470GLC Excavator Repair

TECHNICAL MANUAL

470GLC Excavator Repair

TM12180 21MAR12 (ENGLISH)

For complete service information also see:

470GLC Excavator Operation and Test	TM12174
470GLC Excavator Operator's Manual	OMT293261
Isuzu Interim Tier 4 6UZ1 Workshop Manual	EWJAA-EN-00
Isuzu Interim Tier 4 6UZ1 Technical Manual	ETJAA-EN-00
Super Caddy Oil Cleanup Procedure.....	CTM310
JDLink™ / ZXLink™ (MTG) Diagnosis and Tests Manual	TM114519
Undercarriage Appraisal Manual	SP326
Specifications Manual.....	SP458
MPDr Operator's Manual.....	Version 1.0

Worldwide Construction And Forestry Division
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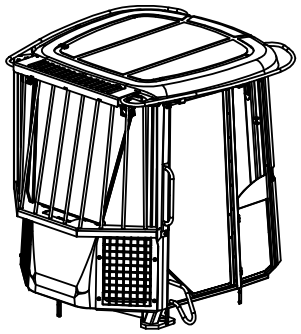
Add Cab Guarding for Special Uses

Special work situations or machine attachments could create an environment with falling or flying objects. Working near an overhead bank, demolition work, using a hydraulic hammer or winch, working in a forestry application or wooded area, or working in a waste management application, for example, could require added guarding to protect the operator.

Additional level II FOPS (falling object protective structure), forestry protection packages, and special screens or guarding should be installed when falling or flying objects could enter or damage the machine. A rear screen should always be used with a winch to protect against a snapping cable. Before operating in any special work environments, follow the operator protection recommendations of the manufacturer of any specialized attachment or equipment. Contact your authorized John Deere dealer for information on protective guarding.



T141893 —UN—09JUN11

Cab Guarding

TX,CABGUARD -19-15FEB11-1/1

Inspect Machine

Inspect machine carefully each day by walking around it before starting.

Keep all guards and shields in good condition and properly installed. Fix damage and replace worn or broken parts immediately. Pay special attention to hydraulic hoses and electrical wiring.

T6607AQ —UN—18OCT88

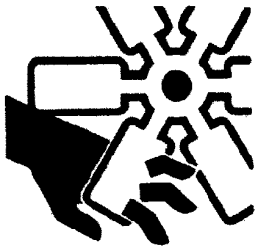
TX,INSPECT -19-08SEP10-1/1

Stay Clear of Moving Parts

Entanglements in moving parts can cause serious injury.

Stop engine before examining, adjusting, or maintaining any part of machine with moving parts.

Keep guards and shields in place. Replace any guard or shield that has been removed for access as soon as service or repair is complete.



T133592 —UN—12SEP01

TX,MOVING,PARTS -19-20JAN11-1/1

Service Cooling System Safely

Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

TS281 —UN—23AUG88

DX,RCAP -19-04JUN90-1/1

Remove Paint Before Welding or Heating

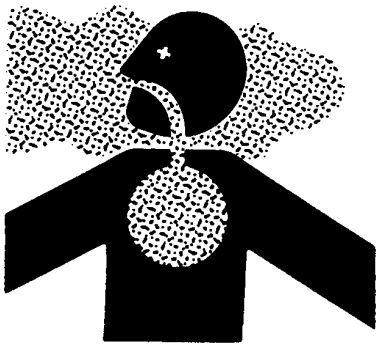
Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Remove paint before heating:

- Remove paint a minimum of 100 mm (4 in.) from area to be affected by heating. If paint cannot be removed, wear an approved respirator before heating or welding.
- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

Do not use a chlorinated solvent in areas where welding will take place.



TS220 —UN—23AUG88

Do all work in an area that is well ventilated to carry toxic fumes and dust away.

Dispose of paint and solvent properly.

DX,PAINT -19-24JUL02-1/1

Make Welding Repairs Safely

IMPORTANT: Disable electrical power before welding. Turn off main battery switch or disconnect positive battery cable. Separate harness connectors to engine and vehicle microprocessors.

Do not weld or apply heat on any part of a reservoir or tank that has contained oil or fuel. Heat from welding and cutting can cause oil, fuel, or cleaning solution to create gases which are explosive, flammable, or toxic.

Avoid welding or heating near pressurized fluid lines. Flammable spray may result and cause severe burns if pressurized lines fail as a result of heating. Do not let heat go beyond work area to nearby pressurized lines.

T133547 —UN—31AUG00

Remove paint properly. Do not inhale paint dust or fumes. Use a qualified welding technician for structural repairs. Make sure there is good ventilation. Wear eye protection and protective equipment when welding.

MB60223,0000212 -19-09FEB11-1/1

Service Recommendations For Flat Face O-Ring Seal Fittings

1. Inspect the fitting sealing surfaces and O-ring. They must be free of dirt or defects.
2. Lubricate O-rings and install into grove using petroleum jelly to hold in place.
3. Index angle fittings and tighten by hand pressing joint together to insure O-ring remains in place.
4. Tighten fitting or nut to torque value shown on the chart. Do not allow hoses to twist when tightening fittings, use backup wrench on straight hose couplings.

IMPORTANT: Tighten fittings to 150% of listed torque value if indexing is necessary or if fitting is attached to an actuating devise.

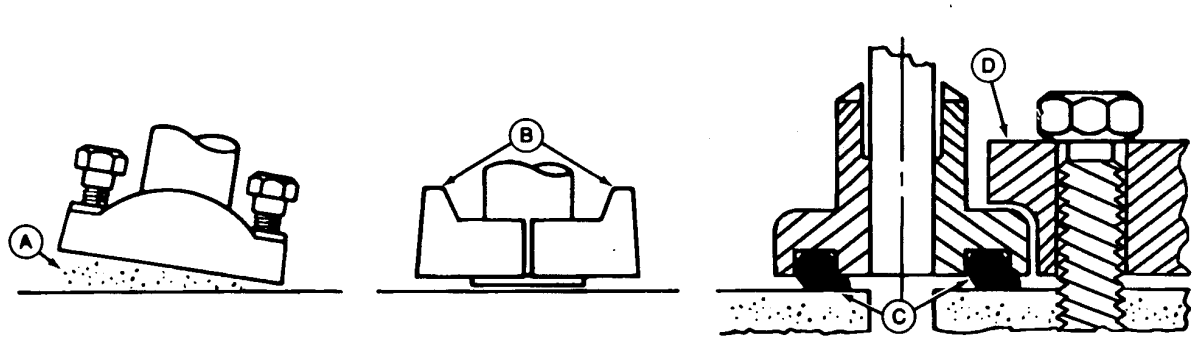
Tighten fittings to 50% of listed torque value if used in aluminum housing.

FLAT FACE O-RING SEAL FITTING TORQUE*						
Nomial Tube O.D.		Thread Size	Swivel Nut		Bulkhead Nut	
mm	in.	in.	N·m	lb-ft	N·m	lb-ft
6.35	0.250	9/16-18	16	12	12	9
9.52	0.375	11/16-16	24	18	24	18
12.70	0.500	13/16-16	50	37	46	34
15.88	0.625	1-14	69	51	62	46
19.05	0.750	1 3/16-12	102	75	102	75
22.22	0.875	1 3/16-12	102	75	102	75
25.40	1.000	1 7/16-12	142	105	142	105
31.75	1.250	1 11/16-12	190	140	190	140
38.10	1.500	2-12	217	160	217	160
*Torque tolerance is +15 -20% unless otherwise specified.						

Stud End O-ring Seal Torque for Straight and Adjustable Fittings*				
Thread Size	Straight Hex Size	Locknut Hex Size	Straight Fitting or Locknut Toque	
Inch	Inch	Inch	N·m	lb-ft
3/8-24	5/8	9/16	12	9
7/16-20	5/8	5/8	21	15
1/2-20	3/4	11/16	26	19
9/16-18	3/4	3/4	34	25
3/4-16	7/8	15/16	73	55
7/8-14	1 1/16	1 1/16	104	76
1 1/16-12	1 1/4	1 3/8	176	130
1 3/16-12	1 3/8	1 1/2	230	170
1 5/16-12	1 1/2	1 5/8	285	210
*Torque tolerance is +15 -20% unless otherwise specified.				

OUO6092,00010A4 -19-02JAN08-1/1

Inch Series Four Bolt Flange Fitting For High Pressure Service Recommendations



T6890BB —UN—01MAR90

A—Sealing Surface **B—Split Flange** **C—Pinched O-Ring** **D—Single Piece Flange**

INCH SERIES FOUR BOLT FLANGE FITTING FOR 41 400 kPa (414 bar) (6000 psi) PRESSURE SERIES TORQUE VALUES—Tolerance is ± 10% unless otherwise specified		
Nominal Flange Size	**Cap Screw Size[a]**	**Min—Max Torque**
in.	**in.**	**Nm (lb-ft)[b]**
1/2	5/16-18 UNC	20—31 (15—23)
3/4	3/8-16 UNC	34—54 (25—40)
1	7/16-14 UNC	57—85 (42—63)
1-1/4	1/2-13 UNC	85—131 (63—97)
1-1/2	5/8-11 UNC	159—264 (117—195)
2	3/4-10 UNC	271—468 (200—345)
[a] JDM A17D, SAE Grade 5 or better cap screws with plated hardware. Lock washers are permissible but not recommended.		
[b] Minimum torques given are enough for the given size connection with the recommended working pressure. Torques can be increased to the maximum shown for each cap screw size if desired. Increasing cap screw torque beyond the maximum will result in flange and cap screw bending and connection failures.		

1. Clean sealing surfaces (A). Inspect. Scratches, nicks, and burrs cause leaks. Roughness causes O-ring wear. Out-of-flat causes O-ring extrusion. If imperfection cannot be polished out, replace component.
2. Install the O-ring (and backup ring, if used) into groove. Use petroleum jelly to hold it in place.

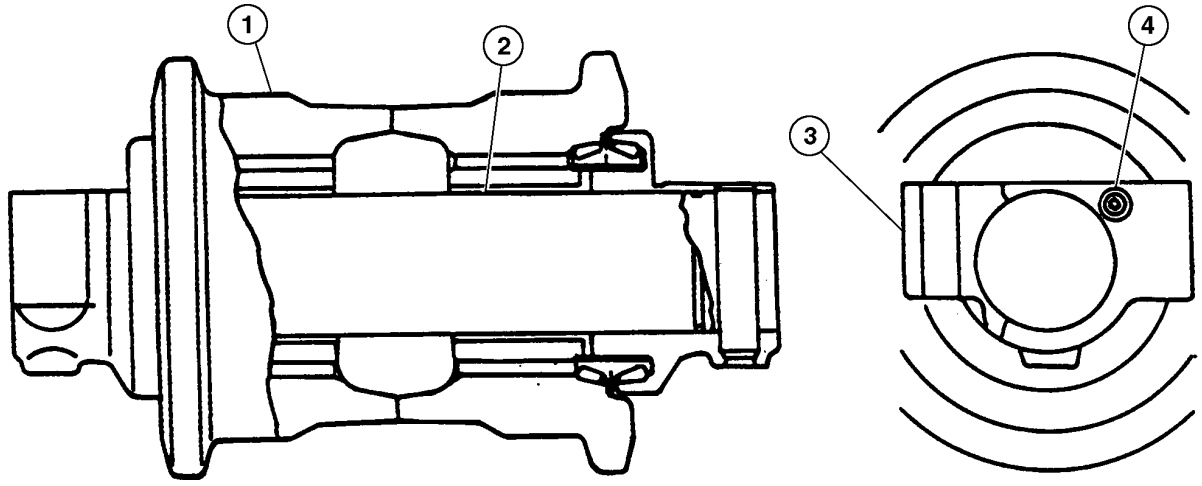
IMPORTANT: DO NOT use air wrenches. DO NOT tighten one cap screw fully before tightening the others. DO NOT over tighten.

3. Split flange: Loosely assemble split flange (B) halves. Make sure split is centrally located and perpendicular to port. Hand tighten cap screws to hold flange halves and line in place. Do not pinch O-ring (C).

   Single piece flange (D): Make sure flange is centrally located on port and line is centered in flange. Install the cap screws. Hand tighten cap screws to hold flange and line in place. Do not pinch O-ring.
4. Tighten one cap screw and then the diagonally opposite cap screw. Tighten the two remaining cap screws. Tighten cap screws within the specified torque values.

OUT3035,0000422 -19-14JAN04-1/1

Track Roller Disassemble and Assemble



TX1008198 —UN—24MAY06

TX1008198

Cap Screw and Roller

1— Roller **2— Axle** **3— Bracket** **4— Plug**

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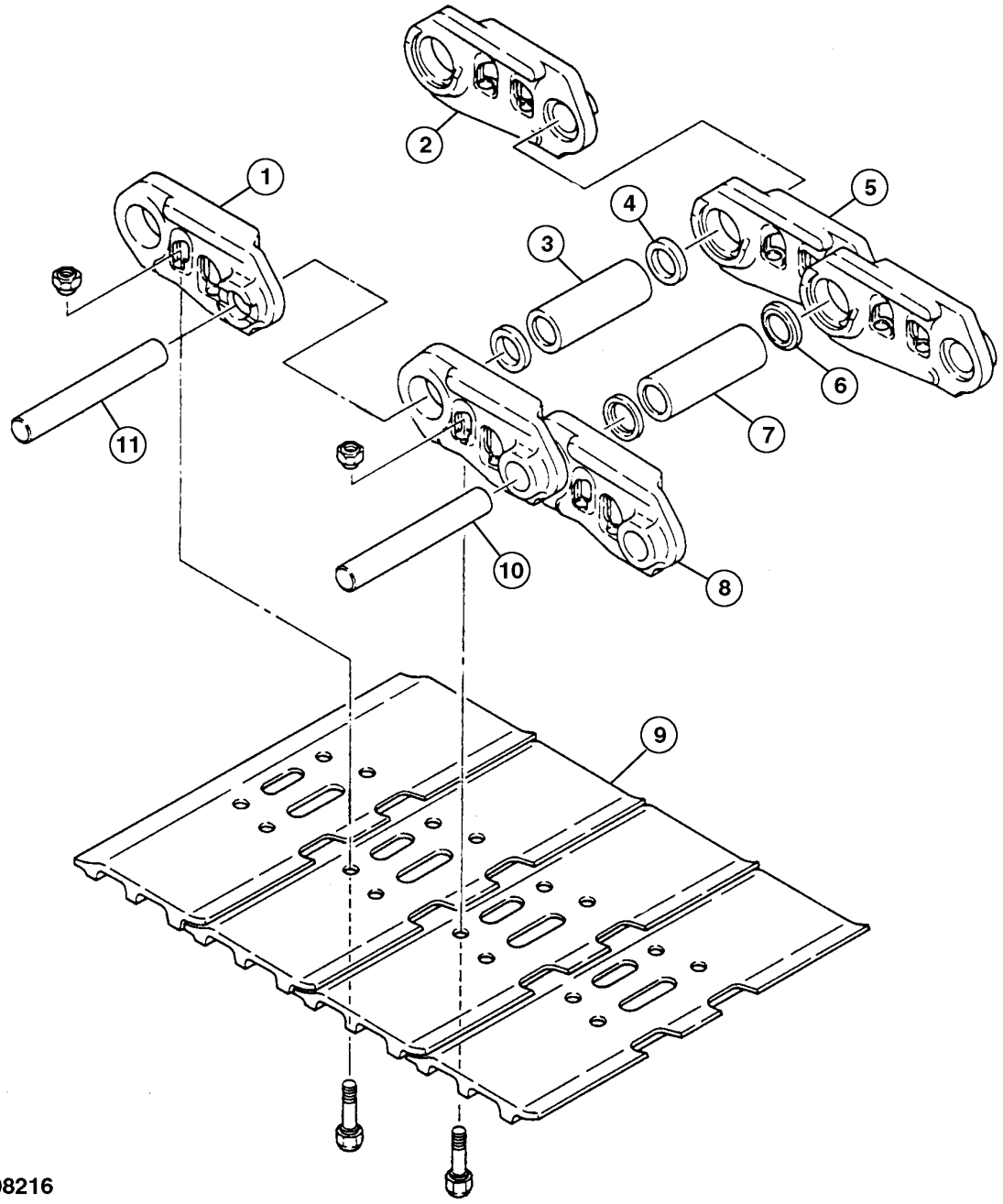
RH60123,0000292 -19-01AUG11-1/3

