
- Used with 5P-1010 and 5P-0477 XT5 Sleeves (assembled with Cat® Hose Press Tooling)
- Helps eliminate leaks and need for additional thread adapters
- Available with STOR (Straight Thread O-ring) style threads

Reference

NEHT5000, Tool Operating Manual

(Continued)

Quick Disconnect Couplers and Nipples (Continued) Flow Test Fittings and Thread Adapters, Hose End Fittings

Model: All Models
Warranty: Six Months

Quick Disconnect Couplers and Nipples	
Working pressure of all couplers and nipples	41,340 kPa (6000 psi)
Flow rate	303 lpm (80 gpm) with a 690 kPa (100 psi) pressure drop
Operating pressure	41,340 kPa (6000 psi)
Burst pressure	137,800 kPa (20,000 psi)
Connection	
for 9U-5075 and 9U-5076	19.05 mm (3/4 in) NPT female port
for 4C-6481 and 4C-6482	1 5/16 in-12 STOR
for 4C-5093 and 4C-5094	1 5/8 in-12 STOR
Thread Adapters	
Working pressure	41,340 kPa (6,000 psi)
4C-5092 Coupling	1 5/16 in-12 Internal STOR x 1 5/8 in-12 External STOR
4C-5088 Coupling	25.4 mm (1 in) NPT Internal Pipe thd x 1 5/8 in-12 External STOR
4C-5087 Coupling	1 5/8 in-12 x 1 5/8 in-12 STOR Male Union
Flow Test Fittings	
Working pressure	41,340 kPa (6,000 psi)
4C-5089 Elbow	1 5/16 in-12 STOR x 1 3/16 in-12 ORFS 90° Swivel
4C-5090 Coupling	1 5/16 in-12 STOR (M30 x 2) Swivel
4C-5091 Coupling	1 5/16 in-12 STOR (M30 x 2)
Hose End Fittings	
Working Pressure	41,340 kPa (6,000 psi)
4C-8767 Coupling	25.4 mm (1 in) XT5 Hose x 1 5/16 in-12 External STOR with O-ring
4C-6461 Coupling	31.75 mm (1 1/4 in) XT5 Hose x 1 5/8 in-12 External STOR with O-ring
4C-6462 Coupling	31.75 mm (1 1/4 in) XT5 Hose x 1 5/16 in-12 External STOR with O-ring

Vehicle System Tools

Couplers and Nipples Usage Chart

Coupler and Nipple Usage Chart					
Size	Description	Part No.	Dust Cap	Dust Plug	Repair Kit
19.05 mm (3/4 in)	Coupler	9U-5076		9U-5083	
19.05 mm (3/4 in)	Nipple	9U-5075	9U-5085		9U-5080
25.4 mm (1 in)	Coupler	4C-6481		9U-5084	9U-5078
25.4 mm (1 in)	Nipple	4C-6482	9U-5086		9U-5081
31.75 mm (1 1/4 in)	Coupler	4C-5094			9U-5079
31.75 mm (1 1/4 in)	Nipple	4C-5093			9U-5082



Quick Disconnect Couplers and Nipples

(Continued)

Couplers and Nipples Usage Chart (Continued)

Item	Part Number	Description	Size
1	9U-5076	QD Coupler	19.05 mm (3/4 in)
2	9U-5083	Dust Plug	19.05 mm (3/4 in)
3	9U-5085	Dust Cap	19.05 mm (3/4 in)
4	9U-5075	QD Nipple	19.05 mm (3/4 in)
5	4C-6481	QD Coupler	25.4 mm (1 in)
6	9U-5084	Dust Plug	25.4 mm (1 in)
7	9U-5086	Dust Cap	25.4 mm (1 in)
8	4C-6482	QD Nipple	25.4 mm (1 in)
9	4C-5094	QD Coupler ¹	31.75 mm (1 1/4 in)
10	4C-5093	QD Nipple ²	31.75 mm (1 1/4 in)
Not shown			
--	9U-5078	Coupler Repair Kit	25.4 mm (1 in)
--	9U-5079	Coupler Repair Kit	31.75 mm (1 1/4 in)
--	9U-5082	Nipple Repair Kit	31.75 mm (1 1/4 in)
--	9U-5081	Nipple Repair Kit	25.4 mm (1 in)
--	9U-5080	Nipple Repair Kit	19.05 mm (3/4 in)

¹263-2839 Dust Cap

²201-8057 Dust Cap

Flow Test Fittings and Thread Adapters



Flow Test Fittings and Thread Adapters

Item	Part No.	Description
1	4C-5088	Coupling
2	4C-5087	Coupling
3	4C-5091	Coupling
4	4C-5090	Coupling
5	4C-5089	Elbow
6	4C-5092	Coupling

Hose End Fittings



Hose End Fittings

Item	Part No.	Description
1	4C-8767	Hose Coupling
2	4C-8761	Hose Coupling
3	4C-8762	Hose Coupling

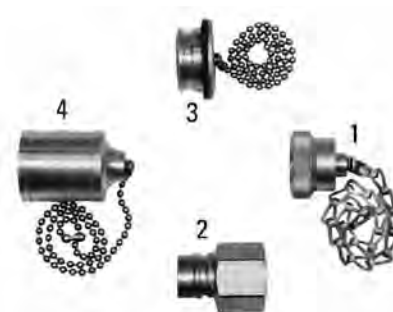
Dust Cap, Plug, and Nipple Assembly

Model: All Cat® Machines

Warranty: Six Months

- Used to seal valved and non-valved nipples and couplings
- Provide positive sealing and padded protection for nipples and couplings

7X-7646 Nipple Assembly	
Low pressure quick disconnect nipple	
Working pressure	3000 psi
Burst pressure	12,000 psi



Item	Part Number	Description	Use
1	7X-7645	Dust Cap	7X-7646 Nipple Assembly, 8C-9024 Nipple Assembly
2	7X-7646	Nipple Assembly	Machines, tool groups, and dealer shop equipment
3	7X-7647	Dust Plug	8C-9025 Coupler
4	7X-7648	Dust Cap	8C-7545 Nipple Assembly

304-1165 Tool Kit

Essential Tool

SMCS Code: 5050-076

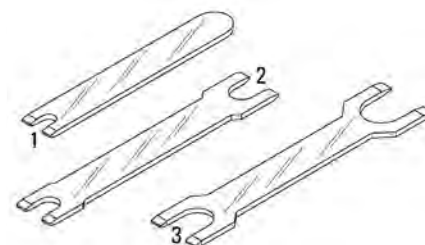
Model: 450E Backhoe Loader

Warranty: Six Months

- Used to properly disconnect snap-to-connect hydraulic fittings during service procedures
- Comes in pouch which includes 3 wrenches for 5 coupler sizes

Reference

KENR5485, Power Train Disassembly and Assembly Service Manual



Item	Part Number	Description	Size
Service/Repair Parts			
1 ¹	304-1166	STC Wrench	-06
2 ¹	304-1167	STC Wrench	-08 and -10
3 ¹	304-1168	STC Wrench	-12 and -16
Not Shown	304-2721	Tool Pouch	--

¹ Not Serviced

8T-5114 Adapter Assembly

8T-5115 Hose Assembly

Model: 205, 206, 211, 212, 213, 214 and 224 Excavators

Warranty: Six Months



- Needed when pressure testing hydraulic excavators
- Both have working capacity of 41,400 kPa (6,000 psi)
- 8T-5115 Hose Assembly has M16X2-6H female threaded couplings, which are compatible with pressure nipples on the hydraulic excavators
- 8T-5114 Adapter Assembly has M16X2-6G male threads and 9/16-18-2B female threads
- 8T-5114 used with 6V-3965 Nipple makes 8T-5115 Hose Assembly and pressure nipples on machines compatible with standard Quick Disconnect Couplings used on Cat® test equipment; 8T-5114 Adapter Assembly and 6V-3965 Nipple must always be installed in one end of 8T-5115 Hose Assembly before attaching hose assembly to pressure nipple on machines

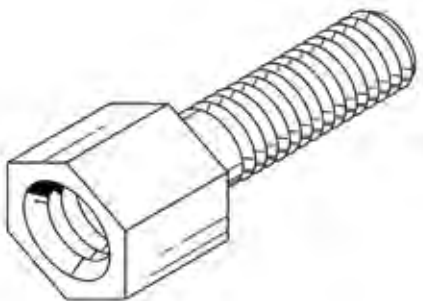
Part Number	Description
8T-5114	Adapter Assembly
8T-5115	Hose Assembly

126-3993 Test Adapter

SMCS Code: 4351-036

Model: M312, M315, M318, M320 Wheeled Excavators

Warranty: Six Months



- Used to test and adjust travel motor de-stroke point
- Adapter has #6 SAE O-ring port for 6V-3965 Valved Quick Disconnect Nipple and 3J-1907 O-ring Seal
- Allows use of standard quick disconnect couplers used on Cat® test equipment

Reference

SENR6261, Testing and Adjusting M300 Family Excavators Hydraulic Systems

Working pressure	41,500 kPa (6,000 psi)
Male end	M12 x 1.0 thread
Female end	#6 SAE O-ring port

Part Number	Description
126-3993	Test Adapter

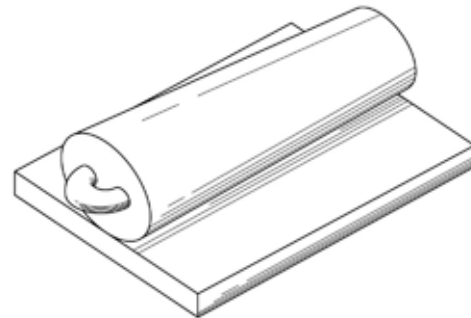
FT2788 Blocker Pin

SMCS Code: 4351-036
 Model: 307C Excavator
 Warranty: None

- Used to prevent machine movement during travel motor relief valve test
- Material: SAE 1018 steel

Reference

307C System Operation, Test and Adjust



418-3610, 418-3611 Track Blocks

418-3612, 421-2325 Track Blocks

Model Usage: 307C thru 349E Excavators
 Warranty: Six Months

- Used to retain track movement on machines for testing relief pressure
- Material, steel

Specifications			
Part Number	Models Used	Dimensions	Weight
418-3610	311D, 312E/D, 313D, 314E/D	350 x 60 mm (13.8 x 2.4 in)	5.1 kg (11.2 lb)
418-3611	315D, 316E, 318E/D, 319D, 320E/D, 321D, 323E/D, 324E/D, 325E/D, 326D, 328D, 329E/D	350 x 65 mm (13.8 x 2.6 in)	7.0 kg (15.4 lb)
418-3612	336E/D, 340D, 345E/D, 349E/D	420 x 75 mm (16.5 x 3.0 in)	11.6 kg (25.6 lb)
421-2325	307C/D, 308C/D/E	350 x 52 mm (13.8 x 2.05 in)	4 kg (8.8 lb)



Vehicle System Tools

Hydraulic Hose for Diagnostic Testing

Model: Most Cat® Models
 Warranty: Six Months

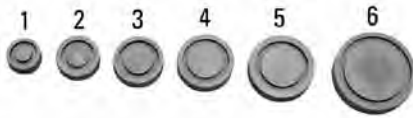
- Designed for diagnostic test applications primarily with 5P-3600 Flow Meter and discontinued 6V-4160 Transmission Test Groups
- Lightweight, easy to coil and resist expansion, minimizing accumulator effect

Part Number	Pressure Rating	Thread Connections	Hose Inside Diameter	Hose Length
177-7860	41,500 kPa (6,019.06 psi)	1/8-27-NPTF (both ends)	3.2 mm (0.13 in)	304 cm (10 ft)
1U-5757	41,500 kPa (6,019.06 psi)	1/8-27-NPTF 7/16-20-thread	2 mm (0.08 in)	183 cm (6 ft)
177-7861	41,500 kPa (6,019.06 psi)	1/8-27-NPTF (both ends)	3.2 mm (0.13 in)	427 cm (14 ft)
177-7862	41,500 kPa (6,019.06 psi)	1/8-27-NPTF (both ends)	3.2 mm (0.13 in)	549 cm (18 ft)

Blocking Covers for Hydraulic Components

Model: Most Cat® Models

Warranty: Six Months



- Used to provide correct fit in the 4 bolt flanges when disconnecting hydraulic hose on machines equipped with XT-5 Hose (34,500 kPa [5,000 psi]) hydraulic system
- With these covers installed, full system pressure can be applied without loss of hydraulic fluid or damage to seal
- Can also be used to isolate relief valve pressure readings

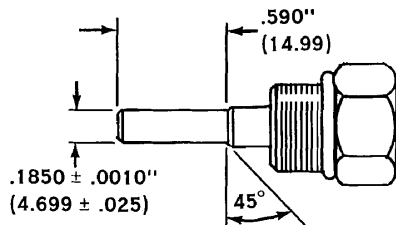
Item	Blocking Cover	Seal	Hydraulic Hose Size
1	5P-0045	1P-3700	12.70 mm (0.50 in)
2	5P-0046	1P-3702	19.05 mm (0.75 in)
3	5P-0047	1P-3703	25.40 mm (1 in)
4	5P-0048	1P-3704	31.75 mm (1.25 in)
5	5P-0049	1P-3705	38.10 mm (1.50 in)
6	5P-0050	1P-3709	50.80 mm (2 in)

5P-2683 Stop

SMCS Code: 5050-036

Model: 12G, 14G, 16G, 130G and 140G Motor Graders

Warranty: Six Months



- Used to block pump servo valve when testing maximum pressure relief valve on 14G and 16G Motor Graders
- Stop assembly can be modified, as indicated below, so it can be used to obtain maximum pressure relief valve setting when tee testing 12G, 130G and 140G Motor Graders

Part Number	Description
5P-2683	Stop

Medium Pressure Quick Disconnect Couplings

Model: Most Cat® Models

Warranty: Six Months



- Replacement parts for earlier adapters for hydraulic system component testing
- Use of these components should be limited to testing at pressures below 34,500 kPa (5,000 psi)

Item	Part No.	Description
1	2P-8334	Nipple, 1 1/4 in Plain 1 1/4 in NPT
2	2P-8335	Coupler, 1 1/4 in Plain 1 1/4 in NPT ¹
3	2P-8336	Nipple, 1 1/4 in Valved with 1 1/4 in NPT
3	190-8319	Nipple
3	190-8317	Nipple, 1 in Valved with 1 1/4 in NPT
4	2P-8337	Coupler As - High Pressure Valved with 1 1/4 in NPT 190-8316 Coupler — 1 in Valved with 1 1/4 in NPT 190-8318 Coupler — 1 in Valved with 1 in NPT

¹8S-9976 Repair Kit is available

173-0959 Relief Adjustment Wrench Assembly

173-0960 T Handle Hex Wrench

Model: HH45, HH55, HH65, and HH75 Skogsjan Tree Harvester Heads

Warranty: Six Months

- Used to adjust bypass relief valve (both tools used together)
- Easy one-hand operation makes adjustment procedure much faster and easier
- Eliminates need for open end wrenches
- Used in tight spaces where conventional tools will not work
- Socket size: 14 mm (0.55 in)
- Hex wrench: 4 mm (0.15 in)



Part Number	Description
173-0959	Relief Adjustment Wrench Assembly
173-0960	T Handle Hex Wrench

9U-5841 Needle Valve

SMCS Code: 5070-036

Model: All Challengers

Warranty: Six Months

- Used in circuit when testing and adjusting hydraulic pump margin pressure
- Used with FT2220 Hydraulic System Test Hose Assembly
- May be used in any hydraulic circuit with pressure of 34,450 kPa (5000 psi) or less
- Valve body made from steel; needle from stainless steel

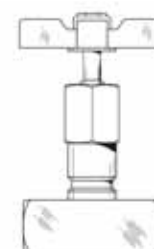
Reference

SENR3346, Service Manual

SENR4969, Service Manual

Maximum flow	57 lpm (15.0 gpm)
Maximum pressure	34,450 kPa (5,000 psi)
Pressure at maximum flow	330 kPa (48.0 psi)
Port size	1/2-12 NPTF

Part Number	Description
9U-5841	Needle Valve



Fitting Groups — JIC and ORFS

SMCS Code: 5050-036; 0784

Model: All Models

Warranty: Six Months

- 4C-4890 JIC Fitting Group replaces discontinued 6V-4161 Pressure Gauge Kit; 4C-4890 contains essentially the same fittings as discontinued 6V-4161 but costs less
- 4C-4890 and 4C-4892 Fitting Groups used to pressure test pilot, main hydraulic and steering systems on all Cat® products; can be used on competitive machines when JIC or ORFS fittings are needed
- Compact, time-saving fitting kits
- Included with tees, plugs, caps, adapters, hose, valve and quick disconnects are 3 oil-filled gauges with test ranges of 4,000 kPa (580 psi), 25,000 kPa (3600 psi) and 60,000 kPa (8,700 psi)

(Continued)

Hydraulic System Tools

Fitting Groups — JIC and ORFS (Continued)

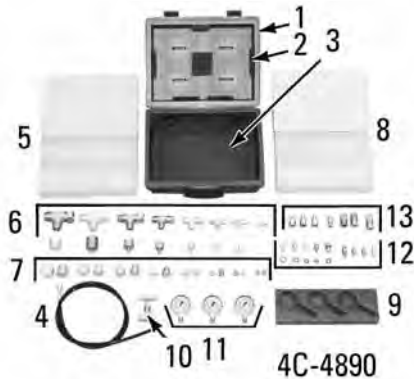
SMCS Code: 5050-036; 0784

Model: All Models

Warranty: Six Months

- Packaged in lightweight, durable carrying case containing 2 modular fitting boxes; limited space for expansion of number and type of fittings; lid decals list each fitting part number, description and location
- Groups 4C-4890 and 4C-4892 include all items in figures

4C-4890 JIC Fitting Group



Vehicle System Tools

Item	Part No.	Description
1	4C-3975	Plastic Case
2	4C-3721	Foam Block
3	4C-3719	Foam Block
4	1U-5757	Hose Assembly
5	4C-3725	Utility Box
6	5P-5004	Reducer (7/16 JIC Ext. x 1 3/16 JIC Int.)
6	5P-5005	Reducer (7/16 JIC Ext. x 1 1/16 JIC Int.)
6	5P-5006	Reducer (7/16 JIC Ext. x 7/8 JIC Int.)
6	5P-5007	Reducer (7/16 JIC Ext. x 3/4 JIC Int.)
6	5P-5008	Reducer (7/16 JIC Ext. x 9/16 JIC Int.)
6	5P-5009	Reducer (7/16 JIC Ext. x 1/2 JIC Int.)
6	6S-5693	Swivel Tee (3/4 JIC)
6	7D-0978	Swivel Tee (1 1/16 JIC)
6	9S-0176	Swivel Tee (7/8 JIC)
6	5P-5003	Reducer (7/16 JIC Ext. x 1 5/16 JIC Int.)
6	5P-4984	Swivel Tee (1 3/16 JIC)
6	5P-4982	Swivel Tee (1/2 JIC)
6	5P-2242	Swivel Tee (1 5/16 JIC)
6	052-0572	Swivel Tee (7/16 JIC)
6	061-9258	Swivel Tee (9/16 JIC)
6	6V-4144	Valved Coupler, (1/4 NPT Int.)
7	5P-4996	Plug (1/2 JIC)
7	9S-5518	Plug (7/16 JIC)
7	5P-2909	Plug (3/4 JIC)
7	9S-8927	Plug (9/16 JIC)
7	9S-8896	Cap (1 1/16 JIC)

Item	Part No.	Description
7	9S-8895	Plug (1 1/16 JIC)
7	9L-8493	Cap (7/16 JIC)
7	8S-4951	Cap (3/4 JIC)
7	8S-4950	Cap (9/16 JIC)
7	8L-9137	Cap (13/16 JIC)
7	6J-7366	Cap (7/8 JIC)
7	5P-4299	Plug (1 3/16 JIC)
7	2P-9697	Plug (7/8 JIC)
7	3R-6789	Cap (1 5/16 JIC)
7	5P-0405	Cap (1/2 JIC)
7	5P-2299	Plug (1 5/16 JIC)
8	4C-4463	Utility Box
9	4C-4464	Foam Block
10	1S-8937	Needle Valve
11	8T-0861	Gauge 60,000 kPa (0 - 8700 psi)
11	8T-0855	Gauge 4000 kPa (0 - 580 psi)
11	8T-0859	Gauge 25,000 kPa (0 - 3600 psi)
12	3J-7352	Connector (7/16 JIC Ext. x 7/16-20 Ext.)
12	7J-4026	Elbow (90°, 7/16 JIC Ext. x 9/16-18 Ext.)
12	4S-6399	Connector (7/16 JIC Ext. x 1/4 NPT Ext.)
12	3K-0360	O-ring Seal
12	3J-7354	O-ring Seal
12	3J-1907	O-ring Seal
12	2P-1314	Connector (7/16 JIC Ext. x 9/16 - 18 Ext.)
12	1J-9671	O-ring Seal

(Continued)

4C-4890 JIC Fitting Group (Continued)

Item	Part No.	Description
12	8L-6557	Connector (7/16 JIC Ext. x 1/8 NPT Ext.)
13	5P-8998	Nipple (1/4 NPT Ext.)
13	6V-4143	Valved Coupler, (1/8 NPT Int.)

Item	Part No.	Description
13	6V-3989	Non-Valved Nipple (1/4 NPT Int.)
13	6V-3966	Valved Nipple Assembly (1/4 NPT Ext.)
--	4C-4890	JIC Fitting Group

4C-4892 ORFS Fitting Group



Item	Part No.	Description
1	4C-3975	Plastic Case
2	4C-3721	Foam Block
3	4C-3719	Foam Block
4	177-7860	Hose
5	4C-3725	Utility Box
6	6V-9509	Plug (13/16 EXT ORFS)
6	6V-9510	Plug (1 EXT ORFS)
6	6V-9511	Plug (1 3/16 EXT ORFS)
6	6V-9512	Plug (1 7/16 EXT ORFS)
6	6V-9746	O-ring Seal
6	6V-9828	Cap (9/16 INT ORFS)
6	6V-9829	Cap (11/16 INT ORFS)
6	6V-9830	Cap (13/16 INT ORFS)
6	6V-9831	Cap (1 INT ORFS)
6	6V-9832	Cap (1 3/16 INT ORFS)
6	6V-9833	Cap (1 7/16 INT ORFS)
6	7J-9108	O-ring Seal
6	7X-0871	Swivel Tee (13/16 INT ORFS x 13/16 EXT ORFS x 9/16 INT SAE)
6	7X-0872	Swivel Tee (1 INT ORFS x 1 EXT ORFS x 9/16 INT SAE)
6	7X-0873	Swivel Tee (1 3/16 INT ORFS x 1 3/16 EXT ORFS x 9/16 INT SAE)
6	7X-2444	Swivel Tee (9/16 INT ORFS x 9/16 EXT ORFS x 9/16 INT SAE)

Item	Part No.	Description
6	8T-4834	Swivel Tee (1 7/16 INT ORFS x 1 7/16 EXT ORFS x 9/16 INT SAE)
6	8T-8902	Swivel Tee (11/16 INT ORFS x 11/16 EXT ORFS x 9/16 INT SAE)
6	6V-9508	Plug (11/16 EXT ORFS)
6	6V-9507	Plug (9/16 EXT ORFS)
6	6V-8398	O-ring Seal
6	6V-8397	O-ring Seal
6	4J-5477	O-ring Seal
6	5K-9090	O-ring Seal (not serviced)
6	6V-3966	Nipple, QD, (1/4 EXT NPT)
7	1S-8937	Needle Valve
8	4C-4463	Utility Box
9	4C-4464	Foam Block
10	8T-4188	Adapter Union (1/8 INT NPT x 1/4 INT NPT)
10	6V-3965	Nipple, QD, (9/16 EXT SAE)
10	6V-4143	Coupler, QD, (1/8 INT NPT)
10	6V-4144	Coupler, QD, (1/4 INT NPT)
10	3J-1907	O-ring Seal
10	3K-0360	O-ring Seal
10	5P-6944	Adapter (3/4 EXT SAE x 9/16 INT SAE)
10	5P-8998	Nipple (1/4 EXT NPT x 1/4 EXT NPT)
11	8T-0859	Gauge 25,000 kPa (0 - 3600 psi)
11	8T-0861	Gauge 60,000 kPa (0 - 8700 psi)
11	8T-0855	Gauge 4,000 kPa (0 - 580 psi)
--	4C-4892	ORFS Fitting Group

8T-5320 Hydraulic Testing Group

Model: Most Cat® Models

Warranty: Six Months



- Designed for general purpose pressure measurements
- Provides versatile and simple method for checking pressure in implement and steering hydraulic systems
- Replaces discontinued 6V-7940 Hydraulic Test Group
- Also replaces discontinued 5S-5123 Hydraulic Testing Group
- Liquid filled gauges, which are more durable and accurate
- Pressure tap assemblies equipped with 6V-3966 Nipple Assembly which allows a single gauge to be quickly connected to hydraulic system
- More flexible hose with higher working and minimum burst pressure than former hose
- Group includes all items in figure

Vehicle System Tools

Item	Part No.	Description	Qty.
1	6V-7145	Case	--
3	8T-7686	Block — Tool Holder	--
4 ¹	3J-1907	Seal-O-Ring - STOR (SAE 9/16-18)	5
4	7M-8489	Adapter Assembly	--
5	8T-0859	Gauge, 25,000 kPa (3600 psi)	--
6	8T-0857	Gauge, 13,800 kPa (2000 psi)	--
7	1J-9671	Seal	6
7	3D-2824	Seal-O-Ring - STOR (SAE 1 1/16-12)	--
7	3J-7354	Seal	6
7	3K-0360	Seal-O-Ring - STOR (SAE 3/4-16)	6
7	5P-2937	Adapter - O-ring to Pipe	--
7	5P-3415	Adapter	--
7	5P-3501	Adapter - STOR	--
7	5P-4674	Adapter - Straight Thread - O-Ring	--
7	5P-4675	Adapter - STR	--
8	8S-7169	Coupling - Pipe Hexagon	2
9	6V-3965	Nipple Assembly	--
10	2N-2543	Plug	--
10	2S-4078	Seal-O-Ring - STOR (SAE 1 5/8-12))	--
11	2J-2668	Cover	--
11	4F-7391	Seal	5
11	4F-7952	Seal	5
11	4J-8996	Seal	5
11	5F-1678	Seal	5
11	5F-7054	Seal	5

Item	Part No.	Description	Qty.
11	5H-4017	Cover, 12.70 mm (0.50 in) line	--
11	5H-4018	Cover, 19.05 mm (0.75 in) line	--
11	5H-4019	Cover, 25.40 mm (1.00 in) line	--
11	5H-4020	Cover, 31.75 mm (1.25 in) line	--
11	7F-8267	Seal	5
11	8S-7668	Cover, 15.75 mm (0.62 in) line	2
12	0S-1587	Bolt	4
12	0S-1591	Bolt	4
12	0T-0768	Bolt	4
12	1A-9579	Bolt	4
13	6V-7944	Plate Assembly, 33.3 mm (1.312 in) diameter 12.70 mm (0.50 in) hose	--
13	6V-7945	Plate Assembly, 41.4 mm (1.63 in) diameter 19.05 mm (0.75 in) hose	--
13	6V-7946	Plate Assembly, 47.5 mm (1.87 in) diameter 25.4 mm (1.0 in) hose	--
13	6V-7947	Plate Assembly, 54.1 mm (2.13 in) diameter 31.75 mm (1.25 in) hose	--
13	6V-7948	Plate Assembly, 63.5 mm (2.50 in) diameter 38.10 (1.50 in) hose	--
13	6V-7949	Plate Assembly, 38.1 mm (1.50 in) diameter 15.75 mm (0.62 in) hose	--
14	6V-3966	Nipple Assembly	3
15	177-7860	Hose Assembly	--
16	6V-4143	Coupler Assembly	2
--	8T-5320	Hydraulic Testing Group	--

¹ Item 4 and item 7

242-7135 Test Kit

Essential Tool

Model: All Cat® Oil Coolers

Warranty: Six Months

- Used to test all Cat® oil coolers for leaks
- Prevents unnecessary oil cooler replacement 136-3602 Drive Adapter

Reference

REHS1758, Test Procedure

Part Number	Description
NEEG2976	Decal



Part Number	Description
242-7135	Test Kit
210-6990	Digital Pressure Gauge (0 to 500 psi)
4C-7056	Hose
4C-8858	Coupler
6V-7145	Case
1P-3703	Seal, 38.66 mm (1.52 in) outside diameter
1P-3704	Seal, 44.75 mm (1.76 in) outside diameter
1P-3708	Seal, 64.2 mm (2.52 in) outside diameter
8T-2885	Seal, 83.4 mm (3.28 in) outside diameter

6V-0102 Flushing Adapter

SMCS Code: 5050-046

Model: 245 Excavator

Warranty: Six Months

- Required for flushing stick cylinder
- Has 3 interconnecting ports so that a loop of 3 hoses can be connected to the three ports on stick cylinder

Part Number	Description
6V-0102	Flushing Adapter



Flowmeters

Model: Most Cat® Models

Warranty: Six Months

- Low cost flowmeters for measuring hydraulic flow in applications within their capacities
- Similar to 6V-7788 Flowmeter; all 3 flowmeters incorporate a variable orifice which measures line flow with less restriction (pressure drop) than 5P-3600 Flowmeter
- Can be installed in any position and are not affected by shock or vibration



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Hydraulic System Tools

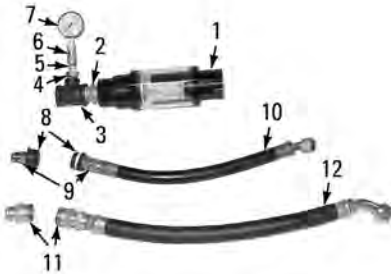
Flowmeters (Continued)

Model: Most Cat® Models

Warranty: Six Months

Part Number	Description	Range	Maximum Pressure	Length	Inlet/Outlet Connections
8T-0454	Flowmeter	20 - 200 lpm (5 - 50 gpm)	20,700 kPa (3,002 psi)	Approx. 300 mm (12 in)	1 1/4 in NPT
8T-0456	Flowmeter	50 - 550 lpm (10 - 150 gpm)	20,700 kPa (3,002 psi)	Approx. 300 mm (12 in)	1 1/4 in NPT

Tools needed for checking transmission cooler flow



Tools needed for checking transmission cooler flow on 943, 953, 963 and 973 Track-Type Loaders (Sold Separately)

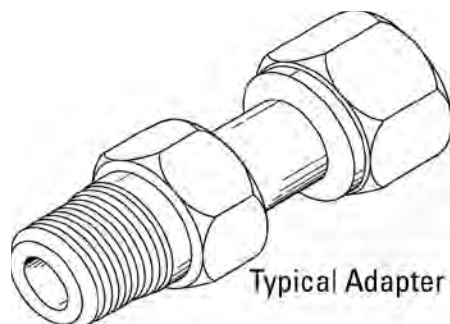
Item	Part Number	Description
1	8T-0454	Flowmeter
2	1P-5598	Pipe Nipple, 1 1/4 in NPT
3	1Y-7453	Tee
4	9B-3523	Reducing Bushing
5	6V-3966	Nipple Assembly
6	6V-4144	Coupler Assembly
7	8T-0854	Gauge - Pressure, 9-1000 kPa (1-150 psi)
8	8F-8306	Reducing Bushing, 1 1/4 in NPT to 3/4 in NPT (2)
9	4S-6678	Flared Connector, 37° (2) ¹
10	9D-9262	Hose ¹
11	6K-3459	Flared Connector, 37° (2) ²
12	134-8416	Hose ²

¹ Use for 943 and 953

² Use for 963 and 973

Adapters

Warranty: Six Months



- Used to adapt fluid ports for measuring flow in hydraulic and cooling systems
- Low-cost adapters are used with other field service components
- Three sizes fit most Cat® machines

Part Number	Male End	Female End
197-8947	1/4 NPTF	9/16-18 ORFS swivel
197-8948	1/2 NPTF	13/16-16 ORFS swivel
197-8949	3/4 NPTF	1 3/16-12 ORFS swivel

6V-7788 Flowmeter

SMCS Code: 5050-038, 5050-082
 Model: D8L, D9L and D10 Tractors
 Warranty: Six Months

- Used for measuring flow when diagnosing steering problems using a field test procedure developed to determine amount of leakage in steering clutch and brake compartments
- Direct reading device installed in power train oil line
- Mounting position, shock, and vibration have little or no effect on operation of new flowmeter



Reference

SMHS8284, Special Instruction

Range	5 - 60 lpm (2 - 15 gpm)
Max. pressure	20,670 kPa (3,000 psi)
Accuracy	±5% of full scale reading

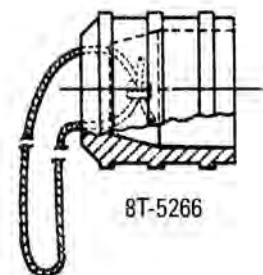
Part Number	Description
6V-7788	Flowmeter

Cap Assemblies

Model: Most Cat® Models
 Warranty: Six Months

Cap Assembly	Nipple
8T-5266	2P-8334, 2P-8336

- For 1 1/4 - 1 1/2 NPTF threaded quick disconnect nipples and couplers
- Designed to prevent contamination when fittings not in use



1U-9161 Pressure Limiting Valve

Model: Most Cat® Models
 Warranty: Six Months

- Protects gauges with maximum working pressures ranging from 30 to 5000 psi
- Prevents calibration failure, interior damage, and blow out caused by excessive pressure
- Works in 3 pressure ranges: 30 to 120 psi, 100 to 1100 psi, and 1000 to 5000 psi
- Supplied with 3 springs used for adjustment throughout 3 pressure ranges
- Whenever pressure pulses or overpressure occurs, valve automatically shuts off pressure instrument at desired setting
- Needle built into valve for adjusting amount of dampening and can also be used as manual shut off
- Easy to install; uses common 1/4-18 FNPT thread
- Quickly pays for itself in savings from cash repair and replacement charges
- Can also be used to set up 2-gauge system similar to 6V-7830 Tetragauge Group
- Adjustable from 30 to 5000 psi (210 to 34,500 kPa)
- 1/4-18 FNPT thread
- Maximum working pressure: 5000 psi (34,500 kPa)



(Continued)

Hydraulic System Tools

1U-9161 Pressure Limiting Valve (Continued)

Model: Most Cat® Models

Warranty: Six Months

Item	Description
2	Spring, black, 100 - 1,100 psi (690 - 7,600 kPa)
3	Spring, gold, 1,000 - 5,000 psi (6,900 - 34,500 kPa)

Item	Part Number	Description
1	1U-9161	Valve-Pressure Limiting [Spring, silver, 30 - 120 psi (210 - 830 kPa) installer at shipment]

1U-5796 Pressure Differential Gauge Group

SMCS Code: 3000-038, 4100-038, 4112-082, 4351-036, 5050-038, 5070-082, 5454-082

Model: See Below

Warranty: Six Months

- Required to verify and set margin pressure on load-sensing hydraulic systems
- Typical examples for use are 416 and 426 Backhoe Loader hydraulic systems, D8N Track-Type Tractor differential steering, and all current motor grader hydraulic systems
- Can also be used in other applications requiring measurement of differential pressure (deltaP)
- Eliminates need for using 2 gauges and then subtracting to find difference between gauges to obtain margin pressure
- Measures differential pressure continuously, regardless of fluctuations in system pressure

Reference

SEHS8979, Special Instruction

Maximum line pressure	52,400 kPa (7,500 psi)
Maximum measurable pressure differential	3,500 kPa (500 psi)
The differential gauge has a magnetic movement.	
Over pressure and pressure spikes will not damage the unit.	

1U-5796 Pressure Differential Gauge Group

Part Number	Description
177-7861	Hose Assembly
1U-5793	Pressure Gauge
3J-1907	Seal-O-Ring - STOR (SAE 9/16 - 18)
6V-0484	O-ring Adapter
6V-3072	Case - Plastic
6V-3965	Nipple Assembly
6V-4143	Coupler Assembly
6V-4144	Coupler Assembly
6V-6105	Block
8C-8431	Tee
8T-0859	Gauge - Pressure
8T-0861	Gauge - Pressure
1U-5796	Pressure Differential Gauge Group

Drive Adapters

SMCS Code: 0784

Model: 205, 206, 211, 212, 213, 214, 224 and Series B, Wheel-Type Excavators

Warranty: Six Months

- Used to connect drive shaft on hydraulic pumps to drive shaft on test benches
- Adapters bolt directly to 1U-9832 Drive Shaft (SAE 27) found on test benches
- Also used with 1U-9359 Adapter and coupled with standard drive shaft (SAE 55)
- Adapters are internally splined hubs



Item	Part Number	Corresponding Splines	Model
1	9U-5277	45 x 2 x 21 x 9G DIN5480	211B, 212B, 213B, 214B, 224B
2	9U-5275	40 x 2 x 18 x 9G DIN5480	205B
3	9U-5230	B40 x 36 DIN5482 213, 214, 224	--
4	9U-5276	B30 x 27 DIN5482 205, 206, 211, 212	--

4C-4385 Splined Adapter

SMCS Code: 0784

Model: D4H

Warranty: Six Months

- Internally-splined drive hub used when bench testing D4H hydraulic pumps
- Fits any pump shaft with spline size of 19-tooth, 24/48 pitch
- Bolts directly to 1U-9832 Drive Shaft (SAE size 27) or when used with 1U-9359 Adapter can be coupled to size SAE 55 drive shaft supplied standard on large hydraulic test center

Reference

SEHS6022, "9T-0290 Pump, D4H Implement" Test Procedure, adapter and other required tooling to bench test D4H implement pump



Part Number	Description
4C-4385	Splined Adapter

136-3602 Drive Adapter

SMCS Code: 0784

Model: 14H and 16H Motor Graders

Warranty: Six Months

- Used to connect test bench drive shaft to tapered end of hydraulic pump
- Works on any pump with a SAE J501 44.45 mm (1 3/4 in) diameter tapered pump shaft

Adapter taper	44.45 mm (1 3/4 in), SAE J501
Outside diameter	97.5 mm (3.84 in)
External keyway width	16.2 mm (0.637 in)
Material	Steel

Part Number	Description
136-3602	Adapter



4C-4088 Splined Adapter

SMCS Code: 0784

Model: Backhoe Loaders

Warranty: Six Months



- Internally-splined drive hub used when bench testing backhoe loader hydraulic pumps
- Fits any pump shaft with spline size of 15-tooth, 16/32 pitch
- Bolts directly to 1U-9832 Drive Shaft (SAE size 27) or when used with 1U-9359 Adapter can be coupled to standard drive shaft (SAE size 55) on large hydraulic test center

References

NEHT6022, Test Procedure; 9T-6857 Pump, 416/428 Backhoe Loader

NEHT6027, Test Procedure; 9T-4833 Pump, 426, 436, 438 Backhoe Loader (adapter and other required tooling to bench test Backhoe Loader pump)

Part Number	Description
4C-4088	Splined Adapter

133-2329 Drive Adapter

SMCS Code: 0784

Model: D3C Track Type Tractor and 933C Track Type Loader

Warranty: Six Months



- Used to connect test bench drive shaft to spline shaft of pump

Number of spline teeth	21
Spline pitch	16/32
Pressure angle	30 degrees
Pitch diameter	20.638 mm (0.8255 in)
Keyway width	16.2 mm (0.64 in)

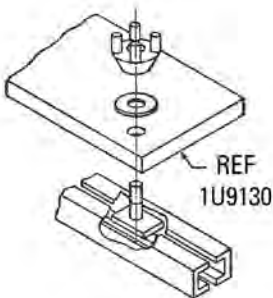
Part Number	Description
133-2329	Drive Adapter

4C-4103 Bolt Mounting Group

SMCS Code: 0784

Model: Most Cat® Models

Warranty: Six Months



- Provides way to secure 1U-9130 Pump Stand or 1U-9588 Transmission Mounting Group to hydraulic test bench bed
- Bolt weldment slides inside rail mounting grooves on most test beds
- Accepts any mounting rail within 63.5 mm (2.50 in) inside clearance and 20.6 mm (0.81 in) clearance slot
- Comes complete with speed bar knob and washer
- Improves speed and ease of mounting and moving components on hydraulic test bench bed

Part Number	Description
4C-4103	Bolt Mounting Group

Hydraulic Test Fittings and Adapters for "MS" and "E" Family Excavators

Model: "MS" and "E" Family Excavators

Warranty: Six Months

- Used to connect Cat® hydraulic service tools to hydraulic ports on excavators
- Hydraulic fittings and ports on these excavators are British standard connections; Cat® service tools use SAE standard connections
- Fittings and adapters available for both flow and pressure measurements
- All fittings rated at 6000 psi working pressure
- Eliminate time spent searching for, and then "stacking" fittings to convert port



NOTE:

BSPT = British Standard Pipe Tapered Threads

BSPP = British Standard Pipe Parallel Threads

Item	Part No.	Description	Application
Flow Meter Adapters			
1 ¹	7X-2430	Adapter 1 in SAE standard flange x 5/16 in-12 SAE O-ring male thread	Used to install flow meter in-line between pump and control valve on models 180 thru 450
1 ²³	7X-2608	Adapter — 1 1/4 in SAE standard flange x 1 5/16 in-12 SAE O-ring male thread	Used to install flow meter in-line between pump and control valve on models 580 thru 1600
2 ²	7X-2612	Adapter — 3/4 in-14 BSPP female x 1 5/16 in-12 SAE O-ring male thread	Used to install flow meter in-line between pump and control valve on models 70 thru 140
3 ²	7X-2432	Adapter — 3/4 in-14 BSPP male x 1 5/16 in-12 SAE O-ring male thread	Used to install flow meter in-line between pump and control valve on models 70 thru 140
4 ³	7X-2470	Adapter — 1 5/8 in-12 SAE O-ring male x 1 5/16 in-12 SAE O-ring female thread	Used to adapt flow meter return back into the oil return line on models 300 and up
5 ¹	8C-9029	Adapter — STR 1 5/16 in x 1 5/16 in SAE O-ring male thread union	Used to adapt flow meter return back into the oil return line
Pressure Test Port Adapters			
6	7X-2613	Adapter — 1/8 in-28 BSPP male x 9/16 in-18 SAE O-ring port	Used to convert BSPP threads on the model 300 travel drive motor control valve
7	7X-2614	Adapter — 1/4 in-19 BSPP male x 9/16 in-18 SAE O-ring port	Used to convert BSPP threads on the model 180 thru 240 travel drive motor control valve
8	8T-7910	Adapter — 1/4 in-19 BSPP male x 9/16 in-18 SAE port	Used to convert BSPP threads in pressure taps to SAE threads on control valve pilot piston ends
8	6V-0405	Seal—1 required	--
9	7X-2615	Adapter — 3/8 in-19 BSPT male x 9/16 in-18 SAE O-ring port	Used to convert BSPT threads on models 580 thru 1600
10	6V-0407	Seal—1 required	--
10	7X-2431	Adapter — 1/2 in-14 BSPP male x 9/16 in-18 SAE O-ring port	Used to convert BSPP threads in pressure taps to SAE threads
In-Line Tee Fittings			
11	7X-2433	Tee — 1/2 in-14 BSPP swivel x 1/2 in-14 BSPP male x 9/16 in-18 SAE female branch	--
11	7X-2435	Tee — 3/8 in-19 BSPP swivel x 3/8 in-19 BSPP male x 9/16 in-18 SAE female branch	--
11	7X-2434	Tee — 1/4 in-19 BSPP swivel x 1/4 in-19 BSPP male x 9/16 in-18 SAE female branch	Used to tap into various lines on the machine where pressure taps do not exist

(Continued)

Hydraulic System Tools

Hydraulic Test Fittings and Adapters for "MS" and "E" Family Excavators (Continued)

Model: "MS" and "E" Family Excavators

Warranty: Six Months

Item	Part No.	Description	Application
Elbows			
12	7X-2609	Elbows 1/4 in-19 BSPP male x 1/4 in-19 BSPP swivel	Used with pressure port adapters in close quarters on all machines
12	7X-2611	Elbows 1/2 in-14 BSPP male x 1/2 in-14 BSPP swivel	--
12	7X-2610	Elbows — 3/8 in-19 BSPP male x 3/8 in-19 BSPP swivel	--
Plugs⁴			
--	8T-7911	Adapter (3/8 in BSPP)	--
--	9S-4685	Plug (3/8 in)	--
--	3J-1907	Seal - O-Ring - STOR (SAE 9/16 - 18)	--

¹Part 7M-8485 Seal — 2 required

²Part 7M-8485 Seal — 1 required

³Part 2S-4078 Seal — 1 required

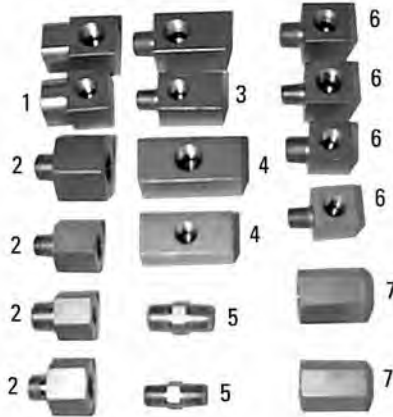
⁴Part 8T-7910 Adapter (1/4 in BSPP) is used to plug hose ends when running diagnostic tests

Fittings for 68,900 kPa (10,000 psi) Hydraulic System

SMCS Code: 5050-039

Warranty: Six Months

- Fittings and adapters for use with 68,900 kPa (10,000 psi) systems



Item	Part Number	Description	Type	Thread A	Thread B	Thread C
1	136-2069	Adapter	90° Elbow	1/4-18 NPT Female	1/4-18 NPT Female	--
1	135-2537	Adapter	90° Elbow	3/8-18 NPT Female	3/8-18 NPT Female	--
2	136-7203	Adapter	Straight	9/16-18 UNF #6 Male	3/8-18 NPT Female	--
2	136-2061	Adapter	Straight	1/4-18 NPT Male	3/8-18 NPT Female	--
2	136-2063	Adapter	Straight	3/8-18 NPT Male	1/2-14 NPT Female	--
2	135-2532	Fitting - Adapter	Straight	3/8-18 NPT Male	1/4-18 NPT Female	--
3	136-2062	Adapter	Tee	3/8-18 NPT Male	3/8-18 NPT Female	3/8-18NPT Female

(Continued)

Fittings for 68,900 kPa (10,000 psi) Hydraulic System (Continued)

SMCS Code: 5050-039

Warranty: Six Months

Item	Part Number	Description	Type	Thread A	Thread B	Thread C
3	135-2534	Adapter	Tee	1/4-18 NPT Male	1/4-18 NPT Female	1/4-18 NPT Female
4	136-2067	Adapter	Tee	1/4-18 NPT Female	1/4-18 NPT Female	1/4-18 NPT Female
4	136-2068	Adapter	Tee	3/8-18 NPT Female	3/8-18 NPT Female	3/8-18 NPT Female
5	135-2536	Adapter	Straight	3/8-18 NPT Male	3/8-18 NPT Male	--
6	136-2059	Adapter	90° Elbow	3/8-18 NPT Male	3/8-18 NPT Female	--
6	136-2060	Adapter	90° Elbow	1/4-18 NPT Male	3/8-18 NPT Female	--
6	135-2533	Fitting - Adapter	90° Elbow	1/4-18 NPT Male	1/4-18 NPT Female	--
6	135-2535	Adapter	90° Elbow	3/8-18 NPT Male	1/4-18 NPT Female	--
7	136-2065	Adapter	Straight	1/4-18 NPT Female	1/4-18 NPT Female	--
7	136-2066	Adapter	Straight	3/8-18 NPT Female	3/8-18 NPT Female	--

171-1879 Adapter Fitting

SMCS Code: 0738

Warranty: Six Months

- Used for high pressure testing
- Used with 68,900 kPa (10,000 psi) high pressure hoses
- Threaded at each end to adapt 1 thread size to another

Maximum working pressure	68,900 kPa (10,000 psi)
Burst ratio	4:1
Thread size	1/4-18 NPT
Thread size	#6 port, 9/16-18



Part Number	Description
171-1879	Adapter Fitting

Die Groups

SMCS Code: 0684

Model: Discontinued 139-5439 Combination Hose Machine and discontinued 145-5161 Floor Model Hose Machine

Warranty: Six Months

- Used to crimp S4G and MCSH/MCSX Anchor brand couplings onto XT-3 ES and XT-5 hose
- Used with discontinued 139-5439 Combination Hose Machine and discontinued 145-5161 Floor Model Hose Machine
 - 220-8686 die works on both discontinued 139-5439 and discontinued 145-5161
 - 220-8687 and 220-8688 dies work only on discontinued 145-5161
- Use NEHS8056 Chart for skive length, crimp diameter, and crimp length
- Dies are made with a smooth bore (non-step) — this requires crimp length to be marked on coupling and lined up with top of die before crimping
- Hose machine must be controlled by a Crimputer (software version 2.0 or higher) to use these dies

Reference

NEHS8056, Anchor Brand Coupling Crimp Chart

(Continued)

Die Groups (Continued)

SMCS Code: 0684

Model: Discontinued 139-5439 Combination Hose Machine and discontinued 145-5161 Floor Model Hose Machine

Warranty: Six Months

220-8686 Die Group		
XT-3 ES	1 1/4 (-20)	Anchor S4G coupling
220-8687 Die Group		
XT-3 ES	1 1/2 (-24)	Anchor S4G coupling
XT-5	1 1/4 (-20)	Anchor MCSH or MCSX couplings
220-8688 Die Group		
XT-3 ES	2 (-32)	Anchor S4G coupling

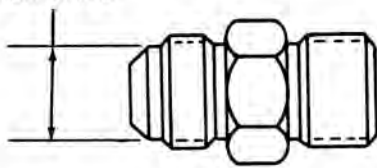
Copper Seals for JIC Fittings (Joint Industry Conference)

SMCS Code: 0684

Model: JIC Fittings

Warranty: Six Months

DIAMETER A



- Used to repair leaking joints between JIC fittings
- Formerly, if JIC connection leaked and slight additional tightening would not stop leak, leaking components had to be replaced; cone shaped soft copper seals can be fitted between sealing surfaces of connection; when connection tightened, soft copper seal deforms and fills scratches or nicks that caused a leak
- To determine size of seal needed, find diameter A as shown in illustration; then use chart to find correct seal part number for diameter A
- After copper seal installed, tighten JIC connection to torque shown in chart

Diameter A	Seal Part Number	Torque
8.6 mm (0.34 in)	6V-7333	30 - 34 N·m (22 - 25 ft-lb)
11.4 mm (0.45 in)	6V-7332	51 - 56 N·m (38 - 41 ft-lb)
14.2 mm (0.56 in)	6V-7331	73 - 79 N·m (54 - 58 ft-lb)
23.9 mm (0.94 in)	6V-7330	102 - 113 N·m (75 - 84 ft-lb)
30.2 mm (1.19 in)	6V-7329	136 - 158 N·m (101 - 117 ft-lb)
38.1 mm (1.50 in)	6V-7328	172 - 190 N·m (127 - 141 ft-lb)
44.4 mm (1.75 in)	6V-7327	215 - 237 N·m (159 - 175 ft-lb)

4C-8768 Fitting

SMCS Code: 6500-036

Model: E300, EL300, E300B, and EL300B Excavator

Warranty: Six Months



- Used to adapt high pressure hose from pump to 1U-8761 Flowmeter
- 90° elbow swivels allowing flowmeter to hook up more conveniently

Working pressure	41,000 kPa (6,000 psi)
Male end	1 5/16-12 SAE O-ring fitting
Female end	1 7/16-12 ORFS fitting

Part Number	Description
4C-8768	Fitting

7I-7133 Cover Plate

SMCS Code: 6500-036

Model: Miscellaneous Excavators

Warranty: Six Months

Part Number	Description
7I-7133	Cover Plate

- Used during main hydraulic pump flow test



7I-7151 Flange

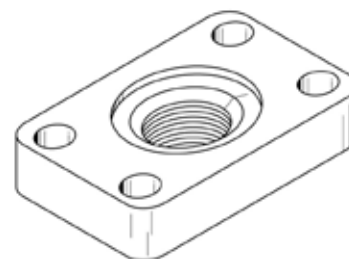
SMCS Code: 6500-036

Model: Miscellaneous Excavators

Warranty: Six Months

Part Number	Description
7I-7151	Flange

- Used during main hydraulic pump flow test



Hydraulic Test Bench Adapters

Model: Most Cat® Models

Warranty: Six Months

- Hydraulic test benches have been developed for bench testing hydraulic components such as transmissions, pumps, valves and hydraulic cylinder
- A large number of special adapters are needed to couple the various components to hydraulic test bench for testing; adapters available from bench manufacturers
- SEHS7972, Bench Testing Hydraulic Components, includes list of adapters and their application

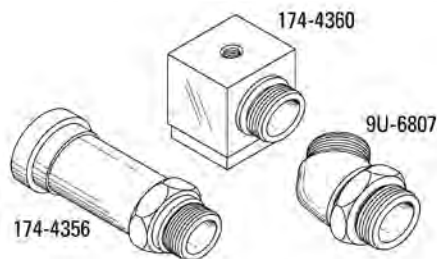
Reference

SEHS7972, Bench Testing Hydraulic Components, list of adapters and their application

174-4356 Adapter, XT-6/STOR, 174-4360 Elbow, 90 Degree, 9U-6807 Coupling, 45 Degree

Essential Tool

SMCS Code: 6500-036
 Model: 365B Hydraulic Excavator
 Warranty: Six Months



- Used to adapt high pressure hose from pump fitting to flowmeter fitting of hydraulic portable tester
- Used with 4C-9910 Portable Hydraulic Tester
- Working pressure: 42,000 kPa (6,000 psi)

Reference

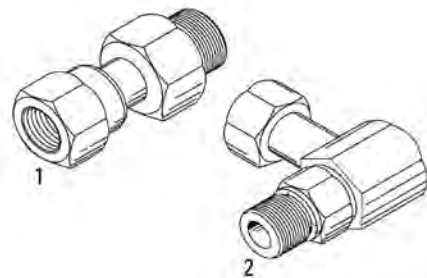
REN1967, Service Manual; System Operation — Test and Adjust

Part Number	Description
174-4356	Adapter, XT-6/STOR
174-4360	Elbow, 90 Degree
9U-6807	Coupling, 45 Degree

1U-7641 Elbow, 90° ORFS to STOR BOSS, 1U-7642 Coupling Assembly, ORFS to STOR BOSS

Essential Tool

SMCS Code: 5070-036
 Model: 307 Excavator
 Warranty: Six Months



- Used to test pump flow rate without removing pump from machine
- 1U-7641**
- Connects high pressure oil line from main hydraulic pump to flowmeter
 - 90° Elbow Swivel makes hookup to flowmeter faster and easier

1U-7642

- Connects return line from flowmeter into hydraulic circuit
- Prevents hydraulic oil from over heating during pump testing by directing oil through the oil cooler

References

SEN9005, Testing and Adjusting 307 Excavator Hydraulic Systems
 SEN9205, Testing and Adjusting 307 Excavator Hydraulic Systems

Item	Part No.	Description	Working Pressure	Male Thread (STOR)	Female Thread (ORFS)	O-ring Seal for STOR BOSS Thread
1	1U-7641	Elbow, 90° ORFS to STOR BOSS	41,000 kPa (5947 psi)	Dash size 16, 1 5/16-12 thd	Dash size 10, 1-14 thd	7M-8485
2	1U-7642	Coupling Assembly, ORFS to STOR BOSS	41,000 kPa (5947 psi)	Dash size 16, 1 5/16-12 thd	Dash size 8, 13/16-16 thd	7M-8485

417-3724 Swivel Elbow SAE 45° Flare 90°

Model Usage: CT15

Warranty: Manufacturer's

- Used with 373-4728 High Pressure Return Line tester on the CT15
- Used to easily disassemble and assemble repeatedly for a leak-proof connection
- Fitting resists mechanical pullout

Specifications	
Dimensions	9.7 x 16 - 457.2 mm (3/8 x 5/8-18 in)
PSI	1000 (68.03 bar)
Min/Max Temperature	-53.89 - 121.11 °C (-65-250 °F)
Weight	.05 kg (.12 lb)
Material	Brass



Part Number	Description
417-3724	Swivel Elbow SAE 45° Flare 90°

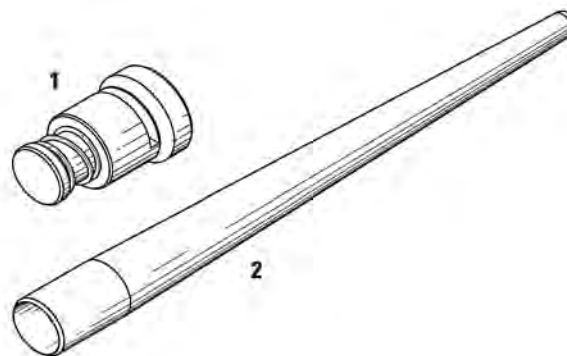
STOR and ORFS O-Ring Seal Installers

Essential Tool

Model: Most Cat® Models

Warranty: Six Months

- Used to install O-ring seals onto STOR and ORFS style fittings
- Helps prevent damage to the seal during assembly
- Specific tools for each size fitting for proper seal installation
- ORFS seal installers use a spring-loaded design to install O-ring seals into end groove of fitting
- STOR seal installers use a smooth tapered design with a recess for sliding O-ring seals past threads and into groove of fitting

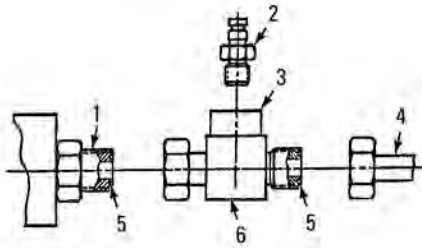


(1) ORFS Seal Installer		
Part Number	Description	Fitting Size
179-6884	Seal Installer	ORFS -4
179-6885	Seal Installer	ORFS -5
179-6886	Seal Installer	ORFS -8
179-6887	Seal Installer	ORFS -10
179-6888	Seal Installer	ORFS -12
179-6889	Seal Installer	ORFS -16
179-6890	Seal Installer	ORFS -20
179-6891	Seal Installer	ORFS -24

(1) ORFS Seal Installer		
Part Number	Description	Fitting Size
336-0739	Seal Installer	STOR -3
336-0740	Seal Installer	STOR -4
336-0741	Seal Installer	STOR -6
336-0742	Seal Installer	STOR -8
336-0744	Seal Installer	STOR -10
336-0750	Seal Installer	STOR -12
336-0784	Seal Installer	STOR -16
371-9041	Seal Installer	STOR -12

Swivel Tees

Model: Most Cat® Models
Warranty: Six Months

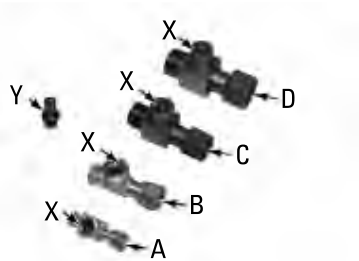


- Used for in-line pressure testing of hydraulic systems where tubing and hoses have ORFS connections
- Quick and easy way to provide diagnostic test port on ORFS tubes and hoses where none were previously available
- Tee has #6 SAE O-ring Port (X) to accept 6V-3965 Valved Quick Disconnect Nipple and 3J-1907 O-ring Seal (Y), providing necessary fittings and location to connect pressure gauge; tee can be left in place for future use or removed after testing
- Supplement tees already available for 3/8 inch and 1 inch ORFS tube sizes; fittings rated at 6000 psi working pressure and fit tube sizes as shown in chart; O-ring seals for ORFS tees must be ordered separately

Item	Description
1	Existing ORFS Connection
3	#6 SAE O-ring Port (X)
4	Existing ORFS Tube or Hose
5	Required O-ring Seal

Item	Part Number	Description
2	6V-3965	Adapter STR (Quick disconnect and 3J-1907 O-Ring Seal (Y))
6	7X-2444	Swivel Tee
6	7X-0873	Swivel Tee
6	7X-0871	Swivel Tee
6	7X-0872	Swivel Tee

Tees



Item	Tee Part Number	O-ring Seal Part Number (Not shown)	Tube Outside Diameter
A	8T-8902	6V-8397	9.52 mm (3/8 in)
A	7X-2444	4J-5477	6.35 mm (1/4 in)
B	7X-0871	6V-8398	12.70 mm (1/2 in)
C	7X-0872	7J-9108	15.88 mm (5/8 in)
D	8T-4834	5K-9090 ¹	25.40 mm (1 in)
D	7X-0873	6V-9746	19.05 mm (3/4 in)

¹ Not Serviced

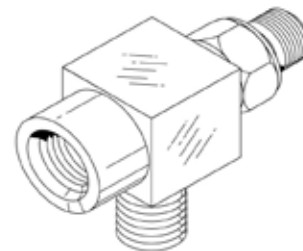
128-5890 Tee Fitting

SMCS Code: 3055-081

Model: Challenger 35, 45, and 55 Agricultural Tractors

Warranty: Six Months

- Used to allow mechanic to more easily test lube oil pressure (oil supply for PTO clutch pack and bearings)
- Used with quick disconnect and pressure gauge
- Installs in place of elbow on center housing (used for testing only; do not permanently install)
- Requires 6V-3965 Nipple Assembly, two 3J-7354 O-ring Seals, and one 3J-1907 O-ring Seal



Reference

SENR8304, Service Manual, Challenger 35, 45, and 55 Agricultural Tractor Transmission Systems Operation Testing and Adjusting

Wrench flat	22.26 mm (7/8 in)
Center housing connection	7/16-20 male O-ring
Nipple connection	9/16-18 female O-ring
Supply line connection	11/16-16 male ORFS

Part Number	Description
128-5890	Tee Fitting

1U-7044 Lube Block Adapter, 1U-8856 U-Joint Adapter

FT2257 Support Legs

SMCS Code: 0784

Model: D6H (discontinued Arrangement 7G-4636), D7H (Arrangement 8P-8973), D8N (Arrangement 9W-9613)

Warranty: 1U-7044 Lube Block Adapter and 1U-8856 U-Joint Adapter: Six Months FT2257 Support Legs: None

- Required for bench testing D6H (discontinued Arrangement 7G-4636), D7H (Arrangement 8P-8973) and D8N (Arrangement 9W-9613) transmissions
- Provide method for connecting transmissions to test bench oil supply, flowmeters and drive shaft, and to support transmission during bench test
- Previously available tooling also used with these adapters and support legs during bench test



Reference

NEHT6010

Part Number	Description
FT2257	Support Legs

Part Number	Description
1U-7044	Lube Block Adapter
1U-8856	U-Joint Adapter

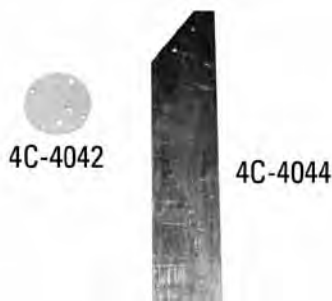
4C-4042 Cover Plate

4C-4044 Front Support Left

SMCS Code: 0784

Model: 936 and the 936E (discontinued Arrangement 6Y-1741)

Warranty: Six Months



- Required for bench testing 936 and the 936E (discontinued Arrangement 6Y-1741) transmission
- Provide way to connect transmission to test bench and to support transmission during bench test
- Previously available tooling also used with these adapters and support legs during bench test

Reference
NEHT6025

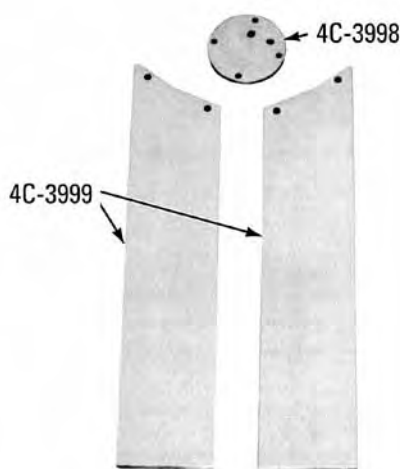
Part Number	Description
4C-4042	Cover Plate
4C-4044	Front Support Left

4C-3999 Front Supports, 4C-3998 Cover

SMCS Code: 0784

Model: 916 (discontinued Arrangement 7G-3030); 926 and 926E (discontinued Arrangement 8P-9853); IT18 and IT18B (discontinued Arrangement 9W-3906); IT28 and IT28B (discontinued Arrangement 8P-9853)

Warranty: Six Months



- Required for bench testing 916 (discontinued Arrangement 7G-3030); 926 and 926E (discontinued Arrangement 8P-9853); IT18 and IT18B (discontinued Arrangement 9W-3906); and IT28 and IT28B (discontinued Arrangement 8P-9853) transmissions
- Provide way to connect transmission to hydraulic test center and to support transmission during bench testing
- Previously available tooling used with supports and cover during bench test

Reference
NEHT6023 Special Instruction

Part Number	Description
4C-3998	Cover
4C-3999	Front Supports

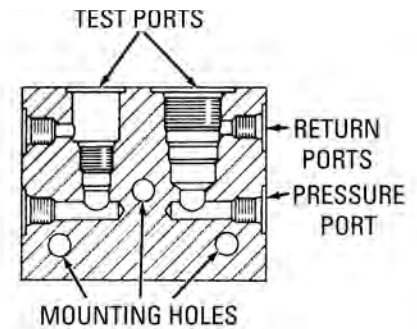
1U-5216 Manifold for Backhoe Loader Line Relief Valves

SMCS Code: 4322-025, 5117-0360

Model: 12G, 120G, 130G, 14G, 140G, 16G, 41G, 428, 436

Warranty: Six Months

- Used to test and adjust line relief valves on 416, 426 and 428 Backhoe Loaders prior to installation
- 68,900 kPa (10,000 psi) capacity hydraulic pump and pressure gauge (not included) also required for bench testing of valves with this manifold
- 2 different-sized SAE ports, modified No. 8 and standard No. 14, provided on manifold for testing both sizes of backhoe loader line relief valves; these 2 independent test ports each have two SAE No. 6 ports for hydraulic pressure and return connections
- Quick disconnect O-ring SAE port 6V-3965 Nipples and 3J-1907 O-rings can be ordered for installation on manifold for easy coupling to hydraulic pump
- Three 11 mm (7/16 in) holes in manifold for mounting convenience



Reference

SEN3195-01 Hydraulic System Manual for 416 and 426 Backhoe Loaders

SEN3472, Hydraulic System Manual for 428 Backhoe Loader

Part Number	Description
1U-5216	Manifold for Backhoe Loader Line Relief Valves

280-7987 Bore Gauge

Essential Tool

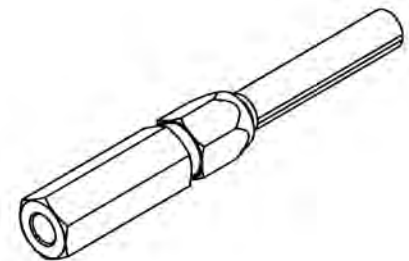
SMCS Code: 5051

Model: 416D, 420D, 424D, 428D, 430D, 432D, and 442D Backhoe Loaders

Warranty: Six Months

Part Number	Description
280-7987	Bore Gauge

- Used to measure bores for valve spools
- Provides a quick and easy method to determine if valve requires reconditioning



Anti-Drift Valve Disassembly and Assembly Tools

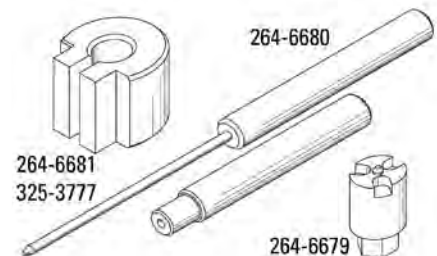
Essential Tool

SMCS Code: 5143, 5461, 5464, 5122

Model: 420E (KMW, HLS), 430E (DDT, EAT) Backhoe Loaders, 312DL (DXH) Excavator

Warranty: Six Months

- Used to disassemble and assemble anti-drift valves
- Spanner wrench used to remove plug holding spring above anti-drift valves
- Pin guide used to install pin and opens anti-drift valve
- 264-6681 Spool Clamp used to hold spool for disassembly and assembly on BHLs only
- 325-3777 Spool Clamp used to hold spool for disassembly and assembly on DL Excavator only



(Continued)

Anti-Drift Valve Disassembly and Assembly Tools (Continued)

Essential Tool

SMCS Code: 5143, 5461, 5464, 5122

Model: 420E (KMW, HLS), 430E (DDT, EAT) Backhoe Loaders, 312DL (DXH) Excavator

Warranty: Six Months

Part Number	Description
264-6679	Wrench
264-6680	Pin Guide
264-6681	Clamp

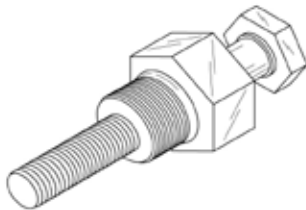
FT3101 Valve Adjuster

Essential Tool

SMCS Code: 5136-025, 7258-509

Model: 725 (AFX1179-UP & B1L1-410) and 730 (AGF1092-UP & B1M1-334) Articulated Truck

Warranty: None



- Used to manually lower dump body when engine is off or stalled
- Installs into port on 241-4680 Hoist Control Valve
- Allows hydraulic spool to be shifted into lowering position
- O-ring on tooling body seals against hoist control valve to prevent hydraulic oil leakage
- Made from 190-7979 Bolt and 148-8407 STOR Plug Assembly

References

SEBU7814, 725, Operation and Maintenance Manual, 730 Articulated Trucks

SEBU7815, 735, Operation and Maintenance Manual, 740 Articulated Trucks

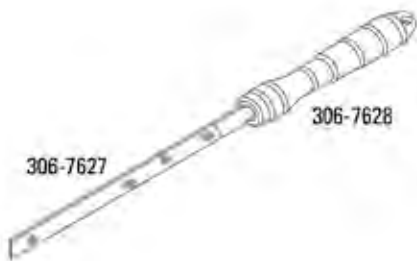
306-7627 File

306-7628 Handle

SMCS Code: 7560

Model: 416E (SHA1-UP, CBD1-UP), 420E (HLS1-UP, KMW1-UP), 430E (EAT1-UP, DDT1-UP), 446D (DBL1-UP) Backhoe Loaders; 924G (RTA1-UP, WGX1-UP, DDA1-UP, RBB1-UP, WMB1-UP), 928G (DJD1-UP, WLG1-UP), 930G (TWR1-UP, TFW1-UP) Wheel Loaders

Warranty: Manufacturer's



- Used to check hardness of chrome plating on cylinder rods

Part Number	Description
306-7627	File
306-7628	Handle

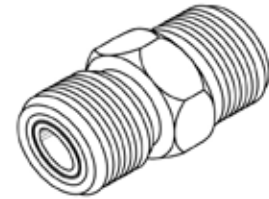
FT1990 Orificed Union

SMCS Code: 5050-038

Model: 416

Warranty: None

- Required to test and adjust hydraulic margin pressure on 416 Backhoe Loaders only
- Loader tilt cylinder hoses are disconnected from cylinder and reconnected at both ends of FT1990 for test procedure
- Places 1378 ± 138 kPa (200 ± 20 psi) load on hydraulic system that should produce pump discharge pressure 1378 ± 138 kPa (200 ± 20 psi) higher than signal line pressure
- Flow spool in compensator valve can be adjusted to obtain correct margin pressure differential (Refer to 416 Backhoe Loader Hydraulic System Testing and Adjusting Service Manual, SENR3195-01, for margin pressure test procedure.)
- Consists of O-ring face seal (ORFS) type 6V-8731 Union (13/16 inch — 16 external thread at both ends), two 6V-8398 O-ring Seals and a 35.3 ± 0.5 mm (1.39 in), long 9.4 mm (3/8 in) diameter bar stock (SAE 1020 steel)
- Round bar stock is inserted into 6V-8731 with 9S-3263 Thread Lock or equivalent; proper-sized orifice created by drilling 4.7 mm (3/16 in) diameter hole through round bar stock



Reference

SENR3195-01, Service Manual, 416 Backhoe Loader Hydraulic System Testing and Adjusting, margin pressure test procedure

Blocking Plates

SMCS Code: 4306-081, 030

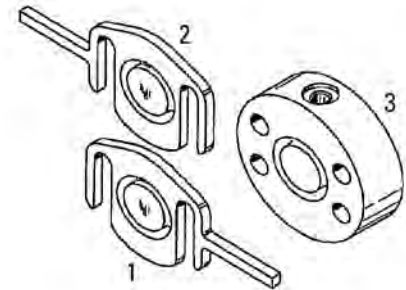
Model: Challenger 65C, 70C, 75C and 85C

Warranty: Six Months

- Used to block steering pump oil flow at the differential steering motor in order to measure steering circuit maximum pressure
- Provides on-machine measurement of pressure — much faster and easier
- Can be used on either the standard steering circuit, or on the attachment, high torque steering circuit

9U-7831 (right hand) and 9U-7832 (left hand)

- Installed at the steering circuit hose connections on the differential steering motor; installed at the ends of the hoses adjacent to the motor without requiring complete removal of the hoses
- Can be slipped into position between the face of the hose coupling and the mounting face on the motor by loosening the four hose flange bolts; the bolts specified for this connection are long enough to permit insertion of the plates without the need to install longer bolts
- If this connection has been previously “disturbed”, check individual bolt length to be sure that a short bolt has not been substituted in this location; the bolts should be 57.15 mm (2.25 in) in length



Note:

Steering circuit pressure is measured at the pressure tap locations on the discharge ports of the steering pump.

9U-7834

- Blocking plate containing a pressure tap location to be used for measurement of steering circuit pressure at the steering motor location
- Installed at the steering motor end of the steering pump discharge lines
- Longer bolts (four 7X-0316 Bolts) must be substituted in the hose flange connection in order to use the 9U-7834 Plate
- The pressure tap location is a -6 STOR threaded hole (9/16-18)

Reference

SENR5262, Service Manual Module

(Continued)

Hydraulic System Tools

Blocking Plates (Continued)

SMCS Code: 4306-081, 030

Model: Challenger 65C, 70C, 75C and 85C

Warranty: Six Months

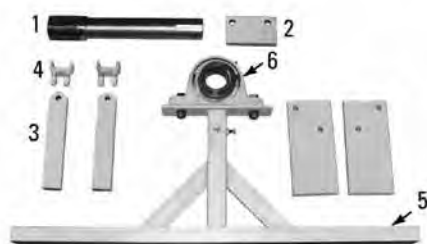
Item	Part Number	Description	Thickness	Width	Outside Diameter	Overall Length	Used with
1	9U-7831	Blocking Plate (right-hand)	8.0 mm (0.31 in)	70 mm (2.76 in)	--	119.0 mm (4.69 in)	--
2	9U-7832	Blocking Plate (left-hand)	8.0 mm (0.31 in)	70 mm (2.76 in)	--	119.0 mm (4.69 in)	--
3	9U-7834	Blocking Plate	34.0 mm (1.33 in)	--	88.9 mm (3.50 in)	--	7X-0316 Bolt, 6V-3965 Nipple, and 3J-1907 Seal

Adapters and Support Legs

SMCS Code: 0784

Model: D11N (discontinued Arrangement 9G-7061)

Warranty: Six Months



- Required for bench testing D11N (discontinued Arrangement 9G-7061) transmission
- Provide way to connect transmission to test bench oil supply, flowmeters, and drive shaft, and also support transmission during bench test
- Previously available tooling used along with these adapters and support legs during bench test

Item	Part Number	Description
2	FT2286	Block Plate
3	FT2278	Rear Support
4	FT2288	Rear Support
5	FT2285	Shaft Support
7	FT2287	Front Support

Item	Part Number	Description
1	4C-3490	Input Shaft
6	8V-4099	Bearing Pillow Block (bearing not included)

Service Tools for Challenger 65 Tractor

SMCS Code: 0784

Model: Challenger 65 Agricultural Tractor

Warranty: None



- Fabricated tools (FT) for servicing Challenger 65 Agricultural Tractor
- ### FT2220 Hose Assembly
- Required to check implement hydraulic system for low pressure standby, margin pressure, and detent kickout pressure
 - Installed in "lift" and "drop" ports of one set of implement hydraulic couplers
 - Made up of parts available from Caterpillar® except for valve and nipple assemblies which may be purchased locally; use Parker MV800S Valve, or equivalent, and Parker 8010-4 or Aeroquip FD76-02-08-10 Nipple Assemblies, or equivalent; nipple assemblies must conform to ASAE S366.1, SAE J1036 or ISO 5675 specifications
 - Maximum working pressure of 1/2 inch ID hose: 4000 psi

Reference

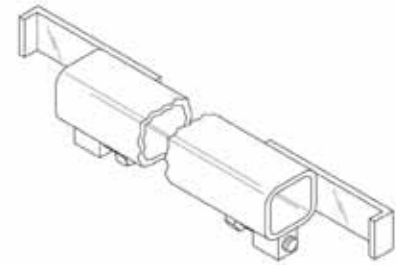
SEN3346, Challenger 65 Service Manual, Systems Operation Testing and Adjusting Module, procedure and lists other required pieces of test equipment

FT2227 Hoist Support Assembly

- Used as cross beam inside cab for supporting hoist when removing and installing steering and charge pump group; pump group is passed through access hole in floor of cab
- Easily fabricated from 50.8 mm (2.0 in) square tubing and mild steel bar stock
- 2D-2285 Bolts used to lock support in place after it is installed inside cab across front and rear cross structural pieces of ROPS

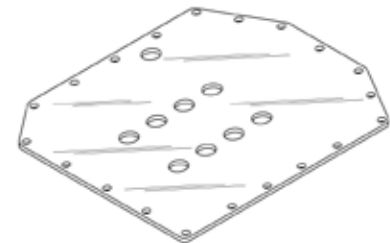
Reference

SENR3348, Challenger 65 Service Manual, Vehicle Systems Disassembly and Assembly module, instructions to ready cab to remove and install pump group



FT2235 Transmission Test Cover

- Used in place of regular transmission cover when troubleshooting transmission hydraulic system
- Has set of access holes that allows connection of pressure gauges to pressure taps in control valve group
- Contains transmission oil in transmission case during troubleshooting process
- Made of 1/4 inch plexiglass



FT2228 Hose Group

Model: All Challenger Models

Warranty: None

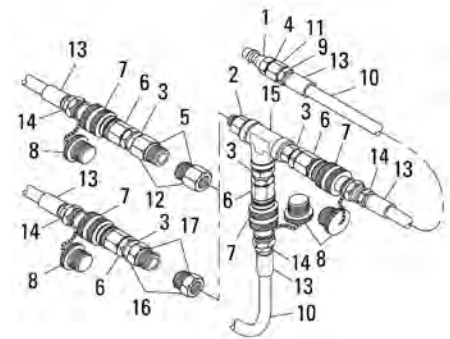
- Used to service Mobil-Trac system (updates current group with fittings to be used on 65C and 75C machines beginning with serial numbers 2ZJ1-UP and 4KK1-UP)
- Used to connect implement hydraulic system to belt tension cylinders to extend cylinders in order to work on undercarriage
- Consists of two different length hose assemblies with double-ended and triple-ended coupler assemblies

Application Procedure

- Install triple-ended coupler assembly ("A") into pressure port of left hand tensioner cylinder. Use caution when removing plug from port. Remove plug slowly, allowing any pressure within cylinder to bleed off before completely removing plug.
- Install double-ended coupler assembly ("B") into pressure port of right hand tensioner cylinder. Use caution when removing plug from port. Remove plug slowly, allowing any pressure within cylinder to bleed off before completely removing plug.
- Connect appropriate end ("C") of longer length of hose into lift port of one of implement hydraulic couplers.

Reference

SENR3344, Service Manual



Item	Part Number	Description
1	9X-2017	Nipple Assembly
2	002-6454	Pipe Nipple
3	3B-7255	Bushing
4	3K-0360	Seal - O-ring - STOR (SAE 3/4 - 16)
5	2M-9780	Seal - O-ring - STOR (SAE 7/8 - 14)

(Continued)

FT2228 Hose Group (Continued)

Model: All Challenger Models

Warranty: None

Item	Part Number	Description
6	1P-2375	Coupler Assembly Quick Connective (Male)
7	1P-2376	Coupler Assembly Quick Connective (Female) (2)
8	1P-2377	Plug As - Dust
9	2P-0921	Collet Stem Assembly
10	2P-5943	Hose
11	5P-1838	O-ring Adapter
12	5P-4481	O-ring Adapter
13	4S-5414	Sleeve
14	9S-4123	Collet Stem Assembly
15	1Y-0413	Pipe Tee
16	6L-9952	Adapter
17	3D-2824	Seal - O-ring - STOR (SAE 1 1/16 - 12)

1U-5525 Attachment Group for Discontinued 1U-5000 Auxiliary Power Unit

Model: 785, 789 Off-Highway Trucks

Warranty: Six Months



- Contains all hydraulic fittings, hoses, and electrical cables to connect discontinued 1U-5000 to either the 785 or 789

Reference

SEHS8880, Special Instruction

Service/Repair Parts		
Part Number	Description	Quantity
1U-5484	Hose Assembly	1
1U-5485	Hose Assembly	2
1U-5486	Connector Assembly	1
1U-5552	Shipping Case	1
1U-5772	Gauge Assembly	1
1U-8330	Hose Assembly	1
1U-8331	Conversion Group	1
327-9137	Conversion Group	1
8S-2632	Battery Connection Cable Plug Assembly	1
1U-5525	Attachment Group	—

Relief Valve Manifolds

SMCS Code: 4322-025, 5117-036

Model: Challenger 65, 65B, and 75 and D8N Track-Type Tractor

Warranty: Six Months

- Used to test and adjust cartridge type relief valves
- Used with discontinued 1U-8900 Cartridge Relief Valve Tester and discontinued 4C-4441 Cartridge Relief Valve Tester
- Greatly simplifies testing — significantly reduces time spent testing each relief valve
- Each manifold has 2 separate ports; both ports have independent pump and tank connections
- Length x Width x Height: 127 x 50 x 101 mm (5.0 x 2.0 x 4.0 in)
- Weight: 5 kg (11.0 lb)



Typical Relief Valve Manifold

Reference

NEHT6031, Test Procedure

9U-5785 Relief Valve Manifold	
One port tests	9T-4892 High Pressure Relief Valves used in the differential steering pump on Challenger 65, 65B, and 75
9U-5829 Relief Valve Manifold	
One port tests	6E-3578 Steering Pump Charge Pressure Relief Valves used in Challenger 65B and 75

364-6747 Manifold

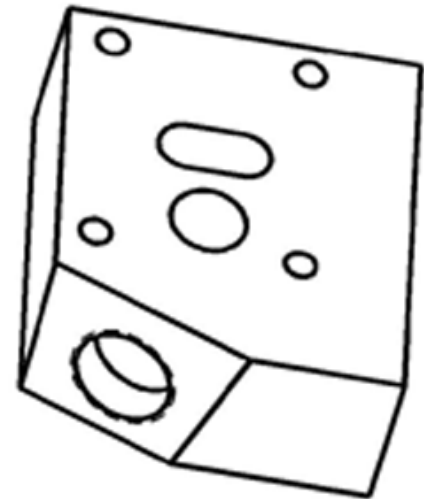
Model Usage: D6T Series II, D8T Series II, PL83

Warranty: Manufacturer's

- Used to test for lube flow/relief while testing transmissions on hydraulic test bench

Specifications	
Dimensions	121.0 x 103.0 x 50.0 mm (4.76 x 4.05 x 1.97 in)

Part Number	Description
364-6747	Manifold



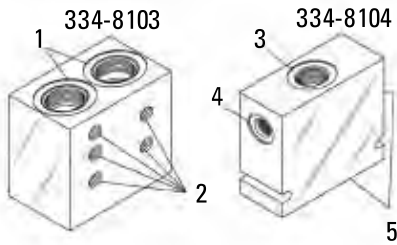
Line Relief Valve Test Manifolds

Essential Tool

SMCS Code: 4322-025, 5117-0360

Model: 963D and 973D Track-Type Loaders

Warranty: Six Months



- Used to test and adjust cartridge type relief valves with -6, -12, and -16 ORFS threads
- Used with cancelled 1U-8900 Cartridge Relief Valve Tester and cancelled 4C-4441 Cartridge Relief Valve Tester
- 334-8103 Valve Test Manifold is used for testing 973D Track Type Loader relief valves
- 334-8104 Valve Test Manifold is used for testing 963D Track Type Loader relief valves
- Simplifies testing — significantly reduces time spent testing each relief valve
- Made from durable hardened steel (RKW C34-39) with black oxide coating for corrosion resistance

Item	Port Fitting
334-8103 Valve Test Manifold	
1	Two ORFS-16 ports (1 5/16-12)
2	Five 1/4-18 NPTF ports
334-8104 Valve Test Manifold	
3	One ORFS-12 ports (1 5/16-12)
4	One ORFS-6 port (9/16-18)
5	Two ORFS-2 ports (1 5/16-12) not visible

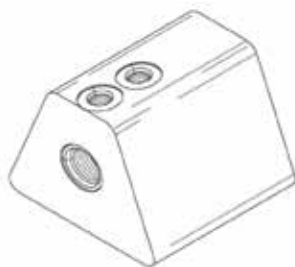
Part Number	Description
334-8103	Valve Test Manifold
334-8104	Valve Test Manifold

299-1731 Manifold

Essential Tool

Model: 216, 226, 232, 236, 242, 246, 246, 248, 252; 262, 268, 256, 272 Skid Steer Loaders 247, 257, 267, 277, 287, 287, 297 Multi-Terrain Loaders

Warranty: Six Months



- Used to test 216-6160, 216-6161, and 289-0850 Relief Valves

Part Number	Description
299-1731	Manifold

Harnesses

SMCS Code: 0784

Model: E200B and EL200B Excavators

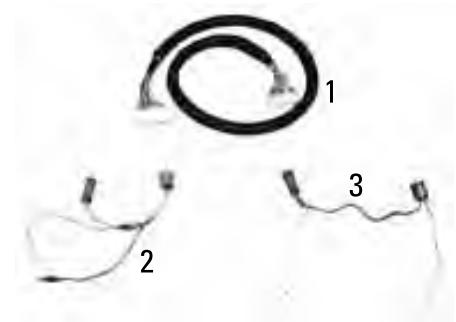
Warranty: Six Months

- Required diagnostic tools for servicing electronic power unit control system
- Special test harnesses to aid serviceman whenever adjustments need to be made to electronic power unit control system; may be necessary to tap into various circuits to check for voltage, current, resistance, or continuity
- Also serve as “tools” for troubleshooting electronic system

Reference

SENR4527, Testing and Adjusting E200B and EL200B Excavators Hydraulic and Electronic Systems (a module of SENR4530, E200B/EL200B Service Manual)

SESV1569, Service Training Meeting Guide (STMG),
“E(L)200B Electronic Power Unit Control”



Item	Part Number	Description	Use
1	099-0048	Extension Harness	In electronic control circuit
2	099-0049	Test Harness	To check governor control potentiometer
3	099-0050	Test Harness	To check the Proportional Reducing Valve (PRV) on E(L)200B Excavator

Wear Gauge Pins

Model: Most Cat® Models

Warranty: Six Months

- Used to accurately measure spline wear on hydraulic pump and motor shafts and to determine shaft reusability
- Placed in spline teeth 180° apart; distance across or between pins determined by using micrometer

Reference

Process should be done as illustrated in reusability guidelines
SEBF8133 and SEBF8136.

Part Number	Description
4C-5852	Wear Gauge Pin
4C-5858	Wear Gauge Pin
4C-6367	Wear Gauge Pin
4C-6368	Wear Gauge Pin

4C-8767 Coupling, XT5 Hose

SMCS Code: 5050-032, 5050-082, 0784-012, 0774-012, 5057-016,

Model: All Models

Warranty: Six Months

- Used with 1U-9551 and 1U-8761 Portable Hydraulic Testers for testing hydraulic oil flows and pressures
- With 4C-6481 and 4C-6482 Quick Disconnect Fittings, it creates a safer connection for higher working pressure of 6000 psi
- For XT5 hose 1 inch, 1 5/16 inch SAE O-ring straight thread
- Used with 5P-1010 Sleeve for XT5 hose 1 1/4 inch
- Working pressure: 6000 psi

Part Number	Description
4C-8767	Hose Coupling

Filter Carts

Auxiliary Filtration System Cart Selection

Recent trends requiring increased production and efficiency of construction and mining equipment have forced heavy equipment manufacturers to design hydraulic and powertrain systems with increasingly sophisticated components. These components require a high level of cleanliness, not only in the manufacture, but also in the rebuild practices and operating fluids.

Caterpillar® auxiliary filter systems are designed for dealers to effectively clean fluid to current machine ISO specifications. Each system incorporates frames, connections, pumps, filter housings and elements for specific systems and fluids. When incorporated with the Contamination Control guidelines and procedures, along with particle trend analysis, the dealer can develop an effective tool to drastically increase component life, eliminate early hour failures and add value to Customer Service Agreements. It is important to match the filtration system and procedure to the machine system and fluid. This will greatly increase the value and reduce the time needed to filter fluids to the appropriate ISO specification. The chart illustrates specific applications of the filter systems as well as general information, Tool Operating Manual and Contamination Control Guideline media numbers.

Many of the systems shown can be modified to perform multiple functions. Please contact Service Tool Division, Capital and Shop Products for more information.

Part Number	Description
245-1769	Oil Filter Cart
188-3242	Hydraulic Filter Cart
174-9158	Transfer/Filter Cart (Air Motor Driven)
231-6284	30 Gallon Filter Cart

245-1769 Oil Filter Cart



245-1769

245-1769	
Application	Final drive and rear axles with more than 380 L (100 gal) capacity
Air powered 340 lpm (90 gpm) Diaphragm pump	
Oil	50W+
Standard filtration	10-micron absolute element
Reference	SEBF8438 Contamination Control Guideline NEHS0847 Tool Operating Manual

188-3242 Hydraulic Filter Cart



188-3242

188-3242	
Application	Reservoirs with greater than 115 L (30 gal) and less than 380 L (100 gal) capacity
Air powered 227 lpm (60 gpm) Diaphragm pump	
Oil	10W - 30W
Standard filtration	25-, 10-, 5-, 2-micron or 5-micron H2O separator element available
Reference	SEBF8447-02 Contamination Control Guideline NEHS0778 Tool Operating Manual
Kit version of 188-3242	227-2479

174-9158 Transfer/Filter Cart

174-9158	
Application	Reservoirs with less than 115 L (30 gal) capacity
Air powered 64 lpm (17 gpm) Gear pump	
Oil	10W - 30W
Standard filtration	25-, 10-, 5-, 2-micron absolute or 5-micron H2O separator element available
Reference	SEBF8493-02 Contamination Control Guideline NEHS0848 Tool Operating Manual
204-7392	This cart is similar to 174-9158 Filter Cart, but has Cat® 844 hose with Flush Face Quick Disconnects.



174-9158

231-6284 30 Gallon Filter Cart

231-6284	
Application	Track-type tractor axles and final drives with less than 115 L (30 gal) capacity
Air powered 115 lpm (30 gpm) with 115 L (30 gal) reservoir Diaphragm pump	
Oil	10W - 60W
Standard filtration	25-, 10-, 5-, 2-micron absolute
Reference	SEBF8797 Contamination Control Guideline NEHS0899 Tool Operating Manual



231-6284

Vehicle Guidelines for Filtration Procedures

The following guidelines and procedures were developed to assist the dealer in implementing and maintaining a consistent contamination control program. These documents provide a method and process to effectively maintain specific machine systems, utilizing Cat® Auxiliary Filtration System Carts. Refer to Service Information System (SIS) for periodic updates.

Hydraulic System Tools

Vehicle Guidelines for Filtration Procedures (Continued)

Vehicles and Ranges	Hydraulic	Trans.	Axles	Other
Off Highway Trucks				
769-797	SEBF8446-01			
769-793B		SEBF8445		
769D-797 (Without Trans. Tank)		SEBF8460-01		
769-777			SEBF8454	
785-797			SEBF8438	
785-789 Cleaning Rear Axle Housings				SEBF8366
793 Cleaning Rear Axle Housings				SEBF8370
785-793 Cleaning Rear Housings (Video)				SEVN4142
793C 797 Spindles (Cleaning)				SEBF8490
793C 797 Spindles (Kidney Looping)				SEBF8483
785 789 Rear Axle Housing (Cleaning)				SEBF8366
793 Rear Axle Housing (Cleaning)				SEBF8370
769-797 OHT Steering				SEBF8724

Vehicle Guidelines for Filtration Procedures (cont.)

Vehicles and Ranges	Hydraulic	Trans.	Axles	Other
Wheel Loaders				
910-980 Wheel Loader	SEBF8493-01			
988-994 Wheel Loader	SEBF8494-01			
990-994 Wheel Loader Steering				SEBF8725
Wheel Loaders with E/D		SEBF8452-03		
Wheel Loaders W/O E/D		SEBF8458-04		
994D		SEBF8459		
988B-992G 994 Wheel Loader			SEBF8464	
IT14G-IT62G	SEBF8493-01			
Track Type Tractors Pipe Layers				
D3-D6 561H-583R	SEBF8455-01			
D7-D11 589	SEBF8456-02			
D6R-D11 561M-589		SEBF8465-03		
Excavators				
5080-5230	SEBF8703			
M312-M325B	SEBF8706-01			
311-385B L	SEBF8447-02			
All Models - Filtering Auxiliary Circuit				SEBF8757-01
Engines				
Filtering				SEBF8405
Particle Counting while on Dyno				SEBF8442-02
Motorgraders				
All	SEBF8453			
All except 24H		SEBF8461		
24H		SEBF8462		
Wheel Tractor Scrapers				
All	SEBF8457			
611-651E		SEBF8463		
623-651 G&E		SEBF8481		
627-657 G&E		SEBF8750		

Hydraulic System Tools

Vehicle Guidelines for Filtration Procedures (cont.)

Vehicles and Ranges	Hydraulic	Trans.	Axles	Other
Articulated Dump Trucks				
D25D-D400E and 725-730	SEBF8489-03			
D25D-D400E and 725-730		SEBF8486		
735-740	SEBF8798-01			
Generic Contamination Control Procedures				
Proper Oil Changing Procedures	SEBF8470			
Proper SOS Sample Collection	SEBF8482			
Procedure for using Filtration Carts				SEBF8279
Adding Filtration Capability to Solvent Parts Washers				SEBF8448
Procedure for Filtering F/D, Rear Axles, and Differentials			SEBF8797	SEBF8797
Challenger Ag Tractors				
Row Crop 35-55	SEBF8484	Hydraulic and Transmission Oil is combined in one sump		
Backhoe Loaders				
416-438	SEBF8333			
416D-442D	SEBF8780			
Forestry Products				
554-574B Forwarder	SEBF8788			
554-574B Forwarder		SEBF8788		
508-545 Skidders	SEBF8779			
533-543 Wheel Feller Buncher	SEBF8786			
550-580B Wheel Harvester	SEBF8787			
550-580B Wheel Harvester		SEBF8787		
Track Loaders				
931C-973C	SEBF8758			
Telescopic Handlers				
TH62-TH103	SEBF8785			
TH210-TH215	SEBF8802			
TH220B-TH460B	SEBF8803			

Vehicle Guidelines for Filtration Procedures (cont.)

