

690E LC Excavator Repair

TECHNICAL MANUAL 690E LC Excavator Repair

TM1509 02JUL98 (ENGLISH)

For complete service information also see:

690E LC Excavator	
Operation and Tests	TM1508
6068 Engine (Serial No. —559602)	CTM8
6068 Engine (Serial No. 559603—)	CTM104
Alternators and Starting Motors	CTM77

**Worldwide Construction
And Forestry Division**
LITHO IN U.S.A.

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Follow Safe Procedures

Unsafe work practices are dangerous. Understand service procedure before doing work; do not attempt shortcuts.



TS231 -19-07OCT88

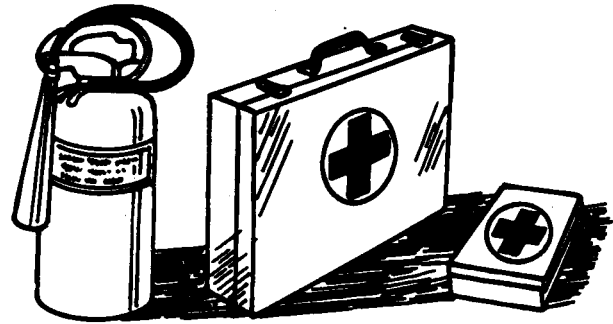
TX,05,FF1611 -19-14JUN90-1/1

Prepare for Emergencies

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



TS291 -UN-23AUG88

DX,FIRE2 -19-03MAR93-1/1

Work in a Clean Area

Before starting a job, clean the work area. Remove objects that may be a safety hazard to the mechanic or bystanders.

TX,05,FF1624 -19-14JUN90-1/1

Use Tools Properly

Use tools appropriate to the work. Makeshift tools, parts, and procedures can create safety hazards.

Use power tools only to loosen threaded tools and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only recommended replacement parts. (See Parts Catalog.)



TS779 -UN-08NOV89

TX,05,FF1614 -19-14JUN90-1/1

Replace Safety Signs

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.



TS201 -UN-23AUG88

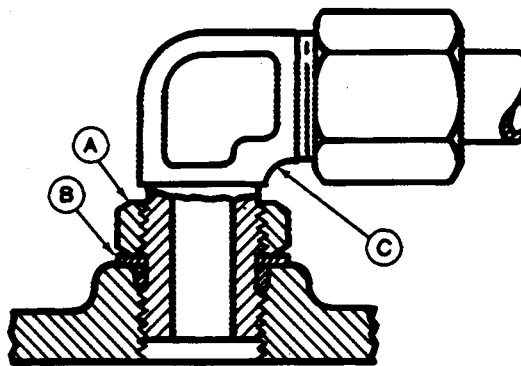
DX,SIGNS1 -19-04JUN90-1/1

Angle Fitting

1. Back-off lock nut (A) and back-up washer (B) completely to head-end (C) of fitting.
2. Turn fitting into threaded boss until back-up washer contacts face of boss.
3. Turn fitting head-end counterclockwise to proper index (maximum of one turn).

NOTE: Do not allow hoses to twist when tightening fittings.

4. Hold fitting head-end with a wrench and tighten locknut and back-up washer to proper torque value.



T6520AB -UN-18OCT88

STRAIGHT FITTING OR SPECIAL NUT TORQUE CHART

Thread Size	N•m	lb-ft
3/8-24 UNF	8	6
7/16-20 UNF	12	9
1/2-20 UNF	16	12
9/16-18 UNF	24	18
3/4-16 UNF	46	34
7/8-14 UNF	62	46
1-1/16-12 UN	102	75
1-3/16-12 UN	122	90
1-5/16-12 UN	142	105
1-5/8-12 UN	190	140
1-7/8-12 UN	217	160

NOTE: Torque tolerance is ± 10%.

04T,90,K66 -19-19MAR96-2/2

Track System

Other Material

Number	Name	Use
PT569 (U.S.)	John Deere NEVER-SEEZ® Lubricant	Apply to spring pin, bracket bore, and end of shaft for track roller and front idler.
T43512 (U.S.) TY9473 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength) Products	To be applied to threads of plug for upper track roller and front idler.
TY9370 (U.S.) TY9477 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength) Products	To be applied to threads of plug for upper track roller and front idler.
T43513 or TY9371 (U.S.)	John Deere Thread Lock and Sealer (High Strength)	Apply to threads of cap screws for sprocket.
TY6305 (U.S.) TY9485 (Canadian) 764 (LOCTITE®)	Clean and Cure Primer Products	Used to clean and cure surface prior to application of adhesives and sealants.

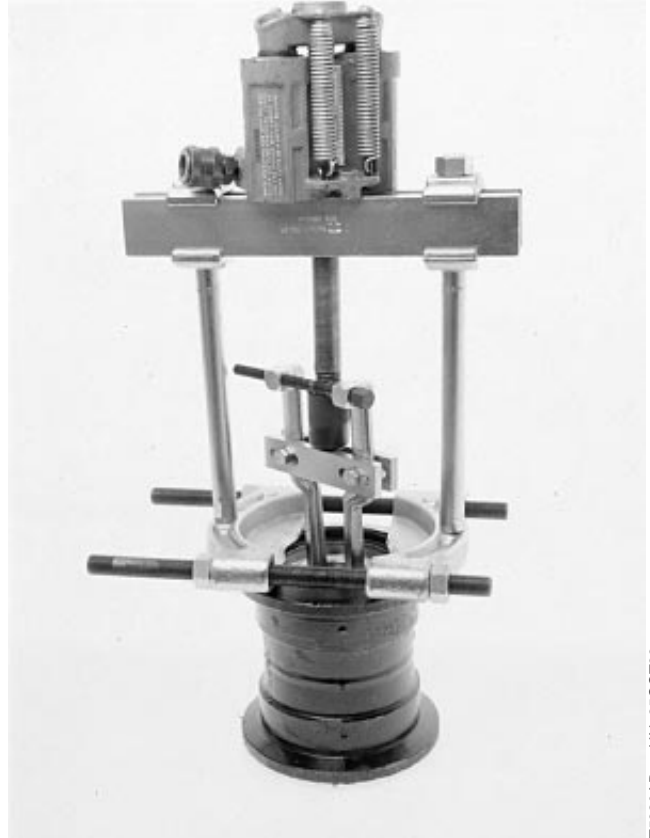
*NEVER-SEEZ is a registered trademark of the Emhart Chemical Group.
LOCTITE is a registered trademark of Loctite Corp.*

TX,0130,AB437 -19-21AUG97-1/1

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NOTE: Only remove bushings if replacement is necessary.

9. Remove bushing using a 2-jaw puller and adapters from 17-1/2 and 30 ton puller set.
10. Repair or replace parts.
11. Inspect metal face seals. (See procedure in this group.)



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T5920AB -UN-25OCT88

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TX,0130,AB445 -19-21FEB92-4/6

Remove And Install Track Shoes

CAUTION: The approximate weight of 800 mm (31 in.) shoe is 23 kg (50 lb).

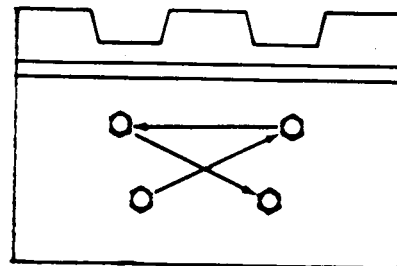
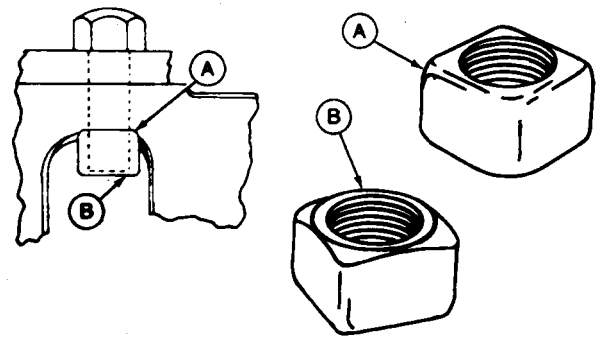
Specification

800 mm (31 in.) Shoe—Weight..... 23 kg (50 lb)

1. Remove four nuts and cap screws to remove shoe.
2. Before installing shoes, clean paint, dirt and debris from mounting surfaces of shoes and links.
3. Apply oil to cap screw threads and bearing surface on head before installing cap screws.
4. Install nuts so rounded corners (A) are against links and not the chamfered edge (B).
5. Starting at any cap screw, tighten cap screws in sequence shown, to 298 N•m (220 lb-ft) plus 1/2 (180°) turn.

Specification

Shoe-to-Link Cap Screws—
Torque 298 N•m (220 lb-ft) plus 1/2 (180°) turn

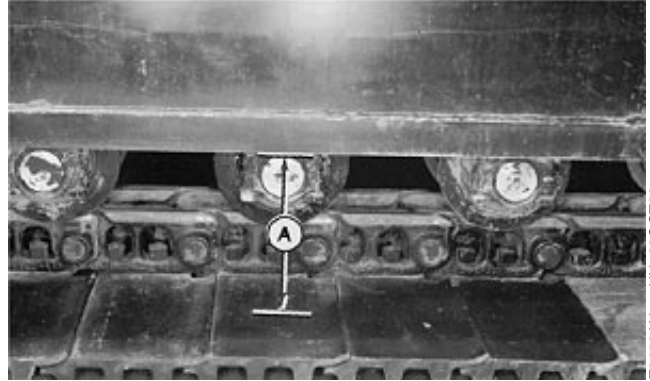


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5. Measure distance (A) at middle track roller from bottom of track frame to top surface of track shoe.

Specification

Middle Roller—Track Sag 305—325 mm (12.0—12.75 in.)



TX,0130,AB555 -19-12APR95-3/4

T6450AN -UN-26OCT88

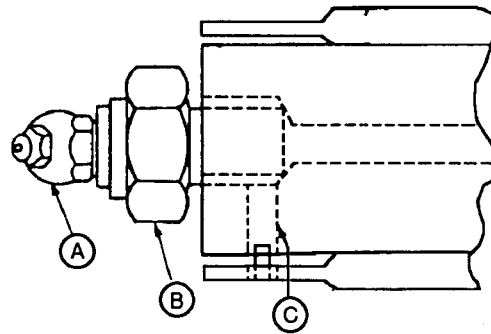
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CAUTION: High pressure grease in track adjuster cylinder. Do not remove grease fitting or valve to release grease.

6. To decrease track sag, add multi-purpose grease to track adjuster cylinder through grease fitting (A) using a grease gun with a maximum capacity of 68 950 kPa (690 bar) (10,000 psi).

Specification

Grease Gun—Capacity 68 950 kPa (690 bar) (10,000 psi)



T7396DZ -UN-28NOV90

To increase track sag, loosen valve (B) one turn to release grease from track adjuster cylinder through hole (C) in rod. Tighten valve when track sag is correct.

NOTE: If piston in track adjuster cylinder does not move, remove the cylinder to make repairs.

TX,0130,AB555 -19-12APR95-4/4

7. Check oil level in idler. If the oil level is down and there is no external leakage, check for a leak from oil cavity to interior of idler.
8. Apply thread lock and sealer (medium strength) to threads of plug. Install and tighten plug.

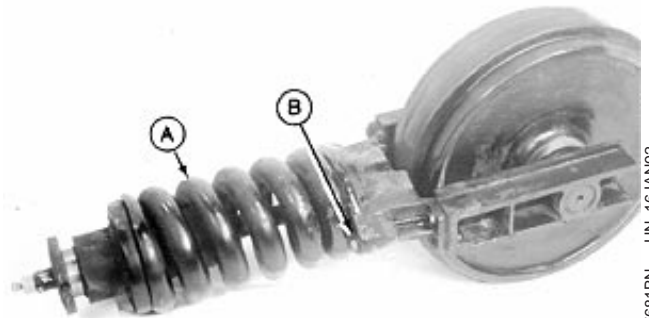
TX,0130,AB556 -19-21FEB92-2/2

Remove And Install Track Adjuster Cylinder And Recoil Spring

1. Remove track and front idler wheel. (See procedures in this group.)

TX,0130,AB463 -19-26FEB92-1/2

2. Remove cap screws (B) to remove idler and yoke from track adjuster cylinder and recoil spring (A).
3. Inspect and repair as necessary.
4. Install track adjuster cylinder and recoil spring to yoke.
5. Tighten cap screws to 90 N•m (65 lb-ft).



T7681BN -JUN-16JAN92

Specification

Track Adjuster Cylinder and Recoil Spring-to-Yoke Cap Screw—Torque.....	90 N•m (65 lb-ft)
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TX,0130,AB463 -19-26FEB92-2/2

Other Material

Number	Name	Use
TY6305 (U.S.) TY9485 (Canadian) 764 (LOCTITE®)	Clean and Cure Primer Products	Used to clean and cure surfaces prior to application of adhesives and sealants.
T43513 (U.S.) TY9474 (Canadian) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength) Products	Used to apply to threads of sprocket-to-housing cap screws.
T43512 (U.S.) TY9473 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength) Products	Used to apply to threads of third planet carrier-to-support hub cap screws.
TY9375 (U.S.) TY9480 (Canadian) 592 (LOCTITE®)	Pipe Sealant TEFLON®Products	Used to apply to threads of plugs in gearbox cover.

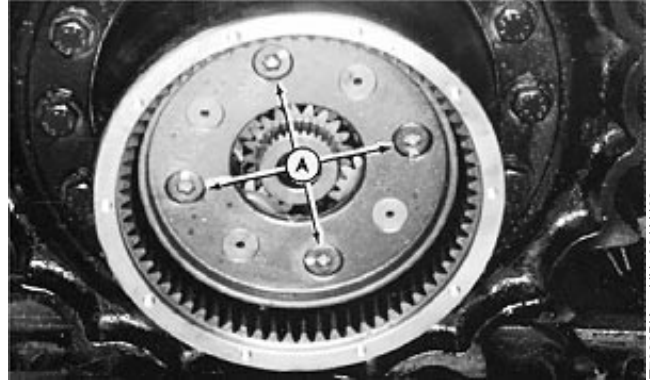
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0250
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LOCTITE is a registered trademark of Loctite Corp.
TEFLON is a registered trademark of the DuPont Company.

TX,0250,DW340 -19-22NOV94-1/1

16. Loosen, but do not remove, cap screws (A).

NOTE: Thread lock and sealer (medium strength) is used on threads of cap screws.



T7626BK -UN-06JAN92

TX,0250,AB507 -19-21FEB92-11/13

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CAUTION: The approximate weight of gearbox and sprocket is 232 kg (578 lb).

- 17. Remove cap screws (D) to remove gearbox and sprocket as an assembly.
- 18. Make repairs as necessary. (See procedure in this group.)
- 19. Install right gearbox with brake port at the 12:30 o'clock position. Install left gearbox with brake port at the 5:30 o'clock position.
- 20. Tighten cap screws to 540 N•m (400 lb-ft).

Specification

Sprocket-to-Housing Cap Screw—Torque..... 540 N•m (400 lb-ft)

- 21. Install sprocket. Clean threads of cap screws using clean and cure primer. Apply thread lock and sealer (high strength) to threads of cap screws. Tighten cap screws to 540 N•m (400 lb-ft).

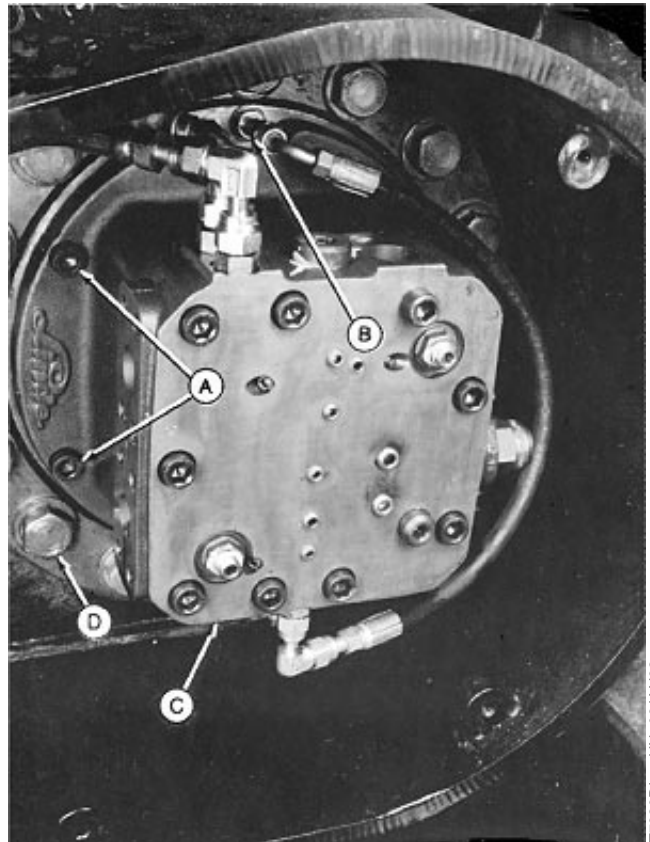
Specification

Frame-to-Gearbox Cap Screw—Torque 540 N•m (400 lb-ft)

- 22. Install O-ring. Install propel motor. Tighten cap screws to 75 N•m (55 lb-ft).

Specification

Propel Motor-to-Gearbox Cap Screw—Torque..... 75 N•m (55 lb-ft)



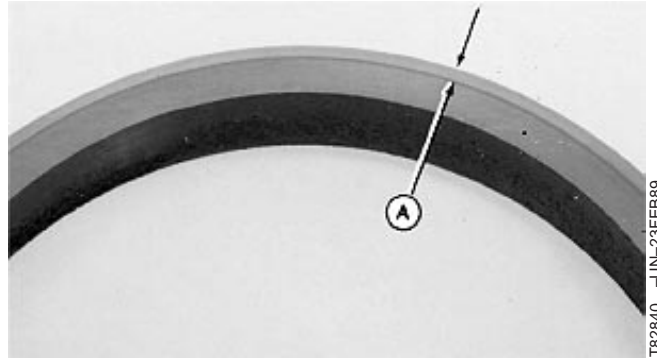
T7626D1 -UN-06JAN92

- A—Cap Screw (6 used)
- B—Right Gearbox Brake Port at 12:30 O'clock Position
- C—Propel Motor
- D—Cap Screw (16 used)

Continued on next page

TX,0250,AB507 -19-21FEB92-12/13

3. Clean seals to be reused by removing all foreign material from seal rings, except seal face (A), using a scraper or a stiff bristled fiber brush.
 4. Wash seal rings and O-rings using a volatile, non-petroleum base solvent to remove all oil. Thoroughly dry parts using a lint-free tissue.
- Apply a thin film of oil to seal ring face.



T82840 -JUN-23FEB89

TX,0250,AA3036 -19-11NOV94-3/3

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Service Equipment And Tools

NOTE: Order tools from the U.S. SERVICE-GARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICE-GARD is a trademark of Deere & Company.

