210LE Landscape Loader Repair

TECHNICAL MANUAL

TM1692 17AUG16 (ENGLISH)

For complete service information also see:

210LE Landscape Loader Operation and Test	TM1691
210LE Landscape Loader Operator's Manual	OTM186794
120 Series Hydraulic Cylinders	CTM120519
POWERTECH®4.5 L & 6.8 L Diesel Engines—Base Engine	CTM104
POWERTECH®4.5 L & 6.8 L Diesel Engines—Mechanical Fuel Systems	CTM207
POWERTECH®4.5 L & 6.8 L Diesel Engines—Level 12 Electronic Fuel System with DE10 Pump	CTM331
Alternators and Starting Motors	CTM77
Front Wheel Drive Axles—AS and MS Series	CTM4687
Hydraulic Cylinders	CTM120519
Super Caddy Oil Cleanup Procedure	CTM310
Specifications Manual	SP458VOL2

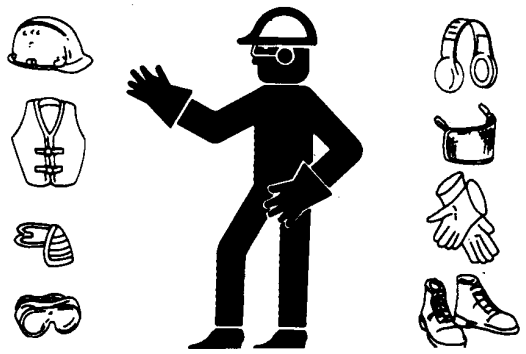
Worldwide Construction And Forestry Division
PRINTED IN U.S.A.

Wear Protective Equipment

Guard against injury from flying pieces of metal or debris; wear goggles or safety glasses.

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing. Wear suitable hearing protection such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



TS206 —UN—15APR13

TX03679,00016D0 -19-05MAY10-1/1

Avoid Unauthorized Machine Modifications

Modifications of this machine, or addition of unapproved products or attachments, may affect machine stability or reliability, and may create a hazard for the operator or others near the machine. The installer of any modification which may affect the electronic controls of this machine is responsible for establishing that the modification does not adversely affect the machine or its performance.

Always contact an authorized dealer before making machine modifications that change the intended use, weight or balance of the machine, or that alter machine controls, performance or reliability.

TX03679,00016B7 -19-12MAY03-1/1

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—15APR13

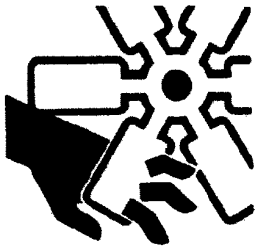
TX03679,0001734 -19-08JAN08-1/1

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—15APR13

TX03679,00016D2 -19-08JAN08-1/1

Remove Paint Before Welding or Heating

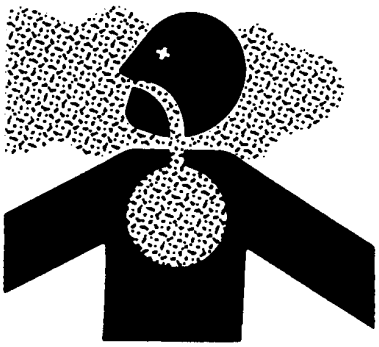
Avoid potentially toxic fumes and dust.

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—15APR13

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.

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.

Remove paint properly. Do not inhale paint dust or fumes. Use a qualified welding technician for structural repairs.

T133547 —UN—15APR13

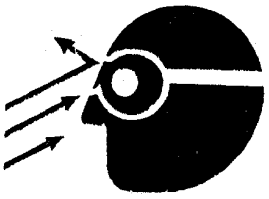
Make sure there is good ventilation. Wear eye protection and protective equipment when welding.

TX03679,00016D5 -19-24SEP07-1/1

Drive Metal Pins Safely

Always wear protective goggles or safety glasses and other protective equipment before striking hardened parts. Hammering hardened metal parts such as pins and bucket teeth may dislodge chips at high velocity.

Use a soft hammer or a brass bar between hammer and object to prevent chipping.



T133738 —UN—15APR13

TX03679,0001745 -19-07SEP06-1/1

3. Inspect all parts for damage; replace parts as necessary.
4. Make sure all parts are clean and free from rust or grease before assembly.
5. To prevent slipping of the wheel under load, the inside and outside of wheel must be free of paint, rust, oil, grease, dirt or other foreign material before installation.
6. Install valve stem (B) in rim base (A) and tighten valve core housing finger tight.

CAUTION: Serious bodily injury can occur from explosion when mounting and inflating tires if safe procedures are not followed.