Vehicles and Ranges	Hydraulic	Trans.	Axles	Other
Paving Product				
Cleaning Asphalt Pavers	SEBF8440			
CS323-583D	SEBF8781			
CP323E-334D	SEBF8781			
CB335D-634C	SEBF8781			
PF209B-PS360B	SEBF8792			
Underground Mining				
R1300-R2900 Load haulers	SEBF8791			
AE40-55 Trucks	SEBF8790			
69D-73D Trucks	SEBF8789			
Compact Construction Equipment				
301.5-305, 902-908, 216-277	SEBF8726			

4C-9475 Transfer Pump Filter Cart, 115 Volt AC, 60 Hz

169-7158 Transfer Pump Filter Cart, 220 Volt AC, 50 Hz

SMCS Code: 0680

Model: All Hydraulic Systems

Warranty: Six Months

European Union compliant, CE marked (169-7158)

- 169-7158 replaces discontinued 4C-9828
- Removes contamination from hydraulic system fluid without removing and replacing fluid from machine
- Environmentally safe method of off-loading used fluid during changes
- As part of normal hydraulic system maintenance, helps prolong seal life and life of other wearing parts and aids in smooth valve and control actuation

References

SEHS9242, Special Instruction

NEEG2735, Decal (CE)

Motor	115 VAC, 60-cycle (or 220 VAC, 50 Hz), single phase, Hp TEFC, 16 amps full load
Filtration capability	13-micron, absolute Spin On filter
Gear pump flow	26 lpm (7 gpm)
Inlet strainer	100 mesh Spin On
Cart wheels	20.2 cm (8 in) semi pneumatic
Magnetic plug	Removable for cleaning
Hose	19.05 mm (3/4 in) diameter, 182.88 cm (6 ft) long, end fitting 3/4 NPT

(Continued)

Hydraulic System Tools

4C-9475 Transfer Pump Filter Cart, 115 Volt AC, 60 Hz (Continued)

169-7158 Transfer Pump Filter Cart, 220 Volt AC, 50 Hz

SMCS Code: 0680

Model: All Hydraulic Systems

Warranty: Six Months



Vehicle System Tools

Part Number	Description
169-7158	Transfer Pump Filter Cart, 220 Volt AC, 50 Hz
4C-9475	Transfer Pump Filter Cart, 115 Volt AC, 60 Hz
4C-9479	Filter Element
4C-9478	Electric Motor (115 VAC, 60 Hz)
169-7160	Electric Motor (220 VAC, 50 Hz)
4C-9476	Gear Pump
9U-6987	Filter Head

273-3273 Portable Filtration Cart

Essential Tool

Model: All Models

Warranty: Six Months



European Union compliant, CE marked

- Used to filter bulk quantities of hydraulic oil during transfer or kidney loop operations
- Used with dealer-supplied hoses and quick disconnects
- Filters oil through a 149-micron wire mesh element to protect pump from debris in unfiltered oil
- A 10- and then a 5-micron spin-on filter removes contaminants to provide clean fill oils
- Adjustable flow control from 0 to 40.0 lpm (0 to 10.6 gpm)
- Compact design uses extendable handles for mobility in shop or field applications
- Spin-on filters provide quick and easy maintenance
- Built-in drip tray prevents ground contamination from spilled oil
- Dirty filter indicators are attached to both output filter housings
- Two S-O-S ports allow oil sampling before and after filtration
- Requires a dealer-installed plug on 6 m (20 ft) power cord
- Rolls easily on rubber tires

References

NEHS0962, Tool Operating Manual,

273-3273 Portable Filtration Cart

SEBF9086, Oil Sample Pre-treatment Procedure for Use with Automatic Particle Counters

(Continued)

273-3273 Portable Filtration Cart (Continued)

Essential Tool

Model: All Models

Warranty: Six Months

Input voltage	200 - 240 VAC Single-Phase
Frequency	50/60 Hz
Power cord	16-3 gauge, 600 V, 6 m (20 ft) long
Power cord plug	Dealer-supplied
Motor speed	0-3200 RPM
Pump flow	0 - 40 lpm (0 - 10.6 gpm)
Pressure bypass valve	414 kPa (60 psi)
Handle length	79 cm (31 in) retracted 129 cm (51 in) extended
Height	51 cm (20 in)
Width	61 cm (24 in)
Dry weight	66 kg (145 lb)
Wheels	25 cm (10 in) diameter hard rubber

Part Number	Description
273-3273	Portable Filtration Cart
Service/Repair Parts	
9U-6985	Filter Element, 149-Micron Suction
9U-5870	Element - Filter, 10-Micron
9U-6983	Filter Element, 5-Micron

Part Number	Description
Service/Repair Parts (Continued)	
190-8318	Suction Quick Disconnect
190-8319	Nipple
201-8057	Dust Cap (Suction)
201-8059	Dust Cap (Return)
7X-3387	S-O-S Sampling Valve
6V-0852	Dust Cap (Blank) (not pictured)

Transfer Carts and Kidney Loop Cart

SMCS Code: 5050-044, 5050-070, 5068

Model: All Models

Warranty: Six Months

- 169-7159 replaces discontinued 127-8782; 174-9158 replaces discontinued 129-0849
- Used to filter petroleum based fluids when transferring from a barrel or reservoir to machine
- Ensures contamination-free oil transferring
- Easily portable in shop or field
- Fast maintenance with easy-change spin-on filters — dirty filter indicators on both suction and discharge lines
- Allows easy “top off” of hydraulic or engine oil systems
- Can be used with glycols when proper filter is incorporated

127-8781 Transfer Cart, 110 Volt AC, 60 Hz

169-7159 Transfer Cart, 220 Volt AC, 50 Hz

- “Gas type” discharge shut off nozzle for convenience
- Barrel suction stand pipe (included)
- 9U-7448 Hoses also act as hose extensions (order extra for length needed)

174-9158 Transfer Cart (Air Motor Driven)

- Can be used for kidney looping
- “Gas type” discharge shut off nozzle for convenience
- Barrel suction stand pipe (included)
- 9U-7448 Hoses also act as hose extensions (order extra for length needed)



(Continued)

Transfer Carts and Kidney Loop Cart (Continued)

SMCS Code: 5050-044, 5050-070, 5068

Model: All Models

Warranty: Six Months

204-7392 Kidney Loop Cart (Air Motor Driven)

- Comes with two 25.4 mm (1 in) Cat® 844 hoses, one with a male, one with a female Quick Disconnect fitting

References

NEHS0634, Tool Operating Manual, Procedures for using Transfer/Filter Cart (127-8781, 169-7159, and 174-9158)

NEEG2735, (CE)

NEHS0848, Tool Operating Manual, 204-7392 Air Motor Driven Filtering Cart (for use on all Caterpillar products)

SEBF8405, Kidney Loop Filtration Process for Rebuilt Engines (uses 174-9158 and 204-7392)

SEBF8453, Bulletin, Procedure for Filtering Motor Grader (all models) Hydraulic Oil (uses 174-9158)

SEBF8455, Bulletin, Procedure for Filtering Track-Type Tractor (D3-D6) Hydraulic Oil (uses 174-9158)

	127-8781	169-7159	174-9158	204-7392
Voltage	110 VAC 60 Hz	220 VAC 50 Hz	—	—
Motor	1.5 Hp electric motor	1.5 Hp electric motor	—	—
Motor (air)	—	—	4 Hp @ 100 psi	4 Hp @ 100 psi
Pump (air)	—	—	56 lpm (15 gpm)	56 lpm (15 gpm)
Pump capacity (50 Hz)	—	53 lpm (14 gpm)	—	—
Pump capacity (60 Hz)	64 lpm (17 gpm)	—	—	—
Filtration (suction)	100 mesh screen	100 mesh screen	100 mesh screen	100 mesh screen
Filtration (discharge)	13 micron (absolute)	13 micron (absolute)	13 micron (absolute)	13 micron (absolute)
Hose (suction)	31.8 mm x 3 m (1.25 in x 10 ft) translucent hose	31.8 mm x 3 m (1.25 in x 10 ft) translucent hose	31.8 mm x 3 m (1.25 in x 10 ft) translucent hose	—
Hose (suction)	—	—	—	25 mm x 3 m (1.0 in x 10 ft) Cat® 844 with female Quick Disconnect
Hose (discharge)	25 mm x 3 m (1.0 in x 10 ft) black hose	25 mm x 3 m (1.0 in x 10 ft) black hose	25 mm x 3 m (1.0 in x 10 ft) black hose	—
Hose (discharge)	—	—	—	25 mm x 3 m (1.0 in x 10 ft) Cat® 844 with male Quick Disconnect
Barrel suction stand pipe	1.2 m (4.0 ft) long	1.2 m (4.0 ft) long	1.2 m (4.0 ft) long	—
Tires	203 mm (8 in) semi-pneumatic	203 mm (8 in) semi-pneumatic	203 mm (8 in) semi-pneumatic	203 mm (8 in) semi-pneumatic

Transfer Carts and Kidney Loop Cart (Cont.)

Part Number	Description
—	Barrel Suction Stand Pipe

Part Number	Description
127-8781	Transfer Cart, 110 Volt AC, 60 Hz
169-7159	Transfer Cart, 220 Volt AC, 50 Hz
174-9158	Transfer/Filter Cart (Air Motor Driven)
204-7392	Kidney Loop Cart (Air Motor Driven)
9U-7449	Discharge Nozzle (not shown)
9U-7448	Suction Hose, 6.1 m (20 ft)
9U-5870	Element - Filter, 10-Micron
9U-6985	Filter Element, 149-Micron Suction
9U-6983	Filter Element, 5-Micron
9U-6984	Engine Oil
188-7027	Element, 25-micron
198-3188	Element, 2-micron
9U-7450	Gear Pump
127-8783	Electric Motor, 110 VAC, 60 Hz, 1.5 Hp single-phase, TEFC
127-8784	Electric Motor, 220 VAC, 50 Hz, 1.5 Hp, single-phase, TEFC



FT2976 Adapter

Model: All Cat® Backhoe Loaders

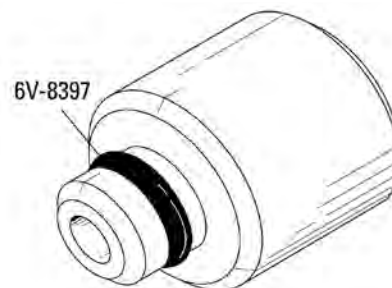
Warranty: None

- Used to create a vacuum, holding oil inside transmission, so appropriate adapters and quick-disconnect fittings can be installed in drain port
- Used with a 204-7392 Filter Cart and a 5P-0306 Vacuum Transducer
- Allows transmission oil to be filtered with a kidney loop oil filtering procedure
- 7T-3251 Vent (breather) must be removed to install adapter
- Uses a 6V-8397 O-ring Seal
- Material: brass, aluminum, or steel

Reference

SEBF8826, Procedure for Kidney Looping Backhoe Loader Transmission Oil

Part Number	Description
6V-8397	O-ring Seal



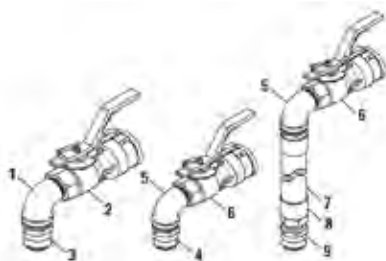
Hose Assembly Adapters

Essential Tool

SMCS Code: 5050

Model: 769, 771, 773, 775, 777, 785, 789, 793, and 797 Off-Highway Trucks

Warranty: Six Months



- Used to provide an ON/OFF valve for hoses on 245-1769 Filter Cart Group
- 90 degree elbow relieves stress on coupling and adapters and helps when clearance is a problem
- ON/OFF valve keeps oil contained inside hose(s) — environmentally safe
- Makes installation and removal quicker and cleaner

Item	Part Number	Description	Size	Use	Required
1	7B-7138	Street Elbow 90°	50.8 mm (2 in)	Used on inlet side of filter cart	1
2	190-8323	Quick Disconnect Coupler	63.5 mm (2 1/2 in)	--	--
3	190-8325	Quick Disconnect Nipple	50.8 mm (2 in)	--	--
4	9U-5974	Quick Disconnect Nipple	1 1/2 x 1 1/2 male NPT thread	--	--
5	5B-7666	Street Elbow 90°	38.1 mm (1 1/2 in)	Used on outlet side	2
6	190-8321	Quick Disconnect Coupler	50.8 mm (2 in)	--	--
7	8X-6295	Hose Assembly (NPTF)	--	--	--
8	3B-6492	Coupling	38.1 mm (1 1/2 in) with 4.5 m (15 ft) hose	Used on outlet side when additional hose length is required	2
9	199-2713	Nipple	38.1 mm (1 1/2 in)	--	--

Vehicle System Tools

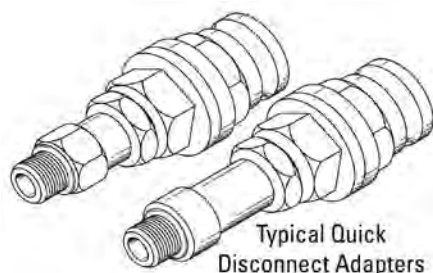
1 1/2 and 2 inch Quick Disconnect Adapters

Essential Tool

SMCS Code: 4050, 5050, 0680

Model: 769, 771, 773, 775, 777, 785, 789, 793, and 797 Off-Highway Trucks

Warranty: Six Months



- Used to connect filter carts to final drive housing and differential case or other applications

Reference

NEHS0779, Tool Operating Manual

(Continued)

1 1/2 and 2 inch Quick Disconnect Adapters (Continued)

Essential Tool

SMCS Code: 4050, 5050, 0680

Model: 769, 771, 773, 775, 777, 785, 789, 793, and 797 Off-Highway Trucks

Warranty: Six Months

Part Number	Size	Use
1 1/2 in Quick Disconnect Fittings		
190-9935	1 1/16-12 thd	--
190-9937	1 1/8-12 thd	769, 771, 773, 775, 777 final drive housing
190-9939	1 5/16-12 thd	--
190-9941	1 1/2-12 thd	--
190-9943	1 5/8-12 thd	785, 789, 793, and 797 final drive housing
2 in Quick Disconnect Fittings		
190-9936	1 1/16-12 thd	--
190-9938	1 1/8-12 thd	--
190-9940	1 5/16-12 thd	--
190-9942	1 1/2-12 thd	769, 771, 773, 775, 777, 785, 789, 793 dif-ferential case
190-9944	1 5/8-12 thd	797 differential case

246-1157 Filter Cart Group

Model: 769, 771, 773, 775, 777 Off-Highway Trucks

Warranty: Six Months

- Replaces discontinued 194-2897
- Used to flush and clean rear axle and final drive assemblies; also can be used in many filtering applications for oil contamination control
- Filters hydraulic fluids from 5W to 90W
- Standard 10-micron filter element with 2271 lpm (600 gpm) capacity — large capacity extends time between filter element changes
- Easily moved around in field conditions on three 30 cm (12.0 in) pneumatic tires
- Oil is pumped through filter cart using an air-powered, diaphragm pump
- Maximum output pressure of fluid being pumped is equal to air inlet air pressure
- Add-on differential pressure gauge (dirty filter indicator) to indicate filter element changes
- All hose assemblies are made from Cat® 844 wire-reinforced hose (will not collapse when filtering hot oil)
- Extra tall hose hook for ease of hose storage
- Built-in storage box to hold optional adapter fittings

Reference

NEHS0809, 194-2897 and 246-1157 Filter Cart Group



(Continued)

246-1157 Filter Cart Group (Continued)

Model: 769, 771, 773, 775, 777 Off-Highway Trucks

Warranty: Six Months

Operating pressure	138 - 827 kPa (20 - 120 psi)
Variable delivery	0 - 409 lpm (0 - 90 gpm)
Supply air consumption	0.47 L/s (1 cfm) per 4.55 lpm (1 gpm) of fluid pumped
Suction lift	Up to 5.5 m (18 ft)
Operating temperature	0° to 93° C (2° to 200° F)
Liters (gallons) per cycle	1.9 L (0.5 gal)
Standard filtration	10-micron absolute
Outlet hoses (2)	61 cm (20 ft) long with 38.1 mm (1.5 in) diameter ends
Inlet hose (1)	30 cm (10 ft) long with 50.8 mm (2.0 in) diameter end
Storage box	612.0 x 273.0 x 241.0 mm (24.0 x 11.0 x 9.5 in)
Noise level	82 dB @ 758 kPa (110 psi) air pressure
Overall dimensions	1295 x 915 x 1219 mm (51 x 36 x 45 in) without 609 mm (24 in) hook bar
Weight	163 kg (360 lb)
Filter working pressure	1034 kPa (150 psi)

Part Number	Description
185-1375	Filter Element, 25-micron absolute
188-7018	Diaphragm Repair Kit
188-7019	Pump
188-7020	Filter Element, 5-micron absolute
192-1560	Filter Element, 10-micron
195-3164	Air Muffler
196-9504	Air Valve Repair Kit
212-7125	Filter Element, 3-micron
246-1157	Filter Cart Group
6Y-8134	O-ring Filter Cover Seal (smaller diameter)
8J-8879	O-ring Cover Seal (larger diameter)
Not shown	
218-8445	Differential Pressure Gauge
Dust Caps/Plugs Used with discontinued 194-2897 Filter Cart Group	
201-8128	63.5 mm (2 1/2 in) diameter aluminum male plug used with 190-8321 Quick Disconnect Coupler or suction line
201-8129	50.8 mm (2 in) diameter aluminum male plug used with 190-8321 Quick Disconnect Coupler or return line
201-8552	63.5 mm (2 1/2 in) diameter aluminum female cap used with the following adapters: 190-9936, 190-9938, 190-9940, 190-9942, or 190-9944

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246-1157 Filter Cart Group (Continued)

Model: 769, 771, 773, 775, 777 Off-Highway Trucks

Warranty: Six Months

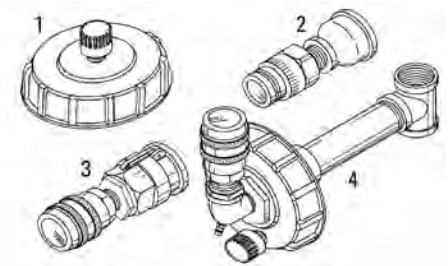
Part Number	Description
Dust Caps/Plugs Used with discontinued 194-2897 Filter Cart Group (Continued)	
201-8553	50.8 mm (2 in) diameter aluminum female cap used with the following adapters: 190-9935, 190-9937, 190-9939, 190-9941, or 190-9943
8C-3451	Dust Cap (not pictured)

FT3016 Contamination Control Caps and Fittings for Plastic Oil Totes

SMCS Code: 4050, 5050

Warranty: None

- Used to filter oil inside plastic tote [1050 L (277 gal) ± 100 L (26 gal)] using a kidney-loop system
- Used with 188-3242 Hydraulic Filter Cart
- Provides a quick and easy way to remove and then return filtered oil into a plastic tote



Part Number ¹	Description	Quantity
Storage Cap (Item 1)		
255-4302	Screw-On Cap	1
272-5131	Dessicant Breather	1
Threaded Suction Connection (Item 2)²		
141-1454	Coupling (2 in NPT to 1 in NPT)	1
3B-7280	Close Nipple (1 in NPT)	1
190-8319	Nipple	1
Cam-Lock Suction Connection (Item 3)³		
263-9602	Cam-Lock Quick Disconnect with 2 in NPT	1
141-2502	Reducer Bushing (2 in to 1 in NPT)	1
3B-7280	Close Nipple (1 in NPT)	1
190-8319	Nipple	1
Return Connection (Item 4)		
255-4302	Screw-On Cap	1
183-3873	Breather Assembly	1
255-4305	Bulkhead Fitting	1
5B-7666	Street Elbow 90°	1
7X-3387	S-O-S Sampling Valve	1
3B-7280	Close Nipple (1 in NPT)	1
8B-5774	Reducer Bushing (1 1/2 in x 1 in NPT)	1
190-8316	Quick Disconnect Coupling with 1 in NPT	1
1H-2815	Pipe Nipple 1 1/2 in NPT x 152 mm (6 in)	1
1L-2782	Pipe Tee (1 1/2 in NPT)	1

¹ All part numbers in the table have a six month warranty

² For oil totes with 2 in NPT threaded lower connection

(Continued)

FT3016 Contamination Control Caps and Fittings for Plastic Oil Totes (Continued)

SMCS Code: 4050, 5050

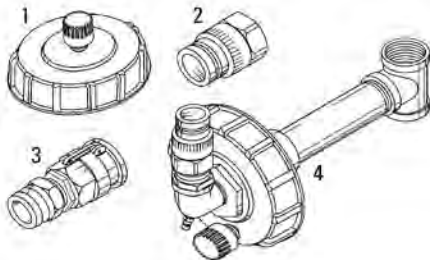
Warranty: None

³For oil totes with quick disconnect cam-lock lower connection

FT3017 Contamination Control Caps and Fittings for Plastic Oil Totes

SMCS Code: 4050, 5050

Warranty: None



- Used to filter oil inside plastic tote [1050 L (277 gal) ± 100 L (26 gal)] using a kidney-loop system
- Used with discontinued 194-2897 or 246-1157 Hydraulic Filter Cart
- Provides a quick and easy way to remove and then return filtered oil into a plastic tote

All part numbers in the table have a six month warranty

Part Number ¹	Description	Quantity
Storage Cap (Item 1)		
255-4302	Screw-On Cap	1
272-5131	Dessicant Breather	1
Quick Disconnect Suction Connection (Item 2)		
190-8322	Quick Disconnect Nipple with 2 in NPT	1
Cam-Lock Suction Connection (Item 3)		
263-9602	Cam-Lock Quick Disconnect with 2 in NPT	1
3B-7296	Close Nipple (2 in NPT)	1
3N-9409	Reducer Bushing (2 1/2 in to 2 in NPT)	1
263-9956	Cam-Lock Fitting with 2 1/2 in NPT	1
Return Connection (Item 4)		
255-4302	Screw-On Cap	1
183-3873	Breather Assembly	1
255-4305	Bulkhead Fitting	1
5B-7666	Street Elbow 90°	1
7X-3387	S-O-S Sampling Valve	1
3L-8993	Close Nipple (1 1/2 in NPT)	1
190-8320	Quick Disconnect Nipple with 1 1/2 in NPT	1
1H-2815	Pipe Nipple 1 1/2 in NPT x 152 mm (6 in)	1
1L-2782	Pipe Tee (1 1/2 in NPT)	1

¹All part numbers in the table have a six month warranty

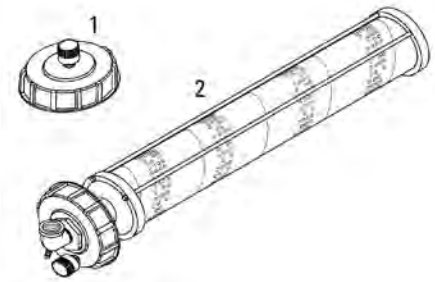
FT3018 Contamination Control Filter for Plastic Oil Totes

SMCS Code: 4050, 5050

Warranty: None

- Used to filter oil inside plastic tote [1050 L (277 gal) ± 100 L (26 gal)] using a kidney-loop system
- Used with dealer supplied hoses, fittings, and hydraulic pump
- Provides a quick and easy way to filter oil as it is pumped into plastic tote

All part numbers in the table have a six month warranty



Other Parts for Return Filter (Item 2)	
Description	Quantity
Filter Housing	
Threaded Rod 1/4-20 x 760 mm (30 in)	3
Aluminum Base Plate 19 x 133 mm (0.750 x 5.25 in)	1
Aluminum Top Plate 19 x 133 mm (0.750 x 5.25 in)	1

Part Number ¹	Description	Quantity
Storage Cap (Item 1)		
255-4302	Screw-On Cap	1
183-3873	Breather Assembly	1
Return Filter (Item 2)		
263-9523	Filter Element (10-micron) ²	1
255-4302	Screw-On Cap	1
183-3873	Breather Assembly	1
255-4305	Bulkhead Fitting	1
5B-7666	Street Elbow 90°	1
7X-3387	S-O-S Sampling Valve	1
3L-8993	Close Nipple (1 1/2 in NPT)	1
2D-6235	Locknut (1/4-20)	--
4B-4276	Flat Washer	6

¹All part numbers in the table have a six month warranty

²Reorder replacement filter elements as needed

188-3242 Hydraulic Filter Cart Group

227-2479 Hydraulic Filter Cart in Kit Form

Model: All Cat® Models

Warranty: Six Months



- Used to flush and clean hydraulic tanks or hydraulic systems; can also be used in any filtering application for oil contamination control
- Allows oil filtering directly from hydraulic tank — eliminates placing oil in separate filtering cart/container
- Filters hydraulic fluids from 5W to 90W
- Easily moved around in field conditions on three 30 cm (12.0 in) pneumatic tires
- Oil is pumped through the filter cart using an air-powered, diaphragm pump
- Maximum output pressure of fluid being pumped is equal to air inlet air pressure
- Differential pressure gauge (dirty filter indicator) indicates filter element change time
- All hose assemblies are made from Cat® 844 wire-reinforced hose (will not collapse when filtering hot oil)
- Extra tall hose hook for ease of hose storage
- Built-in storage box to hold optional adapter fittings

227-2479 (Not European Union Compliant)

- Includes every part needed to build 188-3242 Hydraulic Filter Cart
- Frame provided as item-numbered, unpainted steel pieces to be assembled and welded together
- Hoses not assembled
- Prints provided for welding and assembly

Reference

NEHS0778, 188-3242 Hydraulic Filter Cart Group

Operating pressure	138 - 827 kPa (20 - 120 psi)
Variable delivery	0 - 409 lpm (0 - 90 gpm)
Supply air consumption	0.47 L/s (1 cfm) per 4.55 lpm (1 gpm) of fluid pumped
Suction lift	Up to 5.5 m (18 ft)
Operating temperature	0° to 93° C (2° to 200° F)
Liters (gallons) per cycle	1.9 L (0.5 gal)
Four (4) gang parallel filter head	Permits 4 times filter area to capture particulates and extends filter life
Standard filtration	10-microns
Outlet hose (one)	30 cm (10 ft) long with a female quick-disconnect end
Inlet hose (one)	30 cm (10 ft) long with a male quick-disconnect end
Storage box	736 x 406 x 305 mm (29 x 16 x 12 in)
Noise level	82 dB @ 758 kPa (110 psi) air pressure
Overall dimensions	1295 x 889 x 1143 mm (51 x 35 x 45 in) with hook bar 1956 mm (77 in)
Weight	163 kg (360 lb)

Part Number	Description
188-3242	Hydraulic Filter Cart Group
227-2479	Hydraulic Filter Cart in Kit Form
188-7019	Pump
9U-6985	Pre-filter Element, 100-Mesh
9U-5870	Filter Element, 10-Micron

(Continued)

188-3242 Hydraulic Filter Cart Group (Continued)

227-2479 Hydraulic Filter Cart in Kit Form

Model: All Cat® Models

Warranty: Six Months

Part Number	Description
195-3164	Air Muffler
9U-6986	Differential Gauge
8T-0846	Working Pressure Gauge
9U-6983	Filter Element, 5-Micron, optional
9U-6984	Filter Element, 25-Micron, optional
188-7027	Water Removal Element, optional
3H-0976	O-ring (Element to Head)
Dust Caps/Plugs Used with 188-3242 Hydraulic Filter Cart Group	
201-8057	66.8 mm diameter plastic/rubber plug used on 190-8316 and 190-8318 Quick Disconnect Coupler (female end)
201-8059	44 mm diameter plastic/rubber cap used on 190-8317 and 190-8319 Quick Disconnect Coupler (male end)
8C-3451	1/2 in diameter rubber cap for S-O-S port

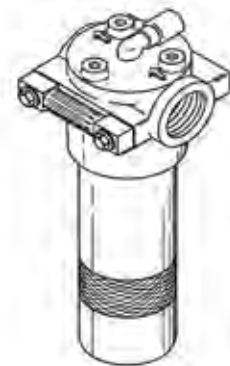
192-6432 Filter

Model: All Cat® Service Vehicles

Warranty: Six Months

- Used to filter oil in high-volume applications
- Provides extended time between element changes
- Uses synthetic fiber filter elements
- Filter head is made of cast aluminum and bowl is made of steel for strength and durability
- Visual dirty element indicator shows when to change element
- Elements contain no metal
- Elements can be incinerated, crushed, or shredded

Working pressure	9,650 kPa (1,400 psi)
Burst pressure	27,573 kPa (4,000 psi)
Nominal flow	64 lpm (17 gpm)
In/out ports	SAE #12
Dirty element indicator	Pop-up style
Material	Aluminum head, steel housing with 3-micron cellulose media
Overall dimension	239 x 89 mm (9.4 x 3.5 in)
Weight	1.4 kg (3.0 lb)
Body-style	Canister



(Continued)

192-6432 Filter (Continued)

Model: All Cat® Service Vehicles

Warranty: Six Months

Nominal Micron Rating	Media Material	Dirt Holding Capacity	Height / Diameter	Part No.	Description
--	--	--	--	192-6432	Filter Group
Cartridge Elements for 192-6432 Filter Group					
3	Cellulose	10.5 g (0.37 oz)	6 in (150 mm) / 2 in (50 mm)	192-6433	--
5	Cellulose	12 g (0.42 oz)	6 in (150 mm) / 2 in (50 mm)	226-5492	--
10	Cellulose	14 g (0.49 oz)	6 in (150 mm) / 2 in (50 mm)	226-5493	--

274-6783 Barrel Adapter

Essential Tool

SMCS Code: 0784

Model: All Models

Warranty: Six Months

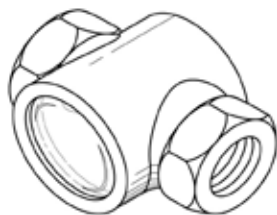


- Used to attach filtering units to 208 L (55 gal) barrels
- Used with 204-7392 Kidney Loop Filter Cart or equivalent
- All steel design is easy to clean
- Unit does not come with quick disconnect fittings
- Inserts into 2 inch NPT port of 208 L (55 gal) barrel
- Top port is return side (1 inch NPT male), and side port is suction side (1 inch NPT female)

Part Number	Description
274-6783	Barrel Adapter

Flow Indicator with Tempered Sight Glass

Warranty: Six Months



- Used to provide a means of viewing flow
- Made of brass with tempered sight glass on opposing sides
- Installs down stream of pump
- Stainless steel flapper shows the movement of fluid and prevents back flow to pump
- Does not restrict flow away from pump
- Viton seals provide long life
- Female NPT ports at each end

(Continued)

Flow Indicator with Tempered Sight Glass (Continued)

Warranty: Six Months

Part No.	Inlet and Outlet Thread Size	Sight Glass Diameter	Overall Size L x H x W	Maximum Pressure	Operating Temp.	Maximum Temp.
257-8444	2 in NPT	69.0 mm (2.72 in)	164.0 x 79.0 x 83.0 mm (6.44 x 3.125 x 3.25 in)	1034 kPa (150 psi)	-17° to 121° C (1° to 250° F)	204° C (400° F)
257-8843	1 1/2 in NPT	69.0 mm (2.72 in)	141.0 x 79.0 x 70.0 mm (5.6 x 3.125 x 2.75 in)	1034 kPa (150 psi)	-17° to 121° C (1° to 250° F)	204° C (400° F)

Filter Head with Non-Collapsible Filter Elements

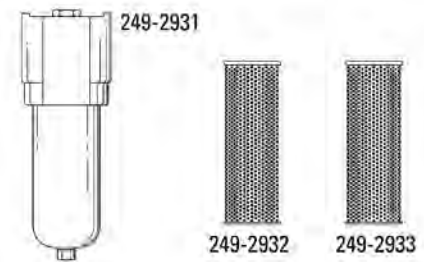
Model: All Cat® Service Vehicles

Warranty: Six Months

- Used to provide no-bypass filtering of hydraulic oils
- Used in service bays with drop-down oil lines or any other application requiring filtered, petroleum-based oil
- Non-collapsible filter elements work well with higher viscous hydraulic oils
- Filter head is made of cast aluminum with steel bowl for strength and durability

Filter Head	
Body-style	Canister
Mounting holes	5/16-18
Inlet and outlet ports	3/4 NPT
Operating temperature range	-29° to 107° C (-20° to 225° F)
Material	Aluminum head with steel housing
Overall size	90.0 mm (3.5 in) square x 238.0 mm (9.4 in) long
Filter Elements	
Filter media	Synthetic
Overall size	50 mm (2 in) diameter x 150 mm (6 in) long
Collapse rating	206.8 bar (3000 psi)

Part Number	Description
249-2931	Filter Housing
249-2932	Filter Element, 10-Micron
249-2933	Filter Element, 24-Micron

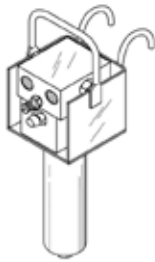


225-3114 Kidney Loop Group

SMCS Code: 5050, 5095

Model: 301.5 (3YW), 301.6 (BDH), 301.8 (BFA), 302.5 (4AZ), 303 (DMA), 303.5 (AFW), 304.5 (ANR), 305 (DSA) Mini Hydraulic Excavators; All Skid Steer Loaders, and All Small Wheel Loaders

Warranty: Six Months



- Used to kidney loop filter a hydraulic system or filter hydraulic oil returning from detachable work tools
- Hoses attach to a rectifier head which allows input flow from either 26.98 mm (1 1/16 in) O-ring ports
- Handle for easier carrying; hooks allow filter group to be hung on machine near work area
- Comes with 225-3116 Filter Element (3 micron) — optional 225-3115 Filter Element (6-micron) can be purchased separately
- Dirty filter indicator shows when to change element
- Optional components enable filtering for specific machines (refer to charts)

Weight of filter unit	15.88 kg (35 lb)
Maximum working pressure rating	31,716 kPa (4,600 psi)
Maximum flow rating	151.4 lpm (40 gpm)
Collapse pressure rating	20,995 kPa (3,045 psi)
Dirty filter rating	517 kPa (75 psi)

Part Number	Description	Quantity
301.8 (BFA) and 302.5 (4AZ) Mini Hydraulic Excavator		
152-8182	Female Coupler	1
225-3114	Filter Housing	1
165-0018	XT-3 ES Bulk Hose 15.9 mm (-10) ID	305 cm (10 ft)
221-0575	Permanent Hose Coupling	4
030-8190	Adapter (-12 to -10)	2
3D-2824	Seal - O-ring - STOR (SAE 1 1/16 - 12)	2
6V-4362	Adapter (-10 to -6)	2
3J-1907	O-ring Seal for 5P-9617 Adapter	2
152-8181	Male Coupler	1
301.5 (3YW), 301.6 (BDH), and 303.5 (AFW) Mini Hydraulic Excavator		
2P-7636	Adapter (-10 to -8)	2
152-2996	Male Coupler	1
152-2997	Female Coupler	1
225-3114	Filter Housing	1
165-0018	XT-3 ES Bulk Hose 15.9 mm (-10) ID	305 cm (10 ft)
221-0575	Permanent Hose Coupling	4
030-8190	Adapter (-12 to -10)	2
3D-2824	Seal - O-ring - STOR (SAE 1 1/16 - 12)	2
3K-0360	Seal - O-ring - STOR (SAE 3/4 - 16)	2

(Continued)

225-3114 Kidney Loop Group (Continued)

SMCS Code: 5050, 5095

Model: 301.5 (3YW), 301.6 (BDH), 301.8 (BFA), 302.5 (4AZ), 303 (DMA), 303.5 (AFW), 304.5 (ANR), 305 (DSA) Mini Hydraulic Excavators; All Skid Steer Loaders, and All Small Wheel Loaders

Warranty: Six Months

Part Number	Description	Quantity
303 (DMA), 304.5 (ANR), 305 (DSA, 3YS), Mini Hydraulic Excavator; All Skid Steer Loaders, and All Small Wheel Loaders		
153-2994	Female Coupler	1
153-2995	Male Coupler	1
225-3114	Filter Housing	1
165-0018	XT-3 ES Bulk Hose 15.9 mm (-10) ID	305 cm (10 ft)
221-0575	Permanent Hose Coupling	4
030-8190	Adapter (-12 to -10)	2
3D-2824	Seal - O-ring - STOR (SAE 1 1/16 - 12)	2
9M-4584	Adapter (-10 to -10)	2
2M-9780	Seal - O-ring - STOR (SAE 7/8 - 14)	2

Hydraulic Tank Adapters

Essential Tool

Model: All 311 through 375 Hydraulic Excavators

Warranty: Six Months

- Used to connect oil filter cart to hydraulic tank on excavator
- Used with 188-3242 Oil Filter Cart
- Provides a quick-disconnect feature to quickly hook up filter cart
- Suction and return stand pipes are easily adjusted depending on depth of hydraulic tank
- For more efficient operation, permanently install 198-1053 Cover Assembly on each 345 and 365 Excavator

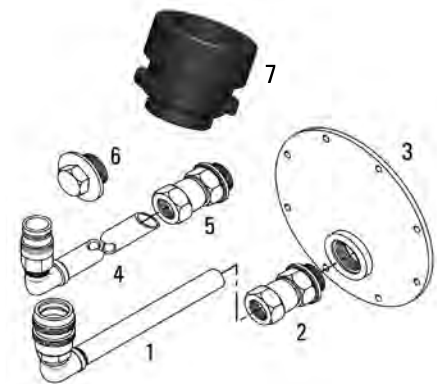
Reference

NEHS0778, Tool Operating Manual, 188-3242 Filter Cart Group

(Used on Hydraulic Tanks or Hydraulic Systems)

SEBF8446, Procedure for Filtering 300 Series Excavator Hydraulic Oil

SEBF8447, Procedure for Filtering Excavator (311-375) Hydraulic Oil

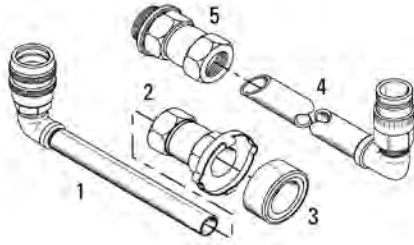


Item	Part Number	Description
Parts for 345 and 365 Excavators		
1	198-8796	Return Line Group
2 and 5 ¹	198-1052	Adapter Assembly (suction)
3	198-1053	Cover Assembly (return)
4	198-8795	Suction Line Group
6	4I-0722	Plug
7	381-8839	Adapter for E-Series tanks (use in place of item 3)

¹ Item 2 is Adapter Assembly (return), Item 5 is Adapter Assembly (suction)

Hydraulic System Tools

Parts for 311 through 375 Excavators (excluding 345 and 365)



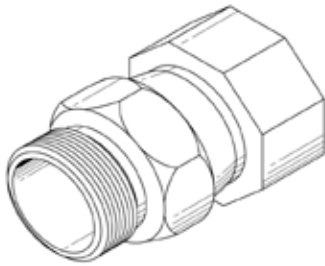
Parts for 311 through 375 Excavators (excluding 345 and 365)		
Item	Part Number	Description
1	198-8796	Return Line Group
2	198-1051	Adapter Assembly (return)
3	199-1003	Seal Assembly (return)
4	198-8795	Suction Line Group
5	198-1052	Adapter Assembly (suction)

228-6507 Adapter Assembly

SMCS Code: 3217, 5050, 5056, 5068, 5095

Model: Forwarders

Warranty: Six Months



- Used to connect machine to filter cart for kidney loop cleaning of hydraulic system
- Used with 5P-7701 or 7M-8485 O-ring
- Provides easy, clean connection to hydraulic tank (helps to meet Contamination Control Initiative)
- Made of durable steel with rubber locking mechanism (allows tube to be locked in desired location)
- See reference manual for additional parts required for procedure

Reference

SEBF8788, Procedure for Kidney Looping Forwarder Hydraulic Oil

Tank connecting thread	SAE 1 5/16-12
Tube size	3/4 in ID pipe
Overall length	63.4 mm (2.50in)

Part Number	Description
228-6507	Adapter Assembly

Vehicle System Tools

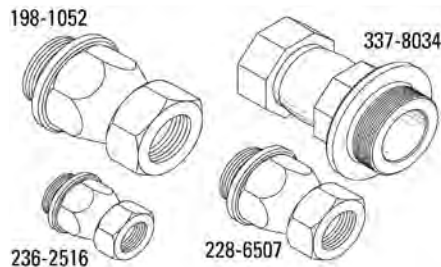
Hydraulic Tank Adapters for 554 and 574B Forwarders

Essential Tool

SMCS Code: 5050, 8095

Model: 554 and 574B Forwarders

Warranty: Six Months



- Used to connect oil filter cart or kidney loop cart to hydraulic tank
- Used with 204-7392 Kidney Loop Cart (Air Motor Driven), CE
- Provides a quick-disconnect feature to quickly hook up filter cart
- Suction and return stand pipes are easily adjusted depending on depth of hydraulic tank
- Another adapter is listed in the table which works on any hydraulic tank with correct thread specifications

References

NEHS0848, Tool Operating Manual, 204-7392 (Air Motor Driven)

Filter Cart (Use on All Caterpillar Products)

SEBF8788, Contamination Control Guideline, Procedure for Kidney Looping Forwarder Power Train and Hydraulic Oil

(Continued)

Hydraulic Tank Adapters for 554 and 574B Forwarders (Continued)

Essential Tool

SMCS Code: 5050, 8095

Model: 554 and 574B Forwarders

Warranty: Six Months

Part Number	Description	Model	ID of Sch 40 Black Pipe	Thread Size	Replaceable O-ring
236-2516	Adapter Assembly	574B	1/2 in	1 1/16-12	3D-2824
228-6507	Adapter Assembly	554	3/4 in	1 5/16-12	7M-8485
198-1052	Adapter Assembly (suction)	--	1 in	M42 x 2	095-1608
337-8034	Adapter Assembly	--	1 in	M52 x 2	095-1610

Adapters and Extensions

Recommended Tool

SMCS Code: 5068-010

Model: All Models with hydraulic tanks having 2 or 4 inch filler caps

Warranty: Six Months

- Used to filter oil directly from hydraulic tank (eliminates placing oil in separate filtering cart/container)
- In tight places the extensions will extend the adapters for easy access
- Used with 188-3242 Filter Cart Group
- Easy-to-use; simply remove filler cap and screen, and then screw adapter onto neck of filler tube
- 2 adapters (1 for 50.8 mm [2 in] and 1 for 101.6 mm [4 in] hydraulic tank filler necks)
- Designed with quick disconnect fittings for quick hookup of hoses from filter cart (designed to prevent incorrect hookup)
- Oil is removed and replaced through adapter into tanks filler hole
- Uses an S-O-S fitting to release pressure buildup prior to removing adapter assembly (in some cases as oil heats up inside hydraulic tank, pressure can build up, resulting in possible hot oil spray, if pressure is not released before adapter is removed)
- Made from lightweight aluminum for easier handling and steel fittings for added durability
- Requires dealer supplied length of 25.4 mm (1 in) ID suction hose (hose length should allow end of hose to be within 15.24 cm [6 in] from bottom of tank) and S-O-S Sampling Adapter
- Overall size (W x L x H): 12.7 x 15.2 x 38.1 cm (5 x 6 x 15 in)



Vehicle System Tools

Reference

NEHS0778, Using the 188-3242 Filter Cart Group

Part Number	Description	Weight
193-5900	Adapter	5 kg (11 lb)
193-5903	Adapter	4 kg (9 lb)
197-4626	Extension	1.58 kg (3.5 lb)
197-4627	Extension	0.68 kg (1.5 lb)

Vacuum Cart Groups

SMCS Code: 7500-574

Model: All Models

Warranty: Manufacturer's



European Union compliant, CE marked

- Used to vacuum oil from reservoir of small equipment, such as skidsteer loaders
- Empties oil pan, through drain hole, in a matter of seconds over conventional (gravity flow) method
- Excellent for use on CSA's or maintenance contracts to evacuate oil reservoirs quickly and efficiently
- Huge time savings for dealerships (some small machines can take as long as twenty minutes to completely drain oil using conventional methods)
- Also provides an efficient means of cleaning up wastes such as contaminated water, oil, antifreeze, fuel, or other fluids
- Easy to operate: portable unit rolls easily on rubber wheels and uses pressurized air for vacuum power
- Lightweight, compact size makes it easy to maneuver and store
- Operates on shop or portable air systems
- Sturdy, polished aluminum construction with durable galvanized fittings and brass valves
- Two models provide coverage for different operational needs such as shop or service truck use
- Does not filter fluids to remove contaminants

Warranty Information

Spillpro

1075 E. Hwy. 40

Vernal, UT 84078

Phone: (702) 573-5119

Fax: (435) 789-7066

Email: info@thespillpro.com

	299-5610 Vacuum Cart Group	299-5612 Vacuum Cart Group
Capacity	170.3 L (45 gal)	49.2 L (13 gal)
Height	147.3 cm (58 in)	119.4 cm (47 in)
Weight	27.2 kg (60 lb) empty	15.9 kg (35 lb) empty
Required Air Supply	82.7 kPa (90 psi) at 849.5 lpm (30 cfm)	82.7 kPa (90 psi) at 849.5 lpm (30 cfm)
Suction Produced	40.6 kPa (12 in Hg)	40.6 kPa (12 in Hg)
Suction Hose	3.2 cm (1.25 in) diameter, 213.4 cm (7.0 ft) long	3.2 cm (1.25 in) diameter, 213.4 cm (7.0 ft) long
Suction Wand	106.7 cm (42 in) long	106.7 cm (42 in) long
Disposal Hose	3.2 cm (1.25 in) diameter, 152.4 cm (5.0 ft) long	3.2 cm (1.25 in) diameter, 152.4 cm (5.0 ft) long
Decal	NEEG2539 - Cat® Logo	NEEG2539 - Cat® Logo
Decal	NEEG2735 - CE Compliant	NEEG2735 - CE Compliant

Part Number	Description
299-5610	Vacuum Cart Group
299-5612	Vacuum Cart Group

173-8839 Fluid Recovery Unit

SMCS Code: 5050-044, 5050-022, 5056-022

Model: All Models

Warranty: Six Months

European Union compliant, CE marked

- Designed to reduce time and trouble associated with the handling and filtration of contaminated petroleum-based fluids and water glycol
 - Sized to handle most hydraulic, transmission, crankcase or cooling system filtering/handling jobs on construction equipment
 - Efficient — everything is there! No extra pans, drop cords, hoses, buckets or barrels are needed; short term fluid storage is no longer a messy problem
 - Portable — operates on shop or portable air systems; easily moved by 1 person when full; fold-away tow bar is standard
 - Easily operated — 3 quick operating ball valves change operation of unit from vacuum to discharge to recycling — easily changed spin-on filters are used throughout
 - Economical — eliminates time consuming handling and disposal of seemingly contaminated fluids; eliminates the purchase of new fluids in many cases; decreases disposal and permit expenses
 - Safe operation — tank safety relief valve and wheel locking device are standard
 - Compact — storage and job accessibility is no problem due to the compact design of the unit
 - Environmentally safe — although it will not turn “bad” fluids into “new” fluid, it will convert contaminated fluids into clean, ready-to-use fluids; this eliminates hazardous waste and landfill problems
 - Air supply — requires 65 to 80 psi shop compressed air
 - Pump unit — vacuum 60.6 to 68.1 lpm (16 to 18 gpm); discharge 60.3 lpm (16 gpm)
 - Easy to clean — large 20.32 x 25.4 cm (8 x 10 in) cleanout door allows cleaning of unit
 - Tank unit — 567.8 L (150 gal) holding tank is mounted on rubber tired wheels and caster; completely portable with a fold away towing bar
 - Hoses — 31.75 mm x 6.10 m (1 1/4 in x 20 ft) clear industrial suction hose is light-weight and flexible; equipped with a quick 25.4 mm x 3.66 m (1 in x 12 ft) black discharge hose with quick coupling and fluid shutoff fill nozzle (standard)
 - Drain pan — lightweight aluminum, 469.9 x 520.7 x 76.2 mm (18 1/2 x 20 1/2 x 3 in) drain pan; equipped with quick coupling connection; steel ball type rollers permit rolling on floor; low profile gets where other pans cannot
 - Filtration — serviceman has the option of filtering fluids three separate times (three filters: suction, recycle and discharge; all have visual “dirty filter” indicators)
1. When fluid is initially being vacuumed from the sump or pan to the unit; the fluid passes into the tank through dual filters at a rate of 60.6 to 68.1 lpm (16 to 18 gpm).
 2. While the fluid is in the holding tank it can be continually circulated through the dual recycle filters until the acceptable contamination level is attained.
 3. When fluid is being pumped back into the vehicle, it goes through yet another set of dual discharge filters at a rate of 60.6 lpm (16 gpm)

Reference

NEHS0648, Tool Operating Manual



(Continued)

173-8839 Fluid Recovery Unit (Continued)

SMCS Code: 5050-044, 5050-022, 5056-022

Model: All Models

Warranty: Six Months

Replacement Filters	
Part Number	Description
173-8839	Fluid Recovery Unit
Standard Replacement Filters ¹	
9U-6985	Suction Filter Element, 100-mesh, stainless steel media, spin-on
9U-5870	Recirculating and Discharge Filter Element, 13-micron absolute, synthetic media, spin-on
Optional Replacement Filters	
9U-6983	Replacement Filter, 5-micron absolute
9U-6984	Replacement Filter, 22-micron absolute

¹ All spin-on filters listed have synthetic filtering media for compatibility with petroleum-based and water-based fluids.

231-6284 Filter Cart Group

Model: All Cat® products

Warranty: Six Months



- Used to flush and clean final drive, rear axle, differential, small hydraulic tanks, and/or hydraulic systems with less than 110 L (30 gal) capacity; can also be used in any filtering application for oil contamination control
- Allows oil filtering directly from hydraulic tank — eliminates placing oil in separate filtering cart/container
- Filters hydraulic fluids from 5W to 90W
- Easily moved around in field conditions on two 30 cm (12 in) pneumatic tires
- Oil is pumped through the filter cart using an air-powered, diaphragm pump
- Maximum output pressure of fluid being pumped is equal to air inlet air pressure
- A dirty filter indicator indicates when to change filter elements
- Protective rails help prevent damage during transportation
- A 161-7059 Diaphragm Repair Kit and a 196-9504 Air Valve Repair Kit are sold separately

References

SEBF8797, Procedure for Filtering Final Drives, Rear Axles, and Differentials on Caterpillar Machines

NEHS0899, Tool Operating Manual, Using the 231-6284 30 Gallon Filter Cart

Capacity	114 L (30 gal)
Maximum free flow	159 lpm (42 gpm)
Maximum size of pumpable solids	3.0 mm (0.12 in)
Air inlet	12.7 mm (0.5 in)
Recommended operating pressure	414 kPa (60 psi)
Maximum air pressure	827 kPa (120 psi)
Minimum air pressure	138 kPa (20 psi)
Overall size (H x D x W)	953.0 x 762.0 x 673.0 mm (37.5 x 30.0 x 26.5 in)
Weight	82.6 kg (182 lb)

Part Number	Description
231-6284	30 Gallon Filter Cart

292-8713 Diesel Fuel Flushing Cart

Model: All Cat® products

Warranty: Six Months

- Used to flush and clean diesel fuel systems; with an additional quick disconnect added to the cart it can be used to filter fuel tanks
- Easily moved around in field conditions on two 30 cm (12.0 in) pneumatic tires
- Oil is pumped through the filter cart using an air-powered, diaphragm pump
- Maximum output pressure of fluid being pumped is equal to air inlet air pressure
- A dirty filter indicator indicates when to change filter elements
- Protective rails help prevent damage during transportation
- A 161-7059 Diaphragm Repair Kit and a 196-9504 Air Valve Repair Kit are sold separately



Reference

NEHS0969, Tool Operating Manual

Capacity	114 L (30 gal)
Maximum free flow	159 lpm (42 gpm)
Maximum size of pumpable solids	3.0 mm (0.12 in)
Air inlet	12.7 mm (0.50 in)
Recommended operating pressure	137 - 276 kPa (20 - 40 psi)
Maximum air pressure	310 kPa (45 psi)
Minimum air pressure	138 kPa (20 psi)
Overall size (H x D x W)	953.0 x 762.0 x 673.0 mm (37.5 x 30.0 x 26.5 in)
Weight	89.4 kg (197 lb)

Part Number	Description
292-8713	Diesel Fuel Flushing Cart

295-5490 Filter Cart Group

Essential Tool

Model: Diesel Fuel Engines

Warranty: Six Months

- Used to clean diesel fuel systems by removing contaminants in fuel
- Lightweight, portable design for easy transport to work site
- Use before engine re-start, or after replacement of a failed fuel system component
- Kidney loop fuel through filter element, reservoir tank, and engine fuel system until desired level of cleanliness is achieved
- Air powered diaphragm pump for dependable pumping action
- Dirty filter indicator shows when filter elements require service
- Includes basic suction/return hose and discharge/pressure hose assemblies (additional dealer-supplied adapters are required)



Reference

NEHS0989, Tool Operating Manual, 295-5490 Portable Diesel Fuel System Filtration Unit

(Continued)

Hydraulic System Tools

295-5490 Filter Cart Group (Continued)

Essential Tool

Model: Diesel Fuel Engines

Warranty: Six Months

Air diaphragm pump	138 to 414 kPa (20 to 60 psi) (operating pressure range)
Pressure air relief valve	483 kPa (70.0 psi)
Maximum output pressure	Pressure of the fluid pumped should be equal to the air inlet pressure
Tank capacity	18.9 L (5.0 gal)
Fluid cycle	0.57 lpm (0.15 gpm)
SOS valve	Standard
Operating temperature	4.4° to 65.5° C (40° to 150° F)
Noise level	78 dB at 483 kPa (70 psi) air pressure
Overall dimensions (W x D x H)	365.0 x 466.0 x 535.0 mm (14.37 x 18.35 x 21.06 in)
Ground strap length	305 cm (10 ft)
Suction/return hose length	427 cm (14 ft)
Discharge/pressure hose length	671 cm (22 ft)
Weight	13.6 kg (30 lb)

Item	Part Number	Description
--	295-5490	Filter Cart Group
Service/Repair Parts		
3	295-8468	Dust Cap
2	295-8469	Dust Cap
1	295-5589	Pump ¹
Not Shown		
--	295-5590	Air Repair Kit
--	295-5591	Diaphragm Repair Kit

¹ Not Serviced

245-1769 Heavy Weight Oil Filter Cart

SMCS Code: 0680

Model: Hydraulic Systems on 785, 789, 793 Off-Highway Trucks and Power Train Oils

Warranty: Six Months



- Replaces discontinued 201-8131 and discontinued 183-9301 Carts
- Used to filter fluids from 5W (lightweight oils) to 90W (final drive lubricants)
- Variable pump delivery
- Powered by compressed air
- A differential pressure gauge is provided to monitor filter element condition
- Extra large capacity filter for extended time between dirty element change
- Wire-reinforced hoses; will not collapse with "hot" oil
- Built-in tool box
- Convenient hose caddy for ease of storage
- Mobile cart on hard plastic casters

Reference

NEHS0847, Tool Operating Manual

(Continued)

245-1769 Heavy Weight Oil Filter Cart (Continued)

SMCS Code: 0680

Model: Hydraulic Systems on 785, 789, 793 Off-Highway Trucks and Power Train Oils

Warranty: Six Months

Performance Note:

Fluid flow through filter for maximum efficiency is dependent upon fluid temperature, fluid viscosity, supply air pressure, supply air volume, and filter media rating.

Prime mover	Air diaphragm pump
Operating pressure	138 - 689 kPa (20 - 100 psi)
Variable delivery	0 - 340 lpm (0 - 90 gpm)
Supply air consumption	0.47 liter/s (1 cfm) per 3.78 liter/m (1 gpm) of fluid pumped
Maximum output pressure of fluid being pumped equals	Air inlet pressure
Hydraulic fluids	5W to 90W
Operating temperature	0° to 66° C (0° to 150° F)
Standard filtration	10-micron, absolute
Extra large filter	27.3 cm diameter x 82.5 cm (10.7 in diameter x 32.5 in)
Outlet hoses	Two #844, 38.1 mm (1 1/2 in) diameter x (25 ft) long (1 1/2 in Cam-lok fittings)
Inlet hose	#844, 50.8 mm (2 in) diameter x 4.27 m (14 ft) long (1 1/2 in Cam-lok fittings)
Tool box	40.6 x 25.4 x 22.8 cm (16 x 10 x 9 in)
Overall dimensions	122 x 157 x 102 cm (48 x 62 x 40 in)
Noise level	82dB (at 110 psi air pressure)
Weight	318 kg (700 lb)

Part Number	Description
245-1769	Oil Filter Cart
Service/Repair Parts	
192-1560	Filter Element, 10-micron
212-7125	Filter Element, 3-micron
188-7020	Filter Element, 5-micron absolute
185-1375	Filter Element, 25-micron absolute
4C-6786	Pump (complete)
196-9504	Air Valve Repair Kit
161-7059	Diaphragm Repair Kit
077-8298	Filter Housing Cap O-ring for discontinued 201-8131 only
221-4490	Cup Seal (inside filter housing) for discontinued 201-8131 only
209-1799	Pump (discontinued 183-9301 only)

Part Number	Description
Service/Repair Parts (Continued)	
209-1800	Repair Kit, diaphragm for pump on discontinued 183-9301
209-1801	Repair Kit, air valve for pump on discontinued 183-9301
3H-0976	O-ring (Element to Head)

(Continued)

245-1769 Heavy Weight Oil Filter Cart (Continued)

SMCS Code: 0680

Model: Hydraulic Systems on 785, 789, 793 Off-Highway Trucks and Power Train Oils

Warranty: Six Months

Part Number	Description
Dust Caps/Plugs Used with 245-1769 and discontinued 201-8131 and discontinued 183-9301 Oil Filter Carts	
201-8128	63.5 mm (2 1/2 in) diameter aluminum male plug used with 190-8321 Quick Disconnect Coupler or suction line
201-8129	50.8 mm (2 in) diameter aluminum male plug used with 190-8321 Quick Disconnect Coupler or return line
201-8552	63.5 mm (2 1/2 in) diameter aluminum female cap used with the following adapters: 190-9936, 190-9938, 190-9940, 190-9942, or 190-9944

Part Number	Description
Dust Caps/Plugs Used with 245-1769 and discontinued 201-8131 and discontinued 183-9301 Oil Filter Carts (Continued)	
201-8553	50.8 mm (2 in) diameter aluminum female cap used with the following adapters: 190-9935, 190-9937, 190-9939, 190-9941, or 190-9943
8C-3451	Dust Cap (not pictured)

FT3102 Modified Socket

Essential Tool

Model: 15B, 20B, and 22B Grapple

Warranty: None



- Used to assemble 144-1055 Adapter onto distributor assembly
- Used with 1/2 inch drive extension and/or square drive socket wrench
- Make from 214-6513 Socket, 1 1/16 inch
- Modify by removing 9 mm (0.35 in) from socket end (total length; 37 mm [1.45 in])

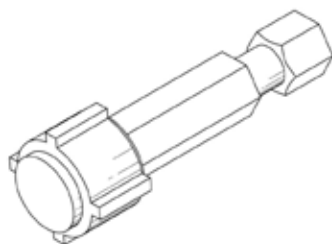
341-4073 Spanner Kit

Essential Tool

SMCS Code: 5264-011

Model: 416E Backhoe Loader

Warranty: Six Months



- Used to remove and install relief valve in 259-6758 Valve Group
- Used with 6 mm socket wrench (dealer supplied)
- Spanner head fits down inside hydraulic valve body
- Four equally spaced teeth engage relief valve for proper removal and installation
- Includes sealable rust inhibitor bag for proper tool storage

References

REN7164, Service Manual, 414E, 416E, 420E, 422E, 428E, 430E, 432E, 434E, 442E, and 444E Backhoe Loaders Machine Systems

KEN7659, Service Manual, 416E, 420E, and 430E Backhoe Loaders Machine Systems

REN8043, Service Manual, 422E, 428E, 432E, 434E, 442E, and 444E Backhoe Loaders Machine System

(Continued)

341-4073 Spanner Kit (Continued)

Essential Tool

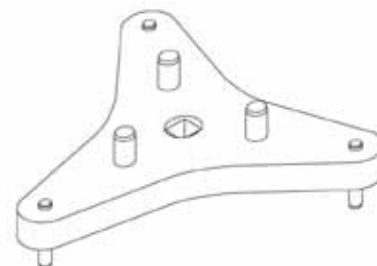
SMCS Code: 5264-011
 Model: 416E Backhoe Loader
 Warranty: Six Months

Part Number	Description
341-4073	Spanner Kit

335-3395 Spanner Wrench Assembly

SMCS Code: 5077
 Model: PL61 Pipelayer
 Warranty: Six Months

- Used to remove and install 297-6401 Accumulator on PL61 Pipelayer
- Used with 1/2 inch square drive ratchet wrench
- Dual-purpose tool can also be used to set bevel gear backlash on D250/725 Articulated Dump Trucks (can be used to replace 149-5167 Spanner Wrench)
- Positive engagement (three pins) reduces risk of damage to accumulator
- Black oxide coated to resist corrosion
- Use 4F-2954 Pin and 8E-8439 Dowel to replace damaged parts

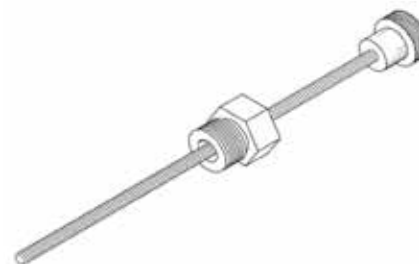


Part Number	Description
335-3395	Spanner Wrench Assembly

308-4547 Valve Adjuster

SMCS Code: 5051, 6501
 Model: E-Series Backhoe Loaders
 Warranty: Six Months

- Used to manually lower boom during engine stall
- Temporarily replaces boom lower pilot line on main control valve
- Remove pilot line and thread plug into control valve
- Slowly turn knob to depress internal valve stem and relieve oil back into reservoir tank
- Allows controlled lowering of boom without a power source



Part Number	Description
308-4547	Valve Adjuster

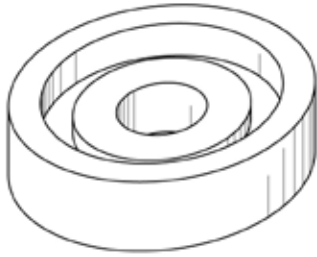
Hydraulic Component Disassembly and Assembly

FT2802 Puller Plate

SMCS Code: 5100-011

Model: All machines with spherical bearings

Warranty: None



- Used to remove spherical bearings from excavator boom, stick, and bucket cylinders or bulldozer tilt cylinder bearings from track-type tractors
- Used with 1P-0820 Puller Group, 2J-3507 Nut, 3K-5234 Washer, and suitable hydraulic pump
- Designed to apply all of force to bearing outer race
- Custom made to fit specific applications (dimensions provide tolerances that can be applied to specific bearing and bore diameters)
- Requires two puller plates for bearing removal
- Material: SAE1 1020 steel

Fabricated Plates for Removal of Spherical Bearings from Hydraulic Cylinders

Model: Most Cat® Excavators and Track-Type Tractors

Warranty: None

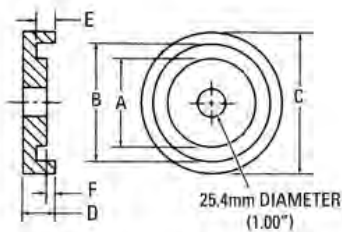


Fig. 1 -- Dimensions to Fabricate Plates

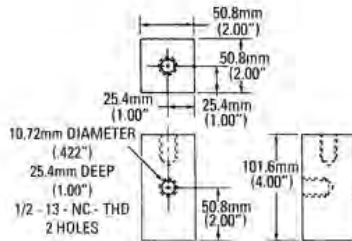


Fig. 2 -- Dimensions to Fabricate Blocks

- Used in removal of spherical bearings used in excavator boom, stick and bucket cylinders, and in track-type tractor bulldozer tilt cylinders
- Design permits all of force to be applied against bearing race
- Made from SAE 1020 Steel according to Figure 1; dimensions given in chart along with part number of bearing they are used on
- Necessary to make 2 spacer blocks for removal of bearings
- Blocks fabricated from steel according to Figure 2
- Blocks used in different positions for different applications
- 1P-0820 Puller Group, 2J-3507 Nut, 3K-5234 Washer, and suitable hydraulic pump also needed

If the part number for a bearing is not in the chart, use the following dimensions to make a puller plate:

- Diameter of hole in center of plate: 25.4 mm (1.0 in)
- Diameter A: 1.5 mm (0.06 in) smaller than diameter of bore of bearing to be removed
- Diameter B: 1.5 to 3.0 mm (0.06 to 0.12 in) larger than outside diameter of ball
- Diameter C: 1.5 to 3.0 mm (0.06 to 0.12 in) smaller than outside diameter of outside race
- Diameter D: 19.0 to 28.4 mm (0.75 to 1.12 in)
- Diameter E: 0.8 mm (0.03 in) more than distance that ball extends beyond outside of bearing race
- Diameter F: must be small enough to permit diameter A to be used as pilot in bore of ball

Bearing Part No.	Diameter A	Diameter B	Diameter C	Diameter D	Diameter E	Diameter F
Puller Plate Dimensions						
6T-8330	139.7 mm (5.5 in)	203.2 mm (8.00 in)	228.6 mm (9.00 in)	31.8 mm (1.25 in)	26.9 mm (1.06 in)	--
8J-4411	74.7 mm (2.94 in)	104.6 mm (4.12 in)	125.5 mm (4.94 in)	25.4 mm (1.00 in)	12.7 mm (0.50 in)	6.3 mm (0.25 in)
106-4550	177.8 mm (7.00 in)	247.6 mm (9.75 in)	287.3 mm (11.312 in)	38.1 mm (1.50 in)	28.6 mm (1.13 in)	--
3G-3320	50.8 mm (2.00 in)	69.8 mm (2.75 in)	87.4 mm (3.44 in)	25.4 mm (1.00 in)	12.7 mm (0.50 in)	6.3 mm (0.25 in)

(Continued)

Fabricated Plates for Removal of Spherical Bearings from Hydraulic Cylinders (Continued)

Model: Most Cat® Excavators and Track-Type Tractors

Warranty: None

Bearing Part No.	Diameter A	Diameter B	Diameter C	Diameter D	Diameter E	Diameter F
Puller Plate Dimensions (Continued)						
3G-3521	111.2 mm (4.38 in)	152.4 mm (6.00 in)	177.8 mm (7.00 in)	31.7 mm (1.25 in)	15.7 mm (0.62 in)	6.3 mm (0.25 in)
3G-5337	98.6 mm (3.88 in)	127.0 mm (5.00 in)	152.4 mm (6.00 in)	25.4 mm (1.00 in)	7.9 mm (0.31 in)	--
6I-8830	139.7 mm (5.50 in)	203.2 mm (8.00 in)	228.6 mm (9.00 in)	31.8 mm (1.25 in)	26.9 mm (1.06 in)	--
4J-4981	68.3 mm (2.69 in)	88.9 mm (3.50 in)	98.6 mm (3.88 in)	19.1 mm (0.75 in)	6.3 mm (0.25 in)	--
5J-6424	74.7 mm (2.94 in)	95.3 mm (3.75 in)	112.8 mm (4.44 in)	19.1 mm (0.75 in)	6.3 mm (0.25 in)	--
5J-9451	79.2 mm (3.12 in)	106.4 mm (4.19 in)	127.0 mm (5.00 in)	19.1 mm (0.75 in)	9.7 mm (0.38 in)	--
6J-5383	60.5 mm (2.38 in)	74.7 mm (2.94 in)	87.4 mm (3.44 in)	19.1 mm (0.75 in)	6.3 mm (0.25 in)	--
7J-3216	66.5 mm (2.62 in)	87.4 mm (3.44 in)	101.6 mm (4.00 in)	19.1 mm (0.75 in)	6.3 mm (0.25 in)	--
7J-3297	66.5 mm (2.62 in)	104.6 mm (4.12 in)	127.0 mm (5.00 in)	25.4 mm (1.00 in)	12.7 mm (0.50 in)	6.3 mm (0.25 in)
8J-3783	111.3 mm (4.38 in)	136.7 mm (5.38 in)	158.8 mm (6.25 in)	28.4 mm (1.12 in)	14.2 mm (0.56 in)	6.3 mm (0.25 in)
8J-4382	124.0 mm (4.88 in)	165.1 mm (6.50 in)	196.9 mm (7.75 in)	31.8 mm (1.25 in)	15.7 mm (0.62 in)	6.3 mm (0.25 in)
8J-4585	85.9 mm (3.38 in)	120.7 mm (4.75 in)	139.7 mm (5.50 in)	25.4 mm (1.00 in)	12.7 mm (0.50 in)	6.3 mm (0.25 in)
8J-6861	68.3 mm (2.69 in)	95.4 mm (3.75 in)	114.3 mm (4.50 in)	25.4 mm (1.00 in)	11.2 mm (0.44 in)	6.3 mm (0.25 in)
8J-7978	85.9 mm (3.38 in)	108.0 mm (4.25 in)	127.0 mm (5.00 in)	19.1 mm (0.75 in)	6.3 mm (0.25 in)	--
8J-8906	79.2 mm (3.12 in)	127.0 mm (5.00 in)	152.4 mm (6.00 in)	28.4 mm (1.12 in)	14.2 mm (0.56 in)	6.3 mm (0.25 in)
9J-3206	60.5 mm (2.38 in)	79.2 mm (3.12 in)	98.6 mm (3.88 in)	19.1 mm (0.75 in)	6.3 mm (0.25 in)	--
5P-7802	66.5 mm (2.62 in)	87.4 mm (3.44 in)	101.6 mm (4.00 in)	19.1 mm (0.75 in)	6.3 mm (0.25 in)	--
1U-2729	85.9 mm (3.38 in)	120.7 mm (4.75 in)	139.7 mm (5.50 in)	25.4 mm (1.00 in)	12.7 mm (0.50 in)	6.3 mm (0.25 in)
1U-3988	85.9 mm (3.38 in)	108.0 mm (4.25 in)	149.4 mm (5.88 in)	19.1 mm (0.75 in)	6.3 mm (0.25 in)	--
9U-9559	77.7 mm (3.06 in)	120.6 mm (4.75 in)	127.0 mm (5.00 in)	19.1 mm (0.75 in)	13.2 mm (0.52 in)	--
9U-9560	117.5 mm (4.63 in)	182.5 mm (7.19 in)	206.4 mm (8.13 in)	31.8 mm (1.25 in)	23.8 mm (0.94 in)	--
9U-9561	157.1 mm (6.19 in)	236.5 mm (9.31 in)	257.2 mm (10.13 in)	38.1 mm (1.50 in)	28.6 mm (1.13 in)	--
6V-3340	66.5 mm (2.62 in)	104.6 mm (4.12 in)	127.0 mm (5.00 in)	25.4 mm (1.00 in)	12.7 mm (0.50 in)	6.3 mm (0.25 in)

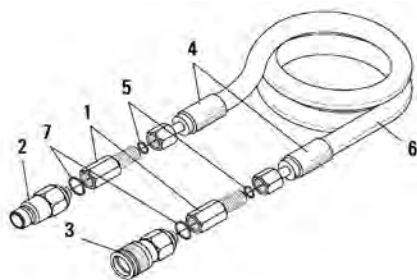
FT3076 Hose Assembly

Essential Tool

SMCS Code: 5050-038

Model: 248B, 268B, 246C, 256C, 262C, 272C, 277C, 287C, and 297C Skid Steer Loaders

Warranty: None



- Used to test and adjust high-flow, hydraulic systems
- Used on both B and C-Series models

Reference

REN8747, Service Manual (248B, 268B)

KENR5113, Service Manual (246C, 256C, 262C, 272C)

KENR5196, Service Manual (277C, 287C, 297C)

Item	Part Number	Description
1	8C-8835	Bulkhead Adapter
2	218-5843	Nipple
3	218-5845	Coupler
4	153-0785	Coupling Assembly
5	6V-8397	O-ring Seal
6 ¹	161-1815	Hose, 152 cm (60 in)
7	3K-0360	Seal - O-ring - STOR (SAE 3/4 - 16)

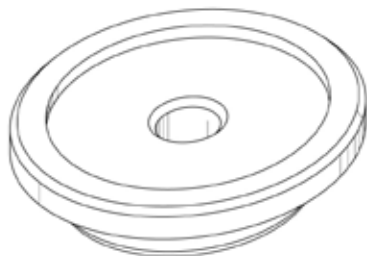
¹ Not Serviced

FT1395 Adapter Plate

SMCS Code: 6116-012, 6116-011, 4151-015, 4158-011, 4151-017, 6072-017, 5102-015, 5102-016

Model: 992C

Warranty: None



- Used to secure lift cylinder and excavator cylinder rods, having spherical bearings, to end post of 1P-1784 and 1P-2330 Hydraulic Cylinder Repair Stands
- Counterbored side of adapters used for excavator cylinder rods having spherical bearings; side with step diameter used for 992C lift cylinder rods
- 2 required
- Material: SAE 1020 steel

9U-5919 Spanner Tool

9U-5920 Sleeve

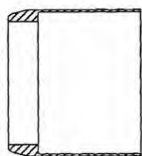
SMCS Code: 5104-017

Model: 994 Wheel Loaders

Warranty: Six Months



9U-5919



9U-5920

9U-5919 Spanner Tool

- Used to disassemble and assemble 6E-0512 and 101-9571 Threaded Piston in 9T-9021, 9T-9022, 9T-9024, and 9T-9025 Tilt Cylinder Groups
- Used with torque wrench
- Plastic ID of spanner to prevent damage to cylinder rod threads during use
- Enables required piston assembly torque of 816 N·m (600 ft·lb) to be achieved (not possible with conventional spanner tools)
- Use of any other tool can result in damage to piston or rod, and result in improper assembly
- Provides positive, non-slip engagement of spanner pins

(Continued)

9U-5919 Spanner Tool (Continued)

9U-5920 Sleeve

SMCS Code: 5104-017

Model: 994 Wheel Loaders

Warranty: Six Months

9U-5919 Spanner Tool	
Construction	Steel
Outside diameter	203 mm (8 in)
Inside diameter	114.0 mm (4.5 in)
Length	152 mm (6 in)
Weight	15 kg (33 lb)
Square drive	1 in

Part Number	Description
9U-5919	Spanner Tool
9U-5920	Sleeve

129-4542 Cylinder Spanner Wrench

SMCS Code: 5104-016, 5104-017

Model: 990 Wheel Loader

Warranty: Six Months

- Used to disassemble and assemble 6E-1169 Threaded Piston in 9T-9570 Tilt Cylinder Group
- Used with 1 inch square drive torque wrench
- Enables piston assembly to be tightened to 800 N•m (592 ft-lb)
- Provides positive, non-slip engagement of spanner pins
- Use of other tools can result in damage to piston or rod causing improper assembly



Pin diameter	15.88 mm (0.625 in)
Distance between pins	204 mm (8.03 in)
Inside diameter	105 mm (4.1 in)
Length	157 mm (6.2 in)
Weight	14 kg (31 lb)
Square drive	1 in
Material	Steel

Part Number	Description
129-4542	Cylinder Spanner Wrench

Piston Spanner Assemblies

SMCS Code: 7201-017, 4303-017

Model: D25C and D, D30C and D, D35C and HP, D40D, D44B, D250B, D300B and D, D350C and D, D400, D400D, D550B Articulated Trucks

Warranty: Six Months

- Used to remove and install pistons on cylinder rods
- Used with 3/4 inch square drive torque wrench, ratchet, or breaker bar
- Quick and easy assembly and disassembly
- Maintains positive engagement and eliminates damage to rod surface
- Saves part replacement costs by eliminating damage by destructive methods such as cutting torch or welding

9U-6110 and 9U-6111 Spanner Wrenches

- Used to remove and install threaded pistons in 6U-3247 and 5U-6864 Suspension Cylinders
- Pins inside of tool provide positive non-slip engagement during torquing (using standard adjustable-type spanner is ineffective and usually results in damaged rod or piston)

(Continued)

Hydraulic Component Disassembly and Assembly

Piston Spanner Assemblies (Continued)

SMCS Code: 7201-017, 4303-017

Model: D25C and D, D30C and D, D35C and HP, D40D, D44B, D250B, D300B and D, D350C and D, D400, D400D, D550B Articulated Trucks

Warranty: Six Months

- “Tubular” design provides slip fit around piston; 3 set screws also provide assurance wrench will not become disengaged during tightening or loosening

9U-6123 Spanner Wrench

- Used to remove and install threaded pistons in discontinued 6U-7243 and discontinued 7U-8421 Steering Cylinders
- Fits pistons with spanner holes on “board” side (facing rod eye) — these pistons are very difficult to service with standard adjustable type spanner wrenches
- C-type design fits around cylinder rod and is held in place with cover plate
- Inside surfaces covered with non-metallic covering to protect 50 mm (2.0 in) cylinder rod during rotation
- Spanner pins on each end provide service for 2 different pistons having different spanner requirements (Side A for discontinued 7U-8421 Piston and Side B for discontinued 6U-7243 Piston)
- When assembled onto cylinder rod, bearing-type design of inside diameter virtually eliminates chance of disengagement

Reference

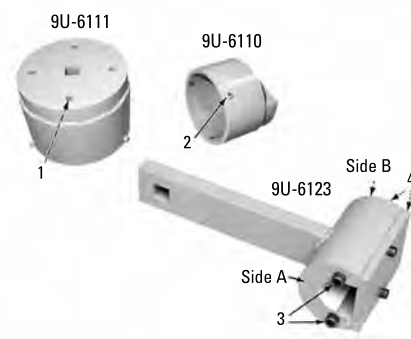
SEN8220, Service Manual, D300D Vehicle Systems Disassembly and Assembly

Vehicle System Tools

Part No.	Description	Inside Diameter	Depth	Width	Length (to end of handle)	Number of Pins	Pin Size	Bolt Circle of Pins	Weight	Square Drive
9U-6110	Spanner	101.6 mm (4.00 in)	61 mm (2.4 in)	--	--	2	3L-3324 Pin; 9.50 mm (0.375 in)	72.00 mm (2.834 in)	2 kg (4.5 lb)	3/4 in
9U-6111	Spanner	139.7 mm (5.50 in)	84 mm (3.1 in)	--	--	4	3L-3324 Pin; 9.50 mm (0.375 in)	106.00 mm (4.173 in)	5 kg (11.5 lb)	3/4 in
9U-6123	Spanner	Cylinder rod size, 50.8 mm (2.0 in)	--	152 mm (6 in)	400 mm (15.75 in)	2 per side	9F-5975 (Side A): 12.0 mm (0.47 in), 8T-8441 (Side B): 18.0 mm (0.71 in)	(Side A): 77.0 mm (3.031 in), (Side B): 78.0 mm (3.071 in)	--	--

Spanner Wrench

Spanner Wrench Usage Chart			
Spanner Wrench Part	9U-6110	9U-6111	9U-6123
Piston Serviced	6U-3247	5U-6864	--
Type Cylinder	Suspension	Suspension	Steering
Vehicle Models	D250B		
	D35C		
	D25C		
	D300B	D35HP	D25D
	D300D	D40D	D250B
		D44B	D30C
		D550B	D30D
			D300B
			D300D
			D35C
			D35HP
			D350C
			D350D
			D40D
			D400
			D400D



Item	Part Number	Description
1	3L-3324	Pin
2	009-0008	Set Screw
3	9F-5975	Socket Head Bolt (5/16 - 18)
4	8T-8441	Socket Head Bolt (M12 x 1.75)
—	9U-6110	Spanner Wrench Part
—	9U-6111	Spanner Wrench Part
—	9U-6123	Spanner Wrench Part

Repair Tools for Backhoes and B-Series Telehandlers

Essential Tool

SMCS Code: 5100-017

Model: TH220B, TH330B, TH350B, TH360B, TH460B, TH560B, TH580B, and Backhoe Loader

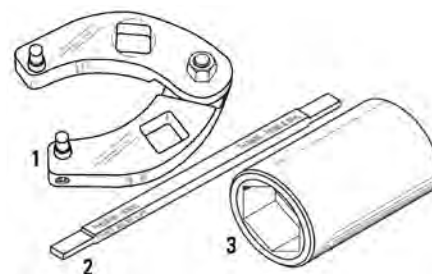
Warranty: Six Months

242-0780 Spanner Wrench

- Used to service B-series Telehandlers only
- Used to disassemble and assemble tow hitch cylinder
- Used with a 1/2 inch square drive ratchet
- Adjustable — fits nut sizes from 50.8 mm (2.0 in) to 152.4 mm (6.0 in)
- Comes with 4 dowels (1/4 in, 5/16 in, 4.5 mm, and 5.5 mm) to fit pin holes
- Can be used for any cylinder gland nut

242-0992 Brake Gauge

- Used to service B-series Telehandlers and Backhoe Loaders
- Replaces canceled 208-5524 Brake Gauge
- Used to check brake disk wear and determine whether disk replacement is needed
- Checks for minimum thickness between brake disks
- Gauge is inserted through inspection port in axle housing



(Continued)

Hydraulic Component Disassembly and Assembly

Repair Tools for Backhoes and B-Series Telehandlers (Continued)

Essential Tool

SMCS Code: 5100-017

Model: TH220B, TH330B, TH350B, TH360B, TH460B, TH560B, TH580B, and Backhoe Loader

Warranty: Six Months

242-0779 Socket

- Used to service B-series Telehandlers only
- Used to remove and install tilt cylinder lock valve
- 36 mm deep socket with 1/2 inch square drive

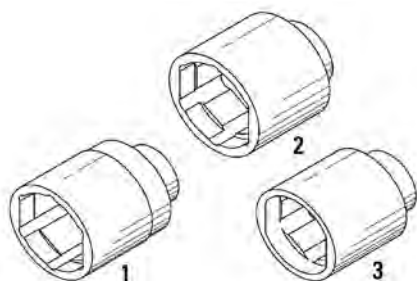
Item	Part Number	Description
1	242-0780	Spanner Wrench
2	242-0992	Brake Gauge
3	242-0779	Socket

Spanner Sockets for Cylinder Piston-Rod Assembly on Backhoe Loaders

SMCS Code: 5104-017

Model: 416D (BGJ1050-1140 and BFP12900-Up), 420D (BLN10300-Up, BMC1-Up, and MBH1-Up), 430D (BML4800-Up) Backhoe Loaders

Warranty: Six Months



- Used to remove and install piston from rod end on lift cylinders and stabilizer cylinders
- Used with 1 in square drive torque wrench to achieve required torque settings
- Also used with ratchet wrench or breaker bar during disassembly
- Do not use with impact wrench

Reference

REN3585; 416D, 420D, 424D, 428D, 430D, 432D, 438D, 442D Backhoe Loader Machine Systems, Disassembly and Assembly

Item	Part Number	Used On
1	FT3025	228 -3505 Lift Cylinder
2	FT3026 ¹	228-3500 Stabilizer Cylinder
3	FT3027	230-0979 Lift Cylinder

¹ Discontinued

Vehicle System Tools

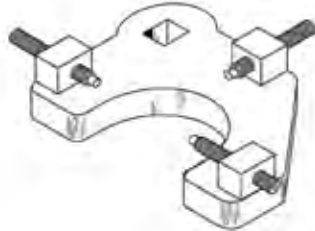
160-0261 Adjustable Cylinder Spanner Wrench

Essential Tool

SMCS Code: 5102

Model: Duece

Warranty: Six Months



- Used to remove threaded glands from hydraulic cylinders
- Used with torque wrench (installation only)
- Adjustable for different diameter heads (must have 4 radial holes on outer diameter)

Minimum gland adjustment	104.78 mm (4.125 in)
Maximum gland adjustment	139.70 mm (5.500 in)
Square drive	3/4 in
Maximum installation torque	510 N·m (375 ft·lb)
Setscrew	9X-6405

Part Number	Description
160-0261	Adjustable Cylinder Spanner Wrench

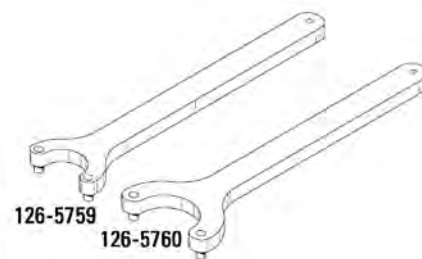
Cylinder Spanner Wrenches

SMCS Code: 5555-017

Model: 525 Log Skidders Equipped with ESCO Series 2000 Sorting and Bunching Grapples

Warranty: Six Months

- Used to disassemble and assemble grapple boom and tong cylinders (1 wrench removes gland from cylinder tube, the other removes piston from rod)
- Gland cylinder wrench is designed to clear cylinder rod guard
- Two 9.6 mm (0.38 in) pins provide positive engagement with gland or piston
- Using other tools to remove glands and piston can cause part damage resulting in increased machine downtime
- Contains HEX for socket to apply specified torque



Part Number	Distance Between Pins	Pin Diameter	Overall Width	Overall Length	Hex Size
126-5759	68.3 mm (2.69 in)	9.6 mm (0.38 in)	93 mm (3.66 in)	406 mm (15.98 in)	1 1/8 in
126-5760	92.2 mm (3.63 in)	9.6 mm (0.38 in)	117 mm (4.61 in)	406 mm (15.98 in)	1 5/16 in

Spanner Wrenches

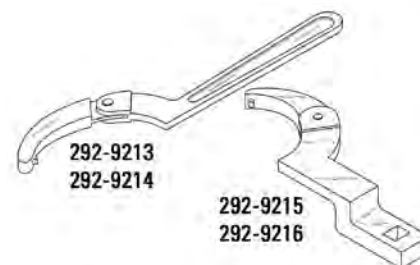
Essential Tool

SMCS Code: 7562

Model: 246C (JAY1-UP), 256C (DWS1-UP), 262C (MST1-UP), 272C (RED1-UP) Skid Steer Loader, 277C (JWF1-UP), 287C (MAS1-UP), 297C (GCP1-UP) Multi-Terrain Loader

Warranty: Six Months

- Used to disassemble and assemble tilt and lift cylinders



Part Number	Description	Capacity	Overall Length	Pin Diameter	Square Drive
292-9213	Spanner Wrench	31.8 - 76.2 mm (1.25 - 3.00 in)	204.7 mm (8.06 in)	4.8 mm (0.188 in)	--
292-9214	Spanner Wrench	50.8 - 120.7 mm (2.00 - 4.75 in)	285.6 mm (11.24 in)	6.0 mm (0.250 in)	--
292-9215	Offset Spanner Wrench	31.8 - 76.2 mm (1.25 - 3.00 in)	135 mm (5.31 in)	4.8 mm (0.188 in)	1/2 in
292-9216	Offset Spanner Wrench	50.8 - 120.7 mm (2.00 - 4.75 in)	162 mm (6.38 in)	6.0 mm (0.250 in)	1/2 in

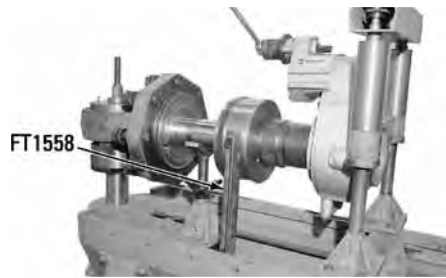
Hydraulic Component Disassembly and Assembly

FT1558 Prop

SMCS Code: 5100-011

Model: D10

Warranty: None



- Needed to hold piston when removing rod nut from dozer tilt and ripper lift cylinders
- Material: 50.8 x 50.8 x 6.35 mm (2 x 2 x 1/4 in) angle iron
- Length determined after cylinder is installed on hydraulic cylinder repair stand

Reference

Service Manual

Hydraulic Cylinder Rod Seal Guides

SMCS Code: 5100-012

Model: See Chart

Warranty: Six Months



Typical Guide

- Needed for installation of hydraulic cylinder heads with polyurethane seals used on square shoulder rods
- Chart correlates guides with cylinder rod diameter, thread size, and application

Seal Guide Number	Rod Larger Outer Diameter	Rod Smaller Outer Diameter	Rod Thread Inner Diameter	Length	Cylinder Where Used
FT2404	101.60 mm (4.00 in)	95.00 mm (3.74 in)	85.09 mm (3.35 in)	100.33 mm (3.95 in)	D25C, D30C D35C, D35HP, D350C, D350D, D400, D400D Suspension Cylinder
FT2415	107.95 mm (4.25 in)	97.79 mm (3.85 in)	80.01 mm (3.15 in)	39.90 mm (1.57 in)	D40D
FT2416	69.85 mm (2.75 in)	60.96 mm (2.40 in)	39.88 mm (1.57 in)	22.90 mm (0.90 in)	
FT2417	88.90 mm (3.50 in)	82.55 mm (3.25 in)	59.94 mm (2.36 in)	39.90 mm (1.57 in)	D250B, D300B D300D, D44, D44B, D550, D550B

Seal Guide Number	Rod Larger Outer Diameter	Rod Smaller Outer Diameter	Rod Thread Inner Diameter	Length	Cylinder Where Used
125-9791	91.20 mm (3.59 in)	81.75 mm (3.22 in)	67.00 mm (2.64 in)	70.0 mm (2.8 in)	--
125-9793	44.00 mm (1.73 in)	39.70 mm (1.56 in)	43.63 mm (1.72 in)	44.00 mm (1.7 in)	--
129-4539	137.16 mm (5.40 in)	130.05 mm (5.12 in)	120.73 mm (4.75 in)	101.60 mm (4.00 in)	992G Tilt Cylinder
129-4541	146.05 mm (5.75 in)	139.70 mm (5.50 in)	127.07 mm (5.00 in)	99.06 mm (3.90 in)	--
132-5139	114.30 mm (4.50 in)	99.57 mm (3.92 in)	82.55 mm (3.25 in)	114.30 mm (4.50 in)	5230 Bucket Dump
132-5140	139.70 mm (5.50 in)	121.41 mm (4.78 in)	82.55 mm (3.25 in)	139.70 mm (5.50 in)	5110 Bucket and Stick
132-5141	152.40 mm (6.00 in)	132.59 mm (5.22 in)	82.55 mm (3.25 in)	152.40 mm (6.00 in)	5130 Front Shovel
132-5142	165.10 mm (6.50 in)	143.51 mm (5.65 in)	101.60 mm (4.00 in)	165.10 mm (6.50 in)	5130 Backhoe Bucket Cylinder; 5110 Boom

(Continued)

Hydraulic Cylinder Rod Seal Guides (Continued)

SMCS Code: 5100-012

Model: See Chart

Warranty: Six Months

Seal Guide Number	Rod Larger Outer Diameter	Rod Smaller Outer Diameter	Rod Thread Inner Diameter	Length	Cylinder Where Used
134-9803	88.65 mm (3.49 in)	76.20 mm (3.00 in)	63.50 mm (2.50 in)	88.90 mm (3.50 in)	D10N Bulldozer Lift
134-9804	88.65 mm (3.49 in)	81.79 mm (3.22 in)	76.20 mm (3.00 in)	99.06 mm (3.90 in)	D11N Bulldozer Lift
158-0511	44.96 mm (1.77 in)	25.40 mm (1.00 in)	31.75 mm (1.25 in)	128 mm (5.0 in)	CS531, CS533, CS563, CS583, CP533, CP Eccentric Group
162-7704	121.00 mm (4.76 in)	105.40 mm (4.15 in)	76.20 mm (3.00 in)	125.00 mm (4.92 in)	--
187-1054	127.00 mm (5.00 in)	95.25 mm (3.75 in)	88.90 mm (3.50 in)	157.48 mm (6.20 in)	D11R Carrydozer Tilt
1P-0763	38.10 mm (1.50 in)	34.29 mm (1.35 in)	31.75 mm (1.25 in)	57.15 mm (2.25 in)	950 Steering
1P-0765	57.15 mm (2.25 in)	53.34 mm (2.10 in)	38.10 mm (1.50 in)	57.15 mm (2.25 in)	834 Steering; 657 Hitch; 920 Bucket Lift
1P-0766	57.15 mm (2.25 in)	53.34 mm (2.10 in)	44.45 mm (1.75 in)	57.15 mm (2.25 in)	966, 980, 977K Logging Fork
1P-0767	57.15 mm (2.25 in)	56.00 mm (2.20 in)	44.50 mm (1.75 in)	57.15 mm (2.25 in)	769B Steering
1P-0768	63.50 mm (2.50 in)	59.18 mm (2.33 in)	50.80 mm (2.00 in)	57.15 mm (2.25 in)	992 Steering; 983 Demolition Bucket; 8R, 9R Blade Rip Tooth; 950, 955K, 966C Bucket Lift; 950, 988, 966C Bucket Tilt; Pitch; 988B Logging Fork
1P-0769	69.85 mm (2.75 in)	63.50 mm (2.50 in)	57.15 mm (2.25 in)	57.15 mm (2.25 in)	977K Bucket Tilt
1P-0770	76.20 mm (3.00 in)	71.70 mm (2.82 in)	57.15 mm (2.25 in)	57.15 mm (2.25 in)	980 Bucket Tilt
1P-0772	82.55 mm (3.25 in)	78.05 mm (3.07 in)	57.15 mm (2.25 in)	57.15 mm (2.25 in)	8D Ripper Lift
1P-0773	82.55 mm (3.25 in)	78.05 mm (3.07 in)	63.50 mm (2.50 in)	57.15 mm (2.25 in)	983 Ripper Lift, 988B Bucket Tilt
1P-0774	82.55 mm (3.25 in)	78.05 mm (3.07 in)	69.85 mm (2.75 in)	57.15 mm (2.25 in)	983, 988 Bucket Lift, 9D Ripper Lift
1U-8595	64.97 mm (2.56 in)	58.00 mm (2.28 in)	48.15 mm (1.90 in)	113.00 mm (4.45 in)	MS120-8, E120
1U-8596	69.97 mm (2.75 in)	52.00 mm (2.05 in)	42.15 mm (1.66 in)	100.00 mm (3.94 in)	MS070-8, E70
1U-8597	69.97 mm (2.75 in)	55.00 mm (2.17 in)	45.15 mm (1.78 in)	144.00 mm (5.67 in)	MS110-8, E110
1U-8598	69.97 mm (2.75 in)	62.00 mm (2.44 in)	52.15 mm (2.05 in)	148.00 mm (5.83 in)	MS070-8, E70, MS140-8
1U-8602	79.97 mm (3.15 in)	66.00 mm (2.60 in)	56.15 mm (2.21 in)	200.00 mm (7.87 in)	MS140-8
1U-8603	79.97 mm (3.15 in)	72.00 mm (2.83 in)	62.15 mm (2.45 in)	146.00 mm (5.75 in)	MS120-8, E120
1U-8606	89.97 mm (3.54 in)	82.00 mm (3.23 in)	72.15 mm (2.84 in)	196.00 mm (7.72 in)	MS240-8, E240
1U-8607	99.97 mm (3.94 in)	82.00 mm (3.23 in)	72.15 mm (2.84 in)	201.00 mm (7.91 in)	MS240-8, E240, MS300-8, E300
1U-8611	129.97 mm (5.12 in)	105.00 mm (4.13 in)	95.15 mm (3.75 in)	248.00 mm (9.76 in)	MS450-8, E450
1U-8612	139.97 mm (5.51 in)	115.00 mm (4.53 in)	105.15 mm (4.14 in)	244.00 mm (9.61 in)	MS650-8, E650
1U-9582	22.28 mm (0.88 in)	15.24 mm (0.60 in)	19.51 mm (0.77 in)	51.05 mm (2.01 in)	--
221-5385	101.60 mm (4.00 in)	92.66 mm (3.65 in)	82.55 mm (3.25 in)	211.00 mm (8.31 in)	854G, D11R Tilt

(Continued)

Hydraulic Component Disassembly and Assembly

Hydraulic Cylinder Rod Seal Guides (Continued)

SMCS Code: 5100-012

Model: See Chart

Warranty: Six Months

Seal Guide Number	Rod Larger Outer Diameter	Rod Smaller Outer Diameter	Rod Thread Inner Diameter	Length	Cylinder Where Used
233-7206	44.40 mm (1.75 in)	38.00 mm (1.50 in)	32.00 mm (1.26 in)	82.00 mm (3.23 in)	TH360B, TH460B Rear Frame Lock
233-7207	44.40 mm (1.75 in)	38.00 mm (1.50 in)	32.00 mm (1.26 in)	100.00 mm (3.94 in)	TH460B Frame Level
233-7208	50.75 mm (2.00 in)	46.00 mm (1.81 in)	38.25 mm (1.51 in)	87.30 mm (3.44 in)	TH350B, TH360B Frame Level
233-7209	64.95 mm (2.56 in)	54.00 mm (2.13 in)	44.60 mm (1.76 in)	92.00 mm (3.62 in)	TH360B, TH460B Stabilizer Cylinder
233-7210	69.95 mm (2.75 in)	54.00 mm (2.13 in)	44.60 mm (1.76 in)	106.00 mm (4.17 in)	TH460B Fork Cylinder
233-7211	74.95 mm (2.95 in)	62.00 mm (2.44 in)	52.15 mm (2.05 in)	118.00 mm (4.65 in)	TH360B/460B Fork Cylinder
233-7212	88.85 mm (3.50 in)	54.00 mm (2.13 in)	44.65 mm (1.76 in)	97.00 mm (3.82 in)	TH350B Boom Raise Cylinder
233-7213	101.55 mm (4.00 in)	69.00 mm (2.72 in)	57.20 mm (2.25 in)	97.00 mm (3.82 in)	TH360B Boom Raise Cylinder
233-7215	101.55 mm (4.00 in)	69.00 mm (2.72 in)	57.20 mm (2.25 in)	117.00 mm (4.61 in)	TH360B Boom Raise Cylinder
244-8854	84.95 mm (3.34 in)	70.00 mm (2.76 in)	57.15 mm (2.25 in)	118.00 mm (4.65 in)	TH220B Fork
244-8855	89.95 mm (3.54 in)	70.00 mm (2.76 in)	57.15 mm (2.25 in)	118.00 mm (4.65 in)	TH330B Fork
244-8857	79.95 mm (3.15 in)	54.00 mm (2.13 in)	44.45 mm (1.75 in)	93.00 mm (3.66 in)	TH330B Boom Raise
2P-8284	69.85 mm (2.75 in)	66.04 mm (2.60 in)	50.80 mm (2.00 in)	57.15 mm (2.25 in)	988 Bucket Tilt
2P-8301	63.50 mm (2.50 in)	59.18 mm (2.33 in)	44.45 mm (1.75 in)	57.15 mm (2.25 in)	623 Ejector
365-1766	64.95 mm (2.56 in)	59.21 mm (2.33 in)	50.80 mm (2.00 in)	57.15 mm (2.25 in)	420E Stick Cylinder
4C-4063	508.00 mm (20.00 in)	355.60 mm (14.00 in)	70.61 mm (2.78 in)	198.12 mm (7.80 in)	--
4C-6746	101.60 mm (4.00 in)	95.25 mm (3.75 in)	162.56 mm (6.40 in)	162.05 mm (6.38 in)	D10N Tilt Cylinder
4C-8122	107.95 mm (4.25 in)	101.60 mm (4.00 in)	82.55 mm (3.25 in)	57.15 mm (2.25 in)	994
4C-8123	139.70 mm (5.50 in)	133.10 mm (5.24 in)	82.55 mm (3.25 in)	82.55 mm (3.25 in)	--
5P-0320	50.80 mm (2.00 in)	46.48 mm (1.83 in)	38.10 mm (1.50 in)	57.15 mm (2.25 in)	J613 Steering and Bowl Lift; 920, 930, 951B; 920, 930, 951B Multi-Purpose Bucket; Side Dump Bucket; 920, 930 Bucket Tilt
5P-3537	38.10 mm (1.50 in)	34.29 mm (1.35 in)	28.58 mm (1.13 in)	57.15 mm (2.25 in)	920, 930 Steering
5P-5191	76.15 mm (3.00 in)	72.39 mm (2.85 in)	50.80 mm (2.00 in)	57.15 mm (2.25 in)	623B Elevating Scraper; D9H Dozer Lift
5P-6155	66.04 mm (2.60 in)	50.80 mm (2.00 in)	44.45 mm (1.75 in)	57.15 mm (2.25 in)	D8 Bulldozer Tilt
5P-6156	88.90 mm (3.50 in)	85.09 mm (3.35 in)	63.50 mm (2.50 in)	57.15 mm (2.25 in)	225 Clamshell; 980C Lift
5P-7382	101.60 mm (4.00 in)	97.10 mm (3.82 in)	69.85 mm (2.75 in)	57.15 mm (2.25 in)	988B Bucket Lift
5P-8565	63.50 mm (2.50 in)	59.18 mm (2.33 in)	44.45 mm (1.75 in)	57.15 mm (2.25 in)	D7F, D7G Dozer Lift
5P-8725	101.60 mm (4.00 in)	97.10 mm (3.82 in)	63.50 mm (2.50 in)	57.15 mm (2.25 in)	D10 Bulldozer Lift

(Continued)

Hydraulic Cylinder Rod Seal Guides (Continued)

SMCS Code: 5100-012

Model: See Chart

Warranty: Six Months

Seal Guide Number	Rod Larger Outer Diameter	Rod Smaller Outer Diameter	Rod Thread Inner Diameter	Length	Cylinder Where Used
6V-3036	82.55 mm (3.25 in)	78.05 mm (3.07 in)	50.80 mm (2.00 in)	57.15 mm (2.25 in)	D9L Bulldozer Lift
6V-3038	95.25 mm (3.75 in)	88.90 mm (3.50 in)	63.50 mm (2.50 in)	57.15 mm (2.25 in)	963 Bucket Tilt
6V-4938	95.25 mm (3.75 in)	88.90 mm (3.50 in)	69.85 mm (2.75 in)	57.15 mm (2.25 in)	227 Stick
6V-6013	76.20 mm (3.00 in)	71.70 mm (2.82 in)	44.45 mm (1.75 in)	57.15 mm (2.25 in)	D8L Bulldozer Lift
6V-6159	28.58 mm (1.13 in)	21.84 mm (0.86 in)	16.00 mm (0.63 in)	38.10 mm (1.50 in)	--
6V-9052	59.94 mm (2.36 in)	59.94 mm (2.36 in)	50.80 mm (2.00 in)	38.10 mm (1.50 in)	--
6V-9072	44.45 mm (1.75 in)	43.94 mm (1.73 in)	39.62 mm (1.56 in)	38.10 mm (1.50 in)	--
8T-9156	53.34 mm (2.10 in)	33.02 mm (1.30 in)	33.02 mm (1.30 in)	74.93 mm (2.95 in)	--
8T-9158	45.72 mm (1.80 in)	36.32 mm (1.43 in)	32.26 mm (1.27 in)	45.47 mm (1.79 in)	--
8T-9159	50.80 mm (2.00 in)	30.48 mm (1.20 in)	44.70 mm (1.76 in)	83.82 mm (3.30 in)	--
9U-6742	50.80 mm (2.00 in)	41.91 mm (1.65 in)	71.88 mm (2.83 in)	71.88 mm (2.83 in)	--
9U-7456	127.00 mm (5.00 in)	119.89 mm (4.72 in)	97.00 mm (3.82 in)	299.72 mm (11.80 in)	--
9U-7953	101.60 mm (4.00 in)	97.10 mm (3.82 in)	82.55 mm (3.25 in)	57.15 mm (2.25 in)	992C Bucket Lift