Track Chain Disassemble and Assemble

1. Remove track chain. See Track Chain Remove and Install. (Group 0130.)



Track Chain Assembly

1— Left Master Track Link
2— Right Master Track Link
3— Master Bushing
4— Collar (2 used)
5— Right Track Link (52 used)
6— Seal (104 used)
7— Bushing (52 used)
8— Left Track Link (52 used)
9— Shoe (53 used)
10— Pin (52 used)
11— Master Pin

TX1008216 —UN—24JUL06

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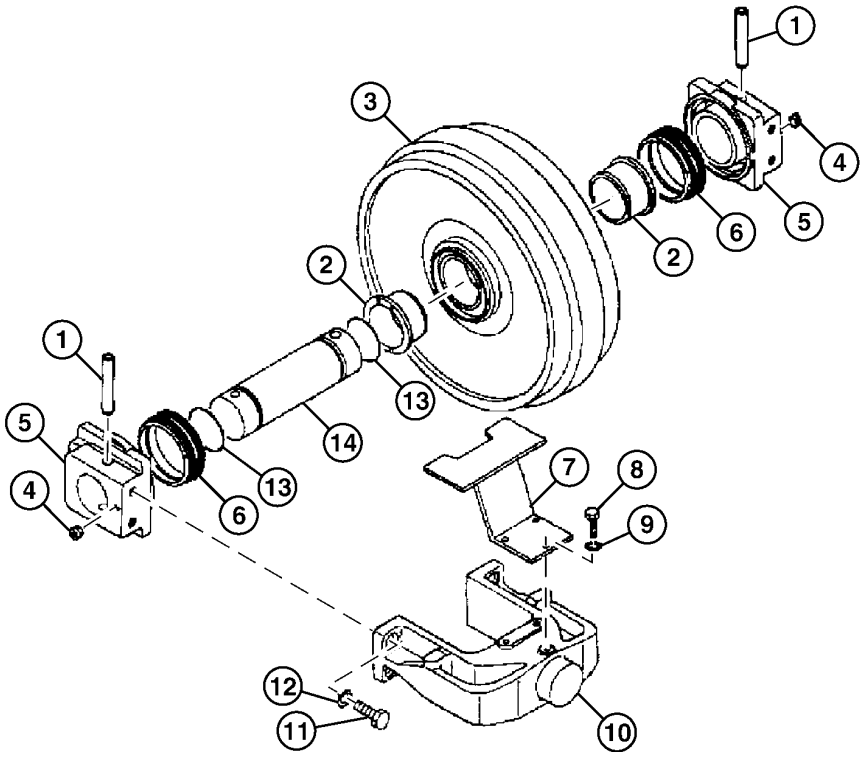
RH60123,000048D -19-19SEP11-1/2

Front Idler Disassemble and Assemble



TX1093578

TX1093578 —UN—16JUN11

Front Idler Assembly

1— Pin (2 used)
2— Bushing (2 used)
3— Idler
4— Plug (2 used)
5— Bracket (2 used)
6— Metal Face Seal (2 used)
7— Guard
8— Cap Screw (3 used)
9— Lock Washer (3 used)
10— Yoke
11— Cap Screw (4 used)
12— Lock Washer (4 used)
13— O-Ring (2 used)
14— Axle

CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

1. Remove front idler. See Front Idler Remove and Install. (Group 0130.)

Specification	
Front Idler—Weight (approximate)	281 kg 619 lb.

2. Remove cap screws (8) and remove guard (7).
3. Remove cap screws (11) and remove yoke (10).
4. Remove plug (4) to drain oil.

Specification	
Front Idler Oil (engine oil SAE 30)—Capacity (approximate)	450 mL 15 oz.

Continued on next page

RH60123,000029C -19-01AUG11-1/6

Section 02
Axles and Suspension Systems

Contents

16. Install spring pins (31) into pins (33) with opening facing cover (49).

CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

17. Install second stage carrier.

Specification	
Second Stage Carrier—Weight (approximate)	25 kg 55 lb.

18. Install second stage sun gear (21) onto second stage carrier.

19. Install spacer (28), spring pins (27), thrust plates (26), first stage planet gears (25), pins (24), needle bearings (23), and thrust plates (22) onto first stage carrier (29).

TX1097233 —UN—01SEP11

Spring Pin

31— Spring Pin (3 used)
33— Pin (3 used)
55— Opening

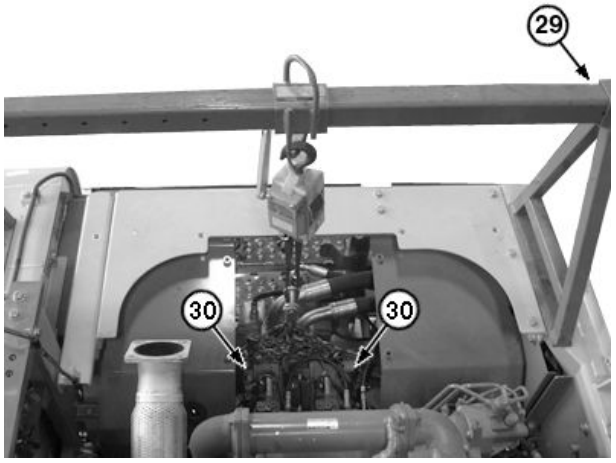
JJ28350,00006A5 -19-09SEP11-9/9

Section 04
Engine

Contents

27. Install DFT1119 Pump Support (29) and JT05550 Eyebolts (30). Support hydraulic pumps during engine removal and installation. See DFT1119 Pump Support. (Group 9900.)

29— DFT1119 Pump Support **30— JT05550 Eyebolt (2 used)**



TX1094024A —UN—12JUL11

DFT1119 Pump Support

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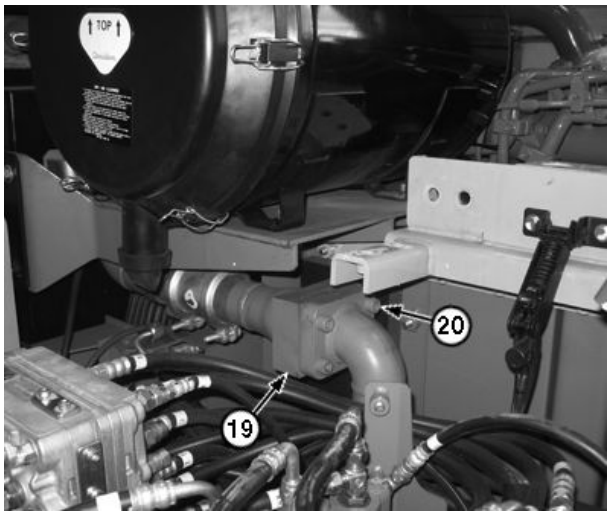
RG80575,00008D5 -19-06SEP11-13/15

Section 05
Engine Auxiliary System

Contents

13. Remove cap screws (20) and disconnect upper hydraulic oil cooler line (19). Close all openings using caps and plugs.

19— Upper Hydraulic Oil Cooler Line
20— Cap Screw (4 used)



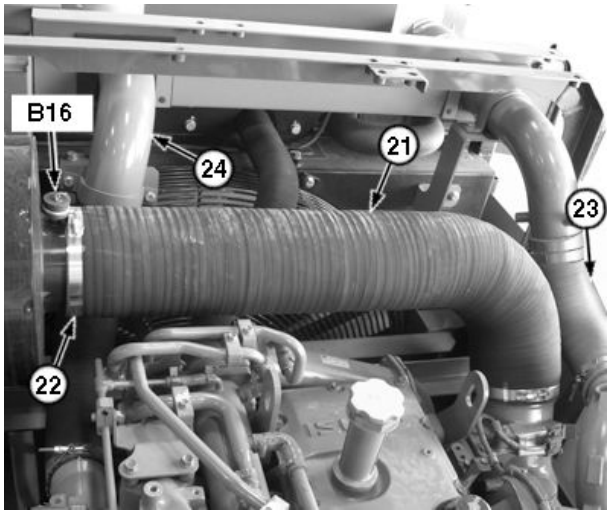
TX1094087A —UN—30JUN11

Upper Hydraulic Oil Cooler Line

RG80575,0000976 -19-21SEP11-6/12

14. Tag and disconnect air filter restriction switch (B16). See Engine Sub Harness (W6) Component Location. (Group 9015-10.)
15. Loosen clamp (22) and disconnect air intake hose (21). Close all openings using caps and plugs.
16. Disconnect turbocharger-to-intercooler hose (23) and intercooler-to-intake manifold hose (24). Close all openings using caps and plugs.
17. Open cooling package door. See Cooling Package Door Remove and Install. (Group 1921.)

21— Air Intake Hose
22— Clamp
23— Turbocharger-to-Intercooler Hose
24— Intercooler-to-Intake Manifold Hose
B16— Air Filter Restriction Switch



TX1094088A —UN—13JUL11

Intercooler and Air Intake Hoses

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RG80575,0000976 -19-21SEP11-7/12

CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

6. Attach appropriate lifting device to exhaust filter (3).

Specification	
Exhaust Filter—Weight (approximate)	59 kg (129 lb.)

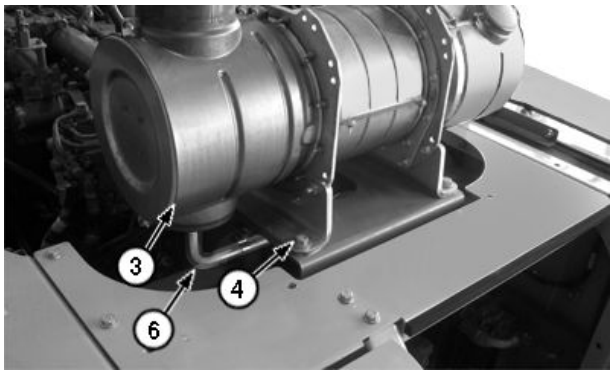
7. Remove cap screws (4), disconnect drain tube (6), and remove exhaust filter.
8. Repair or replace parts as necessary. See Exhaust Filter Disassemble and Assemble. (Group 0530.)

CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

9. Attach appropriate lifting device to exhaust filter.

Specification	
Exhaust Filter—Weight (approximate)	59 kg (129 lb.)

10. Align exhaust filter and drain tube. Install exhaust filter and cap screws.
11. Replace gasket (5). Connect exhaust tube and install cap screws.



TX1094814A —UN—11AUG11

Exhaust Filter

3— Exhaust Filter
4— Cap Screw (4 used)
6— Drain Tube

12. Connect sensors. See Exhaust Filter Harness (W12) Component Location. (Group 9015-10.)
13. Install engine side shields. See Engine Side Shields Remove and Install. (Group 1910.)
14. Install hood. See Hood Remove and Install. (Group 1910.)

RG80575,000091F -19-21SEP11-3/3

Primary Fuel Filter and Water Separator Remove and Install

1. Park and prepare machine for service. See Park and Prepare for Service Safely. (Group 0001.)
2. Open hydraulic pump compartment door on the operator's cab side of machine to access primary fuel filters and water separators.

NOTE: Fuel shutoff valve (1) shown in the open position.

3. Turn fuel shutoff valve to the closed position.

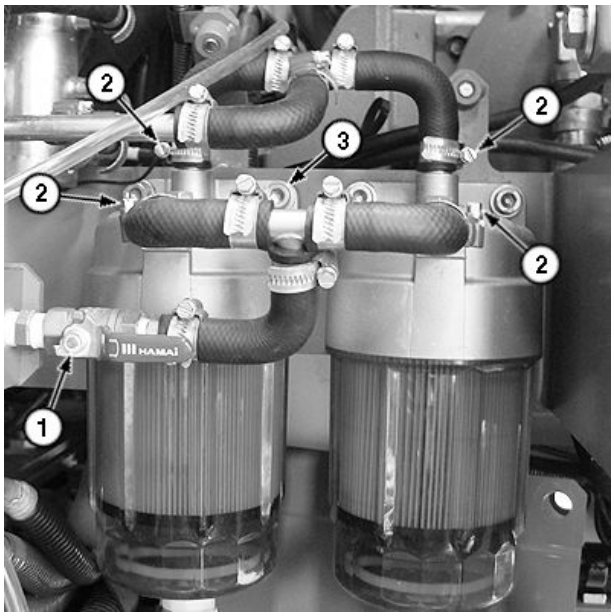
NOTE: Clean area thoroughly prior to removal of fuel filters to eliminate any type of contaminants from entering fuel system.

4. Remove filter elements. See Replace Primary Fuel Filter and Water Separators. (Operator's Manual.)
5. Install identification tags. Remove hose clamps (2) and remove fuel hoses. Close all openings with caps and plugs.
6. Remove cap screws (3) and remove primary fuel filters and water separators.
7. Repair or replace parts as necessary.
8. Install primary fuel filters and water separators with cap screws. Tighten cap screws to specification.

Specification	
Final Filter Mounting Cap Screws—Torque	35 N·m 26 lb.-ft.

9. Connect fuel hoses.
10. Install hose clamps and tighten to specification.

Specification	
Fuel Hose Clamps—Torque	4.4 N·m 39 lb.-ft.



TX1093958A —UN—26AUG11

Primary Fuel Filters

1— Fuel Shutoff Valve
2— Hose Clamp (4 used)
3— Socket Head Cap Screw (4 used)

11. Replace filter elements. See Replace Primary Fuel Filter and Water Separators. (Operator's Manual.)
12. Turn fuel shutoff valve to the open position.
13. Bleed fuel system of air. Perform Bleed Fuel System. (Operator's Manual.)
14. Operate machine and check for leaks.

TZ24494,00006D8 -19-15SEP11-1/1

Counterweight Remove and Install

1. Park and prepare machine for service. See Park and Prepare for Service Safely. (Group 0001.)

⚠ CAUTION: Avoid possible crushing injury from heavy component. Use appropriate lifting device.