7. Before mounting tire on rim (C), add soap lubricant to bead of the tire.
8. Clear area of all persons.

A—Rim Base
B—Valve Stem
C—Rim

T91802 —UN—13FEB90

Continued on next page

TX,01,BD2812 -19-16DEC03-2/3

16. Install hub cover plug (9) and tighten to specification.

Specification	
Wheel Hub Cover Plug (Carraro)—Torque	15 N·m (11 lb-ft)

17. Install wheel. See Remove and Install Front Wheel Assembly in Group 0110.

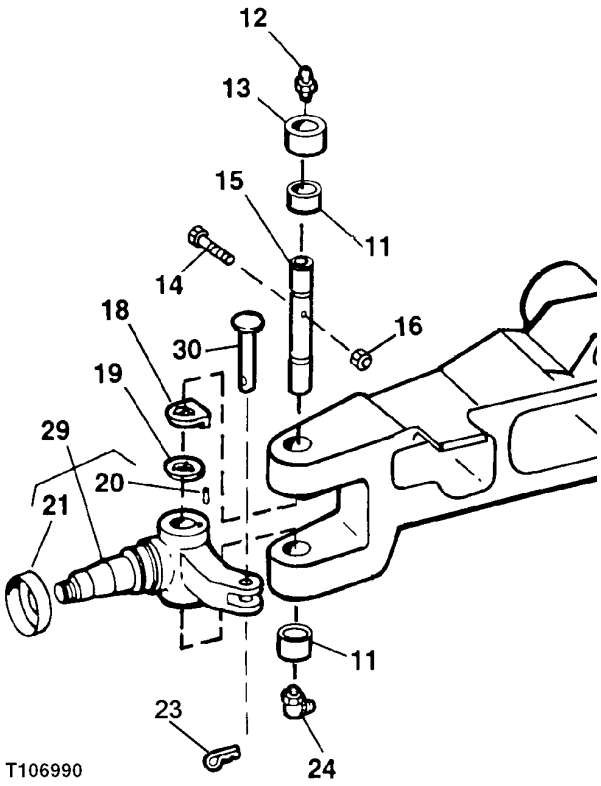
OUO1020,00013A5 -19-17DEC03-2/2

Remove and Install Spindle and Knuckle Assembly

1. Remove hub. See Remove and Install Hub Assembly in this group.
2. Remove cotter pin (23) and pin (30) to disconnect tie rod.
3. Remove cap screw (14).
4. Remove king pin (15) using a soft steel rod.
5. Remove knuckle (29) with thrust washers (18 and 19).
6. Inspect thrust washers (18 and 19) for wear or damage. Remove spring pin (20) only if replacement is necessary.
7. Inspect all parts for wear or damage including axle bushings.
8. Remove seal (13) from upper pivot bore.
9. Remove upper and lower bushings (11) using a bushing, bearing, and seal driver set.
10. Apply cure primer, then retaining compound (maximum strength) to OD of new bushings. Install bushings even to 3 mm (0.01 in.) below inner surface of axle casting.
11. Install new seals tight against bushings.
12. Install new knuckle spring pin, if removed.
13. Install thrust washers and knuckle.
14. Install king pin.
15. Install and tighten cap screw (14) to specification.

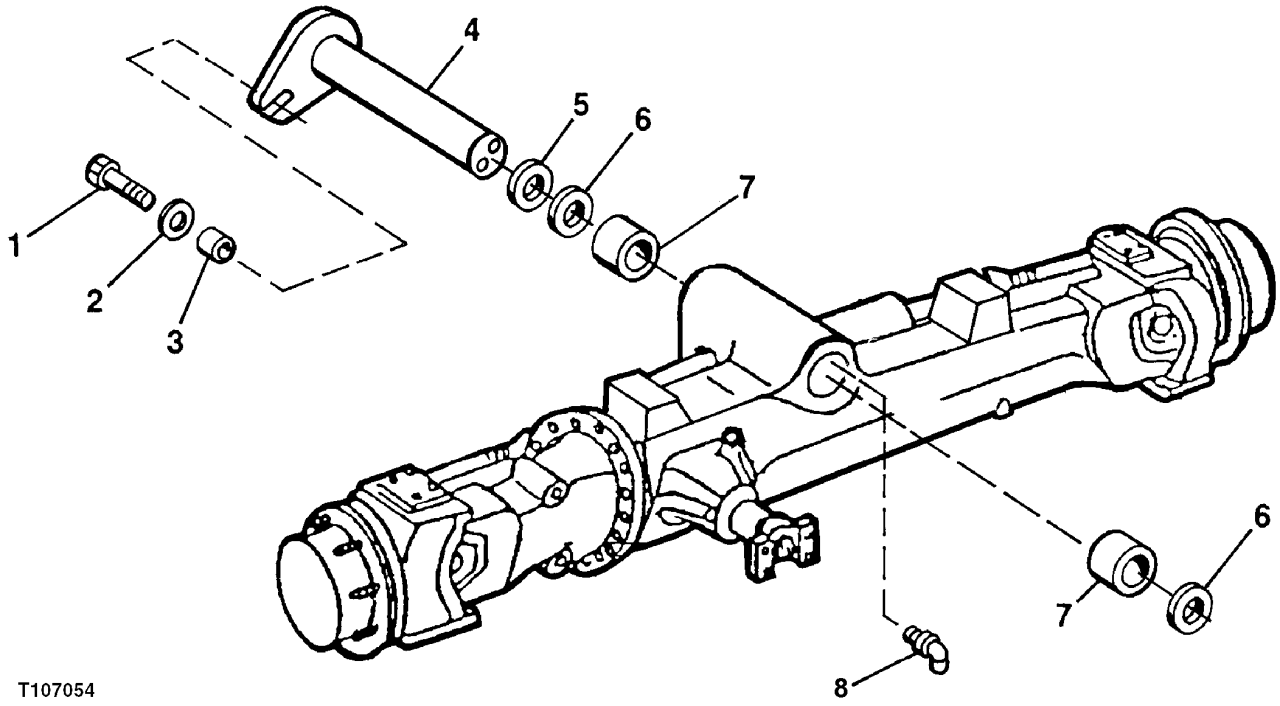
Specification	
Steering Knuckle-to-King Pin Cap Screw—Torque	47 N·m (35 lb-ft)