TX,0260,DW595 -19-12APR95-1/4

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Pump Workbench Support¹ DF1039

Used to hold propel motor housing.

Pump Rotary Group¹ DF1040

Used to hold rotary group.

Spool Holding Fixture¹ DFT1077

Used to hold counterbalance valve piston.

¹*Fabricated tool, dealer made. (See Section 99 for instructions to make tools.)*

TX,0260,DW595 -19-12APR95-2/4

Rotary Manifold Lifting Tool¹ DFT1157

Used to remove and install rotor manifold.

¹*Fabricated tool, dealer made. (See Section 99 for instructions to make tools.)*

Continued on next page

TX,0260,DW595 -19-12APR95-3/4

8. Put cardboard (C) on cylinder block to protect surface.
9. Break roller cage (D) to remove rollers.
10. Remove bearing inner race (A) and spacer (B) using a bearing puller.

A—Inner Race
B—Spacer
C—Cardboard
D—Roller Cage



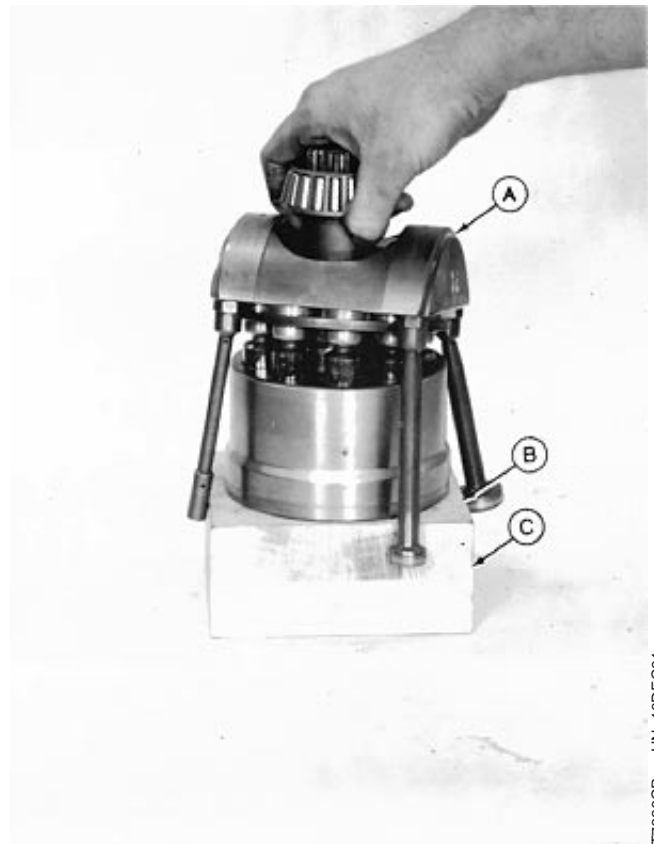
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T7626CP -UN-06/JAN92

TX,0260,AB165 -19-25/FEB92-6/11

IMPORTANT: Do not scratch, nick, or damage lapped surfaces of cylinder block.

11. Put cardboard (B) and workbench support (C) on cylinder block. Turn over to remove shaft and swash plate (A).



T7626CR -UN-18/DEC91

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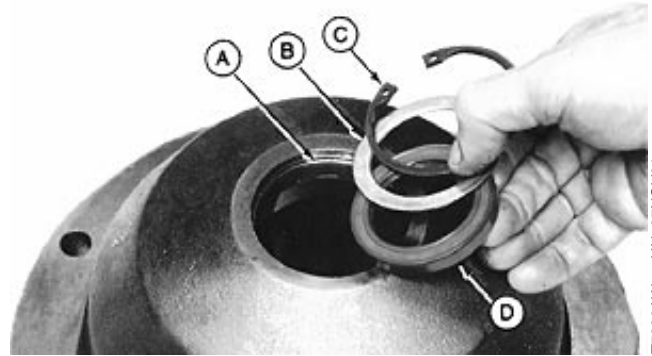
TX,0260,AB165 -19-25/FEB92-7/11

18. Install oil seal (D) with lip to inside of housing until seal bottoms on shoulder (A).

NOTE: If suitable seal sleeve and driver are available, install seal after installing drive shaft.

19. Install washer (B) and snap ring (C).

- A—Shoulder
- B—Washer
- C—Snap Ring
- D—Oil Seal



T7626AW -UN-27NOV91

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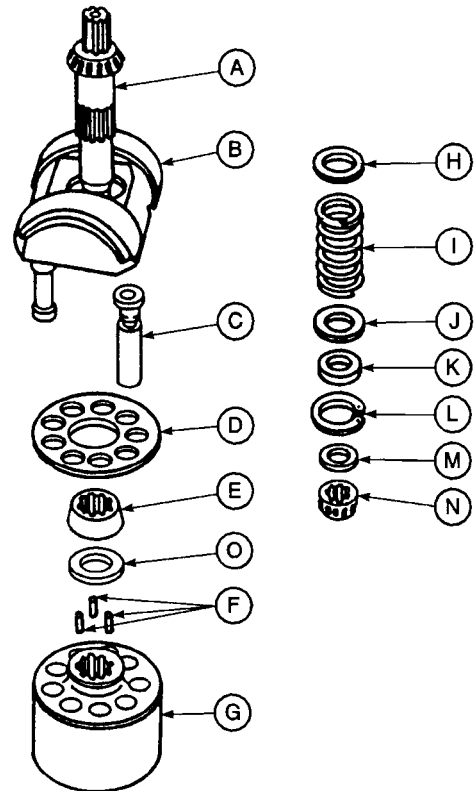
TX,0260,AB524 -19-22FEB92-8/13

20. Install parts (A—N).

Install shims (O) as determined in steps 12—16.

21. Heat bearing cone to 200°C (300°F) in oven.

- A—Drive Shaft
- B—Swash Plate
- C—Piston (9 used)
- D—Retainer Plate
- E—Ball Guide
- F—Needle Bearing (3 used)
- G—Cylinder Block
- H—Washer
- I—Spring
- J—Washer
- K—Washer
- L—Snap Ring
- M—Washer
- N—Bearing Cone
- O—Shim (As required)



T837BAK (CV)

Continued on next page

T837BAK -UN-10DEC94

TX,0260,AB524 -19-22FEB92-9/13

Remove And Install Low Speed Selector Valve

CAUTION: Hydraulic reservoir is pressurized. Loosen fill cap to release pressure.

1. Loosen reservoir fill cap to release air pressure in reservoir.
2. Remove propel motor cover.

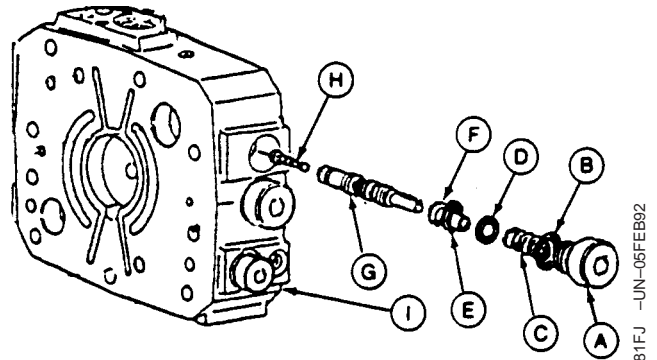
CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury may call the Deere & Company Medical Department in Moline, Illinois, or other knowledgeable medical source.

3. Remove parts (A—H) from valve housing and cover (I).
4. Clean, inspect and replace parts as necessary.
5. Install parts (A—H) in cover (I). Tighten plug (A) to 80 N•m (60 lb-ft).

Specification

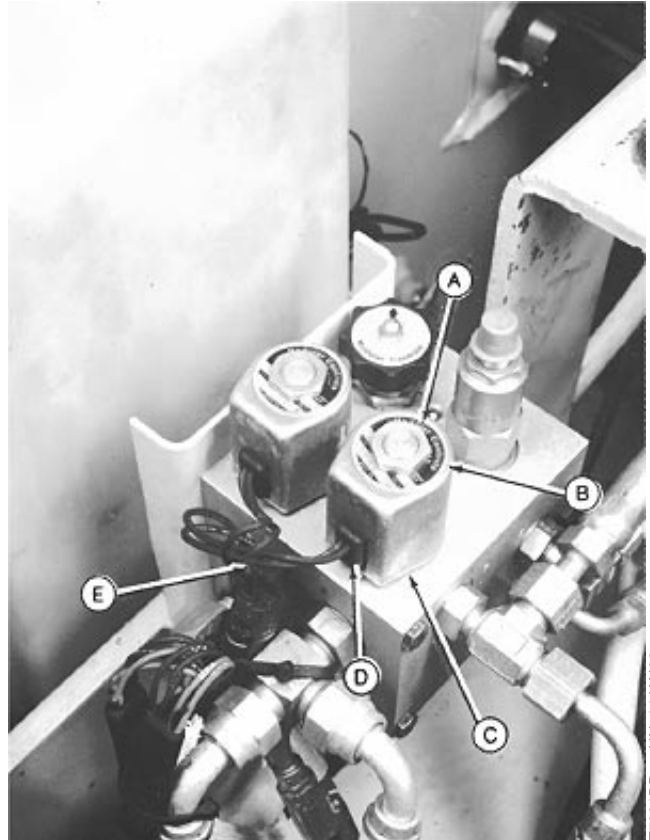
Low Speed Selector Plug—
Torque 80 N•m (60 lb-ft)



- A—Plug
- B—O-Ring
- C—Spring
- D—Washer
- E—Shims
- F—Guide
- G—Valve Piston
- H—Poppet
- I—Valve Housing and Cover

2. Remove nut (A), plate (B), and cover (C).

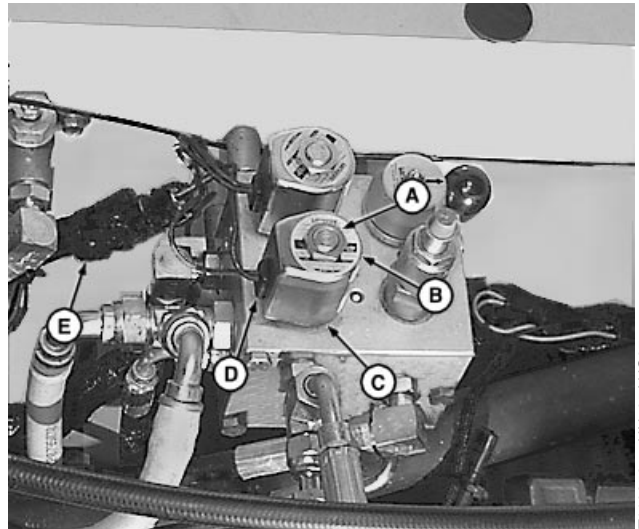
- A—Nut
- B—Plate
- C—Cover
- D—Solenoid
- E—Connector



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T7681BR -UN-14JAN92

(Serial No. —556935)



T110252 -UN-05AUG97

(Serial No. 556936—)

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TX,02,DY2918 -19-21AUG97-2/3

Service Equipment And Tools

NOTE: Order tools from the U.S. SERVICE-GARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICE-GARD is a trademark of Deere & Company.

TX,0260,DW596 -19-12APR96-1/3

Lifting Bracket JT01748

Used to support main hydraulic pump.

Special Crowsfoot JDF22

Used to disconnect fuel pressure lines.

TX,0260,DW596 -19-12APR96-2/3

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TIME TRAC® JT01758

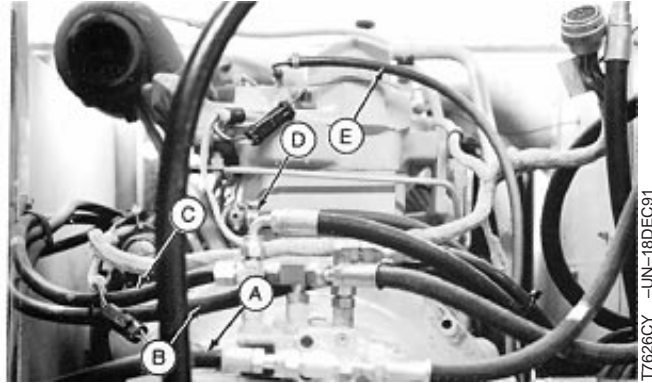
Used to time fuel injection pump to engine.

TIME TRAC is a registered trademark of the Stanadyne Automotive Corp.

TX,0260,DW596 -19-12APR96-3/3

30. Connect hose (D).
31. Connect lines (A—C and E).

- A—Pump Displacement Valve-to-Engine Speed Control Actuator Line
- B—Reservoir-to-Engine Speed Control Actuator Line
- C—Load Sense Valve-to-Engine Speed Control Actuator Line
- D—Heater-to-Engine Block Hose
- E—Fuel Return Line



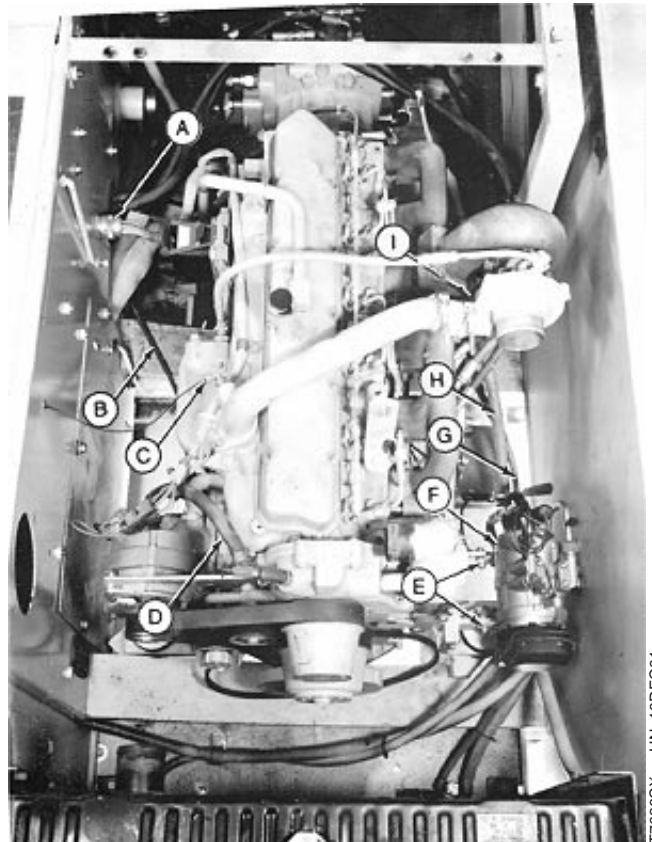
T7626CY -UN-18DEC91

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TX,04,DY2884 -19-20AUG97-10/12

32. Connect battery cables (G and H) and ground strap (I).
33. Install air conditioning compressor (F) and tighten cap screws (E).
34. Connect heater hose (D).
35. Connect lines (B and C).
36. Connect wiring harness (A).

- A—Main Wire Harness
- B—Fuel Line
- C—Start Aid Line
- D—Heater-to-Water Pump Hose
- E—Cap Screw (2 used)
- F—Air Conditioning Compressor
- G—Negative Battery Cable
- H—Positive Battery Cable
- I—Ground Strap

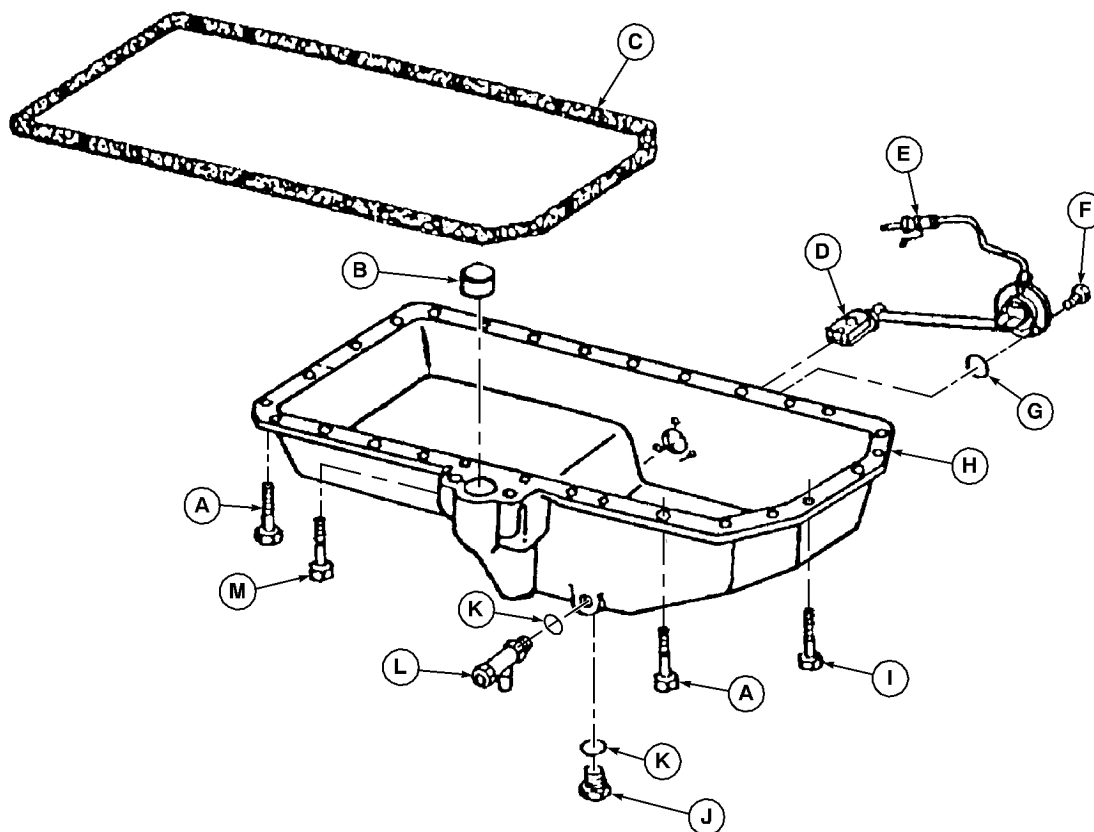


T7626CX -UN-18DEC91

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TX,04,DY2884 -19-20AUG97-11/12

Remove And Install Oil Pan



T110092

A—Cap Screw (26 used)
 B—Cap
 C—Gasket
 D—Sensor

E—Electrical Connector
 F—Cap Screw (3 used)
 G—O-Ring

H—Oil Pan
 I—Cap Screw (6 used)
 J—Plug

K—O-Ring (2 used)
 L—Drain Valve
 M—Cap Screw (4 used)

1. Drain engine oil. Approximate capacity is 19 L (5 gal) including filter.

NOTE: Engine must be removed to remove oil pan.

2. Remove engine. (See procedure in this group.)

3. Remove cap screws (A, I and M). Remove oil pan (H).

4. Remove all gasket material from oil pan and cylinder block.

5. Apply Flexible Form-In-Place Gasket on oil pan rail where flywheel housing, front plate, and timing gear cover attach to cylinder block.