Sensor Installation Tools for Position-Sensing Hydraulic Cylinders

Essential Tool

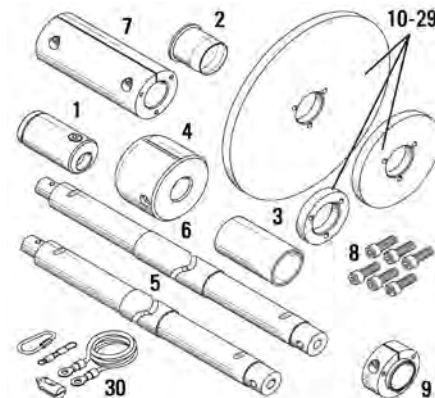
SMCS Code: 7562, 5721

Model: D8T (KPZ, J8B); D9T (RJS); D10T (RJG) Track -Type Tractors 416E (SHA); 420E (HLS, KMW); 430E (EAT, DDT); 432E (BXE); 434E (FSH); 442E (GKZ) Backhoe Loaders 988G (BNH); 980H (JMS) Wheel Loaders 824H (ASX); 834H (BTX); 825H (AZW); 826H (AWF); 836H (BXD) Wheel Dozers

Warranty: Six Months

265-4177 Service Group

- Used to install sensors in clevis-mounted, position-sensing hydraulic cylinders (PCS)
- Ensures accurate alignment of sensor
- Reduces possibility of damage to seal on sensor
- Reduces chances of damaging cylinder bore during installation



Item	Part Number	Description	Quantity
1	265-4180	Installer Group	1
2	265-4181	Sleeve	1
3	265-4182	Sleeve Removal Tool	1
4	265-4183	Driver Group (includes driver cap and bolt)	1
5	265-4184	Extension Tube, 50.0 cm (19.7 in)	2
6	265-4185	Extension Tube, 75.0 cm (29.5 in)	3
7	265-4186	Coupler Group	2
8	8T-0269	M6 x 1 Bolt	6
9	265-4187	Support Collar Group	1
10	265-4188	Support Disc, 266.50 mm (10.49 in)	1
11	265-4189	Support Disc, 253.80 mm (9.99 in)	1

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Hydraulic Component Disassembly and Assembly

Sensor Installation Tools for Position-Sensing Hydraulic Cylinders (Continued)

Essential Tool

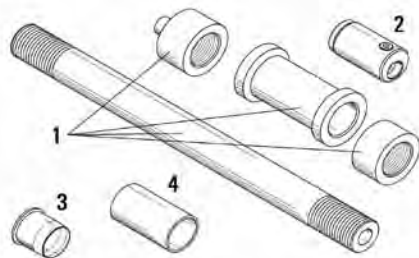
SMCS Code: 7562, 5721

Model: D8T (KPZ, J8B); D9T (RJS); D10T (RJG) Track -Type Tractors 416E (SHA); 420E (HLS, KMW); 430E (EAT, DDT); 432E (BXE); 434E (FSH); 442E (GKZ) Backhoe Loaders 988G (BNH); 980H (JMS) Wheel Loaders 824H (ASX); 834H (BTX); 825H (AZW); 826H (AWF); 836H (BXD) Wheel Dozers
Warranty: Six Months

Item	Part Number	Description	Quantity
12	265-4190	Support Disc, 234.75 mm (9.24 in)	1
13	265-4191	Support Disc, 219.80 mm (8.65 in)	1
14	265-4192	Support Disc, 196.65 mm (7.74 in)	1
15	265-4193	Support Disc, 179.80 mm (7.08 in)	1
16	265-4194	Support Disc, 158.55 mm (6.24 in)	1
17	265-4195	Support Disc, 149.80 mm (5.89 in)	1
18	265-4196	Support Disc, 139.80 mm (5.50 in)	1
19	265-4197	Support Disc, 133.05 mm (5.24 in)	1
20	265-4198	Support Disc, 129.80 mm (5.11 in)	1
21	265-4199	Support Disc, 126.80 mm (4.99 in)	1
22	265-4200	Support Disc, 120.45 mm (4.74 in)	1
23	265-4201	Support Disc, 119.80 mm (4.72 in)	1
24	265-4202	Support Disc, 114.10 mm (4.49 in)	1
25	265-4203	Support Disc, 107.75 mm (4.24 in)	1
26	265-4204	Support Disc, 95.05 mm (3.74 in)	1
27	265-4205	Support Disc, 88.70 mm (3.49 in)	1
28	265-4206	Support Disc, 84.80 mm (3.34 in)	1
29	265-4207	Support Disc, 76.00 mm (2.99 in)	1
30	265-4208	Wire Guide Group	1
--	265-4179	Foam Insert	1
--	4C-9662	Instrument Case, 355 x 832 x 115 mm (14.0 x 32.8 x 4.5 in)	1

Vehicle System Tools

Sensor Installation Tools for Position-Sensing Hydraulic Cylinders



265-4209 Service Group

- Used to install sensors in trunnion-mounted, position-sensing hydraulic cylinders (PCS)
- Ensures accurate alignment of sensor
- Reduces possibility of damage to seal on sensor

Reference

NEHS0935, Tool Operating Manual, Using the 265-4177 and 265-4209 Service Tool Groups to Install Sensors in Position-Sensing Hydraulic Cylinders

Item	Part Number	Description	Quantity
1	265-4212	Slide Hammer Group	1
2	265-4180	Installer Group	1
3	265-4181	Sleeve	1
4	265-4182	Sleeve Removal Tool	1
--	4C-9662	Instrument Case, 355 x 832 x 115 mm (14.0 x 32.8 x 4.5 in)	1
--	265-4211	Foam Insert	1

Position Sensor Cylinder (PSC) Gauge Tools

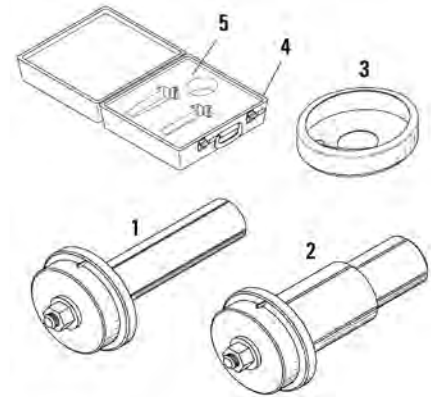
Essential Tool

SMCS Code: 7562, 5721

Model: 12M, 14M, 16M, and 24M Motor Graders 120M, 140M, 160M Motor Graders, 966K, 966L, 972K, 980K

Warranty: Six Months

- Used to precisely measure center-to-center distances between rod ends of steering cylinders
- Used with two 5P-8637 V-Blocks
- Measures cylinders in closed and open position
- Obtaining accurate measurements are necessary after servicing cylinders
- Measurements are necessary to input trim values into ECM (controls steering logic)
- Each gauge group includes two pins; a stepped gauge pin for cylinder rod ends and a straight gauge pin for cylinder tube ends and a precision measuring tape



Reference

NEHS1038, Tool Operating Manual, 307-7586 PSC Gauge Group, 321-5932 PSC Gauge Group, Used For Manual Length Measurement of Position Sensing Steering Cylinders on M-Series Motor Graders

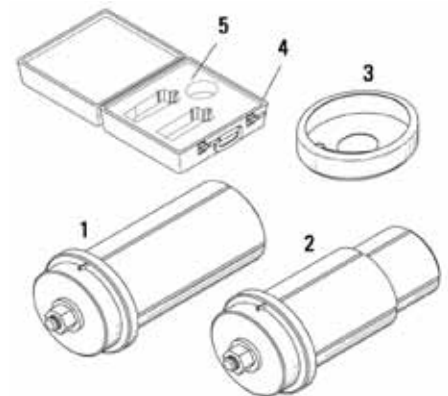
307-7586 PSC Gauge Group for 120M, 140M, and 160M Motor Graders	
Item	Description
Not shown	NEEG3106 Decal
Not shown	NEHS1038 Tool Operating Manual

Item	Part Number	Description
--	321-5932	Gauge Group
--	307-7586	Gauge Group
307-7586 PSC Gauge Group for 120M, 140M, and 160M Motor Graders		
1	307-6222	Gauge Pin Assembly
4	4C-3975	Storage Case
5	307-7585	Foam Insert
2	307-6223	Gauge Pin Assembly
3	307-6224	Pi Tape (with case)

Gauge Group for 24M Motor Grader

321-5932 PSC Gauge Group for 24M Motor Grader	
Item	Description
Not shown	NEEG3107 Decal
Not shown	NEHS1038 Tool Operating Manual

Item	Part Number	Description
321-5932 PSC Gauge Group for 24M Motor Grader		
1	321-5644	Gauge Pin Assembly
2	321-5646	Gauge Pin Assembly
3	307-6224	Pi Tape (with case)
5	307-7584	Foam Insert
4	4C-3975	Storage Case



Gauge Group for 966K, 966L, 972K Wheel Loaders

384-3757 PSC Gauge Group for 966K, 966L, 972K Wheel Loaders		
Item		Description
Not Shown		NEEG3126 Decal
Not Shown		NEHS1138 Tool Operating Manual
Item	Part Number	Description
1	384-3758	Pin Assembly
2	384-3758	Pin Assembly
3	384-3759	Pin Tape
4	4C-3975	Storage Case
5	-	Foam Insert

Gauge Group for 980K Wheel Loaders

384-3760 PSC Gauge Group for 980K Wheel Loaders		
Item		Description
Not Shown		NEEG3126 Decal
Not Shown		NEHS1139 Tool Operating Manual
Item	Part Number	Description
1	384-3761	Pin Assembly
2	384-3761	Pin Assembly
3	384-3759	Pin Tape
4	4C-3975	Storage Case
5	-	Foam Inssert

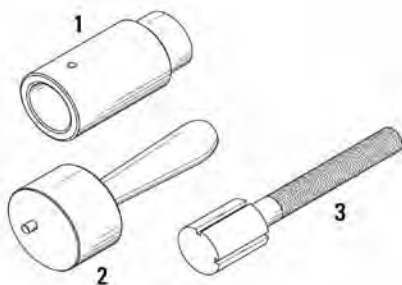
301-9788 Sensor Installer Group

Essential Tool

SMCS Code: 7562, 5721

Model: 430E (DDT1-Up, EAT1-Up) Backhoe Loaders

Warranty: Six Months



- Used to install sensor into position-sensing hydraulic cylinder (PCS)
- Ensures accurate alignment of sensor
- Reduces possibility of damage to seal or cylinder bore
- Includes protective storage case

Reference

REN6485, Service Manual

NEHS0999, Tool Operating Manual, 301-9788 Sensor Installer Group

Item	Part Number	Description
1	302-1473	Sleeve
2	302-1474	Alignment Pin (with handle)
3	302-1475	Installer
--	302-1472	Foam Inserts (for case)
--	6V-3073	Case

162-7704 Seal Installer Group

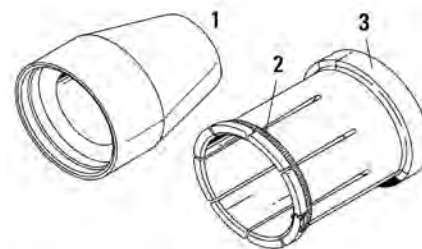
Essential Tool

SMCS Code: 5456-017, 5457-017, 5458-017

Model: 318B, 320, 320B, 322, 322B, and 325 Excavators

Warranty: Six Months

- Used to install 096-7803 Seal onto 41-3614 Cylinder Piston
- Inside diameter of pusher can be used to size outside diameter of seal after installation
- Helps prevent seal damage during installation
- Made from durable plastic



Tapered Seal Guide	
Outside diameter (large end)	121.0 mm (4.76 in)
Outside diameter (small end)	105.4 mm (4.15 in)
Counterbore diameter	119.6 mm (4.71 in)
Inside diameter	76.2 mm (3.00 in)
Pusher	
Inside diameter	120.1 mm (4.73 in)
Length	152.4 mm (6.00 in)
Items with no Part Number	
Item	Description
1	Tapered Seal Guide
3	Sealing ring pusher

Item	Part Number	Description
2	130-8364	Extension Spring

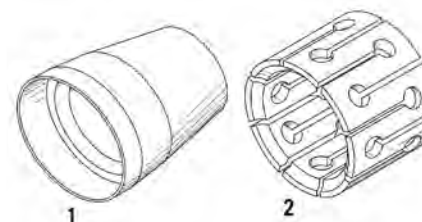
Seal Installer Group

SMCS Code: 5456-017, 5457-017, 5458-017

Model: 312B to 385B, 312C, and 330C Excavators

Warranty: Six Months

- Used to install hydraulic cylinder piston seals
- Tapered mandrel (1) stretches seal over piston — helps prevent seal damage during installation
- Sealing ring pusher (2) uniformly pushes seal over mandrel (1) and into piston groove
- Two different length mandrels (1) are required to install seals on double groove pistons
- Inside diameter of sealing ring pusher (2) can be used to “size” outside diameter of seal after installation
- Sealing ring pushers are made from durable plastic, tapered mandrels are steel construction



Tapered Mandrel (Item 1)						
Part Number	Outside Diameter Large End	Outside Diameter Small End	Counter Bore Diameter	Inside Diameter	Counter Bore Length	Overall Length
318-2322	52 mm (2.05 in)	36.9 mm (1.45 in)	50.03 mm (1.98 in)	33.9 mm (1.33 in)	15 mm (0.59 in)	60 mm (2.36 in)
318-2323	62 mm (2.44 in)	41.9 mm (1.65 in)	60.03 mm (2.37 in)	38.9 mm (1.53 in)	13 mm (0.51 in)	72 mm (2.83 in)
318-2324	72 mm (2.83 in)	50.3 mm (1.98 in)	70.03 mm (2.77 in)	47.3 mm (1.86 in)	17 mm (0.67 in)	82 mm (3.23 in)

(Continued)

Hydraulic Component Disassembly and Assembly

Seal Installer Group (Continued)

SMCS Code: 5456-017, 5457-017, 5458-017

Model: 312B to 385B, 312C, and 330C Excavators

Warranty: Six Months

Vehicle System Tools

Tapered Mandrel (Item 1)						
Part Number	Outside Diameter Large End	Outside Diameter Small End	Counter Bore Diameter	Inside Diameter	Counter Bore Length	Overall Length
318-2325	77 mm (3.03 in)	54.6 mm (2.15 in)	75.03 mm (2.96 in)	51.6 mm (2.03 in)	20 mm (0.79 in)	85 mm (3.35 in)
318-2326	82 mm (3.23 in)	58.7 mm (2.31 in)	80.03 mm (3.16 in)	55.7 mm (2.19 in)	20 mm (0.79 in)	90 mm (3.54 in)
318-2327	92 mm (3.62 in)	67.2 mm (2.65 in)	90.03 mm (3.55 in)	64.2 mm (2.53 in)	20 mm (0.79 in)	95 mm (3.74 in)
318-2328	102 mm (4.02 in)	75.6 mm (2.98 in)	100.03 mm (3.95 in)	72.6 mm (2.86 in)	20 mm (0.79 in)	100 mm (3.94 in)
318-2329	132 mm (5.20 in)	100.9 mm (3.97 in)	130.03 mm (5.13 in)	97.9 mm (3.85 in)	24 mm (0.94 in)	114 mm (4.49 in)
318-2972	52 mm (2.05 in)	36.9 mm (1.45 in)	50.03 mm (1.98 in)	33.9 mm (1.33 in)	35 mm (1.38 in)	80 mm (3.15 in)
318-2973	62 mm (2.44 in)	41.9 mm (1.65 in)	60.03 mm (2.37 in)	38.9 mm (1.53 in)	31 mm (1.22 in)	90 mm (3.54 in)
318-2974	72 mm (2.83 in)	50.3 mm (1.98 in)	70.03 mm (2.77 in)	47.3 mm (1.86 in)	35 mm (1.38 in)	100 mm (3.94 in)
318-2975	77 mm (3.03 in)	54.6 mm (2.15 in)	75.03 mm (2.96 in)	51.6 mm (2.03 in)	40 mm (1.57 in)	105 mm (4.13 in)
318-2976	82 mm (3.23 in)	58.7 mm (2.31 in)	80.03 mm (3.16 in)	55.7 mm (2.19 in)	40 mm (1.57 in)	110 mm (4.33 in)
318-2977	92 mm (3.62 in)	67.2 mm (2.65 in)	90.03 mm (3.55 in)	64.2 mm (2.53 in)	40 mm (1.57 in)	115 mm (4.53 in)
318-2978	102 mm (4.02 in)	75.6 mm (2.98 in)	100.03 mm (3.95 in)	72.6 mm (2.86 in)	40 mm (1.57 in)	120 mm (4.72 in)
318-2979	132 mm (5.20 in)	100.9 mm (3.97 in)	130.03 mm (5.13 in)	97.9 mm (3.85 in)	45 mm (1.77 in)	135 mm (5.31 in)

Seal Installer Group

Sealing Ring Pusher (Item 2)		
Part Number	Inside Diameter	Length
318-2314	43.4 mm (1.70 in)	44 mm (1.73 in)
318-2315	49.3 mm (1.94 in)	48 mm (1.89 in)
318-2316	59.2 mm (2.33 in)	60 mm (2.36 in)
318-2317	64.2 mm (2.53 in)	64 mm (2.52 in)
318-2318	69.1 mm (2.72 in)	72 mm (2.83 in)
318-2319	79.0 mm (3.11 in)	80 mm (3.15 in)
318-2320	88.9 mm (3.50 in)	88 mm (3.46 in)
318-2321	118.7 mm (4.67 in)	120 mm (4.72 in)

Piston Seal and Rod Installers

SMCS Code: 4303-016

Model: TH62, TH63, TH82, and TH83 Telescopic Material Handler

Warranty: Six Months

125-9791 Seal Installer

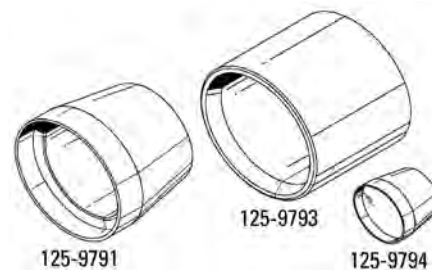
- Used to install piston seals while preventing seal damage during installation
- Locates over piston rod and guides seals over piston and into their correct position

125-9792 Seal Resizer

- Used to compress piston seals to their correct size during installation
- Installs over piston and guides seals into cylinder body
- Helps prevent damaging seals during assembly

125-9793 Installer Rod

- Used to help install piston rod into cylinder body while preventing seal damage during assembly (slips onto end of rod)
- Locates over end of piston rod to guide seals onto rod



Reference

SENR5846; Disassembly and Assembly;
TH62, TH63, TH82, and TH83 Telehandlers,
Machine Systems

Part Number	Description	Length	Outside Diameter	Inside Diameter	Material
125-9791	Seal Installer	70.0 mm (2.8 in)	91.2 mm (3.59 in)	67.0 mm (2.637 in)	Nylon or steel
125-9792	Seal Resizer	70.0 mm (2.8 in)	101.2 mm (4.98 in)	90.03 mm (3.544 in)	Nylon or steel
125-9793	Installer Rod	44.00 mm (1.7 in)	44.98 mm (1.771 in)	31.75 mm (1.25 in)	Nylon or steel

4S-9446 Clamp Assembly

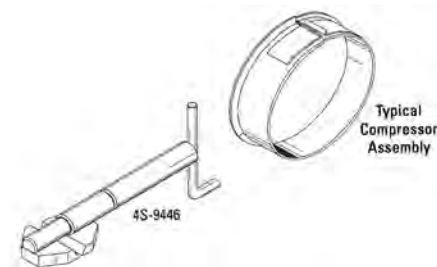
Compressor Assemblies

Model: All models with hydraulic cylinders

Warranty: Six Months

- Used to expand or compress hydraulic cylinder seals before installation

Part Number	Size	Description
4S-9446	—	Clamp Assembly
Compressor Assemblies		
9S-0289	38.1 - 72.2 mm (1.5 - 3.0 in)	—
4S-9450	114.3 - 120.7 mm (4.5 - 4.75 in)	—
4S-9453	152.4 - 158.8 mm (6.0 - 6.25 in)	—



175-1344 Piston Installer

Essential Tool

SMCS Code: 5453-0170

Model: 315B, 317B, and 318B Excavators (Grenoble Version)

Warranty: Six Months

- Used to install spool assembly into 168-3657 Boom Lowering Check Valve
- Pilots spool assembly into main valve body (prevents damage to either component)
- Makes assembly easier and quicker

Large OD	24.89 mm (0.980 in)
Small OD	20.00 mm (0.787 in)
Length	276 mm (10.9 in)
Thread	M10 x 1.0



(Continued)

Hydraulic Component Disassembly and Assembly

175-1344 Piston Installer (Continued)

Essential Tool

SMCS Code: 5453-0170

Model: 315B, 317B, and 318B Excavators (Grenoble Version)

Warranty: Six Months

Part Number	Description
175-1344	Piston Installer

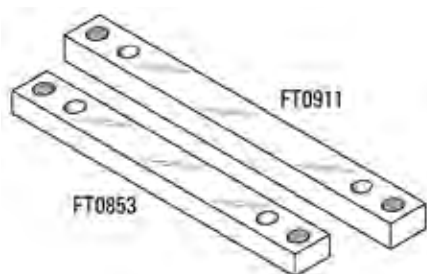
FT0853 Adapter

FT0911 Adapter

SMCS Code: 5100-011

Model: 992 Wheel Loader

Warranty: None



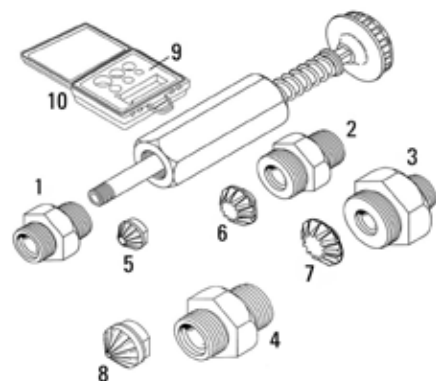
- Required to remove lift cylinder trunnion bearing retainer
FT0853 for serial number 25K1-404
FT0911 for serial numbers 25K405-Up
- Should be used with 1A-1135 Bolts and 3L-2227 Forcing Bolts
- Material: SAE 1020 steel

229-3612 Relief Valve Tool Assembly

Essential Tool

Model: Cat® Hydraulic Control Valves

Warranty: Six Months



- Used to repair/recondition worn valve seats in hydraulic control valve body (line relief valve seats only)
- Restores valve seat to factory specifications
- No need to remove valve; repair is performed “in-chassis”
- In most cases, valve assembly is repaired and not replaced — saves time and expense
- Works on four sizes of line relief valves: 1 1/16 , 1 5/16 , 1 5/8, and M27 threaded valve port
- Comes with case, foam insert, and operating instructions

Reference

NEHS0871, Repairing Line Relief Valve Seats Using the 229-3612 Hydraulic Valve Seat Repair Kit

Item 9	Part Number	Description
--	229-3612	Relief Valve Tool Assembly
Service/Repair Parts		
1	229-3613	Adapter Assembly for 1 1/16 - 12 in threaded port
2	229-3618	Adapter Assembly for 1 5/16 - 12 in threaded port
3	229-3619	Adapter Assembly for 1 5/8 - 12 in threaded port
4	361-1593	Adapter Assembly for M27 x 1.5 mm threaded port
5	229-3615	Cutter for 1 1/16 in threaded port
6	229-3616	Cutter for 1 5/16 in threaded port
7	229-3617	Cutter for 1 5/8 in threaded port
8	361-1591	Cutter for M27 threaded port
9	229-3620	Foam Block

(Continued)

229-3612 Relief Valve Tool Assembly (Continued)

Essential Tool

Model: Cat® Hydraulic Control Valves

Warranty: Six Months

Item 9	Part Number	Description
Service/Repair Parts (Continued)		
10	6V-3072	Case - Plastic, NEEG2574 Group Decal on lid (9U-7402 Group)
Not shown		
--	4B-4280	Washer
--	6W-7301	Retaining Ring

416-8216, 416-8217 Sleeves

FT3207 Impact Rod

Model Usage: Cat Worktool Auto Connect-40

Warranty: Six Months

- Sleeves 416-8216 and 416-8217 are used to install seals onto sleeve assembly
- FT3207 is designed to remove and install 393-1662 and 393-1663 cartridges in and out of manifold

Reference

KENR6576, Assembly and Disassembly Procedures

Specifications		
Part Number	Dimensions	Weight
416-8216	145 x 45 mm (5.7 x 1.8 in)	.67 kg (1.5 lb)
416-8217	163.52 mm (6.4 x 2.1 in)	.67 kg (1.5 lb)
FT3207	304.8 x 38.1 mm	1.0 kg (2.2 lb)



361-1591 Cutter, 361-1593 Adapter Assembly

Essential Tool

SMCS Code: 5453-017

Model: 311C, 312C, 313C, 314C, 315C, 311D, and 314D Excavators

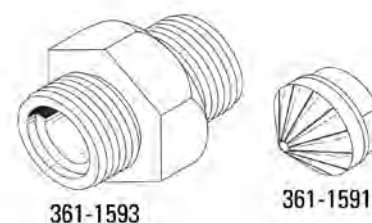
Warranty: Six Months

- Used to repair/recondition worn valve seats in hydraulic control valve body (line relief valve seats only)
- Used with 229-3612 Relief Valve Tool Assembly
- Restores valve seat to factory specifications
- No need to remove valve; repair is performed "in-chassis"
- In most cases, valve assembly is repaired and not replaced —saves time and expense
- 361-1591 Cutter features 10 teeth at a 117 degree angle with a zero degree rake
- 361-1593 Adapter Assembly threads into 229-3612 Relief Valve Tool and then attaches to line relief port on main hydraulic control valve

Reference

NEHS0871, Repairing Line Relief Valve Seats Using the 229-3612 Hydraulic Valve Seat Repair Kit

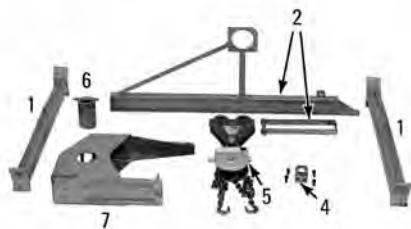
Part Number	Description
361-1591	Cutter for M27 threaded port
361-1593	Adapter Assembly for M27 x 1.5 mm threaded port



Lift Cylinder Removal and Installation Tools

Model: 992 Wheel Loader

Warranty: Six Months



- Used to remove and install lift cylinders without use of heavy crane and without removing lift arms and bucket

Item	Part Number	Description
2	—	Beam Group
3	—	Trolley
4	FT0845	Bracket with four S01595 Bolts
6	FT0844	Pin
7	FT0846	Lifting Bracket
8	FT0951	Guide

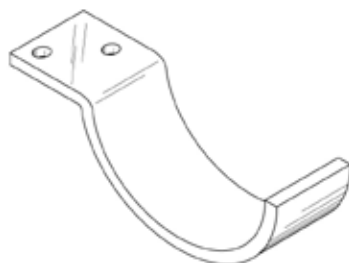
Item	Part Number	Description
1	9S-6340	Lift Arm Support Assembly – 2 required
5	9S-9101	Sling Assembly

FT0951 Guide

SMCS Code: 5100-010

Model: 992

Warranty: None



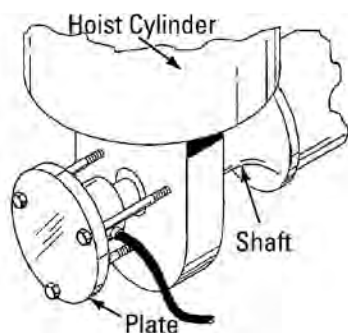
- When installing 992 lift cylinders, assemble this guide on 9S-9101 Sling Assembly to prevent chain from slipping
- Used only when lowering cylinder with one chain

FT2442 Puller Plate

SMCS Code: 5102-011

Model: 793 and 793B Off-Highway Trucks

Warranty: None



- Used to hydraulically separate lower eye of body lift cylinder from 8X-1213 Shaft (part of frame) — very difficult to remove without puller tooling
- Used with three 9X-6151 Bolts, one cylinder, three 7X-0533 Washers, and a hydraulic power source
- Current lift cylinders have puller holes to accommodate tooling — former cylinders without puller holes can be reworked per Service Magazine article 6/28/93

Reference

Service Magazine, 6/28/93 "Puller Holes Added to Hoist Rod Assembly for Easy Removal"

(Continued)

FT2442 Puller Plate (Continued)

SMCS Code: 5102-011

Model: 793 and 793B Off-Highway Trucks

Warranty: None

Capacity	890 kN (100 tons)
Outside diameter	320.0 mm (12.6 in)
Thickness	38.1 mm (1.50 in)
Bolt hole circle	264.0 mm (10.4 in)
Hole diameter	3300 mm (1.3 in)
Material	ASTM A36 plate steel

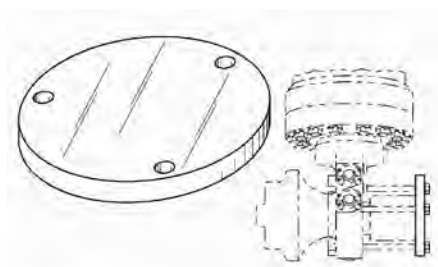
FT3075 Puller Plate

SMCS Code: 5102-011

Model: 784, 785, and 789 Off-Highway Truck

Warranty: None

- Used to hydraulically separate lower eye of 9T-2807 Hoist Cylinder from 6G-6499 Axle Group
- Used with dealer supplied hardware and components: three 4J-7945 Bolts, three 5P-8248 Washers, one single acting, spring return hydraulic lifting cylinder, 6G-8221 Retainer Plate, and a hydraulic power supply and hose
- Material: A36 Plate Steel



FT3153 Hoist Cylinder Puller Assembly

Essential Tool

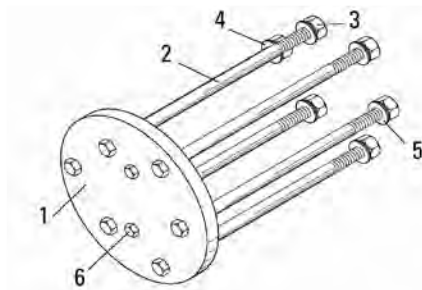
SMCS Code: 5102-011

Model: 770, 772, 773F, 775F, and 777F Off-Highway Trucks

Warranty: None

- Used to separate lower eye of hoist cylinder from axle group
- Used with 6V-3160 Hydraulic Cylinder Group
- Make puller plate from SAE 4140 Steel, hardened to RKW C27-33

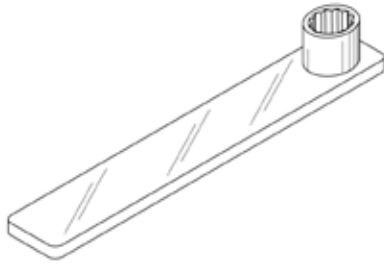
Item with no Part Number		
Item	Description	Quantity
1	Puller Plate	1



Item	Part Number	Description	Quantity
2	6V-6546	Bolt, 1/2-13 x 356 mm (14 in) long	6
3	1F-7958	Full Nut, 1/2-13	6
4	5P-1076	Hard Washer, 13.5 mm ID x 30 mm OD	3
5	5P-8245	Hard Washer, 13.5 mm ID x 25.5 mm OD	3
6	6V-1943	Bolt, 3/8-16 x 28.6 mm (1.13 in) long	2

FT1612 Wrench Assembly

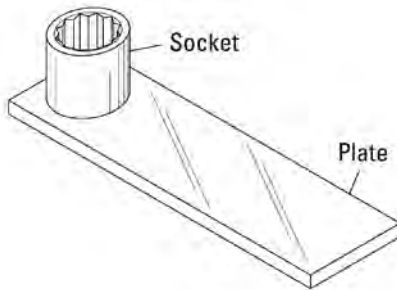
SMCS Code: 5050-025
 Model: 215 and 225 Excavators
 Warranty: None



- Used with 3/16 inch hex wrench for adjustment of piston pump servo valve
- Used on locknut for adjustment screw which is recessed in plug
- Required: 8H-8551 Socket, 1/2 inch drive, 11/16 inch, 12 pt., 38.1 mm (1 1/2 inch) long

FT2774 Wrench Assembly

SMCS Code: 5050-025
 Model: 963C and 973C Track Loader
 Warranty: None



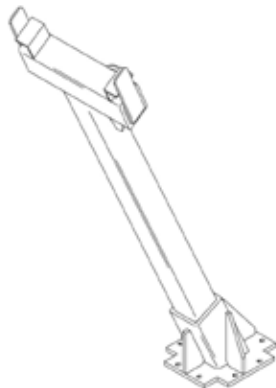
- Used to adjust servo cylinder actuator
- Plate: SAE 1020 steel
- Socket: 8H-8555, 15/16 , 12 point

Vehicle System Tools

174-7525 Telehandler Boom Support

Essential Tool

SMCS Code: 5050-010
 Model: All Telehandler Models
 Warranty: Six Months



European Union compliant, CE marked

- Used to support main boom in a raised position during maintenance and service operations
- Bolts in place of rubber bumper pad centered on top of telehandler machine body
- Designed to clear tubes on bottom of boom
- Designed with heavy-duty square tubing

Part Number	Description
174-7525	Telehandler Boom Support

FT2583 Alignment Tube

SMCS Code: 5104-012

Model: D11R Track-Type Tractor

Warranty: None

- Used to maintain spacers and tilt cylinder when installing pin on dozer blade tilt cylinder assembly
- Material: steel



FT0506 Lifting Fixture

SMCS Code: 4094-017, 3050-017, 3108-017, 6236-017, 7107-017, 3159-017

Model: 3-Axle Tractor-Scrapers

Warranty: None

- Used to lift hydraulic tank on 3-axle tractor-scrappers
- 3D-6684 Cap used to fabricate the tool

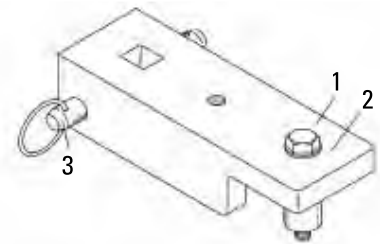


191-3557 Hydraulic Filter Removal Adapter

Model: All 300B Series Excavators

Warranty: Six Months

- Used to take out hard-to-remove hydraulic filter capsules
- Eliminates possible damage to filter capsule during removal
- 3/8-16 threaded hole for eyebolt
- 1/2 inch square drive for ratchet wrench



Service/Repair Parts		
Item	Part Number	Description
1	1H-5403	Bolt
2	9M-1974	Washer
3	3W-9402	Pin
--	191-3557	Hydraulic Filter Removal Adapter

Tools for Servicing Cat® Piston-Type Hydraulic Motors

SMCS Code: 5058-017

Model: See Chart

Warranty: Six Months

- Typical piston motor tools are illustrated
- Use chart to select tools for all machines



Servicing Tools

Item	Description	215 8J-6853 Motor ¹	225 9J-9362 Motor ¹	235 8J-1905 Motor	245 3G-7230 Motor ¹	245 8J-4379 Motor ¹	110G-120G 8J-6730 Motor	12G-130G- 140G 8J-0498 Motor	14G-16G 8J-6855 Motor ¹	988 7J-8240 Motor ¹
1	Retraction Plate (1) or Clamp (2)			5P-2989	5P-2989					
2	Retraction Plate (1) or Clamp (2)			5P-2989	5P-2989					
3	Depth Gauge	6V-2012	6V-2012	6V-2012	6V-2012	6V-2012	6V-2012	6V-2012	6V-2012	6V-2012
4	Depth Gauge Rod			6V-0088 and 6V-0091	6V-0088 and 6V-0091					
5	Pump Fixture									
6	Support Block	FT1017	FT1017	FT1017	FT1017	FT1017	FT1017	FT1017	FT1017	FT1017
7	Protective Plate									
8	Seal Driver									
9	Spring Compressor									
10	Stop Angle Bar									
11	Gauging Bar									
12	Spanner Wrench					5P-2190			5P-2190	2P-2317
13	Shaft Fixture		FT1018			FT1018				FT1018
14	Swash-plate Link Clips		5P-4759	5P-4759	5P-4759	5P-4759			5P-4759	
15	Guide Rod	FT1016	FT1157	FT1145	FT1145	FT1157	FT1016	FT1016	FT1157	FT1016

¹ Discontinued part numbers.

(Continued)

Hydraulic Component Disassembly and Assembly

Servicing Tools (Continued)



Tools for Servicing Cat® Piston Type Hydraulic Pumps

SMCS Code: 5058-017

Model: See Chart

Warranty: Six Months

- Typical piston pump tools are illustrated
- Use chart to select tools for all machines



Vehicle System Tools

Servicing Tools

Item	Description	215 8J-6848 Pump	225 8J-0448 Pump ¹	235 8J-6773 Pump ¹	245 9J-1993 Pump ¹	16G 8J-9249 Pump ¹	14G 9J-0439 Pump	12G 9J-0688 Pump ¹
1	Puller Bolt							
2	Bearing Driver							
3	Seal Driver							
4	Handle			FT1146	FT1146			
5	Pump Fixture							
6	Fixture and Rods			FT1549 ¹ FT1531 FT1550	FT1549 ¹ FT1531 FT1550			
7	Spanner Wrench			FT1532 ²	FT1532 ²			
8	Guide Rod	FT1016, FT1038	FT1038	FT1145	FT1145			
9	Support Block	FT1017	FT1017	FT1017	FT1017			
10	Bracket Assembly							
11	Body Fixture Plate			FT1147	FT1147			
12	Drive Plate, Fixture Plate				FT1148	FT1148		
12	Bearing Cone			FT1149	FT1149			
14	Fixture Plate			FT1150	FT1150			
15	Retraction							
16	Plate (15) or Clamp (16)							
17	Protective Plate							
18	Socket Assembly					5P-3038		
19	Spring Compressor							
20	Step Plate							
¹ Discontinued								

Hydraulic Component Disassembly and Assembly

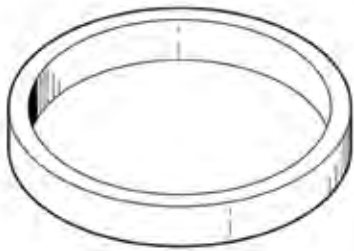
179-6521 Test Ring

Essential Tool

SMCS Code: 5070-016

Model: 988G Wheel Loader or other machines with discontinued 146-8030 Piston Pumps

Warranty: Six Months



- Used to quickly and easily measure pump barrel lift-off shim thickness on discontinued 146-8030 Pumps
- Heat-treated and precision ground for durability and accurate measurements
- Made of stainless steel for long, corrosion-free life

Reference

REN2173, Service Manual, 988G Wheel Loader Machine Systems Disassembly and Assembly

Part Number	Description
179-6521	Test Ring

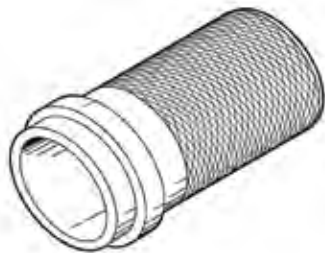
180-6533 Seal Driver

Essential Tool

SMCS Code: 5070-016, 5058

Model: 345B Series II Excavator and other machines with discontinued 170-7572 Hydraulic Piston Motors

Warranty: Six Months



- Used to install shaft seal without disassembling motor
- Proper installation provides longer service life
- Tools are heat-treated and precision machined
- Tools are black oxide coated for long, corrosion-free life

Reference

SENR1934, Service Manual, 345B and 345B Series II Excavators Machine Systems Disassembly and Assembly

Seal inside diameter	53.98 mm (2.125 in)
Seal outside diameter	77.88 mm (3.066 in)
Seal depth from housing face	13.80 mm (0.543 in)

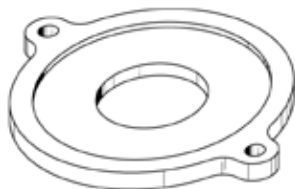
Part Number	Description
180-6533	Seal Driver

Plate Assembly

SMCS Code: 5070-016

Model: Cat® Designed Hydraulic Piston Pumps

Warranty: Six Months



- Plate assembly holds rotating group, swashplate, and shaft together as one unit while removing or installing this assembly from/into the pump housing
- Bolt plate assembly in place using 2 customer-supplied bolts and washers
- Black oxide coated
- Material: steel

Part Number	Application	Center Distance Between Bolt Holes
424-6902	180 cc Pump	173 mm (6.81 in)
129-1028	250 cc pump	188.7 mm (7.43 in)

5P-2390 Gauge Tool Group

SMCS Code: 3108-017, 3108-025, 4150-010, 4150-012, 3108-016, 3103-017, 3100-017

Model: 225 and 235 Excavators

Warranty: Six Months

- Used with 8S-2328 Dial Test Indicator Group to set pump drive bearing clearance to an accuracy of ± 0.03 mm (± 0.0001 in)
- Fits directly into all 3 gears of 225 Excavator pump drive and center gear of 235 Excavator pump drive
- Can also be adapted to outer 2 gears of 235 Excavator pump drive, which have larger splines, by using 38.0 mm (1.5 in) length piece of 25.0 mm (1.0 in) internal diameter XT-3 Hose which has been cut through on 1 side
- When used in outer gears of 235 Excavator pump drive, dial indicator stylus must be placed directly on gear hub, rather than the end of tool group, to achieve desired accuracy



Item	Part Number	Description
1	1K-6872	Locknut
1	1B-4330	Nut
1	5H-6554	Setscrew

Timing Tools for Scrap Shear Rotators

Essential Tool

SMCS Code: 6700-531

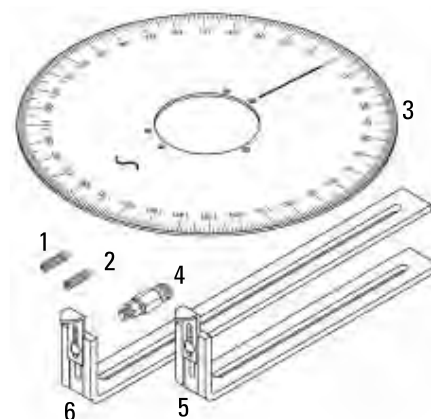
Model: All Scrap Shears

Warranty: Six Months

- Used to provide accurate timing of 190 degree rotating scrap shears after repair
- Two spiral gears are timed to obtain 95 degree rotation from zero in each direction
- Makes installation and timing process quicker and easier
- Use 170-0545 Degree Wheel and 170-0552 Alignment Stud Group on all models
- Use locator screws, timing ring assemblies, and pointer groups on specific models only
- Tools serviced separately to help lower dealer cost

Reference

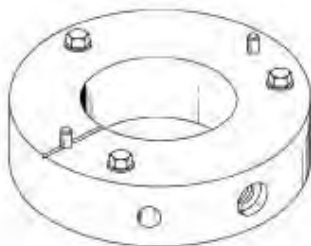
REN4423, Service Manual, Scrap Shear Rotators



Item	Part Number	Description	Models
1	170-0542	Locator Screw	S25, S30, S40, S50, S130, S225, S230, S240, S250, S2130
2	170-0544	Locator Screw	S80, S90, S280, S290
3	170-0545	Degree Wheel	All Models
4	170-0552	Alignment Stud Group (2 required)	All Models
5	170-0553	Pointer Group	S25, S50, S130, S225, S250, S2130
6	170-0554	Pointer Group	S40, S80, S90, S240, S280, S290

Hydraulic Component Disassembly and Assembly

Timing Ring Assembly



Typical
Timing Ring Assembly

Part Number	Description	Models
170-0546	Timing Ring Assembly	S25, S225
170-0547	Timing Ring Assembly	S30, S230
170-0548	Timing Ring Assembly	S40, S240
170-0549	Timing Ring Assembly	S50, S130, S250, S2130
170-0550	Timing Ring Assembly	S80, S280
170-0551	Timing Ring Assembly	S90, S290
Service Repair Parts: Timing Ring Assembly		
095-7992	Dowel	--
8T-4200	Bolt	--
8T-4224	Washer	--
Pointer Group		
1D-4669	Carriage Bolt	--
1F-1739	Wing Nut	--
Locator Screw		
6V-8188	Nut - Full	--
8T-4223	Washer - Hard M12	--

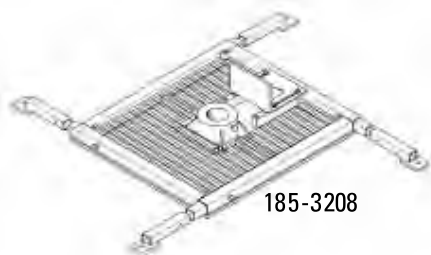
185-3208 Hydraulic Hammer Stand

FT2639 Hammer Stand Pin Group

SMCS Code: 0756-745, 7960

Model: All Cat® Hydraulic Hammers

Warranty: 185-3208 Hydraulic Hammer Stand: Six Months, FT2639 Hammer Stand Pin Group: None



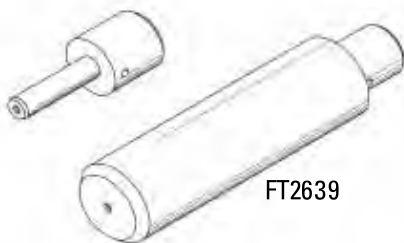
185-3208

- Used to hold hydraulic hammers during repairs
- Universal repair stand holds all hydraulic hammers
- Includes oil basin to contain oil spills
- Extendible/retractable legs (extend to stabilize operation and retract for easier storage)
- FT2639 is a complete set of drawings for all center pins (make only pins needed to service specific hammers)

Base size (retracted)	1219 x 1219 mm (48 x 48 in)
Base size (extended)	2045 x 2045 mm (80 x 80 in)
Steel (pins)	1215 CF

Part Number	Description
185-3208	Hydraulic Hammer Stand

Hammer Stand Pin Group



FT2639

283-9441 Wear Sleeve Driver (Install), 283-9442 Wear Sleeve Driver (Remove)

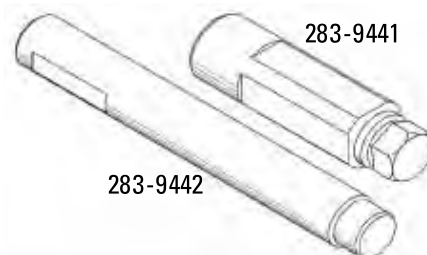
Essential Tool

SMCS Code: 6333

Model: PH 126 Hydraulic Hammer

Warranty: Six Months

- Used to remove and install 275-0756 Wear Bushing in main body of hydraulic hammer
- Used with hydraulic press to remove and install bushing
- 283-9441 Driver is used to install and 283-9442 Driver is used to remove hex-shaped bushing
- Heat-treated for strength and durability
- Hex end of driver fits ID of hex bushing
- Made from alloy steel



Reference

REN6996, Hydraulic Hammer

Disassembly and Assembly

Part Number	Description
283-9441	Wear Sleeve Driver (Install)
283-9442	Wear Sleeve Driver (Remove)

Bushing Puller Plates

Essential Tool

SMCS Code: 6333-011

Model: H115, H120, H130, H140, H160, and H180 Hydraulic Hammers

Warranty: Six Months

- Used to remove upper and lower tool bushings from hydraulic hammers
- Used with hydraulic cylinder, power pack, and threaded rod (see Service Manuals)
- Various sizes fit each model of hydraulic hammer

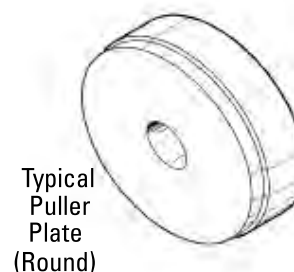
Reference

REN4422, Service Manual,

H140 and H160 Hammers

Maximum pulling capacity	27,216 kg (60,000 lb)
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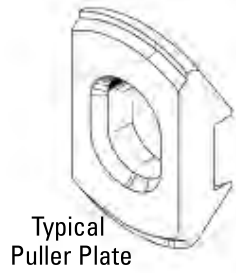
Part Number	Description
193-1169	Puller Plate, H140 (Upper Bushing)
193-1214	Puller Plate, H115 (Upper Bushing)
193-1217	Puller Plate, H120 (Upper Bushing)
193-1218	Puller Plate, H130 (Upper Bushing)
193-1229	Puller Plate, H160 (Upper Bushing)



Typical Puller Plate (Round)

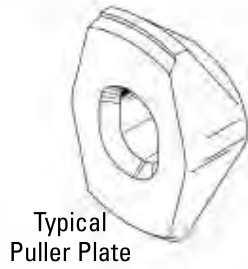
Hydraulic Component Disassembly and Assembly

Typical Puller Plate



Part Number	Description
193-1230	Puller Plate, H115 (Lower Bushing)
193-1231	Puller Plate, H120 (Lower Bushing)
193-1232	Puller Plate, H130 (Lower Bushing)
193-1236	Puller Plate, H180 (Lower and Upper Bushing)

Typical Puller Plate



Part Number	Description
193-1233	Puller Plate, H140 (Lower Bushing)
193-1234	Puller Plate, H160 (Lower Bushing)

Vehicle System Tools

Washer



Part Number	Description
112-9837	Washer (all models)

Sleeve Driver Assemblies, 293-6555 Driver Handle

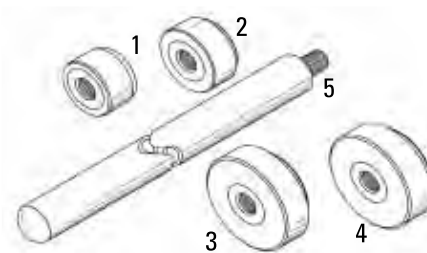
Essential Tool

SMCS Code: 6333-017

Model: H35D, H45D, H55D, and H65D Hydraulic Hammer

Warranty: Six Months

- Used to remove and install piston sleeves without damage to cylinder
- Used with threaded driver handle
- Head of sleeve driver is made from nylon to eliminate scratching or damage to cylinder wall
- Threaded portion of sleeve driver is made from steel to provide extended tool life



Reference

REN4478, Service Manual, Hydraulic Hammer Disassembly and Assembly

Item	Part Number	Description	Used On	Outer Diameter
1	293-6551	Sleeve Driver	H35D	40.0 mm (1.57 in)
2	293-6552	Sleeve Driver	H45D	50.0 mm (1.97 in)
3	293-6553	Sleeve Driver	H55D	65.0 mm (2.56 in)
4	293-6554	Sleeve Driver	H65D	75.0 mm (2.95 in)
5	293-6555	Driver Handle	--	--

Accumulator Tools for Hydraulic Hammer

Essential Tool

SMCS Code: 7201-045

Model: PH 126 Hydraulic Hammer

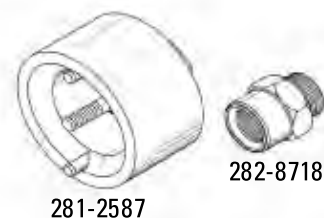
Warranty: Six Months

- Used with 121-6583 Accumulator Charging Kit

Reference

REN6996, Hydraulic Hammer Disassembly and Assembly

Part Number	Description	Use
281-2587	Spanner Wrench	Remove and install top cover of accumulator for servicing
282-8718	Charging Adapter	Recharge nitrogen-filled accumulator



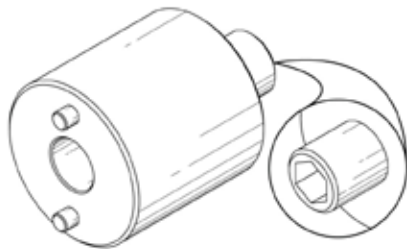
FT3143 Spanner Wrench Adapter Assembly

Essential Tool

SMCS Code: 5077-010

Model: 924H, 924Hz, 928Hz, and 930H Wheel Loaders

Warranty: None



- Used to remove and install 283-4418 Ride Control Accumulators
- Used with 1/2 inch Allen wrench socket and torque wrench
- Required to properly tighten accumulator to torque specification
- Two 6 mm (.24 in) diameter pins in tool engage holes in bottom of accumulator

Reference

KENR7617; 924H, 924Hz, 928Hz, and 930H Wheel Loaders, Machine Systems, Disassembly and Assembly

FT3079 Bushing Installer

Essential Tool

SMCS Code: 7113

Model: 735 Articulated Truck (AWR1-UP; BIN1-UP), 740 Articulated Truck (AXM1-UP; B1P1-UP), 740 Ejector Articulated Trucks (AZZ1-UP; B1R1-UP)

Warranty: None



- Used to ensure proper installation depth on hitch pin bushings in front frame
- Used to accurately install hitch pins upper and lower boss

References

Service Magazine, 3050-0009-2006

REHS3148, Special Instruction, Salvage of the Bores in the Front Frame for the Hitch Pins

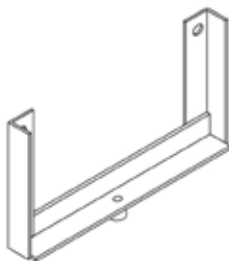
Part Number	Description	Quantity
Used With		
259-9239	Stud	--
6V-7742	Nut - Full	2
8T-3282	Washer - Hard	2
5P-8713	Plate	--

FT2617 Pump Bracket Assembly

SMCS Code: 1003-010

Model: 5130 Mass Excavator and Front Shovel

Warranty: None



- Used to provide additional support to pumps when removing or installing engine
- Prevents potential damage to pump suction lines
- Quick installation (requires only 3 bolts)
- Easily made from common angle iron
- Material: SAE 1018 steel

Reference

SENR1467, Disassembly and Assembly 3508 Engine for 5130B

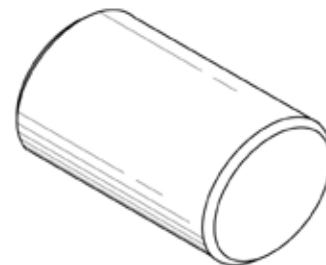
FT0964 Pilot

SMCS Code: 5102-010

Model: 773 Truck

Warranty: None

- Used to align cylinder eye with truck body brackets when installing hoist cylinders
- Material: mild steel



FT0503 Valve Insert Puller

SMCS Code: 5050-011

Model: Most Cat® Models

Warranty: None

- Used to remove control valve inserts in some hydraulic control valves
- Material: SAE 1020 steel

Items with no Part Number	
Item	Description
6	Rod, 11.11 mm (7/16 in)
7	Crosspiece
8	Plate



Item	Part Number	Description
1	1B-2339	Bolt
2	1B-4203	Nut
3	4B-4278	Washer
4	5B-9079	Nut
5	1M-1341	Rod End

Tools for Minimizing Oil Loss During Hydraulic System Disassembly

Model: Most Cat® Models

Warranty: Six Months

- Used to minimize oil loss when hydraulic system must be disassembled for some reason other than failure
- Several sizes of blocker plates available (Figure 2) for use in pump suction line and/or tank return line joints
- Special vacuum cap assembly, consisting of parts illustrated in Figure 1, is installed in place of hydraulic tank filler cap; by applying pressure air to 5P-0306 Vacuum Transducer, continuous vacuum is produced in tank
- With 3.5 kg/cm² (50 psi) air pressure applied, transducer uses 4.65 CFM of compressed air and pulls 8.75 CFM of vacuum flow at 0 psi
- Maximum of 406 mm (16 in) Hg is pulled at 5.6 kg/cm² (80 psi) or 254 mm (10 in) Hg at 3.5 kg/cm² (50 psi)
- For use on hydraulic systems only



Fig. 1
Special Vacuum
Cap Assembly

(Continued)

Hydraulic Component Disassembly and Assembly

Tools for Minimizing Oil Loss During Hydraulic System Disassembly (Continued)

Model: Most Cat® Models

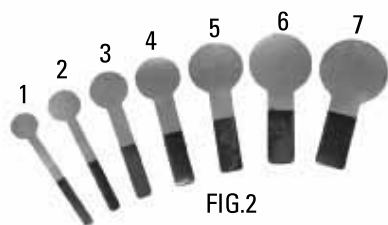
Warranty: Six Months

Item	Part Number	Description
3	FT1114 ¹	Cap
3	FT1115 ¹	Cap

¹ New drawings available in 2006

Item	Part Number	Description
1	5P-0306	Transducer - Vacuum
2	5K-5068	Nipple - Pipe Hexagon
2	6V-4142	Nipple, Unvalved (for 42000 kPa)

Blocker Plates



Item	Part Number	Description	Size
1	5P-1750	Plate	31.8 mm (1.25 in) ID line
2	5P-1751	Plate	38.1 mm (1.5 in) ID line
3	5P-1752	Plate	50.8 mm (2.0 in) ID line
4	5P-1753	Plate	63.5 mm (2.5 in) ID line
5	5P-1754	Plate	76.2 mm (3.0 in) ID line
6	5P-1755	Plate	88.9 mm (3.5 in) ID line
7	5P-1756	Plate	101.6 mm (4.0 in) ID line

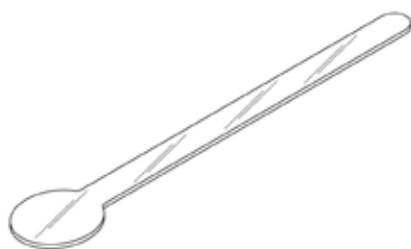
Vehicle System Tools

FT2810 Suction Line Blocker Plate

SMCS Code: 5104-032

Model: 980G Series II Wheel Loader

Warranty: None



- Used to perform a drift test on tilt cylinders
- Easy to install (just loosen tilt cylinder return line bolts and slide blocker plate into place)
- Installs with minimal oil loss and minimal contamination
- Make from 5P-1750 Blocker Plate
- Cut round end diameter from 50.0 mm (2.0 in) down to 45.0 mm (1.8 in)

Reference

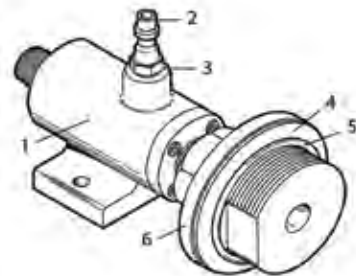
REN6018, Service Manual, Testing and Adjusting

FT2674 Vacuum Cap Assembly

Model: B-Series Hydraulic Excavators

Warranty: None

- Used to minimize oil loss when hydraulic system is disassembled for reasons other than component failure
- Install tool in place of the hydraulic tank filler plug
- Applying air pressure to 5P-0306 Transducer creates a continuous vacuum in hydraulic tank
- Made from off-the-shelf Cat® parts
- With 3.5 kg/cm² (50 psi) of air pressure applied, transducer uses 4.65 CFM of compressed air and pulls 8.75 CFM of vacuum flow at 0 kg/cm² (0 psi)
- Maximum vacuum of 406 mm (16 in) Hg at 5.6 kg/cm² (80 psi) or 254 mm (10 in) Hg at 3.5 kg/cm² (50 psi)
- Hex end of 105-2652 Plug must be drilled and tapped for a 1/4 -18 NPTF thread



Item	Part Number	Description
1	5P-0306	Transducer - Vacuum
2	4C-7156	Quick Disconnect Nipple, 1/4 NPT Female
3	4C-7099	Hex Nipple, 1/4 x 1/8 NPT
4	6C-8496	Washer
5	095-1608	O-ring Seal
6	105-2652	Plug (modified)

311-1362 Plug Vacuum Assembly

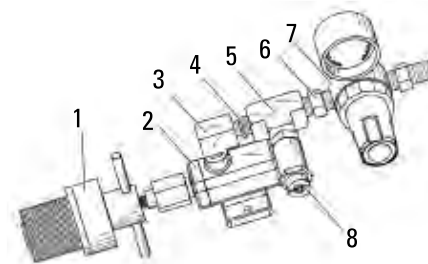
Essential Tool

SMCS Code: 5050-015

Model: M-Series Motor Graders and C-Series Skid Steer Loaders

Warranty: Six Months

- Used to create a vacuum within the hydraulic tank and hydraulic system (minimizes oil loss during repairs)
- Used with shop air supply
- Used when hydraulic system is disassembled for reasons other than component failure
- Applying air pressure to transducer creates a continuous vacuum in hydraulic system
- Used at maximum pressure of 138 kPa (20 psi) to prevent damage to hydraulic tank
- Install tool in place of hydraulic tank filler plug
- Requires a dealer-supplied 1/4 inch NPT adapter to connect air supply



Item with no Part Number	
Item	Description
8	Safety Valve (not serviced separately)

Item	Part Number	Description
1	308-6636	Plug Assembly
2	5P-0306	Transducer - Vacuum
3	3B-6552	Elbow - 90° Pipe
4	6K-1019	Pipe Nipple
5	3B-7762	Tee Fitting
6	5P-8998	Nipple - Pipe
7	4C-8852	Air Regulator

FT0649 Yoke Adapter

Model: Most Cat® Models

Warranty: None



- Used to mount hydraulic cylinders which do not have rod eyes to end post of repair stand
- One end of adapter has holes and slots to fit many different cylinders; other end has boss with tapered hole which fits cylinders with ball stud pivot

FT1631 Flare Nut Wrench

SMCS Code: 5050-010

Model: 814B Tractor; 815B and 816B Compactors

Warranty: None



- Allows easier removal and installation of tube assembly in right bulldozer lift circuit
- Connector between lift tube assembly and hydraulic control valve is difficult to tighten or loosen with standard wrench because of its location
- Can be fabricated from Snap-On RX48 Flare Nut Wrench 38.1 mm (1 1/2 in) or any similar wrench with handle bent at 90° angle
- Drawing includes instructions for bending handle

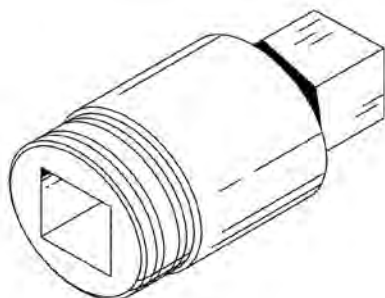
FT2789 Plug Installer

Essential Tool

SMCS Code: 5050-010

Model: 5110B Front Shovel/Mass Excavator

Warranty: None



- Used to remove heater port plug from bottom of hydraulic tank to install a cold weather, hydraulic oil heating element
- Made from 2P-8261 3/4 to 1 inch Adapter (simply grind 1 inch square drive to 7/8 inch)
- Grinding dimensions for male end: 22.0 mm (0.87 in)

FT1308 Peening Device

SMCS Code: 7206-010, 4158-010, 4158-011, 4158-012, 4158-017, 4050-016, 7106-011

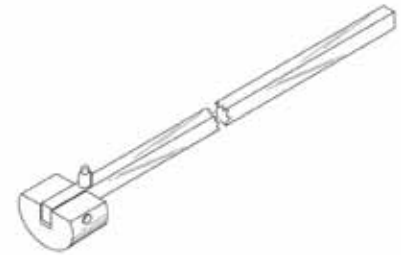
Model: D10, D11N, D6H, D7H, D8L, D8N, D9N, 589

Warranty: None

- Used to peen metal around oil holes inside hydraulic cylinders

Reference

Service Magazine of May 31, 1978



FT0624 Cylinder Spanner Wrench

SMCS Code: 5050-010

Model: 769A Truck

Warranty: None

- Used for turning 5J-4684 Intermediate Cylinder Gland on 769A Truck hoist cylinders



6V-3155 Brace Assembly

SMCS Code: 3260-010, 5050-010

Model: 943, 953 to 953D Track Loaders

Warranty: Six Months

- Should be used on lift cylinder to support lift arms during repair work
- Made from high strength alloy steel
- Has bar to hold it to extended lift cylinder rod
- Only 1 brace needed to hold lift arms in raised position



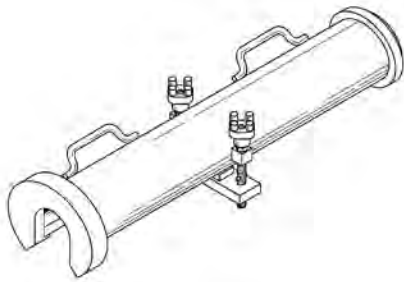
Part Number	Description
6V-3155	Brace Assembly

Hydraulic Component Disassembly and Assembly

236-1192 Lift Cylinder Brace Assembly

Model: 963 and 973 Track-Type Loaders

Warranty: Six Months



- Used to support weight of linkage arms and loader bucket, in raised position, during machine maintenance and repair
- Prevents lift arms and bucket from lowering due to an accidental loss of hydraulic pressure
- Made from high-strength alloy steel
- Only 1 brace assembly required
- Built-in cross bar keeps brace assembly attached to cylinder rod

Part Number	Description
236-1192	Lift Cylinder Brace Assembly

5P-3520 Cylinder Spanner Wrench

Model: Most Cat® Models

Warranty: Six Months



- Used with two 6V-6182 Pins to remove head retaining wire from servo cylinders for hydrostatic transmissions (pin can also be used in other applications)
- Use for the alignment, installation or removal of the cylinder gland nuts on lift trucks, the removal of head retaining wire from the servo cylinders for hydrostatic transmission
- Can also be used for general purpose application using pin hole spacings of 25.4 to 177.8 mm (1 to 7 in)
- 19.05 mm (3/4 in) diameter handle allows the use of wrench extension handles, such as the 5P-8675 Extension Handle
- 5P-3523 Screw
- Chart lists all pins for 5P-3520 Cylinder Spanner Wrench

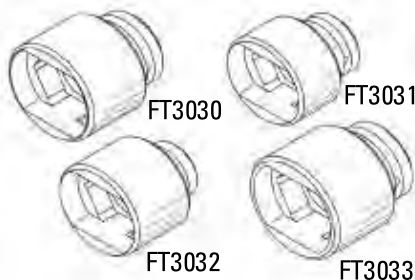
Part Number	Description	Diameter of Large End	Diameter of Small End
5P-3520	Cylinder Spanner Wrench	--	--
6V-2113	Pin	4.66 mm (0.183 in)	3.06 mm (0.12 in)
5P-3521	Pin, 4.64 and 6.24 mm (0.183 and 0.246 in)	6.24 mm (0.245 in)	4.64 mm (0.182 in)
5P-3522	Pin, 7.81 and 9.41 mm (0.307 and 0.370 in)	9.41 mm (0.37 in)	7.81 mm (0.307 in)
6V-6182	Pin	11.08 mm (0.436 in)	6.96 mm (0.274 in)

Spanner Sockets

SMCS Code: 7562

Model: All SSL and MTL Skid Steer Loaders

Warranty: None



- Used to tighten cylinder piston to proper torque
- Used with 3/4 and 1 in square drive torque wrench (do not use with impact wrench)
- Requires special tool to properly remove and install piston
- Used on loader lift and tilt cylinder pistons
- Made from Cat® impact sockets

References

REN2626; 216, 226 SSL Skid Steer Disassembly and Assembly
 REN4855; 247, 257 MTL Skid Steer Disassembly and Assembly
 REN4878; 2247B, 257B MTL Skid Steer Disassembly and Assembly

(Continued)

Spanner Sockets (Continued)

SMCS Code: 7562

Model: All SSL and MTL Skid Steer Loaders

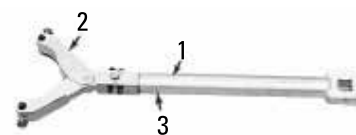
Warranty: None

Part Number	Size	Length	Drive Size	Socket
FT3030	36 mm (1.41 in)	57.2 mm (2.25 in)	3/4 in	9U-6539
FT3031	46 mm (1.81 in)	66.7 mm (2.63 in)	3/4 in	9U-6545
FT3032	50 mm (1.96 in)	73.2 mm (2.88 in)	3/4 in	9U-6546
FT3033	53.97 mm 2 1/8 in)	82.6 mm (3.25 in)	1 in	9U-6570

5P-8675 Extension Handle for 5P-3520 Cylinder Spanner Wrench

Warranty: Six Months

- Provides a 3/4 in drive handle for the 5P-3520 Spanner Wrench
- Reading will be half the applied torque if 9S-7352 Torque Wrench is combined with the 5P-3520 Spanner Wrench and the 5P-8675 Extension Handle



Item	Part Number	Description
1	5P-8675	Extension Handle
2	5P-3520	Cylinder Spanner Wrench
3	6H-3956	Spring Pin

Ejector Cylinder Service Parts

Essential Tool

SMCS Code: 5100-010

Model: D400E II, 730, and 740 Articulated Truck with Ejector Cylinder

Warranty: Six Months

- Used to disassemble and assemble ejector cylinder

Part Number	Description	Model
205-7845	Seal Installer Guide Group	--
297-2794	Guide - Seal (730)	730
213-1818	Ring Expander Group	D400E, 740
5F-9059	Ring Expander Group	730
346-8394	Fit Up Aid Group	D400E, 740, 730
213-5138	Oil Tube Guide Group	D400E, 740, 730
209-6756	Cylinder Rod Clamp Assembly	D400E, 740, 730
297-2791	Rod Adapter Assembly	730
212-8165	Stop Clamp Assembly	D400E, 740
297-2792	Stop Clamp Assembly	730
209-6757	Adjustable Clamp Assembly	D400E, 740
297-2793	Adjustable Clamp Assembly	730
8T-4986	Hose Clamp	730
8C-4810	Wear Ring	730
8T-4987	Hose Clamp	D400E, 740, 730
8C-9112	Wear Ring	D400E, 740, 730
3E-7424	Hose Clamp	D400E, 740, 730
8C-4832	Wear Ring	D400E, 740, 730

(Continued)

Hydraulic Component Disassembly and Assembly

Ejector Cylinder Service Parts (Continued)

Essential Tool

SMCS Code: 5100-010

Model: D400E II, 730, and 740 Articulated Truck with Ejector Cylinder

Warranty: Six Months

Part Number	Description	Model
8T-4989	Hose Clamp	D400E, 740
1U-2218	Wear Ring	D400E, 740
8T-4990	Hose Clamp	D400E, 740
6E-0248	Wear Ring	D400E, 740

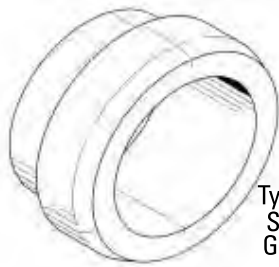
205-7845 Ejector Cylinder Seal Installer Guide Group

Essential Tool

SMCS Code: 5146-012

Model: D400E, 730, and 740 Articulated Trucks

Warranty: Six Months



Typical Seal Guide

- Used to protect the seals while assembling the load ejector cylinders
- Seal guides have a 30° chamfer angle for optimum installation

References

REN5140, Machine Systems Disassembly and Assembly, 740

REN3461, Machine Systems Disassembly and Assembly, D400E

Part Number	Description	Outside Diameter	Model
205-7845	Seal Installer Guide Group	--	--
193-3955	Ejector Cylinder Seal Guide ¹	128 mm (5.04 in)	D400E, 730, 740
193-3958	Ejector Cylinder Seal Guide	152 mm (5.98 in)	D400E, 730, 740
193-3959	Ejector Cylinder Seal Guide	180 mm (7.09 in)	D400E, 740
193-3960	Ejector Cylinder Seal Guide	212 mm (8.35 in)	D400E, 740
Sold Separately			
297-2794	Guide - Seal (730)	104.7 mm (4.12 in)	730

¹ May be used on the 730 Ejector Cylinder. However, a 0.94 mm (0.037 in) thick spacer is needed.

213-1818 Ring Expander Group

SMCS Code: 5486-017

Model: D400E Series II, 730, and 740 Articulated Trucks

Warranty: Six Months



- Used to remove and install seal rings on load ejector cylinders
- Expands the seal ring to eliminate possible scratching of the cylinder surface.

References

REN5140, Machine Systems Disassembly and Assembly for 740 Articulated Trucks

REN3461, Machine Systems Disassembly and Assembly for the D400E Series II Articulated Trucks

(Continued)

213-1818 Ring Expander Group (Continued)

SMCS Code: 5486-017

Model: D400E Series II, 730, and 740 Articulated Trucks

Warranty: Six Months

Part Number	Description	Inside Diameter	Model
213-1818	Ring Expander Group	--	D400E, 740
211-9306	Ring Expander	137.5 mm (5.41 in)	D400E, 730, 740
211-9323	Ring Expander	161.5 mm (6.36 in)	D400E, 730, 740
213-1810	Ring Expander	190 mm (7.48 in)	D400E, 740
213-1812	Ring Expander	222 mm (8.74 in)	D400E, 740
Sold Separately			
5F-9059	Ring Expander Group	114.3 mm (4.50 in)	730
Service/Repair Parts			
3B-9762	Spring	--	--
3C-8388	Roll Pin	--	--

297-2791 Rod Adapter Assembly

209-6756 Cylinder Rod Clamp Assembly

SMCS Code: 5486-017

Model: D400E Series II, 730, and 740 Articulated Dump Trucks

Warranty: Six Months

209-6756

- Used to hold fourth stage piston rod while removing or installing rod-eye
- Helps eliminate potential damage to fourth stage cylinder rod
- Clamps directly onto cylinder rod
- Reacts against hydraulic cylinder bench when removing or installing rod-eye

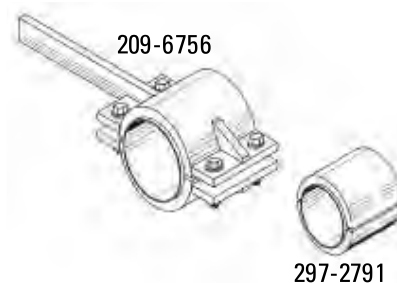
297-2791

- Sold separately for 730 Articulated Dump Truck
- Use with 209-6756 Cylinder Rod Clamp Assembly
- Use 8T-3330 Wear Ring (2) with 297-2791 Rod Adapter Assembly

References

REN5140, Machine Systems Disassembly and Assembly for 740 Articulated Dump Truck

REN3461, Machine Systems Disassembly and Assembly for D400E Series II Articulated Dump Truck



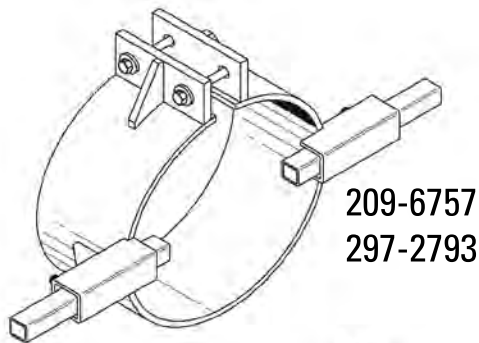
Part Number	Description
297-2791	Rod Adapter Assembly
209-6756	Cylinder Rod Clamp Assembly
Service/Repair Parts	
8T-3331	Wear Ring
9S-1366	Bolt (1/2-13)
5P-8245	Hard Washer
1F-7958	Full Nut (1/2 - 13) (fork mounting hardware)

Adjustable Clamp and Stop Clamp Assemblies

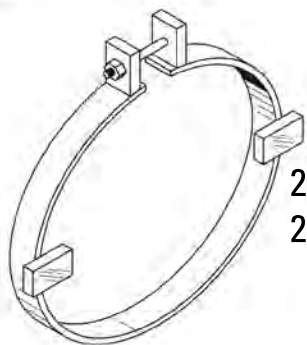
SMCS Code: 5486-017

Model: D400E Series II, 730, and 740 Articulated Dump Truck

Warranty: Six Months



209-6757
297-2793



212-8165
297-2792

- Used to disassemble and assemble load ejector cylinder
- Makes disassembly and assembly operation into a 1-man job

209-6757 and 297-2793 Adjustable Clamp Assemblies

- Prevents cylinder sections from sliding during disassembly and assembly
- Easily adjustable clamp for holding each cylinder stage

212-8165 and 297-2792 Stop Clamp Assemblies

- Keeps first stage cylinder rod in position during disassembly and assembly

References

REN5140, Machine Systems Disassembly and Assembly for 740 Articulated Dump Truck

REN3461, Machine Systems Disassembly and Assembly for D400E Series II Articulated Dump Trucks

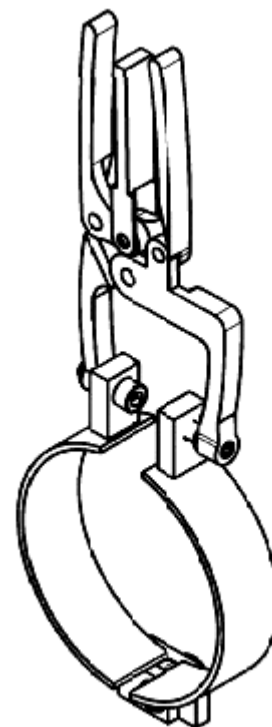
Service/Repair Parts		
Part Number	Description	Model
209-6757	Adjustable Clamp Assembly	--
297-2793	Adjustable Clamp Assembly	--
212-8165	Stop Clamp Assembly	--
297-2792	Stop Clamp Assembly	--
209-6757		
0L-1329	Bolt (1/2-13)	D400E, 740
1F-7958	Full Nut (1/2 - 13) (fork mounting hardware)	D400E, 740
4B-4994	Setscrew (3/8-16)	D400E, 740
5P-8245	Hard Washer	D400E, 740
9S-8752	Nut - Full (3/8 - 16)	D400E, 740

Service/Repair Parts		
Part Number	Description	Model
297-2793		
9K-2429	Bolt (7/16-14)	730
3S-1546	Full Nut (7/16-14)	730
4B-4994	Setscrew (3/8-16)	D400E, 740
7X-0599	Washer	730
9S-8752	Nut - Full (3/8 - 16)	D400E, 740
212-8165		
0T-0573	Bolt (3/8-16)	D400E, 740
9S-8752	Nut - Full (3/8 - 16)	D400E, 740
297-2792		
1M-0644	Bolt (3/8-16)	730
9S-8752	Nut - Full (3/8 - 16)	D400E, 740

FT3190 Ring Compressor

- Used to compress piston seals during rework procedure of hydraulic cylinders 242-4271 & 242-4272
- Used during the assembly process

Specifications	
Dimensions	434.4 x 80 mm (17.1 x 3.14 in)



213-5138 Oil Tube Guide Group

Essential Tool

SMCS Code: 5100-016

Model: D400E, 730, and 740 Articulated Trucks with Load Ejector Cylinder

Warranty: Six Months

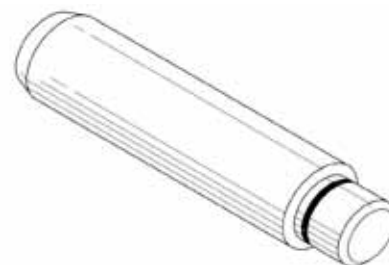
- Used to install oil tube/rod eye into fourth stage piston
- Provides smooth installation and prevents damage to oil tube
- Helps prevent O-ring, located inside piston, from being cut
- Made from durable plastic
- Service part: 095-1696 O-ring

References

REN5140, Machine Systems Disassembly and Assembly (740)

REN3461, Machine Systems Disassembly and Assembly (D400E)

Part Number	Description
213-5138	Oil Tube Guide Group



Threaded Gland Cylinder Tools

Model: All Models with Hydraulic Cylinders

Warranty: Six Months

Spanner Wrench Assemblies

- Used to remove and install threaded gland heads on hydraulic cylinders
- Spanner wrench virtually eliminates chance of disengagement when removing or installing gland
- Eliminates damage to gland caused by hammering, welding, or other destructive means of gland removal
- Designed to pilot around cylinder rod (fits most sizes of cylinder rods)
- 2 wrench sizes for convenience: 9U-7868 for 25 to 80 mm (1.0 to 3.2 in) rod diameter and 9U-7869 for 76 to 115 mm (3.0 to 4.5 in) rod diameter

(Continued)

Hydraulic Component Disassembly and Assembly

Threaded Gland Cylinder Tools (Continued)

Model: All Models with Hydraulic Cylinders

Warranty: Six Months

- Spanner wrench is held in place with cover and 6 adjustable screws (can be tightened so wrench will not disengage even when rod is at a downward angle)
- Screws are fitted with nylon pads to protect cylinder rod (screws also center wrench on rod, making installation and removal on gland much faster and easier)
- Handle is heat-treated for additional strength, and wrench body is zinc-plated to prevent rusting
- Used with 5S-6090 Sliding Tee-Wrench Head, 5S-6089 Handle, 8T-9294 Torque Wrench, or equivalent, 2P-8261 19.05 to 25.4 mm (3/4 to 1 in) Adapter, hydraulic cylinder repair stand, and universal-position adapter plates

Universal-Position Adapter Plates

- 4 universal-position adapter plates work on any gland, within size range, having slots or holes in face and/or flats on outside diameter
- Minimum storage space is required compared to other types of tooling
- Universal-position adapter plates may also be used on cylinders other than Cat® cylinders

Using universal-position adapters will eliminate need for fixed-position adapters when servicing threaded gland cylinders

Pin/Key Group

- Used with the 127-8064 Universal Adapter Plate Group
- Pin/key group is used on glands with pin holes located in the face of the gland
- Assortment of pin sizes are provided to fit various sized holes in the face of the gland
- Keys can easily be adjusted to fit various hole patterns in the face of the gland
- Pins are stored in the keys to help prevent the pins from being lost

NOTE

Cylinder barrels should be honed before assembling new parts into cylinder.

References

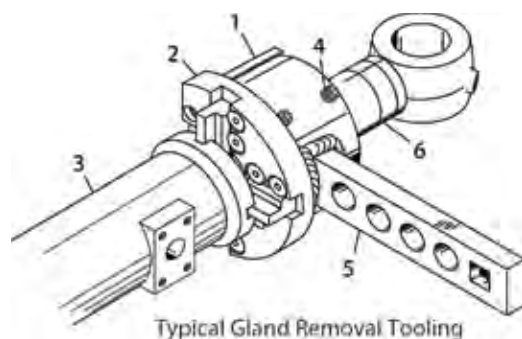
NEHS0629, Tool Operating Manual, Using the 9U-7868 and 9U-7869 Cylinder Spanner Wrench

NEHS0627, Tool Operating Manual, 1U-9001 and 1U-9002 Automatic Honing Tooling

SEHS9538, Tool Operating Manual, Using the 9U-6463 Hone Group and Attachments

NEHC2004, Major Equipment Guide, Hydraulic Cylinder Repair Stands

Item	Description
1	Locking Plate
2	Universal-Position Adapter Plate
3	Cylinder
4	Swivel Screws
5	Spanner Wrench
6	Cylinder Rod



(Continued)

Threaded Gland Cylinder Tools (Continued)

Model: All Models with Hydraulic Cylinders

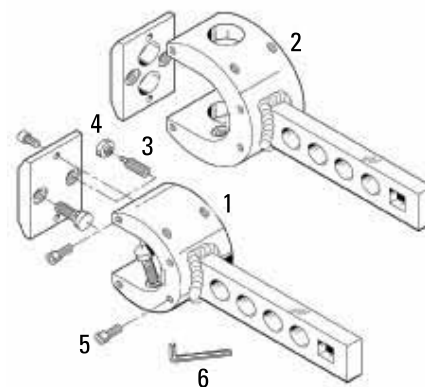
Warranty: Six Months

Part Number	Description	Inside Diameter (adjustable)	Width	Overall Size	Length ¹	Square Drive	Weight
9U-7868	Cylinder Spanner Wrench	25.0 - 80.0 mm (1.0 - 3.2 in)	101 mm (4 in)	377 mm (14.9 in)	304 mm (12 in)	1 in	13.6 kg (30 lb)
9U-7869	Cylinder Spanner Wrench	76.0 - 115.0 mm (3.0 - 4.5 in)	101 mm (4 in)	396 mm (15.6 in)	304 mm (12 in)	1 in	16 kg (35 lb)

¹ Centerline of square drive to centerline of bore

Cylinder Spanner Wrench

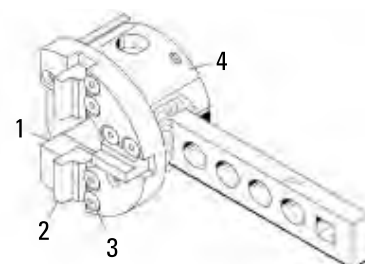
Item	Part Number	Description
1	9U-7868	Cylinder Spanner Wrench (fits 25 - 80 mm [1.0 - 3.2 in] rod diameter)
2	9U-7869	Cylinder Spanner Wrench (fits 76 - 115 mm [3.0 - 4.5 in] rod diameter)
3	9U-7870	Swivel Screw Body
4	121-8872	Swivel Screw Foot
5	9X-6032	Hex Socket Bolt (M10 x 1.5 x 30 mm [1.18 in] long)
6	1U-7566	Hex Wrench



Universal-Position Adapter Plates

Using universal-position adapters will eliminate need for fixed-position adapters when servicing threaded gland cylinders

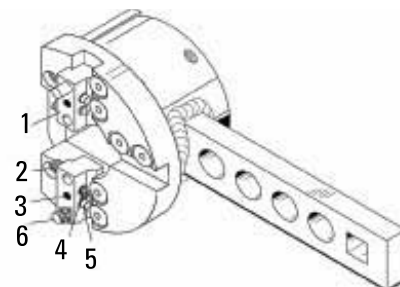
Item	Part Number	Description
1	204-6213	Adjustable Adapter Plate
Additional Tooling Required		
2	127-8066	Key, 12.5 mm (0.50 in) wide
2	127-8067	Key, 9.5 mm (0.38 in) wide
2	127-8068	Key, 6.5 mm (0.25 in) wide
2	130-1810	Pin/Key Group
3	6V-7726	Screw
4	9U-7869	Cylinder Spanner Wrench (fits 76 - 115 mm rod diameter)



130-1810 Pin/Key Group

Warranty: Six Months

Item	Description
3	Plug (make from a 1M-3097 Toric Sealing Ring)



(Continued)

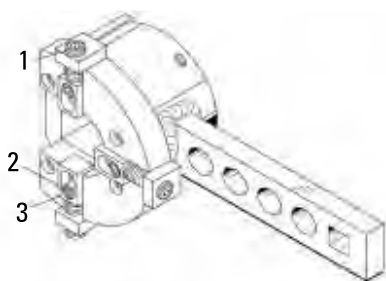
Hydraulic Component Disassembly and Assembly

130-1810 Pin/Key Group (Continued)

Warranty: Six Months

130-1810 Pin/Key Group - This pin/key group is used to remove glands with holes machined in the face.		
Item	Part Number	Description
1	130-1811	Key
2	5P-3523	Retaining Screw
4	5P-3521	Pin, 4.64 and 6.24 mm (0.183 and 0.246 in)
5	5P-3522	Pin, 7.81 and 9.41 mm (0.307 and 0.370 in)
6	130-3856	Pin, 6.96 and 11.08 mm (0.274 and 0.436 in)
Additional Required Tooling (not part of group)		
--	9U-7868	Cylinder Spanner Wrench
--	127-8064	Adjustable Adapter Plate Group

127-8069 Adapter Plate Group

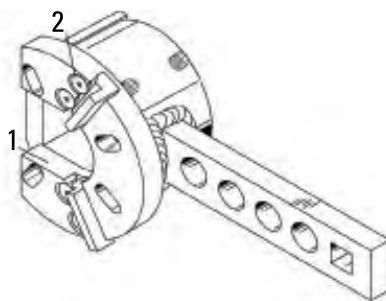


Item	Description
1	Setscrew

127-8069 Adapter Plate Group - This adapter plate is used on glands with 80 to 116 mm (3.1 to 4.5 in) across flats		
Item	Part Number	Description
2	9X-6032	Socket Head Bolt
3	127-8071	Key
Additional Required Tooling (not part of group)		
--	9U-7868	Cylinder Spanner Wrench

162-7189 Adjustable Adapter Plate Group

Adapter Plate Usage



162-7189 Adjustable Adapter Plate Group (120°) - This adapter plate is used on glands with slots machined in the face		
Item	Part Number	Description
1	162-7189	Plate Adapter Group ¹
2	6V-7726	Screw
Additional Required Tooling (not part of group)		
--	9U-7868	Cylinder Spanner Wrench
--	9U-7869	Cylinder Spanner Wrench
--	127-8066	Key, 12.5 mm (0.50 in) wide ²
--	127-8068	Key, 6.5 mm (0.25 in) wide ²
--	127-8067	Key, 9.5 mm (0.38 in) wide ²

¹ Plate adapter fits both 9U-7868 and 9U-7869 Cylinder Spanner Wrenches

² Keys from 127-8064 can be used with this plate

Universal-Position and Fixed-Position Adapter Plate Specifications

Adapter Plate Usage

Chart A will help determine which wrench matches a specific gland. The chart includes a list of each available adapter, the part number of the threaded gland, and the model number of the machine. Use Chart A to select the adapter plate required for disassembly of the cylinder.

(Continued)

Universal-Position and Fixed-Position Adapter Plate Specifications (Continued)

Chart A —Universal-Position and Fixed-Position Adapter Plate Usage			
Universal-Position Adapter Plate Part Number	Fixed-Position Adapter Plate Part Number	Threaded Gland Head Part No.	Model
162-7189	9U-7872	6I-6835	Excavators: 307B, 311, 311B, 312, 312B, 313B, 315B, 317B, 320, 320B
		099-0596	Excavators: 307B, 311, 311B, 312, 312B, 313B, 315B, 317B, 320, 320B
127-8064	9U-7873	6E-0775	Ag Tractors: 65, 65C, 70C, 75, 75C, 85C
		6E-1501	Backhoe Loaders: 416, 416B, 426, 426B, 428B, 436, 436B, 438, 438B, 446, 446B
		6E-1816	Construction Mining Trucks: 768C, 769C, 771C, 772, 772B, 773B, 775B, 776, 776B, 776C, 777, 777B, 777C
		6E-4976	Excavators: 350, 375
		6E-4978 ¹	Integrated Toolcarriers: IT18F, IT28F
		9T-2822	Motor Graders: 14G, 14H, 16G, 16H
		9T-6388 ¹	Track-Type Tractors: D3C, D4C, D5H, D6H, D7H, D8N, D9N, D10N, D11N
			Wheel Loaders: 950F, 966D, 966F, 970F
			Wheel Tractors-Soil/Landfill Compactors: 814B, 815B, 816B
162-7189	9U-7874	099-0668 ¹	Excavators: 307, 311, 311B, 312, 312B, 313B
162-7189	9U-7875	099-0686 ¹	Excavators: 312, 312B, 313B
127-8064	9U-7876	6E-0277 ¹	Backhoe Loaders: 416B, 426B, 428B, 436B, 438B
		6E-1113 ¹	Integrated Toolcarriers: IT18F, IT24F, IT28F
		6E-1405	Motor Graders: 14G, 14H, 16G, 16H
		6E-1943	Track-Type Tractors: D5H, D8N
		6E-1953 ¹	Track Loaders: 953, 953B
		6E-3570	Wheel Loaders: 910E, 918F, 928F, 936F, 938F, 950F, 980C, 980F
		6E-5406 ¹	Elevating Scrapers: 615C
		9T-3609 ¹	
		9T-8080 ¹	
¹ Discontinued			

Hydraulic Component Disassembly and Assembly

Universal-Position and Fixed-Position Adapter Plate Specifications (Cont'd)

Chart A — Universal-Position and Fixed-Position Adapter Plate Usage			
Universal-Position Adapter Plate Part No.	Fixed-Position Adapter Plate Part No.	Threaded Gland Head Part No.	Model
—	9U-7877	2U-7390 ¹	Articulated Trucks: D25C, D25D, D30C, D30D, D40D, D350C, D350D, D400, D400D
		2U-7690 ¹	
		6U-4157 ¹	
		7U-1775 ¹	
		7U-2661 ¹	
		7U-6038 ¹	
		7U-7867 ¹	
		104-4971	
—	226-5755	152-7037 ²	Articulated Truck: D400E, 740 (ejector cylinder)
127-8064 and 130-1810	123-0389	104-9657	Grapple Arrangements for the following models:
		8C-9356	Skidders: 518, 518C
		8C-9436	Track Skidders: D4H, D5H
127-8064 and 130-1810	123-0390	105-9121	Grapple Arrangement for the following model:
			Skidders: 530B
127-8064 and 130-1810	123-0391	105-7738	Grapple Arrangement for the following model:
		105-9099 ¹	Skidders: 530B
162-7189	123-3802	099-7009	Excavator: 307
162-7189	123-3803	085-7990	Excavator: 307
¹ Discontinued			
² Not serviced			

Vehicle System Tools

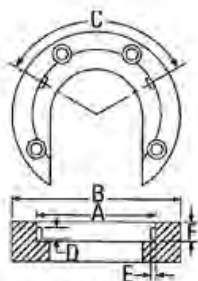
Adapter Plate Specifications

Chart B can be used to identify adapter plates or to determine if an adapter plate can be used on a gland not listed in Chart A. There are 3 styles of adapter plates, as shown in the illustrations.