16. Align tie rod to install pin and cotter pin.
17. Install hub. See Remove and Install Hub Assembly in this group.



11— Bushing
12— Lubrication Fitting
13— Seal
14— Cap Screw
15— King Pin
16— Lock Nut
18— Thrust Washer
19— Thrust Washer
20— Spring Pin
21— Dust Shield
23— Cotter Pin
24— Lubrication Fitting
29— Knuckle
30— Pin

OUO1072,0000BE0 -19-03NOV03-1/1



T107054

T107054 —UN—12AUG98

1— Cap Screw
2— Washer
3— Bushing
4— Pin
5— Thrust Washer (as required)
6— Thrust Washer (2 used)
7— Bushing (2 used)
8— Adapter (2 used)

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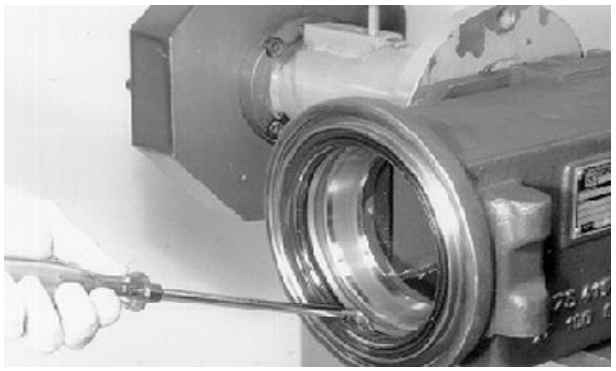
CED,OUO1010,713 -19-24AUG99-2/3

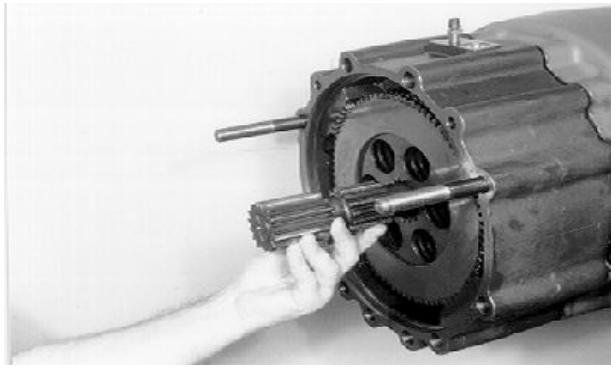
15. Remove and discard shaft seal. If necessary, use a brass rod to drive outer bearing races from axle housing.



T105085 —UN—14JAN97

TX,02,YY2202 -19-02DEC03-9/24

16. Remove sun gear shaft from differential.



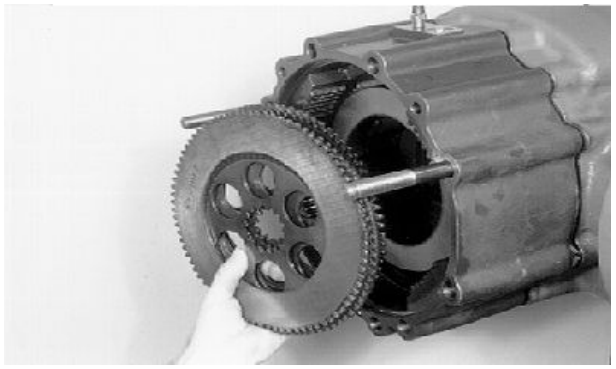
T105086 —UN—14JAN97

TX,02,YY2202 -19-02DEC03-10/24

17. Remove backing plate, brake disks, and separator plates from housing.
18. Inspect parts for wear or damage. Check thickness of brake disk. Replace if less than specification.