6. Position oil pan (H) on cylinder block.

7. Install cap screws (A, I and M). Tighten to 35 N•m (26 lb-ft).

Specification

Oil Pan Mounting Cap
 Screws—Torque 35 N•m (26 lb-ft).

Start at right rear corner and proceed counterclockwise.

8. Install engine. (See procedure in this group.)

9. Add engine oil. (See Engine Oil, Group 0004.)
 Approximate capacity is 19 L (5 gal) including filter.

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T110092 -UN-05AUG97



CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



T92924 -JUN-01NOV88

14. To purge air from injection lines, loosen pump-to-nozzle connections at ALL nozzles using two wrenches. Cover connections with shop towels.
15. Set engine speed at light duty "L" mode. Crank engine until a small amount of fuel leaks from injection lines.
16. Tighten injection line connections.
17. Start engine.

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TX,04,DY2886 -19-20AUG97-7/7

Remove And Install DB4 Fuel Injection Pump (Serial No. 559603—)

Refer to Component Technical Manual (CTM-104) for procedures on removal and installation of fuel injection pump.

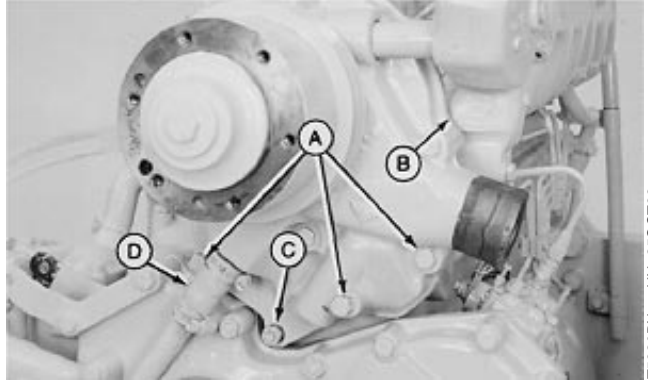
TX,04,DT5058 -19-17JUN97-1/1

Removal And Installation

6. Disconnect oil cooler line (D), upper, and lower radiator hoses.
7. Remove thermostat housing (B) to remove bypass tube.
8. Remove cap screws (A), nut, and lock washer (C) to remove water pump and gasket.

Inspect parts for wear or damage. Replace as necessary.

9. Install gasket, water pump, bypass tube, thermostat housing, and hoses.

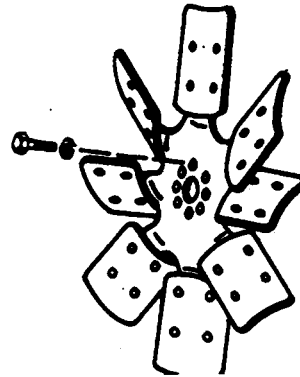


TS820BX -JUN-25OCT88

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TX,04,DY2890 -19-20AUG97-5/8

10. Install cap screws to fan and hub.
11. Install serpentine belt. Tension is automatically adjusted.



RG4797 -JUN-14DEC88

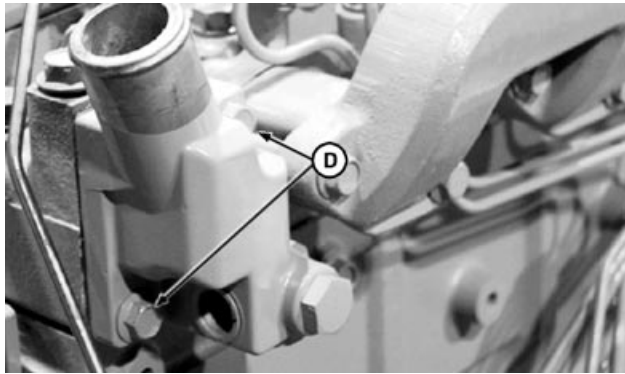
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TX,04,DY2890 -19-20AUG97-6/8

11. Install two cap screws (D). Tighten to 70 N•m (52 lb-ft).

Specification

Thermostat Cover Cap Screws—
Torque 70 N•m (52 lb-ft)



T110149 -UN-05AUG97

TX,04,DT5076 -19-03JUL97-4/5

12. Install thermostat cover-to-water pump tube (A).
13. Install upper radiator hose.
14. Fill cooling system.



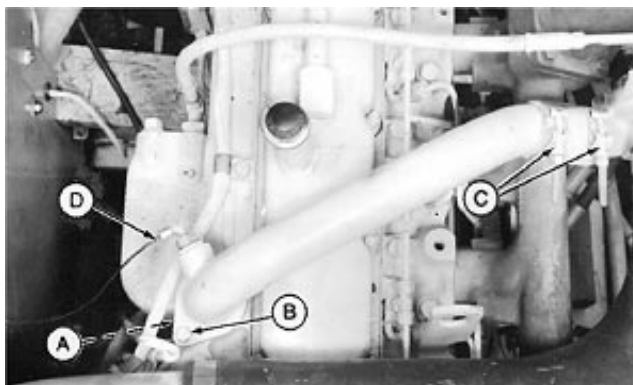
T110148 -UN-05AUG97

TX,04,DT5076 -19-03JUL97-5/5

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**Remove And Install Intake Manifold Tube
(Serial No. —559602)**

1. Remove cold weather start aid line (D).
2. Loosen clamps (C).
3. Remove cap screws (B).
4. Remove intake manifold.
5. Install new gaskets (A).
6. Install intake manifold.
7. Install and tighten cap screw (B).
8. Tighten clamps (C) until hose starts to deform around clamp.
9. Install cold weather start aid line.



T7681FA -UN-23JAN92

- A—Gasket
- B—Cap Screw (2 used)
- C—Clamp (2 used)
- D—Cold Weather Start Aid Line

TX,04,DY2892 -19-20AUG97-1/1

Remove And Install Oil Cooler (Serial No. 559603—)

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

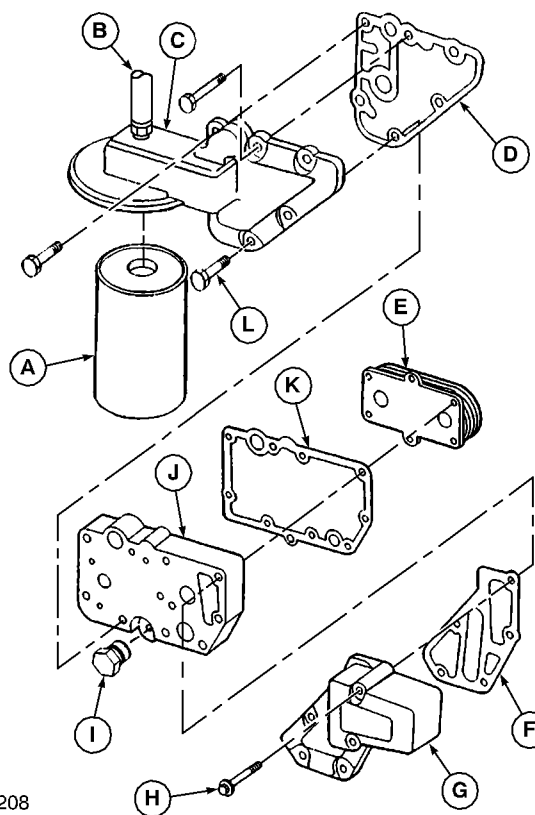
Shut off engine. Only remove filler cap when cool enough to touch with hands. Slowly loosen cap.



1. Remove oil cooler drain plug (I) and drain coolant.
2. Remove oil filter (A).
3. Disconnect line (B).
4. Remove cap screws (L).
5. Remove oil filter base (C).
6. Remove cap screws (H).
7. Remove elbow adapter (G).
8. Remove housing (J). Remove oil cooler (E).
9. Clean gasket mating surfaces.

NOTE: Make sure gasket is properly aligned with cap screw holes.

10. Install oil cooler (E).
11. Install gasket (K) on housing (J) aligning cap screw holes.
12. Install housing (J).
13. Install gaskets (D and F) aligning cap screw holes.
14. Apply thread lock and sealer (medium strength) to threads of cap screws (H and L).
15. Install elbow adapter (G) and cap screws (H). Tighten cap screws to 35 N•m (26 lb-ft).



- A—Oil Filter
- B—Oil Filter Outlet-to-Turbocharger Inlet Port Line
- C—Oil Filter Base
- D—Gasket
- E—Oil Cooler
- F—Gasket
- G—Elbow Adapter
- H—Cap Screw (5 used)
- I—Plug
- J—Housing
- K—Gasket
- L—Cap Screw (7 used)
- K—Gasket

TTS281 -JUN-23AUG88

04
0400
65

T110208 -JUN-05AUG97

Group 0505 Cold Weather Starting Aids

Other Material

Number	Name	Use
T43513 (U.S.) TY9474 (Canadian) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength) Products	Apply to threads of nozzle holder.

LOCTITE is a registered trademark of Loctite Corp.

0505,AA1 -19-25AUG97-1/1

Specifications

Item	Measurement	Specification
Engine Coolant Heater Element Nut	Torque	34 N•m (25 lb-ft)

08T,0505,J1 -19-07NOV94-1/1

05
0505
1

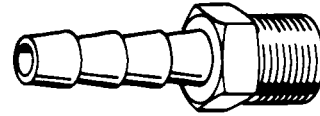
Cooling System

05
0510
7

T6606AJ -UN-23AUG88

Special Or Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICE-GARD™ Catalog or in the European Microfiche Tool Catalog (MTC).



SERVICE-GARD is a trademark of Deere & Company.

53T,JDG51 -19-12FEB90-1/3

Inlet Air Adapter JDG51

Used for intake manifold pressure test.

53T,JDG51 -19-12FEB90-2/3

Used for intake manifold pressure test.

05
0520
1

53T,JDG51 -19-12FEB90-3/3

Service Equipment And Tools

NOTE: Order tools from the U.S. SERVICE-GARD™ Catalog. Some tools may be available from a local supplier.

SERVICE-GARD is a trademark of Deere & Company.

TX,0520,CC1 -19-07JUL87-1/2

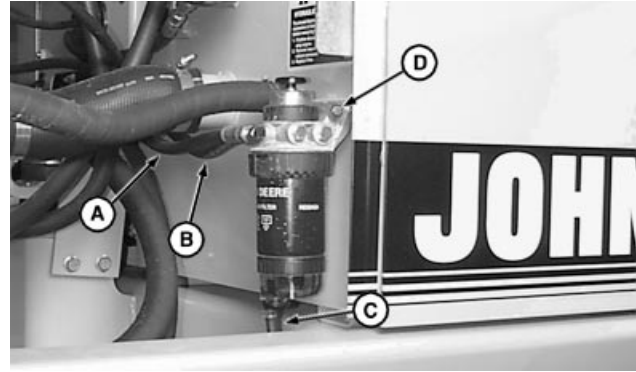
Air Pressure Regulator 1/4 in. Plastic Hose

Used to pressurize air intake system to check for leaks.

TX,0520,CC1 -19-07JUL87-2/2

Remove And Install Primary Fuel Filter (Water Separator) (Serial No. 559603—)

1. Close fuel shut-off valve at fuel tank.
2. Drain all fuel from filter into a container. Dispose of waste properly.
3. Disconnect lines (A—C).
4. Remove cap screws (D). Remove fuel filter.
5. Replace parts as necessary.
6. Install filter.
7. Install cap screws (D).
8. Connect lines (A—C).
9. Open fuel shut-off valve.
10. Bleed fuel system. (See procedure in Group 0400.)



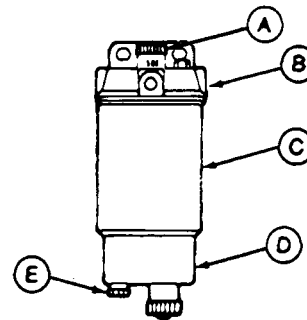
A—Fuel Filter Outlet Port-to-Transfer Pump Inlet Port Line
 B—Fuel Pump Inlet Port-to-Fuel Tank Outlet Port Line
 C—Drain Line
 D—Cap Screw (2 used)

TX,05,DT5070 -19-26JUN97-1/1

05
0560
5

Replace Water Separator Filter Element (Serial No. —559602)

1. Open plunger (A).
2. Place container on track under hose from drain plug (E). Open plug and drain fuel from filter into container. Dispose of waste properly. Close plunger.
3. Turn separator bowl (D) counterclockwise to remove from filter assembly (C).
4. Turn filter assembly counterclockwise to remove from separator base (B).
5. Fill water separator filter with fuel.
6. Install new filter assembly to separator base.
7. Install separator bowl to filter assembly.
8. Bleed fuel system. (See procedure in Group 0400.)



A—Plunger
 B—Base
 C—Filter Assembly
 D—Separator Bowl
 E—Drain Plug

TX,05,DY2930 -19-25AUG97-1/1

T6105BG1 -UN-18OCT88

Section 16 Electrical System

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CAUTION: Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Always remove grounded (-) battery clamp first and replace it last.



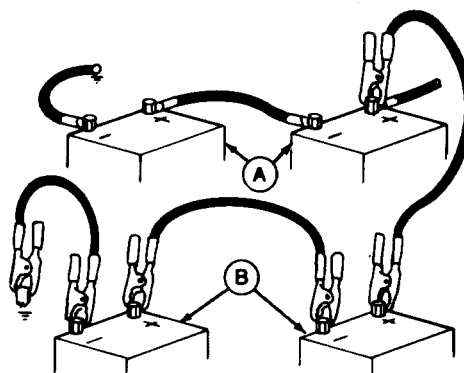
TS204 -UN-23AUG88

IMPORTANT: Machine electrical system is 24-volt negative (-) ground. Use only 24-volt booster batteries.

2. Connect booster batteries (B) to machine batteries (A) making the last connection at machine frame, away from batteries.

Rock the clamps to make sure they make good contact.

When possible, use equipment with a switch in the cable that connects booster batteries to machine batteries.



Two Battery Application

T7233JUN -UN-21MAY90

TX,1671,GG110 -19-25SEP91-2/3

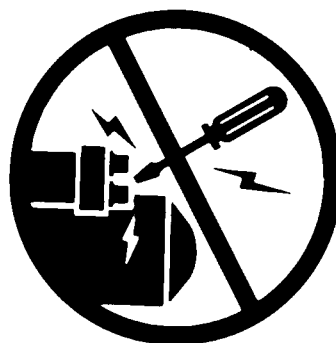
16
1671
9



CAUTION: Avoid possible injury or death from machinery runaway.

Do not start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

NEVER start engine while standing on ground. Start engine only from operator's seat, with transmission in neutral or park.



TS177 -UN-11JAN89

Start engine while seated on operator's seat.

After engine starts, disconnect clamp at machine frame first and then disconnect remaining clamps.

TX,1671,GG110 -19-25SEP91-3/3

Replacing Halogen Bulbs

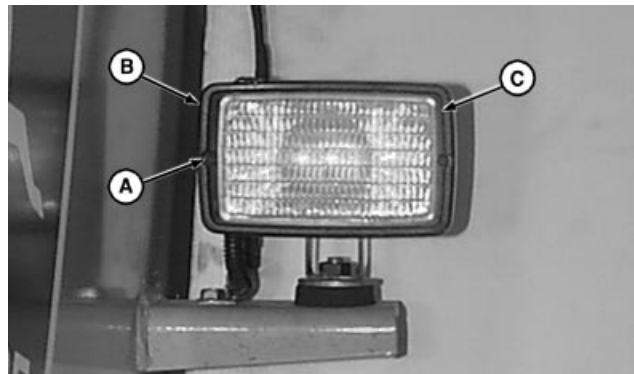
IMPORTANT: To get the correct lighting pattern, lens must be installed so the word "TOP" is on top when lamp is installed on machine. Bezel must be installed so wider section is on top when lamp is installed.

1. Before disassembling, take notice of how bezel and lens are installed with respect to mounting stud.



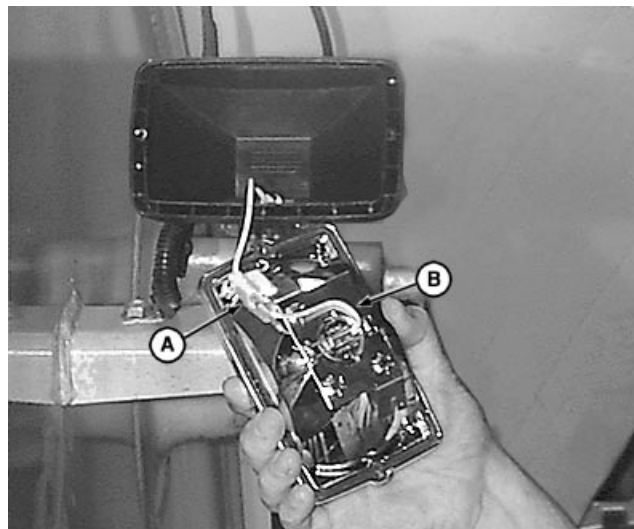
TX,16,DT5083 -19-03JUL97-1/4

2. Remove two screws (A).
3. Remove bezel (B) and lens (C).



TX,16,DT5083 -19-03JUL97-2/4

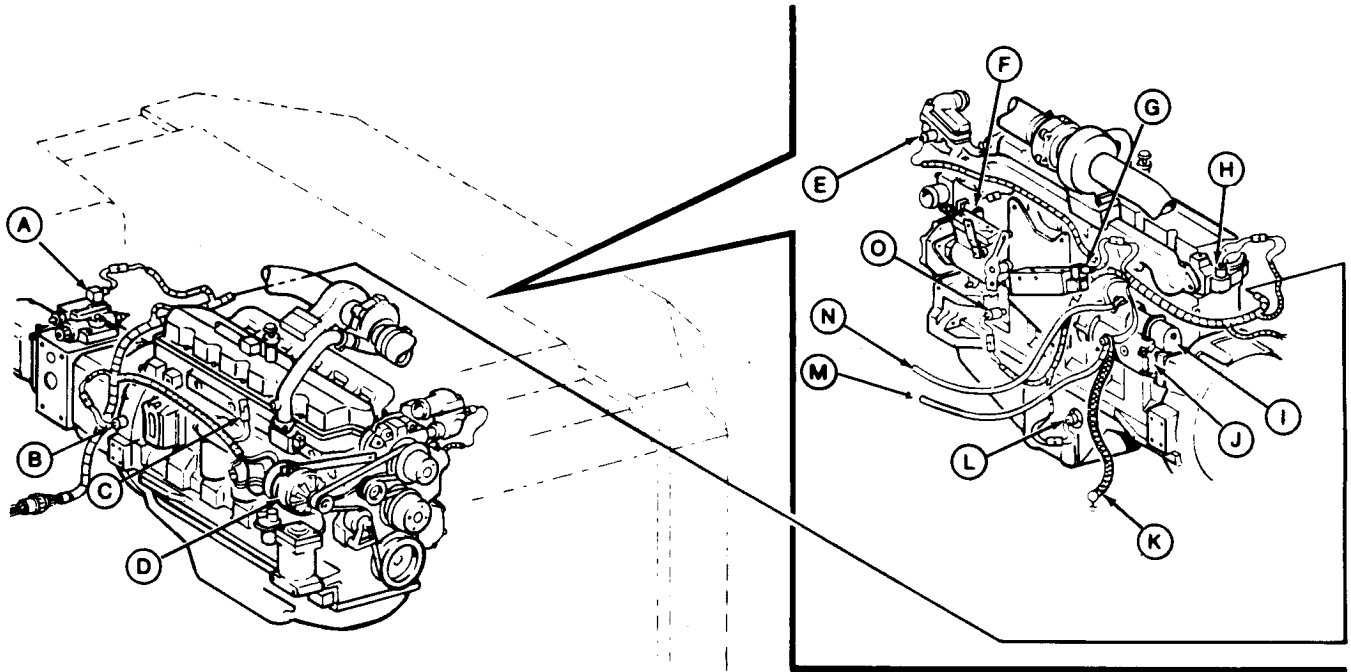
4. Disconnect wiring lead (B) and electrical connector (A).