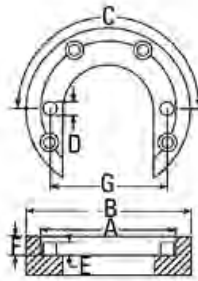
Style "A" Adapter Plate	Pins engage radially; counterbore surrounds outside diameter of gland
Style "B" Adapter Plate	Pins engage axially; counterbore surrounds outside diameter of gland
Style "C" Adapter Plate	Pins engage axially; no counterbore; plate and gland faces contact each other

(Continued)

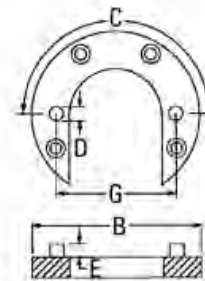
Adapter Plate Specifications (Continued)



Style "A" Adapter Plate



Style "B" Adapter Plate



Style "C" Adapter Plate

Adapter Plate Part No.	Adapter Style	C Bore Diameter (A) mm (in)	Outside Diameter (B) mm (in)	Angle Between Pins (C)	Pin Diameter (D) mm (in)	Pin Height (E) mm (in)	Depth of C Bore (F) mm (in)	Pin Spacing (G) mm (in)
Chart B - Adapter Plate Specifications								
9U-7872	Style A ¹	123 mm (4.84 in)	160 mm (6.30 in)	120°	11.1 mm (0.44 in)	5 mm (0.20 in)	16 mm (0.63 in)	--
9U-7873	Style B ¹	132 mm (5.20 in)	152.4 mm (6 in)	180°	12.7 mm (0.50 in)	12.8 mm (0.50 in)	19.1 mm (0.75 in)	110 mm (4.33 in)
9U-7874	Style A ¹	133 mm (5.24 in)	170 mm (6.69 in)	120°	11.1 mm (0.44 in)	5 mm (0.20 in)	16 mm (0.63 in)	--
9U-7875	Style A ¹	143 mm (5.63 in)	180 mm (7.09 in)	120°	11.1 mm (0.44 in)	5 mm (0.20 in)	16 mm (0.63 in)	--
9U-7876	Style B ¹	156.5 mm (6.16 in)	177 mm (6.97 in)	180°	12.7 mm (0.50 in)	12.8 mm (0.50 in)	19.1 mm (0.75 in)	130 mm (5.12 in)
9U-7877	Style A ²	140 mm (5.51 in)	190.5 mm (7.50 in)	180°	15.7 mm (0.62 in)	9 mm (0.35 in)	19.1 mm (0.75 in)	--
123-0391	Style C ¹	--	152.4 mm (6 in)	180°	7.9 mm (0.31 in)	8.7 mm (0.34 in)	--	114.3 mm (4.50 in)
123-0389	Style C ¹	--	152.4 mm (6 in)	180°	7.9 mm (0.31 in)	8.7 mm (0.34 in)	--	85.7 mm (3.37 in)
123-0390	Style C ¹	--	152.4 mm (6 in)	180°	7.9 mm (0.31 in)	8.7 mm (0.34 in)	--	101.6 mm (4 in)
123-3802	Style A ¹	108 mm (4.25 in)	155 mm (6.10 in)	120°	11.1 mm (0.44 in)	5 mm (0.20 in)	16 mm (0.63 in)	--
123-3803	Style A ¹	118 mm (4.65 in)	155 mm (6.10 in)	120°	11.1 mm (0.44 in)	5 mm (0.20 in)	16 mm (0.63 in)	--
226-5755	Style B ¹	61.9 mm (2.44 in)	152.2 mm (5.99 in)	180°	8 mm (0.31 in)	6.4 mm (0.25 in)	6.4 mm (0.25 in)	48 mm (1.89 in)

¹ Use with 9U-7868 Cylinder Spanner Wrench

² Use with 9U-7869 Cylinder Spanner Wrench

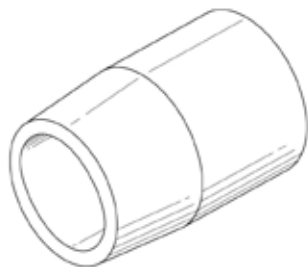
Hydraulic Component Disassembly and Assembly

226-5756 Seal Guide

SMCS Code: 5107-017

Model: 740 Ejector Articulated Truck and D400E Articulated Truck

Warranty: Six Months



- Used to cover threads on end of rod assembly during assembly process
- Protect seals from damage as rod assembly is pushed through gland (improves quality of service repair)
- Made of light-weight nylon for faster, easier assembly
- Resists nicks and scratches better than steel guides, providing extended tool life

Reference

REN5176, 740 Load Ejector Machine System (Supplement)

Part Number	Description
226-5756	Seal Guide

Cylinder Spanner Wrenches

SMCS Code: 5102-017

Model: 769C, 771C, 773B, 775B, 776B, 777C, 777B, 785, 785B, 789, 789B, 793, 793B Off-Highway Trucks

Warranty: Six Months



- Used to remove and install intermediate cylinder heads in off-highway truck lift cylinders
- Used with 1 1/2 inch socket and ratchet, breaker bar, or torque wrench
- Each wrench fits a specific cylinder head
- Piloting tube provides positive, non-slip, spanner pin engagement
- Designed with replaceable spanner pins — light press fit enables replacement if required

Item	Part Number	Description	Number of Pins	Pin Diameter	Pin Spacing	Pilot Tube Outside Diameter	Head Part Number	Model
1	9U-7431	Cylinder Spanner Wrench	2	6.2 mm (0.24 in)	140 mm (5.51 in)	101.1 mm (3.98 in)	9T-6879	769C and 771C
2	9U-7432	Cylinder Spanner Wrench	2	6.2 mm (0.24 in)	162 mm (6.38 in)	126.4 mm (4.98 in)	9T-6882	773B and 775B
3	9U-7433	Cylinder Spanner Wrench	4	9.4 mm (0.37 in)	176 mm (6.93 in)	139.1 mm (5.48 in)	9T-6885	776B, 777B, and 777C
4	9U-7434	Cylinder Spanner Wrench	4	9.4 mm (0.37 in)	222.2 mm (8.75 in)	183.6 mm (7.23 in)	6E-6444 and 6E-6485	785, 785B, 789, and 789B
4	9U-7435	Cylinder Spanner Wrench	4	6.2 mm (0.24 in)	222.2 mm (8.75 in)	183.6 mm (7.23 in)	9T-6351 ¹	785 and 789
5	9U-7436	Cylinder Spanner Wrench	4	9.4 mm (0.37 in)	262 mm (10.31 in)	221.7 mm (8.73 in)	6E-6609	793 and 793B
5	9U-7437	Cylinder Spanner Wrench	4	6.2 mm (0.24 in)	262 mm (10.31 in)	221.7 mm (8.73 in)	6E-0054 ¹	793

(Continued)

Cylinder Spanner Wrenches (Continued)

SMCS Code: 5102-017

Model: 769C, 771C, 773B, 775B, 776B, 777C, 777B, 785, 785B, 789, 789B, 793, 793B Off-Highway Trucks

Warranty: Six Months

Item	Part Number	Description	Number of Pins	Pin Diameter	Pin Spacing	Pilot Tube Outside Diameter	Head Part Number	Model
Service/Repair Parts								
--	3H-0703	Dowel, 6.19 mm (1/4 in) diameter	--	--	--	--	--	--
--	5B-5821	Pin, 9.37 mm (3/8 in) diameter	--	--	--	--	--	--

¹ Discontinued

1U-7042 Locknut Spanner Wrench

SMCS Code: 5050-010

Model: 140G Motor Grader

Warranty: Six Months

- Required to adjust 5T-1428 Bearing Locknut [136.5 mm (5 3/8 in) outside diameter] during assembly of optional front wheel drive hydraulic motors
- Has 1/2 inch square drive; can be used with 9S-7353 or 6V-7915 Torque Wrenches
- Slide rule type torque computer, SEHS7150, can be used to determine torque wrench reading for different extensions
- Service Part: 1J-2198 Pin

Part Number	Description
1U-7042	Locknut Spanner Wrench

324-3723 Spanner Socket

Model: 511, 521, 522, 532, 541, 551, and 552 Feller Buncher with 305-3742 Gear Reduction Group (not serviced)

Warranty: Six Months

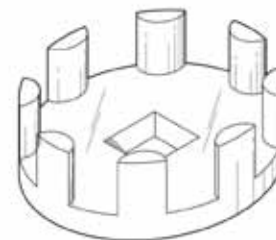
- Used to easily remove and install 303-4212 Locknut on 305-3742 Gear Reduction Group (not serviced)
- Used with 3/4 inch square drive ratchet, breaker bar, or torque wrench
- Durable steel construction

Reference

Feller Buncher Disassembly and Assembly Manuals that include 306-2065 Tilt Arrangement

Outside diameter	76.75 mm (3.02 in)
Overall height	30 mm (1.18 in)
Square drive	3/4 in
Number of teeth	eight (evenly spaced)
Tooth height	20 mm (.79 in)
Tooth diameter	14.3 mm (.56 in)

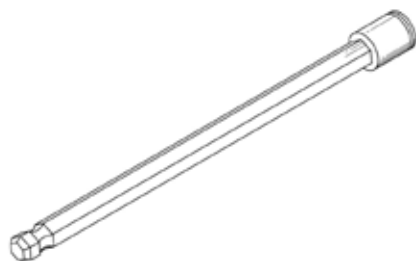
Part Number	Description
324-3723	Spanner Socket



FT2790 Socket Assembly

Essential Tool

SMCS Code: 3204-010
 Model: 143H and 163H Motor Grader
 Warranty: None



- Used to remove and install all wheel drive charge pump motor bolts
- Made from 194-3545 Socket (remove existing Allen wrench)
- Allen wrench blade can be ordered from McMaster Carr, part number 6972A56, and cut to a length of 152.4 mm (6 in)
- Allen wrench blade should be silver soldered into socket

Reference

REN4138, Service Manual, 143H and 163H Motor Grader,
 Engine Supplement Disassembly and Assembly

Service Tools for 20 and 25 Series Tyrone Pumps

SMCS Code: 5050-010
 Model: 20 and 25, Series Tyrone Pumps
 Warranty: Six Months



- Used to remove and install sleeve bearings; sleeve bearings serviced separately
- The following tool lists are for either single or tandem version pumps manufactured after 1979; pumps produced before 1979 require different bearing installing tools because stake location varies
- Because Tyrone pumps do not have date codes, measure stake location dimension in housing and refer to Chart A to determine which staking sleeve is needed
- Tools for non-current pumps are fabricated tools (FT) because there are fewer older pumps than current pumps

Reference

SEHS8428, Special Instruction, complete repair procedure
 for Tyrone Pumps

Tooling Needed to Service the 20 and 25 Series Tyrone Pumps			
Item	Part Number	Description	Qty.
20 Series			
1	5P-1075	Hard Washer	1
1	8T-0875	Pressure Plate Remover Group consists: 8T-0871, 8T-0873, 9F-2773, 5P-1075	--
1	8T-0873	Shaft (not serviced)	1
1	9F-2773	Bolt	1
1	8T-0871	Collet Assembly	1
2	8T-9137	Bearing Remover (formerly 8T-0870, discontinued)	--
3	1K-6979	Set Screw	2
3	8T-0878	Staking Tool	2
3	8T-0880	Bearing Installer Group consists: 8T-0874, 8T-0876, 8T-0877, 8T-0878, 1K-6979	--
3	8T-0877	Sleeve, Staking	1
3	8T-0876	Cap (not serviced)	1
3	8T-0874	Punch Assembly	1

(Continued)

Service Tools for 20 and 25 Series Tyrone Pumps (Continued)

SMCS Code: 5050-010

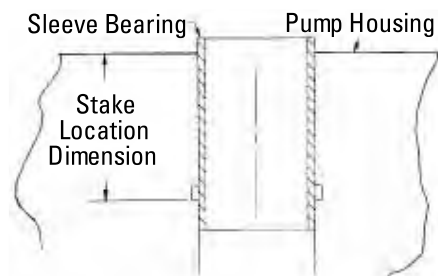
Model: 20 and 25, Series Tyrone Pumps

Warranty: Six Months

Tooling Needed to Service the 20 and 25 Series Tyrone Pumps			
Item	Part Number	Description	Qty.
25 Series			
1	8T-9136	Shaft (not serviced)	--
1	8T-9134	Pressure Plate Remover consists: 8T-9135, 8T-9136, 9F-2773, 5P-1075	--
1	8T-9135	Collet Assembly	1
1	9F-2773	Bolt	1
1	5P-1075	Hard Washer	1
2	8T-9128	Bearing Remover	--
3	8T-9133	Bearing Installer Group consists: 8T-9129, 8T-9131, 8T-9132, 8T-0878, 1K-6979	--
3	8T-9129	Punch Assembly	1
3	8T-9131	Cap	1
3	8T-9132	Staking Sleeve	1
3	8T-0878	Staking Tool	2
3	1K-6979	Set Screw	2

Chart A

Chart A		
Pump Series	Stake Location Dimension (in)	Staking Sleeve Part Number
Former	1.285 ± 0.005	FT2145
25 Current	1.630 ± 0.005	8T-9132
Former	1.908 ± 0.005	FT2146

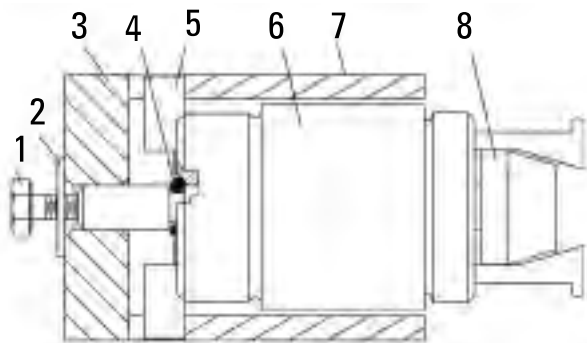


Service Tools for FP/FL/HP-7 and FP/HP-8 Series Tyrone Pumps

SMCS Code: 5061-017, 5073, 0738

Model: D11N, 834B, 988B, 988F, 992, 980, D10, D7H, 578, 589

Warranty: Six Months



Typical Staking Tool

- Easier to use and less expensive than previous staking tools
- 130-5946 Staking Tool Group replaces the discontinued 8T-3057 and 4C-9647 Groups
- 135-7275 Staking Tool Group replaces the discontinued 8T-9123 and 4C-9648 Groups
- Used to install and then secure (stake) sleeve bearing into pump/motor housing or head assembly (very easy to use and understand)
- Used with 4.5 t (5 ton) arbor or hydraulic press
- These two combination tools work on both iron and aluminum housings, series 7 and 8 pumps and motors (simply rotate guide 180° depending on pump type and series)
- Automatically assembles sleeve bearing to proper depth and stakes each sleeve bearing precisely in place (no measuring is required)
- Made of high-grade steel and plated for many years of trouble free service

Reference

NEHS0660, Tool Operating Manual, Replacing Sleeve Bearings in Tyrone Gear Pumps and Motors (used on Series 7 and 8, Iron and Aluminum Housings)

Overall size	70.0 mm (2.75 in) diameter	
Length	146.0 mm (5.75 in)	
Weight	2.5 kg (5.5 lb)	

Item	Part Number	Description
130-5946 Staking Tool Group (FP/HP8)		
1	8T-8908	Bolt
2	6V-7646	Washer
3	130-5947	Cap
4	125-8247	O-ring Seal ¹
5	129-1875	Staking Leg
6	129-1872	Guide
7	129-1874	Sleeve
8	129-1873	Driver

Item	Part Number	Description
135-7275 Staking Tool Group (FP/HP7)		
1	8T-8908	Bolt
2	6V-7646	Washer
3	135-7277	Cap
4	125-8247	O-ring Seal ¹
5	129-1875	Staking Leg
6	135-7268	Guide
7	135-7276	Sleeve
8	135-7269	Driver

¹ Not Serviced

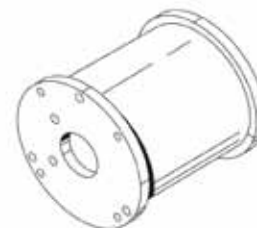
FT1681 Motor Support

SMCS Code: 4150-016, 5459

Model: 943, 953, 963, and 973 Track-type Loaders; 235, 235B, 245, and 245B Excavators

Warranty: None

- Used to assemble track motors and swing motors
- Used with FT1532 Spanner Wrench and FT1549 Fixture which holds drive plate while housing (not drive plate) is rotated
- Enables rotating torque of drive plate to be checked while bearing retaining locknut is tightened (procedure required for correct assembly)
- Used on track motors for 943, 953, 963, and 973 Track-type Loaders; track motors on 235, 235B, 245, and 245B Excavators; swing motors on 235, 235B, and 245 Excavators



References

SEVN2163, Video

SENR4939, Assembly Procedure Wall Chart

SENR4940, Assembly Procedure Wall Chart

1U-7643 Piston Nut Spanner Wrench

SMCS Code: 5058-010, 5070-010, 5058-079 and 5070-079

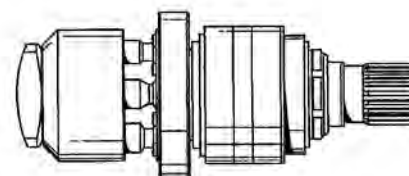
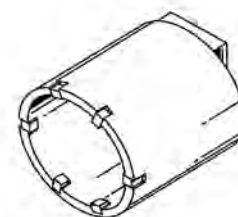
Model: See Below

Warranty: Six Months

- Used to remove and install 9T-2004 Nut
- Used with torque wrench if specific torque is required
- Provides best method of tightening nut — decreases chance of slipping off and/or damaging nut or other components

Description	Model
Tractors	D6H, D7H, D8N
Excavators	215, 215B, 215C, 215D, 219, 219D, 225, 225B, 225D, 227, 229, 229D, 231D, E120B, 320, 322, 325, 330
Wheel Loaders	988F
Front Shovels	5130, 5230
Wheel Tractor Scrapers	623E, 623F
Outside diameter	82.5 mm (3.25 in)
Overall length	146.0 mm (5.75 in)
Socket depth	127 mm (5.0 in)
Square drive	3/4 in
Number of teeth	6, evenly spaced
Tooth width	6.75 mm (0.266 in)
Width between teeth	68.3 mm (2.69 in)

Part Number	Description
1U-7643	Piston Nut Spanner Wrench



Nuts used in piston pump and piston motor rotating groups (typical)

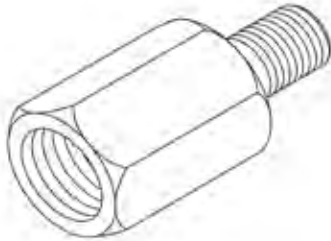
293-6365 Threaded Adapter

Essential Tool

SMCS Code: 5070-017

Model: 5110B Swing Drive Hydraulic Motor

Warranty: Six Months



- Used to remove rotating group from swing motor
- Used with 8B-7548 Bearing Puller Assembly
- Male thread (5/8 -11) and female thread (1-14)

Reference

REN3374, Service Manual, 5110B Machine Systems

Disassembly and Assembly Manual

Maximum capacity	8,165 kg (9 tons)
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Part Number	Description
293-6365	Threaded Adapter

Excavator Pump and Motor Service Tools

Model: 205, 206, 211, 212, 213, 214 and 224 Excavators

Warranty: Six Months



Typical Excavator Hydraulic Pump and Motor Service Tools

- Used to service hydraulic pump, swing motor, and drive motors
- Various combinations of these tools required for disassembly and assembly of these hydraulic pumps and motors, manufactured by Linde (see chart)
- FT2232 Leveling Fixture Group used for servicing B2PV50 and B2PV75 Pumps; FT2232 Leveling Fixture Group used to maintain proper altitude between variable pump housing and rotating gear groups during pump reassembly
- 1U-6671 Flange Puller Group used to remove rotating gears from main housings; also considered general usage tool
- BMF75 Motor also used as differential steering motor on Challenger 65

Reference

SENR3358, Service Manual Supplement, Disassembly and Assembly for Hydraulic Pumps and Motors for Excavators, details on use of each service tool

Item	Description
1	Spanner Wrench (not serviced)
3	Handle (not serviced)
4	Punch (not serviced)
5	Bearing Puller Group (not serviced)
7	Key (not serviced)
10	Template (not serviced)
11	Template Assembly (not serviced)

Item	Part Number	Description
2	8T-7671	Alignment Fixture
2	1U-8833	Alignment Fixture
2	8T-7670	Alignment Fixture
6	8T-7679	Seal Driver
8	8T-7647	Socket Wrench Assembly
9	4C-4063	Seal Guide

FT2232 Leveling Fixture Group

Item	Description
1	Plate



Illus. 2

FT2232 Leveling Fixture Group			
Item	Part Number	Description	Quantity
2	9L-5595	Bolt (3/8 in-16 x 5 in)	2
3	1D-4717	Nut	2
4	5M-2894	Washer	2

1U-6671 Flange Puller Group

Item	Description
1	Puller Plate

Item	Part Number	Description	Quantity
--	1U-6671	Flange Puller Group	--
1U-6671 Flange Puller Group			
2	1U-6693	Forcing Screw	--
3	0S-1619	Bolt	3
4	6F-7031	Bolt	3
5	1U-6694	Shaft Protector	--



Illus. 3

Hydraulic Component Disassembly and Assembly

Machine Model, Motor, Pump

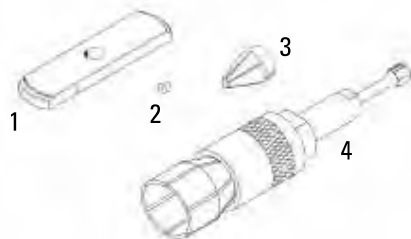
Machine Model/Pump or Motor/Pump or Motor Model											
Item	Part Number	Description	205, 206, 211, 212 Pump B2PV50	213, 214, 224 Pump B2PV75	205, 206 Swing Motor BMF35	211, 212 Swing Motor BMF50	213, 212, 224 Swing Motor BMF75	206, 212, 214 Drive Motor BMR105	224 Drive Motor BMR140	205, 211, 213B Drive Motor HVM55 and HVM63	213 Drive Motor BMF50
Illustration 1											
6	8T-7657	Seal Driver							1		
6	8T-7681	Seal Driver					1				
9	4C-4063	Seal Guide								1	
Illustration 2											
	FT2232	Leveling Fixture Group	1	1							
Illustration 3											
	1U-6671	Flange Puller Group	1	1							

Disassembly and Assembly Tools for 205, 211, 213B Excavator Travel Motors

SMCS Code: 5450-010

Model: 205, 211, 213B Hydraulic Excavators

Warranty: Six Months



- Used to service travel motors
- Complete list of tools in 213B disassembly and assembly manual for travel motor; these tools complete tooling needed for disassembly and assembly of Linde manufactured HVM55 and 63 motors

References

SENR4078, 205 and 211 Excavator Service Manual

SENR3558-01, 213-B Excavator Service Manual

Item	Description	Application
3	Piston Ring Pusher	Not included

Item	Part Number	Description	Application
Linde HVM 55 and 63 Motor Tooling			
1	1U-8833	Centering Tool	Allows proper alignment of the rotating group when barrel shim measurements are taken
2	4C-4063	Seal Guide	Helps expand the seals and backup rings when installing them on the control pistons
4	8T-7651	Bearing Puller Group	Used to remove the bearing cone from the pump rotating group

Service Tools for 9T-1208 Track Motor

Model: 227, 229, 229D, 231D, 235, 235B, 235C, 235D, 245, 245B, 245D Excavators

Warranty: Six Months

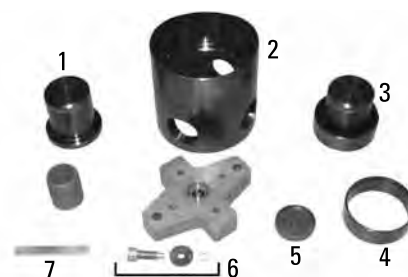
- Used to disassemble and assemble 9T-1208 Track Motor
- Makes repairs easier and faster

References

SENR3402, Service Manual

SENR4269, Service Manual

Item	Part Number	Description
Not Shown	FT2218	Piston Ring Pliers



Item	Part Number	Description
1	1U-5476	Driver Assembly
2	1U-5474	Fixture
3	1U-5475	Driver Group
4	1U-5477	Ring
5	1U-5471	Shaft Seal Driver
6	1U-5472	Plate Group
7	1U-5553	Parallel Group
8	1U-5473	Seal Guide
Not shown		
--	1U-8825	Forcing Screw
--	1U-7565	Allen Key

Rexroth Hydraulic Pump and Motor Service Tools

SMCS Code: 5050-010

Model: 215B, 225, 227 and 330 Excavators, D8R Track-Type Tractor

Warranty: Six Months

- Required for disassembly and assembly of Rexroth hydraulic pumps and motors
- Improve efficiency and quality of repairs to Rexroth hydraulic pumps and motors

Reference

Some Service Manuals now require updating as a result of the final tool part numbers listed in the chart. Use the enclosed chart to update the Tools Needed Charts on page 28 of the Disassembly and Assembly Manual 215B and 225 Hydraulic Pump and Motors (Piston-Type) Form Number SENR3248. Disassembly and Assembly Manual 215B and 225 Hydraulic Pump and Motors (Piston-Type) Form Number SENR3248 is found in Service Manuals SENR3035 (215B), REGO1578 (225) and REGO1156 (225). Also reference SENR8331 Service Manual (252-0614).

(Continued)

Hydraulic Component Disassembly and Assembly

Rexroth Hydraulic Pump and Motor Service Tools (Continued)

SMCS Code: 5050-010

Model: 215B, 225, 227 and 330 Excavators, D8R Track-Type Tractor

Warranty: Six Months

		Model	215, 215B SA	215B, 215B SA	215B	215 SA	225	227	225	330B	D8R	
		Item	Imple- ment Pump	Swing Motor	Track Motor	Track Motor	Swing and Track Motors	Swing Motor	Imple- ment Pump	Double Piston Pump Group	Steering Motor	
		Cat P/N	9T-0992 ¹	9T-0891 ¹	9T-0670 ¹	9T-1062 ¹	9T-0999 ¹	9T-0999 ¹	9T-1054 ¹	153-9185	9T-8345 ¹	
Item	Part Number	Rexroth P/N	AA8V- 0107	AA2F63	AA2F80	AA2F107	AA2F131	AA2F131	AA8V- 0107	A8V0160	AA2FE125	Tool Applica- tion
1	1U-5427	Seal Installer	1						1			Mount seal on second- ary PTO
2	8T-9145	Seal Driver	1	1	1	1	1	1	1			Install lip seal into cover
	8T-9148	Seal Driver				1	1	1				Install lip seal into cover

Vehicle System Tools



Rexroth Hydraulic Pump and Motor Service Tools 3-6

		Model	215, 215B SA	215B, 215B SA	215B	215 SA	225	227	225	330B	D8R		
		Item	Imple- ment Pump	Swing Motor	Track Motor	Track Motor						Steering Motor	
		Cat P/N	9T-0992 ¹	9T-0891 ¹	9T-0670 ¹	9T-1062 ¹	9T-0999 ¹	9T-0999 ¹	9T-1054 ¹	153-9185	9T-8345 ¹		
Item	Part Number	Rexroth P/N	AA8V- 0107	AA2F63	AA2F80	AA2F107	AA2F131	AA2F131	AA8V- 0107	A8V0160	AA2FE125	Tool Applica- tion	
3	8T-9163	Thread Adapter	1						1			Install lip seal in drive shaft cover	
4	8T-9164	Puller Plate	1						1			Pull drive gears	
5	1U-5428	Bearing Driver	1						1			Install bear- ing on second- ary PTO pinion	
6	8T-9143	Piston Ring Guide		1								Install piston rings	
	8T-9149	Piston Ring Guide					1	1				Install piston rings	
	8T-9151	Piston Ring Guide				1						Install piston rings	
	8T-9167	Piston Ring Guide	1						1			Install piston rings	
	205-1642	Piston Ring Guide								1		Install piston rings	
	252-0614	Piston Ring Guide									1	Install piston rings	

Hydraulic Component Disassembly and Assembly

Rexroth Hydraulic Pump and Motor Service Tools 7-10

		Model	215, 215B SA	215B, 215B SA	215B	215 SA	225	227	225	330B	D8R	
		Item	Imple- ment Pump	Swing Motor	Track Motor	Track Motor					Steering Motor	
		Cat P/N	9T-0992 ¹	9T-0891 ¹	9T-0670 ¹	9T-1062 ¹	9T-0999 ¹	9T-0999 ¹	9T-1054 ¹	153-9185	9T-8345 ¹	
Item	Part Number	Rexroth P/N	AA8V- 0107	AA2F63	AA2F80	AA2F107	AA2F131	AA2F131	AA8V- 0107	A8V0160	AA2FE125	Tool Applica- tion
7	8T-9139	Thread Adapter		1	1							Pull rotary group
	8T-9140	Thread Adapter		1	1							Pull rotary group
	8T-9161	Thread Adapter	1						1			Pull drive gears and auxiliary drive
	8T-9162	Thread Adapter	1						1			Pull idler gear shaft
8		Piston Ring Pusher		1								Install piston rings
9	8T-9156	Seal Guide	1						1			Protect input shaft lip seal
	8T-9158	Seal Guide			1							Install cover with lip seal
	8T-9159	Seal Guide				1	1	1				Install cover with lip seal
10	8T-9165	Angle Block	1						1			Pull drive gears

385-8731 Sleeve Bearing Installation Group

Model Usage: All Cat® Gear Pumps with Sleeve Bearings, 1M3780, 1M3909, 2M3868, 2S7931, 3S1292, 5M3320, 7M9338, 9M4370, 131-0167, 131-0825

Warranty: Six Months

- Used for installation of sleeve bearings into the gear pumps and pump covers while keeping the bearing walls rigid
- Equipped with internal sliding rod which allows operator to adjust for different bearing lengths
- Equipped with external sleeve that is interchangeable for setting different bearing depths
- Tool parts packaged together for protection in foam lined plastic case

Specifications	
Dimensions	342.9 x 266.7 x 129.0 mm (13.5 x 10.5 x 5.1 in)
Weight	4.85 kg (10.67 lb)
Material	Black oxide coated Steel

Item	Part Number	Description
--	385-8731	Sleeve Bearing Installation Group
Serviceable Parts		
1	373-5841	Support Tube
2	378-4532	Sleeve Assembly
3	378-4533	Insert Rod
4	378-4534	Support Tube



Seal Installers For Seal Change Kit

Essential Tool

SMCS Code: 5050, 5082

Model: Motor Graders, Wheel Loaders, Integrated Toolcarriers, Off-Highway Trucks, Articulated Trucks

Warranty: Six Months

- Used to install seals in hand metering units

257-8474 Seal Installer

- Used on Motor Graders (12H, 14H, 16H, 120H, 135H, 140H, 143H, 160H, 163H) Wheel Loaders (914G, 924G, 928G, 938G, 966H, 972H) Integrated Toolcarriers (IT14G, IT28G, IT38G)

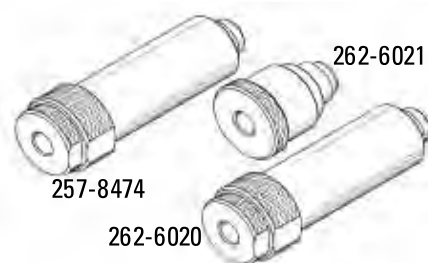
262-6020 Seal Installer

- Used on Off-Highway Trucks (784B, 784C, 785, 785B, 785C, 789C, 793C Articulated Trucks (D350E, D400E, 735, 740) Integrated Toolcarriers (IT18, IT18B, IT28B) Wheel Loaders (916, G916)

262-6021 Seal Installer

- Used on Off-Highway Trucks (769D, 770, 771D, 772, 773D, 773E, 773F, 775D, 775E, 775F, 776D, 777D, 777D (HAA), 777F)

Part Number	Description
257-8474	Seal Installer
262-6020	Seal Installer
262-6021	Seal Installer



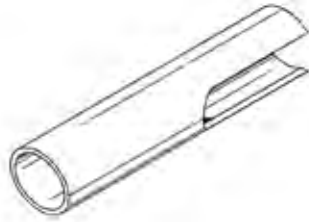
147-3497 Spring Compressor

Essential Tool

SMCS Code: 5070-017

Model: D3C, D4C, and D5C Track-Type Tractor, Hystat Drive; 933C and 939C Track-Type Loader, Hystat Drive

Warranty: Six Months



- Used to compress flow control valve spring to remove or install retainer locks and snap rings
- Used with shop arbor press
- Designed to provide easy access to retainers and snap ring
- Makes removing and installing retainers and snap ring easier

References

SENR1255, Disassembly and Assembly D3C, D4C, D5

C Track-Type Tractor Machine Systems

SENR1271, Disassembly and Assembly 933C, 939C Track Type Loader Machine Systems

Outside diameter	48.3 mm (1.9 in)
Inside diameter	40.9 mm (1.61 in)
Overall length	203.2 mm (8.0 in)

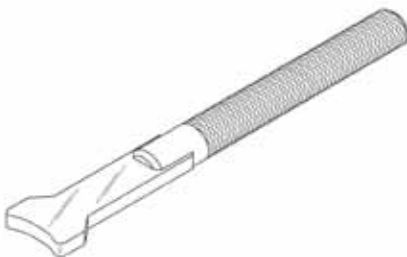
Part Number	Description
147-3497	Spring Compressor

287-3672 Split Ring Remover

Essential Tool

Model: RM350 and RM350B Road Reclaimer/Soil Stabilizer

Warranty: Six Months



- Used to remove split ring from Rexroth hydraulic motors
- Knurled handle for improved grip
- Overall length: 215 mm (8.46 in)

Reference

KENR3125, Service Manual, RM350B Road Reclaimer/Mixer

Power Train Piston Motor (Rear Propel) Disassemble

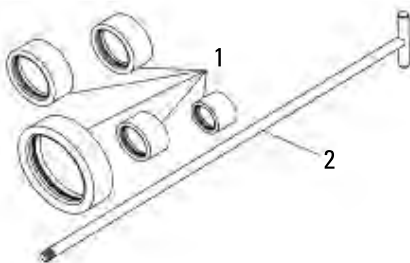
Part Number	Description
287-3672	Split Ring Remover

Cap Assemblies (Hydraulic Tank) and Handle

SMCS Code: 5070-010

Model: Most Hydraulic Excavators

Warranty: Six Months



- Used to seal suction port in hydraulic tank
- Seal caps thread onto handle assembly
- Fits over hydraulic tank suction port from inside tank (suction screen must be removed first)
- Eliminates draining hydraulic oil tank to make system repairs (tank cap should be reinstalled to prevent oil contamination)
- Order parts separately (must order at least one handle)
- To verify correct cap is being used, inside diameter measurement of suction screen should match ID of cap assembly

(Continued)

Cap Assemblies (Hydraulic Tank) and Handle (Continued)

SMCS Code: 5070-010

Model: Most Hydraulic Excavators

Warranty: Six Months

Item	Part Number	Description	Inside Diameter	Used on	Service/Repair Parts
1	227-4685	Seal Cap	160 mm (6.30 in)	350, 365B, 365C, 375, 385B, 385C, 5080, and 5090B Excavators	5L-5032 O-ring
1	227-4683	Seal Cap	115.5 mm (4.55 in)	318C, 320C, 320D, 322C, 325C, 325D, 330B, 330C, 330D, 345B, and 345C Excavators	5H-5672 O-ring
1	234-1615	Seal Cap	90.4 mm (3.56 in)	320A and 322A Excavators	1H-0474 O-ring
1	234-1614	Seal Cap	75.7 mm (2.98 in)	311C, 312C, 315ABC, and 318B Excavators	095-1552 O-ring
1	234-1613	Seal Cap	61.7 mm (2.43 in)	307ABC, 308BC, 311AB, 312AB, and 313B Excavators	099-4780 O-ring
2	227-4690	Handle (fits all cap sizes)	--	--	--

Pump Measuring Tools

SMCS Code: 5070-082, 0685

Model: Machines with A20V, A11V and A4V Rexroth Hydraulic Piston Pumps

Warranty: Six Months

- Used to properly set and hold alignment between port plate, barrel, and slipper retaining plate when determining measurement for pump barrel lift-off shim thickness
- Allows easy measurement of commonly used Rexroth pumps within A20V, A11V and A4V model ranges
- Tools are precision ground for accurate measurements and nickel plated for long, corrosion free life

Reference

Service Manual Module, M318 Disassembly and Assembly, M320 Disassembly and Assembly

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Hydraulic Component Disassembly and Assembly

Pump Measuring Tools (Continued)

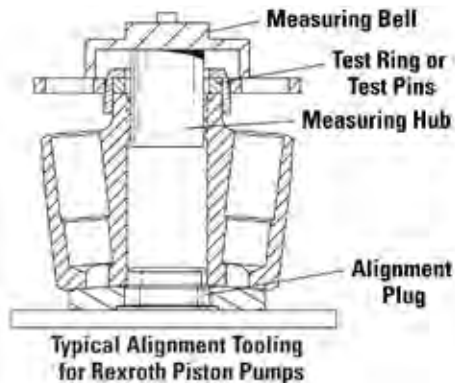
SMCS Code: 5070-082, 0685

Model: Machines with A20V, A11V and A4V Rexroth Hydraulic Piston Pumps

Warranty: Six Months

Tools required to measure and assemble each Rexroth pump on the described vehicle model			
Model	Pump Number	Rexroth Model Number	Tools Required
M312, M315	133-5494 ² , 132-7333 ²	A4VG40	135-8293 Measuring Hub, 128-2744 Measuring Bell, 135-8295 Test Ring, 135-8291 Alignment Plug
D3G, D4G, D5G	178-4415	A4VG40	135-8293 Measuring Hub, 128-2744 Measuring Bell, 135-8295 Test Ring, 316-0053 Alignment Plug
M318, CB434, CB444, CB534, CB634	111-3728 ² , 112-5730 ² , 122-1105 ²	A4VG56	128-2743 Measuring Hub, 128-2744 Measuring Bell, 128-2745 Test Ring, 128-2741 Alignment Plug
CB544, D3C, PR750, PR1000, 914G, 933C	113-9222, 113-9420 ² , 130-1807	A4VG71	135-8294 Measuring Hub, 128-2744 Measuring Bell, 135-8296 Test Ring, 135-8292 Alignment Plug
D4C, D5C, IT14G, 914G, 939C, PS150, PS200, PR750, PR1000	111-0371 ² , 113-9423 ² , 132-5159 ²	A4VG90	128-2747 Measuring Hub, 128-2744 Measuring Bell, 129-3877 Test Ring, 129-3882 Alignment Plug
D8N		A4VG125	129-3873 Measuring Hub, 128-2744 Measuring Bell, 129-3878 Test Ring, 129-3883 Alignment Plug
631E, 637E		A4VG180	129-3875 Measuring Hub, 129-3876 Measuring Bell, 129-3879 Test Ring, 129-3884 Alignment Plug
651E	156-7034	A4V0250	171-1113 Measuring Hub, 129-3876 Measuring Bell, 171-1112 Test Pin (requires 3), 171-1114 Alignment Plug

Vehicle System Tools



Required Tools for Pump Measuring

Tools required to measure and assemble each Rexroth pump on the described vehicle model			
Model	Pump Number	Rexroth Model Number	Tools Required
M312	130-7673	A11V095	129-3873 Measuring Hub, 128-2744 Measuring Bell, 127-1328 ¹ Test Ring, 137-1330 Alignment Plug
M315, M318	111-3727, 130-2447	A11V0130	129-3874 Measuring Hub, 128-2744 Measuring Bell, 128-2746 Test Ring, 128-2742 Alignment Plug
M320	128-4325	A11V0190	137-1326 Measuring Hub, 129-3876 Measuring Bell, 137-1329 Test Pin (requires 3), 137-1331 Alignment Plug
375, 990, 5080	6E-1452 ¹ , 7Y-4007, 105-7282	A11V0200	129-3875 Measuring Hub, 129-3876 Measuring Bell, 129-3880 Test Ring, 129-3903 Alignment Plug
375, 992, 994, 5080, 5110, 5130, 5230	6E-6590 ² , 7Y-4005 ² , 9T-8993, 105-5017 ² , 105-5020 ² , 106-4308 ² , 106-4309 ² , 107-6438 ² , 112-7870 ² , 112-7889 ² , 117-5959 ² , 117-5960 ² , 125-9519 ² , 125-9520 ² , 125-9522 ²	A11V0250	130-9890 Measuring Hub, 129-3876 Measuring Bell, 129-3881 Test Ring, 129-3904 Alignment Plug
365B, 797, 5230	147-5806 ² , 150-6600 ² , 160-0165 ²	A11V0260	171-1113 Measuring Hub, 129-3876 Measuring Bell, 171-1112 Test Pin (requires 3), 171-1114 Alignment Plug
365B	158-9066 ²	A20VL0260	171-1113 Measuring Hub, 129-3876 Measuring Bell, 171-1112 Test Pin (requires 3), 171-1114 Alignment Plug
CB224, CB434, CB534	1G-4116, 122-0014	A11VG35	138-2114 Measuring Hub, 138-2120 Test Ring, 138-2117 Alignment Plug
CB444, CB534, CB544, CB545, CB634	119-3135, 112-5732 ²	A11VG50	135-8293 Measuring Hub, 135-8295 Test Ring, 138-2118 Alignment Plug
¹ Not serviced			
² Discontinued			

207-8159 Guide Bushing

Essential Tool

SMCS Code: 5084-012

Model: 416B, 426B, 428B, 436B, and 438B Backhoes

Warranty: Six Months



- Used to compress 3E-4878 Bushing during installation into 166-2141 Hub Group
- Used with 5P-3975 Rubber Lubricant (makes bushing installation easier)

Part Number	Description
207-8159	Guide Bushing

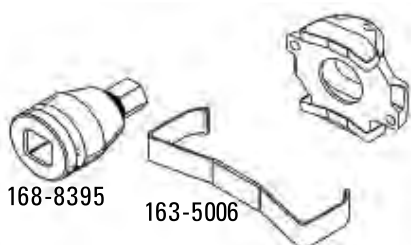
163-5006 Spring Clip, 168-8395 Drive Impact Socket

Essential Tool

SMCS Code: 5070-016

Model: Machines with 1.1 Series A11V Rexroth Hydraulic Piston Pumps

Warranty: Six Months



163-5006 Spring Clip

- Used to properly retain roller bearing cages against swash plate during assembly
- Attaches quickly — reduces assembly time
- Packaged individually, 2 required

168-8395 Drive Impact Socket

- Used to tighten housing bolts to 830 N-m (612 ft-lb)
- Used with 9S-7352 Torque Wrench, 6V-9451 Torque Tube, 8F-4678 Adapter 19.05 mm (3/4 in), and two 6V-9452 Drive Adapters
- Use torque computer with SEHS7150 to determine torque setting prior to tightening bolts

Reference

Machine Systems Disassembly and Assembly Manuals

163-5006 Spring Clip	
Overall size	140 x 50.8 x 12.7 mm (5.5 x 2.00 x 0.500 in)
168-8395 Drive Impact Socket	
Hex size	17 mm
Overall length	61.7 mm (2.43 in)
Square drive	3/4 in
Replacement bit	169-0782 Bit, Hex

Part Number	Description
163-5006	Spring Clip
168-8395	Drive Impact Socket

FT2739 Measuring Plate Group

Essential Tool

SMCS Code: 5058-082, 5072-082

Model: A2FO Rexroth Pumps, A2FM and A2FE Rexroth Motors (sizes 28 cc through 160 cc)

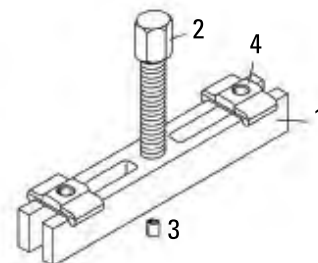
Warranty: None

- Used to check critical lift-off dimension when assembling pumps and motors
- Used with standard depth micrometer
- Works on any A2 pump or motor up to 160 cc
- Simple design reduces cost (made from standard parts)
- 1P-0456 Plate Drive is part of 1P-0500 Bearing and Seal Driver Group or 1P-0510 Bearing and Seal Driver Group

Reference

REN4023, Service Manual, M312 and M315 Excavator Disassembly and Assembly Supplement for Swing Drives

REN4024, Service Manual, M318 and M320 Excavator Disassembly and Assembly Supplement for Swing Drives



Item	Part Number	Description	Quantity
1	6V-3009	Cross Bar	1
2	6V-4832	Screw	1
3	1P-0456	Drive Plate	1
4	126-7181	Sliding Plate	2

FT2786 Measuring Plate Group

Essential Tool

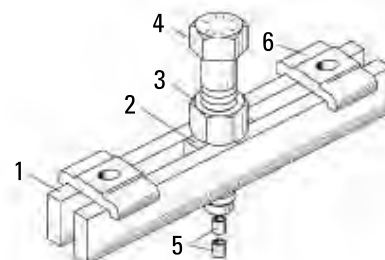
Model: Machines with A2FO Rexroth Pumps, A2FM and A2FE Rexroth Motors (180 through 250 cc)

Warranty: None

- Used to check critical lift off dimension when assembling A2 pumps and motors
- Used with a standard depth micrometer
- Works on A2 pumps and motors from 160 to 250 cc
- Simple design reduces cost of tooling (made from standard Cat® parts)
- Requires machining to cross block and welding

Item	Part Number	Description
1	FT2786	Measuring Plate Group

Item	Part Number	Description
2	1U-9895	Cross block
3	5B-0637	Nut
4	5P-8715	Forcing Bolt
5	1P-0456	Drive Plate
6	3H-0465	Puller Plate



FT3020 Spring Compressor

Essential Tool

SMCS Code: 5058-082, 5070-082

Model: CB21E, CB224E, CB225E Compactor

Warranty: None



- Used to disassemble propel piston pump for cleaning purposes
- Tool compresses spring to release pressure on retaining ring
- Washer end of tool is inserted through spring and placed under bottom edge

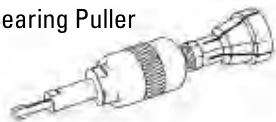
Puller Jaws

SMCS Code: 5058-015

Model: M312, M315, and M318 Wheeled Excavators

Warranty: Six Months

Typical Hydraulic Motor
Bearing Puller



Puller Jaws and Bearing
Puller Base Unit

- Used to remove bearing cone from motor rotating group when servicing Linde hydraulic swing and drive motors
- Used with 1U-5449 Bearing Puller Base Unit
- Pulls bearings without damaging sealing surfaces of rotating group

Part Number	Description	Vehicle	Motor
1U-5453	Puller Jaw	M315, M318	Travel
135-9494	Puller Jaw	M318	Swing
135-7267	Puller Jaw	M312	Travel

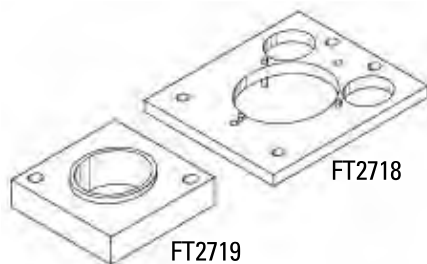
FT2718 Compression Plate, FT2719 Compression Plate

Essential Tool

SMCS Code: 5450-010

Model: 572R Track-Type Tractor Pipe Layer

Warranty: None



- Used to compress cylinder barrel
- Works on Linde HMR-135 and HMF-105 series pumps and motors
- Removes bearing cone from rotating group without damage

Reference

SENR1861, Service Manual, Machine Systems Disassembly and Assembly, 572R Pipelayer

176-5513 Valve Puller

Essential Tool

SMCS Code: 5058-015

Model: M312, M315, M318, and 539 Knuckleboom Loader

Warranty: Six Months

- Used to remove safety pop-off valve cartridge in main control valve of Linde hydraulic swing and drive motors
- Cartridge must be replaced with new part after removal

Part Number	Description
176-5513	Valve Puller



Measuring Tool Groups

Model: 215B and 225 Excavators

Warranty: Six Months

- Used for service of rotating groups in Rexroth pumps and motors
- Used to determine correct spacer thickness — When servicing rotating group, the lift-off separation between barrel and port plate is a critical dimension and must be limited to prevent internal leakage at high pressure; dimension is set by installing a spacer in rotating group
- To help maintain measuring accuracy of kits, inspection gauging balls are included so user can check kits for wear or damage

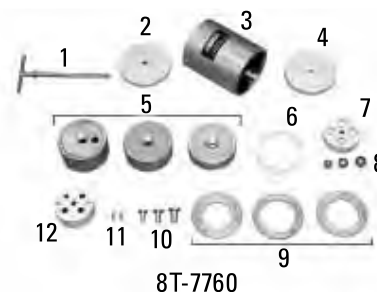
Reference

SEN3109, Service Manual Module, 215B Excavator

Hydraulic Pump and Motor Supplement

SEN3110, Service Manual Module, 225 Excavator

Hydraulic Pump and Motor Supplement



Item	Part Number	Description
--	8T-7760	Measuring Kit
8T-7760 Measuring Tool Group		
1.0	8T-9249	Handle Assembly
2.0	8T-9248	Cover, Top
3.0	8T-7764	Cylinder
4.0	8T-9247	Plate, Bottom
5.0	8T-7754	Support
5.0	8T-7756	Support (not shown)
6.0	8T-9250	Spacer
7.0	8T-9251	Insert, Lower
8.0	8T-9274	Ball
8.0	8T-9273	Ball
8.0	8T-9272	Ball
9.0	8T-7757	Plate
10.0	8T-7763	Pin
10.0	8T-7762	Pin
10.0	8T-7761	Pin
11.0	6D-3027	Bolt
12.0	8T-9252	Insert, Upper

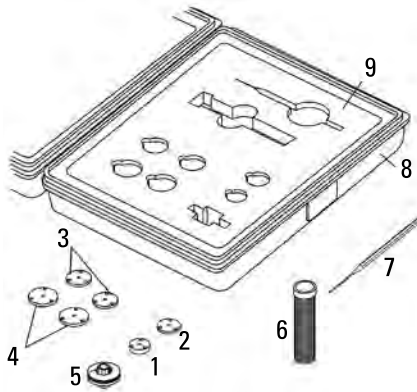
149-4935 Pump and Motor Measuring Group (A6, A7 and A8)

Essential Tool

SMCS Code: 5058-025, 5070-025

Model: Machines with Rexroth A6, A7, and A8 Pumps and Motors

Warranty: Six Months



- Used to determine correct shim thickness (critical lift off dimension)
- Used with dial caliper or suitable measuring devices
- Simple design reduces cost and simplifies procedure
- Used on 55, 80, 107, 160, and 200 cc (A6 and A7) pumps and motors
- Additional gauge plates included for 107 and 160 cc (A8) pumps
- 184 g (6.5 oz) package of gauge balls is included, allowing approximately 200 measurements before reordering (149-5141)
- Disposable gauge balls provide accurate thickness measurement (each ball used only once)
- Punch included for easy removal of gauge balls after recording measurements
- Overall size: 64.0 x 178.0 x 216.0 mm (2.5 x 7.0 x 8.5 in)
- Overall weight: 0.73 kg (1.6 lb)

References

SENR1255; D3C, D4C, D5C, and Series 3 Hystat Track-Type Tractor

Machine System Disassembly and Assembly

NEHS0699; Tool Operating Manual, Using the 149-4935 Measuring Group on A6, A7 and A8 Rexroth Hydraulic Pump and Motor Group

Item	Part Number	Description
1	149-4928	Gauge Plate (A6VM55, A7V055 and A8)
2	149-4930	Gauge Plate (A6VM80 and A7V080)
3	149-4931	Gauge Plate (A6VM107 and A7V0107)
4	149-4932	Gauge Plate (A6VM160 and A7V0160)
5	149-4934	Gauge Group (A6VM200)
6	149-5141	Gauge Ball Group 184 g (6.5 oz)
7	226-1901	Drive Pin Punch (3/32 in)
8	6V-6071	Plastic Case
9	151-5251	Pump Measuring Group Foam Insert
--	149-4935	Pump and Motor Measuring Group (A6, A7 and A8)

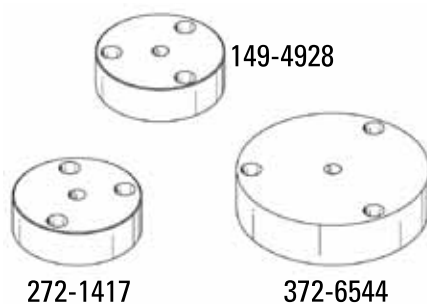
Gauge Plates

Essential Tool

SMCS Code: 5070-025

Model: All Cat® Machines with Rexroth A8 Pumps

Warranty: Six Months



- Used to determine correct shim thickness (critical lift-off dimension)
- Used with 149-4935 Pump and Motor Measuring Group (A6, A7 and A8)
- Simple design reduces cost and simplifies assembly procedure
- Tools are precision ground for accurate measurements
- Heat-treated for durability

References

NEHS0699-01, Tool Operating Manual, Using the 149-4935 Measuring Group on A6, A7, and A8 Rexroth Hydraulic Pump and Motor Groups

SENR1934, Disassembly and Assembly, 345B Excavator, Machine Systems

REHS1607, Rotating group adjustment and instructions for Bosch Rexroth pumps and motors

(Continued)

Gauge Plates (Continued)

Essential Tool

SMCS Code: 5070-025

Model: All Cat® Machines with Rexroth A8 Pumps

Warranty: Six Months

Part No.	Description	Use
149-4928	Gauge Plate (part of 149-4935)	Rexroth models A6V55 and A7V55 pumps
272-1417	Gauge Plate	Rexroth model A8V0160 pumps
372-6543	Gauge Plate ¹	Rexroth model A8V0107 pumps
372-6544	Gauge Plate	Rexroth model A8V0200 pumps

¹ Not shown.

126-6901 Bearing Nut Spanner Wrench

SMCS Code: 5070-025, 0602, 0766

Model: 330, 330B, and 330B LL Excavators

Warranty: Six Months

- Used to remove and install 5I-4479 Nut used to preload bearings in rotating group
- Used with torque wrench to obtain specified torque
- Provides best method of tightening nut
- Greatly decreases chance of wrench slipping off of nut and damaging nut and/or other pump components



Reference

SEPD0269, Service Magazine Article, August 28, 1995

Outside diameter	95.3 mm (3.75 in)
Overall length	219.0 mm (8.6 in)
Socket depth	200.0 mm (7.9 in)
Square drive	3/4 in
Number of teeth	6
Tooth width	6.4 mm (0.25 in)
Width between teeth	73.3 mm (2.89 in)

Part Number	Description
126-6901	Bearing Nut Spanner Wrench

131-5121 Lifting Tool

SMCS Code: 5070-017

Model: 375, 990, 5080, 5110, 5130, 5230 Excavators

Warranty: Six Months

- Used to remove rotating group of Rexroth pump from pump housing
- Used with suitable hoist-type lifting device
- Tool easily attaches to pump shaft with spring-loaded plungers (plungers provide visual indication of whether tool is properly installed, and seated before lifting)
- One tool handles 2 sizes of pump shafts (swivel bail allows tool to be quickly changed to accept both pump shaft sizes)



(Continued)

Hydraulic Component Disassembly and Assembly

131-5121 Lifting Tool (Continued)

SMCS Code: 5070-017

Model: 375, 990, 5080, 5110, 5130, 5230 Excavators

Warranty: Six Months

Pump shaft size (40 mm)	375, 890, and 5080
Pump shaft pump size (42 mm)	5080, 5110, 5130, 5230, and some 375
Working load limit	57 kg (125 lb)
Bore size	40.0 and 42.0 mm (1.6 and 1.7 in)
Overall length	165 mm (6.5 in)

Part Number	Description
131-5121	Lifting Tool

141-4803 Gauge Block Group

SMCS Code: 5070-082, 5058-082, 0767

Model: All Models

Warranty: Six Months



- Used to compare hydraulic pump and motor measurements with a known “standard” dimension
- Blocks are hardened to Rockwell 65, stress relieved, lapped to accurate size, and inspected to ensure parallelism and flatness
- Set includes 36 standard sizes (each block is individually serialized)
- Conforms to Grade 3 tolerances for National Institute of Standards and Technology
- Set comes complete with fitted wooden storage case

Material	Rectangular steel
Hardness	Rockwell 65
Gauge set size ranges	(0.00010 - 4.00000 in)
Size range (9 blocks)	(0.1001 - 0.1009 in) in steps of (0.0001 in)
Size range (9 blocks)	(0.101 - 0.109 in) in steps of (0.001 in)
Size range (9 blocks)	(0.110 - 0.190 in) in steps of (0.010 in)
Size range (5 blocks)	(0.100 - 0.500 in) in steps of (0.100 in)
Size range (3 blocks)	(1.0000, 2.0000, and 4.0000)
Size range (1 block)	(0.050 in)

Part Number	Description
141-4803	Gauge Block Group

206-3689 Motor Turning Tool

Essential Tool

Model: 315C Excavator

Warranty: Six Months

- Used to turn 185-6953 Piston Motor (travel motor) to check rolling torque
- Also used to bench test brake

Reference

REN5525, Service Manual

Overall length	145 mm (5.7 in)
Diameter	37 mm (1.5 in)
Number of teeth	14
Hex drive	30 mm (1.2 in)



Part Number	Description
206-3689	Motor Turning Tool

250-6142 Threaded Adapter

Essential Tool

SMCS Code: 5070-017

Model: 330C and 345B Excavator

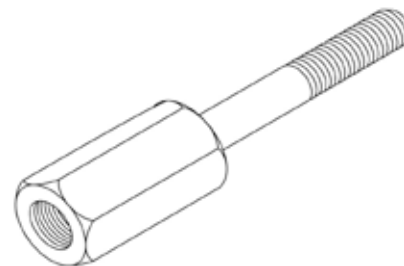
Warranty: Six Months

- Used to remove 242-6775 Pilot Pump Shaft
- Used with a 1P-0074 or 1U-7603 Slide Hammer
- Converts a 5/8-18 threaded slide hammer to an M12 x 1.5 thread
- 90 mm (3.5 in) long adapter is heat-treated for strength and durability

Reference

REN5438, Service Manual, 330C Excavator Systems Disassembly and Assembly

Part Number	Description
250-6142	Threaded Adapter



Hydraulic Pump and Motor Service Tools

SMCS Code: 5050-010

Model: D6H, D7H and D8N Tractors; Challenger 65; 235 and 245 Excavators; 953C Track Loader

Warranty: Six Months

- Required for disassembly and assembly of 5 hydraulic pumps and motors manufactured by Linde
- Used to repair differential steering and implement pump on D6H, D7H and D8N Tractors; differential steering motor and pump on Challenger 65; and implement pump and swing pump and motor on 235 and 245 Excavators

- Easier and faster seal installation, bearing removal, piston alignment, and retainer nut removal and installation

The discontinued 9T-5426 Differential Steering Motor on the Challenger 65 is also used as a swing motor on the 213, 214 and 224 Wheel-Type Excavators.

(Continued)

Hydraulic Component Disassembly and Assembly

Hydraulic Pump and Motor Service Tools (Continued)

SMCS Code: 5050-010

Model: D6H, D7H and D8N Tractors; Challenger 65; 235 and 245 Excavators; 953C Track Loader

Warranty: Six Months

Machine Model/Pump or Motor Part Number							
Part Number	Description	D7H, D8N 9T-5987 ¹ Pumps	Challenger 65 9T-5426 ¹ Motor	Challenger 65 9T-5743 ¹ Pump	D6H, 235 and 245 9T-6261 ¹ , 9T-2507 Pump	235 and 245 9T-2505 ¹ Pump	953C Track Loader 9T-5619 ¹ Pump
1U-5444	Seal Guide	1					
1U-5449	Bearing Puller	1					
1U-5452	Puller Jaws	1					
1U-5453	Puller Jaws				1		
160-6651	Puller Jaws						1
1U-5455	Template			2			
1U-5539	Compressor Assembly			1			
¹ Discontinued							

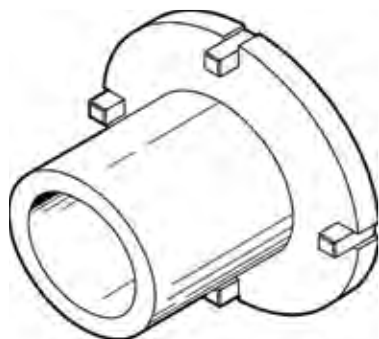
171-1110 Motor Nut Spanner Wrench

Essential Tool

SMCS Code: 4351-015, 4351-017

Model: CB544 and CB545 Vibratory Compactors

Warranty: Six Months



- Used to remove and install 142-1271 Spanner Nut
- Used with 3/4 inch socket or wrench
- Required to disassemble and assemble Poclain Model MC08 drum propel motors
- Pilots from inside diameter of motor shaft (provides positive engagement of nut)
- Heat-treated for added durability

Reference

KENR3039, Machine Systems Disassembly and Assembly, CB544/CB545 Vibratory Compactor

Inside diameter of teeth	85.73 mm (3.375 in)
Pilot diameter	59.0 mm (2.32 in)
Tooth width	5.5 mm (0.22 in)
Overall height	70.0 mm (2.76 in)
Number of teeth	4, evenly spaced

Part Number	Description
171-1110	Motor Nut Spanner Wrench

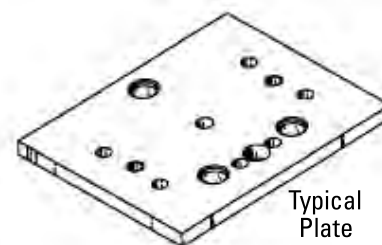
Plates for Measuring Swashplate Position

SMCS Code: 3203-082, 5070-082

Model: 35, 45, and 55 Challengers; RR-250 Road Reclaimer; SS-250 Soil Stabilizer; PM-565 Cold Planer; RM-350 Reclaimer Mixer and SM-350 Stabilizer Mixer; CP/CS323C, CS-533, CP-533, CS-563, CP-563, CS-573, CS-583 Vibratory Compactors

Warranty: Six Months

- Used to measure swashplate position for “zero” displacement in 42, 55, 75, and 100 cc pumps
- Used with 6V-2012 Depth Gauge Group
- Plate preloads pump swashplate neutral mechanism to allow easier and more accurate measurements to be taken (allows neutral adjustment to be made during assembly rather than during testing on test stand)
- Installs directly onto pump and measurements are taken through two slotted holes
- Plate remains on pump while swashplate is adjusted (makes rechecking adjustment very fast and simple)
- All plates are made from steel and precisely machined
- Plates are heat-treated for durability and years of repeated use



References

KENR1899, Service Manual Module, Disassembly and Assembly (CS-533, CP-533)

KENR1627, Service Manual Module, Disassembly and Assembly (CS-563, CP-563)

KENR1884, Service Manual Module, Disassembly and Assembly (CS-573, CP-583)

Service Magazine, August 15, 1994, “Tooling Plate Simplifies Swashplate Neutral Adjustment on Drum Propel Pump”

Part Number	Description	Overall Size	Pump Series	Pump Output
4C-8498	Plate	165 x 203 x 19.0 mm (6.5 x 8.0 x 0.75 in)	93	42 cc — Drum Propel
4C-9419	Plate	178 x 216 x 19.0 mm (7.0 x 8.5 x 0.75 in)	94	55 cc — Axle Propel
127-5653	Neutral Plate	229 x 216 x 19.0 mm (9.0 x 8.5 x 0.75 in)	95	75 cc
127-5654	Neutral Plate	241 x 203 x 19.0 mm (9.5 x 8.0 x 0.75 in)	96	100 cc

Bearing Pullers and Sizing Arbors

Model: Any Machines with Sundstrand Pumps (Mostly Paving Products)

Warranty: Six Months

132-8738 Blind Hole Bearing Puller

- Used to easily grab and remove recessed (blind hole) bearings from pump head
- Used with bridge and bar-type yokes or with a slide hammer
- Prevents damage to surface of pump head caused by prying tools
- Collets expand on inside diameter to allow bearing removal
- Set includes yolk, pressure screw, 3 sizes of expandable collets and additional hardware to make a complete puller (group has no serviceable parts)
- Collet sizes:
 - 25.4 to 31.8 mm (1.00 to 1.25 in)
 - 31.8 to 38.1 mm (1.25 to 1.50 in)
 - 38.1 to 44.5 mm (1.50 to 1.75 in)
- Yoke leg spread: 127 mm (5.0 in)
- All parts can be ordered separately

132-8739 Sizing Arbor Group

- Used to properly size newly installed bearings in Series 90 pumps
- Commonly, mechanics in the past have used a pump shaft to size the bearing’s inside diameter; this is not an acceptable method (using a pump shaft as a sizing tool does not give the proper shaft-to-bearing clearance that is obtained by using the sizing arbors, and will result in significant reductions to pump life)
- Arbors are ground to a 0.0025 mm (0.00010 in) tolerance to properly size the replacement bearings
- Tools are packaged in a convenient case with a 136-7894 Insert to protect the arbor handle and precision ground arbors. Individual parts include:

(Continued)

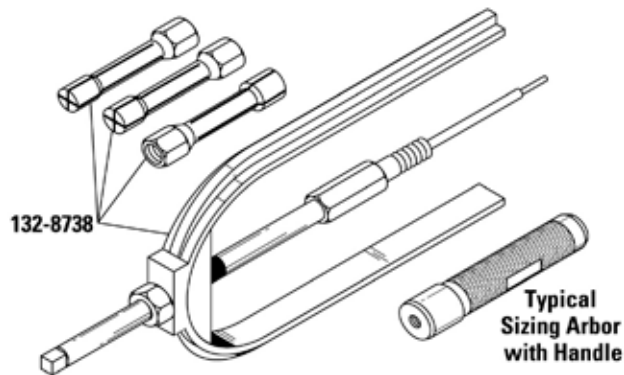
Hydraulic Component Disassembly and Assembly

Bearing Pullers and Sizing Arbors (Continued)

Model: Any Machines with Sundstrand Pumps (Mostly Paving Products)

Warranty: Six Months

Description	Diameter
Threaded Hole	3/8 - 16



Part Number	Description	Diameter
132-8739	Sizing Arbor Group	--
132-8738	Blind Hole Bearing Puller	--
132-8741	Sizing Arbor (30 cc)	25.300 mm (0.9961 in)
133-3056	Sizing Arbor (55 cc)	30.018 mm (1.1818 in)
133-3057	Sizing Arbor (75 cc)	35.014 mm (1.3785 in)
133-3058	Sizing Arbor (100 cc)	38.100 mm (1.5000 in)
133-3059	Sizing Arbor (130 cc)	44.984 mm (1.7710 in)

FT1764 Fixture

SMCS Code: 5050-010

Model: 834B Tractor

Warranty: None



- Reduces difficulty encountered when removing and installing hydraulic control valve

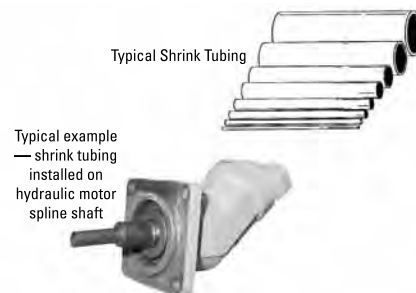
Shrink Tubing for Spline Shafts

SMCS Code: 3000-016, 5000-016

Model: All Models

Warranty: Six Months

- Used to protect seal from damage caused by spline during assembly
- An inexpensive and versatile system for making seal protectors
- Various sizes to fit outside diameters from 6.4 to 101 mm (0.25 to 4.0 in)
- Tubing can be reused on other spline shafts with the same profile
- Shrink tubing can decrease in size by 50% of its original diameter
- Standard 9U-6070 Heat Gun (110 V) or 9U-6072 Heat Gun (220 V) can be used to shrink tubing



Part Number	Inside Diameter x Length	Wall Thickness ¹
9U-5716	12.7 x 1220 mm (0.50 x 48 in)	0.33 mm (0.013 in) - 0.63 mm (0.025 in)
9U-5717	19 x 304 mm (0.75 x 12 in)	0.38 mm (0.015 in) - 0.76 mm (0.030 in)
9U-5718	25.4 x 304 mm (1 x 12 in)	0.46 mm (0.018 in) - 0.89 mm (0.035 in)
9U-5719	31.7 x 304 mm (1.50 x 12 in)	0.51 mm (0.020 in) - 1.02 mm (0.040 in)
9U-5720	50.8 x 304 mm (2 x 12 in)	0.58 mm (0.023 in) - 1.14 mm (0.045 in)
9U-5741	101.8 x 304 mm (4 x 12 in)	0.71 mm (0.028 in) - 1.40 mm (0.055 in)

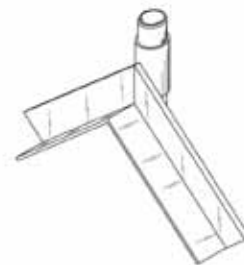
¹ On wall thickness, the first set of numbers are before shrinking and the second set, after shrinking.

FT2238 Centering Fixture

Model: Most Cat® Models

Warranty: None

- Used in testing cylinder rod surface hardness (6V-6035 Hardness Tester mounted in FT2238 Centering Fixture)
- Centers 6V-6035 and holds it perpendicular to rod surface
- Ensures accurate hardness readings
- Can test hardness of cylinder rods ranging from 19.1 to 228.6 mm (0.75 to 9.00 in) in diameter
- 6V-6035 has hardened steel ball which strikes, but does not dent, tested surface; height of bounce read as Shore scleroscope reading



Step Buffer Seal Installer

SMCS Code: 5050-012

Model: See Below

Warranty: Six Months



- Make it possible to quickly and safely install seals without damage

Reference

SEHS8905, Special Instruction, Installing Step Buffer, U-Cup and Double Lip Wiper Seals in head in hydraulic cylinders

Part Number	Size	Use	Model
4C-4069	38.1 mm (1.50 in)	Install 8C-9122 Step Buffer Seal Assembly in hydraulic cylinders ¹	910 and 910E Wheel Loaders, 508 Skidder, D3B Track-Type Tractor
4C-4070	44.5 mm (1.75 in)	Install 8C-9123 Step Buffer Seal Assembly in hydraulic cylinders ¹	416, 426, 428, 436 and 438 Backhoe Loaders

¹ Discontinued

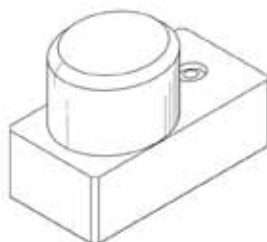
199-4384 Disc Installer

Essential Tool

SMCS Code: 5059-012

Model: 416D, 420D, 424D, 428D, 430D, 432D, 438D, and 442D Backhoe

Warranty: Six Months



- Used to install disc to correct index position
- Reduces valve body or disc damage during installation
- Black-oxide coated to eliminate corrosion
- Overall size: 25 x 50 x 50 mm (1.0 x 2.0 x 2.0 in)

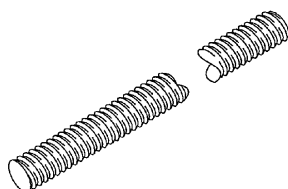
Part Number	Description
199-4384	Disc Installer

9U-7692 Threaded Rod (Metric)

SMCS Code: 5058-015, 5058-016, 5058-017

Model: All Challenger Ag Tractors

Warranty: Six Months



- Used to disassemble and assemble steering motors using a metric threaded rod — makes repairs easier and faster
- Rod can be cut to length for this specific application or used in other applications
- Conforms to metric property class 8.8

Threads	M16 x 2
Overall length	1000 mm (39.0 in) long
Working load	60.25 kN (13,550 lb)

(Continued)

9U-7692 Threaded Rod (Metric) (Continued)

SMCS Code: 5058-015, 5058-016, 5058-017

Model: All Challenger Ag Tractors

Warranty: Six Months

Part Number	Description
9U-7692	Threaded Rod (Metric)

159-3327 Hex Wrench

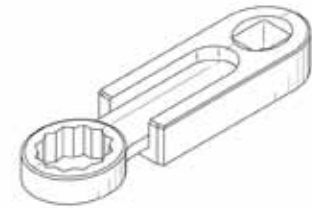
SMCS Code: 5070-011

Model: Skid Steer Loaders, Multi-terrain Loaders

Warranty: Six Months

- Used to remove and install hydrostatic pump mounting bolts
- Used with 1/2 inch drive extension, ratchet wrench and/or torque wrench
- 12 point, 21 mm box end wrench with 1/2 inch drive
- Extension distance 76.2 mm (3.0 in) — center of square drive to center of wrench for ease of torque calculations
- Allows easier access to loosen, remove, and tighten pump mounting bolts
- Heavy-duty welded steel construction designed for maximum torque of 244 N·m (180 lb ft)
- Heat-treated for added durability

Reference



Hydraulic Component Disassembly and Assembly

159-3327 Hex Wrench (Continued)

SMCS Code: 5070-011

Model: Skid Steer Loaders, Multi-terrain Loaders

Warranty: Six Months

KENR5114, 236B, 246B, 246C, 252B, 256C, 262B, 262C and 272C Skid Steer Loaders, Engine Supplement, Disassembly and Assembly, Engine Remove and Install
KENR5115, 246C, 256C, 262C and 272C Skid Steer Loaders, Power Train, Disassembly and Assembly, Piston Pump (Hydrostatic)
KENR5197, 277C, 287C and 297C Multi Terrain Loaders, Power Train, Disassembly and Assembly, Piston Pump (Hydrostatic)
KENR8831, 279C, 289C and 299C Compact Track Loaders, Power Train, Disassembly and Assembly, Piston Pump (Hydrostatic)
REN2857, 216, 226 and 228 Skid Steer Loaders, Power Train, Disassembly and Assembly, Piston Pump (Hydrostatic)
REN2868, 236, 246, 248, 252 and 262 Skid Steer Loaders, Engine Supplement, Disassembly and Assembly, Engine Remove and Install
REN2872, 236, 246 and 248 Skid Steer Loaders, Power Train, Disassembly and Assembly, Piston Pump (Hydrostatic)
REN4808, 236, 246, 252 and 262 Skid Steer Loaders, Power Train, Disassembly and Assembly, Piston Pump (Hydrostatic)
REN4814, 267, 277 and 287 Multi Terrain Loaders, Engine Supplement, Disassembly and Assembly, Engine Remove and Install
REN4833, 216 and 232 Skid Steer Loaders, 3024 Engine Supplement, Disassembly and Assembly, Engine Remove and Install
REN4834, 226 and 242 Skid Steer Loaders, Power Train, Disassembly and Assembly, Piston Pump (Hydrostatic)
REN4843, 226 and 242 Skid Steer Loaders, Engine Supplement, Disassembly and Assembly, Engine Remove and Install
REN4851, 247 and 257 Multi Terrain Loaders, 3034 Engine Supplement, Disassembly and Assembly, Engine Remove and Install
REN4863, 236B, 236B2, 246B, 252B, 252B2 and 262B Skid Steer Loaders, Engine Supplement, Disassembly and Assembly, Engine Remove and Install
REN4864, 236B, 236B2, 246B, 252B, 252B2 and 262B Skid Steer Loaders, Power Train, Disassembly and Assembly, Piston Pump (Hydrostatic)
REN4873, 247B, 247B2, 257B and 257B2 Multi Terrain Loaders, Engine Supplement, Disassembly and Assembly, Engine Remove and Install
REN4874, 247B, 247B2, 257B and 257B2 Multi Terrain Loaders, Power Train, Disassembly and Assembly, Piston Pump (Hydrostatic)
REN4884, 267B, 277B and 287B Multi Terrain Loaders, Machine Systems, Disassembly and Assembly, Piston Pump (Hydrostatic)
REN4893, 216B, 216B2, 226B, 226B2, 232B, 232B2, 242B and 242B2 Skid Steer Loaders, Engine Supplement, Disassembly and Assembly, Engine Remove and Install
REN4894, 216B, 226B, 232B and 242B Skid Steer Loaders, Power Train, Disassembly and Assembly, Piston Pump (Hydrostatic)
REN8743, 248B and 268B Skid Steer Loaders, Engine Supplement, Disassembly and Assembly, Engine Remove and Install
REN8744, 248B and 268B Skid Steer Loaders, Power Train, Disassembly and Assembly, Piston Pump (Hydrostatic)

Part Number	Description
159-3327	Hex Wrench

Cylinder Head Seal Guides

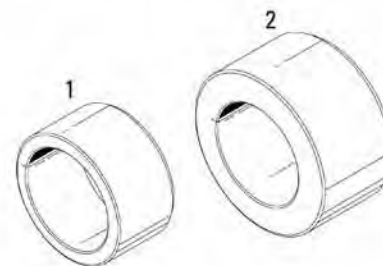
SMCS Code: 4303-016 (4C-8122), 5104-016 (4C-8123)

Model: 994 Wheel Loader

Warranty: Six Months

- Required to install cylinder head seals over square shoulder of cylinder rods
- Installation without them is difficult and will likely damage seals

Part Number	Cylinder Rod Diameter	Cylinder Rod Thread Size
4C-8122	108 mm (4.25 in) guide OD/large end	3.25 in — guide ID
4C-8123	139.7 mm (5.50 in) guide OD/large end	3.25 in — guide ID



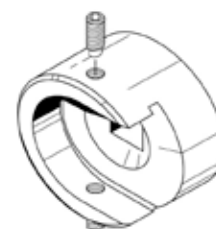
127-5090 Coupling Socket

SMCS Code: 5051-015, 5051-016

Model: 35, 45 and 55 Challenger

Warranty: Six Months

- Used to quickly, and easily remove and install implement hydraulic coupling sleeve
- Used with 1/2 inch square drive ratchet or torque wrench (torque wrench is used at installation to obtain correct torque on coupling)
- Designed with 2 set screws to provide positive engagement with coupling (also helps prevent part damage during removal and installation)
- Coupling is hardened for durability and long life



Reference

SENR8312, Service Manual

Outside diameter	50.8 mm (2.0 in)
Length	33.27 mm (1.31 in)
Square drive	1/2 in
Set screw	10-24 x 3/8 in dog point

Part Number	Description
127-5090	Coupling Socket

4C-8092 Universal Wrench, Extra Large

SMCS Code: 0602-017

Model: 245, E450, E650, MS380, MS400, MS450 and MS580

Warranty: Six Months

- Used with Tuxco Cylinder Repair Stand to disassemble and assemble hydraulic cylinders
- Extra large universal wrench used on larger cylinder piston retaining nuts on Cat® and competitive products that are too large for standard wrench on Tuxco Repair Stand
- Adjustable to sizes that would otherwise require other adapters and many large, expensive sockets with greatly reduced torque
- Can service large nuts at up to 25,000 ft-lb of torque
- Extra large high torque wrench
- Adjustable from 102 through 165 mm (4 through 6 1/2 in)
- Capable of up to 25,000 ft-lb of torque
- Used with 1U-9900, 1U-9901, 1U-9902, 4C-4405, 4C-4406, 4C-4407, 4C-4408, 4C-4868

Reference

NEHC2004-01 Capitol Equipment Guide

Part Number	Description
4C-8092	Extra Large Adjustable Torque Wrench

Hydraulic Component Disassembly and Assembly

17 Fabricated Tools for Articulated Trucks

SMCS Code: 7201-017, 7113-025, 3176-010, 3258-010

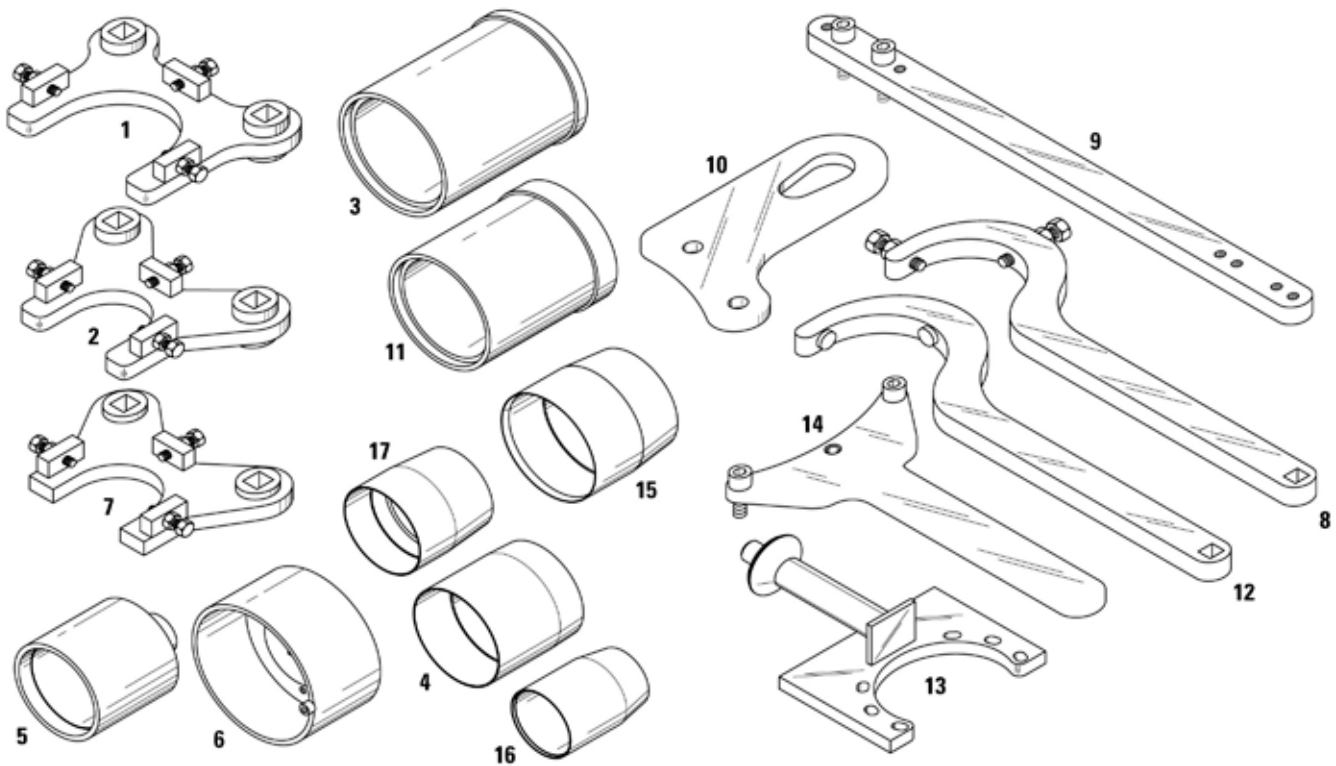
Model: D25C, D250B, D30C, D300B, D300D, D35C, D35HP, D350C, D350D, D40D, D400, D400D, D44, D44B, D550, and D550B Articulated Trucks

Warranty: None

Seventeen (17) fabricated tool (FT) drawings are available to make tools required for various procedures on several models of articulated trucks. The tools are needed for disassembly and assembly of suspension and hoist cylinders, adjustment of the thrust hitch flange, removal and installation of axle differentials, and removal and installation of transfer gear drop box. The following list identifies the FT tool, component on which it is used, function and articulated truck model on which it is used.

Item	Part Number	Description	Use
1	FT2401	Spanner Wrench	Disassemble and assemble 7U-4182 Outer Head in hoist cylinder (used on D40D)
2	FT2402	Spanner Wrench	Disassemble and assemble discontinued 7U-4219 Inner Head of hoist cylinder (used on D40D)
3	FT2403	Piston Driver	Assemble 6U-4162 and 7U-7083 Pistons in the suspension cylinder (used on D25C, D30C, D35C, D35HP, D350C, D350D, D400, and D400D)
4	FT2404	Seal Guide	Install cylinder head over rod in 6U-4161 Suspension Cylinder Group (used on D25C, D30C, D35C, D35HP, D350C, D350D, D400, and D400D)

Vehicle System Tools



Fabricated Tools 5-17

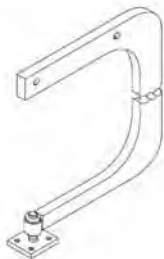
Item	Part Number	Description	Use
5	FT2405	Spanner Wrench	Disassemble and assemble 7U-4218 Inner Piston of hoist cylinder (used on D40D)
6	FT2406	Spanner Wrench	Disassemble and assemble 7U-4166 Outer Piston of hoist cylinder (used on D40D)
7	FT2407	Spanner Wrench	Disassemble and assemble discontinued 6U-3124 Cylinder Head of hoist cylinder (used on D250B, D300B, D300D, D44, D44B, D550, and D550B)
8	FT2408	Spanner Wrench	Disassemble and assemble 6U-3243 Cylinder Head of hoist cylinder (used on D250B, D300B, D300D, D44, D44B, D550, and D550B)
9	FT2409	Spanner Wrench	Disassemble and assemble 7U-4218 and 7U-4166 Pistons in hoist cylinders (used on D40D)
10	FT2410	Lifting Bracket	Remove and install 4C-1800 Transmission Arrangement (used on D400D)
11	FT2411	Piston Driver	Assemble 6U-3247 Piston in suspension cylinder (D250B, D300B, and D300D)
12	FT2412	Spanner Wrench	Disassemble and assemble heads (end caps), in 6U-4161 Suspension Cylinder Group
13	FT2413	Lifting Bracket	Remove and install 4C-1607 (not serviced) and discontinued 9C-2283 Axle Differentials (used in D35C, D35HP, D40D, D44B, and D550B)
14	FT2414	Spanner Wrench	Adjust thrust hitch flanges (used on all models)
15	FT2415	Seal Guide	Install 7U-4182 Outer Head over outer rod (used on D40D)
16	FT2416	Seal Guide	Install 7U-9533 Inner Head over inner rod (used on D40D)
17	FT2417	Seal Guide	Install 6U-3243 Cylinder Head over rod (used on D250B, D300B, D300D, D44, D44B, D550, and D550B)

137-4369 Swivel Bracket Assembly

SMCS Code: 5051-010, 5051-017

Model: 992G Wheel Loader

Warranty: Six Months



European Union compliant, CE marked

- Used to remove or install hydraulic control valve located on front frame (attaches directly to top of valve body)
- Swivel mount design allows valve body to be rotated or repositioned during valve body removal or installation
- One lifting point is provided at “center of gravity” of valve body, keeping it level during removal or installation
- Second lifting point is provided at “center of gravity” of tool, holding bracket level while attaching it to valve body

Lifting hole diameter	30.0 mm (1.12 in)
Overall length	1760.0 mm (69.3 in)
Width	757.0 mm (29.8 in)
Weight	110 kg (242 lb)
Lifting capacity	590 kg (1300 lb)

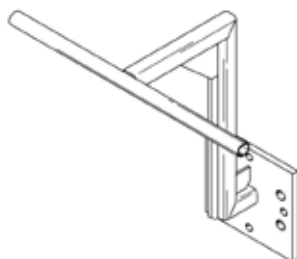
Part Number	Description
137-4369	Swivel Bracket Assembly

247-4296 Pump Removal Handle Assembly

SMCS Code: 5070-010

Model: All Skid Steer Loaders and Multi-Terrain Loaders

Warranty: Six Months



- Used to help remove and install main hydraulic pump
- Used with 138-7575 Link Brackets and overhead lifting device
- Allows 2 mechanics to manually position and install pump
- Makes pump alignment during installation faster and easier
- 2 bolt hole patterns allow 1 tool to fit all pumps

Part Number	Description
247-4296	Pump Removal Handle Assembly

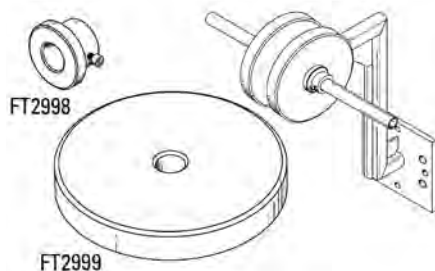
FT2998 Lock Collar, FT2999 Weight

Essential Tool

SMCS Code: 5070

Model: 287 (CNY1-Up) and 287B (ZSA1-Up) Multi-Terrain Loaders

Warranty: None



- Used as a counterweight to facilitate removal and installation of heavier hydraulic pumps
- Requires 2 locking collars and 2 or more weights to be used with 247-4296 Pump Removal Handle Assembly
- Weights are used in any combination from 1 to several depending on weight of pump being removed/installed
- Lock weights on each side of center square tube using lock collars

Reference

REN4884-02; Disassembly and Assembly 267B, 277B, and 287B Multi-Terrain Loaders Power Train

Wrenches

SMCS Code: 5057

Model: 246C (JAY), 256C (DWS), 262C (MST), 272C (RED) Skid Steer Loaders; 277C (JWF), 287C (MAS), 297C (GCP) Multi-Terrain Loaders

Warranty: None

- Used to remove and install hydraulic lines

FT3067

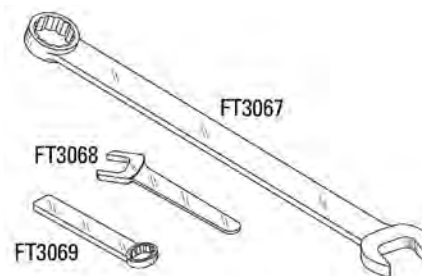
- Used to remove and install drive motor lines
- Decreased head width (open end) provides required clearance between fitting and surrounding components
- Made from 8H-8520 Wrench

FT3068

- Used to remove and install load sensing signal line
- Decreased head width provides required clearance between fitting and surrounding components
- Made from Armstrong 28-032 Wrench

FT3069

- Used to remove and install pilot pump mounting bolts
- Decreased head thickness and shortened overall length provides required clearance between nut and surrounding components
- Made from 6V-9098 Wrench



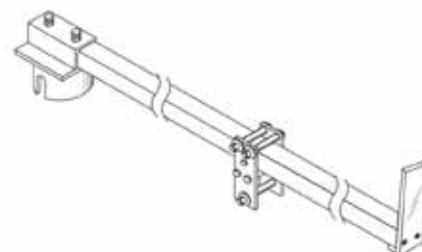
304-8952 Pump Support Group

Essential Tool

Model: 246C (JAY), 256C (DWS), 262C (MST), 272C (RED) Skid Steer Loaders; 277C (JWF), 287C (MAS), 297C (GCP) Multi-Terrain Loaders

Warranty: Six Months

- Used to remove hydrostatic pump from C-Series Skid Steer Loaders and Multi-Terrain Loaders
- Used with 8S-7640 Stand Group and discontinued 1U-9199 Aluminum Alloy Lever Puller



Working load limit	113 kg (250 lb)
--------------------	-----------------

Part Number	Description
304-8952	Pump Support Group
Service/Repair Parts	
304-8950	Tube Assembly
304-8951	Trolley Assembly
305-0041	Base Assembly

157-0738 Bracket Assembly

Essential Tool

SMCS Code: 5066-010, 5066-017

Model: 966G Wheel Loader

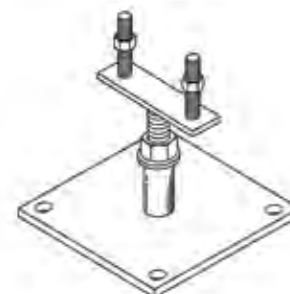
Warranty: Six Months

European Union compliant, CE marked

- Used to remove or install diverter
- Used with 1U-9752 Mechanical Transmission Jack
- Valve is located under hydraulic control valve on front frame

Lifting capacity	28 kg (60 lb)
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Part Number	Description
157-0738	Bracket Assembly



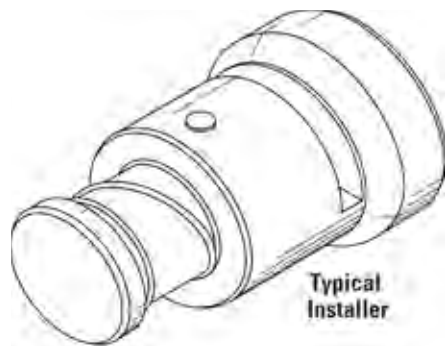
Hydraulic Component Disassembly and Assembly

O-ring Installers

SMCS Code: 0618-012

Model: All Models

Warranty: Six Months



- Reduces leaks due to improper O-ring installation in face seal fittings
- Used to install O-ring seals in dove tail O-ring grooves of tube fittings
- Each tool is designed for a specific size O-ring (makes installation easier)
- Prevents damage to O-ring during installation
- Installer snaps O-ring in place creating positive retention
- O-rings installed by hand will not seat properly and usually will roll-out of fitting at installation

179-6884 (-4)	2-011 O-ring
179-6885 (-6)	2-012 O-ring
179-6886 (-8)	2-014 O-ring
179-6887 (-10)	2-016 O-ring
179-6888 (-12)	2-018 O-ring
179-6889 (-16)	2-021 O-ring
179-6890 (-20)	2-025 O-ring
179-6891 (-24)	2-029 O-ring

279-4142 Wrench Assembly

Essential Tool

SMCS Code: 6307-010

Model: G310B, G315B Grapple

Warranty: Six Months



- Used to properly remove and install bearing retainer nut without damage
- Used with 3/4 inch square drive torque wrench
- Provides accurate torquing method

Drive size	3/4 in
Spanner ID	105.75 mm (4.163 in)
Number of teeth	4
Tooth width	7.38 mm (0.291 in)
Distance between teeth	99.0 mm (3.9 in)

Part Number	Description
279-4142	Wrench Assembly

180-0472 Lift Fixture Assembly (988G Main Valve)

Essential Tool

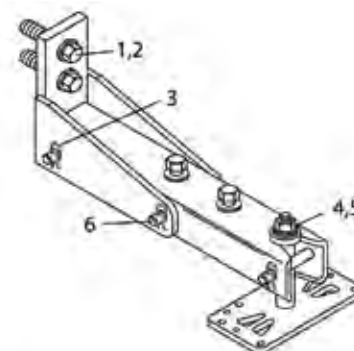
SMCS Code: 5051-010, 0632

Model: 988G Wheel Loader

Warranty: Six Months

European Union compliant, CE marked

- Used to remove and repair the main hydraulic valve
- Used with 142-1664 Lift Bracket Group
- 3-piece unit bolts directly to lift bracket group
- Allows minimal machine disassembly to remove or install main hydraulic valve
- Lower, rotate, and quickly remove valve with reversible support bracket



Overall dimensions	
Base unit	350 x 110 mm (13.5 x 4.3 in)
Lift arm	594 x 101 mm (23.5 x 4 in)
Base plate	150 x 261 mm (6 x 10.3 in)
Weight	38.6 kg (85 lb)
Lift capacity	317.5 kg (700 lb)

Item	Part Number	Description
1	6B-9194	Bolt
2	5P-8250	Hard Washer
3	5P-0370	Lock Pin
4	2J-3505	Full Nut
5	8C-6913	Hard Washer
6	6S-6808	Pin
--	180-0472	Lift Fixture Assembly (988G Main Valve)

277-5832 Hex Wrench, 30 mm

Essential Tool

SMCS Code: 5070

Model: 966H Wheel Loader

Warranty: Six Months

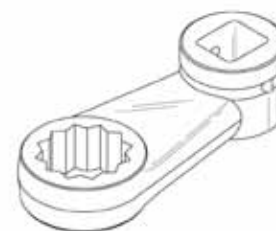
- Used to tighten hydraulic pump bolts
- Fits into limited clearance around bolt heads (sockets or other tools will not fit)
- Used with a 3/4 inch square drive 9U-5007 Torque Wrench or equivalent
- Essential for applying proper bolt torque

Reference

REN8881-00, Hydraulic Pump Removal

Hex	30 mm, 12 point
Square drive	3/4 in
Center-to-center distance of square drive to socket	76.2 mm (3.0 in)

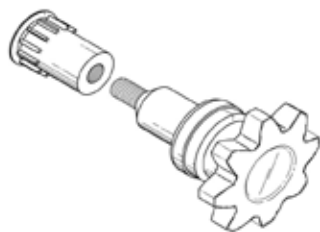
Part Number	Description
277-5832	Hex Wrench (30 mm)



314-9716 Compressor

Essential Tool

SMCS Code: 5070-015
 Model: CB-113 and CB-114 Compactor
 Warranty: Six Months



- Used for piston pump (drum propel) disassembly and assembly
- Used to compress barrel assembly
- Large knob easily adjusts tension on compressor assembly

Reference

KENR6008, Disassembly and Assembly,
 CB14 Vibratory Compactor Machine Systems

Part Number	Description
314-9716	Compressor

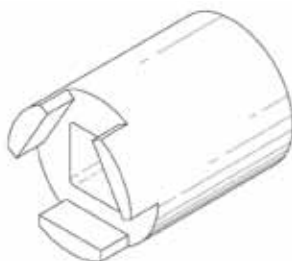
WARNING

Personal injury can result from being struck by parts propelled by a released spring force. Make sure to wear all necessary protective equipment. Follow the recommended procedure and use all recommended tooling to release the spring force.

FT3154 Check Valve Socket

Essential Tool

SMCS Code: 5067-010
 Model: Most Cat® Excavators
 Warranty: None

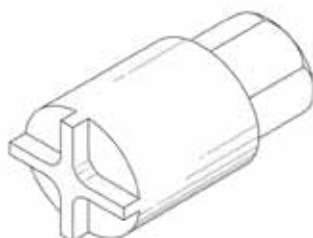


- Used to remove and install 184-3833 Valve Assembly in 173-4672 Check Valve
- Made from 1U-7897 Socket
- Three tangs engage valve assembly during removal and installation
- Used with 1/2 inch square drive extension

238-8670 Socket Screw Wrench

Essential Tool

SMCS Code: 5051-015
 Model: Model: D3G, D4G, and D5G Hystat Track-Type Tractors
 Warranty: Six Months



- Used to disassemble and assemble hydraulic control valve
- Used with 13 mm socket
- Required for proper disassembly and assembly of valve spool assembly
- Machined, four-point tang securely engages screw in valve spool
- Helps prevent damage to valve
- Black oxide coated to resist corrosion

Reference

REN7484, D3G, D4G and D5G Hystat Track-Type Tractors Machine Systems Disassembly and Assembly, Bank Valve (Main Hydraulic) - Disassemble

(Continued)

238-8670 Socket Screw Wrench (Continued)

Essential Tool

SMCS Code: 5051-015

Model: Model: D3G, D4G, and D5G Hystat Track-Type Tractors

Warranty: Six Months

Part Number	Description
238-8670	Socket Screw Wrench

340-8014 Sleeve

Essential Tool

SMCS Code: 5051-016; 5124-016

Model: 414E, 416E, 420E, 422E, 428E, 430E, 432E, 434E, 442E, 444E, and 450E Backhoe Loaders

Warranty: Six Months

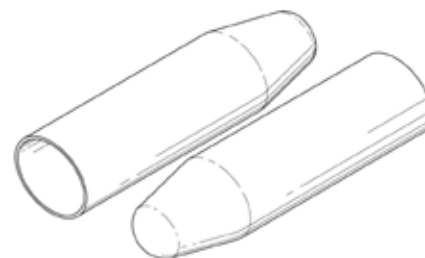
- Used to install lip seal in hydraulic control valve
- Made from hardened steel (RKW C28-32) with a chrome plated finish
- Fits over control valve spool and seal is installed over tool and into groove in spool
- Helps prevent damage to new seals during installation

References

REN6485; 414E, 416E, 420E, 422E, 428E, 430E, 432E, 434E, 442E and 444E Backhoe Loaders Machine Systems

KENR7659; 416E, 420E and 430E Backhoe Loaders Machine Systems

KENR5491; 450E Backhoe Loader Machine Systems



Part Number	Description
340-8014	Sleeve

346-6598 Adapter Assembly

Essential Tool

SMCS Code: 5070-010

Model Usage: 320E, 324E, 329E, 336E, and 349E Excavator

Warranty: Six Months

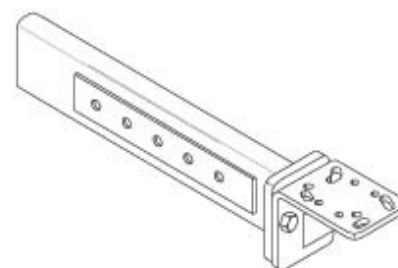
European Union Compliant, CE Marked

- Used to remove hydraulic pump on E-Series excavators with Tier 4 after-treatment package
- Used with 226-2380 Multi-Purpose "C" Style Lifting Bracket Assembly
- Tool eliminates need to remove after-treatment package prior to removing pump
- Mounts to suction port on bottom of pump
- Dual purpose tool works with horizontally mounted pumps (320E, 324E, 336E, and 349E) and pumps mounted on an angle (329E)

Reference

NEHS1103, Tool Operating Manual

Working Load Limit	1366 kg (3000 lb)
Weight	29 kg (64 lb)
Dimensions (L x H x W)	883.6 x 184.8 x 139.7 mm (34.7 x 7.27 x 5.5 in)



Part Number	Description
346-6598	Adapter Assembly

Hydraulic Component Disassembly and Assembly

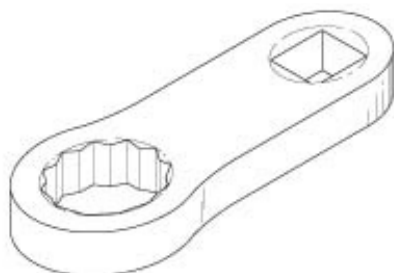
369-9937 Hex Wrench, 30 mm

Essential Tool

SMCS Code: 5070

Model Usage: 966H Wheel Loader

Warranty: Six Months



- Used to tighten hydraulic pump bolts
- Fits into limited clearance around bolt heads (sockets or other tools will not fit)
- Used with a 3/4 inch square drive 9U-5007 Torque Wrench or equivalent
- Essential for applying proper bolt torque

Reference

REN8881-00, Hydraulic Pump Removal

Hex	30 mm, 12 point
Square Drive	3/4 in
Center-to-center distance of square drive to socket	76.2 mm (3.0 in)

Part Number	Description
369-9937	Hex Wrench, 30 mm

387-9124 Wrench Adapter

Model Usage: BCP Skid Steer, Multi Terrain and Compact Track Loaders

Warranty: Six Months



- Used to remove and install new 14 mm 12-pt socket-head bolt (361-2657) used to retain the Hystat pump to the engine housing
- 1/2" drive, 2" offset

387-9124 Specifications	
Dimensions	77 x 24 x 10 mm (3 x 0.9 x 0.4 in)
Weight	0.1 kg (0.2 lb)

Vehicle System Tools

Fan Drive Service Tooling

Model Usage: Off-Highway Trucks

Warranty: Six Months

- Used to disassemble and assemble fan drive
- Material: Steel

Specifications				
Part Number	Replaces	Description	Dimensions	Weight
416-1991	FT2814	Bearing Remover	165.1 x 57.2 mm (6.5 x 2.3 in)	2.3 kg (5 lb)
416-1992	FT2816	Bearing Tool	92.1 x 57.2 mm (3.6 x 2.3 in)	1.5 kg (3.2 lb)
416-1993	FT2462	Pressing Tube	190 x 87.2 mm (7.5 x 3.4 in)	2.6 kg (5.6 lb)
416-1994	FT2463	Ring	86.9 x 64.9 x 13 mm (3.4 x 2.6 x .51 in)	.26 kg (.57 lb)
416-1995	FT2464	Plate	57.2 x 13 mm (2.3 x .51 in)	.26 kg (.57 lb)
416-1996	FT2465	Plate	93.9 x 13 mm (3.7 x .51 in)	.7 kg (1.5 lb)
416-1997	FT2466	Mounting Plate Assembly	89 x 73.2 mm (3.5 x 2.9 in)	1.12 kg (2.5 lb)
416-1998	FT2467	Rotating Plate Assembly	216 x 43 mm (8.5 x 1.7 in)	2 kg (4.4 lb)

(Continued)

Fan Drive Service Tooling (Continued)

Model Usage: Off-Highway Trucks

Warranty: Six Months



416-1991



416-1992



416-1995



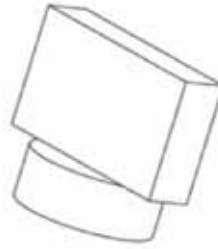
416-1996



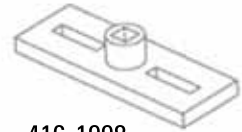
416-1993



416-1994



416-1997



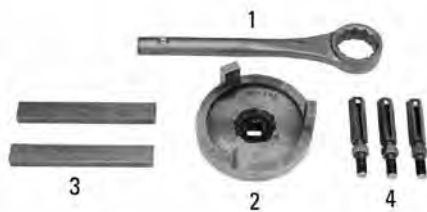
416-1998

Motor Grader Controls, Cable Control and Winch

Tools for 55, 56, 57, 58 and 59 Towing Winches

Model: 55, 56, 57, 58 and 59 Towing Winches

Warranty: Six Months



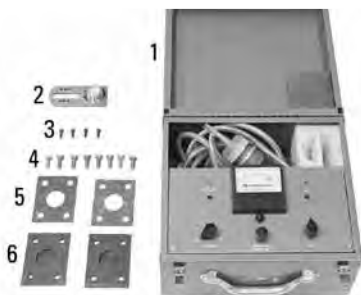
- 4 special tools for assembly operations on Cat® towing winches — 2 available from Parts Department, 2 fabricated

Item	Part Number	Description	No. Req	Winch Models	Use
3	FT1037	Gauging Bar	2	57, 58, 59	Sets and measures distance between bevel gears on directional clutch shaft
4	FT1068	Jack Assemblies	3	55, 56	Sets distance between bevel gears on directional clutch shaft

Item	Part Number	Description	No. Req	Winch Models	Use
1	6V-9454	Wrench, 1 7/8 inch	1	All	Tighten mounting stud nuts on 55, 56, 57, 58 and 59 Towing Winches.
2	2P-2345	Spanner Wrench	1	57, 58, 59	Tighten Drum Shaft Nuts on 55, 56, 57, 58 and 59 Towing Winches.