Specification

Brake Disk—Thickness.....5 mm Minimum (0.197 in.) Minimum



T105087 —UN—14JAN97

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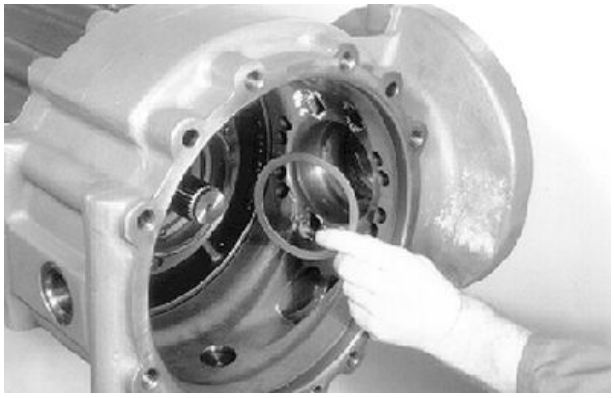
TX,02,YY2202 -19-02DEC03-11/24

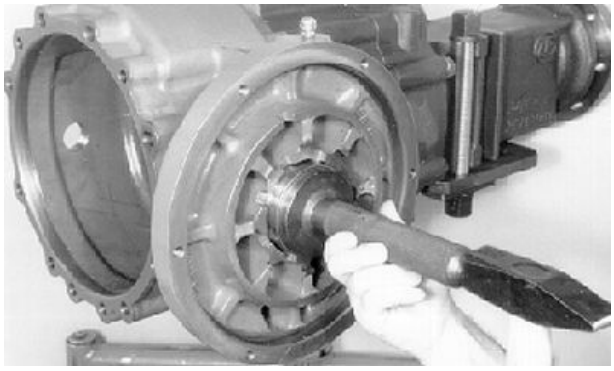
18. Install shims and inner bearing race in housing.



T105121 —UN—14JAN97

TX,02,YY2215 -19-01DEC03-14/42

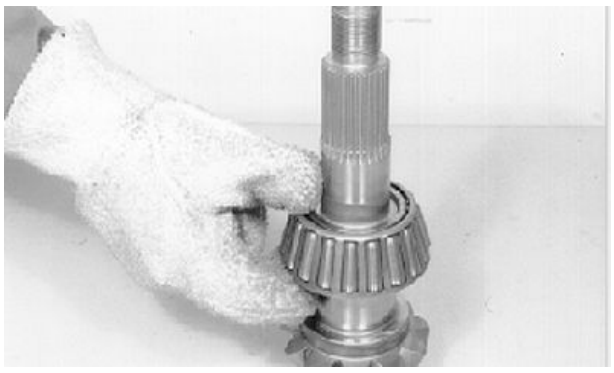
19. Install outer bearing race until bottomed in bore.



T105123 —UN—14JAN97

TX,02,YY2215 -19-01DEC03-15/42

20. Heat inner roller bearing and install on pinion shaft. Be sure bearing is bottomed on shoulder of pinion shaft.



T105124 —UN—14JAN97

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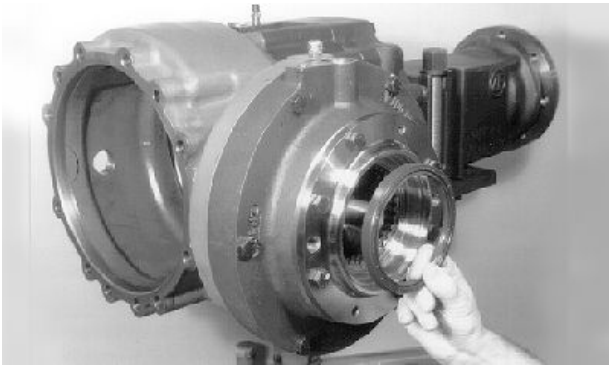
TX,02,YY2215 -19-01DEC03-16/42

52. Install shaft seal with lip of seal facing brake plates. Seal can be driven even with shoulder of housing using JDG1059. Seal must be installed 1.5—2.0 mm below shoulder. This can be done by using a washer and a brass drift. Position the drift over a part of the washer and the shoulder and gently tap seal until drift is bottomed on shoulder.