Continued on next page

TX,16,DT5083 -19-03JUL97-3/4

Engine Electrical Component Identification



A—Pump Displacement Solenoid (Y6)
 B—Engine Speed Sensor (B13)
 C—Alternator Diode (V1)
 D—Alternator (G3) DELCO (Serial No. —541822) BOSCH (Serial No. 541823—)

E—Coolant Gauge Sender (B1)
 F—Fuel Shutoff Solenoid (Y2)
 G—Engine Speed Actuator Solenoid (Y5)
 H—Engine Overheat Switch (B5)

I—Starter Solenoid (Y1)
 J—Starter (M3)
 K—Engine-to-Frame Ground Connection (W2)
 L—Engine Oil Level Switch (B9)

M—Engine-to-Battery Ground Cable (W1)
 N—Battery-to-Engine Power Cable
 O—Engine Oil Pressure Switch (B4)

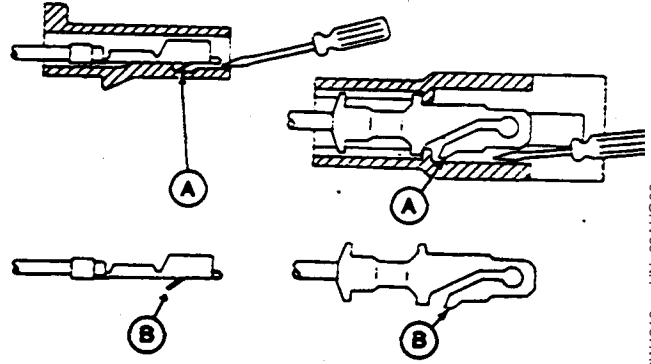
TX,1674,AB344 -19-12APR95-1/1

T7681CB -UN-23JAN92

16
 1674
 5

Remove Connector Body From Blade Terminals

1. Depress locking tang (A) on terminal, using a small screw driver. Slide connector body off.
2. Be sure to bend locking tang back to its original position (B) before installing connector body.

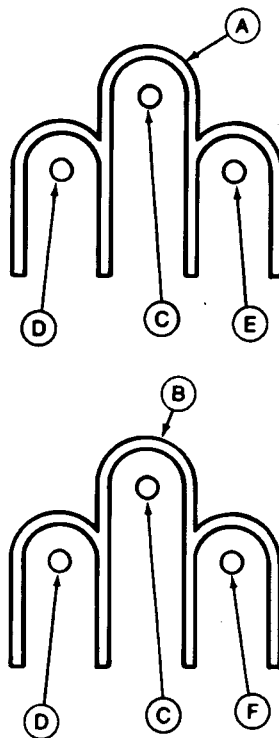


RW4218 -UN-23AUG88

DX,ECONN.V1 -19-02NOV94-1/1

10. Connect wire leads (C—F).
11. Install bracket on right hand console.
12. Install boot, covers and connect battery cable.

- A—Fuel Gauge
- B—Coolant Temperature Gauge
- C—Black Ground Wire Lead
- D—Red/Yellow Wire Lead
- E—Brown Wire Lead
- F—Red/Green Wire Lead



TX,1676,AB538 -19-11JUL92-2/2

T7681FS -UN-20FEB92

Replace Switch Panel 2 Bulb

1. Remove cover.
2. Pull on socket (B) to remove socket and bulb (C).
3. Replace bulb and install socket in housing (A). Install cover.



TX,1676,AB330 -19-08JUN92-1/1

T7681CY -UN-22JAN92

16
1676
5

Service Equipment And Tools

NOTE: Order tools from the U.S. SERVICE-GARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICE-GARD is a trademark of Deere & Company.

TX,1749,VV387 -19-12APR95-1/2

M30-3.5 Metric Lifting Eyebolt (with shoulder) such as
Metric Lifting Eyebolt JT05555

Used to remove and install counterweight.

Spreader Bar

Used to remove and install counterweight.

TX,1749,VV387 -19-12APR95-2/2

Specifications

Item	Measurement	Specification
Counterweight		
Standard	Approximate Weight	3768 kg (8,300 lb)
Optional	Approximate Weight	4627 kg (10,200 lb)
Counterweight-to-Edge of Service Door Gap	Distance	10 ± 3 mm (0.394 ± 0.12 in.)
Frame-to-Counterweight Cap Screw	Torque	1170 N•m (860 lb-ft)

TX,17,DY2934 -19-25AUG97-1/1

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1

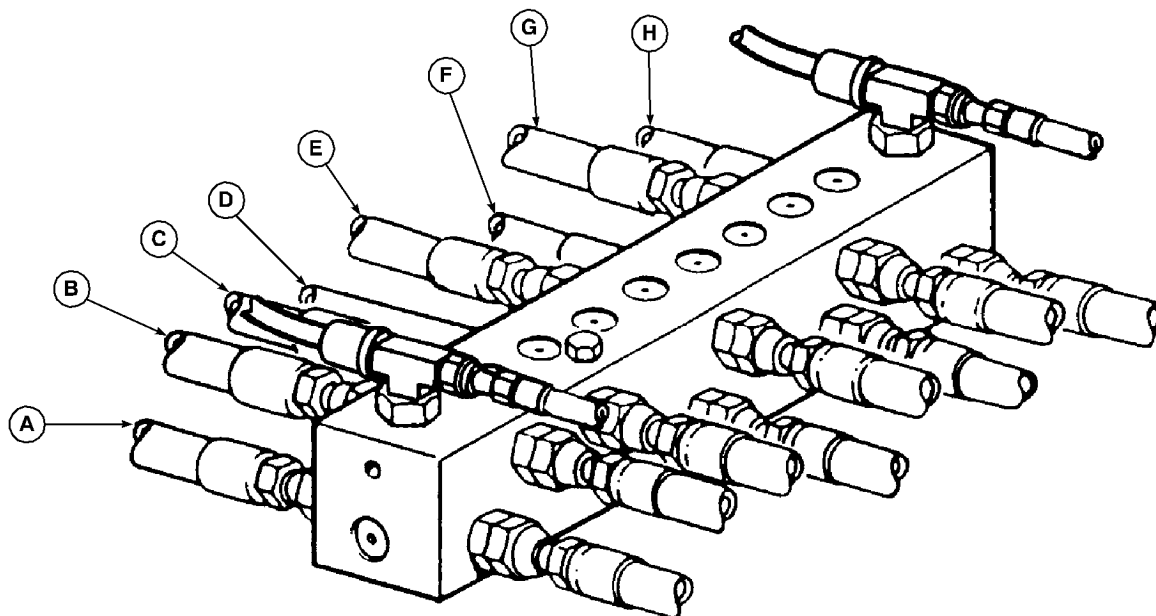
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T110543

T110543 -UN-05AUG97

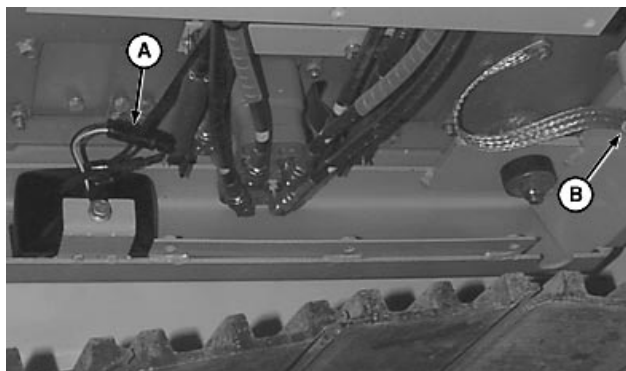
- | | | | |
|--|--|---|---|
| A—Left Pilot Controller Port
1-to-Dig Pilot Check Valve
E2 Port Line | C—Left Pilot Controller Port
3-to-Dig Pilot Check Valve
F2 Port Line | E—Right Pilot Controller Port
1-to-Dig Pilot Check Valve
I2 Port Line | G—Right Pilot Controller Port
3-to-Dig Pilot Check Valve
J2 Port Line |
| B—Left Pilot Controller Port
2-to-Dig Pilot Check Valve
H2 Port Line | D—Left Pilot Controller Port
4-to-Dig Pilot Check Valve
G2 Port Line | F—Right Pilot Controller Port
2-to-Dig Pilot Check Valve
K2 Port Line | H—Right Pilot Controller Port
4-to-Dig Pilot Check Valve
L2 Port Line |

14. Disconnect lines (A—H). Label lines to aid in installation.

TX,18,DW5012 -19-18JUL97-8/20

15. Remove electrical connector (A) and ground straps (B).

- A—Left Drive Light Electrical Connector
- B—Ground Strap (4 used)



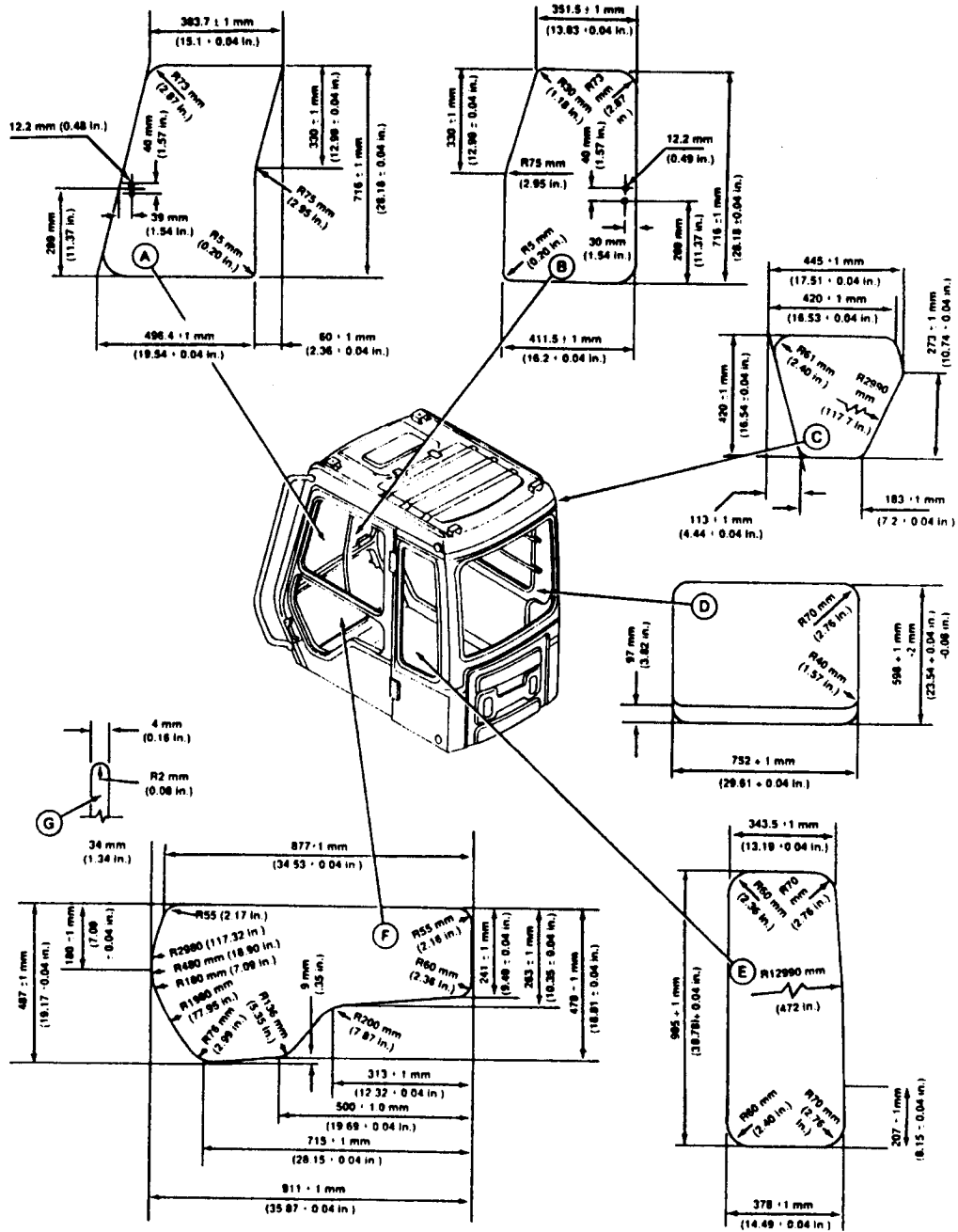
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T109477 -UN-06AUG97

Continued on next page

TX,18,DW5012 -19-18JUL97-9/20

Operator Enclosure



T8316AC (CV)

A—Upper Front Door Windowpane
B—Upper Rear Door Windowpane

C—Right Lower Windowpane
D—Rear Windowpane

E—Left Rear Windowpane
F—Lower Door Windowpane

G—Thickness of Windowpane

T8316AC -UN-21SEP94

18
1810
5

Seat

1—Bracket	11—Stand	20—Nut (8 used)	29—Link
2—Bearing (3 used)	12—Rod	21—Washer (8 used)	30—Seal
3—Knob	13—Pin (2 used)	22—Pin (2 used)	31—Knob
4—Nameplate	14—Bushing (2 used)	23—Retaining Ring (4 used)	32—Bushing (2 used)
5—Bracket	15—Rivet (2 used)	24—Cap Screw (4 used)	33—Cap Screw (2 used)
6—Cap Screw (4 used)	16—Bushing (2 used)	25—Bracket	34—Rubber Stopper (2 used)
7—Shaft	17—Link	26—Slider	35—Spring Pin (2 used)
8—Retaining Ring (8 used)	18—Rubber Stopper (2 used)	27—Suspension	36—Bracket
9—Retaining Ring (2 used)	19—Shaft (2 used)	28—Bushing (4 used)	37—Dampener
10—Pin			

TX,1821,DW267 -19-12APR95-2/2

Check And Add Compressor Oil (Serial No. —541550)

IMPORTANT: The compressor takes a special 525 viscosity oil that has “special additives” which give better compressor life.

If complete system was flushed to remove contamination, the full charge of oil 326 mL (11 fl oz) must be added to the system.

1. Remove compressor. Drain oil from suction port and record amount of oil.
2. If 90—240 mL (3—8 fl oz) was drained from original compressor, add 180 mL (6 fl oz) of new oil back into compressor.
3. If more than 240 mL (8 fl oz) was drained from original compressor, add 180 mL (6 fl oz) of new oil back into compressor. Replace receiver/dryer to remove excess oil from system.
4. If less than 90 mL (3 fl oz) was drained from original compressor, flush all components of system. Replace receiver/dryer and add 330 mL (11 fl oz) of new oil back into system.

Specification

Complete Air Conditioning
System—Oil Quantity 326 mL (11 oz)

5. When installing a compressor that has been disassembled and reassembled with no oil charge,

add an extra 30 mL (1 fl oz) to amounts specified in steps 2, 3 or 4.

6. When installing a new or remanufactured compressor, drain oil. Replace with new oil per steps 2, 3 or 4.
7. If components of system were drained and flushed, add 330 mL (11 fl oz) to compressor.

Specification

Complete Air Conditioning
System—Oil Quantity 326 mL (11 oz)

8. After adding proper amount of oil, rotate compressor shaft four or five times to insure proper lubrication of compressor seal.

IMPORTANT: DO NOT add any more oil than necessary or maximum cooling will be reduced.

9. When servicing individual components, determine oil charge needed using following chart:

Component	Oil Charge
Condenser	30 mL (1 fl oz)
Evaporator	60 mL (2 fl oz)
Receiver/Dryer	10 mL (0.4 fl oz)

TX,1830,DX360 -19-14APR95-1/1

Volumetric Efficiency Test—R12 (Serial No. —541550)

SERVICE EQUIPMENT AND TOOLS

JT05419 Air Conditioning Service Fitting Kit
--

OTHER MATERIAL

R49856 U.S. Compressor Oil

1. Drain compressor oil from low side port.
2. If compressor has not been disassembled and internal parts are wet, add 120—150 mL (4—5 oz.) refrigerant oil. If compressor has been disassembled and internal parts are dry, add 150—180 mL (5—6 oz.) refrigerant oil. Add oil through suction port.
3. Stand compressor on each end, then slowly roll for 30 seconds.
4. Mount compressor in a vise and remove dust cover.
5. Remove large caps from both suction and discharge ports, and install JT03195 and JT03182 service fittings from JT05419 Air Conditioning Service Fitting Kit.

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TX,1830,DX367 -19-14APR95-1/2

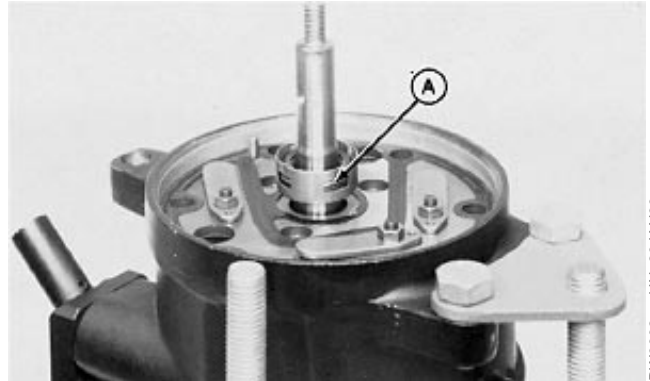
6. Be sure to install new shaft seal (A) as shown. Be sure slotted rear side of seal engages with flats on compressor shaft.

IMPORTANT: This is a two piece seal. Be sure they are properly installed or breakage will occur during assembly of front head.

7. Place front head on compressor. Be sure to align head with dowel pin. Use the six cap screws to draw the head down **EVENLY**, then tighten to 26 N•m (19 lb-ft).