Vehicle System Tools

2P-8330 Blade Control Test Group, 6D-6680 Tool Group Discontinued — Service Parts Available



References

GEG02370, Special Instruction, Testing and Calibrating 2P-8330 Group
FEG00020-30, Methods and Equipment Bulletin, dated 2-75

Item	Part Number ¹	Description	Qty.
1	6D-6680	Tool Group	1
2	5P-4147	Level Assembly ²	--
3	5S-2671	Screw ²	4
4	4M-0061	Bolt ²	8
5	8D-4002	Cover ²	--
6	8D-4178	Gasket ²	--

(Continued)

2P-8330 Blade Control Test Group, 6D-6680 Tool Group (Continued)

Discontinued — Service Parts Available

Item	Part Number ¹	Description	Qty.
--	2P-8330	Blade Control Test Group	1

¹All part numbers in the table have a six month warranty

²Part of 6D-6680 Tool Group

FT1080 Power Pendulum Test Fixture

Model: All Cat® Motor Graders

Warranty: None

- Used to bench test power pendulum of Automatic Blade Control
- Holds power pendulum, retains windup of pendulum clock spring, and provides for leveling pendulum in order to check and adjust phase of feedback pot
- Power for test supplied from external source through jacks provided on discontinued 2P-8330 ABC Test Group

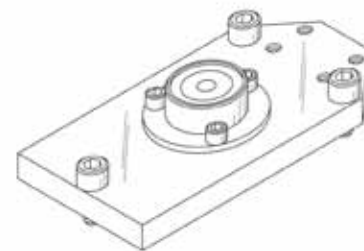


FT1116 Level Checking Fixture

Model: Cat® Motor Graders

Warranty: None

- Provides small surface plate used to check and adjust 3P-1530 Level Assembly, part of 2P-8340 Automatic Blade Control Test Arrangement

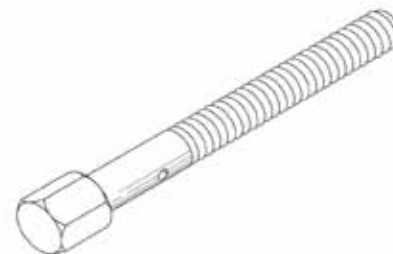


FT1248 Adjusting Screw

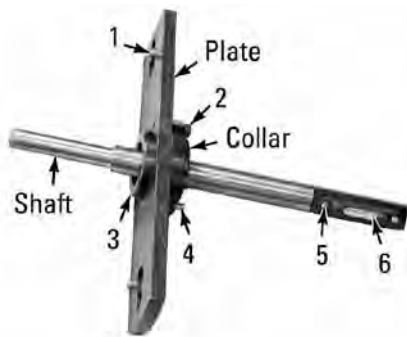
Model: 12G, 14G, 130G, and 140G Motor Graders

Warranty: None

- Used with 8D-7554 Bearing Cup Puller Assembly to pull worm circle drive inboard bearing cup
- Required because of close clearance within circle drive housing



5P-3030 Pendulum Tool Assembly Discontinued — Service Parts Available



Item	Part Number ¹	Description	Qty.
1	8M-6521	Dowel	2
2	1T-0284	Bolt - Hex Socket Head	4
3	3H-1394	Setscrew	--
3	9F-0812	Pin	--
4	3H-0702	Pin	--
5	2D-3077	Screw	2
6	9D-9206	Level	--
--	5P-3030	Pendulum Tool Assembly	--

¹All part numbers in the table have a six month warranty

Bearing Puller Studs

Model: "G" Series and 120G Motor Graders
Warranty: Six Months



- 5P-4184 Stud used with other standard 1.25 inch-12 thread bearing puller adapters and 6V-3175 Hydraulic Puller to remove and install articulated hitch bearing and collar on all "G" series motor graders; can also be used for other applications
- 5P-4776 Stud used with 6V-3160 Hydraulic Puller and standard bearing puller adapters that have 1.00 inch-14 threads; fully adjustable and especially useful when working in area with close clearance, such as when removing centershift lockplate bushings on 120G Motor Graders

Part Number	Length	Threaded
5P-4184	457 mm (18 in)	1.25 in-12 NF
5P-4776	457 mm (18 in)	1.00 in-14

Bearing Puller Adapters

Model: "G" Series Motor Graders
Warranty: Six Months



Typical Puller Adapter

- 5P-2145 Puller Adapter used with loader linkage pin tools to install wheel lean arm bearing on No. 16G Motor Graders
- 5P-4749 Puller Adapter used to install centershift lock plate bushings on 12G, 130G, and 140G Motor Graders
- FT1247 Puller Adapter used in installing centershift lock plate bushings on 120G Motor Grader; fabricated from 1P-1833 Puller Adapter

271-2769 Lift Adapter Assembly

Essential Tool

Model: 14M, 140M, 16M, and 160M Motor Grade

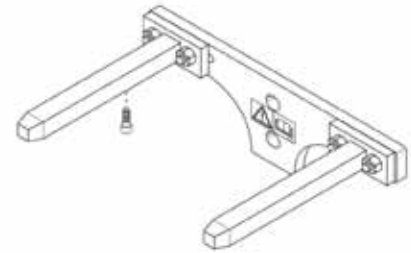
Warranty: Six Months

European Union compliant, CE marked

- Used to remove and install air conditioner unit
- Used with 226-2380 Multi-Purpose Lifting Bracket Group
- Adjustable for various sizes of air conditioner units

Reference

NEHS0979, 271-2769 Lifting Adapter



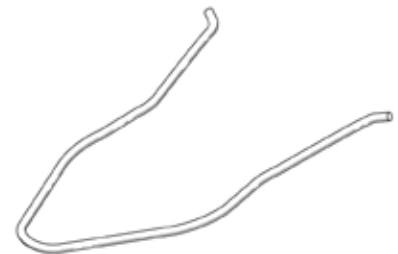
Service/Repair Parts	
Part Number	Description
1A-1460	Bolt (1/2 - 13) (fork mounting hardware)
1F-7958	Full Nut (1/2 - 13) (fork mounting hardware)
1L-0509	Socket Head Cap Screw (3/8-16)
224-0554	Warning Film
5P-8245	Hard Washer

FT1424 Installer Tool

Model: "G" Series Motor Graders

Warranty: None

- Makes it easier to install rubber boots on implement control valve



FT1467 Box Wrench

Model: 55 and 56 Winches

Warranty: None

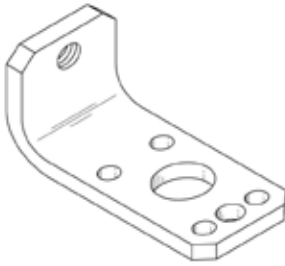
- Used to tighten 4 lower nuts which hold No. 55 and 56 Winches to tractor transmission case
- Serves as extension for 9S-7353 Torque Wrench so torque computer, Form SEHS7150, can be used to determine correct dial reading



FT1411 Bracket

Model: 773B, 776, 77B, 825C, 826C

Warranty: None



- Used with 1P-7409 Eyebolt to aid in removal and installation of winch drum support on 58 or 59 Winch

6B-3260 Scarifier Tooth Removing Tool

Model: Most Cat® Motor Graders

Warranty: Six Months



- Used to remove scarifier teeth on most motor graders

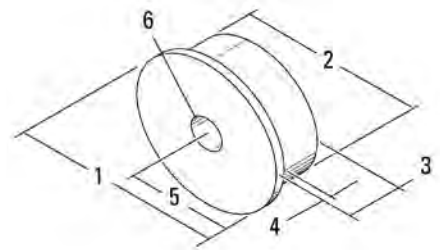
Part Number	Description
6B-3260	Scarifier Tooth Removing Tool

No. 16 Motor Grader Bearing Adapters

Model: 16 Motor Grader

Warranty: None

Item	Part Number	Description	Material	Used with
1	FT0816	Worm Shaft Bearing Adapter	SAE 1020 Steel	Necessary pullers to remove circle reverse control worm shaft bearing
2	FT0817	Worm Gear Shaft Bearing Adapter	SAE 1020 Steel	Necessary pullers to remove circle reverse control worm gear shaft bearing
3	FT0818	Wheel Tie Bar Bearing Adapter	SAE 1020 Steel	Necessary pullers to remove leaning wheel tie bar bearing
4	FT0819	Pitman Arm Upper Bearing Adapter	SAE 1020 Steel	Necessary pullers to remove pitman arm upper bearing
5	FT0820	Pitman Arm Lower Bearing Adapter	SAE 1020 Steel	Necessary pullers to remove pitman arm lower bearing

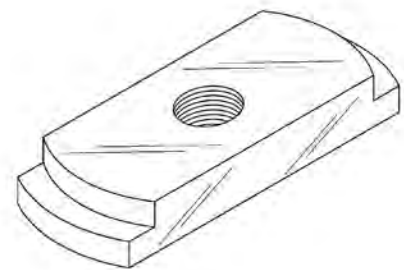


FT0823 Power Control Lifting Bracket

Model: No. 12F, No. 14E and No. 16 Motor Graders

Warranty: None

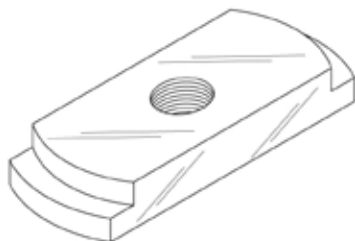
- Used to remove power control box



FT0821 Column Housing Upper Bearing Adapter

Model: No. 16 Motor Grader

Warranty: None

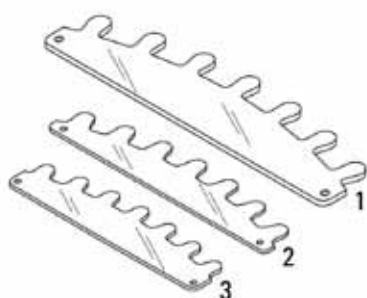


- Used with necessary pullers to remove power control column housing upper bearing

Templates

Model: 12G, 14G, 16G, 120G, 130G and 140G Motor Graders

Warranty: Six Months



- Used to hold and align motor grader circle tooth segments for faster, easier installation
- 319-5038 Template replaces 6V-7808 Template

Reference

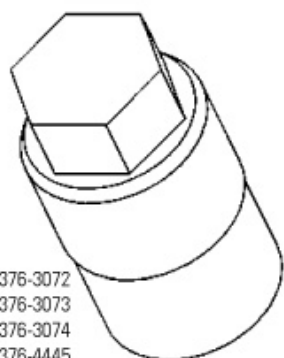
SMHS7268-0, Special Instruction

Item	Part Number	Model
1	319-5038	12G (61M), 120G, 130G (74V, 12W), 140G (72V, 81V, 13W)
2	6V-6037	16G (93U)
3	6V-6039	14G (96U)

Accugrade Installation Alignment Dowels

Model Usage: 349E, 336E, 329E, 324E, 320/323E, 320ERR, 316E, 312E, 314E, 311E Excavators

Warranty: Six Months



376-3072
376-3073
376-3074
376-4445

- JIG dowels used for the installation of Accugrade Systems
- Temporary JIG dowels are screwed into place to allow centering of the mounting plate
- Once mounting plates have been installed, JIG dowels can be removed and attachment of the sensors for the Accugrade can take place.
- Refer to chart below to reference proper JIG/Dowel part number corresponding to machine use

(Continued)

Accugrade Installation Alignment Dowels (Continued)

Model Usage: 349E, 336E, 329E, 324E, 320/323E, 320ERR, 316E, 312E, 314E, 311E Excavators

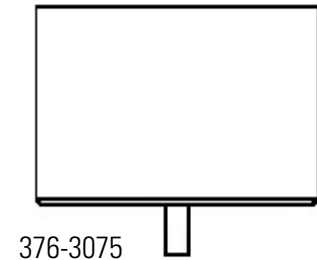
Warranty: Six Months

Boom								
	349E	336E	329E	324E	320/323E	320ERR	316E	312E
Pin No.	234-3945	251-2544	341-5040	341-5032	315-0802	315-0802	180-7719	348-0630
Sensor Plate	349-5451	349-5428	349-5534	349-5533	356-7663		356-7796	
JIG	376-3072	376-3073	376-3073	376-3073	376-3074	376-3074	376-3074	376-3445
Stick								
Pin No.	336-2622	359-5718	323-9254	343-9252	264-1705		107-9738	
Sensor Plate	349-5430		349-5537		356-7667		356-7742	
JIG	376-3073	376-3073	376-3074	376-3074	376-3075		376-3075	

Specifications			
Part Number	Description	Dimensions	Weight
376-3072	Boom JIG	49.9 x 55 mm	1.2 kg (2.67 lb)
376-3073	Boom/Stick JIG	49.9 x 55 mm	0.9 kg (2.01 lb)
376-3074	Boom/Stick JIG	49.9 x 55 mm	0.8 kg (1.87 lb)

Specifications			
Part Number	Description	Dimensions	Weight
376-3075	Stick JIG	49.9 x 35 mm	0.5 kg (1.19 lb)
376-3445	Boom JIG	49.9 x 55 mm	0.8 kg (1.68 lb)

Stick JIG/Dowel



376-3075

Loader Lift Arm and Excavator Implement

Bucket Linkage Pin Removal and Installation Tools

Model: Most Cat® Loaders and Excavators

Warranty: Six Months



- Used for linkage pin removal and installation on loaders and excavators with linkage pins equipped with the following sizes of puller holes:
22.23 mm (7/8 in) — 14
25.40 mm (1 in) — 14
31.75 mm (1 1/4 in) — 12
38.10 mm (1 1/2 in) — 12
50.80 mm (2 in) — 12
- To clean puller holes in loader linkage pins, use the following thread taps:
1P-7421 Tap, 1 inch — 14 thd
1P-3042 Tap, 1 1/4 inch — 12 thd
1P-3044 Tap, 1 1/2 inch — 12 thd
1P-7422 Tap, 2 inch — 12 thd
- Refer to charts on following pages for tools required for each machine

Reference

GMG00806, Special Instruction

Not Shown	
Item	Description
FT0768	Holder Assembly

Item	Part Number	Description
1	9S-5556	Adapter, 1 1/2 in
1	9U-6226	Pin Puller Adapter, M36 x 4 thread (not shown)
2	9S-5557	Adapter, 2 in
3	9S-5433	Puller Adapter ¹
3	5H-6197	Pin (3)
3	8S-6377	Lock (3)
4	9S-5431	Sleeve Assembly
5	9S-5565	Sleeve Assembly
6	8S-6586	Forcing Screw, 1 in
7	9S-5564	Sleeve Assembly
8	9S-5560	Cap - Driver, 2 in
9	9S-5561	Pin Driver Caps
10	9S-5562	Pin Driver Caps
10	9S-5563	Pin Driver Caps
11	8S-6587	Adapter, 1 1/4 in
12	5P-6581	Adapter, 215 Excavator (not shown)
12	5P-7288	Sleeve Assembly, 215 Excavator
Not shown		
--	1P-0544	Fast Runner Nut
--	1P-0543	Fast Runner Nut

¹Accessories

Pin Removal/Installation Tooling

Model: M300 Series Wheeled Excavator; 300 Series Track Excavators; 5080 Front Shovel; General Purpose Pin Pulling

Warranty: Six Months

Receiving Sleeves and Adapter Plates

- Used to easily and quickly remove and install linkage and/or cylinder pins located in front linkages of hydraulic excavators and front shovels
- Longer boom pins, with an M30 or smaller threaded puller hole, are easily removed by using 9U-5266 Sleeve Assembly and 9U-5340 Sleeve Extension and 9U-5341 Adapter Plate
- Large linkage pins, with M36 or M48 threaded puller holes, are easily removed with 9U-6751 and 9U-6752 Receiving Sleeves and 1U-6150, 9U-6754, 9U-6755, 9U-6756, and 9U-6757 Adapter Plates
- Adapter plates attach to bottom of 9U-6751 and 9U-6752 Receiving Sleeves, allowing removal of smaller diameter linkage pins with larger diameter receiving sleeves, thus eliminating a need for many additional sleeves
- 141-1785 Sleeve Assembly is used to remove boom pin from 322B, 322B LL, 325B, 325B LL, 330B, 330B LL, and 345B (provides necessary clearance to hydraulically remove boom pin without first removing fuel tank)
- Most adapter plates are attached using 6V-5192 Socket Head Cap Screws (except 9U-5341 Adapter Plates)
- 287-2153 Sleeve Assembly is used to remove boom-to-stick pin on 330D Hydraulic Excavator

Threaded Puller Studs and Fast Runner Nuts

- Fast runner nuts make removal of linkage pins faster and easier
- Metric puller studs are essential for the removal of linkage pins used in the M300-Series Wheeled Excavators, 300-Series Track Excavators, and 5080 Front Shovels

Pin Driver Caps

- Used to protect end of linkage pins during installation
- Caps can be hit with sledge hammer to drive pins into bores
- 4 sizes of caps are available to fit various pin sizes

9U-6753 Retaining Plate

- Used to attach 1U-5197 Cylinder (80 ton) and discontinued 6V-0014 Cylinder (100 ton) to 9U-6751, 9U-6752, and 141-1985 Receiving Sleeves
- Used with four 9R-3979 Rods, four 8T-4121 Washers, four 8T-4133 Nuts, and 9U-6753 Retaining Plate to safely lift receiving sleeve and hydraulic cylinder as one complete unit

9U-7218 Bearing Puller Plate

- Used to remove boom cylinder (rod end) to boom linkage pin from 375 Excavators
- Allows boom cylinder pins to be removed from either direction
- Either boom cylinder can be removed without having to completely remove cylinder linkage pin

9U-6226 Pin Puller Adapter

- Used to remove boom foot pin from 330 Excavator
- Used with bucket linkage pin removal and installation tools

References

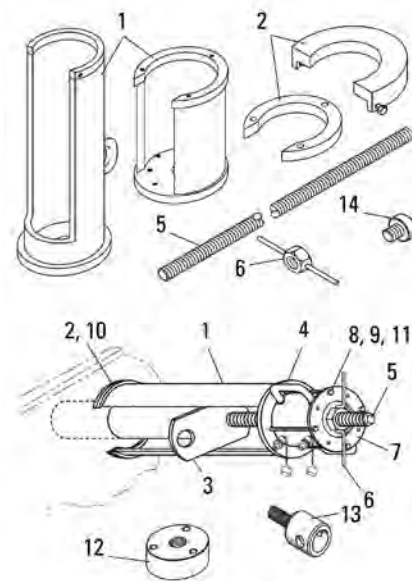
M300-Series Service Manuals

300 Series Service Manuals

5080 Front Shovel Service Manuals

Tools and Shop Products Guide article "Bucket Linkage Pin Removal and Installation Tools"

REN8648, 330D Machine Systems



(Continued)

Loader Lift Arm and Excavator Implement

Pin Removal/Installation Tooling (Continued)

Model: M300 Series Wheeled Excavator; 300 Series Track Excavators; 5080 Front Shovel; General Purpose Pin Pulling

Warranty: Six Months

Item	Description
1	Sleeve Assembly
2	Adapter Plate
3	Pin Assembly
5	Puller Stud
6	Fast Runner Nut
7	Retaining Plate
14	Pin Driver Cap

Item	Part Number	Description
4	316-1491	Cylinder Group (100T) 6 in stroke
8	9R-3979	Rod
9	8T-4133	Nut (M10)
10	6V-5192	Socket Head Bolt
11	8T-4121	Washer (M10)
12	9U-6226	Pin Puller Adapter, M36 x 4 thread (not shown)
13	9U-7218	Bearing Puller Plate

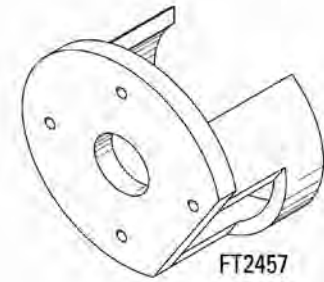
Receiving Sleeve Assemblies

Items with FT Part Numbers						
FT Part Number	Description	Maximum Pin Diameter (3)	Maximum Pin Length (3)	Max. Width of Tear Drop or Flag Retainer	Maximum Puller Stud Diameter (5)	Maximum Capacity
FT3082	Sleeve Assembly	127 mm (5.0 in)	366 mm (14.4 in)	114 mm (4.5 in)	40 mm (1.5 in)	54 t (60 tons)
FT2457	Receiving Sleeve					

Receiving Sleeve Assemblies (1)

Part Number	Description	Maximum Pin Diameter	Maximum Pin Length	Max. Width of Tear Drop or Flag Retainer	Maximum Puller Stud Diameter	Max. Capacity
287-2153	Sleeve Assembly	152 mm (6 in)	812 mm (32 in)	152 mm (6 in)	36 mm (1.4 in)	72 t (80 tons)
141-1785	Sleeve Assembly - Receiving	146 mm (5.7 in)	1,143 mm (45 in)	146 mm (5.7 in)	68 mm (2.7 in)	90 t (100 tons)
4C-8163	Sleeve Assembly	165 mm (6.5 in)	890 mm (35 in)	--	70 mm (2.8 in)	136 t (150 tons)
9U-5266	Sleeve Assembly	127 mm (5 in)	366 mm (14.4 in)	114 mm (4.5 in)	35 mm (1.4 in)	54 t (60 tons)
9U-5340	Receiver Sleeve	127 mm (5 in)	303 mm (11.9 in)	114 mm (4.5 in)	35 mm (1.4 in)	54 t (60 tons)
9U-6751	Sleeve Assembly	216 mm (8.5 in)	330 mm (13 in)	164 mm (6.5 in)	52 mm (2 in)	90 t (100 tons)
9U-6752	Sleeve Assembly	216 mm (8.5 in)	1,143 mm (45 in)	164 mm (6.5 in)	52 mm (2 in)	90 t (100 tons)

Adapter Plates



FT2457

Adapter Plates (2)					
Part Number	Description	Maximum Pin Diameter	Max. Width of Tear Drop or Flag Retainer	Maximum Width	Max. Capacity
1U-6150	Adapter Plates	44 mm (1.7 in)	156 mm (6.1 in)	130 mm (5.1 in)	90 t (100 tons)
9U-5341	Adapter Plate Assembly	104 mm (4.1 in)	114 mm (4.5 in)	--	54 t (60 tons)
9U-6754	Adapter Plates	31.8 mm (1.3 in)	187 mm (7.4 in)	130 mm (5.1 in)	90 t (100 tons)
9U-6755	Adapter Plates	38.1 mm (1.5 in)	118 mm (4.6 in)	--	90 t (100 tons)
9U-6756	Adapter Plates	31.8 mm (1.3 in)	151 mm (5.9 in)	--	90 t (100 tons)
9U-6757	Adapter Plates	25.4 mm (1 in)	196 mm (7.7 in)	164 mm (6.5 in)	90 t (100 tons)

Puller Studs

Puller Studs (5)				
Part Number	Description	Thread Size	Length	Max. Capacity
137-8460	Puller Stud	M30 x 3.5	1,980 mm (78 in)	45 t (50 tons)
9U-5343	Puller Stud	M24 x 3	650 mm (25.6 in)	27 t (30 tons)
9U-5344	Puller Stud	M30 x 3.5	800 mm (31.5 in)	45 t (50 tons)
9U-6811	Puller Stud	M36 x 4	1,575 mm (62 in)	72 t (80 tons)
9U-6812	Puller Stud	M48 x 5	381 mm (15 in)	90 t (100 tons)
9U-6813	Puller Stud	M48 x 5	508 mm (20 in)	90 t (100 tons)
9U-6814	Stud - Puller (M48 x 5)	M48 x 5.0	920 mm (36.2 in)	90 t (100 tons)
9U-6815	Puller Stud (M48) 62 in	M48 x 5	1,575 mm (62 in)	90 t (100 tons)
9U-7998	Puller Stud	M36 x 4	920 mm (36.2 in)	72 t (80 tons)

Fast Runner Nuts

Fast Runner Nuts (6)			
Part Number	Description	Thread Size	Hex Size
9U-5345	Fast Runner Nut Assembly	M24 x 3.0	36 mm (1.4 in)
9U-5346	Fast Runner Nut, M30	M30 x 3.5	46 mm (1.8 in)
9U-6809	Nut - Fast Runner, (M36 x 4)	M36 x 4.0	55 mm (2.2 in)
9U-6810	Nut - Fast Runner (M48 x 5.0)	M48 x 5.0	75 mm (3 in)

Loader Lift Arm and Excavator Implement

9U-6226 Pin Puller Adapter

9U-6226 Pin Puller Adapter (12)			
Inside diameter	Length	Thread size	
63.5 mm (2.50 in)	152 mm (6.0 in)	M36 x 4.0	
9U-7218 Bearing Puller Plate (13)			
Outside diameter	Length	Thread size	Maximum Capacity
127 mm (5.0 in)	50.8 mm (2.00 in)	M30 x 3.5	45 t (50 tons)

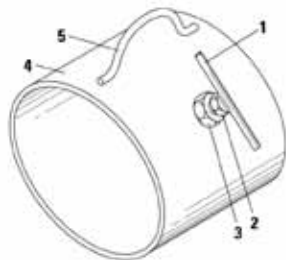
Part Number	Description
9U-6226 Pin Puller Adapter (12)	
9U-6226	Pin Puller Adapter, M36 x 4 thread (not shown)
9U-7218 Bearing Puller Plate (13)	
9U-7218	Bearing Puller Plate

Pin Driver Caps

Part Number	Description	Thread Size
Pin Driver Caps (14)		
9U-5342	Pin Driver Caps	M24 x 3.0
4C-9485	Pin Driver Caps	M30 x 3.5
9U-6225	Pin Driver Caps	M36 x 4.0
9U-6758	Pin Driver Cap (installation only)	M48 x 5.0

FT0768 Pin Holder Assembly

Model: Most Cat® Loaders and Excavators
 Warranty: None



- Used for linkage pin removal and installation on loaders and excavators

Item	Description
1	Steel Rod
4	Steel Tubing
5	Steel Rod

Item	Part Number	Description
2	4B-3617	Setscrew
3	1D-4719	Nut

Service Replacement Part for Discontinued 8M-4856 Receiver Sleeve

367-6742 Sleeve Receiver

Model Usage: 769D, 771D, 773D, 773E, 773F, 775D, 775E, 775F, 789C Off-Highway Truck 320D, 323D, M322D Excavator D5H, D5H Series II, D6K, D6N, D6M, D10R, D11R Track-Type Tractor PL61 Pipelayer M318C, M318D, M322C Material Handler 980G Series II Wheel Loader 517, 527 Track-Type Tractor

Warranty: Six Months

Part Number	Description
367-6742	Sleeve Receiver

- Used to remove and install linkage pins (provides a service replacement part for models listed above)
- Used with existing pin puller tooling

Inside diameter	85.24 mm (3.750 in)
Overall length	228.6 mm (9.00 in)
Outside diameter	114.3 mm (4.5 in)



994 Wheel Loader Tools

Model: 994 Wheel Loader

Warranty: Six Months

- Used to remove and install loader arm linkage

References

SENR4755, 994 Vehicle Systems Disassembly and Assembly

SEHS9272, 994 Field Assembly

4C-9493 Receiving/Handling Sleeve (Item 1)

- Supports hydraulic cylinder and serves as receiving sleeve during hydraulic removal/pulling of collets during disassembly
- Through hole allows use with 50.8 mm (2 in) or smaller puller stud
- ID = 228 mm (9 in)
- Overall length = 185 mm (7.28 in)
- Through hole = 52.5 mm (2 in)
- Maximum force = 100 tons

4C-9491 Receiving/Handling Sleeve (Item 2)

- Serves as receiving sleeve for linkage pins and bearings during disassembly
- ID = 228 mm (9 in)
- Overall length = 300 mm (11.8 in)
- Maximum force = 100 tons

FT2384 Receiving/Handling Sleeve (Item 3)

- Used, if required, for longer pins during removal
- Maximum force = 100 tons

4C-9488 Adapter (Item 4)

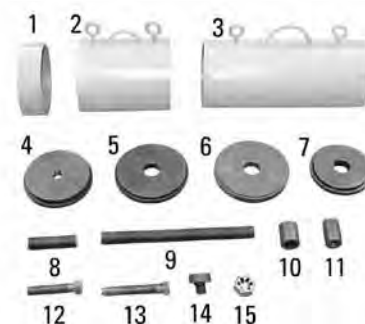
- Used to remove and install 22.2 mm (8.74 in) outside diameter bearings
- Outside diameter = 21.80 cm (8.58 in)
- Pilot diameter = 20.2 cm (7.95 in)
- Center hole for puller stud = 1 1/2 in-12 thd
- Maximum force = 100 tons

4C-9490 Bearing Step Plate (Item 5)

- Assures 22.2 cm (8.74 in) diameter bearings are pulled in to proper depth during installation
- Step = 22.0 cm (8.66 in) diameter, 10.25 mm (0.40 in) deep
- Center hole diameter = 52.5 (2 in)
- Maximum force = 100 tons

4C-9492 Head Plate (Item 6)

- Used between either 4C-9491 Sleeve (2)
- Maximum force = 100 tons



(Continued)

Loader Lift Arm and Excavator Implement

994 Wheel Loader Tools (Continued)

Model: 994 Wheel Loader

Warranty: Six Months

4C-9489 Bearing Step Plate (Item 7)

- Assures that 18.4 cm (7.24 in) diameter bearings are pulled in to proper depth during installation
- Two 18.2 cm (7.17 in) diameter pilots: 8.6 mm (0.34 in) deep, 10.5 mm (0.41 in) deep

FT2371 Stud (Item 8) and FT2370 Stud (Item 9)

- Made by cutting existing 5P-7273 Stud
- Maximum force = 100 tons

4C-9487 Coupler (Item 10)

- Used to connect 2 puller studs
- Threads: 1 1/2 inch-12 (female), in each end
- Maximum force = 70 tons

4C-9486 Adapter/Coupler (Item 11)

- Used to adapt or connect 2 different threads when required
- Threads: 1 1/4 inch-12 (female), in one end; and M30 x 3.5 (female) threads in the other

4C-9432 (Item 12) and 4C-9431 (Item 13) Forcing Bolts

- Both have rolled threads which provide greater strength
- "Rolled threads" 1 in — 14
- Hex heads = 38.1 mm (1.5 in)
- Overall length:
4C-9431 = 244 mm (9.6 in)
4C-9432 = 140 mm (5.5 in)

4C-9485 Cap Driver (Item 14)

- Used to provide striking surface other than collet itself when installing lift arm to main frame collet (striking collet could result in damage to threaded holes from "mushrooming")
- Flat striking surface
- Thread: M30 x 3.5 (male)

4C-6722 Rethreading Die (Item 15)

- Used for repair or threading of M30 x 3.5 threads
- Threads on rods in 994 loader linkage can become damaged or rusted -- repair much less expensive than replacement

Item	Part Number	Description
3	FT2384	Receiving/Handling Sleeve
8	FT2371	Stud
9	FT2370	Stud

Item	Part Number	Description
1	4C-9493	Sleeve
2	4C-9491	Receiving Sleeve
4	4C-9488	Adapter
5	4C-9490	Bearing Step Plate
6	4C-9492	Plate
7	4C-9489	Bearing Step Plate
10	4C-9487	Coupler
11	4C-9486	Adapter - Coupler
12	4C-9432	Forcing Bolts
13	4C-9431	Forcing Bolts
14	4C-9485	Pin Driver Caps
15	4C-6722	Rethreading Die

419-6576 Adapter Plate

Essential Tool

Model: 994D Wheel Loader

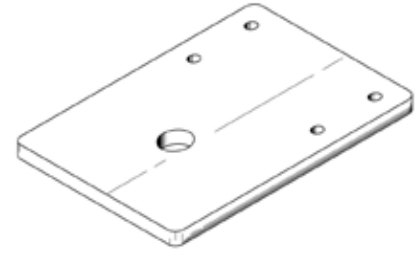
Warranty: Six Months

European Union compliant, CE marked

- Used to lift and install hollow linkage pins with 38 mm (1.5 in) center hole (loader arm)
- Used with 128-4775 Lifting Bracket Assembly

Reference

REN2038, Service Manual



Part Number	Description
419-6576	Adapter Plate

245 Front Shovel Linkage Pin Puller Tools

Model: Most Cat® Loaders and Excavators

Warranty: Six Months

- 5P-7370 Sleeve Assembly and three to six adapters are used with 9S-8901 Cylinder Group for linkage pin removal on 245 Front Shovel
- Can be used for pins not more than 165.1 mm (6.50 in) in diameter and will also accommodate 152.4 mm (6.00 in) and 165.1 mm (6.50 in) diameter pins with tear-drop or flag retainers welded to end
- Refer to Service Manual

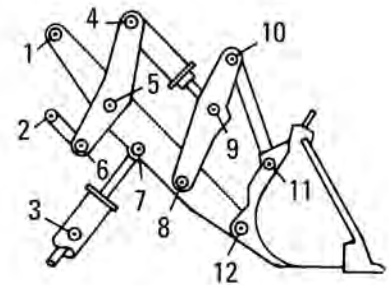
Item	Part Number	Description
1	5P-7370	Sleeve Assembly
2	5P-7371	Adapter



Loader Linkage Pin Tool

Loader Linkage Pin Tool

Other Parts Required	
Tool Required	Pin Location
Stud (1-14)	7, 8, 10, 11, 12



955 Pin Removal (Pin Location)												
Part Number	Tools Required	1	2	4	5	6	7	8	9	10	11	12
1P-0543	Fast Runner Nut	--	--	--	--	--	1	1	--	1	1	1
1P-3042	Tap (1 1/4 -12)	1	1	1	--	1	--	--	1	--	--	--
1P-3044	Tap (1 1/2 -12)	--	--	--	1	--	--	--	--	--	--	--
1P-7421	Tap (1-14)	--	--	--	--	--	1	1	--	1	1	1
4C-9634	Stud (1 1/4 -12)	1	1	1	--	1	--	--	1	--	--	--
5H-6197	Pin	--	--	--	1	--	--	--	--	--	--	--

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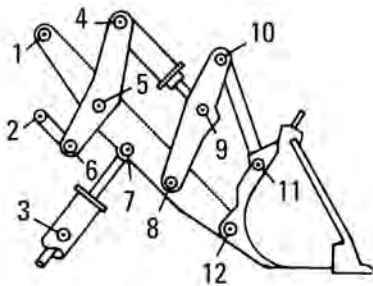
Loader Lift Arm and Excavator Implement

Loader Linkage Pin Tool (Continued)

955 Pin Removal (Pin Location)												
Part Number	Tools Required	1	2	4	5	6	7	8	9	10	11	12
5P-6581	Adapter (7/8 -14)	--	--	--	--	--	1	1	--	1	1	1
6H-4158	Pin	--	--	--	2	--	--	--	--	--	--	--
6V-3160	Puller (30 ton) ¹	--	--	--	--	--	1	1	--	1	1	1
6V-3170	Puller (50 ton) ¹	1	1	1	--	1	--	--	1	--	--	--
7M-9772	Pin	--	--	--	1	--	--	--	--	--	--	--
7M-9774	Adapter Coupling	--	--	--	1	--	--	--	--	--	--	--
8S-6377	Lock	--	--	--	1	--	--	--	--	--	--	--
9S-5431	Sleeve Assembly	--	--	--	1	--	--	--	--	--	--	--
9S-5556	Adapter (1 1/2 -12)	--	--	--	1	--	--	--	--	--	--	--
9S-5564	Sleeve Assembly	1	1	1	--	1	--	--	1	--	--	--
9S-5565	Sleeve Assembly	--	--	--	--	--	1	1	--	1	1	1
9S-8901	Cylinder (90 ton In) ¹	--	--	--	1	--	--	--	--	--	--	--
9U-6832	Fast Runner Nut	1	1	1	--	1	--	--	1	--	--	--
9S-5533	Adapter	--	--	--	1	--	--	--	--	--	--	--

¹ Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

992 Pin Removal (Pin Location)



992 Pin Removal (Pin Location)												
Part Number	Tools Required	1	2 ¹	4	5	6	7	8	9	10	11	12
1P-3044	Tap (1 1/2-12)	--	1	--	--	1	--	1	1	--	--	1
9S-8901	Cylinder (90 ton In) ²	1	1	--	--	1	1	1	1	--	--	1
9S-5556	Adapter (1 1/2 -12)	--	1	--	--	1	--	1	1	--	--	1
9S-5433	Puller Adapter	3	1	--	2	--	--	1	2	--	--	1
9S-5431	Sleeve Assembly	1	1	--	1	1	1 ³	1	1	--	--	1
8S-6377	Lock	3	1	--	2	--	--	1	2	--	--	2
7M-9774	Adapter Coupling	1	1	--	1	1	1	1	1	--	--	1
7M-9772	Pin	1	1	--	1	1	1	1	1	--	--	1
5H-6197	Pin	3	1	--	2	--	--	1	2	--	--	2
6H-4158	Pin	2	2	--	2	2	2	2	2	--	--	2
9H-3992	Head	--	--	--	--	--	1 ⁴	--	--	--	--	--
9U-6832	Fast Runner Nut	--	--	1	--	--	--	--	--	1	1	--
9S-8900	Cylinder (55 ton In) ²	--	--	--	1	--	--	--	--	--	--	--
6V-3170	Puller (50 ton) ²	--	--	1	--	--	--	--	--	1	1	--
9S-5557	Adapter (2-12)	1	--	--	1	--	1	--	--	--	--	--
9S-5564	Sleeve Assembly	--	--	1	--	--	--	--	--	1	1	--
4C-9634	Stud (1 1/4 -12)	--	--	1	--	--	--	--	--	1	1	--

(Continued)

992 Pin Removal (Pin Location) (Continued)

992 Pin Removal (Pin Location)												
Part Number	Tools Required	1	2 ¹	4	5	6	7	8	9	10	11	12
1P-7422	Tap (2-12)	1	--	--	1	--	1	--	--	--	--	--
6H-4135	Sleeve Assembly	--	--	--	--	--	1 ⁴	--	--	--	--	--
1P-3042	Tap (1 1/4 -12)	--	--	1	--	--	--	--	--	1	1	--

¹ Inside pin can be driven inward after suggested tooling is used to pull outside pin

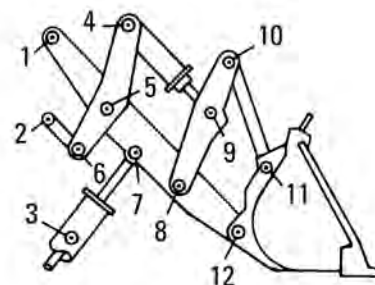
² Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

³ 5K699-Up

⁴ 5K1-25K698

988 Pin Removal (Pin Location)

Other Parts Required	
Tool Required	Pin Location
Stud (1-14)	2, 4, 6, 8, 9, 10, 11, 12 (1 each)



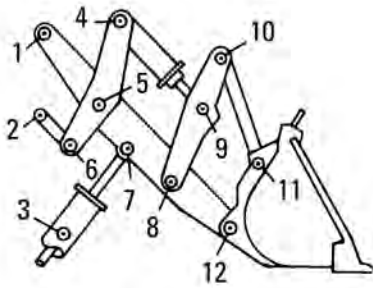
988 Pin Removal (Pin Location)												
Part Number	Tools Required	1	2 ¹	4	5	6 ¹	7	8	9	10	11	12
1P-0543	Fast Runner Nut	--	1	1	--	1	--	1	1	1	1	1
1P-3042	Tap (1 1/4 -12)	1	--	--	--	--	--	--	--	--	--	--
1P-3044	Tap (1 1/2-12)	--	--	--	1	--	--	--	--	--	--	--
1P-7421	Tap (1-14)	--	1	1	--	1	--	1	1	1	1	1
4C-9634	Stud (1 1/4-12)	1	--	--	--	--	--	--	--	--	--	--
6H-4158	Pin	--	--	--	2	--	--	--	--	--	--	--
6V-3160	Puller (30 ton) ²	--	1	1	--	1	--	1	1	1	1	1
6V-3170	Puller (50 ton) ²	1	--	--	--	--	--	--	--	--	--	--
7M-9772	Pin	--	--	--	1	--	--	--	--	--	--	--
7M-9774	Adapter Coupling	--	--	--	1	--	--	--	--	--	--	--
8B-7548	Bearing Puller Assembly	--	--	--	--	--	1	--	--	--	--	--
8B-7563	Handle	--	--	--	--	--	1	--	--	--	--	--
8H-0684	Wrench-Ratchet	--	--	--	--	--	1	--	--	--	--	--
8S-6377	Lock	--	--	--	2	--	--	--	--	--	--	--
8S-6586	Screw, Forcing (1-14)	--	--	--	--	--	1	--	--	--	--	--
8S-6587	Adapter (1 1/4 -12)	--	--	--	--	--	1	--	--	--	--	--
9S-5431	Sleeve Assembly	--	--	--	1	--	--	--	--	--	--	--
9S-5433	Puller Adapter	--	--	--	2	--	--	--	--	--	--	--
9S-5556	Adapter (1 1/2-12)	--	--	--	1	--	--	--	--	--	--	--
9S-5564	Sleeve Assembly	1	--	1	--	--	--	--	1	--	--	--
9S-5565	Sleeve Assembly	--	1	--	--	1	--	1	--	1	1	1
9S-8901	Cylinder (90 ton In) ²	--	--	--	1	--	--	--	--	--	--	--
9U-6832	Fast Runner Nut	1	--	--	--	--	--	--	--	--	--	--
5H-6167	Pin	--	--	--	2	--	--	--	--	--	--	--

¹ Inside pin can be driven inward after suggested tooling is used to pull outside pin

² Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

Loader Lift Arm and Excavator Implement

983 Pin Removal (Pin Location)



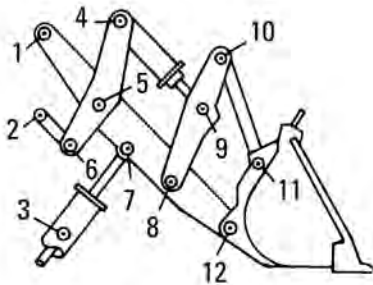
Other Parts Required	
Tool Required	Pin Location
Stud (1-14)	8, 11

983 Pin Removal (Pin Location)

Part Number	Tools required	1	2	4	5	6	7	8	9	10	11	12
1P-0543	Fast Runner Nut	--	--	--	--	--	--	1	--	--	1	--
1P-3042	Tap (1 1/4-12)	1	1	1	--	1	1	--	1	--	--	1
1P-7421	Tap (1-14)	--	--	--	--	--	--	1	--	--	1	--
1P-7422	Tap (2-12)	--	--	--	1	--	--	--	--	--	--	--
4C-9634	Stud (1 1/4-12)	1	1	1	--	1	1	--	1	--	--	1
6H-4158	Pin	--	--	--	2	--	--	--	--	--	--	--
6V-3160	Puller (30 ton) ¹	--	--	--	--	--	--	1	--	1	1	--
6V-3170	Puller (50 ton) ¹	1	1	1	--	1	1	--	1	--	--	1
7M-9772	Pin	--	--	--	1	--	--	--	--	--	--	--
7M-9774	Adapter Coupling	--	--	--	1	--	--	--	--	--	--	--
8S-6377	Lock	--	--	--	2	--	--	--	--	--	--	--
9S-5431	Sleeve Assembly	--	--	--	1	--	--	--	--	--	--	--
9S-5433	Puller Adapter	--	--	--	1	--	--	--	--	--	--	--
9S-5557	Adapter (2-12)	--	--	--	1	--	--	--	--	--	--	--
9S-5564	Sleeve Assembly	1	1	1	--	1	1	1	1	--	--	1
9S-5565	Sleeve Assembly	--	--	--	--	--	--	--	--	1	1	--
9S-8901	Cylinder (90 ton In) ¹	--	--	--	1	--	--	--	--	--	--	--
9U-6832	Fast Runner Nut	1	1	1	--	1	1	--	1	--	--	1
5H-6167	Pin	--	--	--	1	--	--	--	--	--	--	--

¹ Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

980 Pin Removal (Pin Location)



Other Parts Required	
Tool Required	Pin Location
Stud (1-14)	2, 4, 6, 8, 9, 10, 11, 12

980 Pin Removal (Pin Location)

Part Number	Tools Required	1	2 ¹	4	5	6 ¹	7	8	9	10	11	12
1P-0543	Fast Runner Nut	--	1	1	--	1	--	1	1	1	1	1
1P-3042	Tap (1 1/4 -12)	1	--	--	--	--	--	--	--	--	--	--
1P-3044	Tap (1 1/2 -12)	--	--	--	1	--	--	--	--	--	--	--

(Continued)

980 Pin Removal (Pin Location) (Continued)

980 Pin Removal (Pin Location)												
Part Number	Tools Required	1	2 ¹	4	5	6 ¹	7	8	9	10	11	12
1P-7421	Tap (1-14)	--	1	1	--	1	--	1	1	1	1	1
4C-9634	Stud - Puller	1	--	--	--	--	--	--	--	--	--	--
6H-4158	Pin	--	--	--	2	--	--	--	--	--	--	--
6V-3160	Puller Group (30 ton) ¹	--	1	1	--	1	--	1	1	1	1	1
6V-3170	Cylinder Group (450 KN) ²	1	--	--	--	--	--	--	--	--	--	--
7M-9772	Pin	--	--	--	1	--	--	--	--	--	--	--
7M-9774	Adapter Coupling	--	--	--	1	--	--	--	--	--	--	--
8B-7548	Bearing Puller Assembly	--	--	--	--	--	1	--	--	--	--	--
8B-7563	Handle	--	--	--	--	--	1	--	--	--	--	--
8H-0684	Wrench-Ratchet	--	--	--	--	--	1	--	--	--	--	--
8S-6377	Lock	--	--	--	2	--	--	--	--	--	--	--
8S-6586	Screw, Forcing (1-14)	--	--	--	--	--	1	--	--	--	--	--
8S-6587	Adapter (1 1/4 -12)	--	--	--	--	--	1	--	--	--	--	--
9S-5431	Sleeve Assembly ³	--	--	--	1	--	--	--	--	--	--	--
9S-5433	Puller Adapter	--	--	--	2	--	--	--	--	--	--	--
9S-5556	Adapter (1 1/2 -12)	--	--	--	1	--	--	--	--	--	--	--
9S-5564	Sleeve Assembly	1	--	--	--	--	--	--	1	--	--	--
9S-5565	Sleeve Assembly	--	1	1	--	1	--	1	--	1	1	1
9S-8901	Cylinder Group Hyd ²	--	--	--	1	--	--	--	--	--	--	--
9U-6832	Nut Assembly - Fast Runner	1	--	--	--	--	--	--	--	--	--	--
5H-6167	Pin	--	--	--	2	--	--	--	--	--	--	--

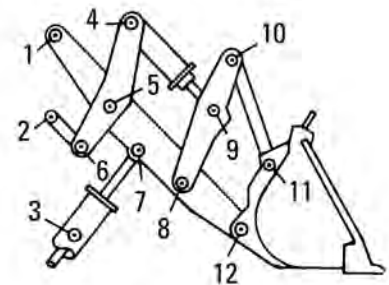
¹ Inside pin can be driven inward after suggested tooling is used to pull outside pin

² Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

³ Used for removal only

977 Pin Removal (Pin Location)

Other Parts Required	
Tool Required	Pin Location
Stud (1-14)	8, 10, 11, 12



977 Pin Removal (Pin Location)													
Part Number	Tools Required	1L	1R	2	4	5	6	7	8	9	10	11	12
1P-0543	Fast Runner Nut	--	--	--	--	--	--	--	1	--	1	1	1
1P-3042	Tap (1 1/4 -12)	--	1	1	1	--	1	1	--	1	--	--	--
1P-3044	Tap (1 1/2 -12)	1	--	--	--	--	--	--	--	--	--	--	--
1P-7421	Tap (1-14)	--	--	--	--	--	--	--	1	--	1	1	1
1P-7422	Tap (2-12)	--	--	--	--	1	--	--	--	--	--	--	--
4C-9634	Stud (1 1/4 -12)	--	1	1	1	--	1	1	--	1	--	--	--
5H-6167	Pin	1	--	--	--	1	--	--	--	--	--	--	--
6H-4158	Pin	2	--	--	--	2	--	--	--	--	--	--	--

(Continued)

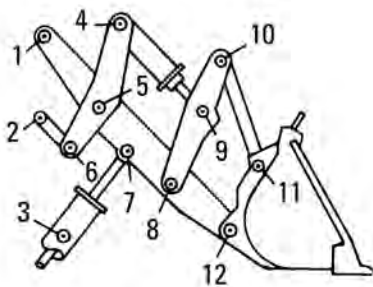
Loader Lift Arm and Excavator Implement

977 Pin Removal (Pin Location) (Continued)

977 Pin Removal (Pin Location)													
Part Number	Tools Required	1L	1R	2	4	5	6	7	8	9	10	11	12
6V-3160	Puller (30 ton) ¹	--	--	--	--	--	--	--	1	--	1	1	1
6V-3170	Puller (50 ton) ¹	--	1	1	1	--	1	1	--	1	--	--	--
7M-9772	Pin	1	--	--	--	1	--	--	--	--	--	--	--
7M-9774	Adapter Coupling	1	--	--	--	1	--	--	--	--	--	--	--
8S-6377	Lock	1	--	--	--	1	--	--	--	--	--	--	--
9S-5431	Sleeve Assembly	1	--	--	--	1	--	--	--	--	--	--	--
9S-5433	Puller Adapter	1	--	--	--	1	--	--	--	--	--	--	--
9S-5556	Adapter (1 1/2-12)	1	--	--	--	--	--	--	--	--	--	--	--
9S-5557	Adapter (2-12)	--	--	--	--	1	--	--	--	--	--	--	--
9S-5564	Sleeve Assembly	--	1	1	1	--	1	1	--	1	--	--	--
9S-5565	Sleeve Assembly	--	--	--	--	--	--	--	1	--	1	1	1
9S-8901	Cylinder (90 ton In) ¹	1	--	--	--	1	--	--	--	--	--	--	--
9U-6832	Fast Runner Nut	--	1	1	1	--	1	1	--	1	--	--	--

¹ Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

950 Pin Removal (Pin Location)



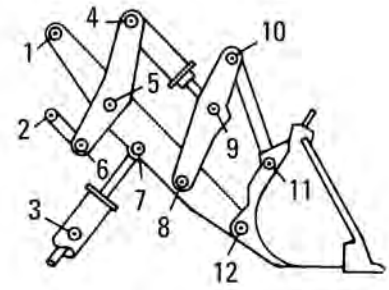
Other Parts Required	
Tool Required	Pin Location
Stud (1-14)	2, 4, 6L, 7, 8, 9, 10, 11, 12

Part Number	Tools Required	1	2	4	5	6L	6R	7	8	9	10	11	12
950 Pin Removal (Pin Location)													
1P-0543	Fast Runner Nut	--	1	1	--	1	--	1	1	1	1	1	1
1P-3042	Tap (1 1/4 -12)	1	--	--	1	--	--	--	--	--	--	--	--
1P-7421	Tap (1-14)	--	1	1	--	1	--	1	1	1	1	1	1
4C-9634	Stud (1 1/4 -12)	1	--	--	1	--	--	--	--	--	--	--	--
5P-6581	Adapter (7/8 -14)	--	--	--	--	--	1	--	--	--	--	--	--
6V-3160	Puller (30 ton) ¹	--	1	1	--	1	--	1	1	1	1	1	1
6V-3170	Puller (50 ton) ¹	1	--	--	1	--	--	--	--	--	--	--	--
8B-7548	Bearing Puller Assembly	--	--	--	--	--	1	--	--	--	--	--	--
8B-7563	Handle	--	--	--	--	--	1	--	--	--	--	--	--
8H-0684	Wrench-Ratchet	--	--	--	--	--	1	--	--	--	--	--	--
8S-6586	Screw, Forcing (1-14)	--	--	--	--	--	1	--	--	--	--	--	--
9S-5564	Sleeve Assembly	1	--	1	--	--	--	--	--	--	--	--	--
9S-5565	Sleeve Assembly	1	--	1	--	1	--	1	1	1	1	1	1
9U-6832	Fast Runner Nut	1	--	--	1	--	--	--	--	--	--	--	--

¹ Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

941 and 951 Pin Removal (Pin Location)

Other Parts Required	
Tool Required	Pin Location
Stud (1-14)	4, 7, 8, 9, 10, 11, 12

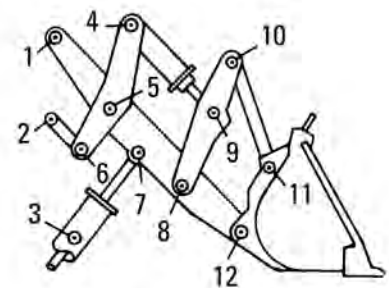


941 and 951 Pin Removal (Pin Location)													
Part Number	Tools required	1	2	3	4	5	6	7	8	9	10	11	12
1P-0543	Fast Runner Nut	--	--	--	1	--	--	1	1	1	1	1	1
1P-3042	Tap (1 1/4 -12)	1	1	--	--	1	1	--	--	--	--	--	--
1P-7421	Tap (1-14)	--	--	--	1	--	--	1	1	1	1	1	1
4C-9634	Stud (1 1/4 -12)	1	1	--	--	1	1	--	--	--	--	--	--
6V-3160	Puller (30 ton) ¹	--	--	--	1	--	--	1	1	1	1	1	1
6V-3170	Puller (50 ton) ¹	1	1	--	--	1	1	--	--	--	--	--	--
8B-7548	Bearing Puller Assembly	--	--	1	--	--	--	--	--	--	--	--	--
8B-7549	Push Puller Leg	--	--	2	--	--	--	--	--	--	--	--	--
8B-7563	Handle	--	--	1	--	--	--	--	--	--	--	--	--
8H-0684	Wrench-Ratchet	--	--	1	--	--	--	--	--	--	--	--	--
8S-6586	Screw, Forcing (1-14)	--	--	1	--	--	--	--	--	--	--	--	--
9S-5431	Sleeve Assembly	--	--	--	--	1	--	--	--	--	--	--	--
9S-5564	Sleeve Assembly	1	--	--	--	--	--	--	--	--	--	--	--
9S-5565	Sleeve Assembly	--	1	--	1	--	1	1	1	1	1	1	1
9U-6832	Fast Runner Nut	1	1	--	--	1	1	--	--	--	--	--	--

¹ Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

930 Pin Removal (Pin Location)

Other Parts Required	
Tool Required	Pin Location
Stud (1-14)	2, 3, 4, 6L, 7, 8, 9, 10, 11, 12



930 Pin Removal (Pin Location)													
Part Number	Tools Required	1	2	3	4	5	6L	7	8	9	10	11	12
1P-0543	Fast Runner Nut	--	1	1	1	--	1	1	1	1	1	1	1
1P-3042	Tap (1 1/4 -12)	1	--	--	--	1	--	--	--	--	--	--	--
1P-7421	Tap (1 -14)	--	1	1	1	--	1	1	1	1	1	1	1
6V-3160	Puller Group (30 ton) ¹	--	1	1	1	--	1	1	1	1	1	1	1
6V-3170	Stud (1 1/4 -12)	1	--	--	--	1	--	--	--	--	--	--	--
6V-3175	Puller Group (50 ton) ¹	1	--	--	--	1	--	--	--	--	--	--	--
9S-5564	Sleeve Assembly	--	--	--	--	1	--	--	--	--	--	--	--

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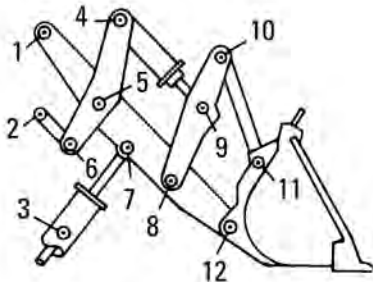
Loader Lift Arm and Excavator Implement

930 Pin Removal (Pin Location) (Continued)

930 Pin Removal (Pin Location)													
Part Number	Tools Required	1	2	3	4	5	6L	7	8	9	10	11	12
9S-5565	Sleeve Assembly	1	1	1	1	--	1	1	1	1	1	1	1
9U-6832	Fast Runner Nut	1	--	--	--	1	--	--	--	--	--	--	--

¹ Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

920 Pin Removal (Pin Location)



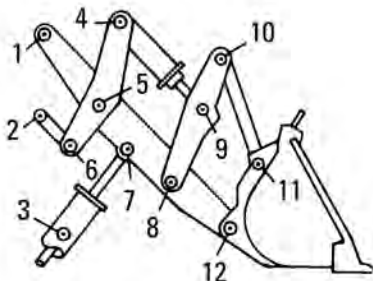
Other Parts Required	
Tool Required	Pin Location
Stud (1-14)	2, 4, 6L, 7, 9

Vehicle System Tools

920 Pin Removal (Pin Location)										
Part Number	Tools Required	1	2	3	4	5	6L	7	9	
1P-0544	Fast Runner Nut	1	--	--	--	1	--	--	--	
1P-3042	Tap (1 1/4 -12)	1	--	--	--	1	--	--	--	
1P-7421	Tap (1-14)	--	1	--	1	--	1	1	1	
4C-9634	Stud (1 1/4 -12)	1	--	--	--	1	--	--	--	
6V-3160	Puller Group (30 ton) ¹	--	1	--	1	--	1	1	1	
6V-3170	Puller Group (50 ton) ¹	1	--	--	--	1	--	--	--	
8B-7548	Bearing Puller Assembly	--	--	1	--	--	--	--	--	
8B-7563	Handle	--	--	1	--	--	--	--	--	
8H-0684	Wrench-Ratchet	--	--	1	--	--	--	--	--	
8S-6586	Screw, Forcing (1-14)	--	--	1	--	--	--	--	--	
9S-5565	Sleeve Assembly	1	1	--	1	1	1	1	1	
9U-6832	Fast Runner Nut	--	1	--	1	--	1	1	1	

¹ Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

966 Pin Removal (Pin Location)



Other Part Required	
Tool Required	Pin Location
Stud (1-14)	4, 6L, 7, 8, 9, 10, 11, 12,

(Continued)

966 Pin Removal (Pin Location) (Continued)

966 Pin Removal (Pin Location)												
Part Number	Tools Required	1	4	5	6L	6R	7	8	9	10	11	12
1P-0543	Fast Runner Nut	--	1	--	1	--	1	1	1	1	1	1
1P-3042	Tap (1 1/4 -12)	1	--	1	--	--	--	--	--	--	--	--
1P-7421	Tap (1-14)	--	1	--	1	--	1	1	1	1	1	1
4C-9634	Stud (1 1/4 -12)	1	--	1	--	--	--	--	--	--	--	--
5P-6581	Adapter (7/8 -14)	--	--	--	--	1	--	--	--	--	--	--
6V-3160	Puller (30 ton) ¹	--	1	--	1	--	1	1	1	1	1	1
6V-3170	Puller (50 ton) ¹	1	--	1	--	--	--	--	--	--	--	--
8B-7548	Bearing Puller Assembly	--	--	--	--	1	--	--	--	--	--	--
8B-7563	Handle	--	--	--	--	1	--	--	--	--	--	--
8H-0684	Wrench-Ratchet	--	--	--	--	1	--	--	--	--	--	--
8S-6586	Screw, Forcing (1-14)	--	--	--	--	1	--	--	--	--	--	--
9S-5564	Sleeve Assembly	1	--	1	--	--	--	--	--	--	--	--
9S-5565	Sleeve Assembly	--	1	--	1	--	1	1	1	1	1	1
9U-6832	Fast Runner Nut	1	1	--	--	--	--	--	--	--	--	--

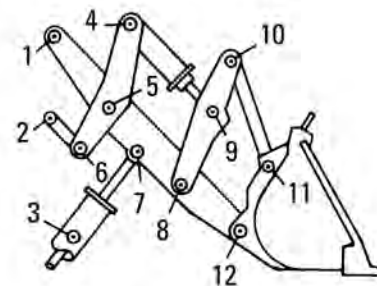
¹Also requires one of the following pumps: discontinued 6F-0025, 3S-622(115 V), 8S-8033 (230 V)

Pin Installations All Machines

FT0768 Linkage Pin Holder Assembly

- Required for all size Puller Holes

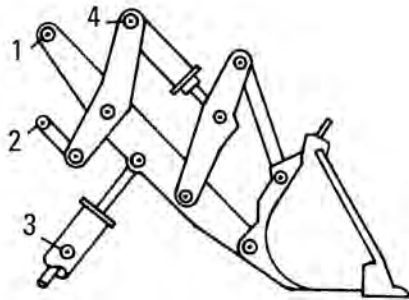
Part No.	Tool Re-quired	2 in Puller Holes	1 1/2 in Puller Holes	1 1/4 in Puller Holes	1 in Puller Holes
FT0768	Linkage Pin, Holder As-sembly	1	1	1	1



Pin Installations All Machines					
Part Number	Tools Required	2 in Puller Holes	1 1/2 in Puller Holes	1 1/4 in Puller Holes	1 in Puller Holes
1P-3044	Tap (1 1/2 -12)	--	1	--	--
1P-7421	Tap (1-14)	--	--	--	1
1P-7422	Tap (2-12)	1	--	--	--
9S-5561	Cap	--	1	--	--
9S-5562	Cap	--	--	1	--
1P-3042	Tap (1 1/4 -12)	--	--	1	--
9S-5563	Cap	--	--	--	1

Loader Lift Arm and Excavator Implement

Loader Lift Arm Bearing Tool 920 and 922 Wheel Loaders (Bearing Location)



NOTE:

FT0514 Handle can be made by dealers for use with 1P-1831, 1P-1832, 1P-1833 and 1P-1834 Adapters where manual driving of the bearings is desired.

Other Parts Required	
Tool Required	Bearing Location
Stud (1-14)	3, 4

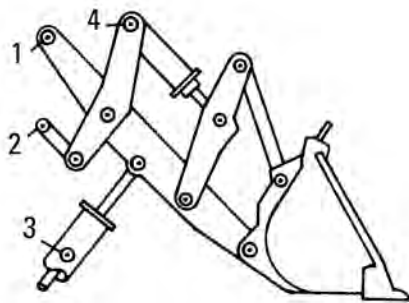
920 and 922 Wheel Loaders (Bearing Location)

Part Number	Tools Required	1	3	4
920 and 922 Wheel Loaders (Bearing Location)				
1H-3107	Push-Puller ¹	1	--	--
1P-0543	Fast Runner Nut	--	1	1
1P-1831	Adapter-Bearing Pulling	--	1	1
1P-1835	Adapter-Bearing Pulling	1	--	--
4C-9634	Stud (1 1/4 -12)	1	--	--
6V-3160	Puller Group (30 ton) ²	--	1	1
6V-3170	Puller Group (50 ton) ²	1	--	--
8B-7548	Bearing Puller Assembly ¹	--	1	1
9S-5564	Sleeve Assembly	1	--	--
9S-5565	Sleeve Assembly	--	1	1
9U-6832	Fast Runner Nut	1	--	--

¹ Use crossbar from Push-Puller for installation only

² Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

930 Wheel Loader (Bearing Location)



NOTE:

FT0514 Handle can be made for use with 1P-1831, 1P-1832, 1P-1833 and 1P-1834 Adapters where manual driving of bearings is desired.

Other Parts Required	
Tool Required	Bearing Location
Stud (1-14)	3, 4

930 Wheel Loader (Bearing Location)

Part Number	Tools Required	1	3	4
1H-3107	Push Puller ¹	1	--	--
1P-0543	Fast Runner Nut	--	1	1
1P-1832	Adapter-Bearing Pulling	--	1	1
1P-1836	Adapter-Bearing Pulling	1	--	--
4C-9634	Stud (1 1/4 -12)	1	--	--
6V-3160	Puller Group (30 ton) ²	--	1	1
6V-3170	Puller Group (50 ton) ²	1	--	--

(Continued)

930 Wheel Loader (Bearing Location) (Continued)

930 Wheel Loader (Bearing Location)				
Part Number	Tools Required	1	3	4
8B-7548	Bearing Puller Assembly ¹	--	1	1
9S-5564	Sleeve Assembly	1	--	--
9S-5565	Sleeve Assembly	--	1	1
9U-6832	Fast Runner Nut	1	--	--

¹ Use crossbar from Push-Puller for installation only

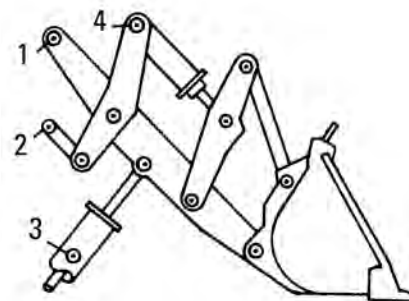
² Also requires one of the following pumps: 3S-6224 (115V), 8S-8033 (230 V)

944 and 950 Wheel Loaders (Bearing Location)

NOTE:

FT0514 Handle can be made for use with 1P-1831, 1P-1832, 1P-1833 and 1P-1834 Adapters where manual driving of bearings is desired.

Other Parts Required	
Tool Required	Bearing Location
Stud (1-14)	3, 4



944 and 950 Wheel Loaders (Bearing Location)				
Part Number	Tools Required	1	3	4
1P-1833	Adapter- Bearing Pulling	--	1	--
1P-1836	Adapter-Bearing Pulling	1	--	--
1P-1832	Adapter-Bearing Pulling	--	1	1
8B-7548	Bearing Puller Assembly ¹	--	1	1
1P-0543	Fast Runner Nut	--	1	1
9U-6832	Fast Runner Nut	1	--	--
6V-3160	Puller Group (30 ton) ²	--	1	1
6V-3170	Puller Group (50 ton) ²	1	--	--
1H-3107	Push-Puller ¹	1	--	--
9S-5564	Sleeve Assembly	1	--	--
9S-5565	Sleeve Assembly	--	1	1
4C-9634	Stud (1 1/4 -12)	1	--	--

¹ Use crossbar from Push-Puller for installation only

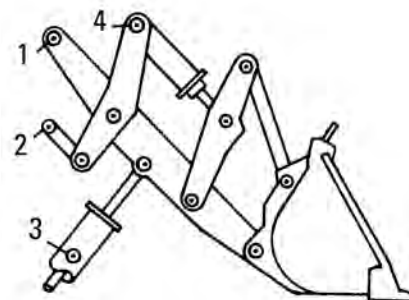
² Also requires one of the following pumps: 3S-6224(115 V), 8S-8033 (230 V)

966 Wheel Loader (Bearing Location)

NOTE:

FT0514 Handle can be made for use with 1P-1831, 1P-1832, 1P-1833 and 1P-1834 Adapters where manual driving of bearings is desired.

Other Parts Required	
Tool Required	Bearing Location
Stud (1-14)	3, 4



(Continued)

Loader Lift Arm and Excavator Implement

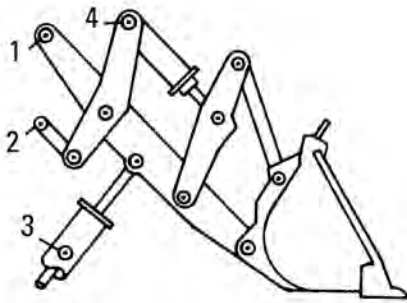
966 Wheel Loader (Bearing Location) (Continued)

966 Wheel Loader (Bearing Location)				
Part Number	Tools Required	1	3	4
1H-3107	Push-Puller ¹	1	--	--
1P-0543	Fast Runner Nut	--	1	1
1P-1833	Adapter- Bearing Pulling	--	1	1
1P-1838	Adapter- Bearing Pulling	1	--	--
4C-9634	Stud (1 1/4 -12)	1	--	--
6V-3160	Puller Group (30 ton) ²	--	1	1
6V-3170	Puller Group (50 ton) ²	1	--	--
8B-7548	Bearing Puller Assembly ¹	--	1	1
9S-5564	Sleeve Assembly	1	--	--
9S-5565	Sleeve Assembly	--	1	1
9U-6832	--	1	--	--

¹ Use crossbar from Push-Puller for installation only

² Also requires one of the following pumps: 3S-6224 (115V), 8S-8033 (230 V)

980 Wheel Loader (Bearing Location)

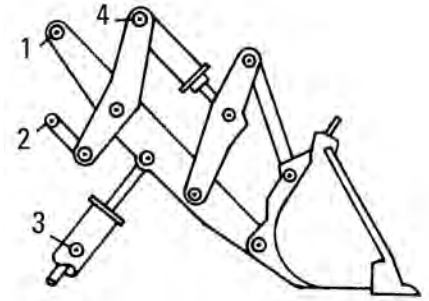


980 Wheel Loader (Bearing Location)					
Part Number	Tools Required	1	2	3	4
1H-3107	Push-Puller ¹	1	1	1	1
1P-1835	Adapter-Bearing Pulling	--	--	1	1
1P-1839	Adapter-Bearing Pulling	1	--	--	--
1P-1841	Adapter-Bearing Pulling	--	1	--	--
4C-9634	Stud (1 1/4 -12)	1	1	1	1
6V-3170	Puller Group (50 ton) ²	1	1	1	1
9S-5431	Sleeve Assembly	1	1	--	--
9S-5564	Sleeve Assembly	--	--	1	1
9U-6832	Fast Runner Nut	1	1	1	1

¹ Use crossbar from Push-Puller for installation only

² Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

988 Wheel Loader (Bearing Location)



988 Wheel Loader (Bearing Location)					
Part Number	Tools Required	1	2	3	4
988 Wheel Loader (Bearing Location)					
1P-1835	Adapter-Bearing Pulling	--	--	1	1
1P-1841	Adapter-Bearing Pulling	1	1	--	--
4C-9634	Stud (1 1/4 -12)	1	1	1	1
1H-3107	Push-Puller ¹	1	1	1	1
6V-3170	Puller Group (50 ton) ²	1	1	1	1
9S-5431	Sleeve Assembly	1	1	--	--
9S-5564	Sleeve Assembly	--	--	1	1
9U-6832	Fast Runner Nut	1	1	1	1

¹ Use crossbar from Push-Puller for installation only

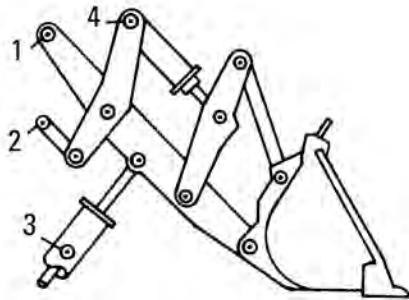
² Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

988G Wheel Loader (Bearing Location)

988G Wheel Loader (Bearing Location)				
Part Number	Tools Required	1	2	3
988G Wheel Loader (Bearing Location)				
134-8466	Sleeve Assembly	--	--	1
137-8460	Rod	--	1	--
220-1776	Puller Stud	--	--	1
316-1489	Cylinder	1	1	--
4C-8163	Sleeve Assembly	--	1	--
8T-4121	Washer	--	--	4
8T-4132	Nut	--	--	4
9R-3979	Rod	--	--	1
9U-5346	Fast Runner Nut	1	1	--
9U-6751	Sleeve Assembly	1	--	--
9U-6753	Plate - Retaining	--	--	1
9U-6809	Fast Runner Nut	--	--	1
9U-6811	Rod	1	--	--

Loader Lift Arm and Excavator Implement

992 Wheel Loader (Bearing Location)

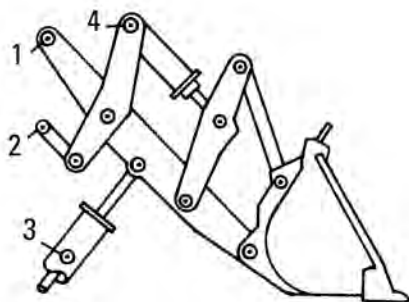


992 Wheel Loader (Bearing Location)					
Part Number	Tools Required	1	2	3	4
1H-3107	Push-Puller ¹	1	1	1	1
1P-1841	Adapter-Bearing Pulling	--	--	1	1
1P-1844	Adapter-Bearing Pulling	1	1	--	--
4C-9634	Stud (1 1/4 -12)	1	1	1	1
6V-3170	Puller Group (50 ton) ²	1	1	1	1
9S-5431	Sleeve Assembly	1	1	1	1
9U-6832	Fast Runner Nut	1	1	1	1

¹ Use crossbar from Push-Puller for installation only

² Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

933 Track-Type Loader (Bearing Location)



NOTE:

FT0514 Handle can be made for use with 1P-1831, 1P-1832, 1P-1833 and 1P-1834 Adapters where manual driving of bearings is desired.

Tools with No Part Number	
Tool Required	Bearing Location
Stud (1-14)	3, 4

933 Track-Type Loader (Bearing Location)				
Part Number	Tools Required	1	3	4
1H-3107	Push-Puller ¹	1	--	--
1P-0543	Fast Runner Nut	--	1	1
1P-1831	Adapter-Bearing Pulling	--	--	1
1P-1832	Adapter-Bearing Pulling	--	1	--
1P-1835	Adapter-Bearing Pulling	1	--	--
4C-9634	Stud (1 1/4 -12)	1	--	--
6V-3160	Puller Group (30 ton) ²	--	1	1
6V-3170	Puller Group (50 ton) ²	1	--	--
8B-7548	Bearing Puller Assembly ¹	--	1	1
9S-5564	Sleeve Assembly	1	--	--
9S-5565	Sleeve Assembly	--	1	1
9U-6832	Fast Runner Nut	1	--	--

¹ Use crossbar from Push-Puller for installation only

(Continued)

933 Track-Type Loader (Bearing Location) (Continued)

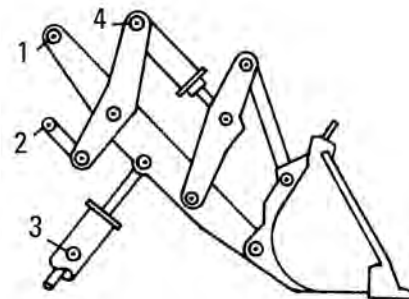
²Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

941 and 951 Track-Type Loaders (Bearing Location)

NOTE:

FT0514 Handle can be made for use with 1P-1831, 1P-1832, 1P-1833 and 1P-1834 Adapters where manual driving of bearings is desired.

Other Parts Required	
Tool Required	Bearing Location
Stud (1-14)	3, 4



941 and 951 Track-Type Loaders (Bearing Location)					
Part Number	Tools Required	1	2	3	4
1P-1833	Adapter-Bearing Pulling	--	--	--	1
1P-1837	Adapter-Bearing Pulling	1	--	--	--
1P-1841	Adapter-Bearing Pulling	--	1	--	--
9S-5431	Sleeve Assembly	--	1	--	--
1H-3107	Push-Puller ¹	1	1	--	--
1P-0543	Fast Runner Nut	--	--	1	1
1P-1832	Adapter-Bearing Pulling	--	--	1	--
4C-9634	Stud (1 1/4 -12)	1	1	--	--
6V-3160	Puller Group (30 ton) ²	--	--	1	1
6V-3170	Puller Group (50 ton) ²	1	1	--	--
8B-7548	Bearing Puller Assembly ¹	--	--	1	1
9S-5564	Sleeve Assembly	1	--	--	--
9S-5565	Sleeve Assembly	--	--	1	1
9U-6832	Fast Runner Nut	1	1	--	--

¹ Use crossbar from Push-Puller for installation only

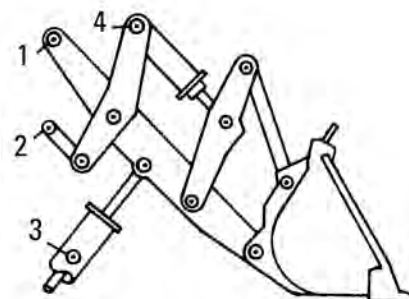
²Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

955H Track-Type Loaders (Bearing Location)

NOTE:

FT0514 Handle can be made for use with 1P-1831, 1P-1832, 1P-1833 and 1P-1834 Adapters where manual driving of bearings is desired.

Other Parts Required	
Tool Required	Bearing Location
Stud (1-14)	3, 4



955H Track-Type Loaders (Bearing Location)				
Part Number	Tools Required	1	3	4
1H-3107	Push Puller ¹	1	--	--
1P-0543	Fast Runner Nut	--	1	1
1P-1832	Adapter-Bearing Pulling	--	--	1
1P-1833	Adapter-Bearing Pulling	--	1	--

(Continued)

Loader Lift Arm and Excavator Implement

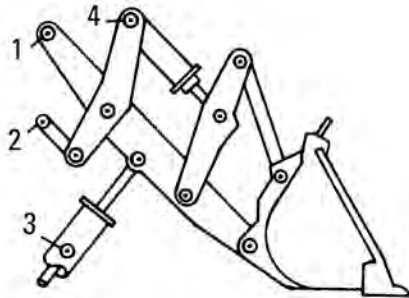
955H Track-Type Loaders (Bearing Location) (Continued)

955H Track-Type Loaders (Bearing Location)				
Part Number	Tools Required	1	3	4
1P-1838	Adapter-Bearing Pulling	1	--	--
4C-9634	Stud (1 1/4 -12)	1	--	--
6V-3160	Puller Group (30 ton) ²	--	1	1
6V-3170	Puller Group (50 ton) ²	1	--	--
8B-7548	Bearing Puller Assembly ¹	--	1	1
9S-5564	Sleeve Assembly	1	--	--
9S-5565	Sleeve Assembly	--	1	1
9U-6832	Fast Runner Nut	1	--	--

¹ Use crossbar from Push-Puller for installation only

² Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

955K Track-Type Loader (Bearing Location)



NOTE:

FT0514 Handle can be made for use with 1P-1831, 1P-1832, 1P-1833 and 1P-1834 Adapters where manual driving of bearings is desired.

Other Parts Required	
Tool Required	Bearing Location
Stud (1-14)	3, 4

Vehicle System Tools

955K Track-Type Loader (Bearing Location)					
Part Number	Tools required	1	2	3	4
1H-3107	Push-Puller ¹	1	1	--	--
1P-0543	Fast Runner Nut	--	--	1	1
1P-1833	Adapter-Bearing Pulling	--	--	1	1
1P-1839	Adapter-Bearing Pulling	1	--	--	--
1P-1843	Adapter-Bearing Pulling	--	1	--	--
4C-9634	Stud (1 1/4 -12)	1	1	--	--
6V-3160	Puller Group (30 ton) ²	--	--	1	1
6V-3170	Puller Group (50 ton) ²	1	1	--	--
8B-7548	Bearing Puller Assembly ¹	--	--	1	1
9S-5431	Sleeve Assembly	--	1	--	--
9S-5564	Sleeve Assembly	1	--	--	--
9S-5565	Sleeve Assembly	--	--	1	1
9U-6832	Fast Runner Nut	1	1	--	--

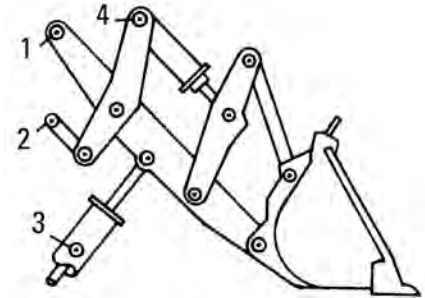
¹ Use crossbar from Push-Puller for installation only

² Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

977H Track-Type Loaders (Bearing Location)

NOTE:

FT0514 Handle can be made for use with 1P-1831, 1P-1832, 1P-1833 and 1P-1834 Adapters where manual driving of bearings is desired.



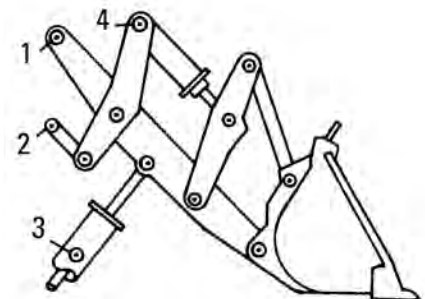
Other Parts Required	
Tool Required	Bearing Location
Stud (1-14)	3, 4

977H Track-Type Loaders (Bearing Location)				
Part Number	Tools Required	1	3	4
1H-3107	Push-Puller ¹	1	--	--
1P-0543	Fast Runner Nut	--	1	1
1P-1833	Adapter- Bearing Pulling	--	--	1
1P-1834	Adapter- Bearing Pulling	--	1	--
1P-1839	Adapter- Bearing Pulling	1	--	--
4C-9634	Stud (1 1/4 -12)	1	--	--
6V-3160	Puller Group (30 ton) ²	--	1	1
6V-3170	Puller Group (50 ton) ²	1	--	--
8B-7548	Bearing Puller Assembly ¹	--	1	1
9S-5431	Sleeve Assembly	--	1	--
9S-5564	Sleeve Assembly	1	--	--
9U-6832	Fast Runner Nut	1	--	--

¹ Use crossbar from Push-Puller for installation only

² Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

977K Track-Type Loader (Bearing Location)



977K Track-Type Loader (Bearing Location)					
Part Number	Tools Required	1	2	3	4
1H-3107	Push - Puller ¹	1	1	1	1
1P-1835	Adapter-Bearing Pulling	--	--	1	1
1P-1841	Adapter-Bearing Pulling	1	--	--	--
1P-1844	Adapter-Bearing Pulling	--	1	--	--
4C-9634	Stud (1 1/4 -12)	1	1	1	1

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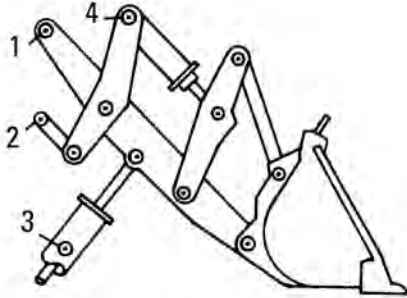
Loader Lift Arm and Excavator Implement

977K Track-Type Loader (Bearing Location) (Continued)

977K Track-Type Loader (Bearing Location)					
Part Number	Tools Required	1	2	3	4
6V-3170	Puller Group (50 ton) ¹	1	1	1	1
7F-6068	Sleeve Assembly	--	--	--	1
9S-5431	Sleeve Assembly	1	1	1	--
9U-6832	Fast Runner Nut	1	1	1	1

¹ Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

983 Track-Type Loader (Bearing Location)



983 Track-Type Loader (Bearing Location)					
Part Number	Tools Required	1	2	3	4
1H-3107	Push-Puller ¹	1	1	1	1
1P-1836	Adapter-Bearing Pulling	--	--	1	--
1P-1839	Adapter-Bearing Pulling	--	--	--	1
1P-1842	Adapter-Bearing Pulling	1	--	--	--
1P-1844	Adapter-Bearing Pulling	--	1	--	--
4C-9634	Stud - Puller	1	1	1	1
6V-3170	Cylinder Group (450 KN) ²	1	1	1	1
7F-5285	Sleeve ²	--	--	--	1
9S-5431	Sleeve Assembly ³	1	1	1	--
9U-6832	Nut Assembly - Fast Runner	1	1	1	1

¹ Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

² Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

³ Used for removal only

Fabricated Tools for Repair of Boom Bores (Upper Frame Groups) on 235 and 245 Excavators and Front Shovels

Model: 235 and 245 Excavators and Front Shovels

Warranty: None

- Four fabricated tools used with 1P-4000 Line Boring Tool Group to recondition boom bores in upper frame group
- Used to locate and hold bar in position during its use:
 - FT1544 Fixture (2 required)
 - FT1545 Locating Bar (2 required)
 - FT1546 Vee Block
 - FT1547 Indicator Bracket

Reference

SMHS7822, Special Instruction, complete repair procedure and instructions for use of the tools

Tools for Servicing 990 Loader Linkage Pins and Collets

Essential Tool

Model: 990 Wheel Loader

Warranty: Six Months

- Used to remove and install loader arm linkage pins
- Used with 3S-6224 Hydraulic Pump (115 VAC), 8S-8033 Hydraulic Pump (230 VAC), or 9U-6600 Hydraulic Hand Pump
- A 6D-7726 Hose Assembly is also required

Optional Receiving Sleeves

- An FT2503 Sleeve Assembly and FT2384 Receiving/Handling Sleeve are optional linkage pin tools (refer to illustrations for manufacturing specifications)
- These optional receiving sleeve assemblies are used with the same tools as other sleeves in this group
- Sleeves work especially well for handling pins weighing as much as 125 kg (335 lb) and 60 cm (2 ft) long, located high on machine
- Both receiving sleeve assemblies are suspended with straps

Part Number	Description	Pin Locations
FT2503	Receiving Sleeve	opt ¹ Pin 1, 2, 3, 4, 5, 6
FT2384	Receiving Sleeve	opt ¹ Pin 7(b), 8(b)

¹ Optional

NOTE: (a) Use to remove collet

NOTE: (b) Use to remove pin

Linkage Pin Removal and Installation ^{1 2}										
Part No.	Description	Size	Pin (1)	Pin (2)	Pin (3)	Pin (4)	Pin (5)	Pin (6)	Pin (7)	Pin (8)
316-1489	Cylinder Group (60 Ton)	62 ton	--	--	--	--	--	--	1	1
3E-8009	Bolt	M30 x 500 mm (19.7 in) long	--	--	--	--	--	--	1(b)	1(b)
4C-8149	Sleeve Assembly	203.2 mm (8.00 in)	1	1	1	1	1	1	--	--
4C-8150	Rod Assembly - Threaded	M64 x 1829 mm (72 in) long	1	1	1	1	1	1	--	--
4C-8151	Forcing Bolt	M24 102.5 mm (4.04 in) long	--	--	--	--	--	--	3(a)	3(a)
4C-8152	Retaining Plate	--	1	1	1	1	1	1	--	--

(Continued)

Loader Lift Arm and Excavator Implement

Tools for Servicing 990 Loader Linkage Pins and Collets (Continued)

Essential Tool

Model: 990 Wheel Loader

Warranty: Six Months

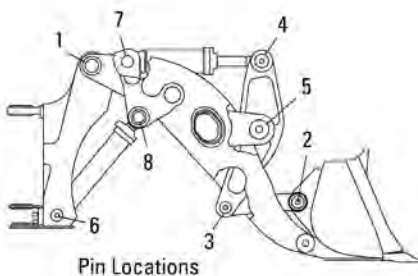
Linkage Pin Removal and Installation¹²

Part No.	Description	Size	Pin (1)	Pin (2)	Pin (3)	Pin (4)	Pin (5)	Pin (6)	Pin (7)	Pin (8)
4C-8153	Plate	--	--	--	--	--	1	--	--	--
4C-9486	Adapter - Coupler	1 1/4-12 x M30	--	--	--	--	--	--	1(b)	1(b)
4C-9491	Receiving Sleeve	--	--	--	--	--	--	--	1	1
4C-9492	Plate	--	--	--	--	--	--	--	1(b)	1(b)
4C-9634	Stud - Puller	1 1/4-12 x 735 mm (29 in) long	--	--	--	--	--	--	1(b)	1(b)
5P-8712	Bushing	62 ton cylinder	--	--	--	--	--	--	2(b)	2(b)
8T-4121	Washer (M10)	--	4	4	4	4	4	4	--	--
8T-4133	Nut (M10)	--	4	4	4	4	4	4	--	--
9T-2240	Rod (M10)	--	4	4	4	4	4	4	--	--
9U-6800	Nut - Speed (M64)	M64	1	1	1	1	2	1	--	--
9U-6832	Speed Nut	1 1/4 in - 12	--	--	--	--	--	--	1(b)	1(b)
316-1490	Cylinder Group	150 ton	1	1	1	1	1	1	--	--

¹ NOTE a: Use to remove collet

² NOTE b: Use to remove pin

Linkage Pin Installation (Collet)



Pins 1, 4, and 6	160 mm (6.3 in) diameter (flag style)
Pins 2 and 3	150 mm (5.9 in) diameter (flag style)
Pin 5	220 mm (8.7 in) diameter (flag style)
Pins 7 and 8	160 mm (6.3 in) diameter (cartridge style)

Linkage Pin Installation (Collet)

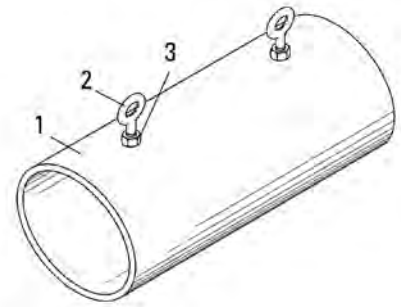
Part Number	Description	Size	Pin 7	Pin 8
1P-0544	Fast Runner Nut	1 1/4 - 7	1	1
316-1489	Cylinder Group (60 Ton)	62 ton	1	1
3E-8009	Bolt	M30 x 500 mm (19.7 in) long	1	1
3S-7023	Washer-Hard	--	1	1
4C-9485	Pin Driver Caps	M30 x 3.5	1	1
4C-9486	Adapter - Coupler	1 1/4-12 x M30	1	1
5P-8712	Bushing	62 ton cylinder	1	1
5P-8714	Stud - Pin Puller	1 1/4-12 x 1 1/4-7, 356 mm (14.0 in) long	1	1

FT2384 Receiving/Handling Sleeve (Optional)

Item	Description
1	Tube, SAE 1026 steel

FT2384 Receiving/Handling Sleeve (Optional)

Item	Part Number	Description
2	1P-7407	Eyebolt (1/2 - 13)
3	1F-7958	Full Nut (1/2 - 13) (fork mounting hardware)

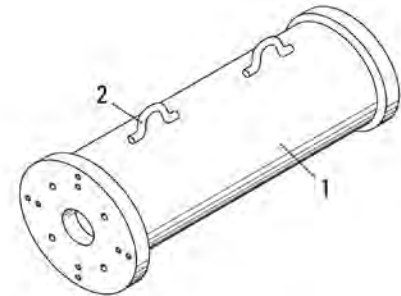


FT2503 Sleeve Assembly

Item	Description
2	Lift Eye

FT2503 Sleeve Assembly

Item	Part Number	Description
1	9U-6752	Sleeve Assembly



237-9180 Receiver Sleeve Assembly

Essential Tool

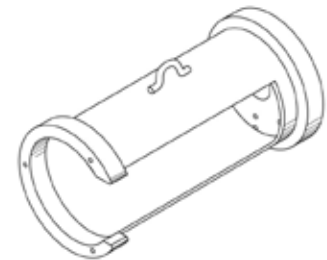
Model: 990G Series II Wheel Loader

Warranty: Six Months

- Used to remove and install bucket linkage pin
- Used with discontinued 316-1490 Cylinder Group (150 ton); 3S-6224 Hydraulic Pump (115 VAC), 8S-8033 Hydraulic Pump (230 VAC), or 9U-6600 Hydraulic Hand Pump; and other tooling found in Tools for Servicing 990 Loader Linkage Pins and Collets
- A 6D-7726 Hose Assembly is also required

Reference

REN6266, Service Manual

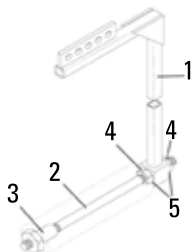


Part Number	Description
237-9180	Receiving Sleeve Assembly

316-1752 Pin Positioner Assembly

Model: 994F, 993K, 992K, 992G Wheel Loaders

Warranty: Six Months



European Union compliant, CE marked

- Used to lift and lower large wheel loader linkage pins into position during disassembly and assembly
- Used on 321 to 634 mm (12.6 to 24.9 in) long linkage pins with 34 to 40 mm (1.34 to 1.58 in) diameter center hole
- 331-1205 Retainer Nut fits recess in center hole on linkage pins
- Used with appropriate lifting device and 189-0408 Screw Pin Shackle (dealer supplied)
- Multiple top plate mounting holes are used to adjust center of gravity for different weight linkage pins

Reference

REN6321, 994F Wheel Loader Machine Systems

NEHS1037, Tool Operating Manual, 316-1752 Pin Positioner Lifting Bracket

Working load limit		148 kg (325 lb)	
Item	Part Number	Description	Qty
1		Frame	1

Item	Part Number	Description	Qty.
2	316-1753	Rod	1
3	331-1205	Retainer Nut Assembly	1
4	3K-9770	Nut - Full	2
5	4K-0684	Hardened Washer	2
--	316-1752	Pin Positioner Assembly	--

Tools for Servicing 992 Loader Linkage Pins and Collets

Model: 992 Loader

Warranty: Six Months

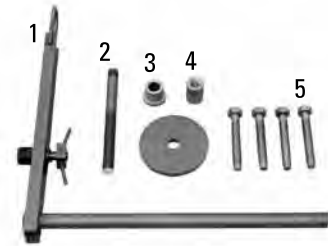


- Special tools used with other hydraulic service tools to remove and install loader linkage pins and collets on 992C Wheel Loaders
- Discontinued 5P-8716 Pin Handler especially recommended for handling pins, some of which weigh as much as 77 kg (170 pounds) and are located high on machine
- Refer to tool charts on following pages for tools required for each location
- In most cases, 992C loader linkage pins and collets can be removed with 5P-8715 Forcing Bolts; if additional force required, these tools used with discontinued 6V-0014 or 316-1491 Cylinder, provide 100 ton capability for removal; refer to Pin Removal tool chart

Item	Part Number	Description
1	6V-2072	Sleeve Assembly
2	6V-2074	Stud
3	6V-2073	Bushing
4	8T-5270	Adapter

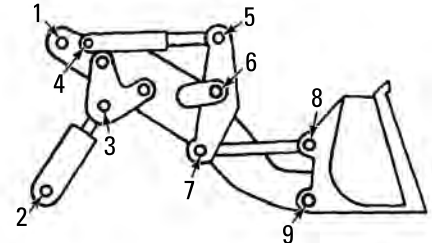
Additional Tools for 992 Loader Linkage Pins and Collets

Item	Part Number	Description
1	5P-8716	Pin Handler
2	5P-8714	Stud - Pin Puller
3	5P-8712	Bushing
4	5P-8623	Coupler
5	5P-8713	Plate
6	5P-8715	Forcing Bolt



Servicing 992C Loader Linkage Pins and Collets

Part Number	Tools Re-quired	1	7	8	9
Collet Removal 1 (Pin Location)¹					
5P-8715	Forcing Bolt	3	3	4	4
316-1491	Cylinder ²	1	1	1	1
6V-2072	Sleeve As-sembly	1	1	1	1
6V-2073	Bushing	1	1	1	1
6V-2074	Stud	1	1	1	1
8H-3390	Nut	1	1	1	1

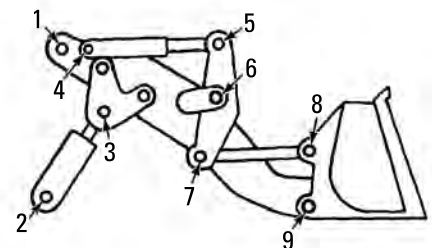


¹ Collets normally can be removed with forcing bolts. If, for some reason, the collets at locations 3, 8 and 9 cannot be removed with forcing bolts, use the other tools with hydraulic force.

² One of the hydraulic pumps which follow is necessary:
3S-6224 (115 V) or 8S-8033 (230 V).

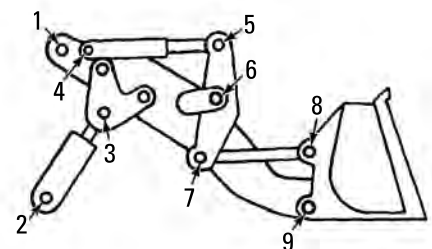
Pin Removal (Pin Location)

Part Number	Tools Required	3	8	9
316-1491	Cylinder ¹	1	1	1
6V-2072	Sleeve Assem- bly	1	1	1
6V-2073	Bushing	1	1	1
6V-2074	Stud	1	1	1
8H-3390	Nut	1	1	1
8T-5270	Adapter	1	1	1



¹ One of the hydraulic pumps which follow is necessary:
3S-6224 (115 V) or 8S-8033 (230 V).

Pin and Collet Installation (Pin Location)



(Continued)

Loader Lift Arm and Excavator Implement

Pin and Collet Installation (Pin Location) (Continued)

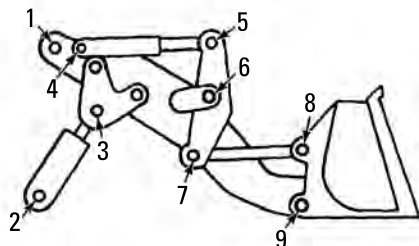
Pin and Collet Installation (Pin Location)										
Part Number	Tools Required	1	2	3	4	5	5 (1) ¹	6	Pin 7	9
316-1489	Cylinder ²	1	1	1	1	1	1	1	1	1
4C-9634	Stud - Puller	1	1	1	--	1	--	1	--	1
4K-0684	Washer - Hard	1	1	--	1 ³	1	--	1	1	1
4V-3241	Rod	--	--	--	1 ³	--	--	--	--	--
5P-4184	Stud	--	--	--	--	--	1	--	1	--
5P-8623	Coupler	1	1	--	1	1	1	1	1	1
5P-8712	Bushing	1	1	1	1	1	1	1	1	1
5P-8713	Plate	--	--	1	--	--	--	--	--	--
5P-8714	Stud	1	1	--	1	--	1	1	1	1
7H-7539	Nut	--	--	--	1 ³	--	--	--	1	--
9U-6832	Nut Assembly - Fast Runner	1	1	1	1	1	1	1	1	1
5P-8716	Pin Handler	1	1	1	1	1	1	1	1	1

¹ Serial numbers 42X804-Up, on right side

² One of the hydraulic pumps which follow is necessary: 3S-6224 (115 V) or 8S-8033 (230 V).