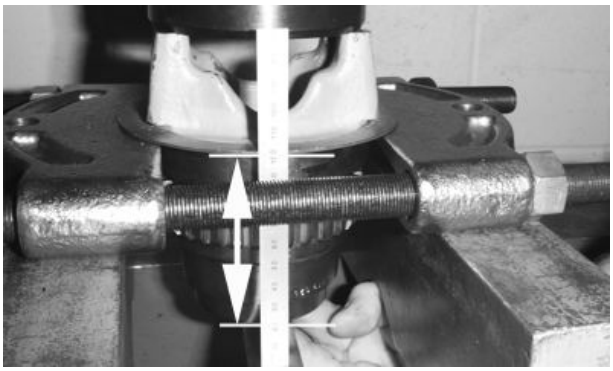
T106490 —UN—16JAN97

TX,02,YY2215 -19-01DEC03-38/42

53. Install sleeve on drive flange (as shown) 100 mm (4.0 in.) from flange end using a knife edge puller and a press.

Specification

Sleeve-to-Flange End—Distance	100 mm (4.0 in.)



T108145B —UN—13MAR97

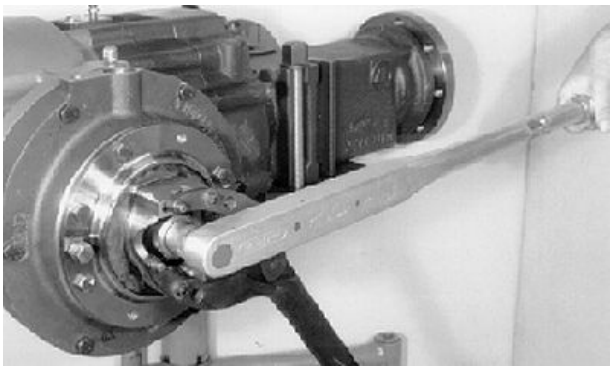
TX,02,YY2215 -19-01DEC03-39/42

54. Apply cure primer, then thread lock and sealer (medium strength) to pinion shaft threads.

55. Install drive flange and washer. Install and tighten nut to specification.

Specification

Rear Axle Pinion Shaft Nut—Torque	600 N·m (443 lb-ft)



T106491 —UN—16JAN97

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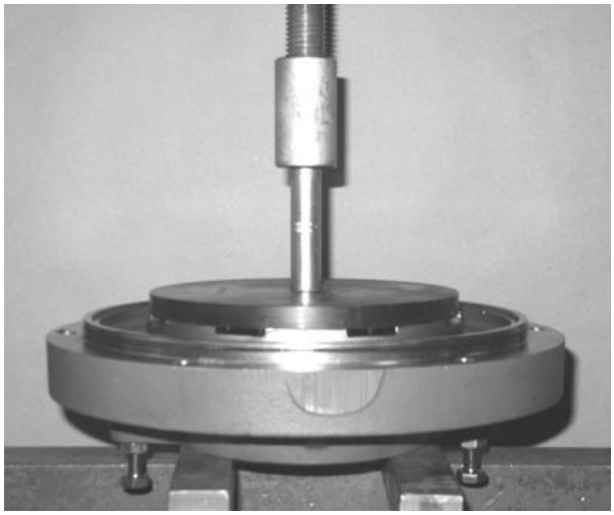
TX,02,YY2215 -19-01DEC03-40/42

25. CAREFULLY press piston into the brake housing until piston is fully seated using hand operated press.

IMPORTANT: Be careful to not roll O-ring out of groove while installing piston.

NOTE: If John Deere tool JDG1123 is not available, a flat plate at least 191 mm (7 1/2 in) diameter and 13 mm (1/2 in) thick may be used to install piston in housing.