Specification

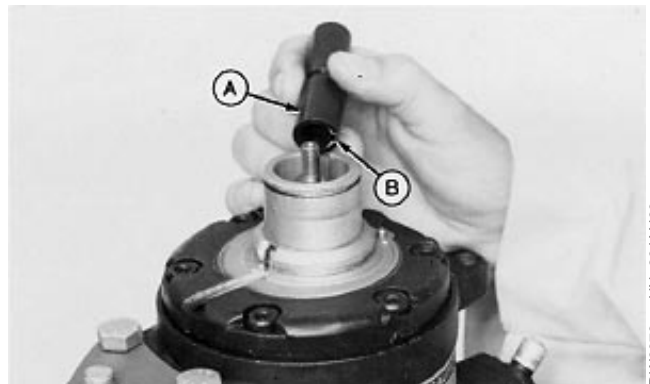
Front Head Cap Screw—Torque 26 N•m (19 lb-ft)



RW3662 -JUN-23JAN89

TX,1830,DX370 -19-14APR95-2/6

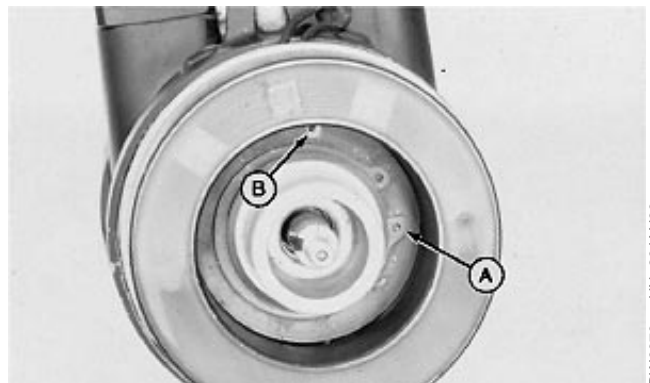
8. Place new shaft key in key way. Position JDG219 Key Driver (A) over key. Be sure slotted area of driver (B) fits in place over key.
9. Use a small hammer to tap key in until it bottoms in key way groove.



RW3678 -JUN-23JAN89

TX,1830,DX370 -19-14APR95-3/6

10. Position clutch coil over head. Be sure to position it properly over roll pin (B). Install snap ring (A). Install with rounded edge facing upward.
11. Connect clutch coil wire to ground screw on compressor.
12. Set clutch pulley in place over coil. Slight tap may be needed to properly position pulley on shaft.



RW3679 -JUN-23JAN89

Continued on next page

TX,1830,DX370 -19-14APR95-4/6

Section 20 Safety And Convenience

Contents

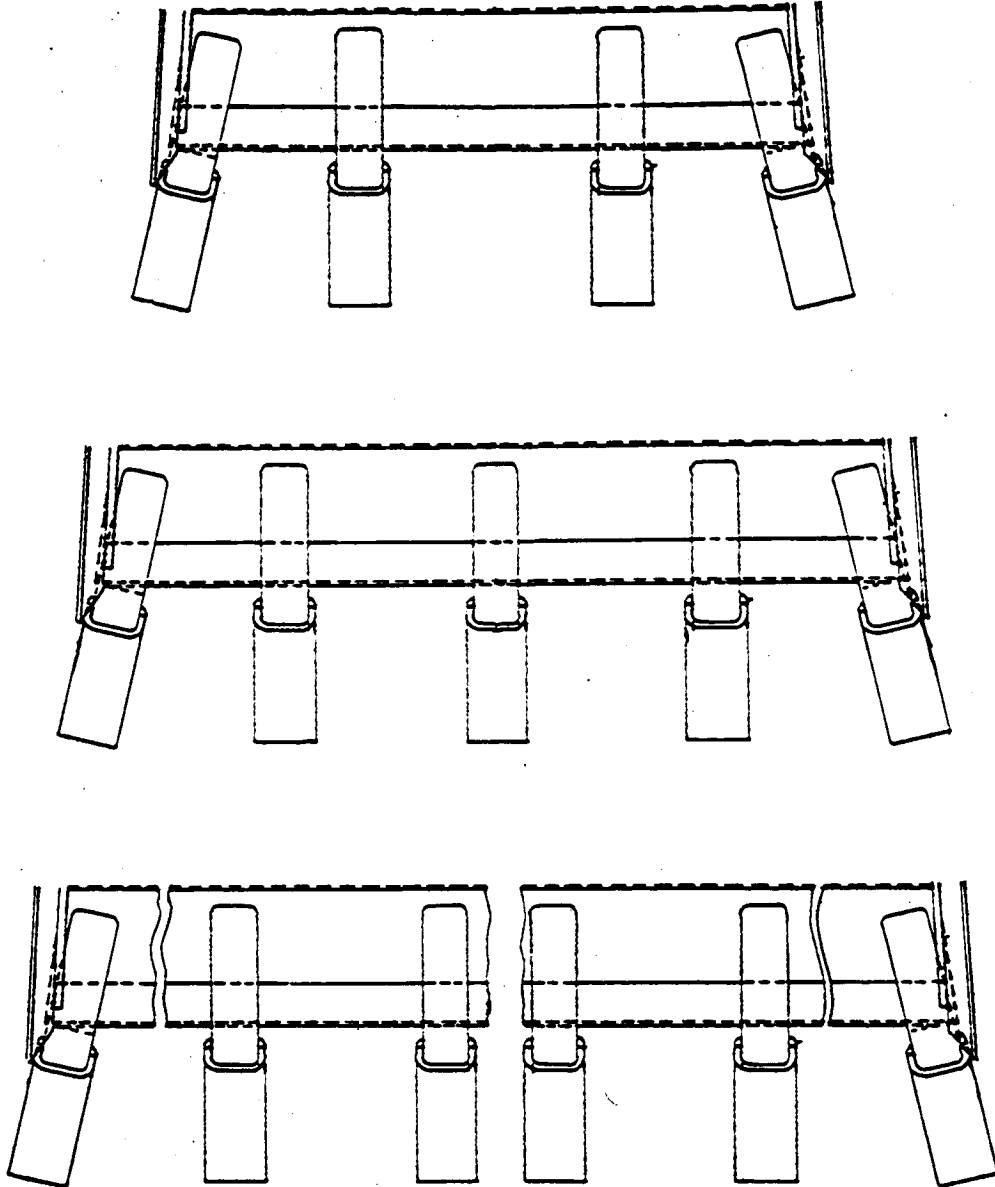
Page

Group 2004—Horn And Warning Devices

Propel Alarm

Remove and Install20-2004-1

Changing Travel Alarm Volume.20-2004-1



T5985AQ -JUN-31OCT89

IMPORTANT: Good welds are important. Have only a qualified welder do the welding. Before welding, clean all dirt and paint from weld area. Connect the welder ground clamp close to each weld area, so electrical current does not pass through any bearings or bushings.

3. Before welding shank, remove the stop so rubber pin lock is not damaged by the heat.

4. Install shank into corner so it is tight against the bevel edge and side of bucket.

Install center shanks so they are tight against bevel edge and spaced equally across width of bucket.

5. Tack weld at the top rear center to hold it in position.

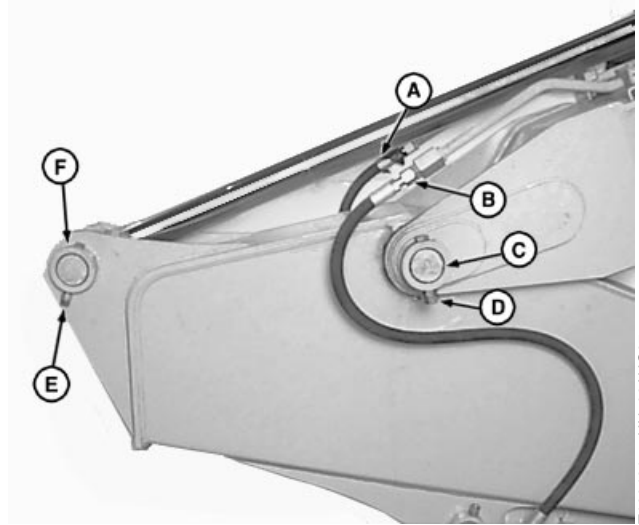
8. On later machines, disconnect hydraulic lines at (A and B).
9. Remove parts (C—F) to remove arm.
10. On earlier machines, install arm and parts (A—F).
11. On later machines, install parts (C—F).

Add or remove shims equally on each side of arm to obtain maximum clearance between arm and boom of 1.5 mm (0.06 in.).

Specification

Arm-to-Boom—Clearance 1.5 mm (0.06 in.)

12. On later machines, connect hydraulic lines at (A and B).
13. Install bucket cylinder, bucket, and linkage.
14. Apply grease to all lubrication fittings. Check hydraulic reservoir oil level. Add oil if necessary.



Later Machine Shown

- A—To Bucket Head End
- B—To Bucket Rod End
- C—Retaining Pin
- D—Nut (4 used)
- E—Cap Screw (2 used)
- F—Retaining Pin

TX,33,DY2940 -19-25AUG97-3/3

T109484 -JUN-06AUG97

Specifications

Item	Measurement	Specification
Pump Drive:		
Hub-to-Pump Case	Clearance	3 ± 1 mm (0.12 ± 0.04 in.)
Set Screw	Torque	122 N•m (90 lb-ft)
Pump (Serial No. —559602):		
Pump-to-Flywheel Cap Screw	Torque	87 N•m (64 lb-ft)
Cylinder Block Bronze Material	Minimum Thickness	0.9 mm (0.035 in.)
Feedback Rod End Piston	Torque	30 N•m (22 lb-ft)
Front Pump-to-Rear Pump Stud	Torque	60 N•m (44 lb-ft)
Stud-to-Housing Nut	Torque	110 N•m (81 lb-ft)
Rear Pump Shaft	End Play	0.10—0.30 mm (0.004—0.012 in.)
Pilot Pump-to-Hydraulic Pump Cap Screw	Torque	110 N•m (81 lb-ft)
Suction Flange-to-Pump Valve Block Inner Cap Screw	Torque	32 N•m (24 lb-ft)
Suction Flange-to-Pump Valve Block Outer Cap Screw	Torque	46 N•m (34 lb-ft)
Pump (Serial No. 559603—):		
Pump-to-Flywheel Cap Screw	Torque	87 N•m (64 lb-ft)
Pilot Pump-to-Hydraulic Pump Cap Screw	Torque	46 N•m (34 lb-ft)
Pilot Pump-to-Hydraulic Pump Cap Screw	Torque	46 N•m (34 lb-ft)
Pump Displacement Solenoid Valve (Serial No. —559602):		
Mounting Cap Screw	Torque	10 N•m (90 lb-in.)

Continued on next page

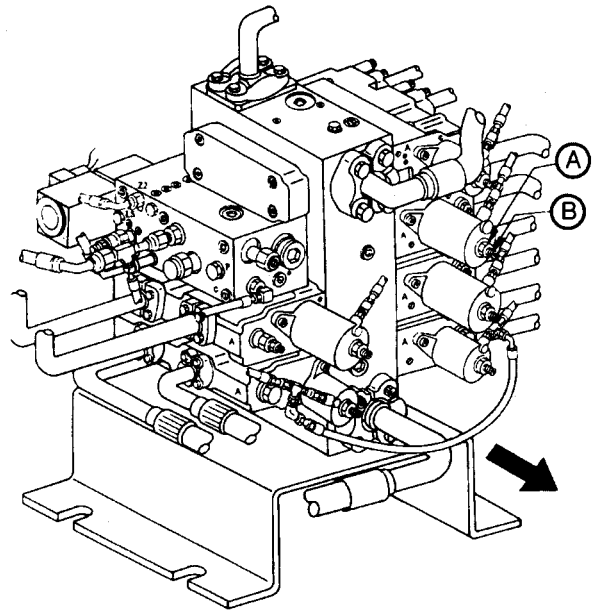
TX,33,DW5016 -19-21JUL97-1/8

Raise Boom With Engine Stopped

With the engine stopped, boom cannot be raised using pilot control valve. The control valve boom spool must be moved manually.

CAUTION: Clear all persons from the area when raising the boom with the engine stopped.

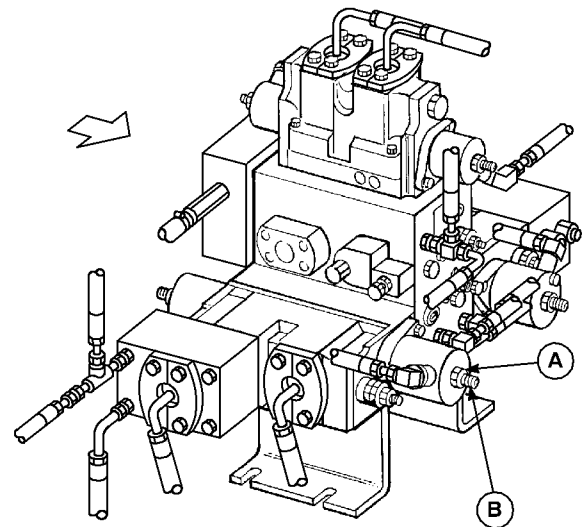
1. Hold spool stop screw (B) in front of boom section, and loosen lock nut (A) until it is held on by only one or two threads.
2. While counting the number of revolutions, turn the spool stop screw in until screw contacts spool (increased resistance).
3. Turn spool stop screw an additional 4—6 turns to move spool enough to allow boom to be raised.



T8048AC (CV)

(Serial No. —556935)

T8048AC —UN—17JUL93



T109283

(Serial No. 556936—)

T109283 —UN—02JUN97

Continued on next page

TX,33,DY2942 —19—26AUG97—1/3

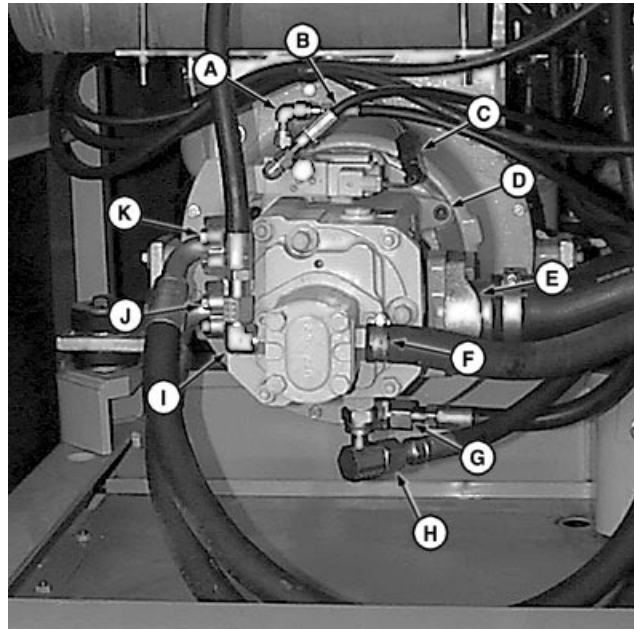
Remove And Install Hydraulic Pump (Serial No. 559603—)

1. Loosen reservoir fill cap to release air pressure from reservoir.
2. Drain reservoir. Approximate capacity is 150 L (40 gal).

TX,33,DY2945 -19-26AUG97-1/5

3. Disconnect lines (A, B and E—K)
4. Disconnect electrical connector (C).

- A—Pump Regulator LS Port-to-Main Control Valve Bottom Tee Port Line
- B—Pump Regulator Right Port-to-Dual Solenoid Valve Manifold "D" Port-to-Reservoir Line
- C—Electrical Connector
- D—Cap Screw (6 used)
- E—Pump Inlet Port-to-Reservoir Line
- F—Pilot Pump Inlet Port-to-Reservoir Line
- G—Pump Rear Drain Port-to-Reservoir Line
- H—Pump Front Drain Port-to-Reservoir Line
- I—Pilot Pump Outlet Port-to-Pilot Filter Forward Port Line
- J—Pump Bottom Rear Port-to-Monoblock Rear Inlet Port Line
- K—Pump Top Rear Port-to-Boom, Arm, Swing Bottom Tee Port Line



T109709 -UN-05AUG97

Hydraulic Pump And Pilot Pump Line

Continued on next page

TX,33,DY2945 -19-26AUG97-2/5

10. Remove cylinder block, pistons, and swashplate as an assembly.

IMPORTANT: Do not scratch, nick, or damage lapped surfaces of cylinder block.

11. Put front pump cylinder block and piston assembly into DF1040 Pump Rotate Group Workbench Support. (See Section 99 for instructions to make tool.)



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T6439UX -UN-22MAR90

TX,33,DY2905 -19-20AUG97-10/17

NOTE: Disassembly of cylinder block and piston assembly for rear and front pump is similar.

12. Put cardboard (C) on cylinder block to protect surface.
13. Break roller cage (D) to remove rollers.
14. Remove bearing inner race (A) and spacer (B) using a bearing puller.

- A—Inner Race
- B—Spacer
- C—Cardboard
- D—Roller Cage



T7626CP -UN-06JAN92

Continued on next page

TX,33,DY2905 -19-20AUG97-11/17

17. Install and tighten studs (A) to 60 N•m (44 lb-ft).

Specification

Front Pump-to-Rear Pump Stud—

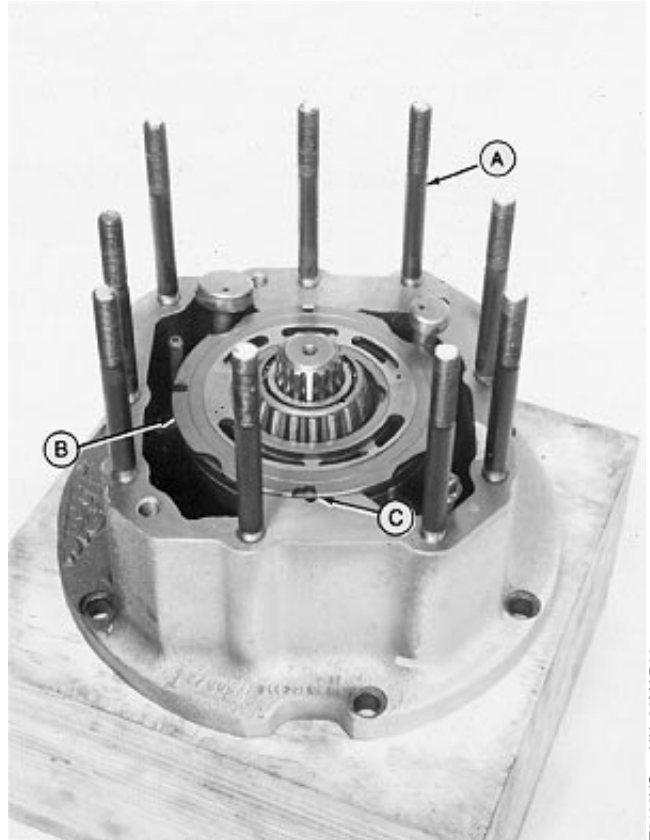
Torque 60 N•m (44 lb-ft)

IMPORTANT: Front pump valve plate is marked “R” for right, as viewed from suction side of pumps.

18. Install valve plate (B) marked “R”, on front pump cylinder block with lapped surfaces toward each other.

Put the two small holes in valve plate towards the bottom of pump and align notches (C) on the suction side of the pump.