³ Part is a component of the linkage

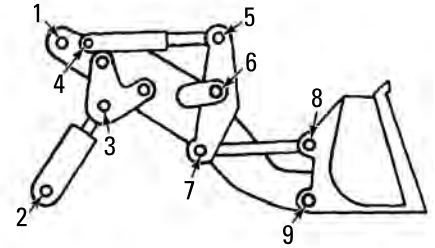
Installation



Installation			
Part Number	Tools Required	Pin Location 8	Collet Location 8
3K-9770	Nut	1	--
3S-6162	Washer	2	--
4C-9634	Stud - Puller	1	--
4K-0684	Washer - Hard	1	1
5P-8623	Coupler	1	1
5P-8712	Bushing	1	1
5P-8713	Plate	1	--
5P-8714	Stud	1	1
9U-6832	Nut Assembly - Fast Runner	1	--
3P-1573	Cylinder ¹	1	1

¹ One of the hydraulic pumps which follow is necessary: 5P-3100, 3S-6224 (115 V), or 8S-8033 (230 V)

Installation (Bearing Location)

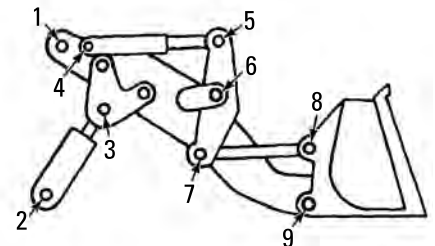


Installation (Bearing Location)								
Part Number	Tools Required	1	2	3	4	5	6	7
1P-1844	Adapter-Bearing Pulling	--	--	--	1	1	--	1
3J-1770	Lock Pin	3	3	3	--	--	3	--
4C-9634	Stud - Puller	--	--	--	1	1	--	1
5D-0764	Washer	--	--	--	1	1	--	1
5H-6197	Pin	1	1	2	--	--	2	--
5P-0972	Adapter	1	1	1	--	--	1	--
5P-4181	Adapter	1	1	1	--	--	1	--
5P-7370	Sleeve Assembly	1	1	1	--	--	1	--
5P-8713	Plate	--	--	--	1	1	--	1
6V-0027	Adapter	1	1	1	--	--	1	--
6V-3170	Cylinder Group (450 KN) ¹	--	--	--	1 ²	1 ²	--	1 ²
7M-9772	Pin	3	3	3	--	--	3	--
7M-9773	Adapter	2	2	2	--	--	2	--
7M-9774	Adapter Coupling	1	1	1	--	--	1	--
8S-6377	Lock	1	1	2	--	--	2	--
9S-5557	Adapter	1	1	1	--	--	1	--
9S-8901	Cylinder Group Hyd ¹	1 ²	1 ²	1 ²	--	--	1 ²	--
9U-6832	Nut Assembly - Fast Runner	--	--	--	1	1	--	1
6H-4135	Sleeve Assembly	--	--	--	1	1	--	1
5P-7371	Adapter	1	1	2	--	--	2	--

¹ Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

² Also requires one of these pumps: 3S-6224 (115 V) or 8S-8033 (230 V)

Removal (Bearing Location)



(Continued)

Loader Lift Arm and Excavator Implement

Removal (Bearing Location) (Continued)

Removal (Bearing Location)								
Part Number	Tools Required	1	2	3	4	5	6	7
1P-1844	Adapter-Bearing Pulling	--	--	--	1	1	--	1
3J-1770	Lock Pin	2	2	2	--	--	2	--
4C-9634	Stud - Puller	--	--	--	1	1	--	1
5D-0764	Washer	--	--	--	1	1	--	1
5H-6197	Pin	2	2	2	--	--	2	--
5P-0972	Adapter	1	1	1	--	--	1	--
5P-7370	Sleeve Assembly	1	1	1	--	--	1	--
5P-8713	Plate	--	--	--	1	1	--	1
6V-0027	Adapter	1	1	1	--	--	1	--
6V-3170	Cylinder Group (450 KN) ¹	--	--	--	1 ²	1	--	1
7M-9772	Pin	2	2	2	--	--	2	--
7M-9773	Adapter	1	1	1	--	--	1	--
7M-9774	Adapter Coupling	1	1	1	--	--	1	--
8S-6377	Lock	2	2	2	--	--	2	--
9S-5557	Adapter	1	1	1	--	--	1	--
9S-8901	Cylinder Group Hyd ¹	1 ²	1 ²	1 ²	--	--	1 ²	--
9U-6832	Nut Assembly - Fast Runner	--	--	--	1	1	--	1
6H-4135	Sleeve Assembly	--	--	--	1	1	--	1
5P-7371	Adapter	2	2	2	--	--	2	--

¹ Also requires one of the following pumps: 3S-6224 (115 V), 8S-8033 (230 V)

² Also requires one of these pumps: 3S-6224 (115 V) or 8S-8033 (230 V)

Vehicle System Tools

Linkage Pin and Sleeve Bearing Removal and Installation Tools

Model: 992G, 992K, 993K Wheel Loader

Warranty: Six Months

- Used to remove and install sleeve bearing linkage pins
- Used with service presses: 9U-7764 (150 ton), 6V-2073 (100 ton), 6V-4131 (80 ton), and 3P-2228 (60 ton)
- Special receiving sleeve assemblies are used with other hydraulic service tools to remove and install linkage pins
- Sleeves work especially well for handling pins weighing as much as 284 kg (626 lb) and 146 cm (4.8 ft) long which are located high on the machine
- Retaining bolts are built into sleeves allowing linkage pin to be locked into sleeve when working overhead
- Receiving sleeve assembly is easily suspended with eyebolts
- Complete range of sleeve bearing puller plates and installer plates are available for servicing each pin location
- Threaded rod and speed nut provides time saving means of pulling large pins
- Refer to charts for tools required for each pin location (only tooling required for the new SBC pins is listed)

992G SBC Linkage Pin Locations

Linkage Pin Installation and Removal Tooling			
Part Number	Description	A	B
318-2121	Sleeve Puller Assembly	1	1
3E-3879	Eyebolt, M16x2	1	1
7Y-0725	Hard Washer	2	2
8T-7781	Nut	2	2
9U-7763	Stud - Puller, 2 in	1	1
9U-7764	Bushing	1	1

(Continued)

992G SBC Linkage Pin Locations (Continued)

Linkage Pin Installation and Removal Tooling			
Part Number	Description	A	B
Retainer Extraction Tooling			
322-5589	Extractor	1	1
7B-2289	Bolt, 1 1/4 -12, 57.15 mm	1	1
009-3020	Washer, 1 1/4	4	4

992K SBC Linkage Pin Locations

Linkage Pin Removal Tooling					
Part No.	Description	A	B	K	Y
9U-7763	Puller Rod, 2 in.	1	1	1	1
9U-7764	Bushing	1	1	1	1
7Y-0725	Hard Washer	2	2	2	2
3E-3879	Eyebolt, M16x2	1	1	1	1
8T-7781	Nut	2	2	2	2
318-2121	Puller Assembly	1	1	1	1
Part of Linkage Pin Installation Tooling					
289-0011	Spacer			1	1

Linkage Pin Installation Tooling					
Part Number	Description	A	B	K	Y
289-0013	Puller Rod, 1 1/2 -12	--	1	--	--
318-2117	Inside Installation Plate	--	1	--	--
318-2121	Sleeve Puller Assembly	1	--	1	1
322-0101	Outside Plate Installer	--	1	--	--
322-0102	Adapter Assembly Spacer	--	--	1	1
3E-3879	Eyebolt, M16x2	1	--	1	1
3S-6162	Hard Washer	--	4	--	--
6V-2073	Bushing	--	1	--	--
7Y-0725	Hard Washer	2	--	2	2
8H-3390	Nut - Full Threaded, 1.5	--	4	--	--
8T-3220	Eyebolt, M12x1.75	--	1	--	--
8T-7781	Nut	2	--	2	2
9U-7763	Stud - Puller, 2 in	1	--	1	1
9U-7764	Bushing	1	--	1	1
Retainer Extraction Tooling					
322-5589	Extractor	1	--	--	--
322-5590	Extractor	--	1	--	--
2K-0439	Bolt, 1 1/4 -12, 88.9 mm	1	--	--	--
009-3020	Washer, 1 1/4	4	--	--	--
7Y-7992	Bolt, M12 x 1.75, 75 mm	--	1	--	--

(Continued)

Loader Lift Arm and Excavator Implement

992K SBC Linkage Pin Locations (Continued)

Linkage Pin Installation Tooling					
Part Number	Description	A	B	K	Y
Retainer Extraction Tooling (Continued)					
8T-4223	Washer - Hard M12	--	4	--	--

993K SBC Linkage Pin Locations

Part No.	Description	A	B	C	D	E	F	G	Y	K
Linkage Pin Installation Tooling										
289-0013	Puller Rod, 1 1/2 -12	1	1	--	--	--	1	--	1	1
289-0008	Puller Rod, 1 1/4 -12	--	--	1	1	1	--	1	--	--
7H-7539	Nut - Full, 1 1/4 - 12	--	--	4	4	4	--	4	--	--
8H-3390	Nut - Full Threaded, 1.5	4	4	--	--	--	4	--	4	4
318-2119	Backup Installation Plate	--	--	1	1	1	--	1	--	--
318-2120	Backup Installation Plate	1	1	--	--	--	1	--	1	1
3P-2228	Insert Plain	--	--	1	1	1	--	1	--	--
6V-2073	Bushing	1	1	--	--	--	1	--	1	1
146-1799	Hard Washer	--	--	4	4	4	--	4	--	--
3S-6162	Hard Washer	4	4	--	1.59 in	--	4	--	4	4
318-2117	Inside Installation Plate	1	1	1	1	1	1	1	1	1
8T-3220	Eyebolt, M12x1.75	1	1	1	1	1	1	1	1	1
318-2115	Outside Installation Plate	1	--	--	--	--	--	--	--	--
318-2116	Outside Installation Plate	--	--	--	--	--	--	--	1	--
318-2118	Outside Installation Plate	--	1	1	1	1	1	1	--	1
Retainer Extraction Tooling										
322-5590	Extractor	1	1	--	--	--	--	--	--	--
8T-0646	Bolt, M12 x 1.75, 110 mm	1	--	--	--	--	--	--	--	--
8T-4223	Washer - Hard M12	4	4	--	0.53 in	--	--	--	--	--
172-9966	Bolt, M12 x 1.75, 65 mm	--	1	--	--	--	--	--	--	--

Linkage Pin Removal Tooling (Pull)

Linkage Pin Removal Tooling (Pull)										
Part No.	Description	A	B	C	D	E	F	G	Y	K
318-2121	Sleeve Puller Assembly	1	1	--	--	--	--	--	1	--
318-2122	Adapter Ring	--	1	--	--	--	--	--	--	--
318-2123	Adapter Ring	1	--	--	--	--	--	--	1	--
318-2124	Puller Assembly	--	--	1	1	1	1	--	--	1
318-2125	Puller Assembly	--	--	--	--	--	--	1	--	--
3E-3879	Eyebolt, M16x2	1	1	--	--	--	1	--	1	1

(Continued)

Linkage Pin Removal Tooling (Pull) (Continued)

Linkage Pin Removal Tooling (Pull)										
Part No.	Description	A	B	C	D	E	F	G	Y	K
3S-6162	Hard Washer	--	--	2	2	2	--	2	--	--
6V-2073	Bushing	--	--	1	1	1	--	1	--	--
7Y-0725	Hard Washer	2	2	--	--	--	2	--	2	2
8H-3390	Nut - Full Threaded, 1.5	--	--	2	2	2	--	2	--	--
8T-3220	Eyebolt, M12x1.75	1	1	1	1	1	--	1	1	--
8T-7781	Nut	2	2	--	--	--	2	--	2	2
9U-6698	Stud - Puller, 1 1/2 in	--	--	--	1	1	1	--	1	--
9U-7763	Stud - Puller, 2 in	1	1	--	--	--	1	--	1	1
9U-7764	Bushing	1	1	--	--	--	1	--	1	1

Linkage Pin Removal Tooling (Push)

Linkage Pin Removal Tooling (Push)										
Part No.	Description	A	B	C	D	E	F	G	Y	K
138-7575	Bracket - Link	4	--	--	--	--	--	--	4	--
172-9966	Bolt, M12 x 1.75, 65 mm	1	1	--	--	--	--	--	1	--
1U-5197	Cylinder Group (80T)	--	--	1	--	--	--	1	--	--
267-4850	Bolt, M12 x 1.75, 55 mm	6	6	--	--	--	--	--	6	--
318-2126	Push Insert Plate	1	1	--	--	--	--	--	1	--
318-2127	Push Tube	1	--	--	--	--	--	--	1	--
318-2128	Push Cylinder Plate	1	1	--	--	--	--	--	1	--
320-4790	Push Support Tube	--	1	--	--	--	--	--	--	--
320-4791	Push	--	--	--	--	--	--	1	--	--
320-4792	Push	--	--	1	--	--	--	--	--	--
320-4793	Push	--	--	--	--	--	1	1	--	--
320-4794	Alignment Rod	1	1	--	--	--	--	--	1	--
320-9698	Alignment Rod	--	--	1	--	--	1	1	--	--
320-9699	Spacer, 20 mm thick 40 mm ID	--	--	--	--	--	4	--	--	--
320-9700	Spacer, 40 mm thick 40 mm ID	--	--	--	--	--	4	--	--	--
320-9701	Spacer, 20 mm thick 53 mm ID	4	--	--	--	--	--	--	4	--
320-9702	Spacer, 40 mm thick 53 mm ID	4	--	--	--	--	--	--	4	--
3E-3879	Eyebolt, M16x2	3	3	1	--	--	1	1	3	--
3H-7654	Hard Washer	4	--	--	--	--	--	--	4	--
3P-2228	Insert Plain	--	--	--	--	--	1	--	--	--
6V-2073	Bushing	1	1	--	--	--	--	--	1	--
6V-4131	Cap Assembly Load	--	--	1	--	--	--	1	--	--
6V-8336	Bolt, M12	3	3	--	--	--	--	--	3	--
6V-8675	Bolt	4	--	--	--	--	--	--	4	--
7X-0622	Hard Washer, M13 ID	10	10	--	--	--	--	--	10	--
8T-4194	Bolt, M12 x 1.75, 50 mm	1	1	--	--	--	--	--	1	--

Vehicle System Tools

(Continued)

Loader Lift Arm and Excavator Implement

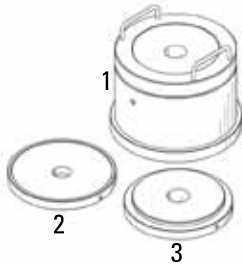
Linkage Pin Removal Tooling (Push) (Continued)

Linkage Pin Removal Tooling (Push)										
Part No.	Description	A	B	C	D	E	F	G	Y	K
8T-4223	Washer - Hard M12	3	3	--	1/2 in	--	--	--	3	--
9R-2640	Boss	4	--	--	--	--	--	--	4	--

263-7808 Pin Joint Group

Essential Tool

Model: 992 Wheel Loader
Warranty: Six Months



- Used to remove and install Sleeve Bearing Cartridge (SBC) pin joint assemblies
- Heat-treated for strength and durability
- Group includes all items in Figure Reference REHS2560, Special Instruction

Item	Part Number	Description
--	263-7808	Pin Joint Group
Service/Repair Parts		
1	246-0498	Pin Puller Assembly
2	246-0499	Puller Plate
3	246-0500	Puller Plate

217-4428 Bearing Puller Plate

Model: 988G Wheel Loader
Warranty: Six Months



- Used to remove 2 sleeve bearings from F pin location
- Bearing puller plate has center swivel point for easy installation
- Hydraulic removal of bearings is preferred over other methods, such as burning, cutting, or drilling
- Heat-treated for added durability

Reference

REN2173, Service Manual, 988G Machine Systems

Overall outside diameter	152.0 mm (5.98 in)
Small outside diameter	136.0 mm (5.35 in)
Hole diameter	31.0 mm (1.22 in)

Part Number	Description
217-4428	Bearing Puller Plate

218-2143 Bearing Puller Plate

Model: 988G Wheel Loader and 836G Landfill Compactor
Warranty: Six Months



Model: 988G Wheel Loader and 836G Landfill Compactor
SMCS Code: 7054, 7117, 7551-011

- Used to remove 2 bearing cups and cones from lower hitch articulation joint
- Used with discontinued 6V-0014 Cylinder and 9U-6810 Speed Nut
- Hydraulic removal of bearings is preferred over other methods, such as burning, cutting, or drilling
- M48 threads provide a maximum of 890 kN (100 tons) of hydraulic pulling force

Reference

REN2173, Service Manual, 988G Machine Systems

(Continued)

218-2143 Bearing Puller Plate (Continued)

Model: 988G Wheel Loader and 836G Landfill Compactor

Warranty: Six Months

Part Number	Description
218-2143	Bearing Puller Plate

FT2824 Sleeve Assembly

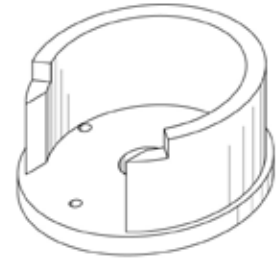
Model: 988G Wheel Loader

Warranty: None

- Used to install 152-3750 Sleeve Bearing into rod end of lift cylinder
- Machined notch is required for sleeve assembly to seat flush against cylinder face

Reference

REN2173, Service Manual, 988G Machine Systems



212-8164 Bearing Installation Plate

215-2596 Adapter Plate

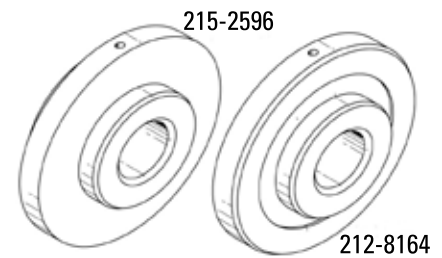
Model: 988G Wheel Loader

Warranty: Six Months

- Used to install 152-3749 Sleeve Bearing into pin bores for lift cylinder (locations K and Y)
- 212-8164 designed to quickly and accurately set depth of sleeve bearing
- Heat-treated for added durability

Reference

REN2173, Service Manual, 988G Machine Systems



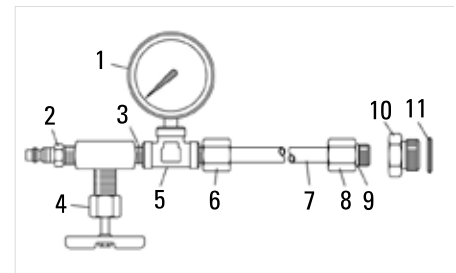
Part Number	Description
215-2596	Adapter Plate
212-8164	Bearing Installation Plate

FT2675 Pressure Gauge

Model: 988G Wheel Loader or other machines with MFL pins

- Used to test MFL joints for correct pin joint assembly
- Provides quick testing after disassembly, assembly, or repair
- Hose length: 457 mm (18.0 in)

Item	Part Number	Description
1	8T-0854	Gauge
2	4C-7158	Fitting
3	008-0728	Nipple
4	1S-8937	Valve - Needle
5	006-0210	Pipe Tee
6	124-1916	Coupling



(Continued)

Loader Lift Arm and Excavator Implement

FT2675 Pressure Gauge (Continued)

Model: 988G Wheel Loader or other machines with MFL pins

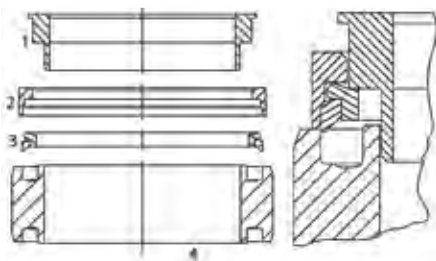
Item	Part Number	Description
7	122-6869	Hose
8	124-1930	Coupling
9	3K-0360	Seal - O-ring - STOR (SAE 3/4 - 16)
Additional parts required for the K-pin joint for the 9886		
10	5P-5777	Adapter
11	7M-8485	O-ring Seal

155-5516 Installer Ring

155-5517 Seal Plunger

Model: 992G Wheel Loader

Warranty: Six Months



- Used to install 143-9740 Seal Assembly into discontinued 144-7077 Collar — provides quick and accurate installation
- Consistently provides precise installation depth of maintenance free linkage (MFL) seals
- Ring prevents seal lip damage
- Plunger applies installation force evenly eliminating possible seal damage
- Helps eliminate recall and rework due to damaged or improperly installed seals

Reference

REHS0146, Special Instruction, Installation of Maintenance Free Linkage Seals

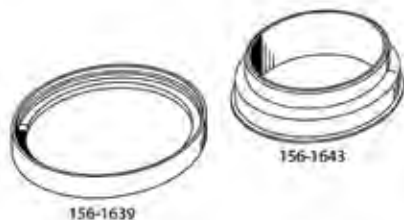
Item	Part Number	Description
1	155-5516	Installer Ring
2	155-5517	Seal Plunger
3	143-9740	Seal Assembly
4	144-7077	Collar

156-1639 Installer Ring 156-1643 Seal Plunger

Essential Tool

Model: 992G Wheel Loader

Warranty: Six Months



- Used to properly install maintenance free linkage (MFL) 1R-1056 Seal Assembly into collar
- Eliminates inconsistent installation of seal (saves time and eliminates possible seal damage during installation)

Reference

REHS0146, Special Instruction, Installation of Maintenance Free Linkage Seal

Part Number	Description
156-1643	Seal Plunger
156-1639	Installer Ring

164-5848 Seal Driver

Essential Tool

Model: 992G Wheel Loader

Warranty: Six Months

- Used to properly install 160-5875 Lip Seal in 161-5808 Bearing
- Quickly and easily installs seal while reducing possibility of damage (eliminates hammer and punch method)
- Made from durable steel tubing

Outside diameter	203.2 mm (8.00 in)
Inside seal diameter	94.5 mm (7.66 in)

Part Number	Description
164-5848	Seal Driver



6V-2078 Stud

Model: 988B

Warranty: Six Months

- Used with 6V-3170 Hydraulic Cylinder, 5B-0637 Nut, and suitable hydraulic pump to install collets in lift arm and bucket linkage on 988B Loaders, 50W1-50W-2264
- On later 988's, 50W-2265-50W-4321, the tools can be used at bucket to lift arm pin only

Reference

Service Manual (tools needed at other locations and later serial numbers)

6V-2078 Stud	
Capacity	490 kN (55 tons)

Part Number	Description
6V-2078	Stud



1U-7646 Coupler

Model: D9L

Warranty: Six Months

- Used to connect 2 or more studs together to get needed length for D9L Impact Ripper Pin disassembly; requires 38.1 mm (1 1/2 in) diameter high-strength puller stud, greater in length than longest stud formerly available, 6V-2074 Stud
- Made from heat-treated alloy steel, 60.45 mm (2.38 in) hexagon stock, similar to existing coupling adapters
- Contains internal stops to control length of thread engagement with studs
- Capacity: 100 tons

Part Number	Description
1U-7646	Coupler

Loader Lift Arm and Excavator Implement

Forcing Bolts for Linkage Pin Collets

Model: 980C and 988B Wheel Loaders

Warranty: Six Months



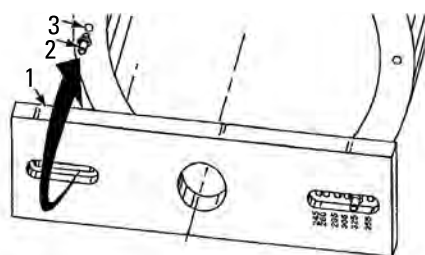
- Used to remove linkage pin collets

Item	Part Number	Description
1	5P-5264	Forcing Bolt, 1.50 in-12 thd
2	5P-5265	Forcing Bolt, 0.875 in-14 thd (3 required)
3	6V-0187	Forcing Bolt, 1.50 in-12 thd

Alignment Fixtures for Portable Boring Bar Unit

Model: 5110B, 5130, 5130B, 5230 Mining Shovels and General Usage When Machine Is Equipped With Bore Alignment Locator Holes

Warranty: Six Months

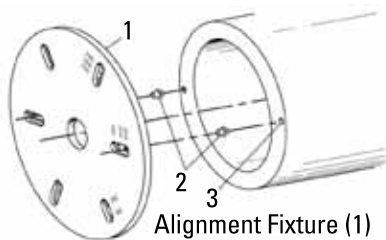


Alignment Fixture (1) and Pins (2) used to align boring bar using alignment locator holes. (3)

- Used to find true center of a bore even when it is badly worn (requires 2 plates and 4 pins)
- Used with 9U-5730 Portable Boring Bar Unit or 9U-5889 Portable Boring Bar Unit
- Alignment fixtures are designed for bore sizes over 190 mm (7.5 in) and when machine is manufactured with bore alignment locator holes
- Simple to use — attach alignment fixture by inserting 1 pin into hole (hole spacing dimensions stamped for easy location) and the other pin into machine locator hole
- Quickly and easily aligns 51 mm (2.0 in) boring bar to exact centerline of original bore using locating holes and pins [alignment is within 0.4 mm (0.016 in)]
- Each alignment fixture accommodates several center-to-center dimensions for locator holes (choose hole in fixture which matches locator hole spacing on machine)
- Alignment fixtures are designed only to locate the boring bar (fixture must be removed once boring bar tooling is in place)
- Locator holes will be designed into many future machine designs
- Hole diameter for boring bar: 51 mm (2.0 in)

Part Number	Description	Width	Thickness	Length
4C-9696	Alignment Fixture	101 mm (4 in)	12.7 mm (0.50 in)	406 mm (16 in)
4C-9698	Alignment Fixture	101 mm (4 in)	12.7 mm (0.50 in)	508 mm (20 in)
197-1377	Alignment Fixture	--	12.7 mm (0.50 in)	--

Alignment Fixture



Alignment Fixture (1) and pins (2) used to align boring bar using bore alignment locator holes (3)

Item	Description
2	Pin
3	Locator Hole

Item	Part Number	Description	Outside Diameter
1	197-1377	Alignment Fixture	349 mm (13.74 in)

Fabricated Tools for Reboring Bushing Bores on Two-Piece Booms

Model: 215, 225 and 235 Excavators

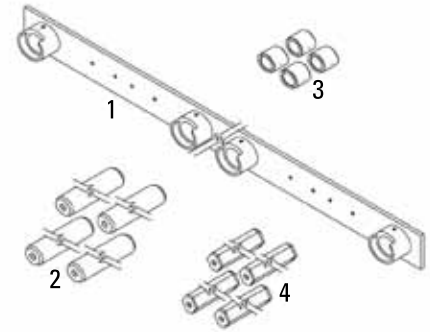
Warranty: Six Months

- Recommended tools to rebores damaged bushing bores at joint of stub and fore boom
- Designed to work satisfactorily if there are at least 2 sets of good bores remaining in fore boom and at least 1 good set of bores in stub boom
- Repair work can be done on machine without removal of stub boom, but fore boom must be removed

Reference

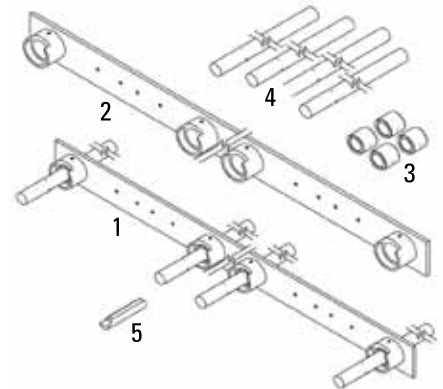
SMHS7625, Special Instruction

215 Excavator		
Item	Part No.	Description
1	FT1456	Fixture
2	FT1457	Pin
3	FT1458	Bushing
4	FT1459	Pin



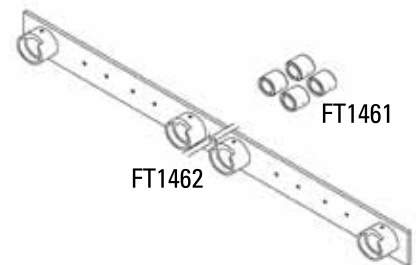
225 Excavator

225 Excavator		
Item	Part Number	Description
1	FT1432	Fabricated Tool Assembly
2	FT1433	Fixture
3	FT1434	Bushing
4	FT1435	Boring Bar
5	FT1436	Carbide Tip Cutting Tool



235 Excavator

235 Excavator	
FT1461	Bushing
FT1462	Fixture



Loader Lift Arm and Excavator Implement

6V-4035 Sleeve Assembly

Model: 980C and 943 Loaders

Warranty: Six Months



- Used to remove bucket linkage or cylinder mounting pins which have retainer plates up to 114 (4.5 in) width; wider retainer plates used at some locations on 980C and 943 Loaders
- Should be used with center hole discontinued 6V-0113 or 316-1489, 6V-3170, 6V-3165, 6V-3160, or 316-1493 Cylinders

Capacity	553 kN (62 tons)
Length	284 (11.18 in)

Part Number	Description
6V-4035	Sleeve Assembly

FT3035 Puller Adapter

Model: 302.5 Mini Hydraulic Excavator

Warranty: None



- Used to remove and install boom swing bearings from frame
- Made from 1P-1832 Bearing Puller Adapter by reducing both outside diameters

Reference

REN9147, Disassembly and Assembly for 302.5C Mini Excavator

Tools used with FT3035	
Part Number	Description
3S-6224	Pump Group - Hydraulic (115V)
4C-9633	Puller Stud
5P-4197	Spacer
6D-7726	Hydraulic Hose (2)
6V-3160	Cylinder Group
9U-6833	Fast Runner Nut Assembly, 250 KN (30 Ton)

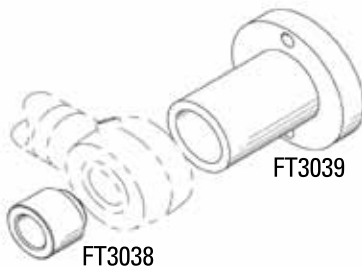
Vehicle System Tools

FT3038 Puller Adapter

FT3039 Receiving Sleeve

Model: 301.8C Mini Hydraulic Excavator

Warranty: None



- Used to remove and install sleeve bearings in bucket cylinder rod eye, blade cylinder rod eye, linkage assembly, and stick assembly
- Used with discontinued 6V-7047 or 316-1496 Single Acting Hydraulic Cylinder, 4C-9633 Puller Stud, and 9U-6833 Fast Runner Nut
- FT3038 pulls sleeve bearing out of component, using a 1-14 threaded puller stud, into FT3039
- Sleeve assembly can be bolted to hydraulic cylinder with two 3/8-16 bolts (makes assembly of puller tooling easier)

Reference

REN9157, 301.8C Mini Hydraulic Excavator, Disassembly and Assembly Service Manual

Bearing Puller Adapters

Model: 613B, 621B, 623B, 627B, 631D, 633D and 637D Scrapers, 245 Excavator, 992C Loader, 5000 Series Excavators, and DIIT
 Warranty: Six Months

- Used for removal and installation of larger sleeve type bearings in loader lift arms, scraper hitches, excavator sticks and booms, etc.

Reference

GMG00806, Special Instruction

Items with FT Part Numbers		
Part number	Small Outside Diameter	Large Outside Diameter
FT3035 ¹	34.5 mm (1.36 in)	44.0 mm (1.73 in)

¹Used for removal of boom swing bearing on 302.5 Excavator



Part Number	Small Outside Diameter	Large Outside Diameter
5P-7428	38.1 mm (1.50 in) ¹	48 mm (1.89 in)
1P-1831	38.1 mm (1.50 in)	50.8 mm (2 in)
1P-1832	44.5 mm (1.75 in)	57.2 mm (2.25 in)
5P-2145	49.3 mm (1.94 in) ²	57.7 mm (2.27 in)
1P-1833	50.8 mm (2 in)	63.5 mm (2.50 in)
5P-4749	52.3 mm (2.06 in) ²	65 mm (2.56 in)
1P-1834	57.2 mm (2.25 in)	69.9 mm (2.75 in)
1P-1835	63.5 mm (2.50 in)	76.2 mm (3 in)
1P-1836	69.9 mm (2.75 in)	82.6 mm (3.25 in)
1P-1837	76.2 mm (3 in)	88.9 mm (3.50 in)
9U-5337	79 mm (3.11 in) ³	91 mm (3.58 in)
5P-8601	82.6 mm (3.25 in) ⁴	88.9 mm (3.50 in)
1P-1838	82.6 mm (3.25 in)	95.3 mm (3.75 in)
1P-1839	88.9 mm (3.50 in)	101.6 mm (4 in)
5P-7398	95.3 mm (3.75 in) ⁵	101.6 mm (4 in)

Part Number	Small Outside Diameter	Large Outside Diameter
1P-1840	95.3 mm (3.75 in) ⁶	108 mm (4.25 in)
1P-1841	101.6 mm (4 in)	117.3 mm (4.62 in)
5P-7399	108 mm (4.25 in) ⁷	120.7 mm (4.75 in)
1P-1842	114.3 mm (4.50 in)	133.4 mm (5.25 in)
9U-6907	119 mm (4.69 in) ³	145.4 mm (5.72 in)
1P-1843	120.7 mm (4.75 in)	136.7 mm (5.38 in)
1P-1844	127 mm (5 in)	146.1 mm (5.75 in)
9U-6261	139 mm (5.47 in) ³	160 mm (6.30 in)
5P-8707	152.4 mm (6 in) ⁸	171.5 mm (6.75 in)
1U-6217	159 mm (6.26 in) ³	185.4 mm (7.30 in)
6V-0027	165.1 mm (6.50 in) ⁹	184.2 mm (7.25 in)
9U-6904	199 mm (7.83 in) ³	225.4 mm (8.87 in)
9U-6906	219 mm (8.62 in) ³	245.4 mm (9.66 in)
9U-6905	239 mm (9.41 in) ³	285.1 mm (11.22 in)
318-4271	263 mm (10.35 in) ¹⁰	276 mm (10.87 in)

¹ Used for draft frame steering link bushing on 613B Scrapers

² Usage described in VST6

³ Used for removal of stick and boom bearings on 5130 and 5230 Excavators

⁴ Used for hitch bearing removal on 621B, 623B and 627B Scrapers

⁵ Used for hitch lateral pitch bushings on 631D, 633D, and 637D Tractor-Scrapers

⁶ Also used on hitch upper bearing on 627 Scraper

⁷ Used for vertical hitch bearings on 631D, 633D and 637D Scrapers

⁸ Used for removal of 245 stick and boom bearings

⁹ Used for removal and installation of 992C loader linkage bearings

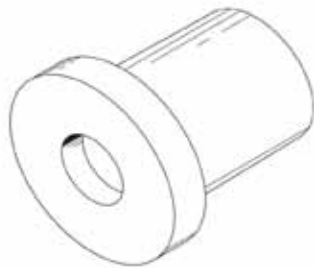
¹⁰ Used for removal of 8P-8929 Bearing on DIIT

FT3052 Receiving Sleeve

Essential Tool

Model: BH150 and BH160 Backhoe Attachment

Warranty: None



- Used to remove linkage bearings
- Used with 3S-6224 Electric Hydraulic Pump Group, 6V-3160 Double Acting Cylinder, 6V-2078 Stud, 1P-1831 Adapter, 1A-1935 Full Nut, and 5P-8250 Washer

Reference

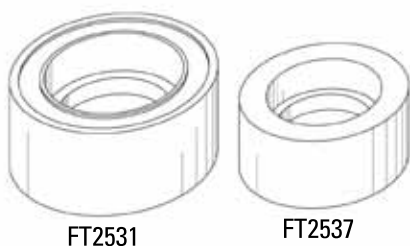
REN4477, Service Manual, BH150 and BH160 Skid Steer Loader Backhoes, Bucket Cylinder - Remove and Install

FT2531 Bearing Press Plate (5130, 5230)

FT2537 Bearing Press Plate (5110)

Model: 5110, 5130 and 5230 Excavators

Warranty: None



FT2531 and FT2537 Bearing Press Plates

- Used to install upper bearing on output pinion to correct depth on shaft (extends bearing life by eliminating improper assembly)
- Used with hydraulic press or M16/M20 threaded rod and nut
- Plate presses bearing completely into cartridge which eliminates high bearing preload stresses due to improper assembly
- Center hole provides clearance for puller stud (threaded hole in shaft can be used with a stud and nut to pull pressing plate onto shaft and install bearing, if hydraulic press is not available)
- Material: SAE1018 steel
- Surface finish: F

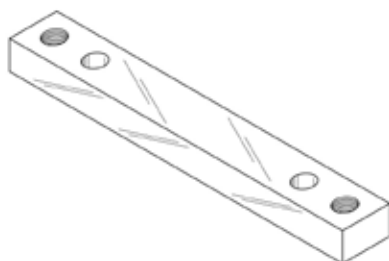
FT2531 Bearing Press Plate (only)

- Used to install 108-8047 Roller Bearing into 6I-7233 Swing Drive Group
- Automatically sets depth of bearing and bearing preload when pressing bearing onto 110-6179 Shaft and into 110-6184 Cartridge
- Recessed area makes sure pressing plate contacts bearings inner and outer race, while also providing clearance for bearing cage
- 2 threaded holes are provided for lifting eyes

FT0886 Adapter

Model: 950, 966C, 980 and 988 Wheel Loaders

Warranty: None



- Use with two 3L-2227 Forcing Bolts and bolts and washers listed below to remove lift cylinder trunnion bearing retainers

(Continued)

FT0886 Adapter (Continued)

Model: 950, 966C, 980 and 988 Wheel Loaders

Warranty: None

Model	Part Number	Description	Qty.
950, 966C	1A-1460	Bolt (1/2 - 13) (fork mounting hardware)	2
950, 966C	4B-4280	Washer	2
980	8S-4734	Bolt	2
980	4B-5059	Washer	2
988	1A-1135	Bolt	2
988	4B-4281	Washer	2

988 Lift Arm Repair Fixtures

Model: 988

Warranty: Six Months

- 9K-4992 Lift Arm Repair Group provides new right and left lift arm supports for 988 lift arms that have experienced excessive wear or failure in area of lift cylinder pinbores
- FT0903 Template (1) should be used to locate new supports as indicated below

Reference

GMG00467, Reworking Procedure



8T-3194 Pin Puller Adapter

Model: 235, 245

Warranty: Six Months

- Similar to 9S-5556 Adapter in all dimensions except for threaded length; additional length of threads needed during installation of sprocket wheels on 235 and 245 Excavators and for installation of large final drive gear onto 235 Excavator sprocket shaft; in these applications, 8T-3194 Adapter is to be used instead of currently specified 9S-5556 Adapter
- Also a general usage service tool for use in applications where greater thread engagement is needed than can be obtained with 9S-5556 Adapter
- 9S-5556 Adapter has not been discontinued, as there are still applications where shorter thread length is required



Part Number	Description	Threads	Length
8T-3194	Adapter	12-2A	64 mm (2.5 in) (increase of 25.4 mm (1.0 in) from 9S-5556 Adapter)
9S-5556	Adapter, 1 1/2 in	12-2A	38.1 mm (1 1/2 in)

Loader Lift Arm and Excavator Implement

220-1776 Puller Stud (M36x4)

Model: 988G, 992G Large Wheel Loader

Warranty: Six Months



- Used to remove front linkage pins (Y) and (K)
- Used with 134-8466 Receiving Sleeve Assembly
- Helps safely remove pins up to 1775 mm (70.0 in) long
- Heat-treated for added durability and long life

Thread	M36x4
Square drive	19 mm (3/4 in)
Overall length	2000 mm (78.75 in)
Maximum capacity	72 t (80 tons)

Part Number	Description
220-1776	Puller Stud (M36x4)

8T-5270 Adapter

Model: 992C, 994

Warranty: Six Months



- Replaces discontinued 6V-2071 Adapter
- Made from stronger and heavier hex stock
- Reduces 2.00-12 internal threads to 1.50-12 internal threads; will accommodate 6V-2074 Stud
- Used primarily to remove linkage pins from 992C Wheel Loaders
- Also general usage tool wherever reduction of thread size from 2.00-12 to 1.50-12 required

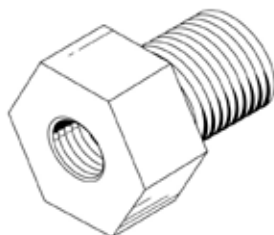
Working capacity	890 kN (100 short tons)
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Part Number	Description
8T-5270	Adapter

221-9575 Pin Pulling Threaded Adapter

Model: 385B Hydraulic Excavator

Warranty: Six Months



- Used to remove boom pins and boom cylinder foot pins
- Reduces M48 x 5.0 threaded hole to M30 x 3.5
- Heat-treated for added durability and long tool life
- 50 tons maximum pulling capacity

Reference

385B Disassembly and Assembly Manual, Machine Systems

Part Number	Description
221-9575	Pin Pulling Threaded Adapter

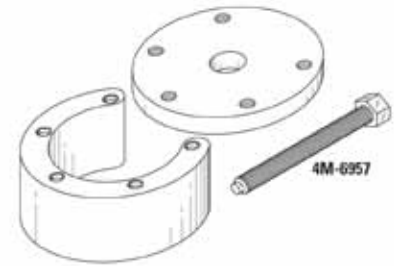
340-4318 Puller Assembly

Essential Tool

Model: 320D FM Excavator

Warranty: Six Months

- Used to remove 4I-4812 Pin Assembly from boom foot
- Used with five 4M-6957 Forcing Bolts, 5/8 -11 x 17.8 cm (7 in) long (dealer supplied)
- Tool consists of two parts: puller plate and spacer
- Puller plate used with forcing screws to partially remove pin
- Forcing screws are then loosened and spacer is inserted to allow puller plate to fully remove pin from boom
- Steel tools are black oxide coated to resist corrosion
- Puller plate has five threaded holes and is hardened to provide long service life
- Opening in spacer fits over pin without removing puller plate and features locator holes for correct forcing bolt alignment



Part Number	Description
340-4318	Puller Assembly

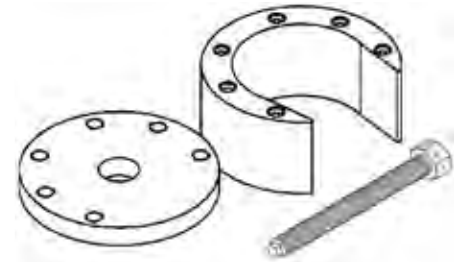
373-5842 Puller Assembly

SMCS Code: 7051-011

Model Usage: 325E, 329E, 336E, 339E Excavators

Warranty: Six Months

- Used to remove 186-5663 pin assembly on excavators at boom foot location where traditional means are not applicable
- Tool includes both puller plate and spacer
- Used with six 5/8" – 11 x 17.8 cm (7 in) forcing screws (purchase separately)
- Black oxide coated to resist corrosion
- Hardened puller plate provides long service life
- Opening in spacer fits over pin without removing puller plate
- Spacer features locator for correct forcing of bolt alignment



Specifications	
Dimensions	175 X 95.25 mm (6.69 X 3.75 in)
Weight	8.75 kg (19.29 lbs)

Part Number	Description
373-5842	Puller Assembly

173-6747 Seal Installation Ring 173-6748 Seal Installation Plunger

Essential Tool

Model: 988G Wheel Loader

Warranty: Six Months

- Used to install 160 mm (6.3 in) MFL seals in front linkage
- Installation tool and plunger provides consistent seat depth without damaging seal

Part Number	Description
173-6747	Seal Installation Ring
173-6748	Seal Installation Plunger

Loader Lift Arm and Excavator Implement

173-6745 Seal Installation Ring 173-6746 Seal Installation Plunger

Essential Tool

Model: 988G Wheel Loader

Warranty: Six Months

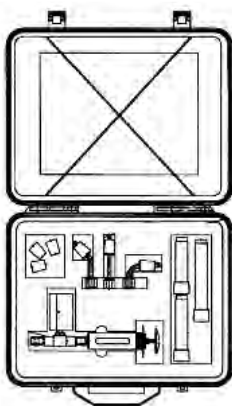
- Used to install 120 mm (4.7 in) MFL seals in front linkage
- Installation tool and plunger provides consistent seat depth without damaging seal

Part Number	Description
173-6745	Seal Installation Ring
173-6746	Seal Installation Plunger

9U-7960 Void Meter Group

Model Usage: 994D, 980G, 990 Wheel Loaders

Warranty: Six Months



- Used to provide a simple, fast and accurate method of checking oil level in Maintenance Free Linkage (MFL) pin joints
- Other means for checking oil level is not recommended
- MFL pins must have specified air void and not filled completely; otherwise, joint must be drained completely, cleaned and refilled with specified amount of oil or filled to overflowing with specific amount removed
- Compares pressures between calibration tubes (part of tool group) and pin joint
- End fittings have O.R.F.S. connections which can be quickly changed to accommodate various port locations
- O.R.F.S. connection can be hand tightened and are leak-proof (no hand tools required)
- Syringe can add or remove specified amounts of oil

Reference

NEHS0608 Tool Operating Manual

Specifications	
Syringe Assembly Capacity	1 to 25 cc
Pressure Gauge	0 to 250 kPa (0 to 35 psi)
Calibration Tube Capacities	20cc, 25cc, 30cc (Void Volumes)
Port Access End Fittings	90°, 45°, and Straight

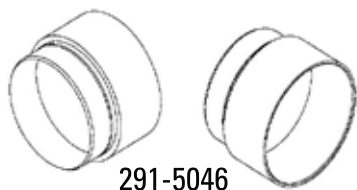
Part Number	Description
9U-7960	Void Meter Group

245-7397, 291-5046 Piston Tool

245-7398, 291-5047 Seal Tool

Model Usage: 777F, 793F, 795F, 797B, 797F

Warranty: Six Months



- Used to prevent seal damage when assembling piston into a steering or brake accumulator.
- 245-7397 is for pistons that have a 250 mm diameter, and 245-7398 is used to install those seals
- 291-5046 is for pistons that have a 180 mm diameter, and 291-5047 is used to install those seals
- Material(s): Zinc phosphate coated steel

(Continued)

245-7397, 291-5046 Piston Tool (Continued)

245-7398, 291-5047 Seal Tool

Model Usage: 777F, 793F, 795F, 797B, 797F

Warranty: Six Months

Specifications		
Part Number	Description	Dimensions
245-7397	Piston Tool	--
245-7398	Seal Tool	--
291-5046	Piston Tool	185.5 x 206 x 145 mm (7.30 x 8.11 x 5.70 in)
291-5047	Seal Tool	179.8 x 135 x 180 mm (7.07 x 5.31 x 7.08 in)

Seal Tool



291-5047

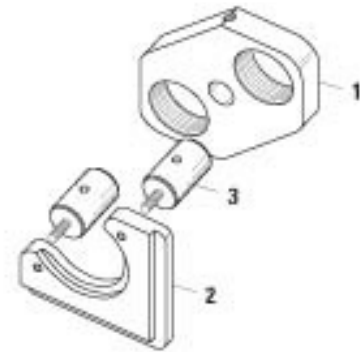
Boom Removal Tools

Essential Tool

Model Usage: 365B, 365C, 375D, 385C and 385D Excavators

Warranty: Six Months

- Used to remove 208-1941 Pin from lower boom foot.
- Used to remove Pins 234-3956, 367-1432, and 208-1941 with 373-5147.
- Used with two 360-6960 Cylinders (50 Ton), one 9U-6812 Puller Stud [M48 x 5.0 by 381 mm (15.00 in) long], and one 9U-6810 Fast Runner Nut (M48 x 5.0) or 9U-6903 Fast Runner Nut (M48 x 5.0)
- Hydraulic power supply is also required
- All tools are sold separately; requires one 369-3528 Puller Plate, one 369-3530 Pusher Plate or one 373-5147 Pusher Plate, and two 369-3531 Spacer Assembly
- A 9M-4021 Eyebolt (1-8 in) threads into puller plate to support weight of cylinders and pusher plate
- Tools are symmetrical and can be used to remove both right and left side pins
- All parts are heat treated for added durability



Combination weight without hydraulic cylinder	47.48 kg (105.4 lb)
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Item	Part Number	Description
1	369-3528	Puller Plate
2	369-3530	Pusher Plate (Lower)
3	369-3531	Spacer Assembly
Not Shown		
4	373-5147	Pusher Plate (Upper)

Implements, Frame, Hitch and Suspension

175-5507 Nitrogen Charging Group

Model: Most Cat® Machines

Warranty: Six Months

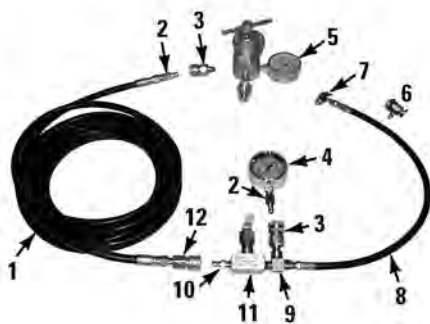


- Used to charge accumulators with pressures up to 20,666 kPa (3000 psi)
- Replaces 1S-8940 Nitrogen Charging Group; 1S-8940 can be updated and then can charge up to 12,400 kPa (1800 psi) (see chart below for parts to purchase)
- Gauges in group have bourdon tube assembly; this type of gauge gives its most accurate reading in center of dial; important to use gauge that will record desired pressure in or near center third of calibrated dial
- Quick disconnect couplings allow gauge to be changed quickly and easily

Item	Part Number	Description
1	9U-6219	Tool Box
2	2P-8289	Holder Block
--	175-5507	Nitrogen Charging Group

Reference

NEHS0742, Tool Operating Manual



NOTE:

The 175-5507 Group is not recommended for tire inflation because of the associated higher pressures and increased line flow restrictions.

Item	Part Number	Description
1.0	162-4147	Hose Assembly
2.0	8S-4600	Nipple (2) ¹
3.0	8S-1506	Disc Coupling Assembly, MPT
4.0	8T-0859	Gauge - Pressure
5.0	162-4146	Regulator Assembly
6.0	7S-5106	Air Chuck
7.0	1S-8938	Air Chuck
8.0	1S-8941	Hose Assembly
9.0	2D-7325	Tee - Pipe

Item	Part Number	Description
10.0	2S-5244	Quick Disconnect Nipple
11.0	1S-8937	Valve - Needle
12.0	8S-4599	Coupling Assembly - Quick Disconnect
Not Shown		
--	8S-5098	Warning Film
Optional tool used with 175-5507		
--	4Z-8499	Gas Charging Kit, for D10 Impact Ripper

¹ Other nipples available for gauge attachment are: 2S-5244, 1/4 in NPT External Thread

361-3889 Nitrogen Charging Group

SMCS Code: 7201-045

Model Usage: Most Cat® Machines

Warranty: Six Months

- Used to charge accumulators with pressures up to 20,666 kPa (3000 psi)
- Not included in group are pressure regulator and pressure gauge (must be locally purchased to meet regulations and certifications for use in Australia)
- Quick disconnect couplings allow gauge to be changed quickly and easily

Reference

NEHS0742, Tool Operating Manual

NOTICE

The 361-3889 Group is not recommended for tire inflation because of the associated higher pressures and increased line flow restrictions.

Specifications	
Size	25 x 25 x 52 mm (.98 x .98 x 2.04 in)
Weight (estimated)	10.3 kg (22.7 lb)

Part Number	Description	Part Number	Description
361-3889	Nitrogen Charging Group	7S-5106	Chuck
1S-8937	Needle Valve	8S-1506	Disc Coupling Assembly, MPT
1S-8938	Air Chuck	8S-5098	Warning Film
1S-8941	Hose Assembly	162-4147	Hose Assembly
2D-7325	Pipe Tee	334-4572	Tool Box
2P-8289	Holder Block	8S-4600	Nipple FPT
2S-5244	Nipple	8S-4599	Coupling Assembly

338-0500 Regulator Assembly

Essential Tool

Model: All Cat® machines

Warranty: Six Months

- Used to charge accumulators with high-pressure nitrogen gas requirement of 400 Bar (6000 psi)
- Used with 346-3622 Pop-off Valve and 175-5507 Nitrogen Charging Group
- Single-stage, high-pressure regulator
- One piece encapsulated valve design with CTFE seats and an internal filter
- Delivery and supply pressure gauges have dual readings (psi/bar)
- Easy-to-read gauges are 63.5 mm (2.50 in) diameter

Maximum inlet pressure	500 Bar (7500 psi)
Delivery pressure range	689 Bar (10,000 psi)
Supply pressure range	689 Bar (10,000 psi)
Inlet connection	CGA 677
Outlet connection	1/4 inch NPT stainless steel Swagelock tube fitting
Overall size	77 x 158 x 127 mm (7.0 x 6.2 x 5.0 in)



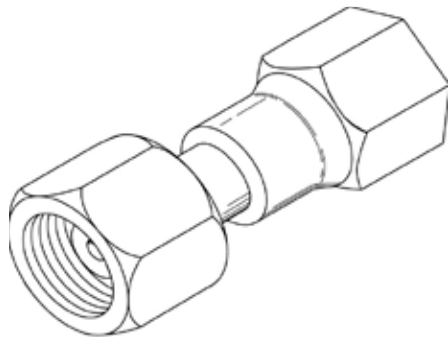
Part Number	Description
338-0500	Regulator Assembly

187-0525 Nitrogen Adapter

Essential Tool

Model: 450, 460, 465, 480, and 485 Lexion Combines

Warranty: Six Months



- Used to connect Cat® regulator to certain German nitrogen supply bottles
- Used with 162-4146 Regulator (part of 175-5507 Nitrogen Charging Kit)
- Female 0.96-14 NGO thd x female W24 32 x 1/14 in thd

NOTE:

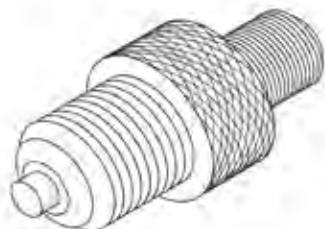
See local nitrogen gas supplier for correct bottles, gas, instructions, and connectors.

Part Number	Description
187-0525	Nitrogen Adapter

5P-2963 Charging Adapter

Model: Various Cat® Machines

Warranty: Six Months



- Used with 175-5507 Nitrogen Charging Group to pressure check and charge accumulator for 8D-8920 Bostrom-Norseman Suspension Seat Group used on Cat® Wheel Tractor-Scrapers
- 0.311 in-32 thd x 0.500 in-20 thd
- Service part: 4J-7533 Seal

References

SEBP3775

SEBD9268

KENR5019

SEBF8272-01

REN4183

SENR1429

REGO1569

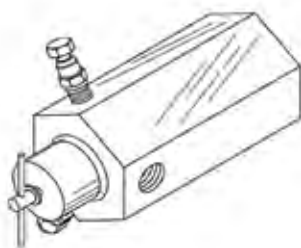
Part Number	Description
5P-2963	Charging Adapter

150-2332 Charging Adapter

Essential Tool

Model: 785 A, B, and C; 789 A, B, and C; 793 A, B, C, CXQ, and D; 797 Off-Highway Trucks

Warranty: One Year



- Used to charge or check charge pressure on Greer accumulators with Schrader valve
- Used with 8T-0859 Pressure Gauge with 0 to 3600 psi range and 175-5507 Nitrogen Charging Group
- Thread engages accumulator body instead of Schrader valve
- T-handle depresses Schrader valve on accumulator
- Adapter has bleed valve and Schrader valve connection for charging group

References

SEPD0438

(Continued)

150-2332 Charging Adapter (Continued)

Essential Tool

Model: 785 A, B, and C; 789 A, B, and C; 793 A, B, C, CXQ, and D; 797 Off-Highway Trucks

Warranty: One Year

REN8336

SENR1452-10

Body size	38.1 mm (1.50 in) hex
Overall length (without handle)	92.0 mm (3.6 in)
Body thread size	7/8-14
Pressure gauge thread size	1/4-18 NPTF

Part Number	Description
150-2332	Charging Adapter

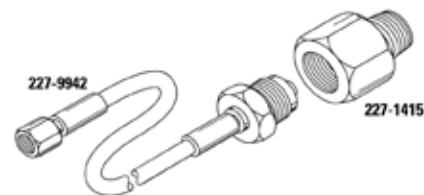
227-1415 Charging Adapter, 227-9942 Charge Hose Assembly

Essential Tool

Model: 797B Off Highway Trucks

Warranty: Six Months

- Used to charge steering accumulator
- Used with 175-5507 Nitrogen Charging Group
- Long charging hose allows supply bottle to remain on ground during charging process
- 227-1415 Charging Adapter adapts current nitrogen charging group regulator to fit 227-9942 Charge Hose Assembly
- 227-1415 male 1/2 -14 NPT thd x female W26.41 x 1/14 thd
- 227-9942 female M14 x 1.5-6H thd x male W26.41x 1/14 thd



References

REN2579-02

REN2581-06

Hose length	10 m (32 ft)
Maximum pressure	37,921 kPa (5500 psi)

Part Number	Description
227-1415	Charging Adapter
227-9942	Charge Hose Assembly

175-7410 Auxiliary Fitting Group

Model: Articulated Dump Trucks, Off-Highway Trucks, Underground Mining Dump Trucks

Warranty: Six Months

- Used to modify 175-5507 Nitrogen Charging Group to permit charging 2 cylinders at the same time
- Particularly convenient in charging of truck suspension cylinders

References

REN8317-00

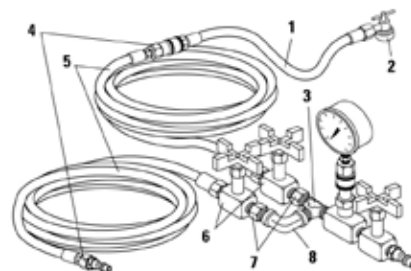
SENR1557-02

REHS1507-02

REHS0878-04

SEHS9411-04

NEHS0742



(Continued)

Implements, Frame, Hitch and Suspension

175-7410 Auxiliary Fitting Group (Continued)

Model: Articulated Dump Trucks, Off-Highway Trucks, Underground Mining Dump Trucks

Warranty: Six Months

Item	Part Number	Description	Qty.
1	1S-8941	Hose Assembly	--
2	7S-5106	Air Chuck	--
3	2D-7325	Tee - Pipe	--
4	8S-7169	Coupling - Pipe Hexagon	2
5	175-6857	Hose Assembly	2
6	1S-8937	Valve - Needle	2
7	5P-8998	Nipple - Pipe	2
8	3D-8884	Elbow (90°)	--
--	175-7410	Auxiliary Fitting Group	--

7S-5439 Extension

Model: Various Cat® Machines

Warranty: Six Months



- Used with 175-5507 Nitrogen Charging Group to charge 9J-2019 Steering Accumulator on 777 Trucks
- .482 in-26 thd (male and female)
- Service part: 8S-4344 Washer
- Maximum working pressure: 435 kPa (3000 psi)

References

REN3826-08

SENR1934-08

SEBU6316-01

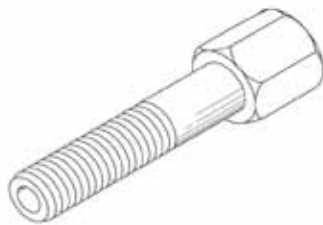
SEPD0683-00

Part Number	Description
7S-5439	Extension

1U-5551 Valve Extension

Model: Various Cat® Machines

Warranty: Six Months



- Accessory to 175-5507 Nitrogen Charging Group needed to test and charge 785 and 789 Off-Highway Truck hydraulic nitrogen-charged steering system accumulators with recessed ports (ports now recessed due to accumulator design change that allows nitrogen bladder servicing)
- Can also be used to test and charge non-recessed accumulator ports
- Couples to chuck of 175-5507 Nitrogen Charging Group
- Maximum pressure: 435 kPa (3000 psi)
- 0.305 in-32 thd (male and female)

References

SEBF8383-05

REN2535-10

SENR1463-07

SEPD0506

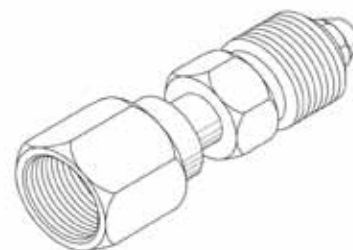
Part Number	Description
1U-5551	Valve Extension

6V-7879 Nitrogen Regulator Adapter

Model: Most Cat® Models

Warranty: Six Months

- Used to connect 162-4146 Regulator, part of 175-5507 Nitrogen Charging Group, and 6V-4037 Regulator, part of 6V-4040 Nitrogen Tire Inflation Group, to nitrogen bottles from some sources outside the U.S.
- 0.960-14 NGO internal righthand thread and 5/8 BSP external righthand thread
- Permits 162-4146 and 6V-4037 Regulators to be used on nitrogen bottles with shutoff valves having 5/8 BSP internal righthand thread



Part Number	Description
6V-7879	Nitrogen Regulator Adapter

9U-6740 Accumulator Charging Group

Model: E180, EL180, EL240, EL300, MS120-8, MS180 LC-8, MS240 LC-8, MS300-5, MS300 LC-8, 214B and 224B Excavators, CB-314, CS-551, CP-323 and CS-323 Compactors

Warranty: Six Months

- 9U-6740 replaces discontinued 4C-4166 Accumulator Charging Group
- Allow accumulator charge to be checked and/or serviced — necessary for proper operation and performance of affected circuits
- Specifically designed to charge 7X-5626, 5W-9971, and 8U-3661 Diaphragm Accumulators that do not utilize a “Schrader” charging valve which is common to most other accumulators
- Gauge and bleed valve permit direct connection to nitrogen charging cylinder
- Valve connects to accumulator’s M28 x 1.5 thd
- Fitting connects directly to nitrogen charging cylinder having male W24.32 x 1/14 thd (DIN 477 #10 Type A, nitrogen)



NOTE:

The 9U-6740 Tool Group is assembled with the W24.32 x 1/14

Fitting. If Adapter is required (for 0.960-14 NGO, U.S. Nitrogen Bottles), simply remove fitting from assembly, and replace with adapter.

- 6V-7879 Adapter (not included) must be ordered separately to provide method of connecting to U.S. nitrogen charging cylinders having a female 5/8-14 BSP thd (BSP #341 nitrogen); 6V-7879 Adapter is used along with Adapter

Reference

NEHS0598, Tool Operating Manual

9U-6740 Accumulator Charging Group	
Consists of	Charging Valve, with Bleed-Off
	Gauge
	Hose
	Protective Case
Weight	2.3 kg (5.00 lb)
9U-6739 Hose Assembly	
Length	250 cm (8 ft.)
Diameter	10.0 mm (0.394 in)
Swivel nut connection (female)	W24.32 x 1/14 thd (DIN 477 #10 Type A, nitrogen)
Swivel nut connection (female)	M14 x 1.5 thd
Working pressure	20,670 kPa (3,000 psi)

(Continued)

Implements, Frame, Hitch and Suspension

9U-6740 Accumulator Charging Group (Continued)

Model: E180, EL180, EL240, EL300, MS120-8, MS180 LC-8, MS240 LC-8, MS300-5, MS300 LC-8, 214B and 224B Excavators, CB-314, CS-551, CP-323 and CS-323 Compactors
 Warranty: Six Months

Part Number	Description
9U-6740	Accumulator Charging Group
9U-6739 Service/Repair Parts	
9U-6739	Hose Assembly
9U-6738	Seal
9U-6741	Charging Adapter
1P-7326	Gasket (service repair for 9U-6741 Adapter)

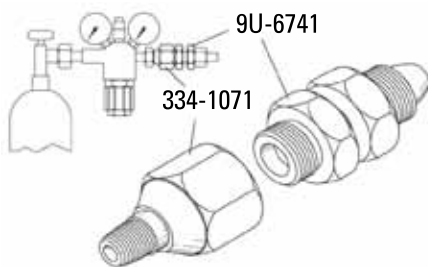
⚠ WARNING

Dry nitrogen is the only gas approved for use in the accumulator. Charging the accumulator with oxygen gas will cause an explosion. This danger will not happen if nitrogen cylinders with standard CGA (Compressed Gas Association, Inc.) number 580 connections are used. When you order nitrogen gas, be sure that the cylinders are equipped with CGA No. 580 connections. Do not use color codes or other methods of identification to tell the difference between nitrogen and oxygen cylinders.

334-1071 Adapter

Essential Tool

Model: E180, EL180, EL240, EL300, MS120- B, MS180 LC-8, MS300-5, MS300 LC-8, 214B and 224B Excavators. CB-314, CS-551, CP-323, and CS-323 Compactors
 Warranty: Six Months

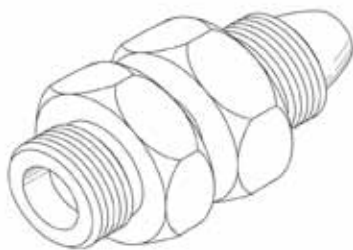


- Used to connect charging hose to nitrogen regulator
- Used with 9U-6741 Adapter and 9U-6740 Accumulator Charging Kit
- Maximum pressure: 20,684 kPa (3000 psi)
- W24.32 x 1/14 internal threads (DIN 477 #10 Type A, nitrogen) and 1/4 NPT external threads
- Solid brass construction

Part Number	Description
334-1071	Adapter

9U-6741 Charging Adapter

Model: Various Excavators, Material Handlers, Hydraulic Hammers, and Articulated Trucks
 Warranty: Six Months



- Adapter connects hose to U.S. nitrogen bottles (low pressure)
- Used with 334-1071 Adapter

References

REN4478-00
 SEBE8658-03
 SEPD0673-00
 RENR9125-01
 RENR6728-00
 RENR4478-00

Male connection	W24.32 x 1/14 thd (DIN 477 #10 Type A, nitrogen)
Male swivel	(0.960 - 14) U. S. thd CGA #580

Part Number	Description
9U-6741	Charging Adapter

152-2023 Accumulator Charging Group

- Used only on high pressure nitrogen bottles
- Used to charge various accumulators on 206B, 212B, 214B, 224B Wheel-Type Excavators; CB314, CS551, CP323, CS323 Compactors; and all Excavators and Backhoe Loaders using hydraulic hammer attachment; Challenger 35, 45 and 55
- Packaged in protective carrying case for convenience and to reduce damage
- Hose assembly connects directly to nitrogen bottle with DIN specifications
- 334-1071 Adapter, 9U-6741 Adapter and 9U-6739 Hose Assembly required to connect hose to U.S. nitrogen bottles (low pressure)
- An additional 6V-7879 Adapter (not shown) must be ordered separately to provide a method of connecting to English nitrogen charging cylinders having a female 5/8-14 BSP thd (BSP #341 nitrogen); the 6V-7879 Adapter is used along with the 9U-6741 Adapter
- 151-8856 Charging Seal is required on 130-7623 Accumulators (130-7623 used only on Challenger 35 S/N 8DM00201 and Up, Challenger 45 S/N 1DR00201 and Up, and Challenger 55 S/N 7DM00201 and Up); the 151-8856 needs to be ordered separately

WARNING

Dry nitrogen is the only gas approved for use in the accumulator. Charging the accumulator with oxygen gas will cause an explosion. This danger will not happen if nitrogen cylinders with standard CGA (Compressed Gas Association, Inc.) number 580 connections are used. When you order nitrogen gas, be sure that the cylinders are equipped with CGA No. 580 connections. Do not use color codes or other methods of identification to tell the difference between nitrogen and oxygen cylinders.

NOTE:

When charging the accumulators on machines equipped with hydraulic hammers, some additional tools will be required. The parts listed below may be required with the 9U-6740 or 152-2023 Accumulator Charging Group.

NOTE:

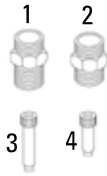
It is recommended that a 175-5507 Nitrogen Charging Group be connected between the 9U-7640 or 152-2023 Accumulator Charging Group and the nitrogen bottle. This will allow the pressure to be controlled and regulated. See NEHS0598 Tool Operating Manual for additional instructions.



Consists of	186-6225 Charging Adapter Assembly
	Charging valve, with bleed-off and Gauge
	199-9040 Hose
	152-2024 Seal
	Protective Case
Weight	2.3 kg (5.0 lb)
199-9040 Hose Assembly	
Length	250 cm (8 ft.)
Diameter	10.0 mm (0.394 in)
Swivel connection (male)	CGA 680
Swivel nut connection (female)	M14 x 1.5 thd
Working pressure	385 bar (5500 psi)
152-2024 O-ring Seal	
Plastic seal	OD 20 mm (0.787 in)
	ID 11.5 mm (0.453 in)
	thickness 2.0 mm (0.079 in)

Part Number	Description
152-2023	Accumulator Charging Group

Additional Tooling

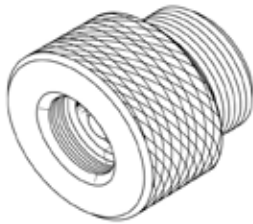


Item	Part Number	Description
Additional Tooling Required for Hydraulic Hammers		
1	7Q-8501	Adapter
2	7Q-8498	Adapter
3	7Q-8502	Pin
4	7Q-8499	Pin
Not Shown		
--	2M-9780	Seal - O-ring - STOR (SAE 7/8 - 14)
--	4J-0522	Seal (not shown)
--	3K-0360	Seal - O-ring - STOR (SAE 3/4 - 16)

209-2112 Nitrogen Adapter

Model: MT735, MT745, MT765, MT835, MT855, and MT865 GEN 111 Challenger Tractor

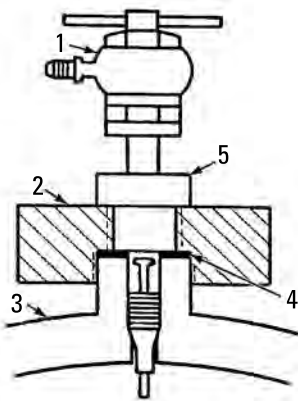
Warranty: Six Months



- Used to provide required connection between charging kit and accumulator
- Used with 152-2023 Nitrogen Charge Kit
- Male M28 x 1.5 thd x female M16 x 2 thd

Part Number	Description
209-2112	Nitrogen Adapter

4C-4321 Adapter



- Used to adapt threads of accumulator filling valve neck to 5P-2963 Adapter and 1S-8938 Chuck
- Hose from 175-5507 Nitrogen Charging Group is then connected to fitting on 1S-8938 Chuck
- 1/2 -20-2B thd x female 5/8 -18-2B thd

Item	Part Number	Description
1	1S-8938	Air Chuck
2	4C-4321	Adapter (Includes 247-2708 Gasket)
3	094-1043	Accumulator
4	247-2708	Gasket (part of 4C-4321 Adapter Group; also part of accumulator cap or available as separate part)
5	5P-2963	Charging Adapter

Reference

SEPD0046



185-4458 Nitrogen Adapter Group

Essential Tool

Model: M313C, M315C, M316C, M318C, M322C, M312C, M315, M318 and M320 Wheel Excavators

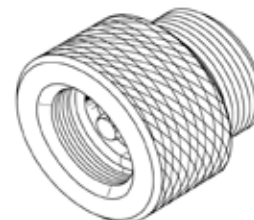
Warranty: Six Months

- Used to connect nitrogen charging kits to Leduc accumulators
- Used with 9U-6740 or 152-2023 Accumulator Charging Group
- Connects to accumulators on feeder housing hydraulic system
- Male M28 x 1.5-6g thd x female ISO 228-G 3/4 thd

References

REN6984

REN6999



Part Number	Description
185-4458	Nitrogen Adapter Group

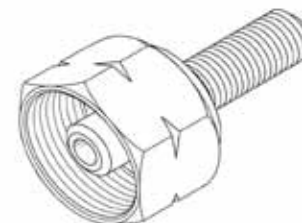
334-0802 Nipple Assembly

Essential Tool

Model: Cat® Excavators and Track-Type Tractors

Warranty: Six Months

- Used with 338-0500 Pressure Regulator and high pressure nitrogen gas bottle
- 1/4 inch NPT male end connects to 41,368 kPa (6000 psi) pressure regulator CGA677 female end connects to 41,368 kPa (6000 psi) high pressure nitrogen gas bottle
- Durable stainless steel construction



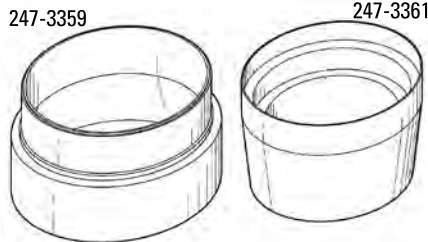
Part Number	Description
334-0802	Nipple Assembly

247-3359 Accumulator Piston Installer, 247-3361 Accumulator Seal Installer

Essential Tool

Model: 797B Off Highway Truck

Warranty: Six Months



- Used to assemble piston into steering accumulator without damaging new seals
- Seal installer makes seal installation onto piston much easier and prevents damage
- Piston installer is placed into accumulator and piston is pressed through installer — prevents seal damage by accumulator threads

Reference

SEPD0740-00

Part Number	Description
247-3359	Accumulator Piston Installer
247-3361	Accumulator Seal Installer

9U-5980 Accumulator Lifting Clamp

Model: 785, 789 and 793 Off-Highway Trucks

Warranty: Six Months



- Used to remove and install steering accumulators
- Removal and installation of the accumulators is very difficult without this clamp (accumulator does not have any convenient lift point; removal and installation with straps alone not recommended because of potential for slippage)
- Provides squeezing-type force for safe, slip-free handling of cylinders
- Has two link brackets (part of lifting clamp) to provide balanced pickup points to assist with placement
- All grease, oil, and dirt must be removed from accumulators and lifting clamp before installing clamp
- Used with truck crane, other boom-type crane, and chain/sling/hooks

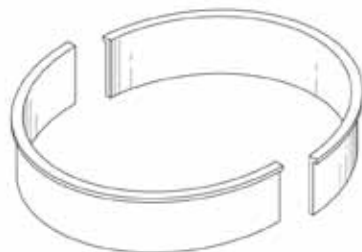
Lifting capacity	600 kg (1320 lb)
Accommodates cylinders with diameters	228 mm (9 in)
Weight (approximate)	4 kg (8.8 lb)
Band-type clamp made of two bands measuring	9.5 x 32 x 318 mm (0.38 x 1.25 x 12.5 in)
Link brackets attached with	1/2-13 bolts

Part Number	Description
9U-5980	Accumulator Lifting Clamp

FT3050 Accumulator Sleeve (Steering)

Model: 797 Off-Highway Trucks (JSM1-UP)

Warranty: None



- Used to remove and install steering accumulators (2 required)
- Used with 9U-5980 Accumulator Lifting Clamp
- When used with 9U-5980, sleeves provide a compression force which provides slip-free handling of steering accumulators
- Adapts 228.0 mm (9.00 in) diameter of 9U-5980 to accommodate 220 mm (8.66 in) diameter of steering accumulators
- Material: SAE1020M Steel Tubing

Reference

797 Off-Highway Truck Disassembly and Assembly Service Manual, Steering Accumulator Cylinders Remove and Install

Maximum load rating for 9U-5980	600 kg (1320 lb)
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Accumulator Tools for Hydraulic Hammer

Essential Tool

Model: PH 126 Hydraulic Hammer

Warranty: Six Months

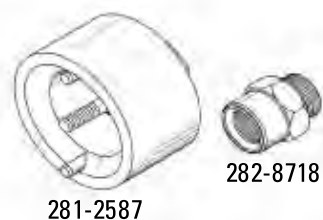
- Used with 121-6583 Accumulator Charging Kit

Reference

REN6996, Hydraulic Hammer

Disassembly and Assembly

Part Number	Description	Use
281-2587	Spanner Wrench	Remove and install top cover of accumulator for servicing
282-8718	Charging Adapter	Recharge nitrogen-filled accumulator



1U-9386 Nut

Model: D11N Track-Type Tractor

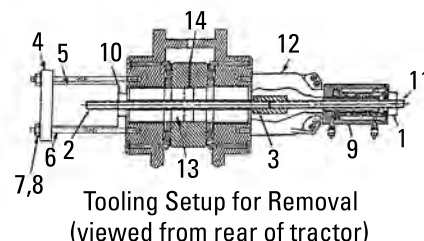
Warranty: Six Months

- Additional tools needed to remove impact ripper shank pin (numbers 1, 2, and 3 on illustration of all removal tooling)
- Available on MAO (made as ordered) basis; delivery within 30 days of receipt of order

Reference

SEBF0578, Special Instruction

Item	Description	Thread	Length
1 and 10	1U-9386, Nut	2 1/2-8-2B	51 mm (2.01 in)
13	Shank Pin		
14	Grease Fitting		



Item	Part Number	Description
1 ¹	1U-9386	Nut
2	1U-9391	Stud
3	1U-9387	Coupler
4	4Z-8398	Cover Assembly
5 ²	316-1490	Cylinder Group
6	5P-4776	Threaded Rod (4)
7	1A-1935	Nut
8	5P-8250	Hard Washer
10	5P-5208	Nut
11	5P-5207	Stud
12	1S-6645	Puller Sleeve Assembly

¹ Item 1 and Item 10

² Item 5 and Item 9

9U-5617 Oil Refill Unit

Model: 769, 773, 777, 785, 789, and 793 Trucks

Warranty: Six Months



- Refills suspension cylinder with oil without the need of circulating oil to remove trapped nitrogen
- No need to evacuate old suspension cylinder oil
- System will compress nitrogen remaining in suspension cylinder oil
- Reservoir: 38 liters (10 gal)
- Hydraulic pressure: 8200 kPa (1200 psi) with 820 kPa (120 psi) air pressure

Reference

SEHS9411, Special Instruction, Suspension Cylinder Servicing

Part Number	Description
4C-8880	Elevator
7S-5106	Air Chuck
9U-5618	Bracket
9U-5619	Block
9U-5672	Barrel Assembly
9U-5675	Valve
9U-5676	Coupler
9U-5677	Nipple (Valved)
9U-5679	Strainer
9U-5680	Check Valve
9U-5682	Nipple
9U-5683	Coupler Valve
9U-5684	Breather

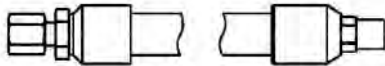
Valve Adapter for Struts and Accumulators

Model Usage: All

Warranty: Six Months



382-7486



FT3192

- High pressure inflating connector adapts to any valve with the thread dimensions of .305" – 32 THD
- Adapter and hose assembly can be used with both 9U-5617 oil refill unit and 175-5507 nitrogen charging group
- Valve has JIC 37° flare 7/16" – 20 THD
- One end 1/4 - 18 NPTF male and other end JIC 37° flare 7/16" – 20 female THD

Reference

KENR8106

Specifications		
Part Number	Description	Dimensions
FT3192	Adapter Hose Assembly	27.7 x 604 mm (1.1 x 23.78 in)
SAE 100R2 Type Hose		
Working Pressure	33,000 kPa (4786.2 psi)	
Min Burst Pressure	132,000 kPa (19145 psi)	

Part Number	Description	Dimensions	Weight
382-7486	Valve Assembly Adapter	39.3 x 17.5 mm (1.55 x .69 in)	.01 kg (.02 lb)
382-7487	Copper Sealing Washer	3.2 x 15.6 x 8.2 mm (.125 x .61 x .32 in)	.001 kg (.002 lb)

H-Link Bore Rework Tools for Cushion Hitch Tractors-Scrapers

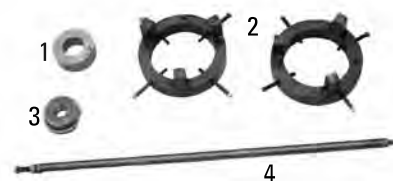
Model: 621, 623, 627, 631, 633, 637, 641, 651 and 657 Cushion Hitch Tractors-Scrapers

Warranty: Six Months

- Fabricated tools used with parts of 1P-4000 Line Boring Tool Group and other tools to remove bushings, rebore, and install oversized bushings in H-Link bores in bracket and hitch castings of cushion hitch tractor-scrapers
- Standard and oversized bushings available

Reference

SMHS6872, Special Instruction



H-Link Bores Rework Tools						
Item	Part No.	Description	Qty.	Remove	Rebore	Install
1	FT1241	Centering Ring	1		1	
2	FT1130-1	Fixture	2		1	
3	FT1299	Adapter (641, 651, 657) or	1	X		
3	FT1231	Adapter	1	X		
4	FT1242-1	Measuring Bar ¹	1		X	
Not shown	FT1243	Tool Bit			X	
Not shown	Not listed	1/2 in Drill (reversible)	1		X	

Table Notes¹

Not Shown					
Part Number	Description	Qty.	Remove	Rebore	Install
1P-1838	Adapter	1	--	--	X
1P-2344	Centering Ring	2	--	1	--
1P-2366	Holder Assembly ²	1	--	X	--
5B-0637	Nut	1	X	--	X
5F-7353	Thrust Washer	1	X	--	X
5F-7366	Screw - Forcing	1	X	--	X
5P-1630	Drive Adapter ²	1	--	X	--
5P-2981	Feed Assembly ²	1	--	X	--
6V-3160	Cylinder Group	1	X	--	X
7F-5283	Head	1	X	--	X
8S-6587	Adapter, 1 1/4 in	1	X	--	X

¹ FT1242-1 Bar can be used on all tractor-scrapers; former FT1242 Bar can be used for 631, 633, 637 Tractor-Scrapers only.

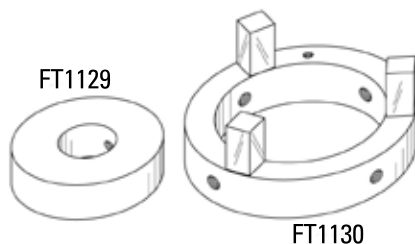
² Part of 1P-4000 Line Boring Tool Group

FT1129 Centering Rings

FT1130 Holding Fixture

Model: 641B, 651B, and 657B Tractor-Scrapers

Warranty: None



- Front horizontal hitch pin bore can become oversized due to normal wear
- Bore can be built up with weld and these tools used with 1P-4000 Line Boring Group to restore bore to correct size
- FT1129 Centering Ring: 2 required

Reference

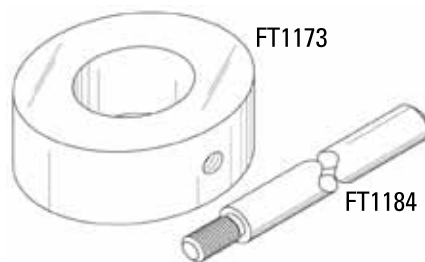
Service Letter, August 17, 1973

FT1173 Centering Rings

FT1184 Torsion Bar

Model: 627 and 627 Push-Pull Tractor-Scrapers

Warranty: None



- Used with FT1140 Fixture and 1P-4000 Line Boring Tool Group to rework front horizontal hitch pin bore
- FT1173 Centering Ring: 2 required

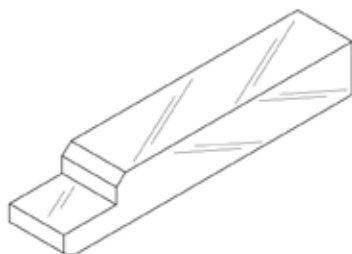
Reference

Service Letter, October 2, 1973

1U-9364 Strut Gauge

Model: 785 and 789 Off-Highway Trucks

Warranty: Six Months



- Used to measure/check for proper oil/nitrogen charge in front suspension cylinders
- Hold strut and spindle a specific distance apart, 265 mm (10.43 in), during nitrogen charging process (used with 175-5507 Nitrogen Charging Group)
- Weight: 5.1 kg (11.2 lb)

References

SENR4016; Service Manual; 785 Suspension Cylinders, Systems Operation, Testing and Adjusting

SENR3436; Service Manual; 789 Suspension Cylinders, Systems Operation, Testing and Adjusting

Part Number	Description
1U-9364	Strut Gauge

FT1680 Strut Gauge

Model: 769C, 773B and 777 Trucks; 768C, 772B and 776 Tractors

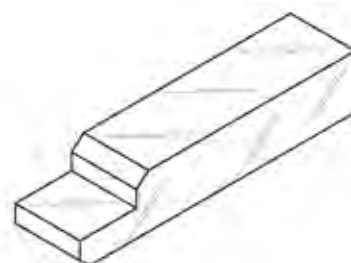
Warranty: None

- Used during oil and nitrogen charging procedure for front suspension cylinders (2 required)

Reference

Service Magazine, November 1, 1982

Part Number	Description
FT1103	Mast Hanger
FT1102	Store Rack



FT1229 Lifting Bars

Model: 215, 225, 235, 235C

Warranty: None

- In absence of appropriate overhead crane, use two FT1229 Lifting Bars, in combination with other tools, to remove and install upper frame and cab from undercarriage of 235 Excavator
- For fabrication instructions for specific machines by serial number, see FT1229 drawing

Reference

Service Manual



Cushion Hitch Accumulator Disassembly Tools

Model: All Current Tractor-Scrapers

Warranty: None

- Used for efficient and safe disassembly of cushion hitch accumulators on all current tractor-scrapers
- Used with standard 914.4 mm (36 in) long, 1/2 inch-13 threaded rod, standard 1/2 inch-13, nut and a flat washer

Part Number	Use
FT1253	Fixture used to remove pistons from 127.0 mm (5.0 in) diameter bore accumulators
FT1254	Fixture used to remove pistons from 209.6 mm (8.25 in) bore accumulators



FT1253

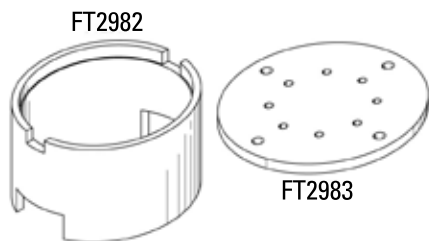
FT1253

FT2982 Spanner Socket, FT2983 Reaction Plate

Essential Tool

Model: 621F, 627F, 621G, 627G, 631G, 637G, 631E, 637E, 651E, and 657E Wheel Tractor Scrapers equipped with power augers

Warranty: None



- Used to remove and install auger drive gearbox nut on 153-5101 and 153-5099 Auger Groups
- Used with the 127-8458 Final Drive Disassembly and Assembly Bench
- Required installation torque: 14,778 N-m (10,900 ft-lb)
- Material: SAE1020 steel

FT0888 Pivot Bearing Adjusting Adapter

Model: 920 and 930 Wheel Loaders

Warranty: None

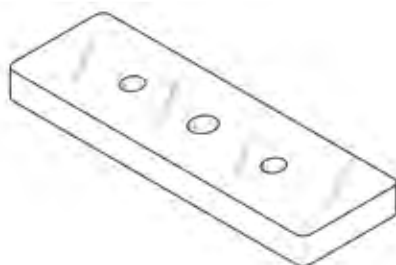


- Used for adjusting preload on hitch lower pivot pin bearing (2 required)

FT0601 Puller Bar

Model: J621 Elevating Scraper

Warranty: None



- Used to remove cover from input side of speed reducer

5P-2706 Chain Clamp Assembly

Model: Elevating Scraper

Warranty: Six Months

- Elevating scraper chain disassembly and assembly is simplified with the use of this tool
- Chain clamp jaws are applicable to the narrowest elevator chain currently in the Cat® products line
- Usable on the heaviest current elevator chain

Chain clamp jaws width	34.1 mm (1.38 in)
Load capacity	2 ton

(Continued)

5P-2706 Chain Clamp Assembly (Continued)

Model: Elevating Scraper

Warranty: Six Months

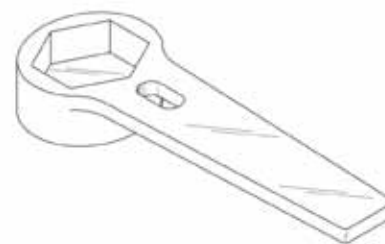
Part Number	Description
5P-2706	Chain Clamp Assembly
Service/Repair Parts	
1B-7411	Nut
3K-8282	Pin
2J-3507	Nut
1A-1935	Nut

FT1122 Drive Wrench

Model: J619 and J621 Elevating Scrapers

Warranty: None

- Used to facilitate installation of drive hub on elevator speed reducer



6V-0028 Wear Gauge

Model: TH350B (SLD1-Up), TH355B (JRK1-Up), TH360B (SLE1-Up), TH460B (SLF1-Up), TH560B (SLG1-Up)

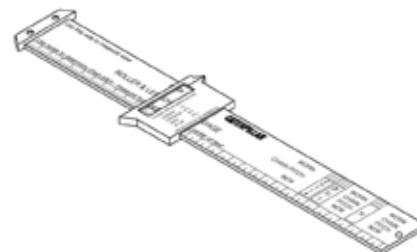
Warranty: Six Months

- Used to measure chain elongation on telescoping boom chain

Reference

REN5188-03; Service Manual; Testing and Adjusting TH350B, TH355B, TH360B, TH460B and TH560B Telehandlers Hydraulic System

Part Number	Description
6V-0028	Wear Gauge

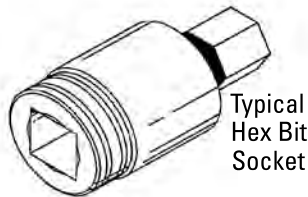


Implements, Frame, Hitch and Suspension

Hex Bit Sockets

Model: General Usage and 5000 Series Mining Excavators

Warranty: Six Months



Typical Hex Bit Socket

- Used to remove and install metric socket head cap screws from pumps
- Used with 3/4 inch and 1 inch drive ratchet and breaker bar
- 129-4552 Hex Bit Socket replaces discontinued 1U-9475
- 129-4553 Hex Bit replaces discontinued 1U-9477

Reference

SENR6058, Service Manual

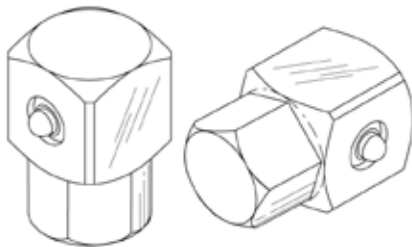
Part Number	Drive	Hex Size Bit	Max. Torque	Capscrew Size	Replacement Bit
1U-9474	1 in	22 mm	3075 N·m (2275 ft·lb)	M30	1U-9476 ¹
129-4552	1 in	27 mm	3125 N·m (2300 ft·lb)	M36	129-4553

¹Warranty: 6 Months

251-8155 Adapter Assembly

Model: 793 Off-Highway Trucks (4AR246-UP, 4GZ, ATY, CBR)

Warranty: Six Months



- Used to remove and install the six 7Y-5217 Socket Head Bolts used on rear suspension cylinder pins (3/4 inch Square Drive x 17 mm Hex)
- Used with 162-8718 Torque Wrench and the 6V-4170 3/4 inch Female Square Drive Adapter
- Required to access bolts in confined area with limited clearance between the bolt head and tire
- Works on any 793 Off-Highway Truck starting with 4AR246, or any 793 Off-Highway Truck earlier models that have been retrofitted with the anti-rotation flag plate
- Heat treated for added strength
- Equipped with retention pin to stay engaged in square drive adapter

References

793 Off-Highway Truck Disassembly and Assembly Manual, Rear Suspension Cylinder Remove and Install

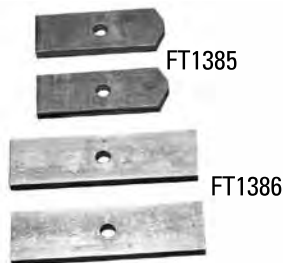
SEPD0774, Service Magazine Article, New Tooling Facilitates the Installation and Removal of Bolts on the Rear Suspension Cylinder

Part Number	Description
251-8155	Adapter Assembly

Plates

Model: 992C Wheel Loader

Warranty: None



- Used to check preload on bearings on main frame hitch assembly

Reference

992C Service Manual

Part Number	Qty.	Use
FT1385	2	Hitch upper bearings
FT1386	2	Hitch lower bearings

Upper and Lower Plate Groups

Essential Tool

Model: See below

Warranty: None

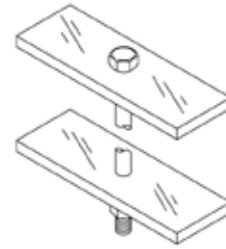
- Used to check bearing preload on main frame hitch assembly

Reference

994 Machine Systems Disassembly and Assembly Manual

FT2627 and FT2628 Upper and Lower Plate Groups

Part Number	Model	Material
Upper Plate Groups		
FT2627	994 Wheel Loader	1E-0170 steel (290 to 450 MPa yield)
FT2826	950GII and 962GII Wheel Loaders	SAE1018 steel
FT2828	988G Wheel Loader	SAE1018 steel
Lower Plate Groups		
FT2628	994 Wheel Loader	1E-0170 steel (290 to 450 MPa yield)
FT2825	950GII and 962GII Wheel Loaders	SAE1018 steel
FT2827	988G Wheel Loader	SAE1018 steel



4C-9416 Locknut Spanner Wrench

Model: AP-1050, AP-1000 and AP-800C Asphalt Pavers

Warranty: Six Months

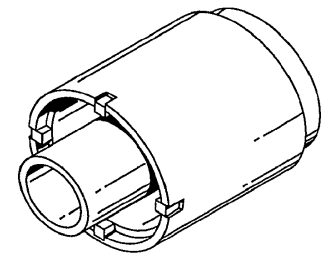
- Used to quickly and easily remove and install both 2H-3778 Spanner Nuts, the locknuts for Extend-A-Mat® B Screed extender sloper pivot pins (assembly requires an inner spanner nut, star washer, and outer spanner locknut)
- Used with 3/4 inch square drive torque wrench — torque specification for 2 nuts is 545 ± 25 N·m (400 ± 20 ft·lb)
- Due to its location, nut is extremely difficult to access using any other tooling
- Wrench uses an inner pilot to prevent it from slipping off during removal and installation of inner spanner nut (makes removal and installation much easier)
- Pilot also keeps wrench teeth engaged in spanner nut when removing and installing outer locknut (helps prevent slippage, resulting in damage to nut or injury to mechanic)
- Wrench is heat-treated for improved durability

Reference

KENR2527, Service Manual, Disassembly and Assembly

Outside diameter	88.9 mm (3.50 in)
Overall length	76.2 mm (3.00 in)
Spanner teeth	4, equally spaced
Tooth width	6.0 mm (0.24 in)
Square drive	3/4 in
Approximate weight	2 kg (5 lb)

Part Number	Description
4C-9416	Locknut Spanner Wrench

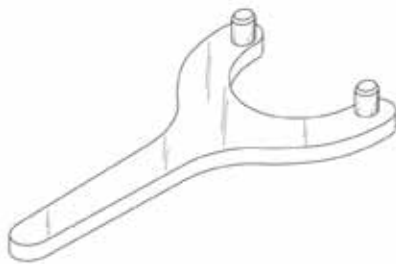


Pin Nut Spanner Wrenches

Essential Tool

Model: Demolition Tool Attachments

Warranty: None



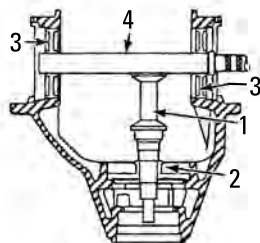
- Used to remove and install pin spanner nuts
- Works on spanner nuts from 102 to 330 mm (4.0 to 13.0 in)
- Easily fabricated tools reduce investment cost
- Reduces damage caused by using hammer and punch
- Allows safe removal of pin spanner nuts

Pin Nut Spanner Wrenches for Vibra Ram Models			
Part Number	Cylinder Pin Model	Arm Pin Model	Rotator Cylinder
FT2565	S12		
FT2566	S18		
FT2567	S25, S30, S40, P16, P20, P25, P28, P40, CR20, CR28	CR20, CR28	
FT2568	S50, S70		
FT2569		P16, P20, P28	
FT2570		S18, S25	
FT2571			
FT2572	CR50	P40	
FT2573		CR35	
FT2574		S30	
FT2575		S40, S70	
FT2576	S80		
FT2577		CR50	
FT2578		S50	
FT2579		P60	
FT2580		S80	
FT2743			S50, S130

Rotary Axle Pinion and Bevel Gear Tooling

Model: RM350 Reclaimer/Mixer

Warranty: Six Months



Pinion Bevel Gear Tooling

- Used to measure and align pinion to bevel gear (1U-5847, 129-7156, 129-7157, and 129-1758)
- When completely assembled in differential housing, tools provide stackup dimension of gear set and provide method to obtain shim pack measurement
- Tools are precisely machined to provide correct and accurate assembly adjustment using procedures provided in Service Manual

Item	Part Number	Description
1	129-7158	Measuring Pin
2	129-7157	Thrust Washer
3	129-7156	Shim
4	1U-5847	Measuring Shaft

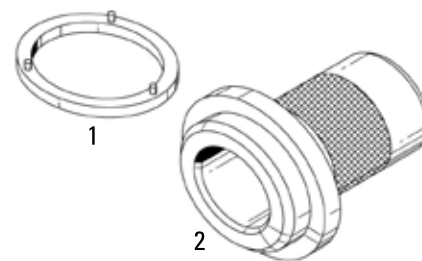
Measuring Ring and Seal Driver

129-7159 Measuring Ring

- Used to determine thickness of shim required for correct assembly of pinion input shaft
- No other measuring method will provide results as fast and accurately as using this tool

129-7160 Seal Driver

- Used to install differential oil seal after pinion and bevel gear have been assembled
- Driver ensures seal is installed to correct depth (also ensures seal is installed exactly perpendicular to shaft; eliminates cocked seals)
- Eliminates seal damage which can be caused during seal installation using conventional tooling
- Heat-treated for durability



References

KENR2560, Service Manual

KENR2573, Service Manual

Item	Part Number	Description
1	129-7159	Measuring Ring
2	129-7160	Seal Driver

Hitch Bearing Puller Adapters

Model: See Below

Warranty: Six Months

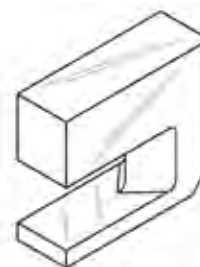
Part Number	Step Plate Diameter	Thread Size	Use	Model
5P-7398	95.3 x 101.6 mm (3.75 x 4.0 in)	1.25 in-12 thd	Removal and installation of hitch lateral pitch bushings	631D, 633D and 637D Tractor-Scrapers
5P-8601	82.6 x 88.9 mm (3.25 x 3.50 in)	1.25 in-12 thd	Removal and installation of appropriate size bushings and bearings	621B, 623B and 627B Scraper hitches
5P-7399	108 x 121 mm (4.25 x 4.75 in)	1.25 in-12 thd	Removal and installation of vertical hitch bearings	631D, 633D and 637D Scrapers

FT2773 Reaction Arm

Model: 365B Hydraulic Excavator

Warranty: None

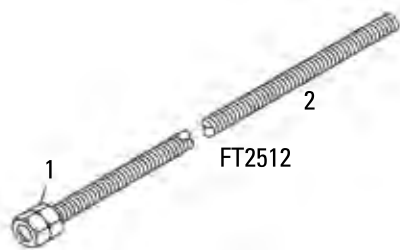
- Used to remove and install inner swing bearing bolts
- Used with canceled 1U-6221 Hydraulic Wrench HY-2XLCT and canceled 1U-6222 46 mm (1.81 in) Low Clearance Hex Link
- Fabricated from 1U-6228 Reaction Arm