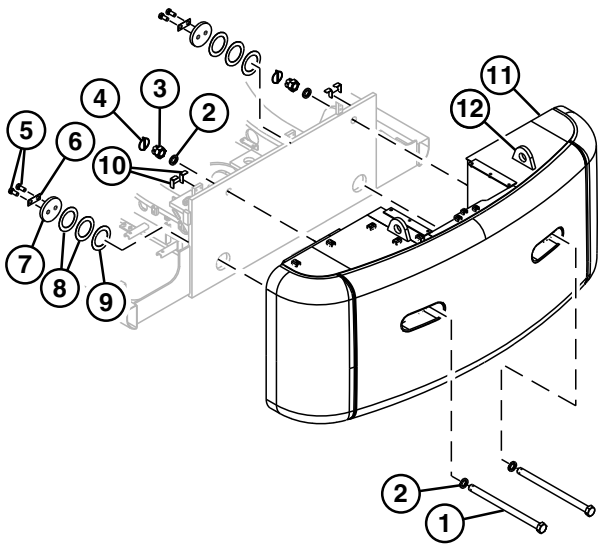
2. Support counterweight by attaching appropriate lifting device to lifting brackets (12) on counterweight (11).

Specification

Counterweight—Weight (approximate) ..... 8504 kg
18 749 lb.

3. Remove rear bottom covers.

1— Rear Cap Screw (2 used)
2— Bushing (4 used)
3— Nut (2 used)
4— Lock Pin (2 used)
5— Front Cap Screw (4 used)
6— Strap (2 used)
7— Plate (2 used)
8— Shim (4 used)
9— Shim (2 used)
10— Shim (4 used)
11— Counterweight
12— Lifting Bracket (2 used)



TX1094472 —UN—02AUG11

Counterweight

RG80575,0000902 -19-02AUG11-1/2

4. Disconnect pump harness-to-rear camera harness connector (X64). See Rear Camera Harness (W19) Component Location. (Group 9015-10.)
5. Remove front caps screws (5), straps (6), plates (7), and shims (8 and 9).
6. Remove lock pins (4), nuts (3), bushings (2), shims (10), and rear cap screws (1).
7. Remove counterweight from machine.
8. Repair or replace parts as necessary.

⚠ CAUTION: Avoid possible crushing injury from heavy component. Use appropriate lifting device.

9. Install counterweight onto machine using appropriate lifting device.

Specification

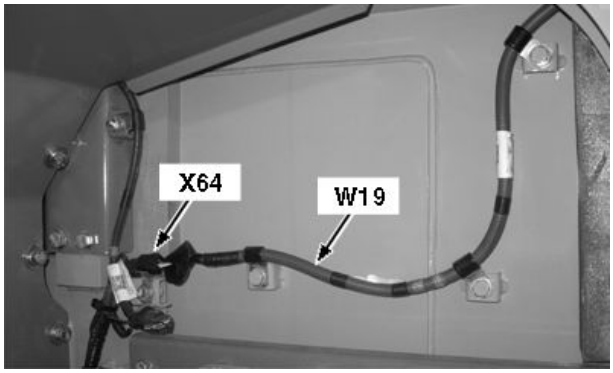
Counterweight—Weight (approximate) ..... 8504 kg
18 749 lb.

10. Install rear cap screws to frame with bushings, shims, and nuts. Tighten nuts to specification. Install lock pins.

Specification

Rear Cap Screws—Torque ..... 2350 N·m
1733 lb.-ft.

11. Install shims, plates, straps and caps screws. Tighten cap screws to specification.



TX1095522A —UN—02AUG11

Rear Camera Harness (W19)

W19—Rear Camera Harness
X64— Pump Harness-to-Rear Camera Harness Connector

Specification

Front Cap Screws—Torque ..... 440 N·m
325 lb.-ft.

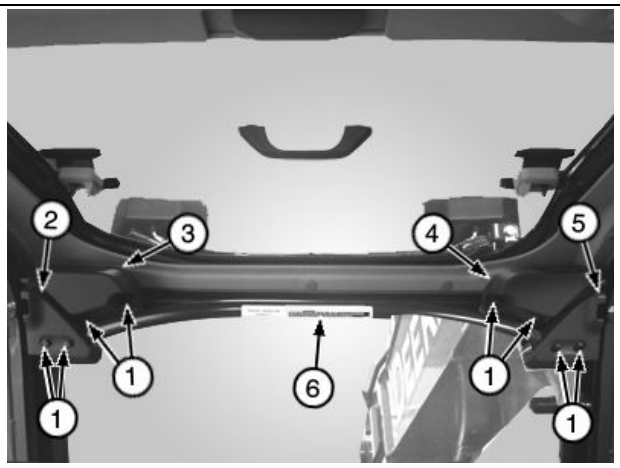
12. Connect pump harness-to-rear camera harness connector (X64). See Rear Camera Harness (W19) Component Location. (Group 9015-10.)
13. Install rear bottom covers.

RG80575,0000902 -19-02AUG11-2/2

Windshield Remove and Install

1. Park and prepare machine for service. See Park and Prepare for Service Safely. (Group 0001.)
2. Remove four cap screws (1) and covers (2 and 5).
3. Remove four cap screws (1) and covers (3 and 4).

1— Cap Screw (8 used)
2— Cover
3— Cover
4— Cover
5— Cover
6— Front Window Handle



TX1096510A —UN—23AUG11

Windshield - Interior

TZ24494,0000723 -19-16SEP11-1/2

IMPORTANT: Avoid damage to window, use two technicians during window removal to prevent window from falling out of machine.

4. Remove cap screws (7) and rollers (8).
5. Tilt the front window handle (6) into interior until horizontal.
6. Holding horizontally, tilt one lower corner up until it releases.
7. Lift entire windshield to release remaining corner to remove.
8. Repair or replace as necessary. See Windshield Disassemble and Assemble. (Group 1810.)
9. Holding horizontally, insert one lower corner until it latches into place.
10. Holding latched corner, tilt opposite corner until it latches.
11. Tilt the front window handle to a vertical position.
12. Install rollers and cap screws (7).

TX1098000A —UN—16SEP11

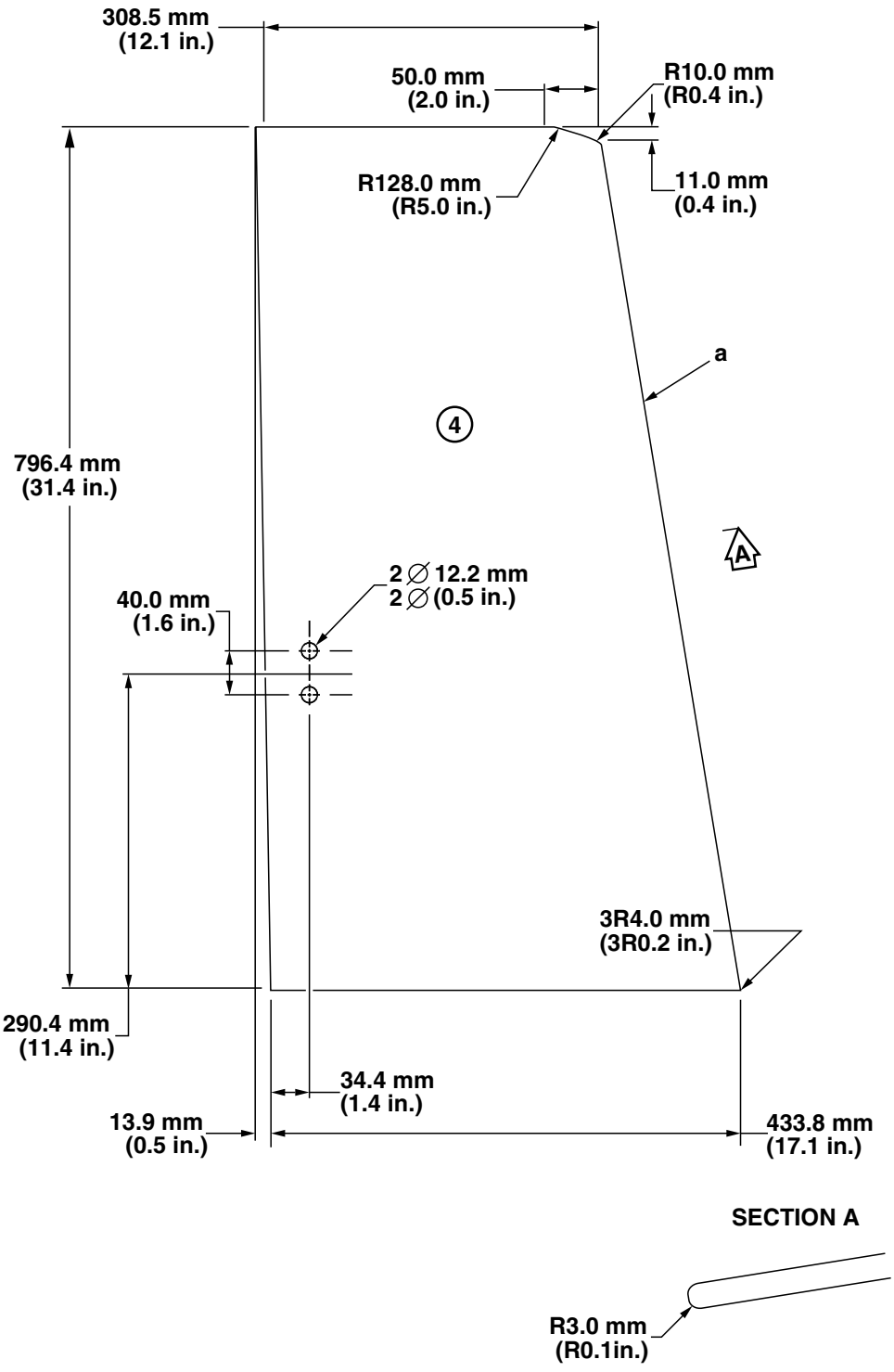
Windshield Rollers

7— Cap Screw (4 used)
8— Roller (2 used)

13. Install covers (3 and 4) and cap screws.
14. Install covers (2 and 5) and cap screws.

TZ24494,0000723 -19-16SEP11-2/2

UNIT:mm



TX1092089 —UN—08JUN11

TX1092089

Cab Door Rear Sliding Glass

4— Cab Door Rear Sliding Glass a— Chamfer Along Periphery

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DS35042,00002E0 -19-28JUN11-5/9

1— Seat Assembly
2— Back Rest Cover
3— Back Rest Foam
4— Bottom Seat Cover
5— Bottom Seat Foam
6— Seat Frame
7— Heater Kit (24 volt)
8— Headrest
9— Seat Adjuster Cable
10— Adjustment Handle (2 used)
11— Height Riser Spring (4 used)
12— Air Lumbar Support Kit
13— Height Riser Kit
14— 55 Suspension Kit
15— Damper Spring Kit
16— Bearing Kit
17— Up Stop Bump Stop Kit
18— Tether Belt (2 used)
19— Suspension Wiring Kit
20— 24 V Air Compressor Kit
21— KV Valve Kit
22— Suspension Cover Kit
23— Air Spring
24— Lever Center Pivot
25— Fore and Aft Adjust Kit
26— Heater Wire Lead Kit

RG80575,00008E7 -19-02AUG11-2/2

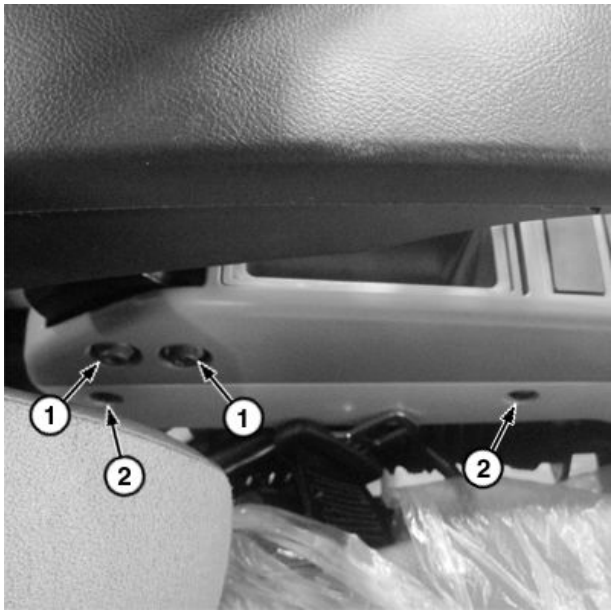
Left and Right Console Covers Remove and Install

1. Park and prepare machine for service. See Park and Prepare for Service Safely. (Group 0001.)

NOTE: It may be easy to access some of the cap screws by adjusting the seat to different positions.

2. Remove cap screws (1 and 2) from left console armrest and lower inside console cover.

1— Cap Screw (2 used)
2— Cap Screw (2 used)



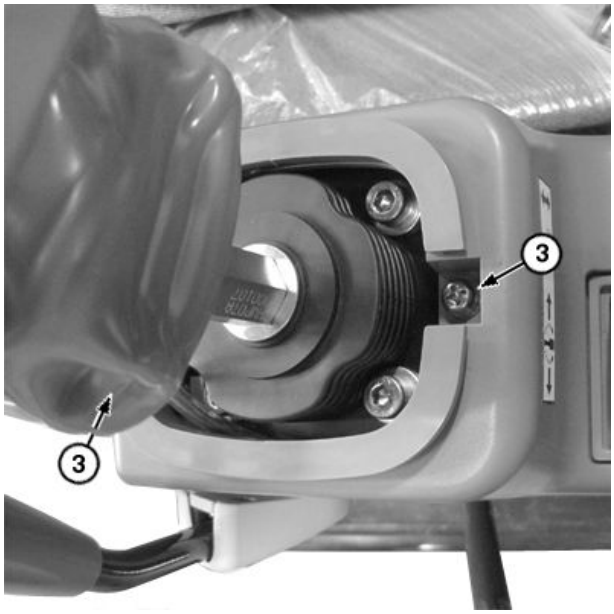
TX1092285A —UN—17MAY11

Left Console Armrest and Lower Inside Console Cover Cap Screws

RG80575,00008E8 -19-26JUL11-1/15

3. Slide left pilot control lever boot up to expose upper console cover cap screws (3) and remove cap screws.

3— Cap Screw (2 used)



TX1092287A —UN—17MAY11

Left Upper Console Cover Cap Screws

Continued on next page

RG80575,00008E8 -19-26JUL11-2/15

NOTE: Purging the condenser circuit takes 10—12 minutes to thoroughly remove solvent.

g. Disconnect hose from aeration nozzle to check circuit for solvent. Hold hose close to piece of cardboard; continue purging until cardboard is dry.

11. See flush evaporator, if evaporator requires flushing.

    If system is contaminated with burned refrigerant oil or debris, remove and bench flush evaporator. See following steps to flush evaporator through expansion valve, if oil appears normal.

12. **Flush evaporator:**

    a. Remove evaporator and expansion valve. See Heater and Air Conditioner Remove and Install. (Group 1830.)

    b. Force flushing solvent through evaporator inlet with compressed air.

    c. Purge system until dry.

    d. Install evaporator and then go to step 13. See Heater and Air Conditioner Remove and Install. (Group 1830.)

13. **Flush evaporator through expansion valve:**

    a. Connect flusher outlet hose to connection of receiver/dryer outlet hose using appropriate adapter.

    b. Fill flusher tank and fasten all connections.

Specification	
Flusher Tank—Capacity	4 L 1 gal.

NOTE: Air pressure must be at least to specification for flushing and purging.

Specification	
Air Pressure—Minimum Pressure (for flushing and purging)	620 kPa 90 psi 6.2 bar

    c. Connect supply line of moisture-free compressed air or dry nitrogen to flusher air valve.

    d. Attach hose and aerator nozzle to compressor inlet line using appropriate adapter. Put nozzle in container to collect solvent.