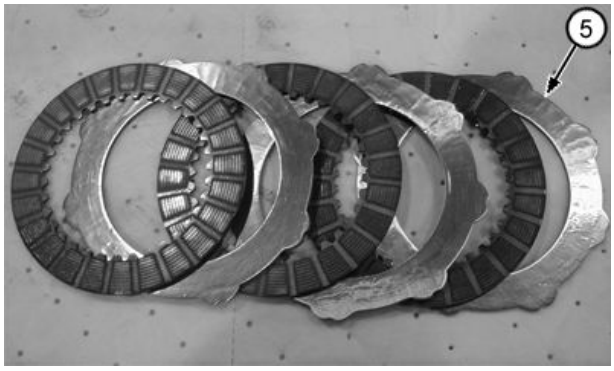


T152645B —UN—19MAR02

DW09104,000000A -19-01DEC03-21/42

26. Install brake pack as shown. Start with wear plate (5).

5— Wear Plate



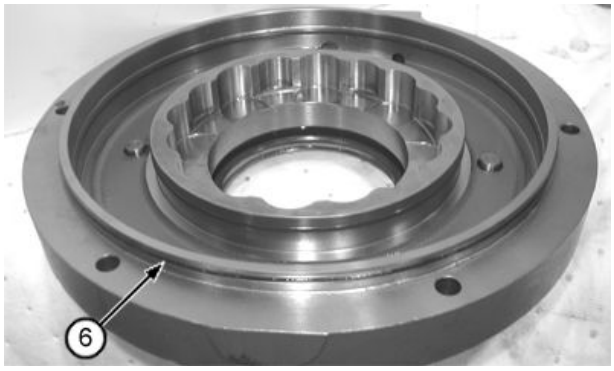
T152614B —UN—21MAR02

DW09104,000000A -19-01DEC03-22/42

27. Apply petroleum jelly to O-ring (6) and insert into housing cover groove.
28. Record dimension (X) stamped on top center of rear axle housing.

EXAMPLE OF DIMENSION X	
(X) Equals	173.24 mm (6.82 in.)

6— O-Ring



T152632B —UN—21MAR02

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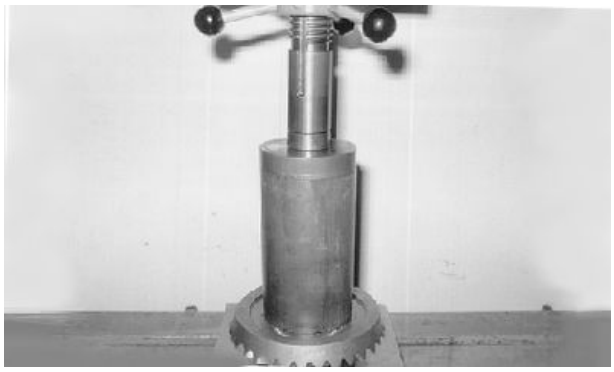
DW09104,000000A -19-01DEC03-23/42

NOTE: Make sure spring pins are aligned with bores in bevel gear.

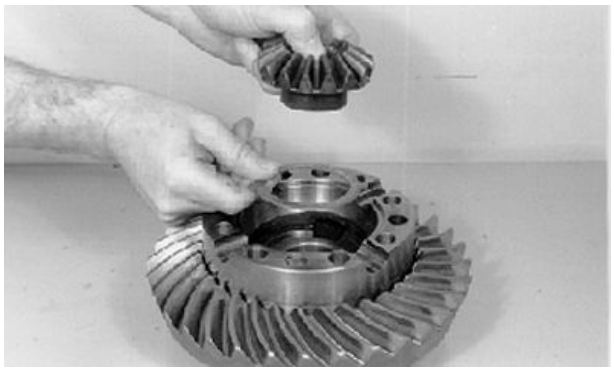
2. Press ring gear on differential hub until bottomed.



T106496 —UN—16JAN97

TX,02,YY2217 -19-26MAY99-2/49

3. Install thrust washer and side gear.



T106497 —UN—16JAN97

TX,02,YY2217 -19-26MAY99-3/49

IMPORTANT: Thrust washers on outer edge of pinion gears MUST be installed with locking tabs upward. If thrust washers are not installed properly premature failure of pinion assembly will occur.

4. Install pinion assembly.

T106498 —UN—16JAN97

Continued on next page

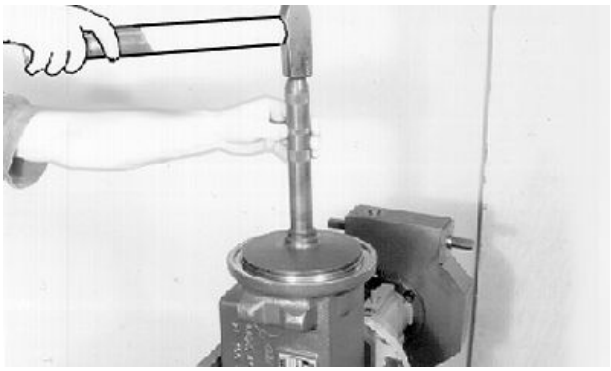
TX,02,YY2217 -19-26MAY99-4/49

39. Install both axle housing bearing races until bottomed.

T106585 —UN—17JAN97

TX,02,YY2217 -19-26MAY99-30/49

40. Install axle seal with lips of seal facing toward brake housing using a JDG1059 Axle Seal Installer.



T106586 —UN—21MAR97

TX,02,YY2217 -19-26MAY99-31/49

41. Install axle shaft using a hoist.

T105082 —UN—14JAN97

Continued on next page

TX,02,YY2217 -19-26MAY99-32/49

Section 03
Transmission

Contents

Page

Group 0300—Removal and Installation
Specifications 03-0300-1
Remove and Install Transmission..... 03-0300-1