Threaded Rod and Extended Hex Wrench

Model: TH62, TH63, TH82, and TH83 Telescopic Material Handler

Warranty: None

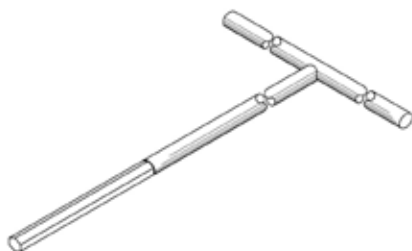


FT2512 Threaded Rod

- Used to remove and install boom wear pads
- Works as an extension handle to reach between box boom section to hold wear pads in place
- Provides a fast and easy way to capture wear pads by threading into end of wear pad

Item	Part Number	Description	Thread	Qty.
1	5P-7970	Nut	M8 x 1.25	2
2	1U-6341	Rod	M8 x 1.25	--

Extended Hex Wrench



FT2513 Extended Hex Wrench

- Used to remove chain underblock pin on third section of boom
- Tee handled hex key wrench has extended length to reach underblock pin
- Provides fast and easy removal and installation

336-6457 Socket Essential Tool

Model: TS220 Towed Scraper

Warranty: Six Months



- Used to disassemble and assemble rear horizontal hitch
- 4 3/8 inch, 6-point socket
- 3/4 inch square drive
- Welded steel construction
- Not recommended for use with impact wrench

Part Number	Description
336-6457	Socket

147-3508 Socket Wrench

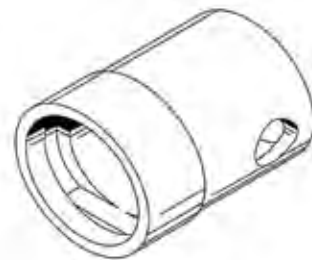
Essential Tool

Model: RT80, RT100, TH82, TH83, and TH103 Telehandler

Warranty: Six Months

- Used to make removal and installation of 081-6212 Nut faster and easier
- Provides adequate length to engage nut
- Socket pilots around nut for positive engagement
- Cross hole provided for bar or handle

Outside diameter	88.9 mm (3.50 in)
Inside diameter	76.2 mm (3.00 in)
Overall length	114.3 mm (4.50 in)
Cross hole diameter	27.0 mm (1.06 in)
Distance across flats	65.52 mm (2.580 in)



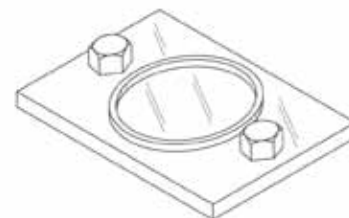
Part Number	Description
147-3508	Socket Wrench

FT3022 Support Plate

Model: TH580B (SLH) Telehandler

Warranty: None

- Used to position a lifting device directly under counterweights center of gravity
- Makes counterweight removal much easier



FT1362 Ladder

Model: 14G and 16G Motor Graders

Warranty: None

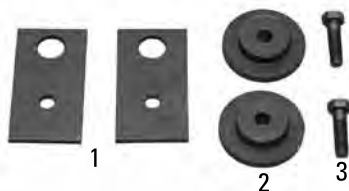
- Makes service work much easier when working on components at or near cab floor of 14G and 16G Motor Graders



5P-7321 Spacer

Model: D6D Tractor

Warranty: Six Months



- Required for tilting or installing semi-modular cab
- 5P-7321 Spacers and two plates needed for positioning dash on tractor when tilting or removing cab or when installing new cab

Reference

SMHS7062, Special Instruction

Item	Part Number	Description
1	5P-7322	Plate
2	5P-7321	Spacer
3	1A-1460	Bolt (1/2 - 13) (fork mounting hardware)

318-1491 Offset Wrench

Essential Tool

Model: 140M and 160M Monarch Series Motor Graders

Warranty: Six Months



- Used to remove and install cab bolts without removing fuel tank
- Reduces service time by eliminating fuel tank removal
- Required to properly tighten cab bolts to required 635 N·m (470 ft·lb) of torque during installation
- Durable welded construction
- 3/4 inch square drive x 36 mm, 12 point, box-end wrench

Reference

Service Manual, 140M and 160M Disassembly and Assembly

Part Number	Description
318-1491	Offset Wrench

FT2943 Cab Spacer

Model: Medium Wheel Loaders

Warranty: None



- Used to remove and install cab
- Used with 138-7575 Link Brackets
- Material: SAE4140 steel

Reference

Service Manual, 924G and 928G Power Train Disassembly and Assembly

307-4561 Block Gauge Assembly

Essential Tool

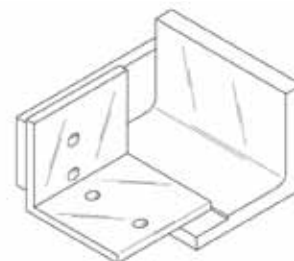
Model: D8, D9, D10 Track-Type Tractors applies to following serial number ranges for standard cabs: RJG1 – 892, RJS1 – 648, KPZ1 – 1375, J8B1 – 995

Warranty: Six Months

- Used to rework mounting holes in cab air filter bracket to provide proper installation
- Used as both a gauge block and a template to drill new holes
- Relocation of cab filter eliminates system leaks
- Tool will only be available for 2 years

Reference

REBE1668 Service Letter



Part Number	Description
307-4561	Block Gauge Assembly

312-6543 Block Gauge Assembly

Essential Tool

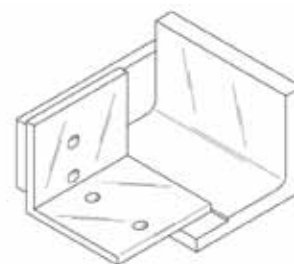
Model: D8, D9, D10 Track-Type Tractors applies to following serial number ranges for enhanced cabs: D8T-J8B 24 to 942, D8T-KPZ 325 to 1494, D9T-RJS 118 to 748, and D10T-RJG 105 to 938

Warranty: Six Months

- Used to rework in-cab mounting holes to provide proper installation for air conditioning filter bracket
- Used as both gauge block and template to drill new bracket holes
- Relocation of cab filter bracket eliminates system air leaks
- Tool will only be available for two years

Reference

REBE1668, Service Letter



Part Number	Description
312-6543	Block Gauge Assembly

258-5686 Impact Socket

Essential Tool

Model: 789A (9ZC1-UP), 789B (7EK1-UP), and 789C (2BW1-UP) Off- Highway Trucks

Warranty: Six Months

- Used to remove and install bolts securing cab support assemblies (outriggers) to frame assembly
- Used with 222-3054 Impact Wrench or other similar tool
- 2-step outside diameter provides required clearance
- Industrial finish helps prevent rust and corrosion
- 1 inch square drive with 1 1/2 inch 6-point socket opening

Reference

SEBE9071, Service Letter, Product Improvement Program for Inspecting and/or Replacing the Rear Cab Support on Certain 789 Off-Highway Trucks

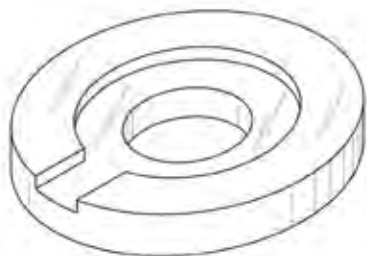


Part Number	Description
258-5686	Impact Socket

FT1211 Gauging Washer

Model: 613 Tractor-Scrapers

Warranty: None



- Replaces 2P-8288 Washer
- Used to determine shim thickness for lower vertical hitch pin

Reference

GMG02109, Special Instruction

5P-7323 Bearing Nut Spanner Wrench

Model: 988B

Warranty: Six Months



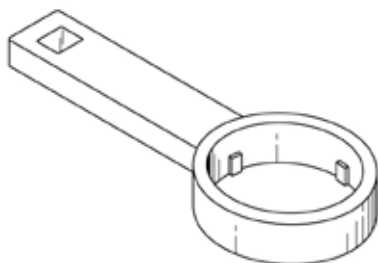
- Used to remove and install spanner nut which retains bearing in implement pump drive on 988B Wheel Loaders

Part Number	Description
5P-7323	Bearing Nut Spanner Wrench

219-0476 Spanner Wrench

Model: 570B and 580B Harvesters

Warranty: Six Months



- Used to remove and install 161-5560 Spanner Nut (articulation hitch)
- Used with 3/4 inch drive torque wrench
- Effective torque wrench adapter length is 200 mm (7.87 in) (example: If required torque is 500 N·m [369 ft-lb] and if 9U-5007 Torque Wrench is used, dial reading should be 420 N·m [310 ft-lb])

References

REN6145, Service Manual, Machine Systems Disassembly and Assembly

SENR8203, Service Manual, Vehicle Systems Disassembly and Assembly (D400D)

Part Number	Description
219-0476	Spanner Wrench

Pin Driver Caps

Essential Tool

Model: 345C, 365C, 385C Hydraulic Excavators

Warranty: Six Months

- Used to protect linkage pins from damage during installation
- Longer thread engagement for thicker flag pins
- Heat-treated for added durability
- Side holes in head allow pins to be installed or removed using a spanner wrench

Reference

Disassembly and Assembly Service Manual for 345C, 365C, and 385C



Part Number	Thread Size	Thread Length
276-8831	M30 x 3.5	51.1 mm (2.01 in)
276-8833	M36 x 4.0	58.5 mm (2.30 in)
276-8834	M48 x 5.0	71.5 mm (2.81 in)

FT2929 Spanner Wrench

Model: 570B and 580B Harvesters

Warranty: None

- Used to remove and install 161-5558 and 156-0093 Spanner Nuts on boom assembly
- Used with 3/4 inch drive torque wrench

Reference

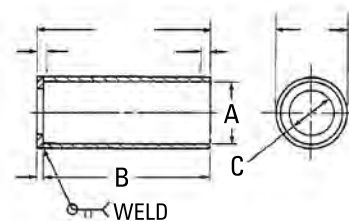
REN6145, Service Manual, Machine Systems Disassembly and Assembly



Summary of Receiving Sleeves, Adapter Plates, Pin Driver Caps, Receiving Sleeves with Adapters

Receiving Sleeves

		A	B	C
		Maximum	Maximum	Stud Hole
Part Number	Description	Pin Diameter	Pin Length	Diameter
FT2544	Receiving Sleeve	305.0 mm (12.00 in)		
FT-2729	Receiving Sleeve	303.0 mm (11.93 in)	685.0 mm (26.97 in)	Open end (4C-9492)
FT-2384	Receiving Sleeve Assembly	208.0 mm (8.19 in)	550.0 mm (21.65 in)	Open end (4C-9490)
FT-2545	Receiving Sleeve	184.15 mm (7.25 in)		165.0 mm (6.50 in)
FT-0768 (pin holder)	Receiving Sleeve Assembly	148.0 mm (5.83 in)	127.0 mm (5.00 in)	Open end (4C-9490)
FT-2549	Receiving Sleeve	130.0 mm (5.12 in)	140.0 mm (5.51 in)	70.0 mm (2.76 in)



(Continued)

Implements, Frame, Hitch and Suspension

Summary of Receiving Sleeves, Adapter Plates, Pin Driver Caps, Receiving Sleeves with Adapters (Continued)

		(A) Maximum	(B) Maximum Pin	(C) Stud Hole
Part Number	Description	Pin Diameter	Length	Diameter
124-4640	Sleeve Assembly - Receiving	254 mm (10 in)	450 mm (17.72 in)	--
124-4641	Sleeve - Receiving	263 mm (10.35 in)	216 mm (8.50 in)	Open end (9U-6501)
134-8466	Sleeve Assembly - Receiving	200 mm (7.87 in)	1,322 mm (52.05 in)	68.0 mm (2.68 in)
134-8470	Receiving Sleeve (Accessories)	160 mm (6.30 in)	--	Open end
134-8471	Receiving Sleeve (Accessories)	170.3 mm (6.70 in)	1,315 mm (51.77 in)	Open end
161-1783	Receiver Sleeve	220 mm (8.66 in)	1,550 mm (61.03 in)	--
1M-6756	Sleeve Assembly	166 mm (6.54 in)	202 mm (7.95 in)	33.0 mm (1.30 in)
1U-6202	Puller Assembly - Pin	243 mm (9.57 in)	450 mm (17.72 in)	68.0 mm (2.68 in)
4C-8163	Sleeve Assembly	163 mm (6.42 in)	890 mm (35.04 in)	70.0 mm (2.76 in)
4C-9491	Receiving Sleeve	227 mm (8.94 in)	300 mm (11.81 in)	52.5 mm (2.07 in)
4C-9493	Sleeve	227 mm (8.94 in)	160 mm (6.30 in)	52.5 mm (2.07 in)
5P-7370	Sleeve Assembly	198 mm (7.80 in)	180 mm (7.09 in)	101.0 mm (3.98 in)
6V-2072	Sleeve Assembly	176 mm (6.93 in)	240 mm (9.45 in)	40.0 mm (1.58 in)
6V-2097	Receiving Sleeve	130 mm (5.12 in)	75 mm (2.95 in)	39.0 mm (1.54 in)
6V-2098	Sleeve	112 mm (4.41 in)	76 mm (2.99 in)	39.0 mm (1.54 in)
6V-2108	Receiving Sleeve	106 mm (4.17 in)	74 mm (2.91 in)	Open end (129-6672)
6V-6982	Sleeve Assembly	28 mm (1.10 in) ¹	125 mm (4.92 in) ¹	Approx. 25.0 mm (0.98 in)
7F-6068	Sleeve Assembly	100 mm (3.94 in)	215 mm (8.46 in)	Open end (5P-8713)
9S-5431	Sleeve Assembly	149 mm (5.87 in)	187 mm (7.36 in)	101.6 mm (4.00 in)
9S-5564	Sleeve Assembly	115 mm (4.53 in)	431 mm (16.97 in)	33.0 mm (1.30 in)
9S-5565	Sleeve Assembly	74 mm (2.91 in)	355 mm (13.98 in)	33.0 mm (1.30 in)
9U-5671	Receiver Sleeve Adapter ²	36 mm (1.42 in)	98 mm (3.86 in)	Open end
9U-6706	Puller Assembly (Cylinder Pins)	182 mm (7.17 in)	438 mm (17.24 in)	83.0 mm (3.27 in)
9U-6791	Receiving Sleeve	244 mm (9.61 in)	1,800 mm (70.87 in)	140.0 mm (5.51 in)
9U-6792	Puller Assembly - Pin	201 mm (7.91 in)	1,825 mm (71.85 in)	83.0 mm (3.27 in)
9U-7765	Receiving Sleeve	284 mm (11.18 in)	762 mm (30 in)	Open end (9U-6501)

¹ Approximate size

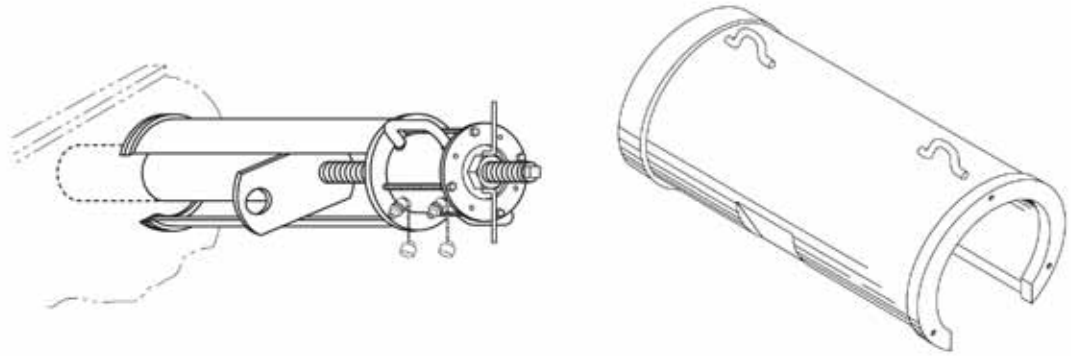
² 9U-5671 Sleeve 36.0 mm (1.42 in) 98.0 mm (3.86 in) Open end

Receiving Flag Sleeves

		Maximum	Maximum	Stud Hole	Flag
Part Number	Description	Pin Diameter	Pin Length	Diameter	Clearance
FT-2457 (9U-6750)	Receiving Sleeve Assembly	214.0 mm (8.43 in)	127.0 mm (5.00 in)	open end (4C-9492)	164.0 mm (6.46 in)
FT-2503 (9U-6752)	Receiving Sleeve	214.0 mm (8.43 in)	1143.0 mm (45.00 in)	70.0 mm (2.76 in)	164.0 mm (6.46 in)

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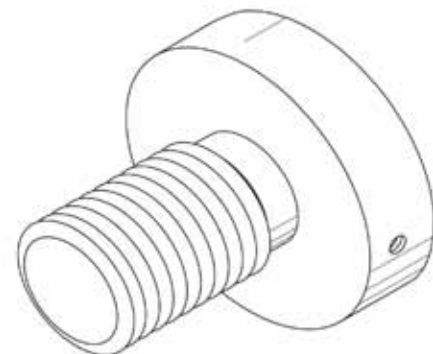
Receiving Flag Sleeves (Continued)



Part Number	Description	Maximum Pin	Maximum Pin	Stud Hole	Flag Clearance
		Diameter	Length	Diameter	Size
137-8792	Sleeve Assembly - Bearing	238 mm (9.37 in)	305 mm (12.01 in)	68.0 mm (2.68 in)	135.0 mm (5.31 in)
141-1785	Sleeve Assembly - Receiving	144 mm (5.67 in)	1,140 mm (44.88 in)	68.0 mm (2.68 in)	146.0 mm (5.75 in)
155-8191	Sleeve Group (992G)	313 mm (12.32 in)	1,473.8 mm (58.02 in)	68.0 mm (2.68 in)	234.0 mm (9.21 in)
237-9180	Receiving Sleeve Assembly	247.7 mm (9.75 in)	545 mm (21.46 in)	68.0 mm (2.68 in)	165.0 mm (6.50 in)
287-2153	Sleeve Assembly	152 mm (5.98 in)	812 mm (31.97 in)	36.0 mm (1.40 in)	152.0 mm (6.00 in)
323-7335	Sleeve Assembly	298 mm (11.73 in)	660 mm (25.98 in)	70.0 mm (2.76 in)	203.2 mm (8.00 in)
4C-8149	Sleeve Assembly	298 mm (11.73 in)	660 mm (25.98 in)	70.0 mm (2.76 in)	203.2 mm (8.00 in)
5P-7288	Sleeve Assembly, 215 Excavator	106 mm (4.17 in)	419 mm (16.50 in)	32.5 mm (1.28 in)	95.0 mm (3.74 in)
6V-4035	Sleeve Assembly	125 mm (4.92 in)	250 mm (9.84 in)	35.0 mm (1.38 in)	118.57 mm (4.67 in)
8T-3198	Sleeve Assembly	42.5 mm (1.67 in)	190 mm (7.48 in)	17.5 mm (0.69 in)	28.0 mm (1.10 in)
9S-5433	Puller Adapter ¹	150.9 mm (5.94 in)	158.8 mm (6.25 in)	Open end	147.3 mm (5.80 in)
9U-5266	Sleeve Assembly	125 mm (4.92 in)	415 mm (16.34 in)	35.0 mm (1.38 in)	138.6 mm (5.46 in)
9U-5340	Receiver Sleeve	125 mm (4.92 in)	300 mm (11.81 in)	Open end	138.6 mm (5.46 in)
9U-6751	Sleeve Assembly	214 mm (8.43 in)	330 mm (12.99 in)	52.0 mm (2.05 in)	164.0 mm (6.46 in)
9U-6752	Sleeve Assembly	214 mm (8.43 in)	1,143 mm (45 in)	52.0 mm (2.05 in)	164.0 mm (6.46 in)

¹ Accessories

Pin Driver Cap Specifications



(Continued)

Implements, Frame, Hitch and Suspension

Pin Driver Cap Specifications (Continued)

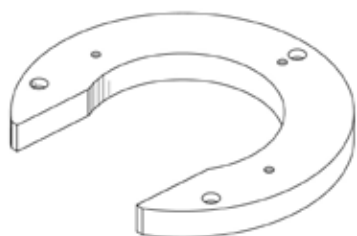
Part Number	Description	Thread Size	Head	
			Diameter	Thread Length
276-8831	Pin Driver Caps	M30 x 3.5	63.5 mm (2.50 in)	51.1 mm (2.01 in)
276-8833	Pin Driver Caps	M36 x 4.0	88.9 mm (3.50 in)	58.5 mm (2.30 in)
276-8834	Pin Driver Caps	M48 x 5.0	101.6 mm (4 in)	71.5 mm (2.81 in)
4C-9485	Pin Driver Caps	M30 x 3.5	63.5 mm (2.50 in)	29.5 mm (1.16 in)
9S-5561	Pin Driver Caps	1 1/2-12	88.9 mm (3.50 in)	35.8 mm (1.41 in)
9S-5562	Pin Driver Caps	1 1/4-12	63.5 mm (2.50 in)	29.5 mm (1.16 in)
9S-5563	Pin Driver Caps	1-14	50.8 mm (2 in)	23.1 mm (0.91 in)
9U-5342	Pin Driver Caps	M24 x 3.0	50.8 mm (2 in)	31.8 mm (1.25 in)
9U-6225	Pin Driver Caps	M36 x 4.0	88.9 mm (3.50 in)	38.6 mm (1.52 in)
9U-6758	Pin Driver Cap (installation only)	M48 x 5.0	101 mm (3.98 in)	51.6 mm (2.03 in)

Adapter Plates



Part Number	Description	Maximum
		Pin Diameter
124-4637	Adapter Plate	102 mm (4.02 in)
192-5512	Adapter Plate	192 mm (7.56 in)
192-5513	Adapter Plate	150 mm (5.91 in)
9U-5341	Adapter Plate Assembly	104 mm (4.09 in)
9U-6226	Pin Puller Adapter, M36 x 4 thread (not shown)	63.5 mm (2.50 in)
9U-6501	Plate - Head Puller	276 mm (10.87 in)
9U-6755	Adapter Plates	235 mm (9.25 in)
9U-6756	Adapter Plates	151 mm (5.94 in)

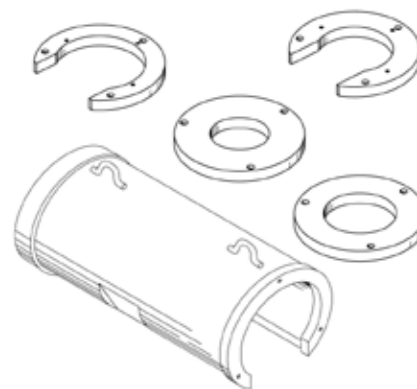
Adapter Flag Plates



Part Number	Description	Maximum	Flag Clearance
		Pin Diameter	Size
162-7189	Adapter Group - Plate	93 mm (3.66 in)	93.0 mm (3.66 in)
192-5510	Adapter Plate	260 mm (10.24 in)	234.0 mm (9.21 in)
192-5511	Adapter Plate	210 mm (8.27 in)	203.0 mm (7.99 in)
1U-6150	Adapter Plates	156 mm (6.14 in)	130.0 mm (5.12 in)
9U-6754	Adapter Plates	187 mm (7.36 in)	130.0 mm (5.12 in)
9U-6757	Adapter Plates	196 mm (7.72 in)	164.0 mm (6.46 in)

Receiving Sleeves with Adapters

Adapter Plate Part No.	Used with Receiving Sleeve Part No.
1U-6150	9U-6751, 9U-6752
9U-6501	9U-7765
9U-6756	9U-6751, 9U-6752
9U-6757	9U-6752
9U-6755	9U-6751, 9U-6752
9U-6754	9U-6751, 9U-6752
192-5513	155-8191
192-5511	FT2729, 155-8191
192-5510	FT2729, 155-8191
192-5512	155-8191
124-4637	124-4640, 124-4641
161-1783	9U-6742
154-7387	9U-6751, 9U-6752
9U-5341	9U-5266



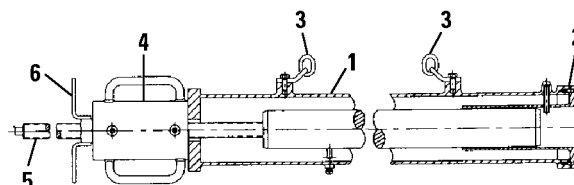
Linkage Pin and Bearing Removal Tools

Model: 5110 Excavator

Warranty: Six Months

- Used to remove all linkage pins and bearings
- Used with general tooling listed in "General Tooling Used for All Pins"
- Receiving sleeve assembly is easily suspended with lifting link brackets (supplied with receiving sleeve)
- Only 1 receiving sleeve is required for this operation (sleeve is adapted for other pin diameters by using appropriate receiving sleeve adapter assembly)

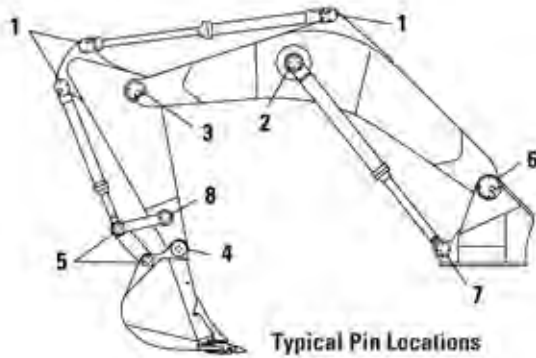
Items with no Part Number	
Item	Description
3	Linkage Pin



Typical Receiving Sleeve Usage		
Item	Part Number	Description
1 ¹	134-8466	Sleeve Assembly - Receiving
4	316-1491	Cylinder Group (100T) 6 in stroke
5	136-5747	Stud - Puller (M48 x 5)
6	9U-6810	Nut - Fast Runner (M48 x 5.0)
General Tooling Used for All Pins		
--	3S-6224	Pump Group - Hydraulic (115V)
--	6D-7726	Hydraulic Hose (2)
--	8S-8033	Pump Grp - Hydraulic (230V)

¹Item 1 and Item 2

Typical Pin Locations



Item	Description
1	Cylinder pin
2	Cylinder pin
3	Stick-to-Boom Pin
4	Bucket Pin
5	Bucket Linkage Pin
6	Boom-to-Swing Frame Pin
7	Cylinder Pin
8	Bucket Linkage Pin
Included in Pin Specific tooling:	
Hydraulic Cylinder (150 ton) ¹ , used with Pin No. 2, No. 3, No. 4, and No. 6	

Pin Specific Tooling	
Part Number	Description
Pin No. 1	
9U-6810	Nut - Fast Runner (M48 x 5.0)
1U-6202	Puller Assembly - Pin
316-1491	Cylinder Group (100T) 6 in stroke
9U-6814	Stud - Puller (M48 x 5)
Pin No. 2	
134-8466	Sleeve Assembly - Receiving
134-8470	Receiving Sleeve (Accessories)
4C-8150	Rod Assembly - Threaded
9U-6800	Nut - Speed (M64)
316-1490	Cylinder Group
Pin No. 3	
134-8466	Sleeve Assembly - Receiving
4C-8150	Rod Assembly - Threaded
9U-6800	Nut - Speed (M64)
316-1490	Cylinder Group
Pin No. 4	
134-8466	Sleeve Assembly - Receiving
4C-8150	Rod Assembly - Threaded
9U-6800	Nut - Speed (M64)
134-8471	Receiving Sleeve (Accessories)
316-1490	Cylinder Group
Pin No. 5	
134-8466	Sleeve Assembly - Receiving
136-5747	Stud - Puller (M48 x 5)
9U-6810	Nut - Fast Runner (M48 x 5.0)

Pin Specific Tooling	
Part Number	Description
Pin No. 5 (Continued)	
316-1491	Cylinder Group (100T) 6 in stroke
316-1490	Cylinder Group
Pin No. 6	
4C-8150	Rod Assembly - Threaded
9U-6800	Nut - Speed (M64)
1U-6202	Puller Assembly - Pin
316-1490	Cylinder Group
Pin No. 7	
1U-6202	Puller Assembly - Pin
9U-6810	Nut - Fast Runner (M48 x 5.0)
9U-6814	Stud - Puller (M48 x 5)
136-5747	Stud - Puller (M48 x 5)
316-1491	Cylinder Group (100T) 6 in stroke
Pin No. 8	
9U-6810	Nut - Fast Runner (M48 x 5.0)
134-8466	Sleeve Assembly - Receiving
136-5747	Stud - Puller (M48 x 5)
316-1491	Cylinder Group (100T) 6 in stroke

Part Specifications

Part Number	Description	Maximum Pin Diameter	Maximum Pin Length	Maximum Rod Diameter	Maximum Capacity (Tons)	Thread	Thread Size	Length	Use
134-8466	Sleeve Assembly - Receiving	200 mm (7.87 in)	1,322 mm (52 in)	64 mm (2.5 in)	136 t (150 ton)	--	--	--	As a receiving sleeve for all long pins on vehicle. By itself for boom-to-stick pin
134-8470	Receiving Sleeve (Accessories)	160 mm (6.30 in)	--	--	136 t (150 ton)	--	--	--	With 134-8466 to accept a 160 mm (6.3 in) diameter pin
134-8471	Receiving Sleeve (Accessories)	170 mm (6.70 in)	1,315 mm (51.8 in)	--	136 t (150 ton)	--	--	--	With 134-8466 to accept a 170 mm (6.7 in) diameter pin
136-5747	Stud - Puller (M48 x 5)	--	2,415 mm (95.1 in)	--	--	M48 x 5	2415 mm (8 ft)	--	--

Adapter Plate and Receiving Sleeve Assembly

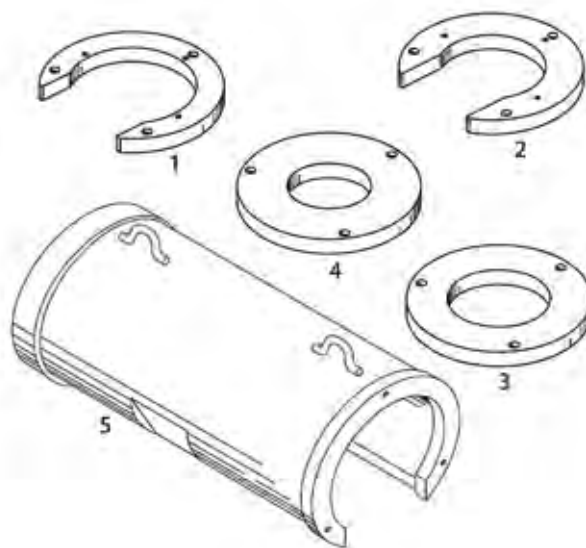
Essential Tool

Model: 5110B Excavator

Warranty: Six Months

- Used to remove boom to frame pin, stick to boom pin, bucket to stick pin, and all related hydraulic cylinder mounting pins
- Adapter plates attach to FT2729 and 155-8191 Receiving Sleeves allowing the removal of smaller diameter linkage pins with larger diameter receiving sleeves, thus eliminating the need for many additional sleeves.
- Used with 3S-6224 Hydraulic Pump (115 VAC) or 8S-8033 Hydraulic Pump (230 VAC) and 6D-7726 Hydraulic Hose

Item	Part Number	Description	Maximum Pin Diameter	Maximum Capacity
5	FT2729	Receiving Sleeve		150 tons

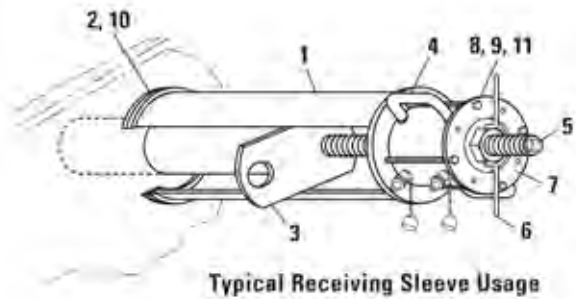


Item	Part Number	Description	Maximum Pin Diameter	Maximum Capacity
1	192-5510	Adapter Plate	260 mm (10.2 in)	150 tons
2	192-5511	Adapter Plate	210 mm (8.3 in)	150 tons
3	192-5512	Adapter Plate	192 mm (7.6 in)	150 tons
4	192-5513	Adapter Plate	150 mm (5.9 in)	150 tons

Implements, Frame, Hitch and Suspension

Typical Receiving Sleeve Usage

Item	Description
1	Receiving Sleeve Assembly
2	Adapter Plate
3	Linkage Pin
4	Hydraulic Cylinder
5	Puller Stud
6	Fast Runner Nut
7	Retaining Plate
8	Rod
9	Nut
10	Socket Head Bolt
11	Washer

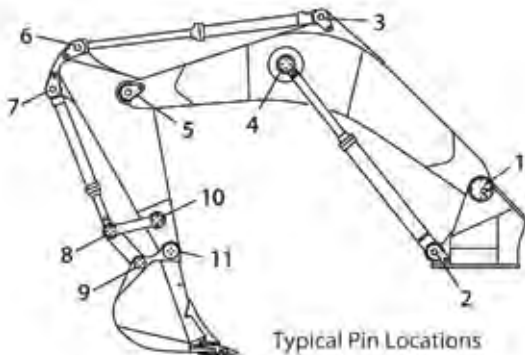


Typical Receiving Sleeve Usage

Vehicle System Tools

Pin Specific Tooling No. 1-5

Pin Specific Tooling		
Part Number	Description	Qty.
FT2729	Receiving Sleeve ¹	1
¹ Tooling for Pin No. 1, Pin No. 2, Pin No. 3, Pin No. 6 and Pin No. 7		



Typical Pin Locations

(Continued)

Pin Specific Tooling No. 1-5 (Continued)

Pin Specific Tooling		
Part Number	Description	Qty.
Pin No. 1		
8T-0271	Bolt - Hex Socket Head (M10 x 1.5)	3
316-1490	Cylinder Group	1
192-5511	Adapter Plate	1
4C-8152	Retaining Plate	1
9T-2240	Rod (M10)	4
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
9U-6800	Nut - Speed (M64)	1
Pin No. 2		
192-5511	Adapter Plate	1
4C-8152	Retaining Plate	1
8T-0271	Bolt - Hex Socket Head (M10 x 1.5)	3
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
9T-2240	Rod (M10)	4
316-1491	Cylinder Group (100T) 6 in stroke	1
9U-6815	Puller Stud (M48) 62 in	1
9U-6903	Nut - Speed (M48)	1
Pin No. 3		
9U-6815	Puller Stud (M48) 62 in	1
192-5510	Adapter Plate	1
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
9T-2240	Rod (M10)	4
316-1491	Cylinder Group (100T) 6 in stroke	1
4C-8152	Retaining Plate	1
8T-0271	Bolt - Hex Socket Head (M10 x 1.5)	3
9U-6903	Nut - Speed (M48)	1
Pin No. 4		
316-1490	Cylinder Group	1
155-8191	Sleeve Group (992G)	1
192-5511	Adapter Plate	1
9U-6800	Nut - Speed (M64)	1
4C-8152	Retaining Plate	1
8T-0271	Bolt - Hex Socket Head (M10 x 1.5)	3
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
9T-2240	Rod (M10)	4
9U-6702	Rod Assembly - Threaded	1
Pin No. 5		
316-1490	Cylinder Group	1
4C-8152	Retaining Plate	1
192-5510	Adapter Plate	1
8T-0271	Bolt - Hex Socket Head (M10 x 1.5)	3
8T-4121	Washer (M10)	4

(Continued)

Implements, Frame, Hitch and Suspension

Pin Specific Tooling No. 1-5 (Continued)

Pin Specific Tooling		
Part Number	Description	Qty.
Pin No. 5 (Continued)		
8T-4133	Nut (M10)	4
9T-2240	Rod (M10)	4
155-8191	Sleeve Group (992G)	1
9U-6702	Rod Assembly - Threaded	1
9U-6800	Nut - Speed (M64)	1

Pin Specific Tooling No. 6-11

Pin Specific Tooling		
Part Number	Description	Qty.
Pin No. 6		
9U-6815	Puller Stud (M48) 62 in	1
192-5510	Adapter Plate	1
8T-0271	Bolt - Hex Socket Head (M10 x 1.5)	3
316-1491	Cylinder Group (100T) 6 in stroke	1
4C-8152	Retaining Plate	1
9T-2240	Rod (M10)	4
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
9U-6903	Nut - Speed (M48)	1
Pin No. 7		
192-5510	Adapter Plate	1
8T-0271	Bolt - Hex Socket Head (M10 x 1.5)	3
316-1491	Cylinder Group (100T) 6 in stroke	1
4C-8152	Retaining Plate	1
9T-2240	Rod (M10)	4
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
9U-6815	Puller Stud (M48) 62 in	1
9U-6903	Nut - Speed (M48)	1
Pin No. 8		
316-1490	Cylinder Group	1
192-5512	Adapter Plate	1
8T-0271	Bolt - Hex Socket Head (M10 x 1.5)	3
4C-8152	Retaining Plate	1
9T-2240	Rod (M10)	4
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
155-8191	Sleeve Group (992G)	1
9U-6702	Rod Assembly - Threaded	1
9U-6800	Nut - Speed (M64)	1
Pin No. 9		
8T-4121	Washer (M10)	4
316-1490	Cylinder Group	1
192-5513	Adapter Plate	1
8T-0271	Bolt - Hex Socket Head (M10 x 1.5)	3

(Continued)

Pin Specific Tooling No. 6-11 (Continued)

Pin Specific Tooling		
Part Number	Description	Qty.
Pin No. 9 (Continued)		
4C-8152	Retaining Plate	1
9T-2240	Rod (M10)	4
8T-4133	Nut (M10)	4
155-8191	Sleeve Group (992G)	1
9U-6800	Nut - Speed (M64)	1
9U-6702	Rod Assembly - Threaded	1
Pin No. 10		
192-5513	Adapter Plate	1
8T-0271	Bolt - Hex Socket Head (M10 x 1.5)	3
316-1491	Cylinder Group (100T) 6 in stroke	1
4C-8152	Retaining Plate	1
9T-2240	Rod (M10)	4
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
9U-6903	Nut - Speed (M48)	1
155-8191	Sleeve Group (992G)	1
136-5747	Stud - Puller (M48 x 5)	1
Pin No. 11		
316-1490	Cylinder Group	1
192-5512	Adapter Plate	1
8T-0271	Bolt - Hex Socket Head (M10 x 1.5)	3
4C-8152	Retaining Plate	1
9T-2240	Rod (M10)	4
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
155-8191	Sleeve Group (992G)	1
9U-6702	Rod Assembly - Threaded	1
9U-6800	Nut - Speed (M64)	1

Bearing Puller Adapters and Installer Plates

Essential Tool

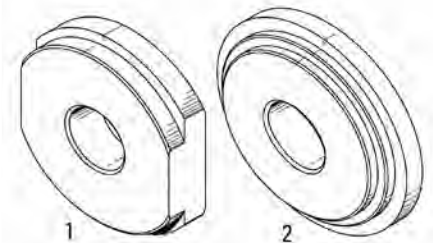
Model: 5110B Excavator

Warranty: Six Months

- Used to remove and install sleeve bearings from excavator linkage
- Used with 3S-6224 Hydraulic Pump (115 VAC), 8S-8033 Hydraulic Pump (230 VAC), or (9U-6600) Hydraulic Hand Pump
- Also requires a 6D-7726 Hose Assembly
- Designed to install bearings to proper depth without measuring
- Complete range of tools are available to service each linkage location

Reference

REN3371, Service Manual, 5110B Excavator Machine Systems Disassembly and Assembly



(Continued)

Bearing Puller Adapters and Installer Plates (Continued)

Essential Tool

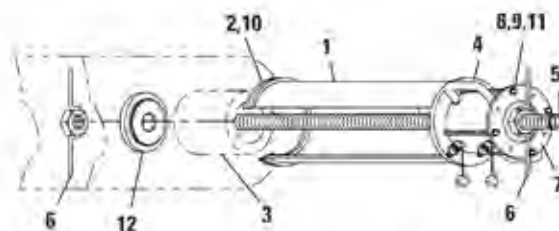
Model: 5110B Excavator

Warranty: Six Months

Bearing Puller Adapters and Installer Plates						
Item	Part No.	Description	Bearing ID	Bearing OD	Bearing Installation Depth	Maximum Capacity
1	197-6681	Bearing Puller Adapter	200.0 mm (7.87 in)	225.0 mm (8.86 in)		150 tons
	197-6682	Bearing Puller Adapter	170.0 mm (6.69 in)	195.0 mm (7.68 in)		150 tons
	197-6683	Bearing Puller Adapter	150.0 mm (5.90 in)	170.0 mm (6.69 in)		150 tons
2	197-6684	Bearing Puller Adapter	120.0 mm (4.72 in)	140.0 mm (5.51 in)		150 tons
	197-6685	Bearing Installer Plate				
		Side 1	180.0 mm (7.08 in)		10.0 mm (0.39 in)	
		Side 2	180.0 mm (7.08 in)		Flush	
	197-6686	Bearing Installer Plate				
		Side 1	120.0 mm (4.72 in)		10.0 mm (0.39 in)	
		Side 2	170.0 mm (6.69 in)		10.0 mm (0.39 in)	
	197-6687	Bearing Installer Plate				
		Side 1	150.0 mm (5.90 in)		10.0 mm (0.39 in)	
	Side 2	200.0 mm (7.87 in)		10.0 mm (0.39 in)		

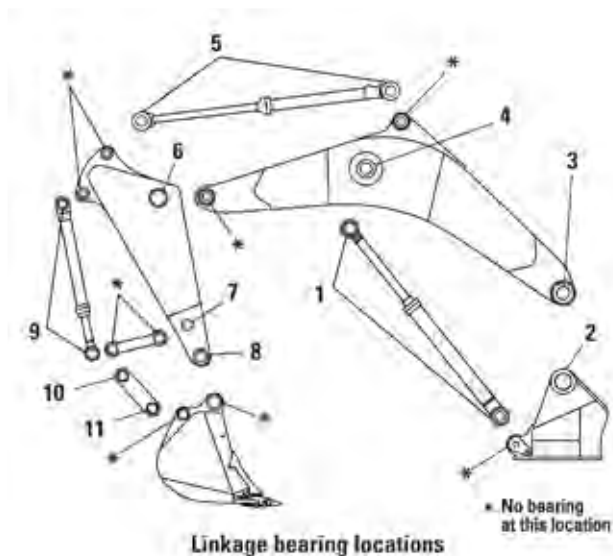
Typical Removal and Installation Tooling

Refer to "Pin Specific Tooling" for Part Numbers	
Item	Description
1	Receiving Sleeve Assembly
2	Adapter Plate
3	Sleeve Bearing
4	Hydraulic Cylinder
5	Puller Stud
6	Fast Runner Nut
7	Retaining Plate
8	Rod
9	Nut
10	Socket Head Bolt
11	Washer
12	Bearing Puller Adapter or Bearing Installer Plate



Typical Removal and Installation Tooling

Linkage Bearing Locations



Linkage bearing locations

(Continued)

Implements, Frame, Hitch and Suspension

Linkage Bearing Locations (Continued)

Removal Tooling		
Part Number	Description	Qty.
Bearing No. 1, 5, and 9		
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
137-8792	Sleeve Assembly - Bearing	1
138-1135	Bearing Puller Plate	1
9T-2240	Rod (M10)	4
9U-6800	Nut - Speed (M64)	2
4C-8152	Retaining Plate	1
316-1490	Cylinder Group	1
Bearing No. 2, 3, and 6		
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
137-8792	Sleeve Assembly - Bearing	1
9T-2240	Rod (M10)	4
4C-8152	Retaining Plate	1
9U-6800	Nut - Speed (M64)	2
197-6681	Bearing Puller Adapter	1
316-1490	Cylinder Group	1
Bearing No. 4		
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
9T-2240	Rod (M10)	4
9U-6751	Sleeve Assembly	1
9U-6753	Retaining Plate	1
9U-6815	Puller Stud (M48) 62 in	1
9U-6903	Nut - Speed (M48)	2
316-1491	Cylinder Group (100T) 6 in stroke	1
197-6681	Bearing Puller Adapter	1
Bearing No. 7		
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
9T-2240	Rod (M10)	4
137-8792	Sleeve Assembly - Bearing	1
4C-8152	Retaining Plate	1
9U-6800	Nut - Speed (M64)	2
197-6684	Bearing Puller Adapter	1
316-1490	Cylinder Group	1
Bearing No. 8		
8T-4133	Nut (M10)	4
8T-4121	Washer (M10)	4
9T-2240	Rod (M10)	4
9U-6800	Nut - Speed (M64)	2
4C-8152	Retaining Plate	1
137-8792	Sleeve Assembly - Bearing	1
197-6682	Bearing Puller Adapter	1
316-1490	Cylinder Group	1

(Continued)

Linkage Bearing Locations (Continued)

Removal Tooling		
Part Number	Description	Qty.
Bearing No. 10		
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
9T-2240	Rod (M10)	4
137-8792	Sleeve Assembly - Bearing	1
4C-8152	Retaining Plate	1
9U-6800	Nut - Speed (M64)	2
138-1135	Bearing Puller Plate	1
316-1490	Cylinder Group	1
Bearing No. 11		
8T-4133	Nut (M10)	4
197-6683	Bearing Puller Adapter	1
316-1491	Cylinder Group (100T) 6 in stroke	1
9T-2240	Rod (M10)	4
8T-4121	Washer (M10)	4
9U-6815	Puller Stud (M48) 62 in	1
9U-6903	Nut - Speed (M48)	2
9U-6751	Sleeve Assembly	1
9U-6753	Retaining Plate	1

Installation Tooling

Installation Tooling		
Part Number	Description	Qty.
Bearing No. 1, 5, 9, and 10		
4C-6504	Puller Stud (M64) 48 in	1
138-1135	Bearing Puller Plate	1
9U-6800	Nut - Speed (M64)	2
197-6685	Bearing Installer Plate	1
316-1490	Cylinder Group	1
Bearing No. 2 and 3		
9U-6800	Nut - Speed (M64)	2
197-6681	Bearing Puller Adapter	1
197-6687	Bearing Installer Plate	1
316-1490	Cylinder Group	1
Bearing No. 4		
9U-6800	Nut - Speed (M64)	2
197-6685	Bearing Installer Plate	1
4C-8150	Rod Assembly - Threaded	1
316-1490	Cylinder Group	1
Bearing No. 6		
9U-6800	Nut - Speed (M64)	2
197-6687	Bearing Installer Plate	1
4C-8150	Rod Assembly - Threaded	1
316-1490	Cylinder Group	1

(Continued)

Implements, Frame, Hitch and Suspension

Installation Tooling (Continued)

Installation Tooling		
Part Number	Description	Qty.
Bearing No. 7 and 8		
9U-6800	Nut - Speed (M64)	2
4C-8150	Rod Assembly - Threaded	1
197-6686	Bearing Installer Plate	2
316-1490	Cylinder Group	1
Bearing No. 11		
9U-6800	Nut - Speed (M64)	2
197-6687	Bearing Installer Plate	1
4C-8150	Rod Assembly - Threaded	1
316-1490	Cylinder Group	1

Bearing Removal Adapters

Model: 772 Coal Hauler

Warranty: None



- Used for hitch disassembly and assembly operations

Item	Part Number	Description	Use
1	FT1306	Adapter	Used for removal of hitch pivot pins
2	FT1307	Adapter	Used for removal and installation of 4D-6611 Bearings for horizontal and vertical pivot pins in hitch

FT1715 Sleeve

Model: D10 Tractor

Warranty: None



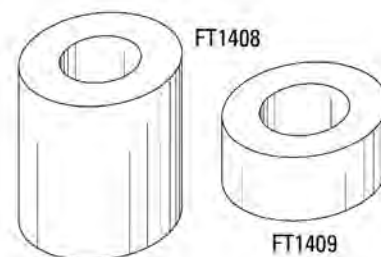
- Used with hydraulic press and other tools for removing equalizer bar center pins

Spacers

Model: D10 Tractor

Warranty: None

- Used for installing equalizer bar end pin
- FT1409 Spacer also used for track roller frame removal and installation



FT1390 Lifting Bracket

Model: 992C Wheel Loader

Warranty: None

- Used to lift rear bumper (2 required)
- Especially required to install bumper if vehicle is delivered via truck shipment
- Two 1 inch-8 UNC bolts needed for attaching brackets
- Large drawing available



2G-2827 Block Assemblies

Model: 621B, 623B, 627B, 631D, 633D and 637D Tractors

Warranty: Six Months

- Used for supporting hitch when separating tractor from scraper
- Two blocks required, one for each hitch stop on tractor differential case
- Blocks tapped for 3/4 inch-10 bolts which are adjusted out against hitch to support it firmly

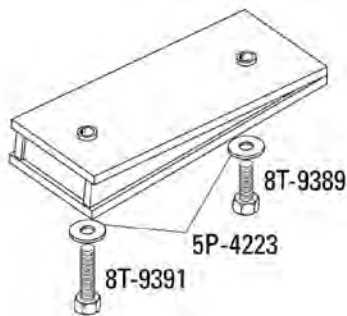


Part Number	Description
2G-2827	Block Assemblies

FT3058 Support Block

Model: 657G Wheel Tractor Scraper

Warranty: None



- Used to provide a level lifting surface on angular main frame rails
- Used with 9U-7489 100 Ton Lift Stands
- Mounting bolts must be tightened to standard bolt torque
- Requires two 8T-9391 Bolts, two 8T-9389 Bolts, and four 5P-4223 Washers

Reference

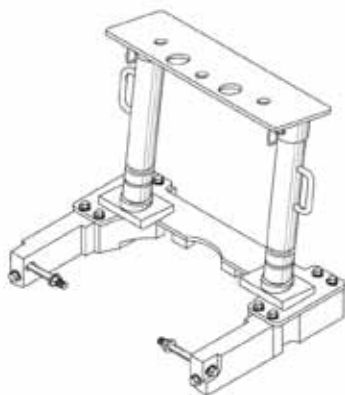
REN9714, Service Manual, 657G Disassembly and Assembly

245-9130 Support Stand Assembly

Essential Tool

Model: TK722 (TKC1-UP and 1031-UP); TK732 (T1041-UP); TK752 (3021-UP) Track Feller Buncher

Warranty: Six Months



- Used to support upper structure of machine during removal and installation of forward tilt cylinder

Part Number	Description
245-9130	Support Stand Assembly

Vehicle System Tools

Strut Adapters

Model: See below

Warranty: None



- Used with 1P-1784 Hydraulic Cylinder Repair Stand for disassembly and assembly of front suspension cylinders
- Bolt to end of rod assembly and secure rod to end post of repair stand
- FT1330 Adapter also modified so that it can be attached to piston and aid in its removal

Part Number	Model
FT2761	777 Trucks and 776 Tractors
FT1330	769, 773 Trucks and 768, 772 Tractors

994 Main Frame Assembly Tools

Model: 994 Wheel Loader

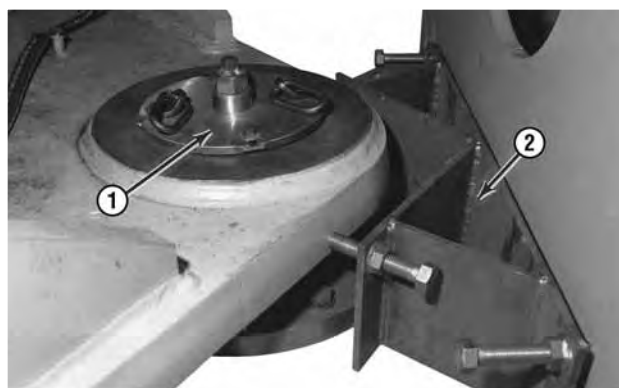
Warranty: Six Months

- Used in assembly of 994 Wheel Loader main frames
- Align and hold 994 center hitch pin bores prior to pin installation
- Bore alignment very important but difficult because of large pin size, close tolerances, mass of 2 loader frames, speed required to install cold (shrunk) pins before they warm and expand

Reference

SEHS9272, Special Instruction, 994 Field Assembly Instructions

SENR4755, Service Manual, 994 Vehicle Systems Disassembly and Assembly Module



Item	Part Number	Description	Dimensions	Weight
1	9U-5234	Collet Assembly	236 mm (9.3 in) diameter 670 mm (26.4 in) long	89 kg (196.21 lb)
2	9U-5235	Fixture Assembly	750 x 174 x 178 mm (29.5 x 6.9 x 7 in)	22.7 kg (50.04 lb)

994 Hitch Pin Pulling Tools

Model: 994 Wheel Loader

Warranty: Six Months

- Used to pull hitch pin or pull any pin with a 2 inch-12 puller hole — saves time and eliminates destruction of pin
- Used with discontinued 316-1490 Cylinder and 8T-7781 Nut
- Hydraulic removal of pin is preferred over other methods, such as burning, cutting, or drilling
- 2 inch stud provides a maximum 1335 kN (150 tons) hydraulic pulling force
- 38.1 mm (1 1/2 in) stud provides a maximum 890 kN (100 tons) of hydraulic pulling force
- Most 994 hitch pin pulling operations require the maximum force provided by these tools

9U-7763 Puller Stud

- Rolled threads and heat treatment for added strength
- Provides pulling capacity up to 1335 kN (150 tons)
- Course threads, on cylinder end of stud, provide for faster nut running during pulling

9U-7764 Bushing

- Used to reduce 63.5 mm (2.5 in) center hole of cylinder to 51 mm (2.0 in) diameter for 9U-7763 Stud
- Heat treated for additional strength

9U-6489 Eyebolt (with shoulder)

- Provides quick and convenient lifting point
- Used for general lifting applications of 14,755 kg (32,500 lb) or less [upper hitch pin weighs 116 kg (255 lb) and lower hitch pin 185 kg (407 lb)]

9U-6501 Plate

- Provides a base for discontinued 316-1490 Cylinder
- Heat treated to Rockwell C32-38
- 2-step diameter centers plate on end of different ID receiving sleeves

(Continued)

Implements, Frame, Hitch and Suspension

994 Hitch Pin Pulling Tools (Continued)

Model: 994 Wheel Loader

Warranty: Six Months

FT2432 Aligning Wrench

- Used to align lower hitch pin to bottom plate and frame holes
- Wrench is bolted to pin allowing rotation to align pin, frame, and locking plate holes

9U-6698 Puller Stud

- Used for any general pulling application requiring 1 1/2 inch-12 threads
- Rolled threads and heat treatment for added strength
- Provides pulling capacity up to 890 kN (100 tons)

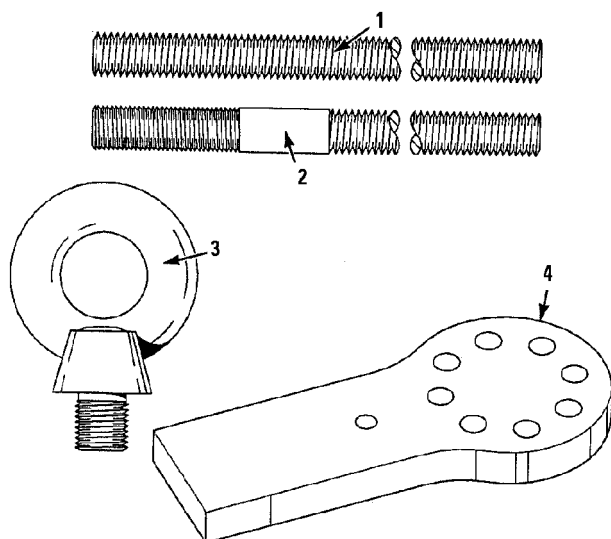
References

SENR4755, Disassembly and Assembly, 994 Wheel Loader Vehicle Systems

Procedure for 994 Front Frame Replacement from Decatur Mining Vehicle Center (M.V.C.)

Item	Part Number	Description
4	FT2432	Aligning Wrench

Vehicle System Tools



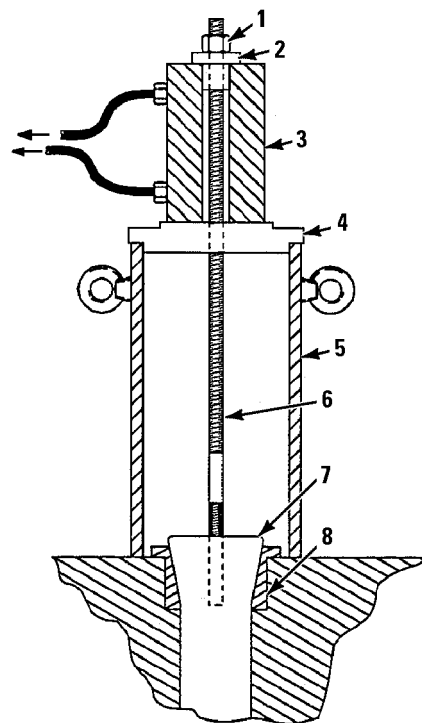
Item	Part Number	Description
1	9U-6698	Stud - Puller, 1 1/2 in
2	9U-7763	Stud - Puller, 2 in
3	9U-6489	Shoulder Eye Bolt

Assembly Diagram for 994 Hitch Pin Pulling Tools

Item	Description
7	Hitch Pin
8	Hitch Pin Bushing

(Continued)

Assembly Diagram for 994 Hitch Pin Pulling Tools (Continued)



Item	Part Number	Description
1	8T-7781	Nut
2	9U-7764	Bushing
3	316-1490	Cylinder Group
4	9U-6501	Plate - Head Puller
5	9U-7765	Receiving Sleeve
6	9U-7763	Stud - Puller, 2 in

Implements, Frame, Hitch and Suspension

Tool Specifications for 994 Hitch Pin Pulling Tools

9U-6489 Shoulder Eyebolt	
Thread	2 in-12 thd
Length from bottom of shoulder to end of thread	51 mm (2.0 in)
Capacity	14,755 kg (32,500 lb)
Eye diameter	82.6 mm (3.25 in)
9U-6501 Plate	
Overall diameter	305 mm (12.0 in)
Thickness	38 mm (1.5 in)
Center hole diameter	53 mm (2.1 in)
Heat treatment	Rockwell C32-38
Large step diameter	276 mm (10.9 in)
Small step diameter	201.5 mm (7.93 in)
Rated Pulling Capacity	1335 kN (150 tons)
9U-6698 Puller Stud	
Threads	1 1/2 in-12 thd (rolled)
Thread length	1220 mm (48.0 in)
Pulling capacity (force)	890 kN (100 tons)
Heat treatment	Rockwell C41-45
9U-7763 Puller Stud	
Overall length	1220 mm (48.0 in)
Short end thread	2 in-12 thd (rolled)
Length	101 mm (4.0 in)
Long end thread	2 in-8 (rolled)
Length	1016 mm (40.0 in)
Heat treatment	Rockwell C41-45
Pulling capacity (force)	1335 kN (150 tons)
9U-7764 Bushing	
Outside diameter	62.0 mm (2.44 in)
Inside diameter	52.3 mm (2.06 in)
9U-7765 Receiving Sleeve	
Outside diameter	305 mm (12.0 in)
Inside diameter	285 mm (11.2 in)
Overall length	762 mm (30.0 in)
Lifting eyes	2
Rated pulling capacity	1335 kN (150 tons)

990 Articulation Hitch Pin Pulling Tools

Model: 990 Wheel Loader

Warranty: Six Months

- Used to pull articulation hitch pins and bearings — saves time and eliminates damage to pin
- Used with 316-1491 or discontinued 6V-0014 Cylinder and 9U-6810 Speed Nut
- Hydraulic removal of pin is preferred over other methods, such as burning, cutting, or drilling
- M48 threads provide a maximum of 890 kN (100 tons) of hydraulic pulling force
- All plates and sleeves serviced separately

124-4637 Adapter Plate

- Used to remove 4E-8152 Top Hitch Pin on early 990s (no puller hole for removing the pin hydraulically)
- Later models, with pin puller hole, do not require this adapter plate

124-4638 Bearing Puller Plate

- Used to remove the top articulation hitch pin bearing

124-4639 Bearing Puller Plate

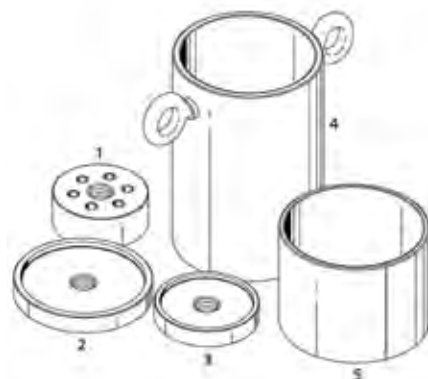
- Used to remove the bottom articulation hitch pin bearing

124-4640 Receiving Sleeve Assembly

- Used to remove the top and bottom articulation hitch pins

124-4641 Receiving Sleeve

- Used to remove the top and bottom articulation hitch pin bearings



Item	Part No.	Description	Recess/ Inside Diameter	Overall Diameter	Outside Diameter	Thickness	Puller Hole Thread	Rated Capacity	Overall Length
1	124-4637	Adapter Plate	--	177.8 mm (7.00 in)	--	76.2 mm (3.00 in)	M48 X 5	890 kN (100 tons)	--
2	124-4638	Bearing Puller Plate (upper bearing)	214 mm (8.43 in) ¹	251 mm (9.88 in)	--	38 mm (1.5 in)	M48 X 5	--	--
3	124-4639	Bearing Puller Plate (lower bearing)	174.0 mm (6.85 in) ¹	193.5 mm (7.62 in)	--	38 mm (1.5 in)	M48 X 5	--	--
4	124-4640	Sleeve Assembly - Re- ceiving	--	--	279.4 mm (11.00 in)	--	--	890 kN (100 tons)	450 mm (17.7 in)
5	124-4641	Sleeve - Receiving	Open end (9U-6501)	--	279.4 mm (11.00 in)	--	--	890 kN (100 tons)	216 mm (8.5 in)

¹ Recess Diameter

332-7591 Sleeve Assembly

Model: 993K Wheel Loader

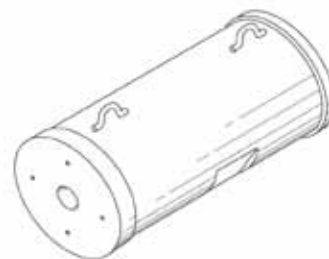
Warranty: Six Months

- Used to remove lower articulation flagged hitch pin
- Used with 316-1491 or 6V-0014 Hydraulic Cylinder Group, 3S-6224 Electric Hydraulic Pump Group, 9U-6815 Puller Stud, and 9U-6810 Speed Nut
- Hydraulic removal of pin is preferred over other methods, such as burning, cutting, or drilling
- Heat-treated for added durability

Reference

KENR5832, 993K Wheel Loader Machine Systems, Disassembly and Assembly, Loader Frame from Rear Frame - Separate

Inside diameter	298 mm (11.73 in)
Overall length	736 mm (28.98 in)
Flag opening	220 mm (8.66 in)
Hole for threaded rod	70 mm (2.76 in)



(Continued)

Implements, Frame, Hitch and Suspension

332-7591 Sleeve Assembly (Continued)

Model: 993K Wheel Loader

Warranty: Six Months

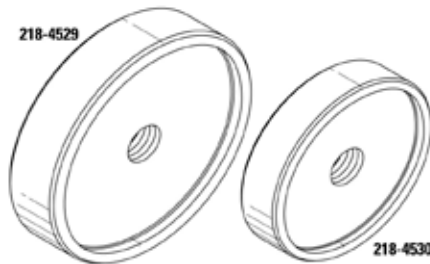
Part Number	Description
332-7591	Sleeve Assembly

218-4529 Bearing Puller Plate

218-4530 Bearing Puller Plate

Model: 950G and 962G Series I and II Wheel Loaders; IT62G Series I and II Integrated Toolcarrier

Warranty: Six Months



- Used to remove both bearing cups and cones from lower and upper hitch articulation joints
- Used with 6V-3160 Double Acting Hydraulic Cylinder and 9U-5345 Fast Runner Nut Assembly (M24 x 3.0)
- Use 218-4529 for lower hitch articulation joint and 218-4530 for upper joint
- Hydraulic removal of bearings is preferred over other methods, such as burning, cutting, or drilling

Threaded hole	M24 x 3.0
Maximum pulling force	267 kN (30 tons)
Outside diameter (218-4529)	136.0 mm (5.35 in)
Outside diameter (218-4530)	106.0 mm (4.17 in)

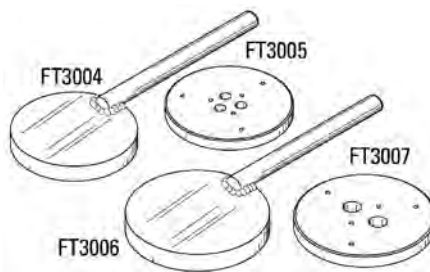
Part Number	Description
218-4529	Bearing Puller Plate
218-4530	Bearing Puller Plate

Hitch Bearing Installation Tools

Essential Tool

Model: 5, 525, 525B, 533, 535B, 543, and 545 Wheel Skidder TK370, TK371, TK 380, and TK381 Wheel Feller Buncher 966G and 972G Wheel Loader

Warranty: None



- Used to install hitch bearings to proper depth

FT3004 Bearing Driver

FT3005 Measuring Plate

- Used on 515 (4LR1-Up), 525 (1DN1-Up), 525B (3KZ1-1151), and 535B (AAE1-638)

FT3006 Bearing Driver

FT3007 Measuring Plate

- Used on 525B (3KZ1152-Up) 533 (CDR1-Up), 535B (AAE639-Up), 543 (ASJ1-Up), 545 (2FZ1-Up), TK370 (WBD1-Up), TK371 (WBG1-Up), TK380 (WBE1-Up), TK381 (WBH1-Up), 966G and 972G

References

REN6693; Disassembly and Assembly; 515 and 525 Wheel Skidder Machine Systems

REN4344; Disassembly and Assembly; 525B and 535B Wheel Skidder Machine Systems

REN3054; Disassembly and Assembly; 545 Wheel Skidder Machine Systems

REN6168; Disassembly and Assembly; 533 and 543 Wheel Feller Buncher Machine Systems

REN6240; Disassembly and Assembly; TK370, TK371, TK380, and TK381 Wheel Feller Buncher Machine Systems

Tools for Tightening Horizontal Hitch Pins

Model: 631, 633, 637, 641, 651, 657, 660 and 666 Tractor-Scrapers

Warranty: Six Months

- Used with 2P-8285 Arm, 2P-8286 Drive Adapter, 7S-4135 Torque Multiplier, 2P-0853 Ratchet Adapter, and 9S-7351 Torque Wrench to remove and install horizontal hitch pins
- 5P-1663 Extension Wrench discontinued and replaced by 5P-1661 Wrench

Item	Part Number	Description	Size
1	5P-1661	Sledge Wrench	4 1/4 in
2	5P-1662	Socket	4 1/4 in



Puller Plates

Model: See below

Warranty: Six Months

- Used with hydraulic cylinder of 55 tons or less capacity to remove tubes and glands in truck front suspension groups

Reference

Service Magazine, January 19, 1981

Part Number	Model
6V-3141	776 Tractors and 777 Trucks
6V-3142	768 and 772 Tractors and 769 and 773 Trucks



Front Suspension Forcing Plates

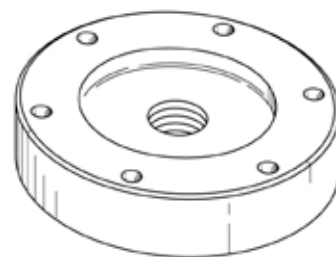
Model: 735 and 740 Articulated Trucks

Warranty: Six Months

- Used to separate front suspension "A-frame" from main frame assembly at lower hitch pin
- Used with 5P-5264 Forcing Bolt (sold separately)
- Reduces damage to front suspension and main frame/hitch pin
- Precision machined and heat-treated for long durability
- Threaded hole: 1 1/2-12

Reference

REN5140, Service Manual, Front Suspension Remove and Install, Disassembly and Assembly Machine Systems

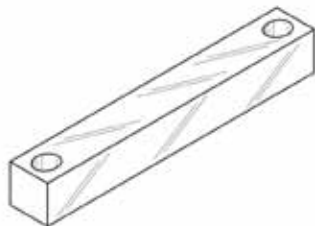


Part Number	Description	Used On	Serial No. used with
217-5919	Forcing Plate	older 735 and 740 Articulated Trucks	AWR and AXM
334-8414	Forcing Plate	new 735 and 740 Articulated Trucks	B1N00959-up, B1P02709-up, and B1R00360-up

FT1485 Equalizer Pad Compressor Bar

Model: 943 Track Loader

Warranty: None



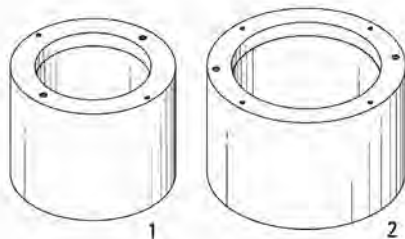
- Used for compression of pads during removal and installation of center pin and equalizer bar (4 required)
- Fastened to 2 plates on top of equalizer pads with two 8S-3887 Bolts each
- Up to 24 washers (2M-0849 Washer) used to adjust position of bars

Swing Drive Sleeves

Essential Tool

Model: 318C, 320C, 321C, 323C, and 345C Excavators

Warranty: None



- Used to disassemble excavator swing drive lower bearing
- Used with standard shop press
- Prevents damage to lower bearing seal cage
- Make from SAE1020 steel

References

KENR5272, 315D and 319D Excavators, Machine Systems, Disassemble and Assemble
 KENR6016, 320D FM Excavator, Machine Systems Disassemble and Assemble
 RENR8614, 320D Excavator, Machine Systems, Disassemble and Assemble
 RENR8649, 320D RR Excavator, Machine Systems, Disassemble and Assemble
 KENR8110, 320D RR FM Excavator, Machine Systems, Disassemble and Assemble
 RENR7500, 323D Excavator, Machine Systems, Disassemble and Assemble
 KENR5988, 330D Forest Machine, Machine Systems, Disassemble and Assemble
 RENR8612, 345C Excavator, Machine Systems, Disassemble and Assemble
 RENR8610, 345C Material Handler, Machine Systems, Disassemble and Assemble
 KENR6438, 345C MHPU Mobile Hydraulic Power Unit, Machine Systems, Disassemble and Assemble
 RENR9574, 345D Excavator, Machine Systems, Disassemble and Assemble
 RENR8616, 365C Excavator, Machine Systems, Disassemble and Assemble
 KENR8120, 365C MHPU Mobile Hydraulic Power Unit, Machine Systems, Disassemble and Assemble

Item	Part Number	Description	Use
1	FT3023	Swing Drive Sleeve	on machines equipped with 148-4636 Pinion Shaft
2	FT3157	Swing Drive Sleeve	on machines equipped with 227-6108 Pinion Shaft

FT1421 Spring Installer

Model: Most Cat® Machines

Warranty: None

- Makes it easy to install springs when assembling torsion springs used on some seat suspension groups
- Has a hook to engage tang of spring and contact surface with radius to fit against spring body
- Large drawing available



6V-6178 Puller Plate

6V-6179 Bar Assembly

Model: 768, 769, 772, 773's, 776 and 777

Warranty: Six Months

- Used to separate front suspension struts from steer axle spindles on all Cat® off-highway trucks and tractors; tools for this operation cannot be used on all vehicles
- Two 6V-6178 Plates and four 6V-6179 Bar Assemblies used with discontinued 316-1490 Cylinder Group to provide heavy-duty tool arrangement with 16.5 kN (150 tons) capacity
- Eight 1D-4635 Bolts needed when used on 768, 769, 772 and 773s; four 3R-2299 Bolts needed when used on 776 and 777s



Part Number	Description
6V-6178	Puller Plate
6V-6179	Bar Assembly

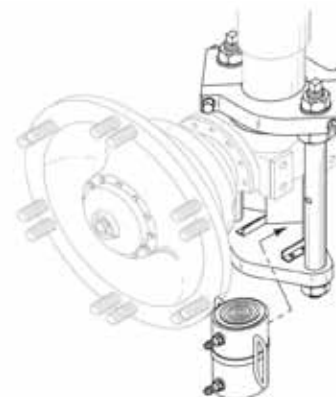
291-4194 Separation Group

Essential Tool

Model: 769D (BBB00069-UP), 771D (BCA00071-UP), 773D, 773E (BDA00073-UP), 775D, 775E (BEC00075-UP) Off-Highway Trucks

Warranty: Six Months

- Used to separate spindle/hub assembly from suspension cylinder rod
- Used with dealer supplied 3S-6224 Electric Hydraulic Pump (115 V) or 8S-8033 Electric Hydraulic Pump (230 V), 1U-5197 Hydraulic Cylinder (80 Ton Capacity), and two 8F-0024 High-Pressure Hoses or 6D-7726 High-Pressure Hoses
- Separation group consists of 2 interlocking top plates with bolts and nuts, a bottom plate, and 2 threaded rod assemblies with nuts and washers
- Bottom plate includes a V-shaped retainer plate for positioning and holding hydraulic cylinder during use
- Procedure can be done with components on or off-vehicle



References

NEHS0975 Tool Operating Manual; Using 291-4194 Separation Group to Separate Front Spindle/Hub From Suspension Cylinder Rod

SEN1422; 769D, 771D Disassembly and Assembly, Front Suspension Cylinders

SEN1584; 773D, 773E, 775D, and 775E Disassembly and Assembly, Front Wheel,

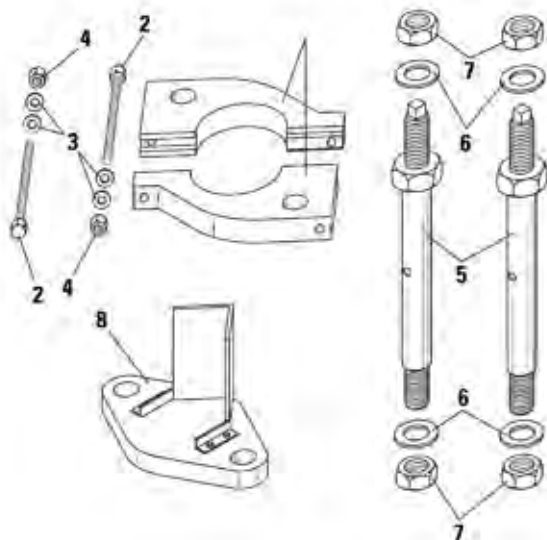
Bearing and Dual Cone Seal - Remove

Description	Qty.	Weight
Top plate	2	27 kg (50 lb)
Bottom plate assembly	1	34 kg (75 lb)
Rod assembly	2	16 kg (35 lb)
Hydraulic cylinder	1	29 kg (63 lb)

Implements, Frame, Hitch and Suspension

Separation Group Parts

Unnumbered Part		
Item	Description	Qty
6	Washer	4

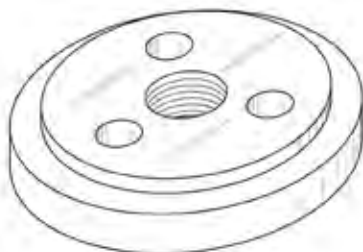


Item	Part Number	Description	Qty.
1	291-4196	Top Plate Assembly	1
2	9X-2475	M20 x 2.5 Bolt	2
3	8T-3282	Washer - Hard	4
4	6V-7742	Nut - Full	2
5	291-4195	Rod Assembly	2
7	8C-7328	M48 x 5 Nut	4
8	291-4197	Bottom Plate Assembly	1
Not shown	224-0554	Warning Film	2

FT1795 Adapter

Model: 651E, 657E

Warranty: None



- Used to remove horizontal hitch pin
- Also used to remove horizontal hitch bearing separately using 6V-3175 Hydraulic Puller

FT1939 Plate

Model: 785, 789, 793

Warranty: Six Months

- FT1939 Plate, used with 1U-5750 Engine Stand, 6,000 lb, and 1U-5749 Engine Adapter Plate supports front suspension in vertical position to facilitate repair; vertical position recommended to assure good seal alignment
- Weight of front suspension: 1850 kg (4078 lb) without axle
- Weight of gland and tube: 181 kg (400 lb)



FT1939

8T-5293 Plate

Model: 789

Warranty: Six Months

- Used to remove gland and tube from 789 Off-Highway Truck front suspension cylinders and to press gland onto tube at installation (similar to FT1938 Plate for 785 Off-Highway Trucks)
- Front suspension cylinder should be mounted on FT1939 Plate supported by 4540kg (10,000 lb) stand in vertical position when pulling gland and tube



Reference

SENR3404, 789 Truck Vehicle Systems Disassembly and Assembly Manual

Part Number	Description
8T-5293	Plate

8T-9205 Puller for 789

Model: 789

Warranty: Six Months

- Used to separate front axle (spindle) from its suspension cylinder strut (similar to 8T-2852 Puller for 785 Off-Highway Trucks)
- Used with 8T-2853 Handle Assembly (2 required) to position puller on bottom of front axle
- Puller weight: 58.7 kg (129 lb)
- Capacity: 6470 kN (727 Ton-Force) for separating strut and spindle connection

Reference

SENR3404, 789 Truck Vehicle System Disassembly and Assembly Manual

NOTE:

Support front axle before removing bolts that hold 5T-6303 Plate in position.

Part Number	Description
8T-9205	Puller for 789



WARNING

To avoid possible personal injury from sudden release of the axle from the strut rod or the snapping of a bolt when removing the plate, loosen all bolts in a circular pattern one-half turn. Do this again and again until the torque for the bolts is released.

148-0357 Front Strut Handling Group

Essential Tool

Model: 769 through 793 Construction Mining Trucks (CMT)

Warranty: Six Months



European Union compliant, CE marked

- Used to remove, disassemble, assemble, and install front strut
- Provides safe and efficient removal and installation without removing truck fenders
- Can be used as a platform for disassembly and assembly
- Must be matched with appropriate size forklift to handle weight of front strut

References

SENR2944 (769C), Service Manual

SENR2964 (773B), Service Manual

SENR5616 (777C), Service Manual

SENR5678 (785B), Service Manual

SENR5687 (789B), Service Manual

SENR5692 (793B), Service Manual

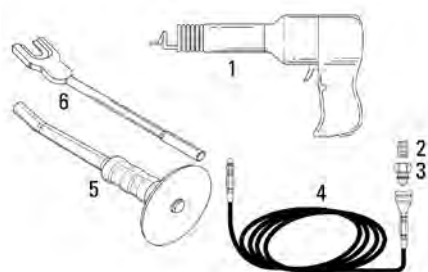
Working load limit	6,652 kg (14,667 lb)
Inside dimension of fork spread	105 cm (41.5 in)

Part Number	Description
148-0357	Front Strut Handling Group
Group Includes:	
148-0336	Supporting Handle Bracket Assembly
148-0337	Supporting Bracket Assembly (RH)
148-0338	Supporting Bracket Assembly (LH)
1D-4709	Hex Head Bolt
5P-8250	Hard Washer

Cutter Bit Removal Tooling

Model: PR1000, PR750, PR450, PM565 Pavement Profilers; RR/SS250 and RM/SM350 Road Reclaimer/Soil Stabilizer

Warranty: Six Months



- Used to remove cutter bits on Cat® rotary mills (cold planers) and other similar equipment
- 104-8591 Hammer Punch and 8T-4474 Bit Puller are direct replacement parts for original equipment tools
- Using an air hammer and air hammer punches (8T-4060 and 8T-4340) makes cutter removal even easier and faster
- Air hammer can be operated from machine's air system eliminating need for service truck when changing cutters
- Air hammer tools will work on CP-4447-RUTAB or CP-717 Chicago Pneumatic air hammers

Item	Part Number	Description
1	8T-9930	Air Hammer
2	5P-8998	Nipple - Pipe
3	5R-5561	Nipple Assembly
4	9N-9094	Air Hose Assembly
5	104-8591	Hammer Punch
6	8T-4474	Bit Puller

234-4278 Clamp Fixture Group

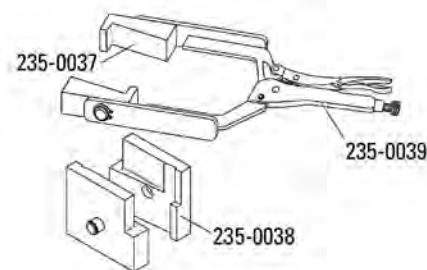
Essential Tool

Model: PM 465 and PM-565 Cold Planner

Warranty: Six Months

- Used to replace bit holder base
- Locates and holds replacement bit holders in original position, angle, and pitch
- Saves time — quickly locks base into position for welding

Service/Repair Part	
Part Number	Description
NEEG2978	Decal



Service/Repair Parts	
Part Number	Description
235-0037	Jaw Fixture Assembly
235-0038	Jaw Fixture Assembly
235-0039	Clamp Fixture Assembly
6V-3072	Case - Plastic, NEEG2574 Group Decal on lid (9U-7402 Group)

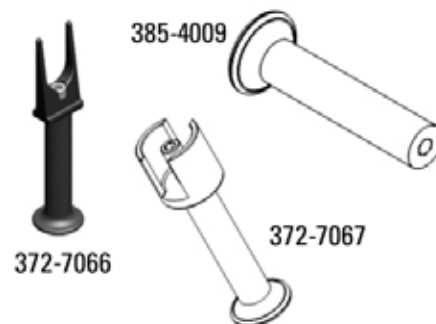
372-7066 Bit Holder Removal Tool, 372-7067 Bit Holder Install Tool, 385-4009 Bit Holder Handle

Model Usage: PM200 & PM201 Cold Planers

Warranty: Six Months

- 372-7066 used to easily remove 241-4559 cutter bit holder from rotor
- 372-7067 used to easily install 241-4559 cutter bit holder on rotor
- Tools constructed of hardened steel with black oxide finish

Specifications		
Part Number	Description	Dimensions
372-7066	Bit Holder Removal Tool	267.4 x 155.6 mm (10.53 x 6.13 in)
372-7067	Bit Holder Install Tool	76.2 x 19.1 mm (3.0 x .75 in)
Service / Repair Parts		
385-4009	Bit Holder Handle	157 x 60 mm (6.2 x 2.4 in)



378-4294 Bit Extractor Tool

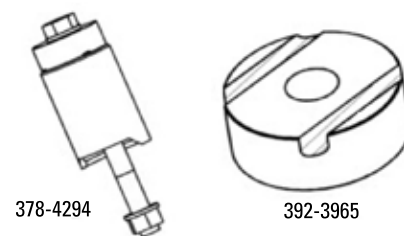
392-3965 Wedge Removal Tool

Model Usage: PM200 & PM201 Cold Planners

Warranty: Six Months

- Used to easily remove broken 241-4559 cutter bit holder from rotor

Specifications	
Part Number	Dimensions
378-4294	250.3 x 90 mm (9.9 x 3.5 in)
392-3965	70 x 25.4 mm (2.8 x 1.0 in)

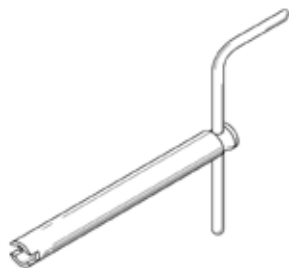


232-6299 Depth Adjuster

Essential Tool

Model: PC203/4 and PC404 Cold Planer Worktools on Cat® Skid Steer Loaders

Warranty: Six Months



- Used to quickly and easily adjust depth of cut

Reference

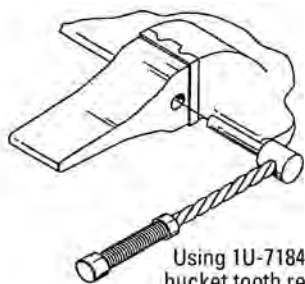
SEBU7705, Service Manual

Part Number	Description
232-6299	Depth Adjuster

1U-7184 Cable Handled Pin Remover

Model: 5130 Mining Excavators (Front Shovel and Backhoe Styles)

Warranty: Six Months



Using 1U-7184 to remove bucket tooth retaining pins

- Used to remove FLEXPIN from excavator bucket teeth
- Used with a sledge hammer to remove pin

References

SENR6058, 5130 Service Manual Module, Disassembly and Assembly

SEHS9721, Special Instruction, Assembly Procedure for Hydraulic Excavator (5130 only)

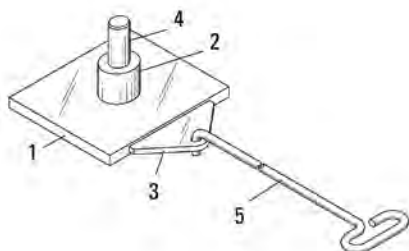
Overall length	508 mm (20.0 in)
Overall height	257 mm (10.1 in)
Oval pin size	25 x 30 mm (1.0 x 1.2 in)

Part Number	Description
1U-7184	Cable Handled Pin Remover

FT2614 Wedge Removal Bracket Assembly (MAA Wedges)

Model: 994 Wheel Loaders with mechanically attached adapters

Warranty: None



- Used to remove mechanically-attached adapters on buckets
- Uses the machines hydraulics and weight to assist in wedge removal
- Eliminates using impact-type tooling
- Material for items 1, 2, 3, and 5: SAE1020 steel
- Material for item 4: SAE4140 steel

Reference

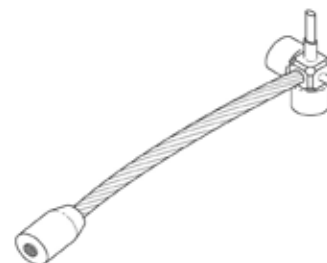
PEXT6026, 994 MAA CD-ROM

229-0287 Pin Remover

Model: Medium Wheel Loaders and Excavators or any K Series Tooth System G.E.T.

Warranty: Six Months

- Used to remove and install “K Series Tooth System” bucket teeth retaining pins
- Used with large hammer (installation) or sledge hammer (removal)
- Easy to hold and wire rope handle reduces shock
- Urethane collars provide larger striking area, prevent damage to striking surface, and absorb shock of hammer blow
- Urethane collars also keep hammer head from sliding off of striking surface



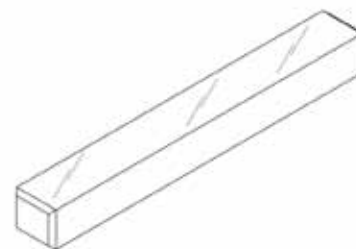
Part Number	Description
229-0287	Pin Remover

FT3112 Installer

Model: K-80, K-90, and K-100 Series Bucket Tips

Warranty: None

- Used to remove and install bucket tip retaining pins on K-series buckets
- Used with a hammer
- Sized to fit a mechanics gloved hand when driving retaining pins
- Overall dimensions: 25 mm x 25 mm x 203 mm (1 in x 1 in x 8 in) with 2 mm (0.078 in) chamfer on each end
- Material: SAE 1020M steel

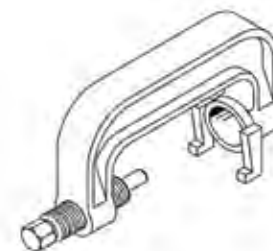


149-2872 Tooth Pin Remover Group (Small Bucket)

Model: J200 thru J450

Warranty: Six Months

- Used to remove pins as small as 15.5 mm (0.61 in) from bucket teeth
- Used with 8T-3130 Wrench (7/8) — allows removal of teeth as close as 13.2 cm (5.2 in) apart
- Tool loosens pins so they can be removed with pliers
- 2 adapters available for correct alignment; one for J200-J400 Series, another for J450 Series teeth



Reference

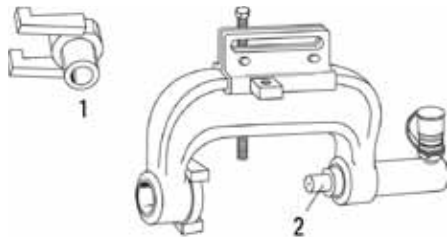
NEHS0696, Tool Operating Manual

Part Number	Description
149-2872	Tooth Pin Remover Group (Small Bucket)
Service/Repair Parts	
149-2874	Screw Assembly
149-2877	Small Receiving Adapter

149-2879 Tooth Pin Remover Group (Medium Bucket)

Model: GET Products

Warranty: Six Months



- Used to remove horizontal or vertical bucket pins (edge protector, J350-J400, and J450-J550 pins)
- Provides up to 10 tons of removal force
- J-style adapters hook to rear edge of tooth (provides positioning and retention while removing pins)
- Adjustable positioning bolt assists in alignment of repetitive tooth pin removal
- 3 adapters for different size pins

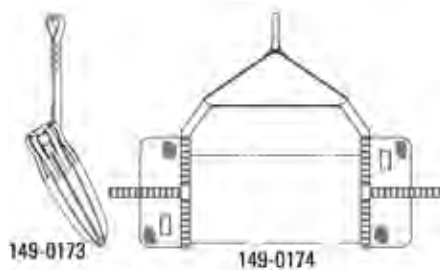
Pin length (maximum)	171.5 mm (6.75 in)
Throat depth (maximum)	154.0 mm (6.06 in)
Pin diameter (maximum)	22.1 mm (0.87 in)
Tooth spacing minimum clearance	211.0 mm (8.31 in)

Item	Part Number	Description
--	149-2879	Tooth Pin Remover Group (Medium Bucket)
1	149-2884	Adapter, Larger (J450-J550 pins)
2	149-2882	Insert

Fabric Baskets

Model: All Models with Ground Engaging Tools (GET)

Warranty: Six Months



European Union compliant, CE marked

- Used to help remove and install bucket teeth, cutting edges, and adapters
- Must be used with overhead lifting device
- Provides an easy method of moving Ground Engaging Tools (GET) products in and out of service trucks or shop environment
- Non-choker style baskets must be used in pairs (securely holds cutting edge)
- Suitable nylon strap (sold separately) must be used with 149-0174

References

NEHS0700, Tool Operating Manual, Using the Choker Style Fabric Basket to Install and Remove Bucket Teeth

NEHS0701, Tool Operating Manual, Using Non-Choker Style Fabric Baskets to Install Bucket or Blade Cutting Edges

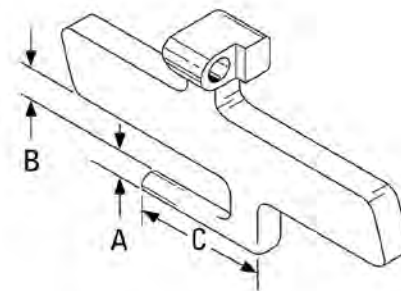
Part Number	Description	Maximum Capacity	Maximum Length	Weight Capacity
149-0173	Choker Style Fabric Basket	260 mm (10.2 in) square	450 mm (17.7 in)	104 kg (229 lb)
149-0174	Non-Choker Style Fabric Basket	63.5 x 419 mm (2.5 x 16.5 in)	200 mm (7.9 in)	125 kg (276 lb)

207-0631 Tooth Pin Remover

Model: 416, 420, and 430 Backhoe Loaders and All Models with Diagonal Retention System Pins
 Warranty: Six Months

European Union compliant, CE marked

- Used to remove and install flex pins from bucket teeth in a matter of minutes
- Quick and easy (recommended over punch and hammer method)
- Works on Caterpillar® Diagonal Retention System (DRS) with 1-piece flex pins
- Also works on "23 Series" forged or cast teeth with horizontal flex pin retention
- Small enough to store in mechanic's toolbox



Part Number	Description
207-0631	Tooth Pin Remover

175-0138 Compression Retainer Pry Bar

Essential Tool

Model: 990, 992, 998 Wheel Loader; 345, 350, 375 Excavator; 5080 Mining Shovel
 Warranty: Six Months

- Used to install and remove bucket tip spring retainers
- Eliminates use of hammers or other devices normally used for conventional pin removal (using other tools could cause personal injury)
- Cut out end is used to remove plug and cap
- Flat end is used to compress retainer which allows for removal
- Makes removal faster and easier

References

PEXT8026, New Caterpillar Compression Retainer and Tip System
 PEXT9034, Compression Retaining System (CD-ROM)



Part Number	Description
175-0138	Compression Retainer Pry Bar

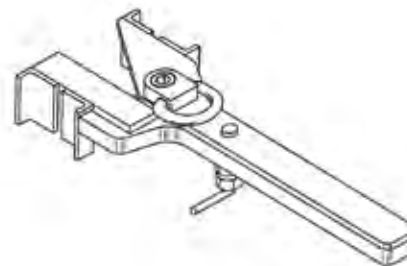
160-4947 Handling Bracket Assembly

Essential Tool

Model: GET Series 40 and 50 Wear Blocks
 Warranty: Six Months

European Union compliant, CE marked

- Used to quickly and easily lift wear blocks into place (lightweight and simple to use)
- Provides a positive lock that retains wear block to handling tool
- Allows infinite positioning



Part Number	Description
160-4947	Handling Bracket Assembly

263-0039 Pry Bar

Model: Wheel Loaders, Track -Type Loaders, Excavators, and Backhoe Loaders

Warranty: Six Months



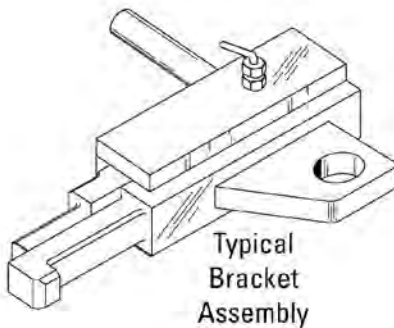
- Used to remove and install retainers on K-series hammerless bucket teeth
- Ergonomic handle reduces hand fatigue
- Long-life finish resists rust and wear during use

Part Number	Description
263-0039	Pry Bar

Cutting Edge Handling Bracket Assemblies

Model: Machines with Cutting Edges having Rectangular Holes

Warranty: Six Months



European Union compliant, CE marked

- Used to lift cutting edges with rectangular mounting holes
- Easy and quick attachment to cutting edge
- Adjusts to different hole sizes
- Provides positive locking

Part Number	Rectangular Hole Size	Maximum Weight Limit
152-2025	15.7, 19.1, and 22.1 mm (5/8, 3/4, and 7/8 in)	270 kg (595.25 lb)
152-2026	25.4 and 31.8 mm (1 and 1 1/4 in)	392 kg (864.21 lb)

8T-2852 Puller for 785

Model: 785

Warranty: Six Months



Puller with Handle Assembly

- Used to separate front suspension strut from front axle (spindle)
- Used with 8T-2853 Handle Assembly (2 required) to position 8T-2852 Puller on bottom of front axle; install 6 bolts spaced evenly around puller to hold it to front axle
- Puller ton-force capability: 654 tons

Reference

SENR4020, 785 Truck Vehicle Systems Disassembly and Assembly Manual

NOTE:

Support front axle before removing bolt that holds 6G-6534 Plate in position.

Part Number	Description
8T-2852	Puller for 785

WARNING

To avoid possible personal injury from sudden release of the axle from the strut rod or the snapping of a bolt when removing plate, loosen all bolts in a circular pattern one-half turn. Do this again and again until the torque for the bolts is released.

9U-5613 Puller Plate

FT2399 Lifting Plate

Model: 789 and 793 Off-Highway Trucks

Warranty: Six Months (FT2399: None)

9U-5613 Puller Plate

- Required for front axle removal on 793 Off-Highway Truck
- Used to separate front axle from front strut (two 8T-2853 Handles may be used with puller plate to help position it to bottom of front axle)
- Similar to 8T-2852 Puller and 8T-9205 Puller used on 785 and 789 Off-Highway Trucks

NOTE:

Support the front axle before removing the bolts that hold the 8X-2608 Plate in position.



Puller with Handle Assembly

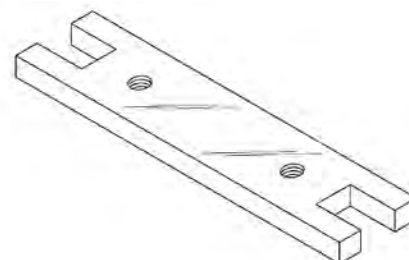
WARNING

To avoid possible personal injury from sudden release of the axle from the strut rod or the snapping of a bolt when removing the plate, loosen all bolts in a circular pattern one-half turn. Do this again and again until the torque for the bolts is released.

Lifting Plate

FT2399 Lifting Plate

- Used for disassembly and assembly of front struts on 789 and 793 Off-Highway Trucks
- Used with two 2D-1201 Eye Bolts when removing rod and piston assembly from front suspension cylinders
- Service Manual shows 2 link brackets being used, which is incorrect, because link bracket mounting holes are too small for bolts required on 789 and 793 cylinders (See Service Manual changes above)



References

SENR4917, (793 Truck)

SEN3404, (789 Truck) Vehicle System Disassembly and Assembly

9U-5613 Puller Plate	
Diameter	445 mm (17.5 in)
Thickness	130 mm (5.1 in)
Weight	68 kg (150 lb)
Hardness	Rockwell C 42-47
FT2399 Lifting Plate	
Capacity	1135 kg (2500 lb)

Part Number	Description
9U-5613	Puller Plate

Changes to Service Manuals

SENR3404, 789 Truck Vehicle Systems Disassembly and Assembly

- Tools Needed charts on pages 53 and 56 —
Tool D, 6V-2157 Link Bracket (qty. 2), should be removed and replaced with:
FT2399 Lifting Plate (qty. 1)
2D-1201 Lifting Eye Bolt, 5/8-11 NC (qty. 2)

SENR4917, 793 Truck Vehicle Systems Disassembly and Assembly

- Tools Needed chart on page 44 —
Part number for Tool A is 8T-2853
Part number for Tool B is 9U-5613
- Tools Needed chart on page 47 —
A new column C should be added consisting of:
FT2399 Lifting Plate (qty 1)
2D-1201 Lifting Eye Bolt, 5/8-11 thd (qty 2)

(Continued)

Changes to Service Manuals (Continued)

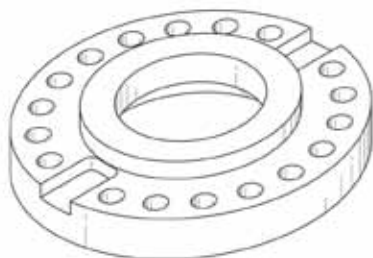
- Photo above step 6 and photo above step 7 on page 48 currently show two link brackets being used. It should be noted that the new tool C is required instead.
- Tools needed chart on page 49 needs new column F consisting of:
FT2399 Lifting Plate (qty 2)
2D-1201 Lifting Eye Bolt, 5/8-11 thd (qty 2)
- Step 7 on page 49 will require tool F

283-0811 Pusher Plate

Essential Tool

Model: 793D Extended-Life Off-Highway Truck, FDB1-Up

Warranty: Six Months



- Used to separate front axle from front suspension cylinder
- Required for front axle removal
- Similar to 9U-5613 Puller Plate, but utilizes larger bolt diameter and front axle keyway clearance
- Heat treated to C42-47 for durability
- Weight: 70 kg (154.4 lb)

Reference

REN8332, Disassembly and Assembly, 793D Extended-Life Off-Highway Truck, Machine Systems, Spindle (Front) Remove

NOTE:

Support the front axle before removing the bolts that hold the 183-9580 Steering Arm in Position.