NOTE: Purging evaporator circuit takes 12—15 minutes to thoroughly remove solvent.

14. Disconnect hose from aeration nozzle to check circuit for solvent. Hold hose close to piece of cardboard and continue purging until cardboard is dry.

15. Install new receiver/dryer compatible with R134a refrigerant. Fasten connections and mounting bracket. See Receiver-Dryer Remove and Install. (Group 1830.)

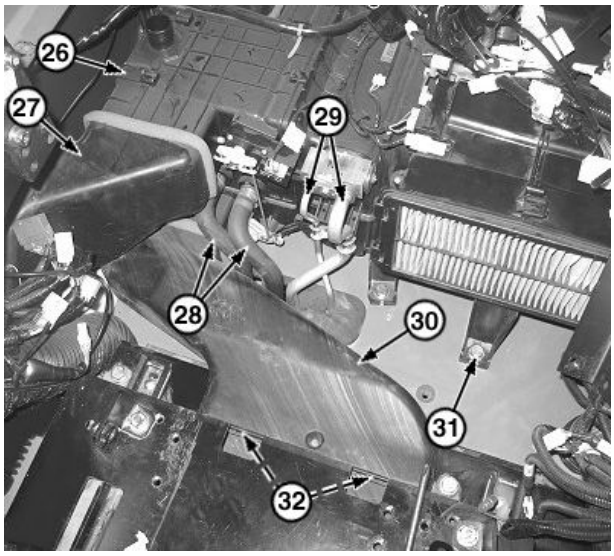
16. Add required oil. See R134a Refrigerant Oil Information. (Group 1830.)

17. Install compressor and connect refrigerant lines to manifold. See Air Conditioner Compressor Remove and Install. (Group 1830.)

18. Connect clutch coil wire and install drive belt. See Replace Air Conditioner V-Belt. (Operator's Manual.)

RG80575,0000987 -19-29AUG11-2/2

16. Disconnect engine coolant hoses (28) from heater and evaporator case (26). Close all openings using caps and plugs.
17. Install identification tags and remove air conditioner refrigerant lines (29) from heater and evaporator case. Close all openings using caps and plugs.
18. Remove cap screws (32) and air duct (30).
19. Remove cap screws (31). Separate air filter from air duct and remove.
20. Remove heater-air conditioner.
21. Repair or replace parts as necessary.
22. Install heater-air conditioner.
23. Connect air duct.
24. Connect engine coolant hoses and refrigerant lines.
25. Install fresh air inlet duct.
26. Install panel, cover and cap screws.
27. Install air conditioner controller (ACF), screws and electrical connector. See Cab Harness (W1) Component Location. (Group 9015-10.)
28. Install cap screws, relay block, and screws.
29. Install 12-volt power converter and screws.
30. Install cap screw to clamp down cab wiring harness.
31. Connect electrical connectors to monitor controller (DSZ). See Cab Harness (W1) Component Location and see Monitor Harness (W3) Component Location. (Group 9015-10.)
32. Install right side panel and cap screws.
33. Install center panel and cap screws.



TX1093039A —UN—08JUN11

Air Conditioner Component Location

26— Heater and Evaporator Case
27— Air Duct
28— Engine Coolant Hose (2 used)
29— Air Conditioner Refrigerant Line (2 used)
30— Air Duct
31— Cap Screw (6 used)
32— Cap Screw (2 used)

34. Install seat. See Seat Remove and Install. (Group 1821.)
35. Evacuate and charge system. See Evacuate R134a System and see Charge R134a System. (Group 1830.)
36. Fill cooling system. See Cooling System Fill and Deaeration Procedure. (Operator's Manual.)

RG80575,0000939 -19-22AUG11-6/6

Receiver-Dryer Remove and Install

1. Park and prepare machine for service. See Park and Prepare for Service Safely. (Operator's Manual.)
2. Recover refrigerant from system. See Recover R134a Refrigerant. (Group 1830.)
3. Remove cap screws (1) and open cooling package doors.

1— Cap Screw (4 used)

TX1093709A —UN—24JUN11

Cooling Package Doors

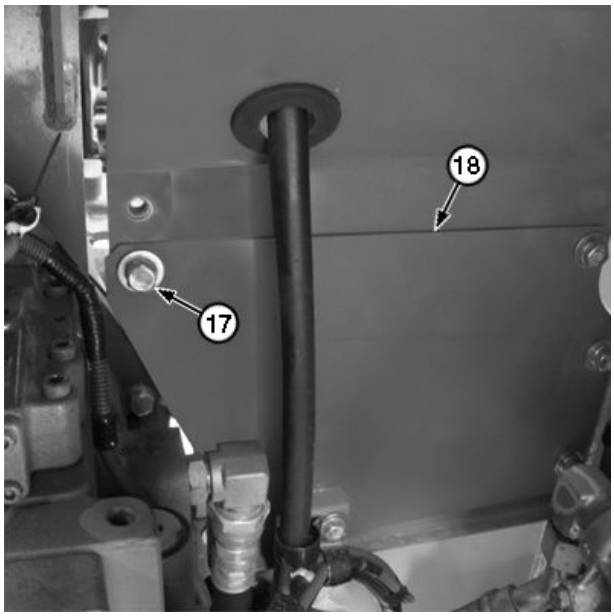
Continued on next page

DS35042,00002F0 -19-20JUL11-1/2

11. Remove cap screws (17) and lower rear hydraulic pump cover (18).

17— Cap Screw (5 used)

18— Lower Rear Hydraulic Pump Cover

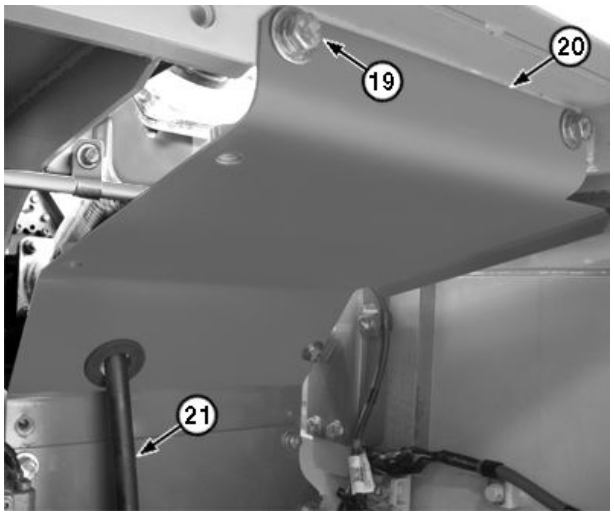


TX1093758A —UN—23JUN11

Lower Rear Hydraulic Pump Cover

BE7856,0000045 -19-02SEP11-8/9

12. Route drain hose (21) through upper rear hydraulic pump cover (20).
13. Remove cap screws (19) and upper rear hydraulic pump cover.
14. Repair and replace parts as necessary.
15. Route drain hose through upper rear hydraulic pump cover.
16. Install upper rear hydraulic pump cover and cap screws.
17. Install lower rear hydraulic pump cover and cap screws.
18. Install center hydraulic pump cover and cap screws.
19. Install left support and cap screws.
20. Install wiring harness and cap screws to support.
21. Install right front engine side cover and cap screws.
22. Install right rear engine side cover and cap screws.
23. Install left rear engine side cover and cap screws.
24. Install left front engine side cover and cap screws.
25. Install exhaust pipe and cap screws.
26. Install hood. See Hood Remove and Install. (Group 1910.)



TX1093761A —UN—23JUN11

Upper Rear Hydraulic Pump Cover

19— Cap Screw (3 used)

20— Upper Rear Hydraulic Pump Cover

21— Drain Hose

BE7856,0000045 -19-02SEP11-9/9

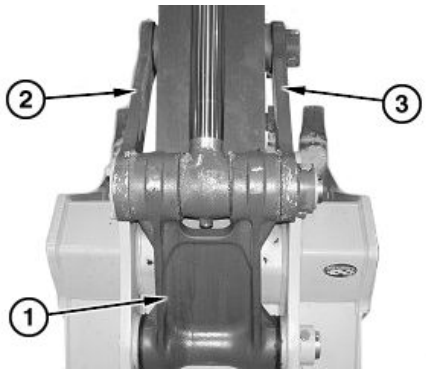
Bucket Links Remove and Install

1. Prepare machine for service. See Park and Prepare for Service Safely. (Group 0001.)
2. Lower bucket so bottom of bucket is resting on ground.

⚠ CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

3. Attach appropriate lifting device to bucket link (1).

Specification	
Bucket Link—Weight (approximate)	223 kg 492 lb.



TX1003799 —UN—17FEB06

Bucket and Arm Links

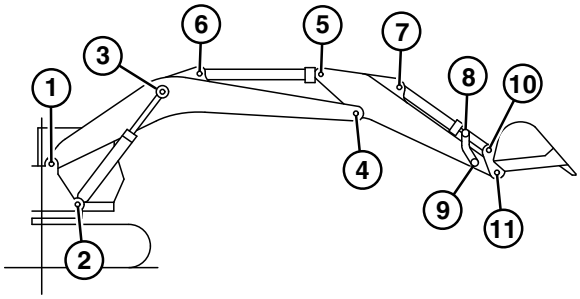
1— Bucket Link
2— Right Arm Link
3— Left Arm Link

Continued on next page

JD29379,000008C -19-15SEP11-1/2

Inspect Pins, Bushings and Bosses—Front Attachment

1— Boom-to-Frame Joint
2— Boom Cylinder Head End-to-Frame Joint
3— Boom Cylinder Rod End-to-Boom Joint
4— Boom-to-Arm Joint
5— Arm Cylinder Rod End-to-Arm Joint
6— Arm Cylinder Head End-to-Boom Joint
7— Bucket Cylinder Head End-to-Arm Joint
8— Bucket Cylinder Rod End-to-Side and Bucket Links Joint
9— Side Links-to-Arm Joint
10— Bucket Link-to-Bucket Joint
11— Bucket-to-Arm Joint



TX1004442

TX1004442 —UN—06MAR06

Boom, Arm and Bucket

Pins, Bushings and Bosses				
	Item	**Standard**	**Allowable Limit**	**Remedy**
1	Pin	120 mm 4.72 in.	119 mm 4.69 in.	Replace
	Bushing	120 mm 4.72 in.	121.5 mm 4.78 in.	Replace
2	Pin	110 mm 4.33 in.	109 mm 4.30 in.	Replace
	Boss (main frame)	110 mm 4.33 in.	111.5 mm 4.39 in.	Replace
	Bushing (boom cylinder)	110 mm 4.33 in.	111.5 mm 4.39 in.	Replace
3	Pin	120 mm 4.72 in.	119 mm 4.69 in.	Replace
	Boss (boom)	120 mm 4.72 in.	121.5 mm 4.78 in.	Replace
	Bushing (boom cylinder)	120 mm 4.72 in.	121.5 mm 4.78 in.	Replace
4	Pin	120 mm 4.72 in.	119 mm 4.69 in.	Replace
	Boss (boom)	120 mm 4.72 in.	121.5 mm 4.78 in.	Replace
	Bushing (arm)	120 mm 4.72 in.	121.5 mm 4.78 in.	Replace
5	Pin	110 mm 4.33 in.	109 mm 4.30 in.	Replace
	Boss (arm)	110 mm 4.33 in.	111.5 mm 4.39 in.	Replace
	Bushing (arm cylinder)	110 mm 4.33 in.	111.5 mm 4.39 in.	Replace
6	Pin	110 mm 4.33 in.	109 mm 4.30 in.	Replace
	Boss (boom)	110 mm 4.33 in.	111.5 mm 4.39 in.	Replace
	Bushing (arm cylinder)	110 mm 4.33 in.	111.5 mm 4.39 in.	Replace
7	Pin	100 mm 3.94 in.	99 mm 3.90 in.	Replace
	Boss (arm)	100 mm 3.94 in.	101.5 mm 4.00 in.	Replace
	Bushing (bucket cylinder)	100 mm 3.94 in.	101.5 mm 4.00 in.	Replace
8	Pin	110 mm 4.33 in.	109 mm 4.30 in.	Replace
	Bushing	110 mm 4.33 in.	111.5 mm 4.39 in.	Replace

Continued on next page

1— Valve Cover
2— Nut (2 used)
3— Set Screw (2 used)
4— Cap Screw
5— Booster
6— O-Ring
7— Booster Cover
8— Cap Screw (5 used)
9— O-Ring
10— Cover
11— Cap Screw (2 used)
12— Cap Screw (2 used)
13— Cap Screw (9 used)
14— Plug (2 used)
15— O-Ring (2 used)
16— Plug (12 used)
17— Valve Plate Pin (2 used)
18— Seat Packing (2 used)
19— Pin (4 used)
20— Stopper (2 used)
21— Steel Ball (2 used)
22— Seat (2 used)
23— Plug (2 used)
24— Needle Bearing (2 used)
25— Valve Plate
26— Valve Plate
27— Cylinder Block (2 used)
28— Cylinder Spring (18 used)
29— Spherical Bushing (2 used)
30— Retainer (2 used)
31— Roller Bearing
32— Plunger (18 used)
33— Shoe Plate (2 used)
34— Swash Plate (2 used)
35— Pin
36— Tilt Bushing (2 used)
37— Tilt Pin (2 used)
38— Feedback Pin (2 used)
39— Swash Plate Stand (2 used)
40— Pin (2 used)
41— Snap Ring (3 used)
42— Bearing Spacer (3 used)
43— Roller Bearing
44— Drive Shaft
45— Driven Shaft
46— Bearing Spacer (2 used)
47— Snap Ring (2 used)
48— Backup Ring (2 used)
49— O-Ring (2 used)
50— Stopper (2 used)
51— Servo Piston (2 used)
52— Stopper (2 used)
53— O-Ring (2 used)
54— Backup Ring (2 used)
55— Pump Casing
56— Eyebolt (2 used)
57— Plug (20 used)
58— O-Ring (5 used)
59— O-Ring (2 used)
60— Name Plate
61— Rivet (2 used)
62— Screw (4 used)
63— Plug (3 used)
64— O-Ring (3 used)
65— Cap Screw (8 used)
66— Cap Screw (8 used)
67— Servo Cover (2 used)
68— Nut (2 used)
69— Set Screw (2 used)
70— Snap Ring (2 used)
71— Bearing Spacer (2 used)
72— Drive Gear
73— Driven Gear
74— Bearing Spacer
75— Snap Ring
76— Front Casing
77— O-Ring
78— Oil Seal
79— Front Cover
80— Snap Ring
81— Cap Screw (11 used)
82— Coupling
83— Pin (4 used)
84— Pin
85— Inner Spacer
86— Stop Ring
87— Pin (4 used)
88— O-Ring (2 used)
89— Plug (2 used)
90— Cover
91— Cap Screw (8 used)
92— O-Ring

1. Remove pump 1 and 2 regulators. See Pump 1 and 2 Regulator Remove and Install. (Group 3360.)
2. Remove plugs (63) and drain hydraulic oil.
3. Remove cap screws (91) and remove cover (90) and O-ring (92).
4. Remove cap screws (8) and remove booster cover (7) and O-ring (6).
5. Remove booster (5) from driven shaft (45).
6. Remove cap screws (11) and remove cover (10), coupling (82), and O-ring (9).
7. Install eyebolts M12 x 1.75 mm to valve cover (1).

CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

8. Remove cap screws (4, 12, and 13) and remove valve cover.

Specification

Valve Cover—Weight (approximate)..... 60 kg 130 lb.

9. Remove seat packing (18) from pump casing (55).

NOTE: Do not remove needle bearing (24) unless worn or damaged.

10. When replacing worn or damaged needle bearing (24) remove stop ring (86), needle bearing, inner spacer (85), and valve plate (25) from drive shaft (44).
11. Remove valve plate (26) from driven shaft (45).
12. Remove cylinder block (27) assemblies from drive shaft and driven shaft.
13. Remove plungers (32), retainers (30), spherical bushings (29), and cylinder springs (28) from cylinder blocks.
14. Remove swash plates (34) and shoe plates (33) from pump casing.

IMPORTANT: To prevent component damage do not loosen nuts (2 and 68). When loosening nuts (2 and 68) and set screws (3 and 69), flow rate is changed.

15. Remove cap screws (66) and remove servo cover (67), stoppers (52), servo pistons (51), stoppers (50), and tilt pins (37).
16. Remove snap ring (80) and remove front cover (79).
17. Remove oil seal (78) from front cover.

CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

18. Remove cap screws (81) and remove front casing (76).

Specification

Front Casing—Weight (approximate)..... 32 kg 70 lb.

19. Remove snap rings (70), bearing spacers (71), and drive gear (72) from drive shaft.
20. Remove snap ring (75), bearing spacer (74), and driven gear (73) from driven shaft.
21. Remove snap rings (47) and bearing spacers (46) from pump casing.
22. Remove snap ring (41) and bearing spacer (42) from driven shaft.
23. Remove drive shaft and driven shaft from pump casing.

NOTE: Do not remove roller bearings (31 or 43) unless worn or damaged.

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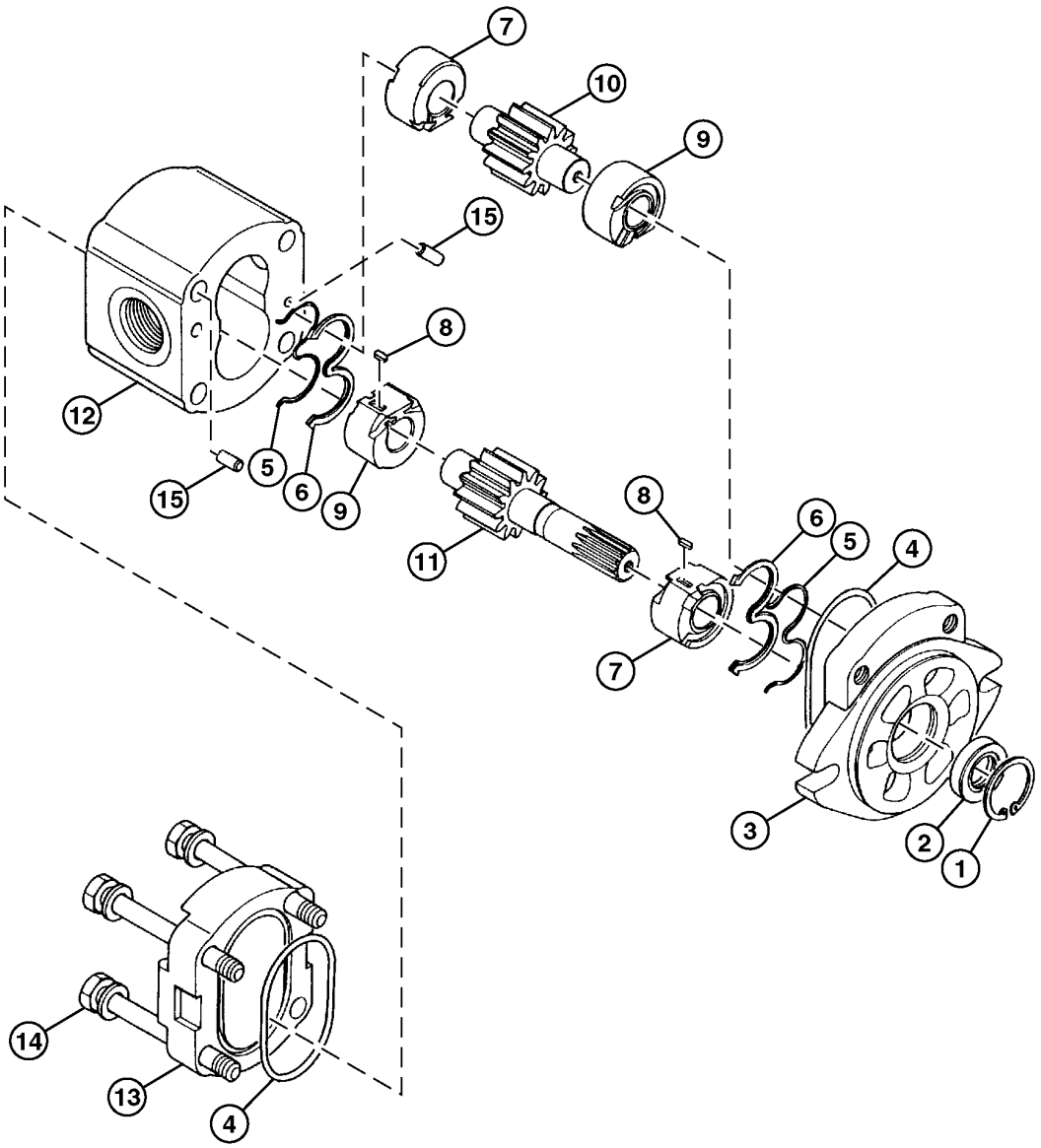
Pilot Pump Disassemble and Assemble



TX1095992 —UN—11AUG11

TX1095992

Pilot Pump (exploded view)

1— Snap Ring
2— Seal
3— Mounting Flange
4— O-Ring (2 used)
5— Backup Ring (2 used)
6— Seal (2 used)
7— Bushing (2 used)
8— Key (2 used)
9— Bushing (2 used)
10— Driven Gear
11— Drive Gear
12— Housing
13— Cover
14— Cap Screw (4 used)
15— Dowel Pin (2 used)

1. Remove snap ring (1).
2. Remove cap screws (14) and mounting flange (3).
3. Check bushings (7). If inside diameter and surface toward gear are rough or worn, replace pump.
4. Check gears (10 and 11) and housing (12). If gear teeth, shaft and inside of housing are rough or worn, replace pump.
5. Repair or replace parts as necessary.

IMPORTANT: Prevent possible pump damage. Apply clean hydraulic oil to parts during installation.

Continued on next page

RG80575,0000929 -19-12AUG11-1/2

17. Remove retaining ring (31) from pump housing.
18. Remove shaft (3) from pump housing.
19. Remove seal holder (20) from shaft.
20. Remove oil seal (28) and O-ring (44) from seal holder.

NOTE: Do not remove roller bearing (29) unless replacing.

21. Remove retaining ring (33) and roller bearing (29) from shaft.
22. Inspect, clean, and replace parts as necessary.

IMPORTANT: Avoid possible pump damage. Apply clean hydraulic oil to parts prior to installation.

23. Install roller bearing (29) and retaining ring (33) onto shaft.
24. Install oil seal (28) and O-ring (44) into seal holder (20).
25. Install the seal holder and retaining ring (31) into pump housing.

IMPORTANT: Avoid possible oil seal damage. Cover splines of shaft during installation.

26. Install shaft into pump housing.
27. Install retaining ring (31) into pump housing.
28. Install ball bearings (14) and swash plate (10) to pump housing.
29. Install washer (19), spring (15), washer (19), and retaining ring (32) into cylinder block (4).
30. Install needles (11), washer (19), and holder (9) into cylinder block.
31. Install pistons (6) to retainer (8).
32. Install retainer into cylinder block.
33. Install cylinder block onto shaft.
34. Install needle bearing (30) into cover.
35. Install spring guide (21) and sleeve (23) into cover and tighten cap screws (39) to specification.

Specification

Cap Screw—Torque.....4 N·m
36 lb.-in.

36. Install spring (22) and control piston (24) into sleeve (23).
37. Install O-ring (42) onto sleeve (17).
38. Install sleeve, spring (16), and control piston (18) into cover.
39. Install valve plate (5) onto cover.
40. Install gasket (13) and cover onto pump housing and tighten cap screws (38) to specification.

Specification

Cap Screw—Torque.....50 N·m
37 lb.-ft.

41. Install O-ring (40) onto plug (34).
42. Install plug (34), piston (27), and O-ring (43) into block (26) and tighten plug to specification.

Specification

Plug—Torque.....20 N·m
180 lb.-in.

43. Install spool (25) and block onto cover and tighten cap screws (39) to specification.

Specification

Cap Screw—Torque.....4 N·m
36 lb.-in.

44. Install O-rings (41) onto plugs (35).
45. Install plugs into pump housing and cover and tighten to specification.

Specification

Plug—Torque.....27 N·m
240 lb.-in.

JA66566,00008DB -19-04AUG11-2/2

Fan Drive Pump Regulator Remove and Install

For information on fan drive pump regulator remove and install, see Fan Drive Pump Disassemble and Assemble. (Group 3360.)

RG80575,000092E -19-12AUG11-1/1

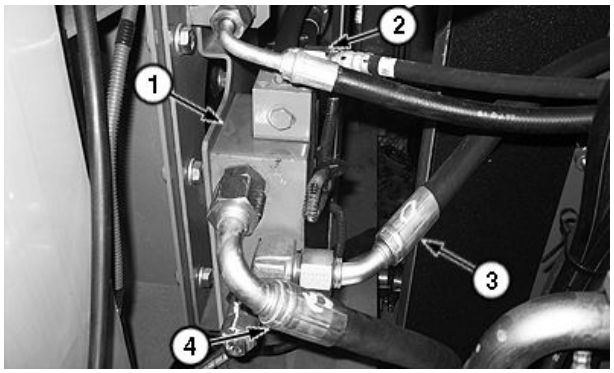
Fan Drive Pump Regulator Disassemble and Assemble

For information on fan drive pump regulator disassemble and assemble, see Fan Drive Pump Disassemble and Assemble. (Group 3360.)

RG80575,000092F -19-12AUG11-1/1

Fan Drive Reversing Control Valve Remove and Install

1. Park and prepare machine for service. See Park and Prepare for Service Safely. (Group 0001.)
2. Release hydraulic oil tank pressure by pressing pressure release button at top of hydraulic oil tank. See Hydraulic Oil Tank Pressure Release Procedure. (Group 9025-25.)
3. Apply vacuum to hydraulic oil tank. See Apply Vacuum to Hydraulic Oil Tank. (Group 3360.)
4. Tag and disconnect lines (2—4). Close all openings using caps and plugs. See Fan Drive Hydraulic System Component Location. (Group 9025-15.)



TX1095590A —UN—08AUG11

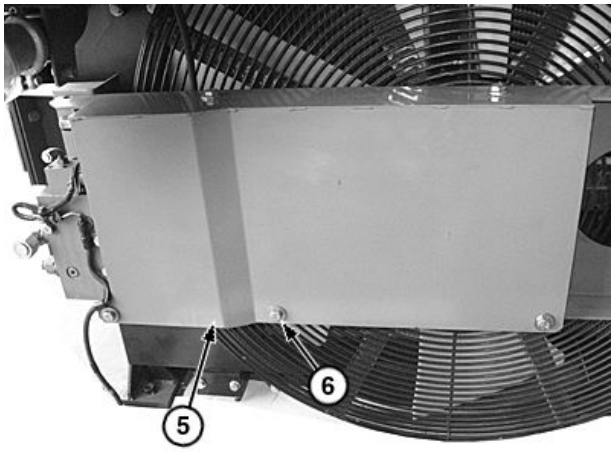
Fan Speed and Reversing Control Valve

1— Fan Speed and Reversing Control Valve
2— Pilot Line (solenoid valve manifold to oil cooler fan speed reversing control valve)
3— Return Line (oil cooler fan motor to hydraulic oil tank)
4— Supply Pressure Line (oil cooler fan pump to oil cooler fan speed reversing control valve)

RG80575,0000912 -19-21SEP11-1/3

5. Remove cap screws (6) and cover (5).

5— Cover
6— Cap Screw (5 used)



TX1095591A —UN—19AUG11

Cover

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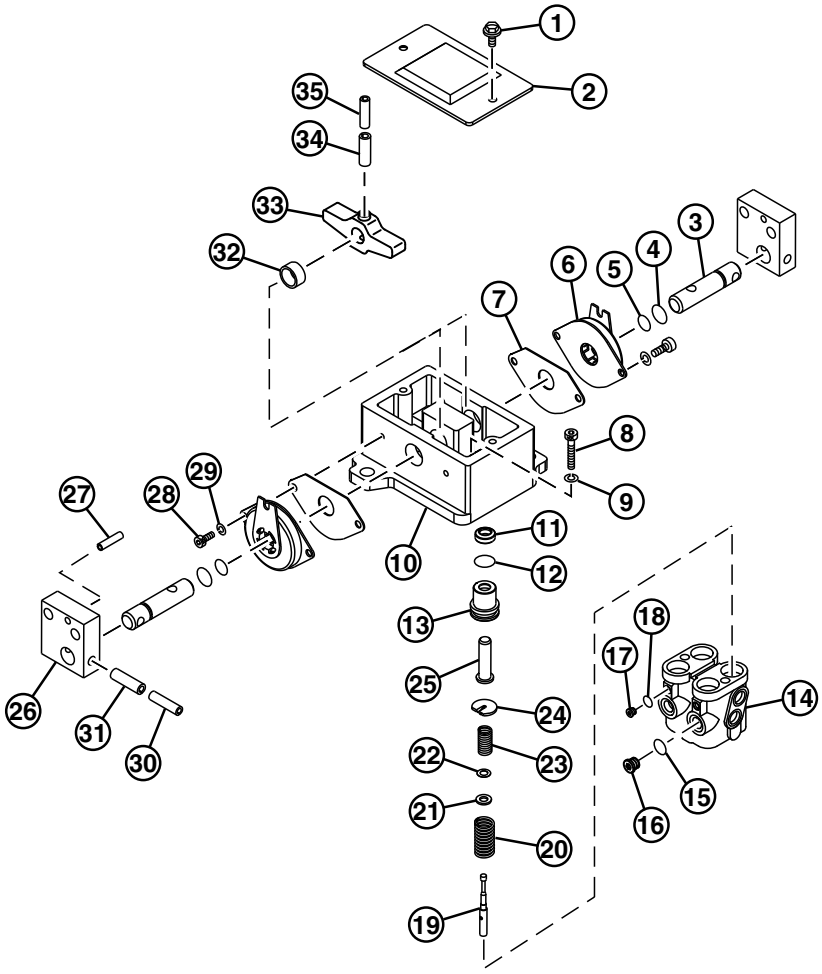
RG80575,0000912 -19-21SEP11-2/3

Travel Pilot Control Valve Disassemble and Assemble



TX1093292

TX1093292 —UN—15JUN11

Travel Pilot Control Valve Components

1— Cap Screw (2 used)
2— Cover
3— Pin (2 used)
4— O-Ring (2 used)
5— O-Ring (2 used)
6— Dampener (2 used)
7— Rubber Seat (2 used)
8— Cap Screw (2 used)
9— Lock Washer (2 used)
10— Holder
11— Oil Seal (4 used)
12— O-Ring (4 used)
13— Bushing (4 used)
14— Casing
15— O-Ring
16— Plug
17— Plug
18— O-Ring
19— Spool (4 used)
20— Spring (4 used)
21— Spacer (4 used)
22— Shim (as required)
23— Balance Spring (4 used)
24— Spring Guide (4 used)
25— Pusher (4 used)
26— Bracket (2 used)
27— Spring Pin (2 used)
28— Cap Screw (4 used)
29— Lock Washer (4 used)
30— Spring Pin (2 used)
31— Spring Pin (2 used)
32— Bushing (4 used)
33— Cam (2 used)
34— Spring Pin (2 used)
35— Spring Pin (2 used)

NOTE: The casing (14) and spools (19) are replaced as an assembly because the spools are select fitted to bores in housing.