NOTE: Splined coupling is not installed at this time. Pump shaft end play is checked before coupling is installed.



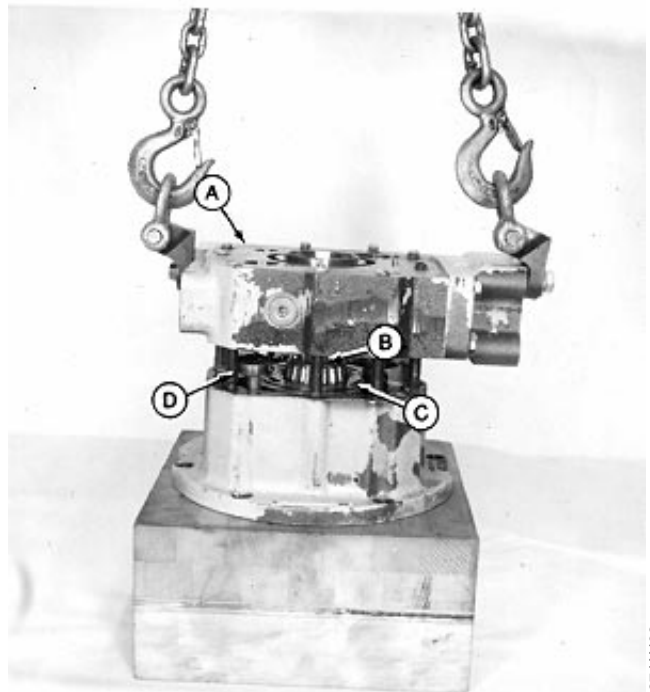
T6439YS -UN-22MAR90

TX,33,DY2949 -19-26AUG97-11/21

19. Carefully install valve block (A). As valve block is lowered, align studs (B), pistons (D), and feedback rod with bores as valve block.

Make sure locator pins fit into notches of valve plate (C). When parts are aligned properly, there is approximately 1.5 mm (1/16 in.) gap between pump housing and valve block.

- A—Valve Block
- B—Stud (9 used)
- C—Valve Plate
- D—Small and Large Piston



T7681EX -UN-27JAN92

Continued on next page

TX,33,DY2949 -19-26AUG97-12/21

Disassemble And Assemble Pump Displacement Solenoid Valve (Serial No. 559603—)

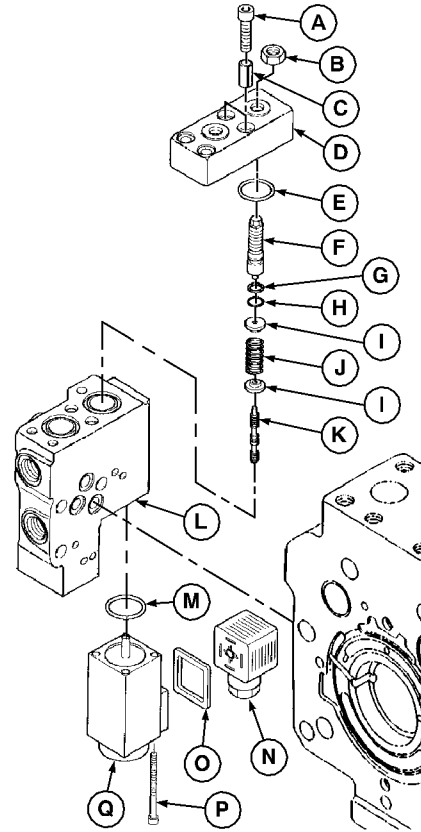
1. Inspect parts (A—Q) and replace as necessary.
2. Install new O-rings.

Specification

Solenoid-to-valve Housing Cap	
Screw—Torque.....	2.7 N•m (24 lb-in.)
Cap Screw—Torque.....	23 N•m (17 lb-ft)

- A—Socket Head Cap Screw (4 used)
- B—Nut (2 used)
- C—Sleeve (2 used)
- D—Cover
- E—O-Ring (2 used)
- F—Adjusting Screw (2 used)
- G—Ring (2 used)
- H—O-Ring (2 used)
- I—Retainer (2 used)
- J—Spring
- K—Piston
- L—Housing
- M—O-Ring
- N—Connector
- O—Seal
- P—Socket Head Cap Screw (4 used)
- Q—Solenoid

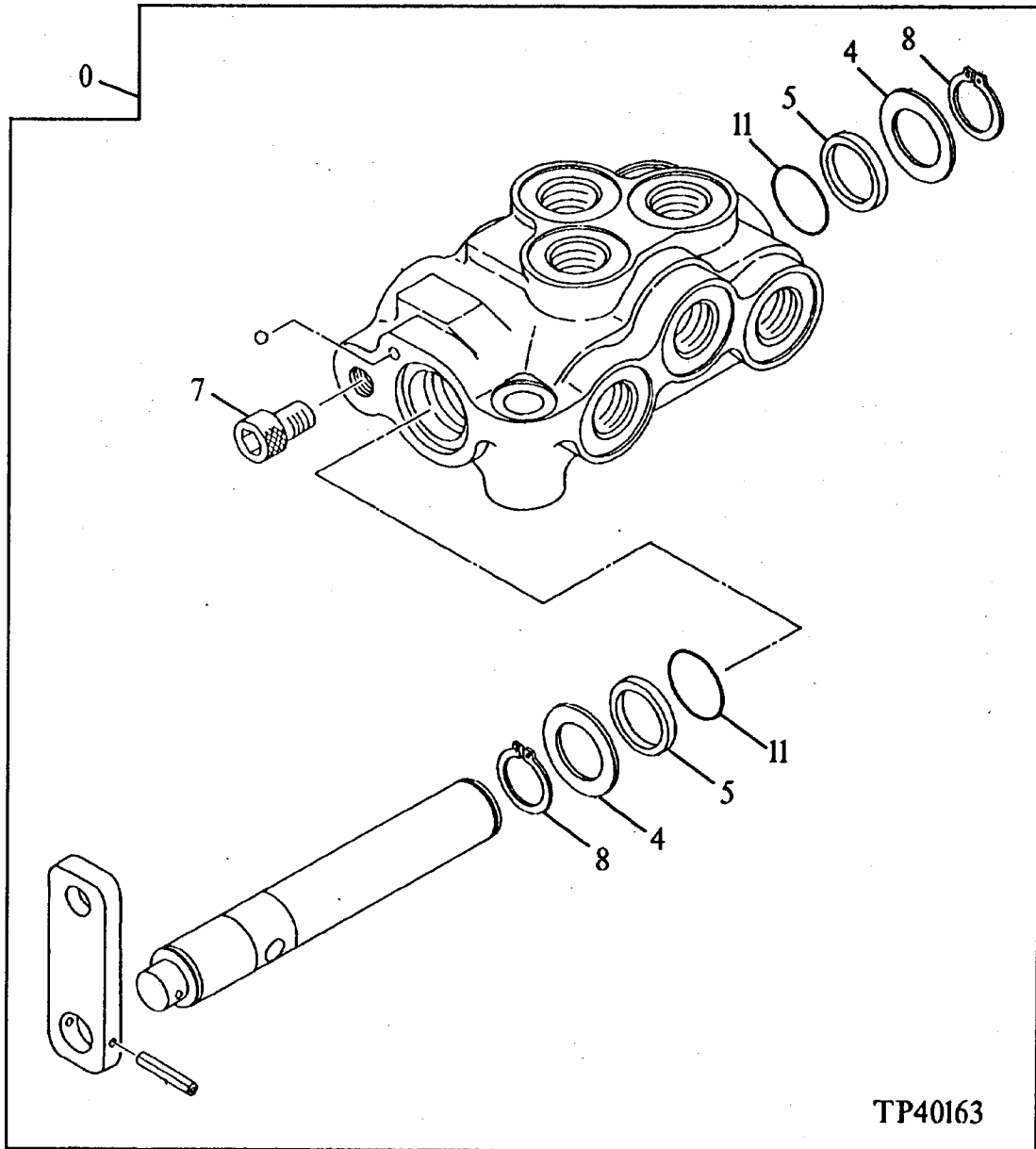
T109729



T109729 -UN-05AUG97

TX,33,DY2950 -19-26AUG97-1/1

Disassemble And Assemble Pilot Shut-Off Valve



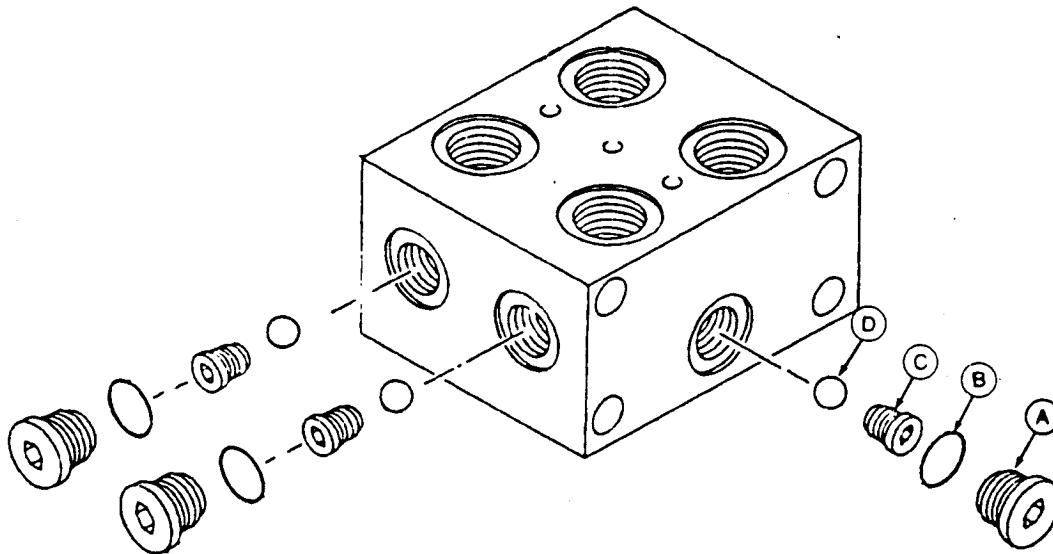
TP40163 -UN-01JAN94

- | | | | |
|-------------------|-------------------------|----------------------|---------------------|
| 0—Valve | 5—Back-Up Ring (2 used) | 8—Snap Ring (2 used) | 11—Packing (2 used) |
| 4—Washer (2 used) | 7—Cap Screw | | |

1. Remove parts (4—11).
2. Inspect and replace as necessary.
3. Install parts.

TX,3360,AB349 -19-30SEP94-1/1

Disassemble And Assemble Propel Pilot Check Valve Block



A—Plug (3 used)

B—O-Ring (3 used)

C—Ball Seat (3 used)

D—Ball (3 used)

1. Remove plugs (A).

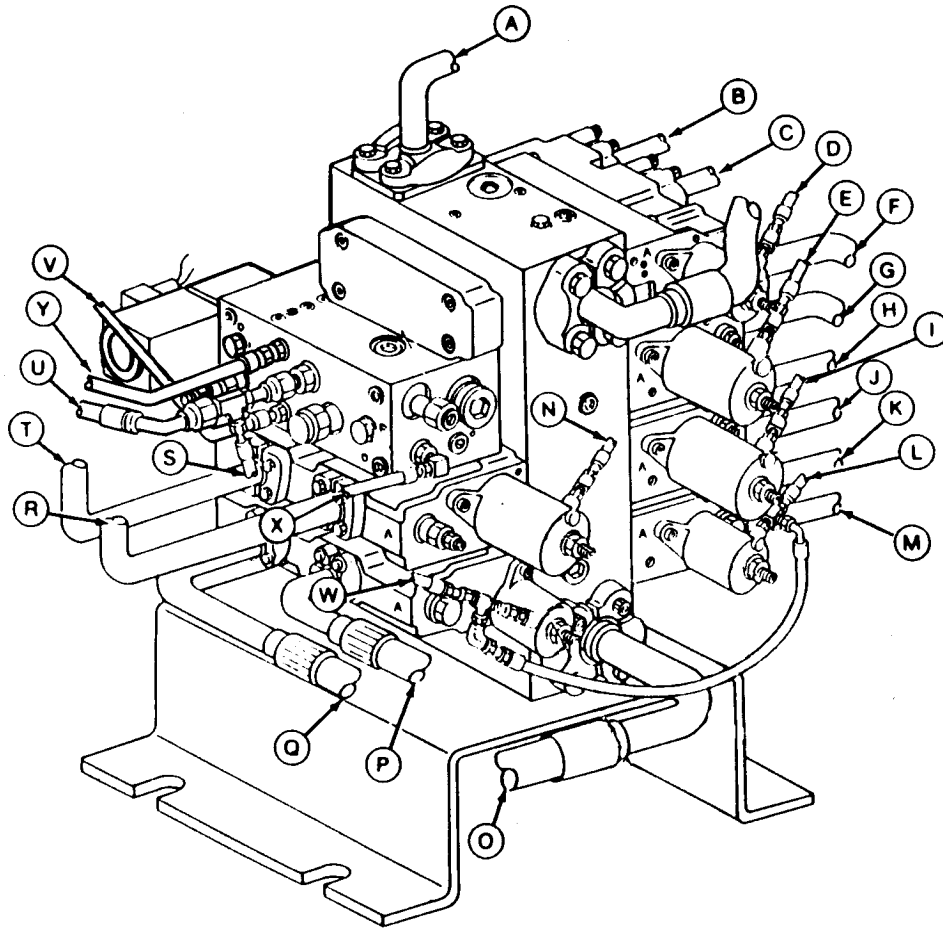
2. Remove ball seats (C) and balls (D).

3. Inspect parts and replace as necessary.

4. Install parts and new O-rings (B).

T7681CA -UN-16/JAN92

TX,3360,AB368 -19-17FEB92-1/1



(Serial No. —543989)

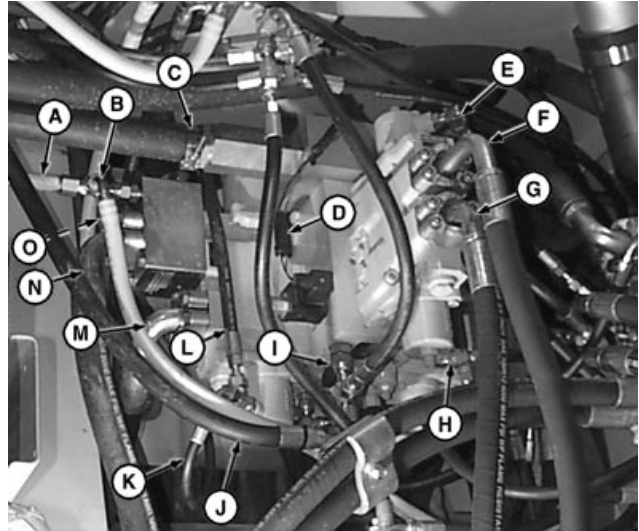
- | | | | |
|---|---|---|---|
| A—To Oil Cooler Line | H—Line-to-Bucket Cylinder
Piston End | N—Line-to-Dig Pilot Check
Valve Block (K2) | U—Line-to-Pilot Filter |
| B—To Swing Motor Line | I—Line-to-Dig Pilot Check
Valve Block (I1) | O—Line-to-Reservoir | V—Line-to-Swing Motor |
| C—To Swing Motor Line | J—Line-to-Bucket Cylinder
Rod End | P—Line-to-Rotary Manifold | W—Line-to-Propel Pilot Check
Valve Block |
| D—Line-to-Dig Pilot Check
Valve block (F2) | K—Line-to-Left Propel Reverse
Piston End | Q—Line-to-Rotary Manifold | X—Line-to-Dual Solenoid
Block |
| E—Line-to-Dig Pilot Check
Valve Block (G2) | L—Line-to-Propel Pilot
Controller | R—Line-to-Arm Cylinder
Piston End | Y—Pressure Control Manifold
Line (Z2 Port) |
| F—Line-to-Boom Cylinder Rod
End | M—Line-to-Left Propel
Forward | S—Line-to-Dual Solenoid
Block | |
| G—Line-to-Boom Cylinder
Piston End | | T—Line-to-Arm Cylinder Rod
End | |

20. Connect lines (A—X).

T7681DH —JUN-22/JAN92

19. Connect lines (A—C and E—O).
20. Connect electrical connector (D).
21. Fill reservoir. Approximate capacity is 151 L (40 gal).

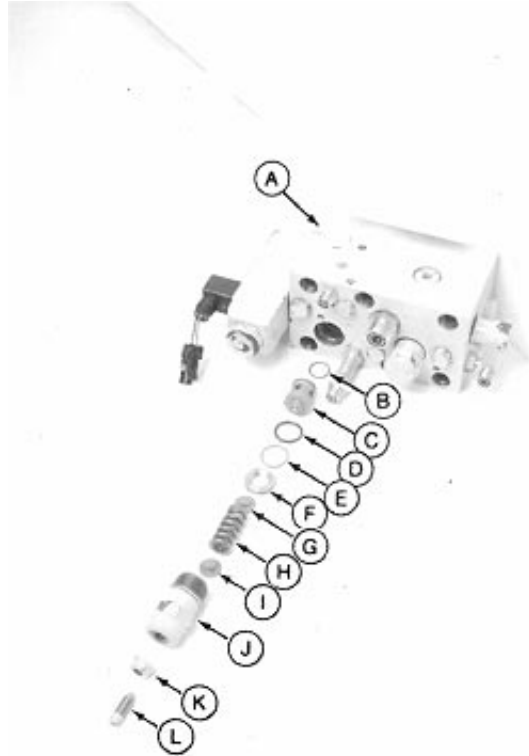
- A—Main Control Valve Boom Raise Anti-Drift Valve Y Port-to-Hydraulic Tank Line
- B—Main Control Valve Boom Raise Anti-Drift Valve Y Port-to-Arm Raise Anti-Drift Valve Y Port Line
- C—Main Control Valve Return Manifold RES Port-to-Hydraulic Tank Line
- D—Electrical Connector
- E—Main Control Valve Swing Valve Left Rear Pilot Cap-to-Dig Shuttle Valve F1 Port Line
- F—Main Control Valve Swing Section A Port-to-Swing Motor Left Front Port Line
- G—Main Control Valve Swing Section B Port-to-Swing Motor Right Front Port Line
- H—Main Control Valve Swing Valve Right Front Pilot Cap-to-Dig Shuttle Valve E1 Port Line
- I—Main Control Valve P2 Port-to-Dual Solenoid Valve P Port Line
- J—Main Control Manifold P2 Port-to-Hydraulic Outlet Port Line
- K—Main Control Valve Boom Lower Front Pilot Cap Port-to-Main Control Valve Boom Raise Anti-Drift Valve X Port Line
- L—Main Control Valve Boom Lower Front Pilot Cap Port-to-Dig Shuttle Valve L1 Port Line
- M—Main Control Valve Boom Lower B Port-to-Boom Cylinder Rod End Port Line
- N—Main Control Valve Boom Raise Anti-Drift Valve A Port-to-Boom Cylinder Head End Port Line
- O—Main Control Valve Boom Raise Anti-Drift Valve X Port-to-Main Control Valve Boom Lower Front Pilot Cap Port Line



T109755 -UN-22AUG97

2. Remove parts (B—L). Measure distance of adjustment screw (L) to body (J) for proper assembly.
3. Inspect parts and replace as necessary.
4. Install new O-rings and backup ring.
5. Adjust valve. (See procedure in Group 9025-25.)