Group 0315—Controls Linkage
Other Material..... 03-0315-1
Specifications 03-0315-1
Remove and Install Transmission Gearshift Lever 03-0315-1
Remove Shift Lever and Housing..... 03-0315-4
Disassemble and Assemble Shift Lever and Housing 03-0315-6
Install Shift Lever and Housing..... 03-0315-9

Group 0350—Gears, Shafts, Bearings, and Power Shift Clutch
Essential Tools..... 03-0350-1
Service Equipment and Tools 03-0350-1
Other Material..... 03-0350-2
Specifications 03-0350-3
Transmission, Disassemble and Assemble Manual Shift
Remove Outer Components 03-0350-4
Transmission, Disassemble and Assemble
Disassemble Converter Side of Case ...03-0350-8
Remove Oil Suction Tube 03-0350-11
Remove Reverse and Forward Clutch Packs.....03-0350-11
Disassemble and Assemble Reverse or Forward Clutch Pack.....03-0350-11
Remove Drive Shaft 03-0350-21
Disassemble and Assemble Drive Shaft 03-0350-21
Remove Rear Output Shaft with Synchronizer 03-0350-23
Remove Intermediate Shaft with Synchronizer 03-0350-24
Disassemble Rear Output or Intermediate Shaft with Synchronizer.....03-0350-24
Rear Output Shaft—Cross Section View 03-0350-28
Intermediate Shaft—Cross Section View 03-0350-29
Assemble Rear Output or Intermediate Shaft 03-0350-29
Remove MFWD Output Shaft (If Equipped)..... 03-0350-35
Disassemble MFWD Shaft 03-0350-35
MFWD Shaft—Cross Section View.....03-0350-38
Assemble MFWD Shaft.....03-0350-39
Remove, Disassemble, and Assemble Idler Shaft 03-0350-41
Remove and Install Oil Supply Tube ...03-0350-42

Page

Install Idler and MFWD Shafts to Assemble Transmission 03-0350-42
Install Intermediate and Rear Output Shafts 03-0350-45
Install Drive Shaft 03-0350-46
Install Forward and Reverse Clutch Packs 03-0350-47
Install Oil Suction Tube 03-0350-48
Assemble Converter Side of Case 03-0350-49
Install Outer Components to Assemble Transmission 03-0350-52
Powershift Transmission
Remove Outer component to Disassemble Trans. 03-0350-58
Disassemble Converter Side of Case ..03-0350-60
Remove Low Range Forward, Reverse and Third Speed Clutch Packs 03-0350-62
Disassemble and Assemble Low Range Forward, Reverse and Third Speed Clutch Packs ..03-0350-63
Remove Low Range Forward, Reverse and Third Speed Clutch Packs 03-0350-73
Disassemble and Assemble 1st Speed, 2nd Speed and High Range Forward Clutch Packs 03-0350-73
Remove Drive Shaft 03-0350-84
Disassemble and Assemble Drive Shaft 03-0350-84
Remove MFWD Output Shaft (If Equipped)..... 03-0350-86
Disassemble MFWD Shaft (If Equipped) 03-0350-88
Assemble MFWD Shaft (If Equipped) ..03-0350-90
Remove Oil Suction Tube 03-0350-92
Remove and Install Oil Supply Tubes ..03-0350-93
Install Oil Suction Tube 03-0350-94
Install MFWD Shaft (If Equipped) to Assembe Trans. 03-0350-94
Install Drive Shaft 03-0350-95
Install Clutch Packs.....03-0350-96
Assemble Converter Side of Case 03-0350-97
Install Outer Components to Assemble Transmission—Power Shift 03-0350-101

Group 0360—Hydraulic System
Other Material..... 03-0360-1
Specifications 03-0360-1
Manual Shift Transmission
Remove and Install Control Valve 03-0360-2
Disassemble and Assemble Control Valve 03-0360-2
Remove and Install Charge Pump 03-0360-11

Continued on next page

Other Material

Number	Name	Use
TY21517 (U.S.) NA (Canadian) 454 (LOCTITE®)	Instant Gel Adhesive	Apply to threads of shift lever knob.
TY16285 (U.S.) TY9485 (Canadian) 7649 (LOCTITE®)	Cure Primer	Apply to mounting surfaces of shift lever housing and transmission prior to application of adhesives and sealants. Apply to threads of shift lever knob prior to application of adhesives and sealants.
TY16021 (U.S.) TY9484 (Canadian) 17430 (LOCTITE®)	High Flex Form-In-Place Gasket	Apply to mounting surfaces of shift lever housing and transmission.

LOCTITE is a registered trademark of Loctite Corp.