Note port location and quantity of shims (22) when removing. Same number of shims must be used when installing.

1. Remove cover (2) and cap screws (1). Remember to keep parts removed from each port together. Identify each group of parts by port numbers stamped on casing.

NOTE: Remove spring pins (27) and bushings (32) only if necessary.

2. Remove plug (16) and O-ring (15).
3. Remove plug (17) and O-ring (18).

NOTE: Spring pins (30 and 31) are stepped and can only be removed from one direction. Scribe mark on brackets (26) to show installation direction of spring pins.

4. Remove spring pins (30 and 31) and brackets (26).
5. Remove cap screws (28) and lock washers (29).
6. Remove O-rings (4 and 5).

Continued on next page

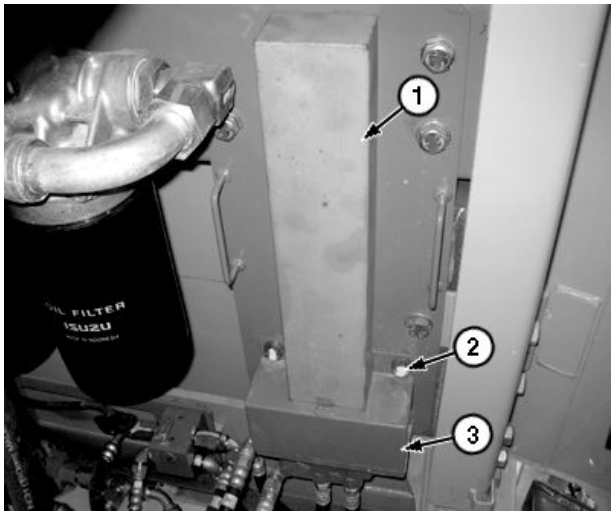
BE7856,0000037 -19-30AUG11-1/2

Counterweight Pilot Control Valve Remove and Install—If Equipped

1. Park and prepare machine for service. See Park and Prepare for Service Safely. (Group 0001.)
2. Disconnect battery negative (-) cable.

CAUTION: Avoid personal injury from high pressure fluid. High pressure release of oil from pressurized system can cause serious burns or penetrating injury. Relieve pressure from hydraulic system before servicing.

3. Release hydraulic oil tank pressure by pressing pressure release button at top of hydraulic oil tank. See Hydraulic Oil Tank Pressure Release Procedure. (Group 9025-25.)
4. Apply vacuum to or drain hydraulic oil tank. See Apply Vacuum to Hydraulic Oil Tank. (Group 3360.) See Drain and Refill Hydraulic Tank Oil and Clean Suction Screen. (Operator's Manual.)
5. Remove counterweight control valve lever cover (1).
6. Remove cap screws (2) to remove counterweight control valve cover (3).

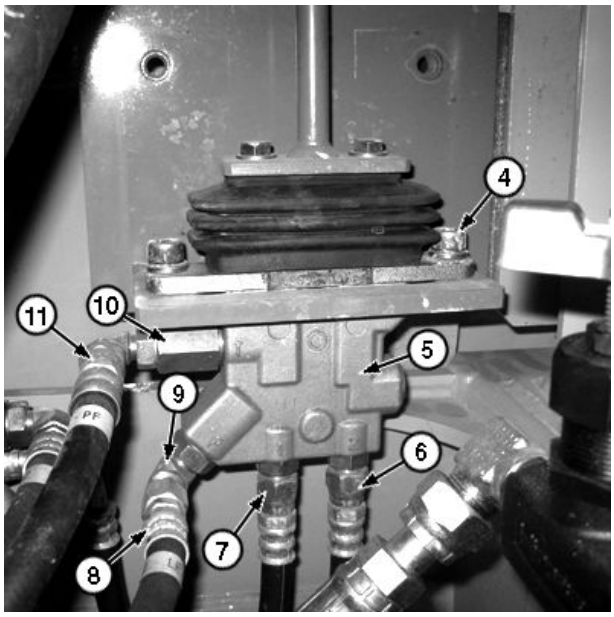


TX1097740A —UN—12SEP11

1— Counterweight Control Valve Lever Cover
2— Cap Screw (2 used)
3— Counterweight Control Valve Cover

JB35873,0000303 -19-19SEP11-1/2

7. Tag and disconnect hydraulic hoses (6, 7, 8, and 11). Close all openings using caps and plugs.
8. Remove fittings (9 and 10). Close all openings using caps and plugs.
9. Remove cap screws (4) to remove counterweight pilot control valve (5).
10. Repair or replace parts as necessary. See Counterweight Pilot Control Valve Disassemble and Assemble. (Group 3360.)
11. Install counterweight pilot control valve.
12. Install fittings and connect hydraulic hoses. See Hydraulic System Schematic. (Group 9025-15.)
13. Remove vacuum or fill hydraulic oil tank. See Apply Vacuum to Hydraulic Oil Tank. (Group 3360.) See Drain and Refill Hydraulic Tank Oil and Clean Suction Screen. (Operator's Manual.)
14. Connect the battery negative (-) cable.
15. Operate counterweight pilot control lever and check for leaks.
16. Install counterweight control valve cover.
17. Install counterweight control valve lever cover.

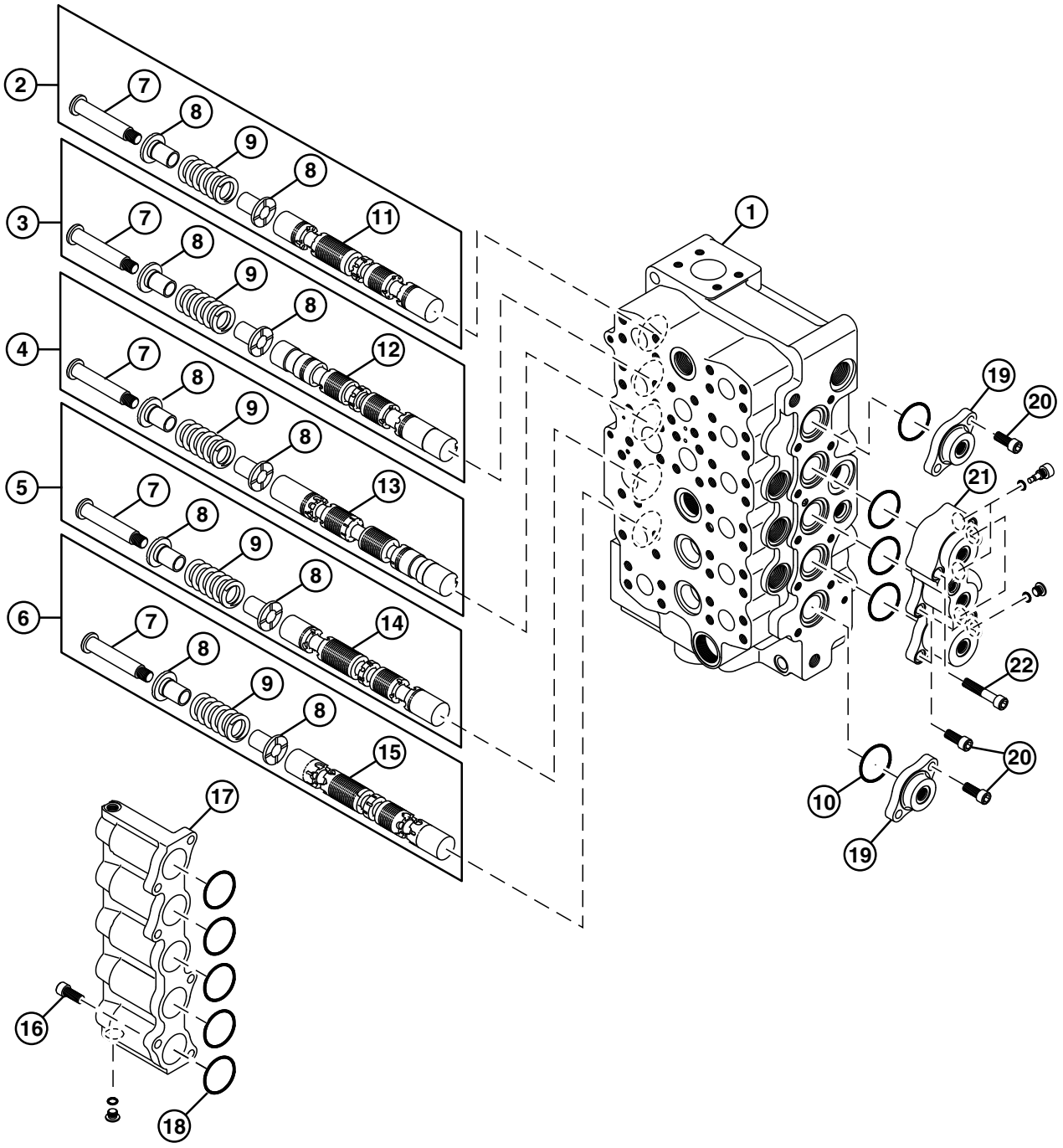


TX1097741A —UN—12SEP11

Counterweight Pilot Control Valve Hoses

4— Cap Screw (2 used)
5— Counterweight Pilot Control Valve
6— Hydraulic Hose
7— Hydraulic Hose
8— Hydraulic Hose
9— Fitting
10— Fitting
11— Hydraulic Hose

JB35873,0000303 -19-19SEP11-2/2



TX1097145

Left Control Valve Spools (5-spool)

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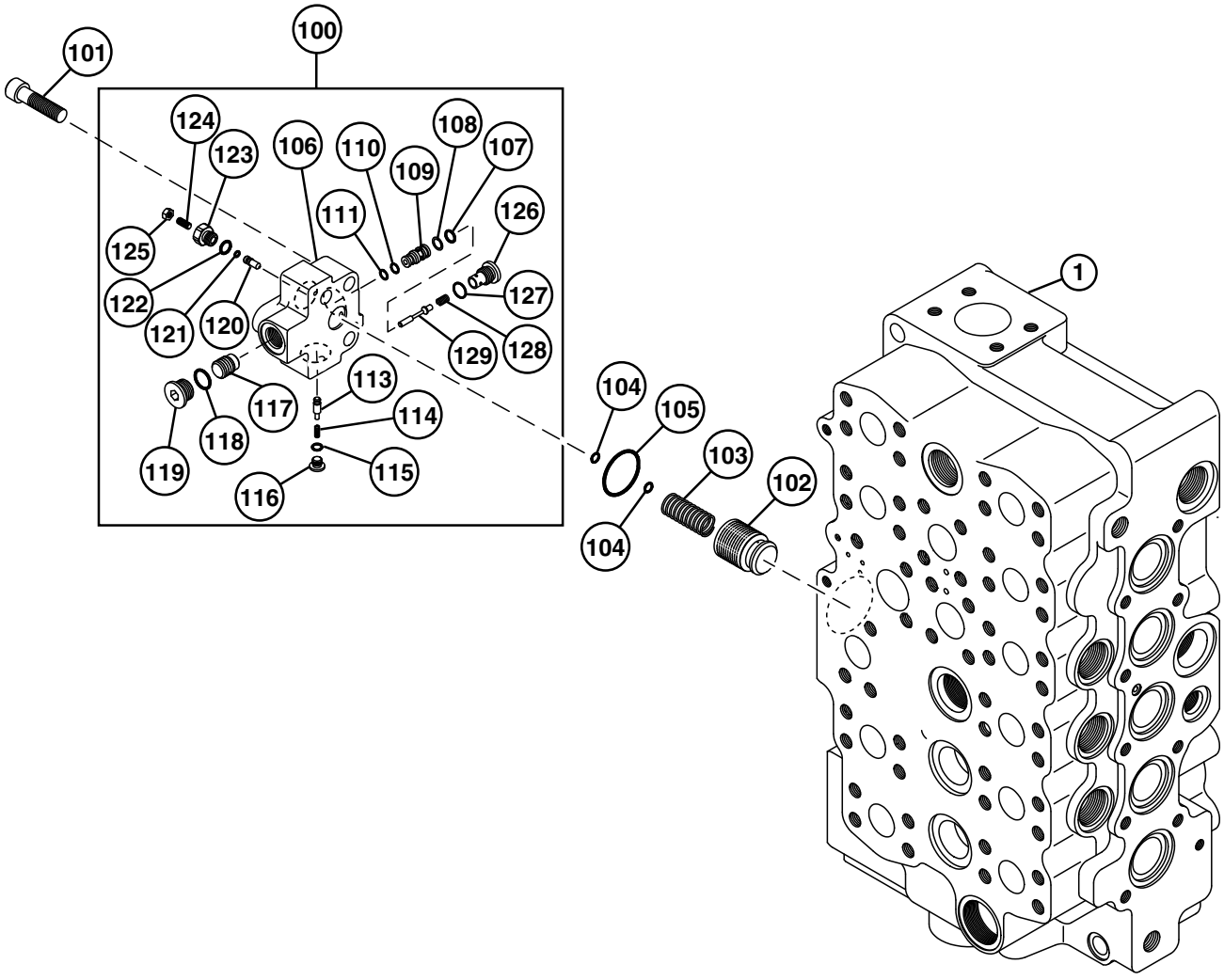
JB35873,00002AE -19-15SEP11-2/33

Boom 2 Reduced Leakage Valve (Valve and Check Valve)



TX1097153

Boom 2 Reduced Leakage Valve (valve and check valve)