- A—Pressure Control Manifold
- B—O-Ring
- C—Poppet
- D—Backup Ring
- E—O-Ring
- F—Ring
- G—Retainer
- H—Spring
- I—Retainer
- J—Body
- K—Nut
- L—Adjustment Screw

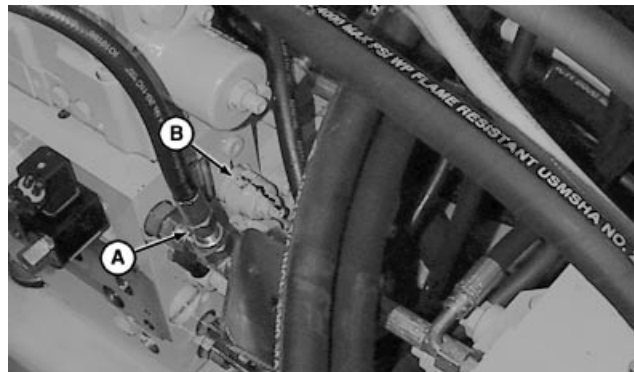


T7681DR -UN-27JAN92

TX,33,DY2969 -19-26AUG97-2/2

Remove And Install Load Sense System Relief Valve (Serial No. 556936—)

1. Release pressure in hydraulic reservoir. Unlock hydraulic tank fill cap. Slowly turn cap to release air pressure.
2. To gain access to relief valve, disconnect and tag hydraulic line (A).
3. Remove valve (B).
4. Replace parts as necessary.
5. Install valve. Tighten to 90—150 N•m (66—110 lb-ft).



T110211 -UN-05AUG97

Specification

Load Sense Relief Valve Plug
(556936—)—Torque..... 90—150 N•m (66—110 lb-ft)

6. Connect hydraulic line (A).
7. Adjust valve. (See procedure in Group 9025-25.)

TX,33,DY2970 -19-26AUG97-1/1

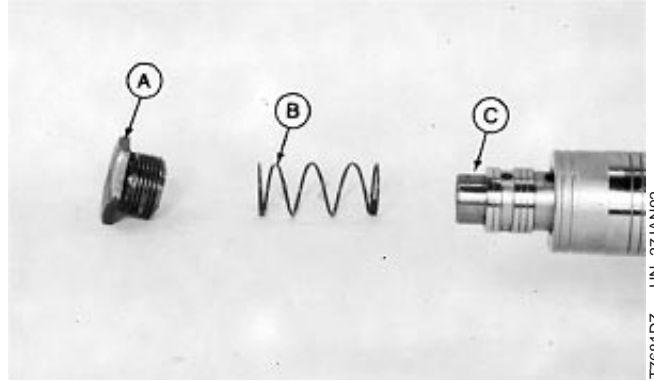
8. Apply thread lock and sealer (medium strength) to threads of plug (A).

9. Install valve (C), spring (B), and plug (A).

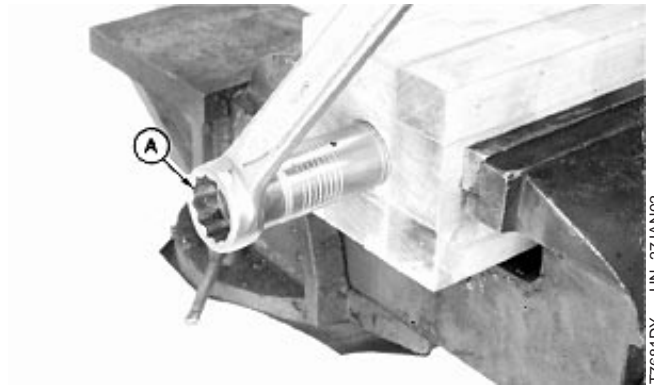
Tighten plug to 100 N•m (75 lb-ft).

Specification

Spool Plug—Torque 100 N•m (75 lb-ft)



T7681DZ -UN-27JAN92



T7681DY -UN-27JAN92

Continued on next page

TX,33,DY2979 -19-26AUG97-7/8

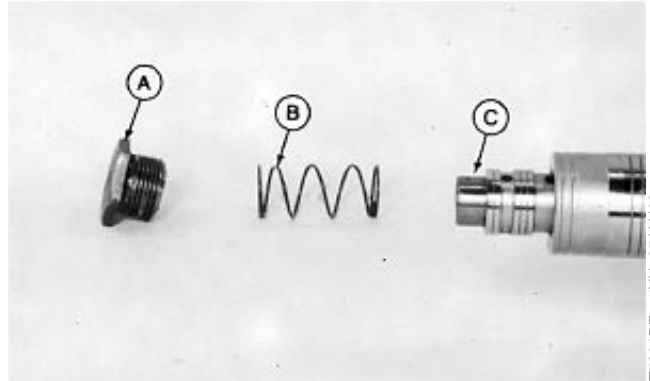
10. Apply thread lock and sealer (medium strength) to threads of plug (A).

11. Install valve (C), spring (B), and plug (A).

Tighten plug to 60 N•m (45 lb-ft).

Specification

Spool Plug—Torque 60 N•m (45 lb-ft)



T7681DZ -UN-27JAN92

TX,33,DY2980 -19-26AUG97-5/6

12. Install parts (A—J).

Install spool so end with extra groove is towards “B” end of valve section.

NOTE: Letters “A” and “B” are cast on ends of valve section.

13. Tighten cap screws (H) to 25 N•m (18 lb-ft).

Specification

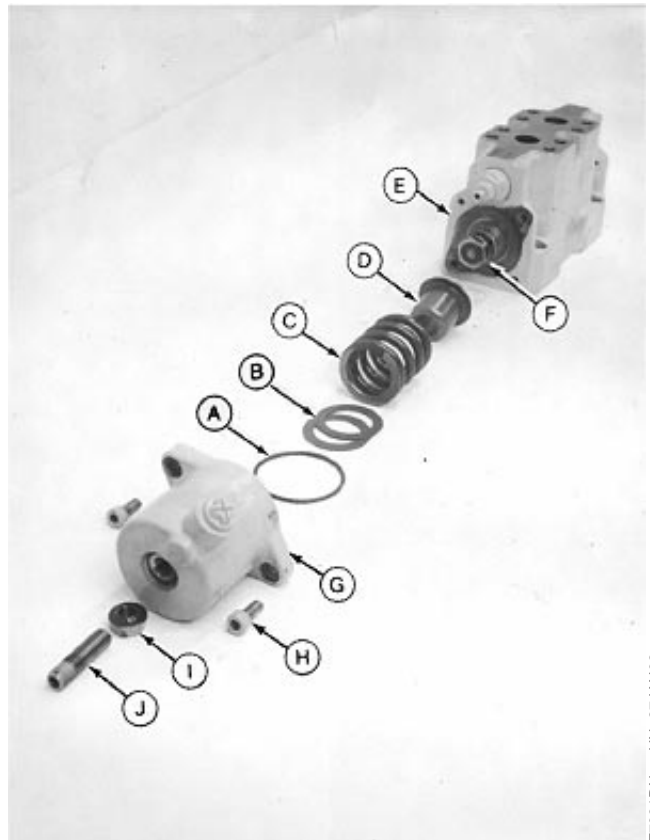
Valve Cover-to-Housing Cap Screw—Torque 25 N•m (18 lb-ft)

14. Adjust spool stop screws (J). (See procedure in this group.) Tighten nut (I) to 60 N•m (45 lb-ft).

Specification

Spool Stop Screw Nut—Torque 60 N•m (45 lb-ft)

- A—O-Ring
- B—Shim (as required)
- C—Spring
- D—Cap
- E—Housing
- F—Spool
- G—Cover
- H—Cap Screw (2 used)
- I—Nut
- J—Spool Stop Screw



T7681DX -UN-27JAN92

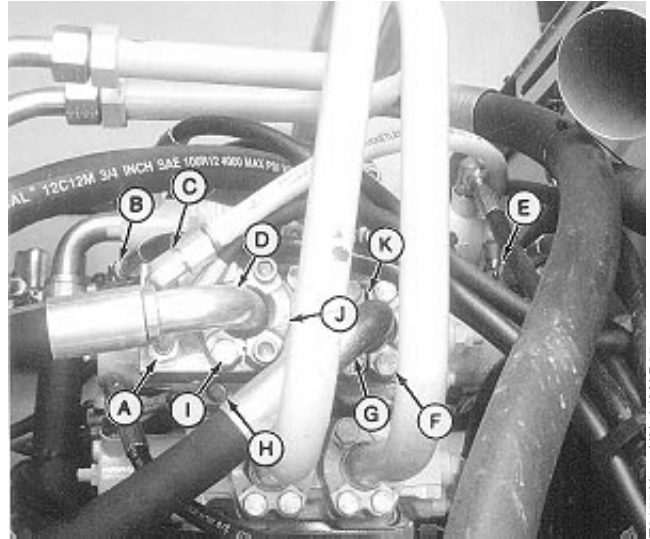
TX,33,DY2980 -19-26AUG97-6/6

Remove And Install Boom Regenerative Valve (Serial No. 545157—556935)

1. Lower equipment to ground.
2. Release pressure in hydraulic reservoir. Loosen hydraulic tank fill cap. Slowly turn cap to release air pressure.
3. Drain reservoir. Approximate capacity is 148 L (39 gal).

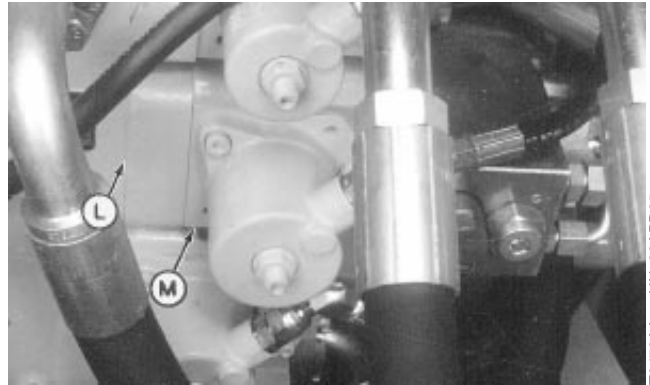
CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

4. Remove hydraulic lines (A, B, C and E).
5. Remove cap screws (I and F) and flanges (J and K). Remove hydraulic lines (D and G).
6. Remove cap screws (H). Remove boom valve (M) and boom regenerative valve (L).
7. Replace parts as necessary.
8. Install new O-rings.
9. Install boom regenerative valve and boom valve. Tighten mounting cap screws to 86 N•m (63 lb-ft).
10. Install hydraulic lines.
11. Fill reservoir. (See Hydraulic Oil in Group 0004.)



T8455AL -UN-04MAR95

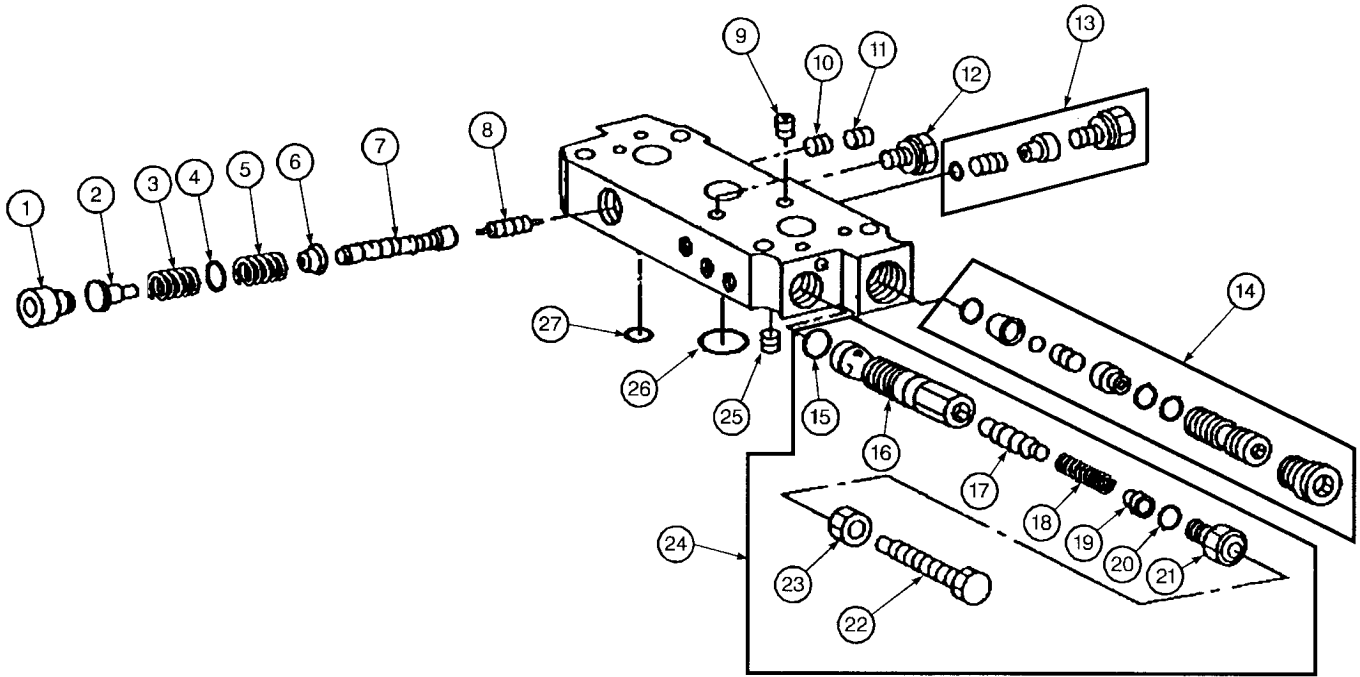
Components Removed For Clarity



T8472AA -UN-28APR95

- A—Boom Lower Valve B Port-to-Boom Anti-Drift Valve X Port Line
- B—Boom Raise Valve A Port-to-Dig Pilot Check Valve Block K1 Port Line
- C—Boom Anti-Drift Valve Y Port-to-Hydraulic Reservoir
- D—Boom Anti-Drift Valve Port-to-Boom Cylinders Rod End Port Line
- E—Boom Lower Valve B Port-to-Dig Pilot Check Valve Block L1 Port Line
- F—Cap Screw (4 used)
- G—Boom Valve B Port-to-Boom Cylinders Head End Port Line
- H—Cap Screw (4 used)
- I—Cap Screw (4 used)
- J—Flange (2 used)
- K—Flange (2 used)
- L—Boom Regenerative Valve
- M—Boom Valve

**Disassemble And Assemble Swing Torque Control Valve
(Serial No. —546276)**



T8455AG (CV)

- | | | | |
|---------------|------------------|-------------|--------------------|
| 1—Plug | 8—Shuttle Spool | 15—O-Ring | 22—Screw |
| 2—Spring Seat | 9—Plug | 16—Sleeve | 23—Nut |
| 3—Spring | 10—Orifice | 17—Piston | 24—Relief Valve |
| 4—Shim | 11—Plug | 18—Spring | 25—Plug |
| 5—Spring | 12—Plug | 19—Retainer | 26—O-Ring (3 used) |
| 6—Spring Seat | 13—Check Valve | 20—O-Ring | 27—O-Ring (2 used) |
| 7—Spool | 14—Shuttle Valve | 21—Plug | |

T8455AG -UN-18APR95

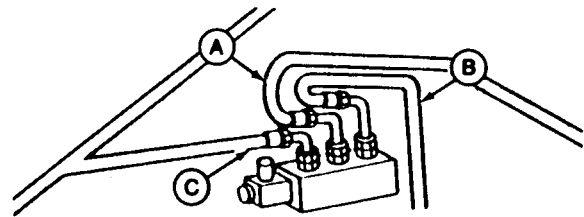
TX,3360,DW602 -19-27AUG97-1/1

Remove And Install Engine Speed Control Actuator

1. Release pressure in hydraulic reservoir. Unlock hydraulic tank fill cap. Slowly turn cap to release air pressure.

TX,3360,AB413 -19-17FEB92-1/2

2. Disconnect lines (A—C).
3. Remove actuator.
4. Repair or replace actuator as necessary.
5. Install actuator.
6. Connect lines.

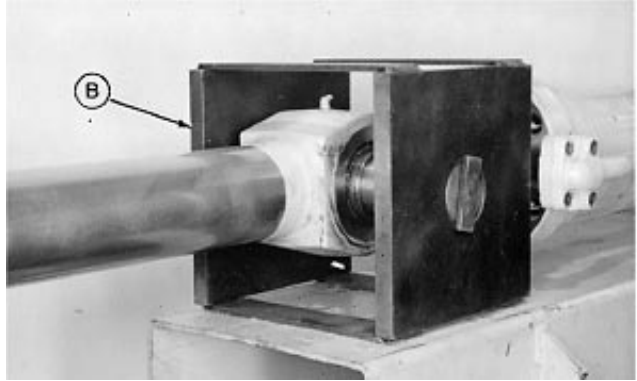


A—Line to Dual Solenoid Block
B—Line to Reservoir
C—Line to Pilot Filter

T7681EG -UN-27JAN92

TX,3360,AB413 -19-17FEB92-2/2

4. Install head end of rod in housing (B) and install inside JT30043 Hydraulic Cylinder Repair Stand.



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T6557HK -UN-27OCT88

TX,3360,VV389 -19-25NOV91-4/10

5. Install wrench on the piston nut (A) with the setscrew at the bottom.

IMPORTANT: Damage to piston nut flats can result from tightening setscrew. Use a steel spacer between nut and setscrew before tightening.

6. To protect nut from possible damage from setscrew, install a 38 x 51 x 6.4 mm (1.5 x 2.0 x 0.25 in.) piece of steel flat stock (A) between nut and setscrew.

7. Tighten setscrew.

Bucket Cylinder—Specification

Piston Nut—M62 x 2—Torque	4740 N•m (3485 lb-ft)
Piston Nut—M52 x 2—Torque	4260 N•m (3130 lb-ft)
Rod Guide Cap Screws—Torque	558 N•m (410 lb-ft)

Arm Cylinder—Specification

Piston Nut—Torque	7560 N•m (5560 lb-ft)
Rod Guide Cap Screws—Torque	972 N•m (715 lb-ft)
Cushion Cap Screw—Torque.....	972 N•m (715 lb-ft)

Boom Cylinder—Specification

Piston Nut—Torque	6080 N•m (4470 lb-ft)
Rod Guide Cap Screws—Torque	558 N•m (410 lb-ft)

8. Remove nut.



T6685XJ -UN-27OCT88

Continued on next page

TX,3360,VV389 -19-25NOV91-5/10

29. To protect nut from damage, insert a 38 x 51 x 6.4 mm (1.5 x 2.0 x 0.25 in.) piece of steel flat stock (A) between nut and setscrew.