Part Number	Description
283-0811	Pusher Plate



WARNING

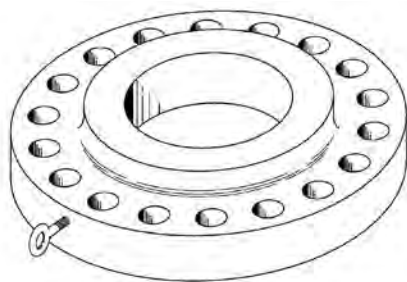
To avoid possible personal injury from sudden release of the axle from the strut rod, or the snapping of a bolt when removing the plate, loosen all bolts in a circular pattern one-half turn. Do this again and again until the torque for the bolts is released.

160-5493 Puller Plate

Essential Tool

Model: 797 Off-Highway Trucks

Warranty: Six Months



- Used to separate front axle from suspension strut rod
- Can be used with a hoist attached to two 1/2-13 eye bolts
- Attaches to rod with eighteen 7Y-5245 Hex Head Bolts and 9X-8259 Flat Hard Washers
- Heat-treated for added strength and durability
- Eye bolts not included

Outside diameter	533 mm (21.0 in)
Overall thickness	115 mm (4.5 in)
Bolt hole circle dimension	445 mm (17.5 in)
7Y-5245	M36 x 4.0, 150.0 mm (5.9 in) long
9X-8259	M36

Part Number	Description
160-5493	Puller Plate

6V-9080 Hitch Pin Sprocket Wrench

Model: 651E and 657E Tractor Scrapers

Warranty: Six Months

- Used for removing or installing 5P-9093 Hex Nut (5 3/8 inch) securing horizontal hitch pin; hitch pin size increased to 3 1/2 inch-12-2B thd and 5 3/8 inch hex nut size on 651E and 657E Series Tractor Scrapers from 4 1/4 inch hex size on 651B and 657B Series
- 2 wrenches required for various stages of tractor and hitch assembly



6V-9080

Part Number	Description
6V-9080	Hitch Pin Sprocket Wrench

9U-5131 Cylinder Spanner Wrench

Model: Articulated Trucks D25C, D30C, D25D, D30D, D350D, D35C, D35MP, D40D, D400D, D350C, D400

Warranty: Six Months

- Used to disassemble and assemble cylinder pistons from rods on suspension cylinders on articulated trucks
- Is more versatile, faster and safer than universal-type spanners
- Designed to perform without damaging or scratching piston OD or rod
- Services 4 different pistons — more economical than 4 separate tools
- Has 1 1/4 inch hex for use with 1 1/4 inch socket and torquing tool



Reference

SEN8203, Service Manual, Vehicle Systems Disassembly and Assembly (D400D)

Part Number	Description
9U-5131	Cylinder Spanner Wrench

5130 Mining Excavator Pin Removal/Installation Tooling

Model: 5130 Mining Excavators (Front Shovel and Backhoe Styles)

Warranty: Six Months

Pin Pullers

- Used to remove and install boom-to-frame pin, stick-to-boom pin, bucket-to-stick pin, and all related cylinder pins — tooling is essential to properly handle large pins without damage
- Used with general tooling listed below in "General Tooling Used for All Pins"
- A locking stud is designed into each pin installer to lock pin inside installer (essential when working overhead)
- Each pin installer should be fitted with the correct cradle assembly to hold hydraulic cylinder in place

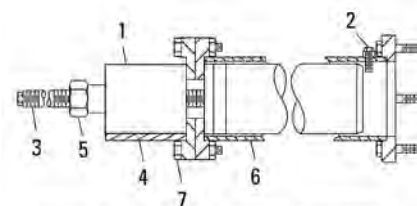
Threaded Puller Rods and Fast Runner Nuts

- Threaded rods, in various lengths, used to pull pins into or out of pin bore
- Fast runner nuts are used with threaded rod to make removal of pins faster and easier
- Puller rods screw into threaded hole in each pin

References

SEN6058, 5130 Service Manual Module, Disassembly and Assembly

SEN1472, 5130B Service Manual Module, Disassembly and Assembly



Typical pin installer and cradle assembly

(Continued)

Implements, Frame, Hitch and Suspension

5130 Mining Excavator Pin Removal/Installation Tooling (Continued)

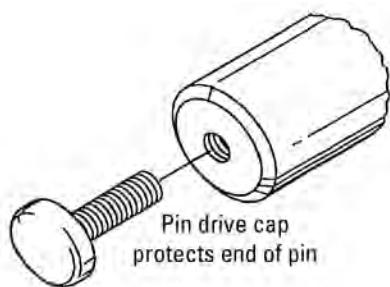
Model: 5130 Mining Excavators (Front Shovel and Backhoe Styles)

Warranty: Six Months

SEHS9721, Special Instruction, Assembly Procedure for Hydraulic Excavator (5130 only)

Item	Description
1	Hydraulic Cylinder
2	Square Head Setscrew (Locking Stud)
3	Threaded Puller Rod
4	Cradle Assembly
5	Fast Runner Nut
6	Pin Installer
7	Bolt Washer Nut

5130 Pin Driver Caps

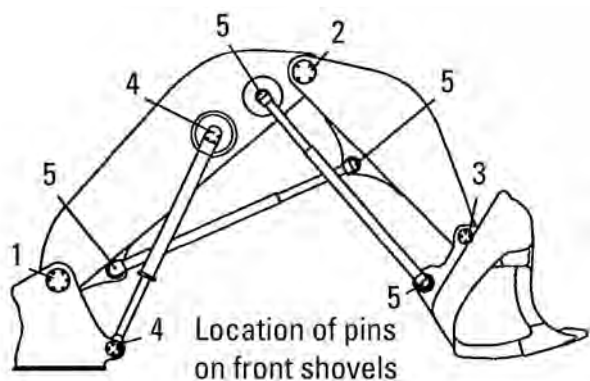


Pin Driver Caps

- 2 sizes of pin driver caps are available to protect ends of pin (keeps pin from “mushrooming” at the ends)
- When installed, the caps can be hit with sledge hammer to drive pins into bore (used for installation only)
- Used only when hydraulic force is not required to install pins

5130 Front Shovel Tooling Usage

Item	Description
1	Boom-to-Swing Frame Pin
2	Stick-to-Boom Pin
3	Bucket Pin
4	Cylinder Pins
5	Cylinder Pins



(Continued)

5130 Front Shovel Tooling Usage (Continued)

Removal/Installation	
Part Number	Description
Pin No. 1 (Boom-to-Swing Frame)	
4C-9544	Pin Driver Cap (installation only)
9U-6798	Hydraulic Cylinder Plate Assembly ¹
Pin No. 2 (Stick-to-Boom)	
9U-6798	Hydraulic Cylinder Plate Assembly ¹
161-1783	Receiver Sleeve
Pin No. 3 (Bucket Pin)	
9U-6792	Puller Assembly - Pin
Pin No. 4 (Cylinder Pin)	
9U-6706	Puller Assembly (Cylinder Pins)
4C-9544	Pin Driver Cap (installation only)
Pin No. 5 (Cylinder Pin)	
9U-6706	Puller Assembly (Cylinder Pins)
9U-6814	Stud - Puller (M48 x 5)
9U-6903	Nut - Speed (M48)
9U-6758	Pin Driver Cap (installation only)

¹Part of 9U-6791 Pin Installer Group; 9U-6791 contains the basic group of tools for removing pins (Group includes: 9U-6798, 2H-3889, 6V-8237, 8T-0363, and 8T-4001).

General Tooling

General Tooling Used for All Pins	
Part Number	Description
3S-6224	Pump Group - Hydraulic (115V)
6D-7726	Hydraulic Hose (2)
8S-8033	Pump Grp - Hydraulic (230V)
9U-6702	Rod Assembly - Threaded
9U-6800	Nut - Speed (M64)
316-1490	Cylinder Group

5130 Mass Excavator Tooling Usage

Warranty: Six Months

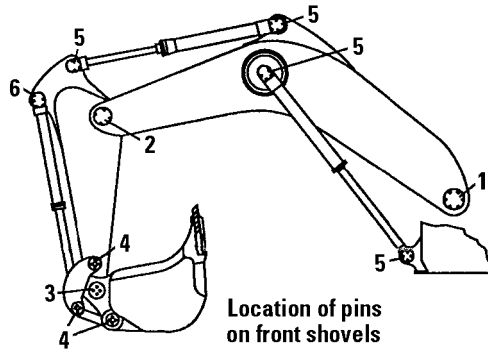
Item	Description
1	Boom-to-Swing Frame Pin
2	Stick-to-Boom Pin
3	Bucket Pin
4	Bucket Pin
5	Cylinder Pins
6	Cylinder Pins

(Continued)

Implements, Frame, Hitch and Suspension

5130 Mass Excavator Tooling Usage (Continued)

Warranty: Six Months



Vehicle System Tools

Removal/Installation	
Part Number	Description
Pin No. 1 (Boom-to-Swing Frame)	
4C-9544	Pin Driver Cap (installation only)
9U-6798	Hydraulic Cylinder Plate Assembly ¹
Pin No. 2 (Stick-to-Boom)	
161-1783	Receiver Sleeve
9U-6798	Hydraulic Cylinder Plate Assembly ¹
Pin No. 3 (Bucket Pin)	
9U-6792	Puller Assembly - Pin
Pin No. 4 (Bucket Pin)	
9U-6792	Puller Assembly - Pin
4C-9544	Pin Driver Cap (installation only)
Pin No. 5 (Cylinder Pin)	
4C-9544	Pin Driver Cap (installation only)
9U-6706	Puller Assembly (Cylinder Pins)
Pin No. 6 (Cylinder Pin)	
9U-6758	Pin Driver Cap (installation only)
9U-6706	Puller Assembly (Cylinder Pins)
9U-6903	Nut - Speed (M48)
9U-6814	Stud - Puller (M48 x 5)

¹ Part of 9U-6791 Pin Installer Group; 9U-6791 contains the basic group of tools for removing pins (Group includes: 9U-6798, 2H-3889, 6V-8237, 8T-0363, and 8T-4001).

5130 Part Specifications

Part No.	Description	Max. Pin Diameter	Max. Pin Length	Max. Rod Diameter	Max. Capacity	Thread Size	Length	Diameter	Use
161-1783	Receiver Sleeve	220 mm (8.7 in)	1550 mm (61.0 in)	82 mm (3.2 in)	136 t (150 tons)	--	--	--	Holds pin during removal
4C-8150	Rod Assembly - Threaded	--	--	--	136 t (150 tons)	M64 x 6	1.8 m (6.0 ft)	--	Used to remove and install pins
4C-9544	Pin Driver Cap (installation only)	--	--	--	--	M64 x 6	70 mm (2.8 in)	127 mm (5.0 in)	Used to install pins when using sledge hammer
9U-6702	Rod Assembly - Threaded	--	--	--	136 t (150 tons)	M64 x 6	2.6 m (8.5 ft)	--	Used to remove and install pins
9U-6706	Puller Assembly (Cylinder Pins)	182 mm (7.2 in)	440 mm (17.3 in)	82 mm (3.2 in)	136 t (150 tons)	--	--	--	Used to remove cylinder pins
9U-6758	Pin Driver Cap (installation only)	--	--	--	--	M48 x 5.0	77 mm (3.0 in)	101 mm (4.0 in)	Used to install pins when using sledge hammer
9U-6792	Puller Assembly - Pin	228 mm (9.0 in)	1825 mm (71.9 in)	82 mm (3.2 in)	136 t (150 tons)	--	--	--	Holds pin during removal (hydraulic cylinder cradle assembly part of 9U-6792) and during installation
9U-6798	Hydraulic Cylinder Plate Assembly ¹	--	--	82 mm (3.2 in)	136 t (150 tons)	--	--	--	Used to hold hydraulic cylinder; used with 161-1783 to remove boom and stick pins
9U-6800	Nut - Speed (M64)	--	--	--	--	M64 x 6	--	--	Used with threaded puller rods to remove and install pins
9U-6814	Stud - Puller (M48 x 5)	--	--	--	90 t (100 tons)	M48 x 5.0	0.9 m (3.0 ft)	--	Used to remove and install pins
9U-6815	Puller Stud (M48) 62 in	--	--	--	90 t (100 tons)	M48 x 5	1.5 m (5.0 ft)	--	Used to remove and install pins
9U-6903	Nut - Speed (M48)	--	--	--	--	M48 x 5	--	--	Used with threaded puller rods to remove and install pins

¹ Part of 9U-6791 Pin Installer Group; 9U-6791 contains the basic group of tools for removing pins (Group includes: 9U-6798, 2H-3889, 6V-8237, 8T-0363, and 8T-4001).

5230 Mining Excavator Pin Removal/Installation Tooling

Model: 5230 Mining Excavators (Front Shovel)

Warranty: Six Months

Pin Pullers

- Used to remove and install boom-to-frame pin, stick-to-boom pin, bucket-to-stick pin, and all related cylinder pins (tooling is essential to properly handle large pins without damage)
- Used with general tooling listed in "General Tooling Used for All Pins"
- A locking stud is designed into each pin installer to lock pin inside installer (essential when working overhead)
- Each pin installer should be fitted with the correct cradle assembly to hold hydraulic cylinder in place

Threaded Puller Rods and Fast Runner Nuts

- Threaded rods, in various lengths, used to pull pins into or out of pin bore

(Continued)

Implements, Frame, Hitch and Suspension

5230 Mining Excavator Pin Removal/Installation Tooling (Continued)

Model: 5230 Mining Excavators (Front Shovel)

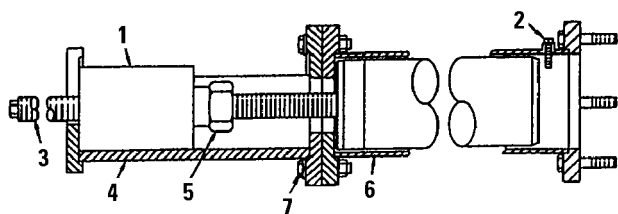
Warranty: Six Months

- Fast runner nuts are used with threaded rod to make removal of pins faster and easier
- Rods screw into threaded hole in each pin

Reference

SENR6108, 5230 Service Manual Module, Disassembly and Assembly

Item	Description
1	Hydraulic Cylinder
2	Square Head Setscrew (Locking Stud)
3	Threaded Puller Rod
4	Cradle Assembly
5	Fast Runner Nut
6	Pin Installer
7	Bolt



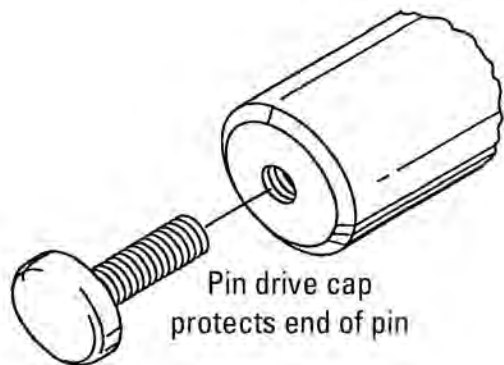
Typical pin installer and cradle assembly

Part Number	Description
6V-8237	Hard Washer
8T-4001	Nut

5230 Pin Driver Caps

Pin Driver Caps

- 2 sizes of pin driver caps are available to protect ends of pin (keeps pin from mushrooming at the ends)
- When installed, the caps can be hit with sledge hammer to drive pins into bore (used for installation only)
- Used only when hydraulic force is not required to install pins



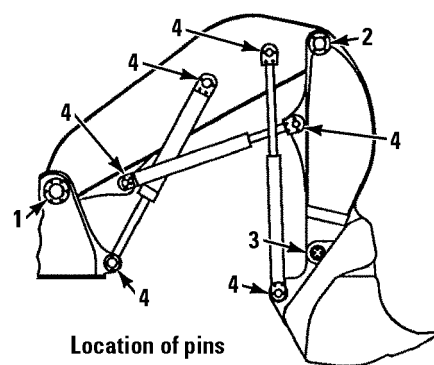
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5230 Pin Driver Caps (Continued)

Part Number	Description	Qty.
General Tooling Used for All Pins		
316-1490	Cylinder Group	1
6D-7726	Hydraulic Hose (2)	2
8S-8033	Pump Grp - Hydraulic (230V)	1
9U-6702	Rod Assembly - Threaded	1
9U-6800	Nut - Speed (M64)	2
3S-6224	Pump Group - Hydraulic (115V)	1

5230 Front Shovel Tooling Usage

Item	Description
1	Boom-to-Swing Frame Pin
2	Stick-to-Boom Pin
3	Bucket Pin
4	Cylinder Pins



Removal/Installation	
Part Number	Description
Pin No. 1 (Boom-to-Swing Frame)	
9U-6798	Hydraulic Cylinder Plate Assembly ¹
1U-6197	Installer Cradle
1U-6196	Boom Pin Tube Assembly
Pin No. 2 (Stick-to-Boom)	
1U-6199	Stick Pin Installer Assembly
1U-6198	Hydraulic Cylinder Plate Assembly
Pin No. 3 (Bucket Pin)	
1U-6201	Bucket Pin Installer Assembly
Pin No. 4 (Cylinder Pin)	
1U-6202	Puller Assembly - Pin
9U-6814	Stud - Puller (M48 x 5)
4C-9544	Pin Driver Cap (installation only)

¹ Part of 9U-6791 Pin Installer Group; 9U-6791 contains the basic group of tools for removing pins (Group includes: 9U-6798, 2H-3889, 6V-8237, 8T-0363, and 8T-4001).

Implements, Frame, Hitch and Suspension

5230 Part Specifications

Warranty: Six Months

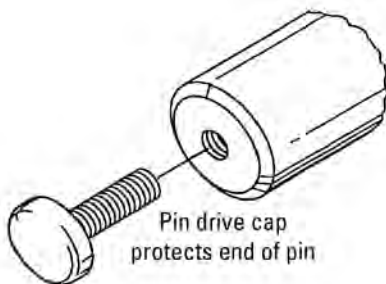
Part Number	Description	Max. Pin Diameter	Max. Pin Length	Max. Rod Diameter	Capacity (Tons)	Thread Size	Length	Diameter	Use
General Tooling Used for All Pins									
1U-6196	Boom Pin Tube Assembly	304 mm (11.97 in)	2,100 mm (82.68 in)	82 mm (3.23 in)	136 t 150 tons	--	--	--	Holds pin during removal
1U-6197	Installer Cradle	--	--	82 mm (3.23 in)	136 t 150 tons	--	--	--	Used to hold hydraulic cylinder; to install boom pin
1U-6201	Bucket Pin Installer Assembly	--	--	82 mm (3.23 in)	136 t 150 tons	--	--	--	Used to hold hydraulic cylinder
1U-6202	Puller Assembly - Pin	243 mm (9.57 in)	450 mm (17.72 in)	82 mm (3.23 in)	136 t 150 tons	--	--	68.0 mm (2.68 in)	Used to remove cylinder pins
4C-8150	Rod Assembly - Threaded	--	1,829 mm (72.01 in)	--	136 t (150 tons)	M64 x 6	1.8 m (6.0 ft)	--	Used to remove and install pins
4C-9544	Pin Driver Cap (installation only)	--	--	127 mm (5 in)	--	M64 x 6	70 mm (2.8 in)	101 mm (4.0 in)	Used to install pins when using sledge hammer
9U-6702	Rod Assembly - Threaded	--	2,616 mm (102.99 in)	--	136 t 150 tons	M64 x 6	2.6 m (8.5 ft)	--	Used to remove and install pins
9U-6800	Nut - Speed (M64)	--	--	--	--	M64 x 6	--	--	Used with threaded puller rods to remove and install pins

Vehicle System Tools

5230B Mining Excavator Pin Removal/Installation Tooling

Model: 5230B Mining Excavators

Warranty: Six Months



Pin Pullers

- Used to remove and install boom-to-frame pin, stick-to-boom pin, bucket-to-stick pin, and all related cylinder pins (tooling is essential to properly handle large pins without damage)
- Used with general tooling listed in General Tooling Used for All Pins
- A locking stud is designed into each pin installer to lock pin inside installer (essential when working overhead)
- Each pin installer should be fitted with the correct cradle assembly to hold hydraulic cylinder in place

Threaded Puller Rods and Fast Runner Nuts

- Threaded rods, in various lengths, used to pull pins into or out of pin bore
- Fast runner nuts are used with threaded rod to make removal of pins faster and easier
- Rods screw into threaded hole in each pin

Pin Driver Caps

- 2 sizes of pin driver caps are available to protect ends of pin (keeps pin from mushrooming at the ends)
- When installed, the caps can be hit with sledge hammer to drive pins into bore (used for installation only)
- Used only when hydraulic force is not required to install pins

Reference

REN3379, Service Manual

(Continued)

5230B Mining Excavator Pin Removal/Installation Tooling (Continued)

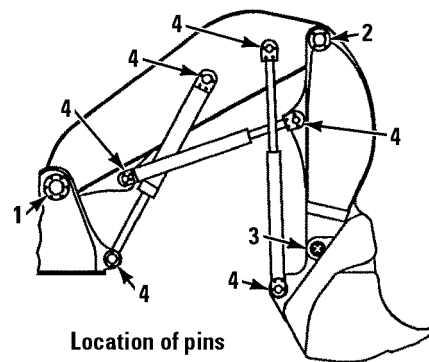
Model: 5230B Mining Excavators

Warranty: Six Months

Part Number	Description	Qty.
General Tooling Used for All Pins		
1U-6197	Installer Cradle	1
4C-8152	Retaining Plate	1
9T-2240	Rod (M10)	4
8T-4121	Washer (M10)	4
8T-4133	Nut (M10)	4
9U-6800	Nut - Speed (M64)	2
4C-9544	Pin Driver Cap (installation only)	1
3S-6224	Pump Group - Hydraulic (115V)	1
8S-8033	Pump Grp - Hydraulic (230V)	1
316-1490	Cylinder Group	1
Requires the following		
6D-7726	Hydraulic Hose (2)	2
135-2532	Bushing	2
135-2533	Street Elbow	1
1P-2376	Coupler Assembly Quick Connective (Female) (2)	2
1P-2377	Plug As - Dust	2
8T-0820	Standard Pressure Gauge	1

5230B Front Shovel Tooling Usage

Item	Description
1	Boom-to-Swing Frame Pin
2	Stick-to-Boom Pin
3	Bucket Pin
4	Cylinder Pins



(Continued)

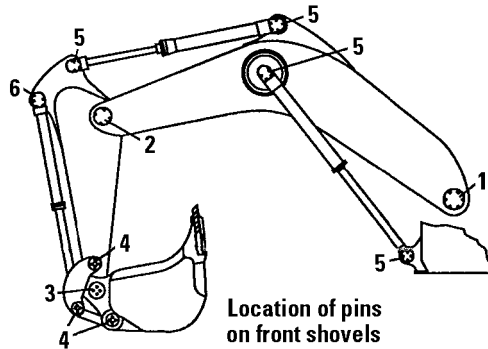
Implements, Frame, Hitch and Suspension

5230B Front Shovel Tooling Usage (Continued)

Part Number	Description
Pin No. 1	
1U-6197	Installer Cradle
1U-6202	Puller Assembly - Pin
9U-6702	Rod Assembly - Threaded
Pin No. 2 and 4	
1U-6201	Bucket Pin Installer Assembly
1U-6202	Puller Assembly - Pin
9U-6702	Rod Assembly - Threaded
Pin No. 3	
1U-6201	Bucket Pin Installer Assembly
9U-6702	Rod Assembly - Threaded

5230B Mass Excavator Tooling Usage

Item	Description
1	Boom-to-Swing Frame Pin
2	Stick-to-Boom Pin
3	Bucket Pin
4	Bucket Pin
5	Cylinder Pins
6	Cylinder Pins



Part Number	Description
Pin No. 1 and 2	
1U-6202	Puller Assembly - Pin
9U-6702	Rod Assembly - Threaded
Pin No. 3, 4, 5 and 6	
1U-6202	Puller Assembly - Pin
9U-6702	Rod Assembly - Threaded

5230B Part Specifications

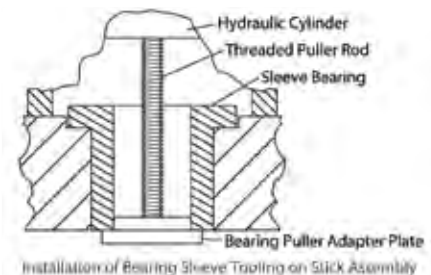
Part Number	Description	Max. Pin Diameter	Max. Length	Max. Diameter	Max. Capacity (Tons)	Thread Size	Length	Diameter	Use
1U-6196	Boom Pin Tube Assembly	304 mm (11.97 in)	2,100 mm (82.68 in)	82 mm (3.23 in)	136 t 150 tons	--	--	--	Holds pin during removal
1U-6197	Installer Cradle	--	--	82 mm (3.23 in)	136 t 150 tons	--	--	--	Used to hold hydraulic cylinder; to install boom pin
1U-6201	Bucket Pin Installer Assembly	--	--	82 mm (3.23 in)	136 t 150 tons	--	--	--	Used to hold hydraulic cylinder
1U-6202	Puller Assembly - Pin	243 mm (9.57 in)	450 mm (17.72 in)	82 mm (3.23 in)	136 t 150 tons	--	--	68.0 mm (2.68 in)	Used to remove cylinder pins
4C-9544	Pin Driver Cap (installation only)	--	--	127 mm (5 in)	--	M64 x 6	70 mm (2.8 in)	101 mm (4.0 in)	Used to install pins when using sledge hammer
9U-6702	Rod Assembly - Threaded	--	2,616 mm (102.99 in)	--	136 t 150 tons	M64 x 6	2.6 m (8.5 ft)	--	Used to remove and install pins
9U-6800	Nut - Speed (M64)	--	--	--	--	M64 x 6	--	--	Used with threaded puller rods to remove and install pins
9U-6814	Stud - Puller (M48 x 5)	--	920 mm (36.22 in)	--	90 t (100 tons)	M48 x 5.0	0.9 m (3.0 ft)	--	Used to remove and install pins

Bearing Puller Adapters

Model: 300 and M300 Series Excavators; 5000 Series Mining Excavators (Front Shovel and Backhoe Styles)

Warranty: Six Months

- Used to remove sleeve bearings from boom and stick — essential to remove bearing sleeves used on 300, M300, and 5000 Series Excavators
- Also used to pull any bearing with appropriate size inside diameter
- Bearing puller adapters allow easy removal of sleeve bearings and reduce chance of damage to bearing bore
- Sides are cut away to allow adapter to be put through bearing in a sideways position and then turned up to engage against backside of bearing
- A 1 1/4 inch hardened washer must be used when using 1 1/4-12 threaded puller rods and 7H-7539 Nut



References

5000 Series Excavator Service Manual Module, Disassembly and Assembly
 00 Series Excavator Service Manual Module, Disassembly and Assembly
 M300 Series Excavator Service Manual Module, Disassembly and Assembly
 SEHS9721, Special Instruction, Assembly Procedure for Hydraulic Excavator (5130 Excavator only)

Used with the following tooling when adapter plate has M64 threaded holes	
Part Number	Description
Not Listed	Hydraulic Cylinder

(Continued)

Implements, Frame, Hitch and Suspension

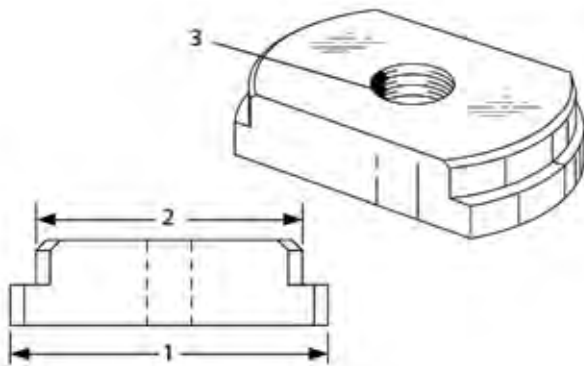
Bearing Puller Adapters (Continued)

Model: 300 and M300 Series Excavators; 5000 Series Mining Excavators (Front Shovel and Backhoe Styles)

Warranty: Six Months

Part Number	Description
Used with the following tooling when adapter plate has M64 threaded holes	
9U-6800	Nut - Speed (M64)
3S-6224	Pump Group - Hydraulic (115V)
8S-8033	Pump Grp - Hydraulic (230V)
6D-7726	Hydraulic Hose (2)
316-1490	Cylinder Group
Used with the following tooling when adapter plate has 1 1/4-12 threaded holes	
9U-6832	Speed Nut
7H-7539	Nut - Full, 1 1/4 - 12
4K-0684	Hardened Washer
6V-3175	Hydraulic Cylinder
3S-6224	Pump Group - Hydraulic (115V)
8S-8033	Pump Grp - Hydraulic (230V)
6D-7726	Hydraulic Hose (2)

Bearing Puller Adapter Specifications



Vehicle System Tools

Part Number	Description	Bearing I.D.	Adapter OD (Item 1)	Adapter OD (Item 2)	Threaded Hole (Item 3)
123-3804	Bearing Puller Adapter	60.0 (2.36)	70.0 (2.76)	59.0 (2.32)	1 1/4 -12
1U-6217	Bearing Puller Adapter	160.0 (6.30)	185.4 (7.30)	159.0 (6.26)	1 1/4 -12
231-4349	Bearing Puller Adapter	65.0 (2.56)	75.0 (2.95)	64.0 (2.52)	1 1/4 -12
246-2386	Bearing Puller Adapter	120.0 (4.72)	137.0 (5.39)	119.0 (4.69)	1 1/4 -12
284-2368	Bearing Puller Adapter	100.5 (3.96)	115.0 (4.53)	99.5 (3.92)	1 1/4 -12
9U-5336	Bearing Puller Adapter	70.0 (2.76)	81.0 (3.19)	69.0 (2.72)	1 1/4 -12
9U-5337	Bearing Puller Adapter	80.0 (3.15)	91.0 (3.58)	79.0 (3.11)	1 1/4 -12
9U-5338	Bearing Puller Adapter	90.0 (3.54)	102.0 (4.02)	89.0 (3.50)	1 1/4 -12
9U-5339	Bearing Puller Adapter	100.0 (3.94)	112.0 (4.41)	99.0 (3.90)	1 1/4 -12
9U-6227	Bearing Puller Adapter	110.0 (4.33)	126.0 (4.96)	109.0 (4.29)	1 1/4 -12
9U-6260	Bearing Puller Adapter	130.0 (5.12)	150.0 (5.91)	129.0 (5.08)	1 1/4 -12
9U-6261	Bearing Puller Adapter	140.0 (5.51)	160.00 (6.30)	139.0 (5.47)	1 1/4 -12
9U-6904	Bearing Puller Adapter	200.0 (7.87)	225.4 (8.87)	199.0 (7.83)	M64 x 6
9U-6905	Bearing Puller Adapter	240.0 (9.45)	285.1 (11.22)	239.0 (9.41)	M64 x 6
9U-6906	Bearing Puller Adapter	220.0 (8.66)	245.4 (9.66)	219.0 (8.62)	M64 x 6

(Continued)

Bearing Puller Adapter Specifications (Continued)

Part Number	Description	Bearing I.D.	Adapter OD (Item 1)	Adapter OD (Item 2)	Threaded Hole (Item 3)
9U-6907	Bearing Puller Adapter	120.0 (4.72)	145.4 (5.72)	119.0 (4.69)	1 1/4 -12

185-5852 Bearing Puller Adapter

Essential Tool

Model: 539 Knuckleboom Loader

Warranty: Six Months

- Used to remove 162-6471 Bushings
- Used with 4C-9634 Stud Puller, 9U-8632 Fast Runner Nut, and discontinued 6V-0113 or 316-1489 Cylinder Group
- Bearing inside diameter: 89.2 mm (3.51 in)
- Adapter outside diameter: 87.4 mm (3.44 in)



Part Number	Description
185-5852	Bearing Puller Adapter

284-2368 Bearing Puller Adapter

Essential Tool

Model: 330D Hydraulic Excavator

Warranty: Six Months

- Used to remove stick nose sleeve bearings
- Heat-treated for added durability
- Used with discontinued 6V-0113 or 316-1489 Cylinder Group and 4C-9634 Puller Stud



Reference

REN8648, 330D Disassembly and Assembly Machine Systems

Thread	1 1/4-12
Small outside diameter	99.5 mm (3.92 in)
Large outside diameter	115.0 mm (4.53 in)

Part Number	Description
284-2368	Bearing Puller Adapter

185-3542 Bearing Puller Plate (988G)

Model: 988G Wheel Loader

Warranty: Six Months

- Used to remove sleeve bearings from Y and K pin locations
- Bearing puller adapter has center swivel point for easy installation
- Heat-treated for added durability

Inside diameter	180 mm (7.1 in)
Overall outside diameter	188 mm (7.4 in)
Small outside diameter	156 mm (6.1 in)

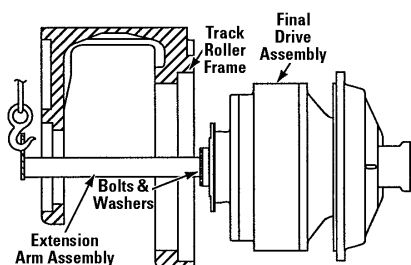


Part Number	Description
185-3542	Bearing Puller Plate (988G)

4C-9695 Extension Assembly Arm

Model: 5230 Mining Excavators (Front Shovel)

Warranty: Six Months



- Used to remove and install final drive assembly into track roller frame
- Used with overhead hoist or equivalent to lift extension arm and final drive assembly
- Extension arm is essential to correctly and quickly install the final drive — final drive assembly must be held horizontal to allow final drive installation due to close tolerances between mounting diameters and track roller frame bores
- Bolts directly onto final drive with standard metric bolts
- Extra mounting holes allow final drive to be rotated to any desired angle (30° increments) during installation — helps to align final drive mounting holes for assembly
- Bolts and washers are required to mount extension to final drive — 6V-3532 Bolt (M20 x 60 mm long) and 8T-3282 Washer
- Overall length: 1168 mm (46.0 in)
- Approximate weight: 49.8 kg (110 lb)

Reference

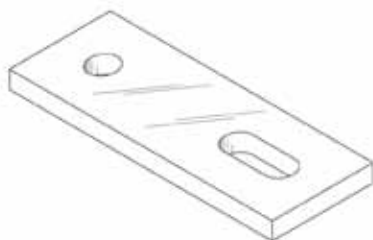
SENR6108, 5230 Service Manual Module, Disassembly and Assembly

Part Number	Description
4C-9695	Extension Assembly Arm

FT2303 Support

Model: AP800 and AP1200 Pavers

Warranty: None



- Used during replacement of main screed plate (2 required)
- When crown gap cover is removed from screed frames, supports should be installed temporarily in place of crown gap cover to prevent screed frames from shifting.

Reference

KEBR1235, Service Manual

FT3137 Guide Support

Model: AS3173 Screed (Used with AP300 Paver)

Warranty: None



- Used to support sliding guides on extender side of screed
- Used during disassembly and assembly
- Welded steel construction
- Adjustable support plate

Reference

QENR2078, Service Manual, AS3173 Screed, Disassembly and Assembly

FT2302 Alignment Tool

Model: PR-450 Pavement Profiler

Warranty: None

- Used to align gear box drive sheave with engine
- Other parts needed:
1S-2830 Stud, 152.4 mm (6 in) length, 5/8-11 NC and 5/8-18 UNF (3)
1D-4720 Nut, 5/8-11 NC (3)
S0509 Bolt, 3/8-16 NC (4)
- Using this tool is fastest and easiest way to align sheave



References

KELR1202, Service Manual

KELR1214, Service Manual

KELR1217, Service Manual

KELR1218, Service Manuals

Cab Tilt Braces

Model: 943, 953, 963 and 973 Loaders

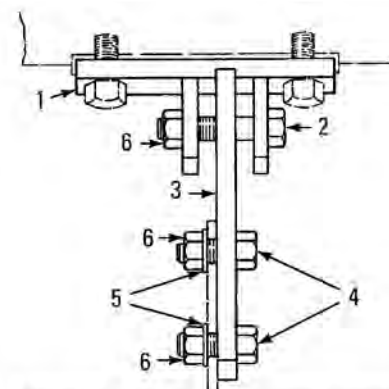
Warranty: Six Months

- Used to secure cabs when they are tilted to 90° position
- Brace groups bolt between operator platform and loader frame
- Cab braces not serviced as group under single part number; all components of the groups must be ordered individually

Item	Description	943 Loader 8G-0148 Brace ¹	953 Loader 8G-0149 Brace ¹	963 Loader 8G-1847 Brace ¹	973 Loader 8G-1890 Brace ¹
		Group	Group	Group	Group
1	Bracket As- sembly	8G-1397	8G-1397	8G-1397	8G-1397
2	Bolt	3B-2968	3B-2968	3B-2968	3B-2968
3	Plate	8G-6187	8G-6188	8G-1849	3W-0815
4	Bolt	0L-1178 (2)	0L-1178 (2)	0S-1626 (2)	1D-4609 (2)
5	Washer	5P-8248 (2)	5P-8248 (2)	5P-8248 (2)	5P-8248 (4)
6	Nut	1B-4331 (3)	1B-4331 (3)	1B-4331	2J-3506 (3)
¹ Cancelled					

Item	Part Number	Description
1.0	8G-1397	Bracket Assembly
2.0	3B-2968	Bolt
3.0	8G-6187	Plate
4.0	0L-1178 ¹	Bolt
5.0	5P-8248	Hard Washer
6.0	1B-4331	Nut

¹ Discontinued, part of the 8F-2550 Engine Tilting Group

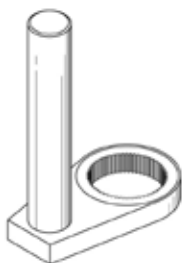


Typical Brace Group Component Location

FT3014 Reaction Arm Assembly

Model: 789A (9ZC1-UP), 789B (7EK1-UP), and 789C (2BW1-UP) Off- Highway Trucks

Warranty: None



- Used to remove and tighten bolts securing cab support assemblies (outriggers) to frame assembly; especially helpful when removing and torquing the lower bolted joint on the rear cab support
- Used with 194-7586 Pneumatic Wrench Group and 258-5686 Modified Impact Socket

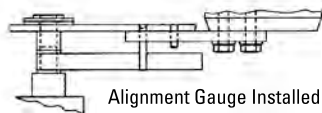
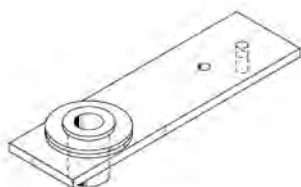
Reference

SEBE9071 Service Letter, Product Improvement Program for Inspecting and/or Replacing the Rear Cab Support on Certain 789 Off-Highway Trucks

127-8073 Articulation Sending Unit Alignment Gauge

Model: All H Series Motor Graders

Warranty: Six Months



Alignment Gauge Installed on Machine

- Used to make sure 3E-5383 Articulation Sending Unit matches actual position of vehicles articulation (if sensor is not aligned properly, operators display for articulation in cab will be incorrect)
- Alignment gauge is required to realign replacement sensors, or if sensor moved for any reason such as work to, or around articulation joint area
- Allows quick and accurate positioning of sensor relative to 2 fixed points on machine
- Sensor is properly positioned when bushing, pin, and hole are all aligned
- Overall size: 25.0 x 89.0 x 16.0 mm (0.10 x 3.50 x 0.63 in)

Reference

Service Manual Module

Part Number	Description
127-8073	Articulation Sending Unit Alignment Gauge

1U-9099 Adapter

Model: Challenger 35, 45 and 55

Warranty: Six Months



- Used to provide connection to pump when checking servo up-stroke pressure from inside port (there is insufficient clearance to attach pressure gauge onto top of pump)
- Threads into inside port on top of steering pump
- Uses quick disconnect end to easily and quickly attach pressure gauge
- Thread specification: M8 x 1
- Angle: 90°

Reference

SEN8300 Service Manual

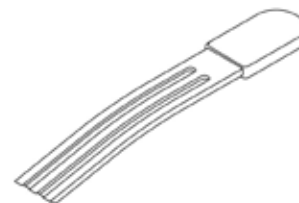
Part Number	Description
1U-9099	Adapter

1U-9067 Hand Brake Tool

Model: Challenger 35, 45 and 55

Warranty: Six Months

- Used to separate brake friction plates (makes it possible to separate and insert brake pads into friction plates)
- Makes a difficult installation procedure quick and easy
- Tool is angled to allow parking brake to be almost completely installed before tool is removed
- Rubber coated handle makes tool easier to hold
- With parking brake unit removed, tool is easily installed to separate discs
- Once brake pads are between friction plates, tool can be easily removed and parking brake can be mounted to housing
- Overall length: 218 mm (8.6 in)



Reference

SENR8300 Service Manual

Part Number	Description
1U-9067	Hand Brake Tool

PTO Component Tools

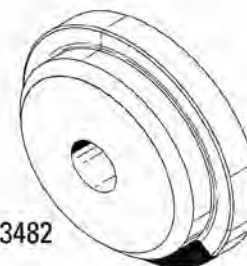
Model: Challenger 35, 45 and 55

Warranty: Six Months

- Used to remove, install, assemble, and disassemble components of PTO

137-3482 PTO Installer

- Used to install 112-8695 Seal for PTO output shaft and 112-8436 Seal for rock shaft
- Handle can be attached to installer and seals are then driven into place
- Installer provides additional protection to seal during installation



137-3482

Reference

SENR8300 Service Manual

137-3482 PTO Installer	
Outside diameter	92.0 mm (3.62 in)
Pilot diameter	74.3 mm (2.93 in)
Diameter of center hole	6.63 mm (0.26 in)

Part Number	Description
1U-9059	Bracket
1U-9066	PTO Hub Puller
137-3482	PTO Installer

PTO Bracket

1U-9059 Bracket

- Used to lift PTO during removal and installation (holds PTO assembly in a horizontal position)
- Used with overhead lifting device
- Attaches to PTO housing cylinder bracket for three point hitch



1U-9059

PTO Hub Puller



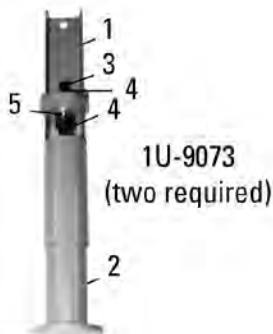
1U-9066 PTO Hub Puller

- Used to remove PTO clutch housing assembly (hub)
- Used with 8B-7548 Push/Puller Group

Rear Stand Group

Model: Challenger 35, 45 and 55

Warranty: Six Months



- Used when splitting tractor to remove transmission or other driveline components
- Bolts directly to frame using counterweight bolt holes
- Support can be adjusted for height (adjustments should not be made when support is holding full load of tractor)
- Rear supports bolt on with 0S-1626 Bolts and 2J-3506 Nuts — front support uses counterweight mounting bolts

Reference

SEN8300 Service Manual

1U-9073 Rear Stand Group		
Item	Part Number	Description
1	1U-9077	Leg Assembly
2	1A-1935	Nut
3	5F-7366	Screw - Forcing
4	1U-9075	Rear Stand Assembly
5	5F-7353	Thrust Washer

1U-9078 Stabilizer

Model: Challenger 35, 45 and 55

Warranty: Six Months



- Used to add stability to front of Challenger during undercarriage change or when working on undercarriage — spreads front stabilizing points out to 1245 mm (49.0 in)
- Used with 8S-7640 Tube Stand, 8S-7611 Tube, and 8S-7615 Pin (requires 2 of each)
- Bolts directly onto engine side frames using two 0S-1626 Bolts and 2J-3506 Nuts

Reference

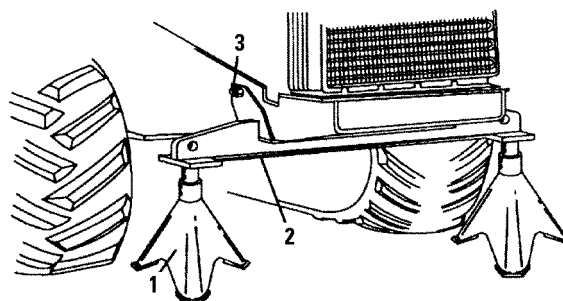
SEN8300 Service Manual

Distance between side plates	689 mm (27.1 in)
Distance between stabilizer pads	1245 mm (49.0 in)
Working load limit	4086 kg (9000 lb)
Mounting hardware (2 each)	0S-1626 Bolt, 2J-3506 Nut

Part Number	Description
1U-9078	Stabilizer

Stabilizer with Tube Stand

Item with no Part Number	
1	Tube Stand



Using the stabilizer and tube stands

Item	Part Number	Description
2	1U-9078	Stabilizer
3	0S-1626	Bolt
3	2J-3506	Nut

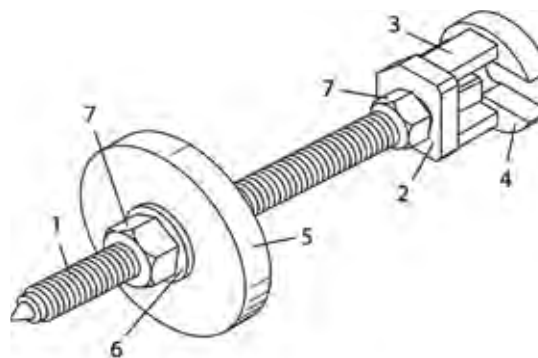
FT2635 Pin Adapter Group

Model: All 35, 45, and 55 Challengers with Load Sensing Hitch

Warranty: None

- Used to remove electronic draft pin located in rear hitch (makes removal easier)
- Requires simple machining and welding
- Made from one 5F-7366 Forcing Screw, one 5P-8250 Hardened Washer, two 1A-1935 Full Nuts, and 4 fabricated parts
- To simplify machining, plate (4) can be made from a 113-5463 Retainer
- Steel specification: SAE1018
- Machining tolerances: ± 1.0 mm

Item	Description
2	Plate (fabricated)
3	Block (fabricated)
4	Retainer (fabricated)
5	Plate (fabricated)



(Continued)

Implements, Frame, Hitch and Suspension

FT2635 Pin Adapter Group (Continued)

Model: All 35, 45, and 55 Challengers with Load Sensing Hitch

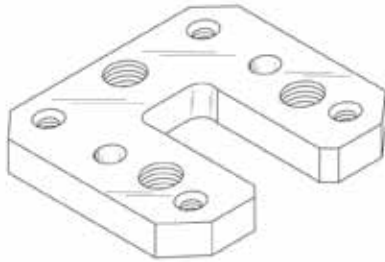
Warranty: None

Item	Part Number	Description
1	5F-7366	Screw - Forcing
6	5P-8250	Hard Washer
7	1A-1935	Nut

FT2647 Draft Pin Remover

Model: All 35, 45, and 55 Challengers with Load Sensing Hitch

Warranty: None



- Used to remove electronic draft pin located in rear hitch
- Used with 3 forcing screws such as 8B-7552 Forcing Bolt or 5F-7345 Forcing Screw
- Can be made from a 113-5463 Retainer by drilling and tapping three additional 5/8-18 UNF holes

9U-7412 Bearing Driver Plate

Model: 785B, 789B, and 793B Off-Highway Trucks

Warranty: Six Months

- Used to install bearings without damage
- Has 2 different pilots (1 for 8X-8654 Bearing used on 789B and 793B Off-Highway Trucks); 1 for 71-5494 Bearing used on 785B Off-Highway Trucks)
- Used with either 1P-0531 Handle or 1P-0532 Handle and 4L-7124 Bolt (handles and bolt part of 1P-0520 Driver Group)
- Driver plate heat-treated for durability

Reference

SENR5678, 785B Vehicle Systems Disassembly and Assembly

SENR5687, 789B Vehicle Systems Disassembly and Assembly

SENR5692, 793B Vehicle Systems Disassembly and Assembly

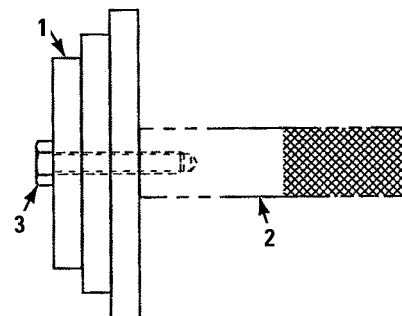
Outside diameter	139.7 mm (5.50 in)
Thickness	19.05 mm (0.750 in)
Pilot diameters	114.0 mm (4.49 in) and 126.7 mm (4.99 in)
Attachment to handle	4L-7124 Bolt, 1/4 in x 20 x 1 1/4 in
Heat treat	Rockwell C 32-38

(Continued)

9U-7412 Bearing Driver Plate (Continued)

Model: 785B, 789B, and 793B Off-Highway Trucks

Warranty: Six Months



Item	Part Number	Description
1	9U-7412	Bearing Driver Plate
Not included		
2	1P-0531	Handle ¹
2	1P-0532	Handle ¹
3	4L-7124	Bolt - Hex Socket Head ¹

¹Part of 1P-0520 Driver Group

FT2433 Bearing Removal Block

FT2434 Shaft Support Assembly

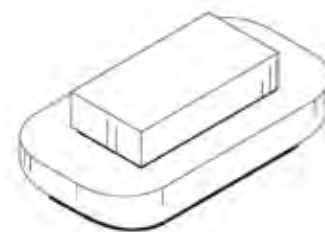
Model: 433B, 553, and 563 Compactors

Warranty: None

- Used to remove and install bearing, roller bearing cage, and vibratory weights
- FT2433 Bearing Removal Block makes removal of bearings from housing simpler and faster
- FT2434 Support Assembly: one end used to remove vibrator weights; other end to remove roller bearing cage

Reference

Service Manual for compactor

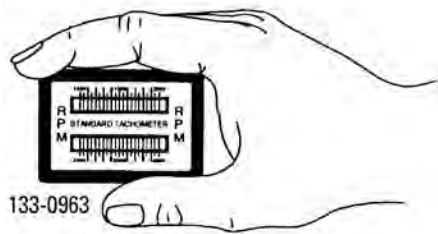


133-0963 Hand Held Drum Vibration Tachometer

133-9905 Frequency Meter, NEEG2687 Vibration Amplitude Decal

Model: All Vibratory Compactors

Warranty: Six Months



133-0963

133-0963 Hand Held Tachometer

- Check vibrations per minute by simply placing the unit on a vibrating drum and reading the measurement (If vibration is too great to obtain a reading, simply place your hand on the drum and then place the tachometer on top of your hand. This will dampen the vibration, but still provide an accurate reading.)
- Small, lightweight, hand-held, and easily carried into the field
- Completely sealed against contamination in normal working environments
- Readings can be extrapolated to one-quarter increments (for example, 12 VPM/25 VPM)

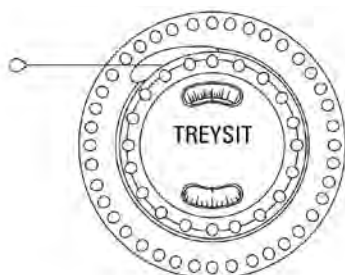
Reference

Instructions for using the 133-0963 Drum Vibration Tachometer and the 133-9905 Frequency Meter are included with each unit.

Low range	1000 - 2000 VPM in increments of 50
High range	2000 - 4000 VPM in increments of 100
Overall size	76 x 51 x 64 mm (3.0 x 2.0 x 2.5 in)
Weight	370 g (13 oz)
Accuracy	0.5% of rated frequency
Individual reed accuracy	0.3% at room temperature

Part Number	Description
133-0963	Hand Held Drum Vibration Tachometer
133-9905	Frequency Meter

Frequency Meter



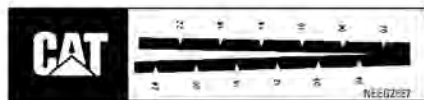
133-9905

133-9905 Frequency Meter

- Used to measure vibrations per minute (VPM) of vibratory compactor drums
- Low-cost option to measure vibrations per minute (good choice when exact accuracy of reading is not critical)
- Indicator can check RPM between 800 and 50,000 or cycles per second between 14 and 750

Size	85.0 x (3.4 in) diameter, 19.0 mm (0.75 in) thick
RPM range	800 - 50,000
Cycles per second range	14 - 750

Vibration Amplitude Decal



NEEG2687

NEEG2687 Vibration Amplitude Decal

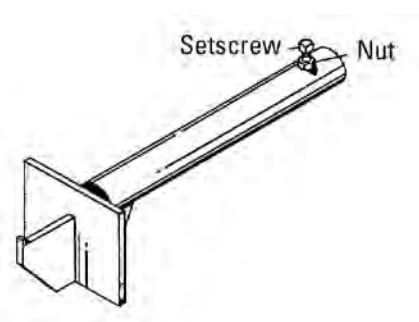
- Used to quickly and easily indicate amplitude of a vibrating surface
- Magnetized and will stick on most metal surfaces
- To obtain a reading, place decal on metal surface, 90° to direction of travel, and read wedge overlap
- Amplitude readout ranges: 0.50 to 6.35 mm (0.020 to 0.250 in)
- Size: 51.0 x 210.0 mm (2.00 x 8.25 in)

129-7142 Lifting Beam

Model: CB534B Compactors with Split Drum Option

Warranty: Six Months

- Used to remove 5E-7415 Friction Group from compactors with split drum option (provides a way to reach inside the drum where friction group is mounted)
- Used with 6V-2082 Hook Group and overhead lifting device
- Reduces chance of damage to friction group and other drum components during removal (easier to control and guide part out of drum)
- Holds friction group in a vertical position for easier installation of mounting bolts
- Must remove grab hook, bolt, and bracket from stationary tube of 6V-2082 Hook Group before installing 129-7142 Lifting Beam
- Lifting beam is locked onto hook group with setscrew (location of lifting beam can be adjusted to obtain the best balance or center of gravity)



Reference

CB534B Service Manual Module, Disassembly and Assembly

Maximum lifting capacity	136 kg (300 lb)
Setscrew	2H-3900 Dog Point Setscrew (1/2-13 x 1 1/2 in long) Nut (2) 1F-0748 Weld Nut (1/2-13)

Part Number	Description
129-7142	Lifting Beam

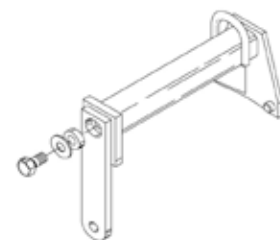
132-5136 Brake Lifting Bracket (24H Motor Grader)

Model: 24H Motor Grader

Warranty: Six Months

European Union compliant, CE marked

- Used to remove and install brake group (brakes do not have to be released prior to installation when using this bracket)
- Used with overhead lifting device
- Bracket easily attaches to brake group and is held securely in place with one lug nut
- Bracket can be installed without brake halves being oriented
- Bracket holds brake group in a horizontal position making removal and installation much faster and easier
- Each lifting bracket comes with a certificate of proof testing



Reference

KENR6023 Disassembly and Assembly Manual, 24M Motor Grader Power Train

NEHS1095 Tool Operating Manual: 132-5136 Brake Lifting Bracket

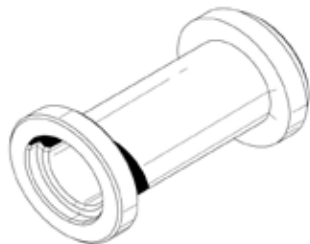
Length	560 mm (22.0 in)
Height	460 mm (18.1 in)
Weight	12.25 kg (27 lb)
Working load limit	998 kg (2200 lb)
Proof test load	1996 kg (4400 lb)

Part Number	Description
132-5136	Brake Lifting Bracket (24H Motor Grader)

141-3028 Seal Driver

Model: CB534, CB534B, CB534C, CB535, CB634, CB634C, and CS431 Compactors

Warranty: Six Months



- Used to properly install 140-8409 and 140-8410 Seals into housing of the eccentric group
- Eliminates possibility of seal damage caused by hammer and punch (provides proper depth and uniform fit)
- Use one end of driver to install seal flush with housing, and other end of driver to install seal to a depth of 10.0 mm (0.39 in)
- Driver installs seals with housing in vehicle, getting around hard-to-reach areas

Reference

Service Manual, Disassembly and Assembly of Eccentric Group

Outside diameter	101.6 mm (4.00 in)
Inside diameter	55.6 mm (2.19 in)
Length	182.4 mm (7.18 in)

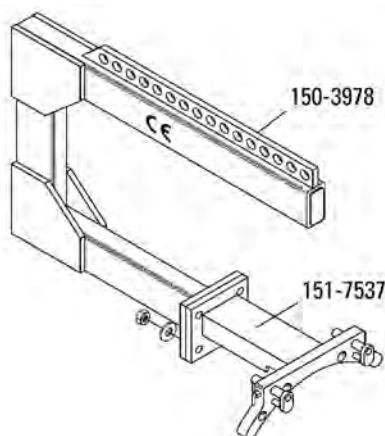
Part Number	Description
141-3028	Seal Driver

Adapter Bracket Assemblies

Essential Tool

Model: CS/CP 533C, CS/CP 563C, CS583C Vibratory Compactors

Warranty: Six Months



European Union compliant, CE marked (151-7537)

- Used to safely remove and install compactor pods

Lifting Bracket

- Uses different adapter plates for various applications
- Adjustable center of gravity

Adapter Plate

- Heat-treated for added strength and durability
- Fits intricate profile of pods
- Locking pads secure pod to adapter

Reference

KENR7009 Service Manual, Compactor Disassembly and Assembly

150-3978 Lifting Bracket Assembly	
Maximum capacity	907 kg (2000 lb)
Height	1014 mm (40.0 in)
Maximum depth	1089 mm (43.0 in)
Minimum depth (without adapters)	820 mm (32.0 in)
Adjustable center of gravity	197.0 - 1089 mm (7.75 - 43.0 in) inside clearance
151-7537 Adapter Bracket Assembly	
Overall dimensions	500 x 630 x 229 mm (20.0 x 25.0 x 9.0 in)

Part Number	Description
150-3978	Lifting Bracket
151-7537	Adapter Plate

Eccentric Weight Removal Tools for Vibratory Compactors

Essential Tool

Model: CB-434D (CNH1-Up) Vibratory Asphalt Compactor, CB-534D (CNH1-Up) Vibratory Compactor, CS-563E (CNG1-Up) Vibratory Soil Compactor, CP-563E (CNT1-Up) Vibratory Soil Compactor, CB-564D (C6D1-Up) Vibratory Compactor
 Warranty: Six Months

European Union compliant, CE marked

- Used to remove and install various compactor drum eccentric weight housings

306-3351 C-Frame Assembly

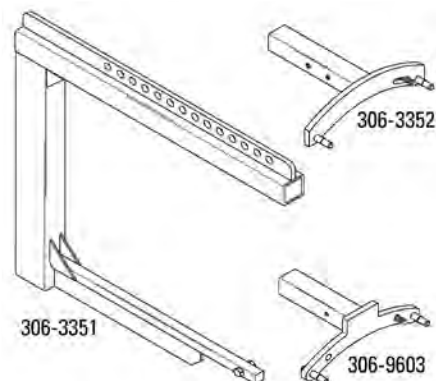
- Used with adapter assemblies for various applications
- Use with an approved shackle
- Adjustable center of gravity
- 7X-0328 Bolt, 5P-1076 Washer, and 6V-8188 Nut are used to attach adapter assemblies

306-3352 Adapter Assembly

- Used on CB534D, CB534D series XW, and CB-564D Vibratory Compactors
- Connects to 306-3351 C-frame Assembly with a lock bolt
- Fits profile of eccentric weights
- An 8T-7338 M16 Bolt secures eccentric weight to adapter

306-9603 Adapter Assembly

- Used on CB-434D, CS-563E, and CP-563E Vibratory Compactors
- Connects to 306-3351 C-frame Assembly with lock bolt
- Fits profile of eccentric weights
- A 099-0169 Bolt secures eccentric weight to adapter



Reference

KENR3614 Disassembly and Assembly Manual, CB-534D, CB-534D Series XW, and CB-564D Vibratory Compactor Machine Systems
 NEHS1019 Tool Operating Manual; 306-3351 C-Frame Lifting Assembly
 NEHS1020 Tool Operating Manual; 306-3352 C-Frame Adapter, 306-9603 C-Frame Adapter

	306-3351	306-3352	306-9603
Working load limit	454 kg (1000 lb)	454 kg (1000 lb)	454 kg (1000 lb)
Weight	84 kg (185 lb)	7.6 kg (16.8 lb)	6.9 kg (15.4 lb)

Part Number	Description
306-3351	C-Frame Assembly
306-3352	Adapter Assembly
306-9603	Adapter Assembly

232-0228 Lifting Bracket Assembly

Essential Tool

Model: CB-434D, CB-534D, CB-534D Series XW, CB-564D Compactor
 Warranty: Six Months

European Union compliant, CE marked

- Used to remove and install compactor drum support plates and final drive
- Used with overhead lifting device, suitable shackle, and dealer-supplied Grade 8 bolt and washer
- Adjustable center of gravity to balance load for alignment during installation

Reference

KENR3614 Disassembly and Assembly, CB-534D, CB-534D Series XW, and CB-564D Vibratory Compactors Machine Systems



(Continued)

Implements, Frame, Hitch and Suspension

232-0228 Lifting Bracket Assembly (Continued)

Essential Tool

Model: CB-434D, CB-534D, CB-534D Series XW, CB-564D Compactor

Warranty: Six Months

Specifications	
Maximum capacity	454 kg (1000 lb)
Overall size	82.25 x 72.39 cm (32.38 x 28.50 in)
Adjustable center of gravity	38.1 mm (1.50 in) to 68.58 cm (27.00 in)

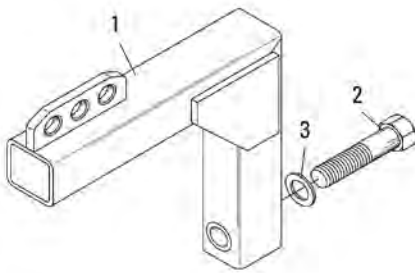
Part Number	Description
232-0228	Lifting Bracket Assembly

345-1236 Lifting Bracket Assembly

Essential Tool

Model: CB54, CB54 Series XW, and CB64 Vibratory Compactor

Warranty: Six Months



European Union compliant, CE marked

- Used to remove and install compactor drum support plates and final drive
- Used with 7X-2581 Bolt - M30 x 100 mm (4.0 in) long, 9X-8258 Washer - M30, and two guide bolts (all dealer supplied)
- Bolt and washer are used to attach lifting bracket to compactor drum support plate
- A suitable overhead lifting device and 189-0410 Screw Pin Shackle are required to support and raise lifting bracket and compactor drum support plate
- A three-hole shackle mounting plate allows adjustable center of gravity, to balance load during installation
- Durable welded steel construction

Reference

NEHS1088, Tool Operating Manual, 345-1236 Lifting Bracket

KENR5997, CB54, CB54 Series XW, and CB64 Vibratory Compactor

Working load limit	567 kg (1250 lbs)
Overall size (L x H x W)	387.4 x 409.6 x 95.2 mm (16.12 x 15.25 x 3.75 in)
Weight	12 kg (26.0 lbs)
Item with no Part Number	
Description	Qty.
Guide Bolt (Not shown)	2

Item	Part Number	Description	Qty.
1	345-1236	Lifting Bracket	1
2	7X-2581	Bolt, M30 x 100 mm (3.94) length	1
3	9X-8258	Washer	1
Not shown			
Required	189-0410	Shackle (4.75 ton)	1

231-7699 Lift Adapter Assembly

Essential Tool

Model: CP434D and CS434D Compactor

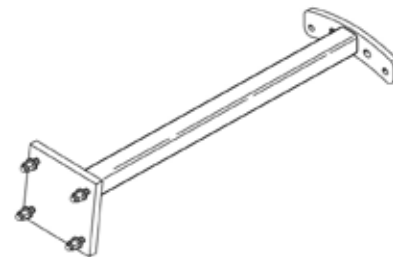
Warranty: Six Months

European Union compliant, CE marked

- Used to remove eccentric weight housing without removing drum
- Used with 150-3978 Lifting Bracket Assembly

Maximum reach (with 150-3978)	187 cm (74.0 in)
Overall size	1066 x 228 x 370 mm (42.0 x 9.0 x 14.5 in)
Angle of lift arm	80 degrees
Maximum weight load limit	200 kg (440 lb)

Part Number	Description
231-7699	Lift Adapter Assembly



347-1694 Spanner Wrench

Essential Tool

Model: CB-534D, CB-534DXW Vibratory Compactor

Warranty: Six Months

- Used to remove and install 267-5641 Nut, which is part of 303-8755 Eccentric Weight Group
- Used with 206-8796 Torque Multiplier, 1 1/2 inch square drive
- 40.7 cm (16.0 in) diameter tool with six equally-spaced teeth to securely engage special nut
- Teeth are hardened to handle high torque from multiplier
- Made from durable, welded-steel construction with black oxide coating for corrosion resistance



Part Number	Description
347-1694	Spanner Wrench

157-2378 Seal Installer, 158-0511 Seal Guide

Essential Tool

Model: CS531, CS533, CS563, CS583, CP533, and CP563 Compactors

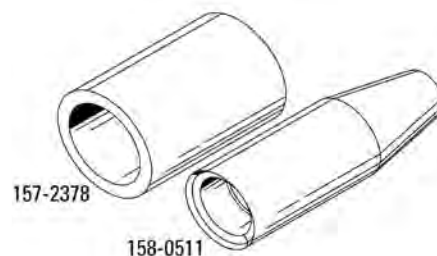
Warranty: Six Months

- Used to properly install 126-9339 Seals into housing of eccentric group
- Eliminates seal damage caused by hammer and punch installation method (provides even installation pressure and uniform fit)
- Guide centers housings for pod assembly to ensure proper bearing alignment
- Guide seals over shaft and wear sleeve to provide proper fit without damage to seal and prevents seal from rolling

Reference

KENR7009 Compactor Machine Systems Disassembly and Assembly Manual

Part Number	Description	Length	Outside Diameter
157-2378	Seal Installer	101.6 mm (4.00 in)	61 mm (2.4 in)
158-0511	Seal Guide	128 mm (5.0 in)	45 mm (1.7 in)

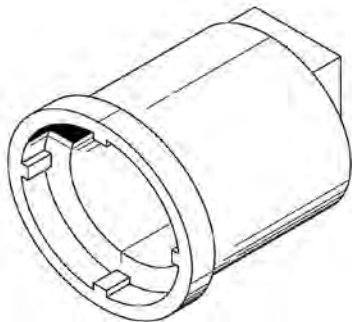


154-6179 Spanner Socket

Essential Tool

Model: PF290B, PS360B Pneumatic Compactors

Warranty: Six Months



- Used to remove and install pinion spanner nut without damage
- Used with 1 inch square drive impact or torque wrench
- Heat-treated to increase durability and tool life

Reference

KENR7008 and KENR7018 Differential Disassembly and Assembly Manuals

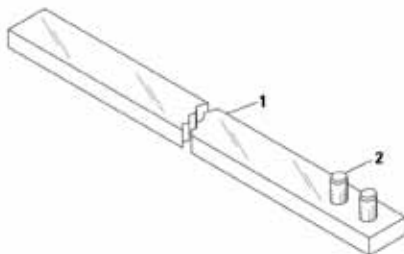
Length	179 mm (7.0 in)
Outside diameter	167 mm (6.6 in)
Square drive	1 in
Between teeth	131 mm (5.2 in)
Tooth width	11 mm (0.4 in)
Tooth spacing	4, equally spaced

Part Number	Description
154-6179	Spanner Socket

FT2593 Locking Assembly Spanner Wrench

Model: 583 Pipelayer

Warranty: None



- Used to rotate concentric pin to align frames and install locking assembly (provides a safe method)
- Can be made from commonly available steel
- Use 6V-3535 Dowel pins or equivalent
- Pin quantity: 2
- Handle material: ASTM A36 steel

Reference

SENR1811 Service Manual

Item with no Part Number	
Item	Description
1	Handle

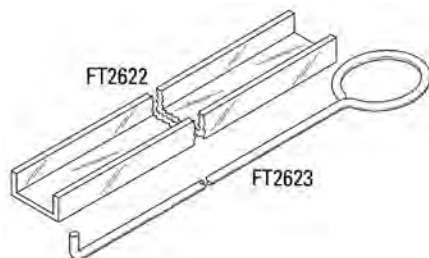
Item	Part Number	Description
2	6V-3535	Dowel

FT2622 Guide, FT2623 Hook

Essential Tool

Model: PS300(B), PS500, and Newer Model Compactors

Warranty: None



- Used to quickly and easily install chain during assembly
- Easily fabricated from standard steel
- FT2623 Material: SAE1018 steel rod
- FT2622 Material: SAE1018 steel channel

Reference

KENR2705 Service Manual, PS300B/PF300B Pneumatic Compactor Machine Systems Disassembly and Assembly Manual

FT2621 Deep Socket

Essential Tool

Model: AP1055B Asphalt Pavers

Warranty: None

- Used to adjust track (provides extra length required to reach adjusting nut)
- Fabricated from two 4C-9748 Sockets
- Not intended for use with impact wrenches
- Stamp Not for Impact Use on socket after welding 2 sockets together
- Socket size: 2 3/16 inch
- Square drive: 1 inch

NOTE:

Make sure inside hex of each socket is in alignment before welding.

Reference

KENR2888 Service Manual, AP1050 and AP1055B Asphalt Paver

Machine Systems Disassembly and Assembly



198-8732 Speed Sensor Gauge

Essential Tool

Model: AP-1055B, BG-2455C Asphalt Pavers

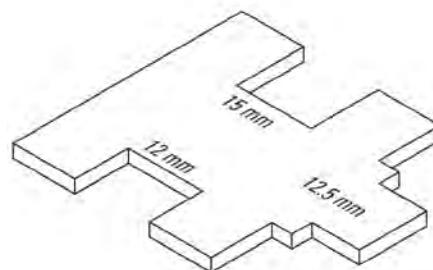
Warranty: Six Months

- Used to adjust travel motor speed sensor to proper depth (refer to Special Instruction for specific procedure for using tool)
- Faster and more accurate than other methods

Reference

REHS0895 Special Instruction, Speed Sensor Installation

REHS0894 Special Instruction, Speed Sensor Installation



Part Number	Description
198-8732	Speed Sensor Gauge

FT2762 Gauge Plate

Model: AP-1055B Asphalt Paver

Warranty: None

- Used to measure shim gap on front idler of track frame
- Allows fast, accurate shim adjustment
- Material: A2 tool steel
- Heat treat requirement: Rc 50 to 62

NOTE:

Etch or otherwise mark thickness of gauge plate on outside diameter

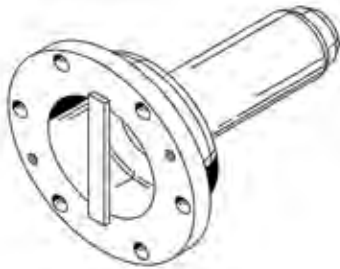


160-3934 Centering Guide

Essential Tool

Model: PS300B Suspended Tire Pneumatic Compactor

Warranty: Six Months



- Used to properly align rear axle housings (reduces premature wear out)
- Quickly installed and removed (saves time during assembly)
- Machined to specific tolerances from high quality steel
- Overall diameter: 230 mm (9.1 in)
- Length: 270 mm (10.6 in)

Reference

KENR2705 Service Manual, PS300B/PF300B

Pneumatic Compactor Machine Systems

Disassembly and Assembly

Part Number	Description
160-3934	Centering Guide

163-8003 Seal Installer

Essential Tool

Model: PS/PF300 Pneumatic Compactors

Warranty: Six Months



- Used to properly form 8I-4154 Teflon Oil Seal to shaft
- Required during assembly of third gear clusters low clutch shaft and output shaft assembly
- Diameter: 35.1 mm (1.38 in)
- Length: 64 mm (2.5 in)

Reference

KENR2704 PS/PF300 Propel Systems Disassembly and Assembly Manual

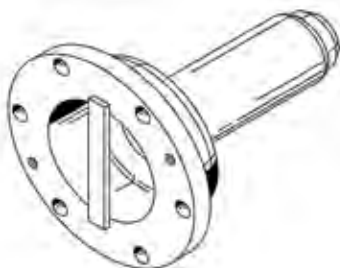
Part Number	Description
163-8003	Seal Installer

160-3935 Centering Guide

Essential Tool

Model: PS500 Suspended Tire Pneumatic Compactor

Warranty: Six Months



- Used to properly align rear axle housings (reduces premature wear out)
- Quickly installed and removed (saves time during assembly)
- Machined to specific tolerances from high quality steel
- Overall diameter: 230 mm (9.1 in)
- Length: 324 mm (12.8 in)

Reference

KENR2705 Service Manual, PS300B/PF300B Pneumatic Compactor Machine Systems

Disassembly and Assembly Manual

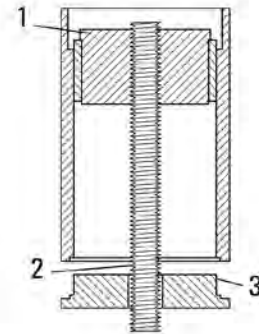
Part Number	Description
160-3935	Centering Guide

133-8361 Bearing Installer

Model: PS/PF 300B Pneumatic Compactor

Warranty: Six Months

- Used to install 112-8554 Bearing into front fork assembly — requires upper (1) and lower (3) plates
- Installer properly fits bearing, eliminating hammering and peening damage caused by improper installation techniques and tools
- Puller stud is large enough to provide adequate capacity and pulling force for sleeve bearing installation
- This tool is used for installation only



Reference

KENR2705 Service Manual Module

133-8361-B Plate (Item 1)	
Large diameter	123.85 mm (4.875 in)
Small diameter (fits inside bearing)	120.0 mm (4.72 in)
Threaded hole	M30 x 3.5
9U-5344 Stud (Item 2)	
Thread	M30 x 3.5
Overall length	350 mm (13.7 in) long
133-8361-A Plate (Item 3)	
Large diameter	160 mm (6.3 in)
Small diameter (fits tube assembly)	134.0 mm (5.28 in)
Puller stud hole diameter	32 mm (1.3 in)

Part Number	Description
133-8361	Bearing Installer

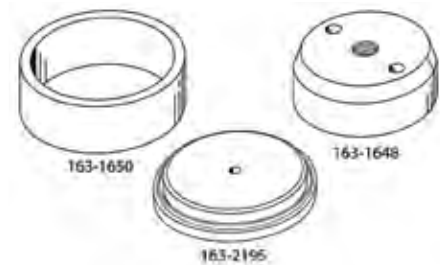
163-1648 Guide, 163-1650 Sleeve, 163-2195 Seal Installer

Essential Tool

Model: PS/PF300 and PS/PF300B

Warranty: Six Months

- Used to assemble fork assembly components
- Sleeve properly aligns guide on shaft
- Guide properly aligns fork assembly during installation (eliminates lip seal roll)
- Seal installer eliminates seal damage caused by improper installation techniques and tools — used with 1P-0532 Handle (included in 1P-0520 Driver Group)



Reference

KENR2705 Service Manual, PS300B/PF300B Pneumatic Compactor

Machine Systems Disassembly and Assembly

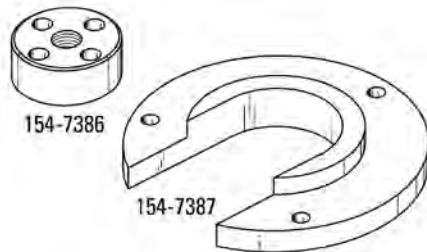
Part Number	Description	Overall Dimensions
163-1650	Sleeve	140.0 x 50.8 mm (5.51 x 2.00 in)
163-1648	Guide	120.0 x 50.8 mm (4.72 x 2.00 in)
163-2195	Seal Installer	140.0 x 25.4 mm (5.51 x 1.00 in)

154-7386 Puller Plate, 154-7387 Adapter Plate

Essential Tool

Model: 24H Motorgrader

Warranty: Six Months



- Used to quickly and easily remove and install blade tip pins
- Used with 9U-6751 Receiving Sleeve (33.0 cm [12.99 in] long) or 9U-6752 Receiving Sleeve (114.3 cm [45.0 in] long)
- Saves time and eliminates destruction of pin
- Bolts directly onto pin in place of pin cap
- Provides efficient means of pulling pin
- Chamfered end guides pin during installation

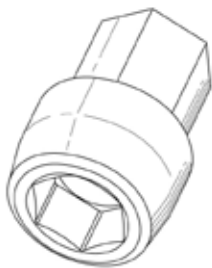
154-7386 Puller Plate	
Outside diameter	97.5 mm (3.83 in)
Thread	M30 x 3.5
Thickness	40 mm (1.6 in)
Bolt hole diameter	18 mm (0.71 in)
154-7387 Adapter Plate	
Outside diameter	270 mm (10.6 in)
Inside diameter	118 mm (4.6 in)
Attaching bolts	6V-5192 Socket Head Cap Screw
Bolt quantity	3

Part Number	Description
154-7386	Puller Plate
154-7387	Adapter Plate

218-4175 Socket, 30 mm (1.18 in)

Model: MT735, MT745, MT755, and MT765 Ag Tractors

Warranty: Six Months



- Hytorc hex socket used to properly tighten front frame bolts
- Used with canceled 1U-6221 Hydraulic Wrench

Part Number	Description
218-4175	Socket, 30 mm (1.18 in)

210-6670 Bearing Puller Plate

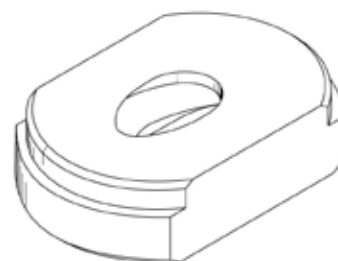
Model: D7R Track-Type Tractor

Warranty: Six Months

- Used to correctly remove old pivot shaft bearings from tractor frame and install new ones
- Bearing puller plate has center swivel point for easy installation
- Hydraulic removal of bearings is preferred over other methods, such as burning, cutting, or drilling
- Heat treated for added durability

Overall outside diameter	179.0 mm (7.05 in)
Small outside diameter	170.9 mm (6.73 in)
Hole diameter	42.0 mm (1.65 in)

Part Number	Description
210-6670	Bearing Puller Plate



203-5584 Frame Bracket Assembly

Model: MT735, MT745, MT755, MT765, MT835, MT845, MT855, and MT865 Gen 111 Challenger Tractors

Warranty: Six Months

- Used to support front frame (in raised position)
- Used with 1U-7498 Twelve Ton Support Stands
- 2 required (bolts directly to front frame)
- Used when:
 - Changing rubber drive belts
 - Repositioning undercarriage row width
 - Removing undercarriage from tractor
 - During major service/repair work

Part Number	Description
203-5584	Frame Bracket Assembly
Service/Repair Parts	
6V-8237	Hard Washer
8T-0664	Bolt, M24 x 3
8T-3282	Washer - Hard
8T-6430	Bolt, M20 x 2.5



198-3112 Pin Service Group

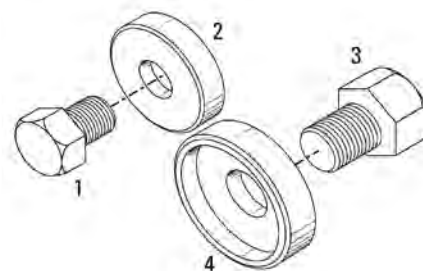
Model: All Models of Backhoe Loaders

Warranty: Six Months

- Used to remove linkage pins on all backhoe loaders
- Removes up to eight different pin sizes
- Easy pin removal — remove end cap bolt and install puller bolt and washer

Item	Part Number	Description	Thread	Used With
1	198-3113 ¹	Bolt	M20 x 1.5	
2	198-3114 ¹	Washer		198-3113 ¹
3	198-3115 ¹	Bolt	M24 x 2.0	
4	198-3116 ¹	Washer		198-3115 ¹
¹ Not Serviced				

Part Number	Description
198-3112	Pin Service Group

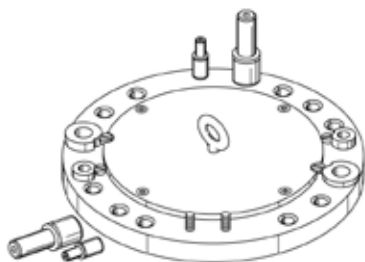


254-3424 Drilling Fixture

Essential Tool

Model: 345B and 345C Series II Excavator

Warranty: Six Months



- Used to locate and repair damaged swing drive mounting bolt holes and dowel holes
- Comes with two 16 mm (0.629 in) and two 30 mm (1.181 in) pins (one set shown in the storage position) and bushings

Reference

Technical Information Bulletin 4228-00

REHS2415 Special Instruction

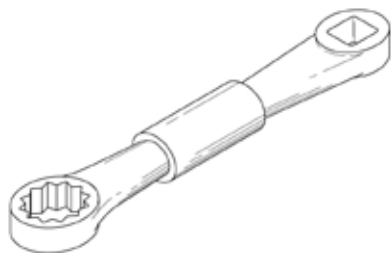
Part Number	Description
254-3424	Drilling Fixture

239-2296 Torque Adapter

Essential Tool

Model: IT28G Integrated Toolcarrier Machines-Special Defense Products and Standard Production Units

Warranty: Six Months



- Used to remove and install 2 cab ROPS bolts located in front corners on cab floor
- Used with a 3/4 inch square drive 9U-5007 Torque Wrench
- Fits into limited clearance area where sockets or other tools will not fit
- Essential for applying proper bolt torque

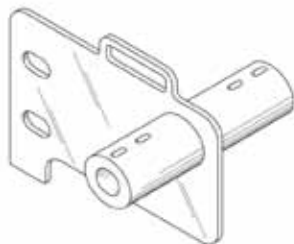
Square drive	3/4 in
Socket size	30 mm, 12 point
Center-to-center distance from drive to socket	203.2 mm (8.00 in)

Part Number	Description
239-2296	Torque Adapter

FT3028 Stall Fixture

Model: 10 foot Asphalt Augers

Warranty: None



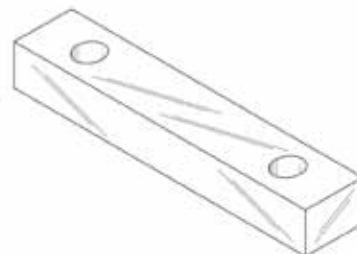
- Used to effectively obtain stall pressure on auger motor

FT3029 Locking Bar

Model: Asphalt Augers

Warranty: None

- Used to obtain stall pressure on auger motor



FT3119 Pressurizing Grease Gun

Model: 993K Wheel Loader

Warranty: None

- Used to pressurize linkage pin bore during linkage pin removal
- Reduces amount of tonnage (force) required to remove linkage pins
- Allows pressurized grease [not to exceed 68,948 kps (10,000 psi)] to fill lift arm bore to help remove linkage pin
- High-pressure, quick disconnect attaches grease gun to fitting installed in linkage
- Certified pressure gauge shows pressure of grease in linkage pin bore and can be used to verify that all pressure has been released
- Made from:

8F-9866 Grease Gun Assembly

5P-3238 Hex Pipe Nipple

3J-1907 O-Ring Seal

006-0210 Pipe Tee

186-2613 Pressure Gauge

187-3546 Quick Disconnect Coupler

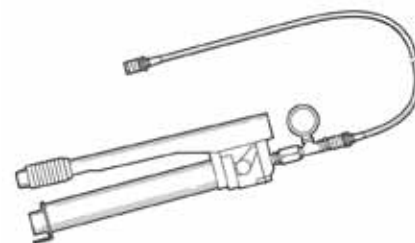
5P-3501 Pipe Adapter

8F-0024 Hose Assembly

187-3547 Nipple

Reference

KENR5832, 993K Wheel loader, Machine Systems, Disassembly and Assembly



Vehicle System Tools

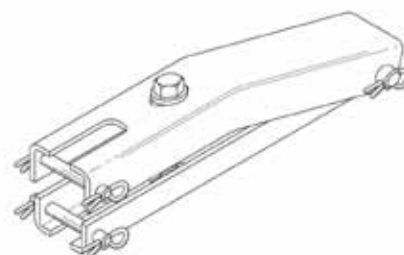
312-2967 Compressor Group

Essential Tool

Model: 246C, 256C, 262C, 272C, 277C, 287C, and 297C Skid Steer Loaders

Warranty: Six Months

- Used to install and remove 238-7693 Spring on optional quick coupler arrangement
- Used with two, 12 mm wrenches to tighten spring compression bolt
- Lock pins on end of tool arms prevent spring from ejecting during replacement procedure
- Durable steel construction



(Continued)

Implements, Frame, Hitch and Suspension

312-2967 Compressor Group (Continued)

Essential Tool

Model: 246C, 256C, 262C, 272C, 277C, 287C, and 297C Skid Steer Loaders

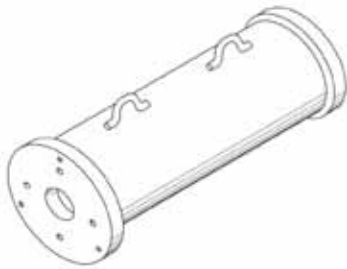
Warranty: Six Months

Part Number	Description
312-2967	Compressor Group
Service/Repair Parts	
5P-0372	Lock Pin
149-0206	Hex Nut
8T-0106	Bolt
8T-4223	Washer - Hard M12

323-7335 Sleeve Assembly

Model: 994D Wheel Loader; 994F Wheel Loader

Warranty: Six Months



- Used to install and remove loader arm linkage pins
- Used with 3S-6224 Hydraulic Pump (115 VAC), 8S-8033 Hydraulic Pump (230 VAC), or 9U-6600 Hydraulic Hand Pump
- Requires 6D-7726 Hydraulic Hose Assembly
- Designed to clear newer style flag pins
- Easily suspended with lifting loops
- Durable, hardened-steel construction

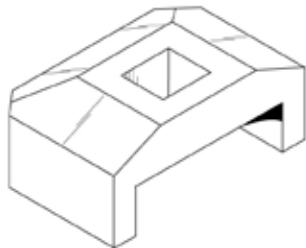
Part Number	Description
323-7335	Sleeve Assembly

320-6627 Canister Socket

Essential Tool

Model: Wheel Loaders, Track-Type Tractors, Pipelayers, and Motor Graders

Warranty: Six Months



- Used to remove and install 241-3352 Filter Housing
- Used with 1/2 inch square drive wrench
- Used on canister-style hydraulic filter, which has a square socket on housing bottom
- Socket is open on one end to clear drain plug on filter housing

Part Number	Description
320-6627	Canister Socket

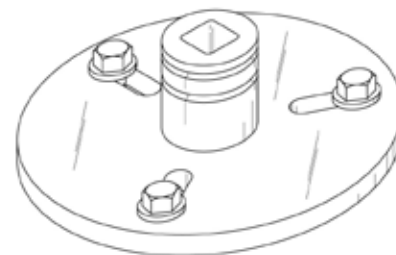
313-2527 Driver Assembly

Essential Tool

Model: 994F Wheel Loader

Warranty: Six Months

- Used to remove and install accumulators
- Used with 3/4 inch square drive wrench
- Machined slots allow easy bolt alignment during attachment
- Durable, welded-steel construction



Part Number	Description
313-2527	Driver Assembly
Service/Repair Parts	
6V-4248	Bolt
6V-5839	Washer

Conic Bearing Installer Tubes

Model: CB-113 and CB-114 Compactor

Warranty: None

- Used to install conic bearings in articulating and oscillating hitch
- Steel construction adds durability and lengthens tools service life
- Material: SAE 1020M steel

Part Number	Outside Diameter	Inside Diameter	Length
FT3096	72.0 mm (2.83 in)	62.0 mm (2.44 in)	200.0 mm (7.87 in)
FT3097	41.0 mm (1.61 in)	31.0 mm (1.22 in)	250.0 mm (9.84 in)



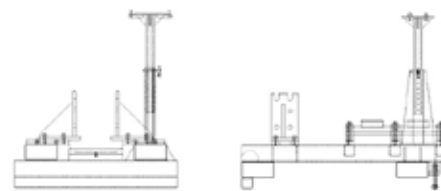
355-5007 Stand Assembly

373-2633 Tool Group

Model Usage: 777, 784, 785, 789, 793 Off-Highway Trucks

Warranty: Six Months

- The Stand Assembly is used to hold the front struts during disassembly and assembly.
 - Stand can be used to ship and store front struts.
 - A mounting location for the dealer to mount a winch is provided to allow the turning of the wheel during assembly.
- The Tool Group is used to align the bolt pattern on the suspension shaft with the steering linkage on Extended Life Powertrain Struts (XLP).
- Both tools can be used on left and right front struts.
- Both tools are MAO (Made As Ordered).

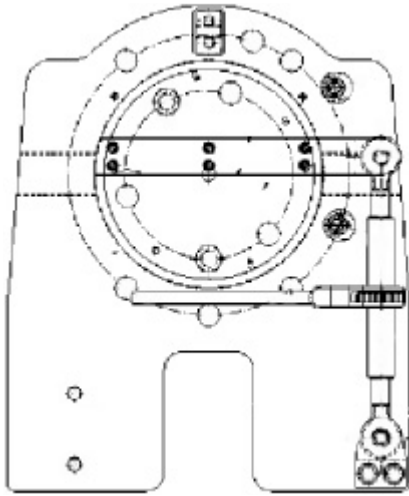


Specifications		
Part Number	Description	Dimensions
355-5007	Stand Assembly	1956 x 1524 x 1829 mm (77 x 59.99 x 72 in)
373-2633	Tool Group	692 x 572 mm (27.24 x 22.51 in)

Implements, Frame, Hitch and Suspension

Reference

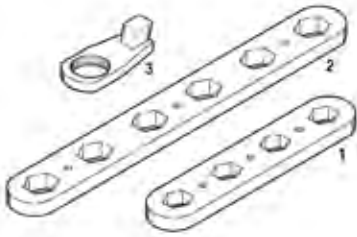
KENR8579-01, 793F Off-Highway Truck Machine
Systems Disassembly & Assembly



Reaction Arm Tools

Essential Tool

Model: 795F AC and 797F Off-Highway Truck
Warranty: Six Months



- Used with other required tooling to loosen and tighten nuts located on front suspension struts

Reaction Arm Back-up Plates

- Used to initially tightening nuts on top and bottom of struts
- 334-8335 used for four-bolt pattern on top of strut
- 334-8336 used for six-bolt pattern on bottom of strut
- Plates can become wedged during use and feature 7/8 - 14 threaded holes to aid in removal (bolts not supplied)
- Made from hardened steel

Reaction Arm

- Used to obtain proper torque after initial tightening
- Used with 194-7586 Pneumatic Wrench Group (RAD 2000)

Item	Part Number	Description
1	334-8335	Reaction Arm Back-up Plate
2	334-8336	Reaction Arm Back-up Plate
3	335-6485	Reaction Arm

399-0774 Reaction Plate Group

Model Usage: 793D, 793F OHT

Warranty: Six Months

- Used to hold all nuts on back side of one 793F AC front struts
- Allows easy, fast torquing
- Each tool group includes plates for one front strut
- 5 Hex plate used on top bolt pattern
- 3 Hex plate used on bottom bolt pattern
- Machined chamfers allow for clearance with frame
- Symmetric plates used on right and left struts
- Plates can become wedged during use and feature 7/8 – 14 threaded holes to aid in removal
- Made of hardened steel
- Black Oxide coated to prevent corrosion



Specifications		
Dimensions	5 Hex Plate	544.4 x 76.7 x 25 mm (21.43 x 3.01 x .98 in)
Weight		5.8 kg (12.78 lb)
Dimensions	3 Hex Plate	317.4 x 90.1 x 25 mm (12.49 x 15.35 x .98 in)
		12.49 x 15.35 x .95 in)
Weight		3.1 kg (6.83 lb)
Weight	All Plates	17.88 kg (39.41 lb)

389-9530 Reaction Arm Wrench

389-9531 Reaction Arm Wrench

Model Usage: 793F AC, 793 MD, 789D

Warranty: Six Months

- Used to remove and install nuts located on front suspension struts
- Black oxide coated
- Hardened steel for increased strength



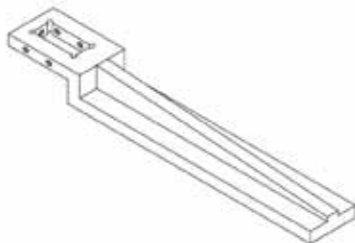
Specifications			
Part Number	Description	Dimensions	Weight
389-9530	47 mm Hex Wrench	174 x 74 x 25 mm (6.85 x 2.91 x .98 in)	1.36 kg (3 lb)
389-9531	55 mm Hex Wrench	178.4 x 80 x 25 mm (7.02 x 3.15 x .98 in)	1.36 kg (3 lb)

330-7456 Reaction Arm

Essential Tool

Model: 795F AC Off-Highway Truck

Warranty: Six Months



- Used to remove and install steering linkage nuts
- Used with 132-8126 Hydraulic Torque Wrench and 234-6041 Impact Socket (4-1/4 in)
- Five set screws secure tool onto torque wrench
- Prevents rotation of torque wrench under load when loosening or tightening steering arm linkage nuts
- Welded steel construction for long service life

Reference

KENR8727, 795F AC Off-Highway Truck, Machine Systems, Disassembly and Assembly, Steering Arm Remove and Install

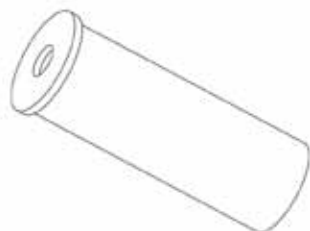
Length	686 mm (27.0 in)
Width	102 mm (4.0 in)
Height	76 mm (3.0 in)

Part Number	Description
330-7456	Reaction Arm
Service/Repair Parts	
010-2597	Hex Socket Setscrew, 3/8 -16 x 25.4 (1.0 in) long, qty. 5

380-5720 Receiver Sleeve

Model: 793F, 795F AC, and 797F Off-Highway Trucks

Warranty: Six Months



- Used to help remove link pins on rear suspension upper and lower suspension links
- Used with 3S-6224 Electric Hydraulic Pump Group, 9U-6815 Puller Stud, 7Y-1460 Nut, and 5P-5201 Double Acting Cylinder
- Made from SAE 1020M Steel

Reference

KENR8382, 797F Off-Highway Truck, Machine Systems, Disassembly and Assembly

KENR8727, 795F series AC Off-Highway Truck, Machine Systems, Disassembly and Assembly

KENR8579, 793F Off-Highway Truck, Machine Systems, Disassembly and Assembly

380- 5720 Receiver Sleeve	
Overall length	549.28 mm (21.625 in)
Inside diameter	171.45 mm (6.750 in)
Tube wall thickness	9.525 mm (0.375 in)
End plate diameter	215.9 mm (8.50 in)
End plate thickness	19.05 mm (0.750 in)
End plate center Opening	50.8 mm (2.00 in)

380-5721 Receiver Sleeve

Model Usage: 793F MD, 795F AC, and 795F

Warranty: Six Months

- Used to help remove link pins on rear suspension upper and lower suspension links
- Used with 350-7768 Electric Hydraulic Pump Group, 9U-6815 Puller Stud, 7Y-1460 Nut, and 346-5029 Double Acting Cylinder
- Made from steel
- Black oxide coated

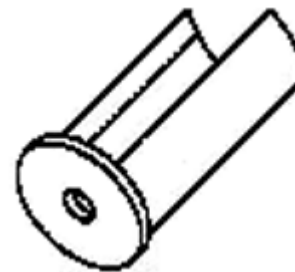
Reference

KENR8382, 797F Off-Highway Truck, Machine Systems, Disassembly and Assembly

KENR8727, 795F Series AC Off-Highway Truck, Machine Systems, Disassembly and Assembly

KENR8579, 793F Off-Highway Truck, Machine Systems, Disassembly and Assembly

Specifications		
Part Number	Overall length	End plate center opening
380-5721	533.4 mm (21.0 in)	66.8 mm (2.6 in)



FT3160 Driver

Essential Tool

Model: CB-534D, CB-534DXW Vibratory Compactor

Warranty: None

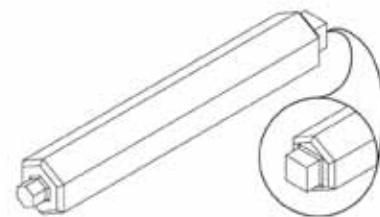
- Used to remove and install 267-5641 Nut, part of 303-8755 Eccentric Weight Group
- Used with 127-8458 Final Drive Bench and 347-1694 Spanner Socket
- Made from 128-4075 Hex Shaft Assembly
- Transmits hydraulic force of final drive bench to spanner socket to loosen or tighten nut on eccentric weight group
- Square drive end engages spanner socket while large hex shaft engages final drive bench drive plate

Reference

KENR6010, CD54 Vibratory Compactor, Machine Systems, Disassembly and Assembly, Eccentric Weight

NEHS0673, Tool Operating Manual, 127-8458 Final Drive Disassembly and Assembly Bench

Length	455.4 mm (17.93 in)
Square drive	37.34 mm (1.47 in)
Main shaft hex	76.2 mm (3.00 in)
Shaft end hex	28.11 mm (1.11 in)

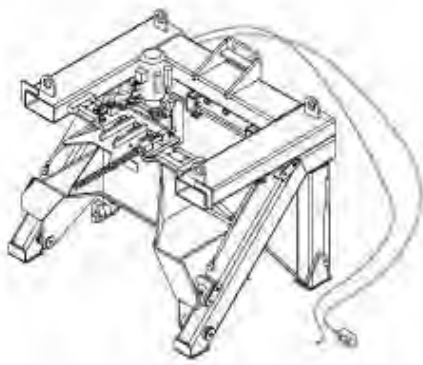


Removal and Install Front Suspension Strut Assembly on Off-Highway Trucks

270-8312 Strut Handler

Model Usage: 777, 784, 785, 789, and 793 Off-Highway Trucks

Warranty: Six Months



European Union Compliant, CE Marked

- Used to remove and install front strut without removing upper structures
- Also used to transport strut assembly
- Used with a suitable lift truck or wheel loader with fork attachment and adequate lifting capacity (a mast tilt and side shift function is recommended)
- Strut handler has a self-contained hydraulic tilt system which allows tilting strut assembly to a horizontal position for disassembly, assembly, and transport
- Hand-held control pendant used to operate hydraulic functions of tooling
- Various adapter plates allow tooling to fit multiple truck models
- Tooling is adjustable to allow for different strut assembly caster angles
- Strut handler attaches to front strut at wheel hub and upper strut body
- Can be used on both left and right-side strut assemblies
- Using handling group requires a two or three person crew
- Hydraulic system is wired for 220 Volt system
- Electric motor operates in both 50 Hz and 60 Hz
- Fork truck capacity is required to lift combined weight of tool and front strut 7901.6 kg (17,420 lb)
- Strut handler weighs approximately 1814 kg (4000 lb)

Working load limit: 5897 kg (13,000 lb)

Reference

NEHS1093 270-8312 Strut Handler

Size: 1574.8 mm (62 in) H x 1955.8 mm (77 in) W x 1473.2 mm (58 in) L

Weight: 1814 kg (4000 lb)

Part Number	Description
270-8312	Strut Handler