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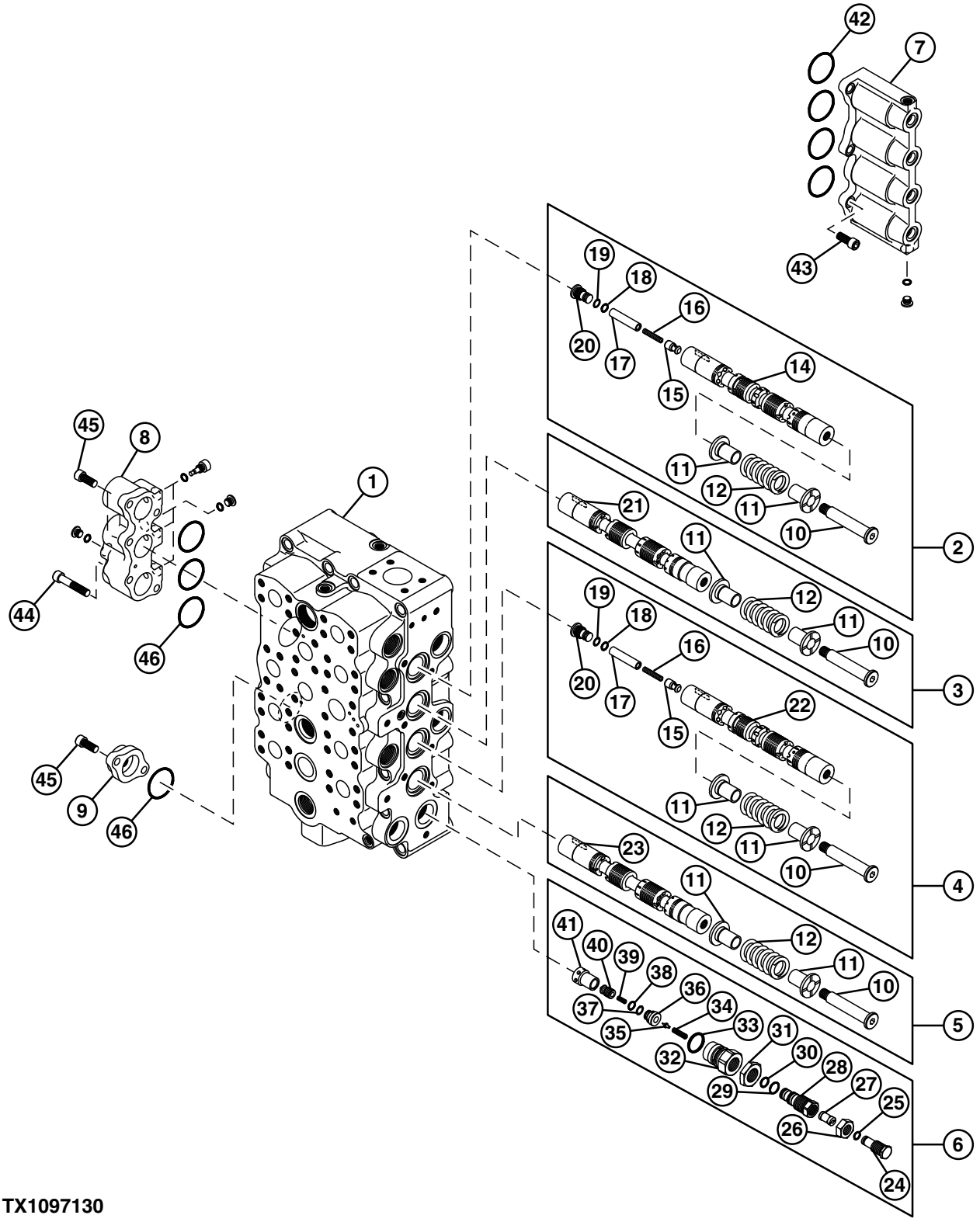
JB35873,00002AE -19-15SEP11-22/33



TX1097130

Right Control Valve Spools (4-spool) and Main Relief Valve

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RH60123,0000443 -19-15SEP11-2/32

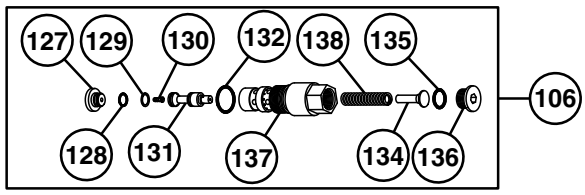
Bucket Regenerative Valve (106) Disassemble and Assemble

1. Remove bucket regenerative valve (106) from right control valve housing (1).
2. Remove sleeve (137), spool (131), spring (138), and guide (134) from housing.
3. Remove piston (130), backup ring (129), and O-ring (128) from retainer (127).
4. Remove O-ring (132) and plug (136) from sleeve (137).
5. Remove O-ring (135) from plug.
6. Repair or replace parts as necessary.
7. Install O-ring (135) to plug (136).
8. Install plug and O-ring (132) to sleeve (137). Tighten plug to specification.

Specification

Plug—Torque.....180 N·m
133 lb.-ft.

9. Install O-ring (128), backup ring, and piston to retainer (127).
10. Install guide (134), spring (138), spool (131), and retainer to sleeve.



TX1097602 —UN—15SEP11

Bucket Regenerative Valve

106— Bucket Regenerative Valve
127— Retainer
128— O-Ring
129— Backup Ring
130— Piston
131— Spool
132— O-Ring
134— Guide
135— O-Ring
136— Plug
137— Sleeve
138— Spring

11. Install bucket regenerative valve to housing. Tighten to specification.

Specification

Bucket Regenerative
Valve—Torque.....180 N·m
133 lb.-ft.

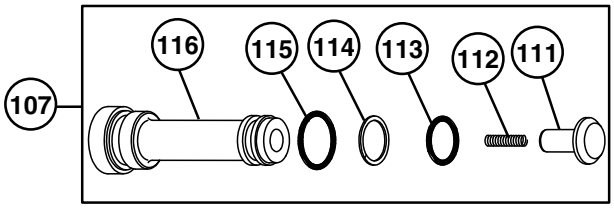
RH60123,0000443 -19-15SEP11-19/32

Check Valve (107) Disassemble and Assemble

1. Remove plug (116) from right control valve housing (1).
2. Remove spring (112) and check valve (111) from housing.
3. Remove O-rings (113 and 115) and backup ring (114) from plug.
4. Repair or replace parts as necessary.
5. Install backup ring and O-rings to plug.
6. Install spring and check valve to housing.
7. Install plug to housing. Tighten to specification.

Specification

Check Valve
Plug—Torque.....350 N·m
260 lb.-ft.



TX1097604 —UN—15SEP11

Check Valve

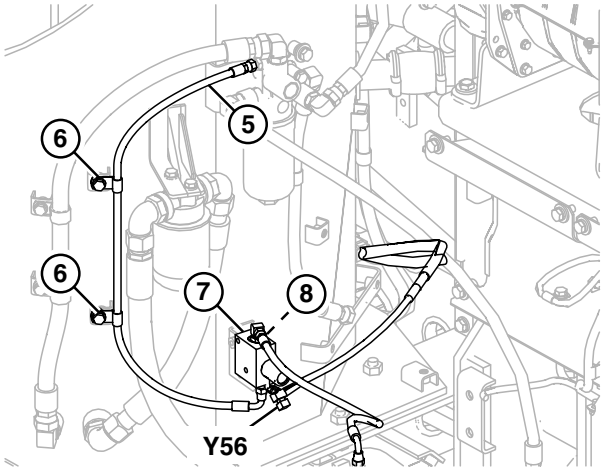
107— Check Valve Assembly
111— Check Valve
112— Spring
113— O-Ring
114— Backup Ring
115— O-Ring
116— Plug

Continued on next page

RH60123,0000443 -19-15SEP11-20/32

9. Disconnect fan pump control solenoid (Y56).
10. Remove cap screws (6).
11. Attach identification tags and disconnect hydraulic hose (5). Close all openings using caps and plugs.
12. Remove cap screws (8) and set fan pump control solenoid valve (7) aside.

5— Hydraulic Hose
6— Cap Screw (2 used)
7— Fan Pump Control Solenoid Valve
8— Cap Screw (2 used)
Y56— Fan Pump Control Solenoid



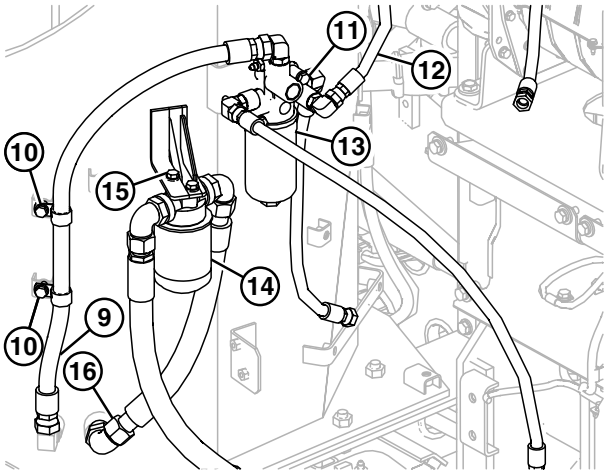
TX1097857 —UN—15SEP11

Fan Pump Control Solenoid Valve

MM16284,0001168 -19-19SEP11-3/8

13. Attach identification tags and disconnect hydraulic hoses (9, 12, and 16). Close all openings using caps and plugs.
14. Remove cap screws (10).
15. Remove cap screws (15) and remove pump case drain filter (14) and set aside.
16. Remove cap screws (11) and remove pilot system oil filter (13) and set aside.

9— Hydraulic Hose
10— Cap Screw (2 used)
11— Cap Screw (2 used)
12— Hydraulic Hose
13— Pilot System Oil Filter
14— Pump Case Drain Filter
15— Cap Screw (2 used)
16— Hydraulic Hose



TX1097858 —UN—15SEP11

Hydraulic Oil Filters

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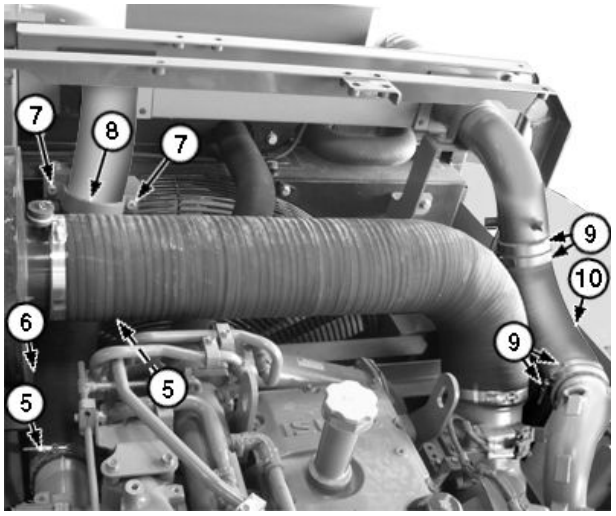
MM16284,0001168 -19-19SEP11-4/8

7. Loosen clamps (5 and 9) and remove hoses (6 and 10).
8. Remove cap screws (7) and clamp (8).

5— Clamp (2 used)
6— Intercooler-to-Intake Manifold Hose
7— Cap Screw (2 used)
8— Clamp
9— Clamp (4 used)
10— Turbocharger-to-Intercooler Hose



TX1094316A —UN—08JUL11

Intercooler Hoses

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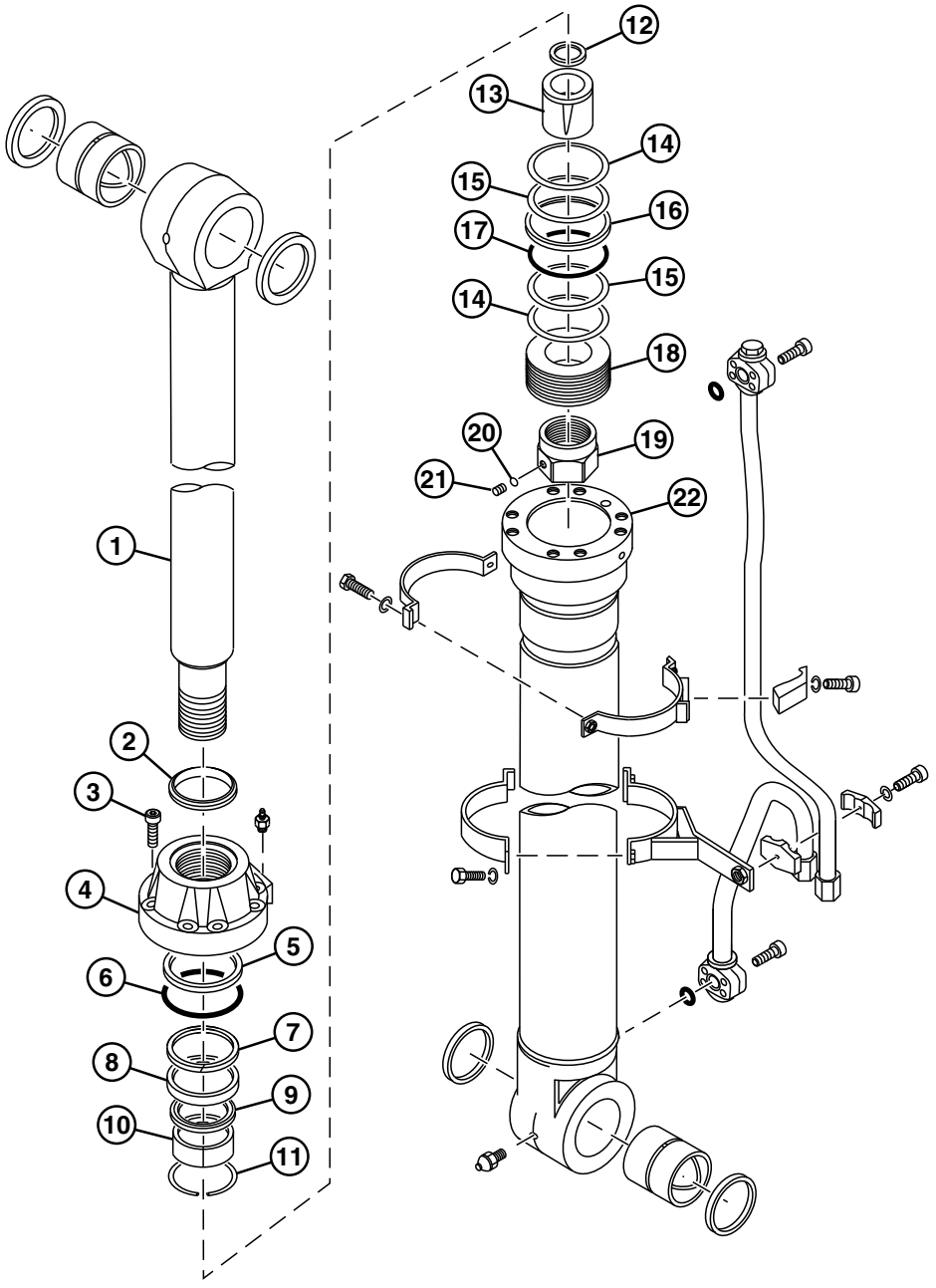
RG80575,00008CB -19-21SEP11-2/9

Boom Cylinder Disassemble and Assemble



TX1096127 —UN—18AUG11

TX1096127

Boom Cylinder

1— Cylinder Rod
2— Wiper Ring
3— Socket Head Cap Screw (8 used)
4— Cylinder Head
5— Backup Ring
6— O-Ring
7— Backup Ring
8— U-Ring
9— Ring
10— Bushing
11— Retaining Ring
12— Cushion Seal
13— Cushion Bearing
14— Slide Ring (2 used)
15— Slide Ring (2 used)
16— Seal Ring
17— O-Ring
18— Piston
19— Nut
20— Steel Ball
21— Set Screw
22— Cylinder Barrel

Continued on next page

TZ24494,00006EA -19-15SEP11-1/5

26. Install O-ring (18) and seal ring (17) to piston using ST2971 Seal Ring Installing Tool. After installed, adjust seal ring using ST2971 Seal Ring Installing Tool.
27. Install slide rings (15 and 16) with their slits positioned 180° offset from each other.
28. Install cylinder head assembly to cylinder rod using ST8023 Cylinder Head Maintenance Tool.
29. Install cushion seal to cylinder rod with slit facing towards piston side.
30. Install cushion bearing to cylinder rod with chamfered surface facing towards cylinder head side.
31. Install piston assembly to cylinder rod.
32. Align matching marks made during disassembly and install nut to cylinder rod using ST3283 Cylinder Nut Removal and Installation Tool and ST5908 Hydraulic Cylinder Disassembly and Assembly Device.