Bucket Cylinder—Specification

Piston Nut—M62 x 2—Torque 4740 N•m (3485 lb-ft)
Piston Nut—M52 x 2—Torque 4260 N•m (3130 lb-ft)

Arm Cylinder—Specification

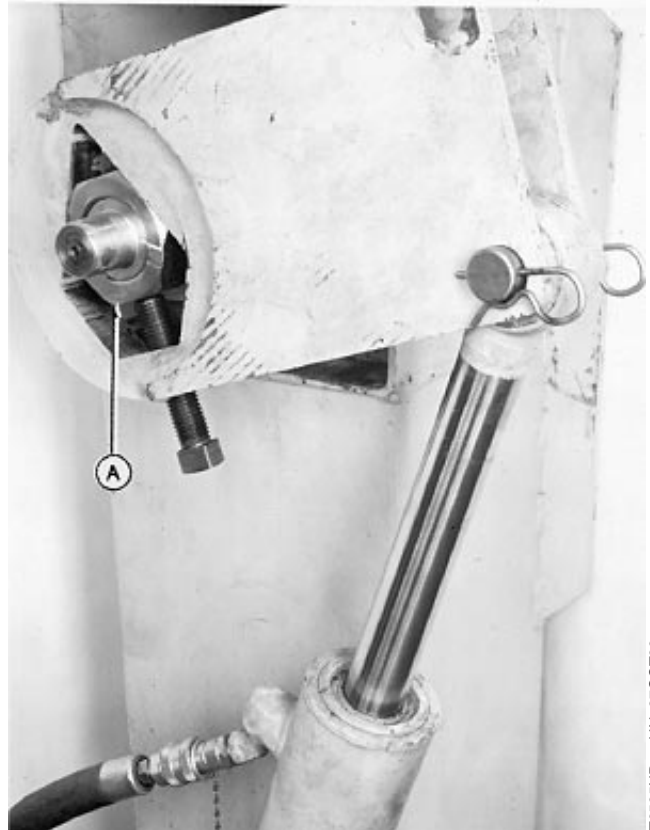
Piston Nut—Torque 7560 N•m (5560 lb-ft)
Cushion Cap Screw—Torque 972 N•m (715 lb-ft)

Boom Cylinder—Specification

Piston Nut—Torque 6080 N•m (4470 lb-ft)

30. Tighten nut.

31. Attach a hoist to rod using lifting straps. Carefully install rod in cylinder barrel. Do not damage piston seals.



T6685XP -UN-27OCT88

TX,3360,VV392 -19-25NOV91-9/10

32. Install and tighten cap screws (A) to specification.

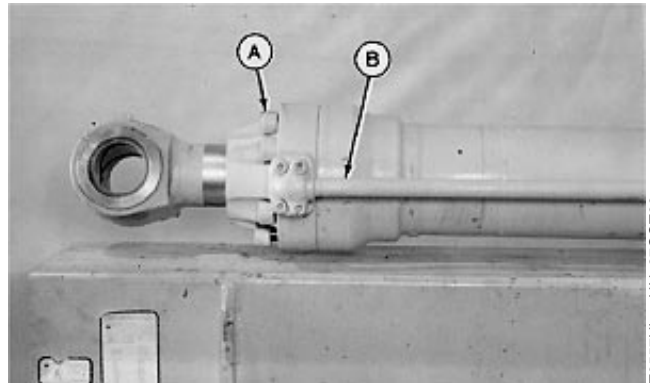
Bucket And Boom Cylinder—Specification

Rod Guide Cap Screw—Torque 558 N•m (410 lb-ft)

Arm Cylinder—Specification

Rod Guide Cap Screw—Torque 972 N•m (715 lb-ft)

33. Connect lines (B) to cylinder. Tighten cap screws.



T6557HI -UN-27OCT88

TX,3360,VV392 -19-25NOV91-10/10

Hydraulic System

1—Screw (6 used)	12—Washer (14 used) (Serial No. 538063—)	22—Filter	31—Cap Screw (7 used)
2—Cover	13—Cap	23—Washer (as required)	32—Cap Screw (3 used)
3—O-Ring	14—Gasket	24—Washer (4 used)	33—Sensor
4—Spring	15—Cover	25—Cap Screw (4 used)	34—O-Ring
5—Valve	16—Screen	26—Fitting	35—Washer (7 used)
6—Filter Element	17—Reservoir	27—Switch	36—Cap Screw (7 used)
7—Screw (3 used)	18—Plug	28—Lock Washer (Serial No. 538063—)	37—Washer (4 used) (Serial No. 538063—)
8—Filter	19—Union Fitting (2 used)	29—Nut (Serial No. 538063—)	38—Bumper (4 used) (Serial No. 538063—)
9—O-Ring	20—Tube	30—Angle	
10—Gasket	21—Relief Valve		
11—Nut (14 used)			

Replace parts as necessary.

TX,33,DW5009 -19-17JUL97-2/2

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Service Equipment And Tools

NOTE: Order tools from the U.S. SERVICE-GARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

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TX,4350,AB37 -19-20APR95-1/9

17-1/2 and 30 Ton Puller Set

Used to remove bearings.

TX,4350,AB37 -19-20APR95-2/9

Spring Scale

Used measure rolling torque of swing drive.

TX,4350,AB37 -19-20APR95-3/9

Lifting Brackets JT01748

Used with hoist to remove and install swing gearbox.

TX,4350,AB37 -19-20APR95-4/9

Swing Gearbox Pinion Holding Fixture¹ DFT1074

Used to hold swing motor pinion.

¹Fabricated tool, dealer made. (See Section 99 for instructions to make tools.)

Continued on next page

TX,4350,AB37 -19-20APR95-5/9

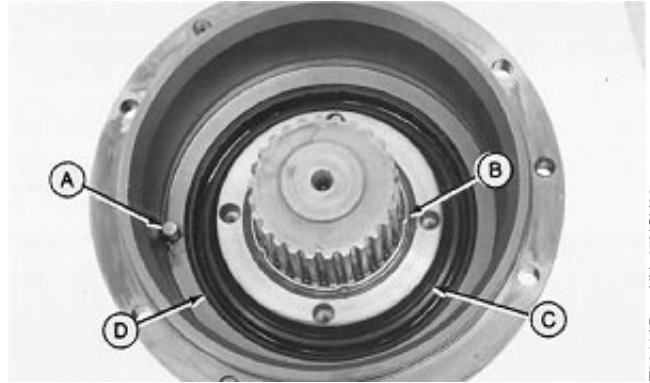
13. Install and clean magnet (A).

NOTE: Special nut is staked in five positions (B).

14. Hold pinion shaft using DFT1074 Swing Gearbox Pinion Holding Fixture. Remove special nut (C) using DF1054 Swing Gearbox Nut Spanner Wrench (E). (See Section 99 for instructions to make tools.)

15. Remove oil seal (D).

- A—Magnet
- B—Staking—5 Places
- C—Special Nut
- D—Oil Seal
- E—DF1054 Spanner Wrench



T6641AR -UN-07NOV88

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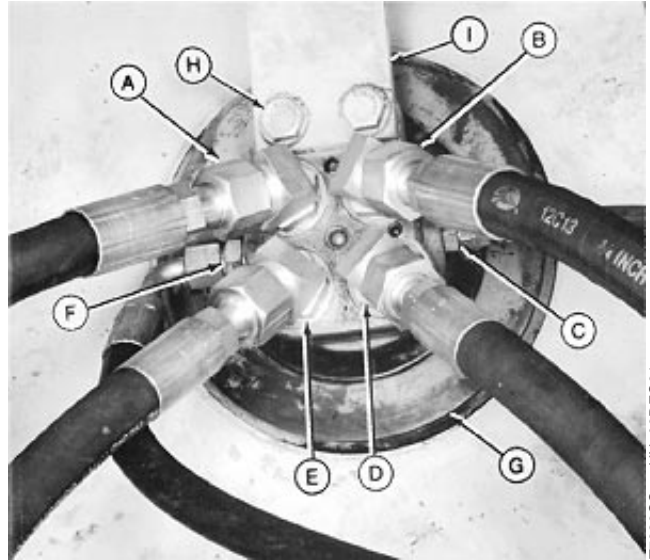
T7628BU -UN-06DEC91

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TX,43,DY2989 -19-27AUG97-8/13

6. Install cover (G).
7. Install strap (I). Install cap screws (H).
8. Connect lines (A—F).
9. Connect battery negative cable.
10. Remove chain from boom cylinder.

- A—Port 3-to-Left Propel Section B Port Line
- B—Port 1-to-Right Propel Section A Port Line
- C—P1 Port-to-Dual Solenoid Block A Port Line
- D—Port 2-to-Right Propel Section B Port Line
- E—Port 4-to-Left Propel Section A Port Line
- F—Drain Port-to-Reservoir Line
- G—Cover
- H—Cap Screw (2 used)
- I—Strap



T7626CC -UN-06DEC91

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TX,4350,GG280 -19-20APR95-2/3

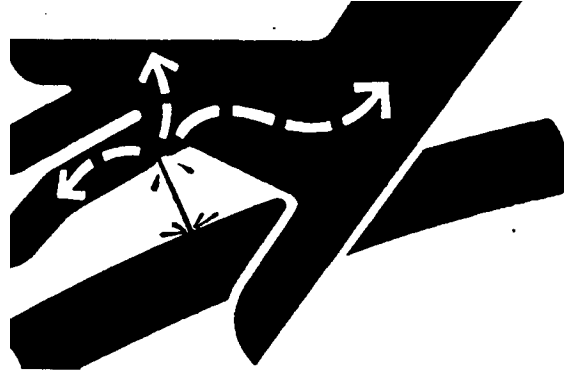
Remove And Install Swing Motor (Serial No. 556936—)



CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury may call the Deere & Company Medical Department in Moline Illinois, or other knowledgeable medical source.

1. Lower all equipment to ground.
2. Loosen reservoir fill cap to release air pressure from reservoir.



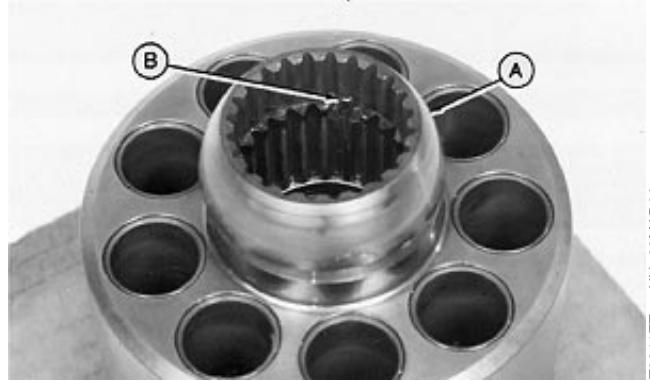
X9811 -UN-23AUG88

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TX,04,DT5072 -19-02JUL97-1/2

19. Apply petroleum jelly to pins (B). Install pins and ball guide (A) and align splines.



T6641ET -JUN-22MAR90

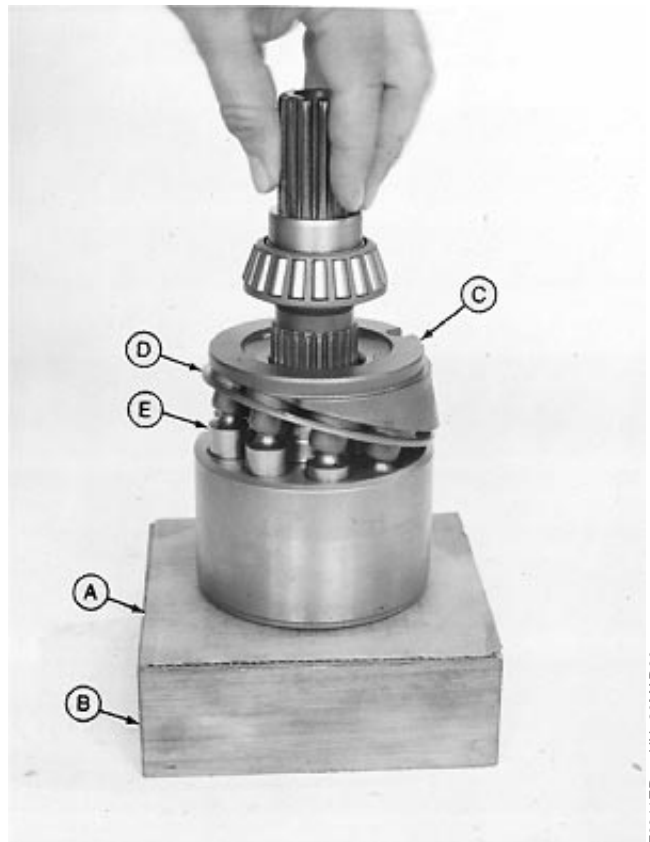
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TX,4360,AB40 -19-08JAN92-13/20

20. Install parts (C—E).

Install motor shaft using care not to move three pins in cylinder block.

- A—Cardboard
- B—Wood Support
- C—Swash Plate
- D—Retainer Plate
- E—Piston (9 used)

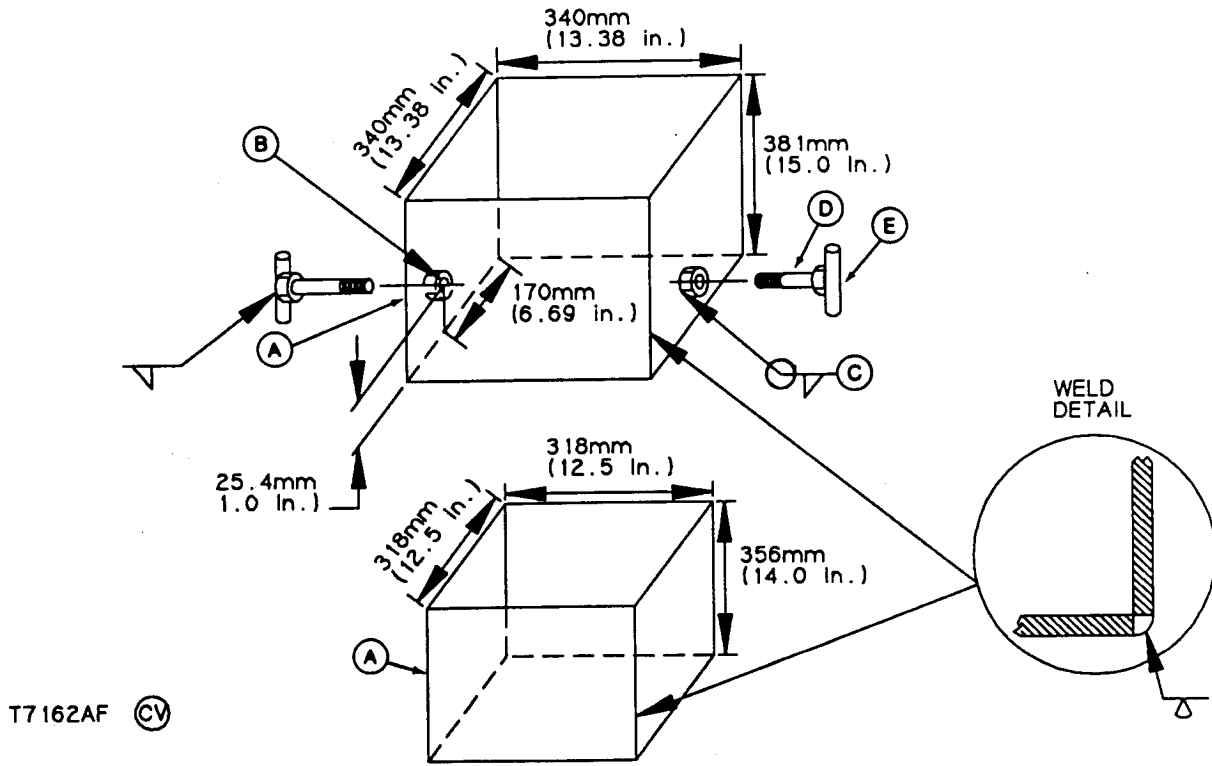


T6641ER -JUN-20MAR90

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TX,4360,AB40 -19-08JAN92-14/20

DFT1087 Track Recoil Spring Disassembly And Assembly Guard Tool



A—3/16 in. 1020 CR Steel Plate C—1/2 in. Nut (2 used)
 B—9/16 in. Hole (2 places)

D—1/2 x 2 in. Cap Screw (2 used)

E—1/2 x 3 in. Steel Round Stock (2 used)

Track Disassembly and Assembly Guard Tool is used with ST4920 Track Recoil Spring Disassembly and Assembly Tool.

- 3/16 in. 1020 CR Steel Plate (A)
- 1/2 in. Nut (C) (2 used)
- 1/2 x 2 in. Cap Screw (D) (2 used)
- 1/2 x 3 in. Steel Round Stock (E) (2 used)

Material required:

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9900
5

T7162AF -UN-17OCT89

TX.9900,BA499 -19-24SEP91-1/1

DFT1089 Barrel Support

Barrel supports are used to support the upperstructure when removing the undercarriage.

Material required:

CAUTION: Cutting tops off barrels that contained flammable or explosive material can cause serious injury or death.

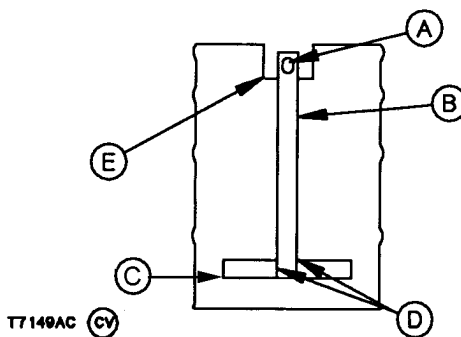
- Clean metal 55 gal barrels of equal height with lids removed. (Must be 34.5—35.5 in. height x 24 in. wide.)
- 1/2 x 4 x 24 in. 1020 CR Plate
- 1/2 x 4 x 12 in. 1020 CR Plate
- One empty 3 lb coffee can or equivalent
- Highway Cement (9 bag mix). Mix extra dry to aid curing time.

Insert hook assembly into barrel before cement is set. Hold assembly in position, using a steel plate or wire, until cement begins to cure.

Level off cement with top of barrels.

Cement must cure for a minimum of ten days.

The approximate weight of each barrel support is 545 kg (1200 lb). The approximate support capacity of each barrel support is 385 560 kg (850,000 lb).



- A—2 x 4 in. Slotted Hole, Recessed
- B—1/2 x 4 x 24 in. 1020 CR Plate
- C—1/2 x 4 x 12 in. 1020 CR Plate
- D—1/4 in. Fillet Weld
- E—One empty 3 lb coffee can or equivalent

T7149AC -JUN-08JAN97

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TX,9900,AA3912 -19-24SEP91-1/1

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