Specification	
Nut-to-Cylinder Rod——Torque	27 300 N·m 20 100 lb.-ft.

33. Install ball and set screw to nut.

Specification	
Set Screw-to-Nut——Torque	100 N·m 74 lb.-ft.

34. Crimp set screw in two places using a punch.

TX1096064A —UN—02SEP11

Piston and Rings

14— Piston
15— Slide Ring (2 used)
16— Slide Ring (2 used)
17— Seal Ring
18— O-Ring

35. Position cylinder barrel horizontally on a suitable workbench.
36. Install cylinder rod into cylinder barrel.

IMPORTANT: Avoid damage to rings. Handle with care.

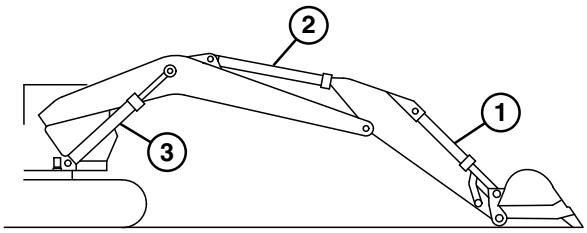
37. Install cylinder head to cylinder barrel with socket head cap screws.

Specification	
Socket Head Cap Screw-to-Cylinder Head——Torque	1560 N·m 1150 lb.-ft.

TZ24494,000067F -19-13SEP11-5/5

Bucket Cylinder Remove and Install

1. Park and prepare machine for service. See Park and Prepare for Service Safely. (Group 0001.)
2. Position the machine as shown. Fully retract the bucket cylinder (1) and arm cylinder (2) and lower bucket to the ground.
3. Stop engine.
4. Release pressure in boom hydraulic circuit. See Hydraulic Circuit Pressure Release Procedure. (Group 3360.)
5. Release hydraulic oil tank pressure by pressing pressure release button at top of hydraulic oil tank. See Hydraulic Oil Tank Pressure Release Procedure. (Group 9025-25.)
6. Drain or apply vacuum to hydraulic tank. See Apply Vacuum to Hydraulic Oil Tank. (Group 3360.) See Drain and Refill Hydraulic Tank Oil and Clean Suction Screen. (Operator's Manual.)



TX1098619 —UN—23SEP11

Machine Position

1— Bucket Cylinder
2— Arm Cylinder
3— Boom Cylinder (2 used)

Continued on next page

JD29379,0000092 -19-24SEP11-1/4

Section 43
Swing System

Contents

1— Swing Motor
2— Cap Screw (8 used)
3— Ring Gear
4— Sun Gear
5— Thrust Plate
6— Planetary Pinion Carrier
7— Sun Gear
8— Thrust Plate
9— Planetary Pinion Carrier
10— Cap Screw (2 used)
11— Lock Plate
12— Bearing Nut
13— Tapered Roller Bearing
14— Thrust Plate (3 used)
15— Planetary Gear (3 used)
17— Spring Pin (3 used)
18— Pin (3 used)
19— Thrust Plate (3 used)
20— Planetary Gear (3 used)
21— Needle Bearing (3 used)
22— Spring Pin (3 used)
23— Pin (3 used)
24— Cap Screw (12 used)
25— Drain Plug
26— Drain Valve
27— Housing
28— Cork (2 used)
29— Oil Seal
30— Tapered Roller Bearing
31— Screw (4 used)
32— Magnet (4 used)
33— Sleeve
34— O-Ring
35— Shaft

1. Apply PM37477 Thread Locker and Sealer (medium strength) to screws (31). Install magnets (32) and screws to sleeve (33).
2. Install O-ring (34) to sleeve.
3. Install sleeve and cone of tapered roller bearing (30) to shaft (35) using ST 7295 Bearing Pusher.
4. Install cup of tapered roller bearing (30) to housing (27).
5. Apply PM38654 Thread Lock and Sealer (high strength) to outside diameter of oil seal (29) and multipurpose grease to lip of seal.

   Install oil seal into housing (27) with the lip of seal facing the motor side of housing using ST 7300 and ST 7296 Seal Install Tools.
6. Install the cup of tapered roller bearing (13) to housing.

CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

7. Lift and install housing onto shaft (35).

Specification

Housing—Weight (approximate)..... 70 kg 130 lb.

8. Install cone of tapered roller bearing (13) to shaft. Tap the cone until two threads of shaft (35) for bearing nut (12) appear.
9. Install bearing nut to shaft to prevent shaft from falling out.

CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

10. Lift and place housing (27) in a press.

Specification

Housing and Shaft—Weight (approximate)..... 95 kg 210 lb.

11. Remove bearing nut (12) from shaft (35).
12. Install tapered roller bearing (13) to housing using ST 2924 Bearing Pusher.
13. Apply grease to threads of bearing nut (12).

    Install bearing nut to shaft (35).

    Tighten bearing nut using either DFT1220 Swing Gear Case Nut Spanner Wrench or ST 2926 Spanner Wrench.

    To make DFT1220 Swing Gear Case Nut Spanner Wrench tool, see DFT1220 Swing Gear Case Nut Spanner Wrench. (Group 9900.)

Specification

Bearing Nut—Torque..... 490 N·m 360 lb.-ft.

14. Apply PM38654 Thread Lock and Sealer (high strength) to the threads of cap screws (10). Install lock plate (11) to bearing nut (12) with cap screws. Torque cap screws to specification.

Specification

Lock Plate Cap Screws—Torque..... 50 N·m 37 lb.-ft.

15. Install thrust plate (8) to planetary pinion carrier (9) with the oil groove facing to sun gear (7).
16. Apply grease onto the upper and lower sides of planetary gears (15). Install thrust plates (14) so the oil grooves face the planetary gear. Install planetary gears and thrust plates to planetary pinion carrier (9).
17. Install pins (18).

Continued on next page

RH60123,0000281 -19-01SEP11-6/7

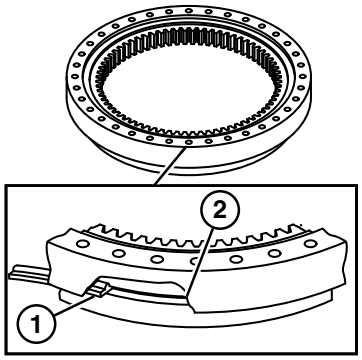
Swing Bearing Lower Seal Install

NOTE: It is not necessary to remove the upperstructure to replace the swing bearing lower seal.

Part of swing bearing is shown cut away to show lower seal in groove.

1. Remove old seal (1).
2. Scrape old adhesive from seal groove (2). Clean seal groove using PM37509 Cure Primer.
3. Apply PM37391 Gel Super Glue sparingly to seal groove.
4. Install seal with seal lip against outer race. Start about 76 mm (3 in.) from end of seal using blunt instrument to force seal into groove. Push seal in direction of portion already installed to avoid stretching seal.
5. Before bringing ends of seal together, cut off excess length.

IMPORTANT: To avoid pulling seal out of groove, adhesive must cure for at least 24 hours before using swing function.



TX1094141 —UN—14JUL11

Swing Bearing Lower Seal

1— Seal **2— Seal Groove**

6. Apply PM37391 Gel Super Glue to both ends of seal. Push ends into seal groove making sure they come together.
7. Install upperstructure. See Upperstructure Remove and Install. (Group 4350.)

RH60123,0000287 -19-01AUG11-1/1

3— Socket Head Cap Screw (8 used)
4— Swing Motor and Park Brake Right
5— Pilot Signal Manifold Swing Park Brake Release Pilot Valve-to-Swing Motor Right Line
6— Left Control Valve (5-spool)-to-Swing Motor Right Hose (2 used)
7— Left Control Valve (5-spool) Bypass Shutoff Valve-to-Swing Motor Right Hose
8— Swing Motor Right-to-Hydraulic Oil Tank Hose
9— Pilot Signal Manifold Swing Park Brake Release Pilot Valve-to-Swing Motor Left Line
10— Left Control Valve (5-spool) Bypass Shutoff Valve-to-Swing Motor Left Hose
11— Left Control Valve (5-spool)-to-Swing Motor Left Hose (2 used)
12— Swing Motor Left-to-Hydraulic Oil Tank Hose
13— Swing Motor and Park Brake Left
14— Socket Head Cap Screw (8 used)

3. Install identification tags and disconnect hydraulic hoses (8—12). Close all openings using caps and plugs.

CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

4. Remove cap screws (14) and remove swing motor and park brake left (13).

Specification

Swing Motor and Park Brake Left—Weight (approximate)..... 60 kg 132 lb.

5. Inspect and repair as necessary. See Swing Motor and Park Brake Disassemble and Assemble. (Group 4360.)
6. Install swing motor and park brake left. Torque cap screws to specification.

Specification

Swing Motor and Park Brake Cover-to-Housing Cap Screw—Torque.....90 N·m 66 lb.-ft.

7. Connect hydraulic hoses. See Swing Motor Line Identification. (Group 9025-15.)
8. Disconnect vacuum pump from hydraulic oil tank. See Apply Vacuum to Hydraulic Oil Tank. (Group 3360.)
9. Perform swing motor and park brake start-up procedure. See Swing Motor and Park Brake Start-Up Procedure. (Group 4360.)
10. Fill hydraulic oil tank. See Drain and Refill Hydraulic Tank Oil and Clean Suction Screen. (Operator's Manual.)

IMPORTANT: Hydraulic pump will be damaged if not filled with oil before starting. Procedure must be performed to fill pump housing whenever oil has been drained from the pump or hydraulic oil tank.

11. Perform pump 1 and 2 start-up procedure. Perform Pump 1 and 2 Start-Up Procedure. (Group 3360.)
12. Check hydraulic oil level. See Check Hydraulic Oil Level. (Operator's Manual.)

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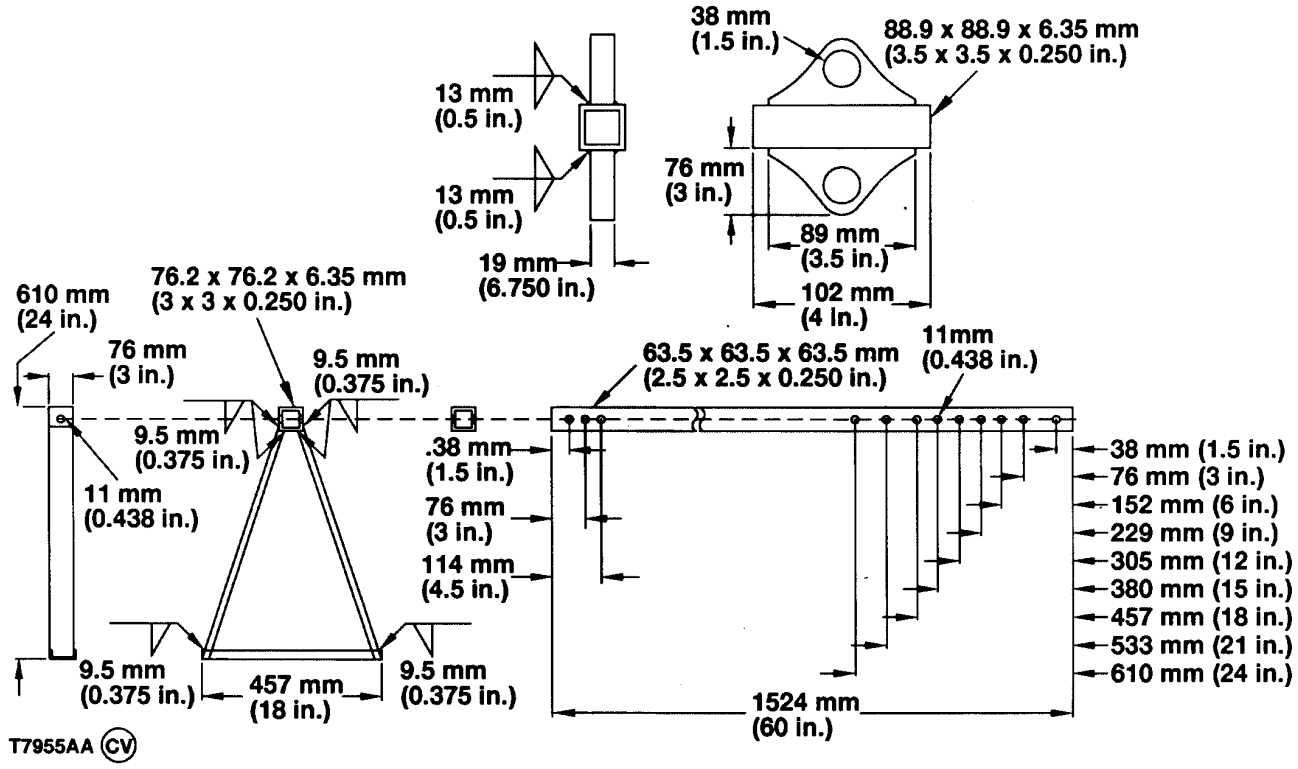
RH60123,000028B -19-13SEP11-2/4

DFT1119 Pump Support



Pump support is used with a hand hoist to support a pump(s) when an engine is removed.

Two end stands are needed.

CAUTION: Failure to use a cap screw to secure end stand base could result in the stand falling off the machine.

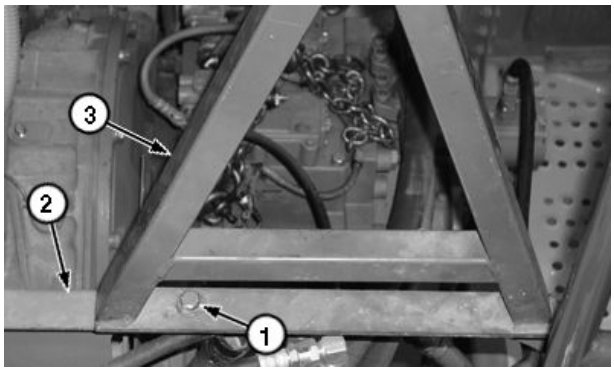
RG80575,0000904 -19-02AUG11-1/2

Drill a hole in the base of end stands as needed so that a cap screw (1) can be installed in an existing threaded hole in sheet metal brace (2). Install cap screw to secure pump support to sheet metal brace.

Drill the holes through the square steel tubing so they are centered.

Material required:

- C3 x 5 Steel Channel
- 88.9 x 88.9 x 6.35 mm (3.5 x 3.5 x 0.250 in.) Square Steel Tubing
- 76.2 x 76.2 x 6.35 mm (3 x 3 x 0.250 in.) Square Steel Tubing
- 63.5 x 63.5 x 6.35 mm (2.5 x 2.5 x 0.250 in.) Square Steel Tubing
- 19 mm (3/4 in.) Flat Bar Stock
- M10 x 89 mm or 3/8 x 3-1/2 in. D Grade (SAE Grade 5) Cap Screw (2 used)
- M10 or 3/8 in. D Grade (SAE Grade 5) Nut (2 used)



Cap Screw Location Example

1— Cap Screw
2— Sheet Metal Brace
3— End Stand

RG80575,0000904 -19-02AUG11-2/2