CED,OUO1032,1432 -19-22JUL99-1/1

Specifications

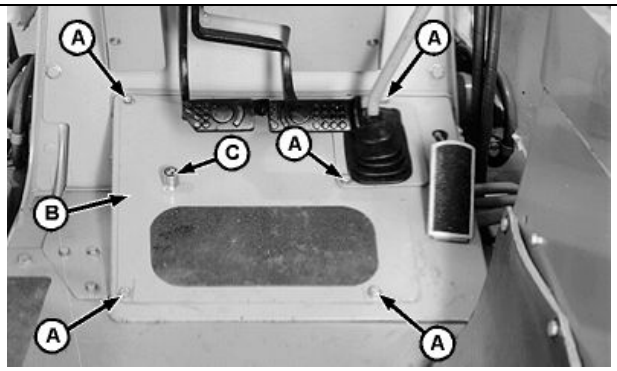
Item	Measurement	Specification
Boot Retainer-to-Shift Housing Cap Screws	Torque	9.5 N·m (84 lb-in.)
End of Shift Rails-to-Face of Shift Lever Housing	Distance	85 mm (3.35 in.) Approximate
Shift Lever Housing-to-Transmission Cap Screws	Torque	23 N·m (204 lb-in.)
Shift Lever Housing Plugs	Torque	25 N·m (216 lb-in.)
Shift Lever Detent Plugs	Torque	25 N·m (216 lb-in.)

CED,OUO1065,62 -19-04OCT99-1/1

Remove and Install Transmission Gearshift Lever

1. Remove cap screws (A).
2. Disconnect harness from differential lock switch (C). Remove floor plate (B).

A—Cap Screws (5 used)
B—Floor Plate
C—Differential Lock Switch



T109778 —UN—30JUN97

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TX,03,BD2820 -19-08JAN04-1/3

Essential Tools

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

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CED,TX03399,5728 -19-08DEC99-1/4

Shaft Seal Installer JDG1057	Used to install shaft seal MFWD shaft.

CED,TX03399,5728 -19-08DEC99-2/4

Power Shift Clutch Pack Snap Ring Removal and Installation Tool..... DFT1162[1]	Used to remove and install clutch pack snap rings.

[1]Dealer Fabricated Tool. See Group 9900 for instructions to make tool.

CED,TX03399,5728 -19-08DEC99-3/4

MFWD Shaft Snap Ring Removal and Installation Tool ..... DFT1163[1]	Used to remove and install MFWD shaft snap rings on power shift transmission.

[1]Dealer Fabricated Tool. See Group 9900 for instructions to make tool.

CED,TX03399,5728 -19-08DEC99-4/4

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

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CED,TX03399,5729 -19-01SEP06-1/3

Repair Stand..... D01003AA	Used to disassemble and assemble transmission.

CED,TX03399,5729 -19-01SEP06-2/3

Transmission Support Bracket[1] DFT1143	Used to support transmission in repair stand.

[1]Fabricated tool, dealer made. (See Section 0399 for instructions to make tool.)

CED,TX03399,5729 -19-01SEP06-3/3

Remove Oil Suction Tube—Manual Shift

1. Loosen oil suction tube screw.
2. Remove oil suction tube.

T101525 —UN—28JUN96

TX,0350,SS3424 -19-12NOV03-1/1

Remove Reverse and Forward Clutch Packs—Manual Shift

IMPORTANT: Clutch pack assemblies, reverse and forward, must be installed back into same bore as removed. Mark clutch pack assemblies front and back before removing.

1. Mark and remove reverse clutch pack assembly.
2. Mark and remove forward clutch pack assembly.

T101526 —UN—28JUN96

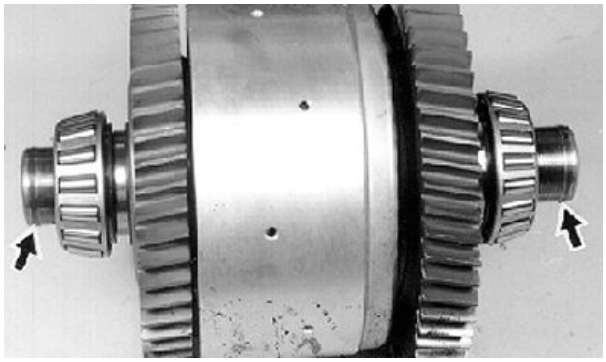
TX,0350,SS3423 -19-12NOV03-1/1

Disassemble and Assemble Reverse or Forward Clutch Pack—Manual Shift

1. Remove sealing rings (arrows).

IMPORTANT: Always keep bearing cones and bearing cups as a matched set. If either requires replacement, both must be replaced.

2. Remove bearing cones (press fit) (one on each side).



T101527 —UN—17OCT96

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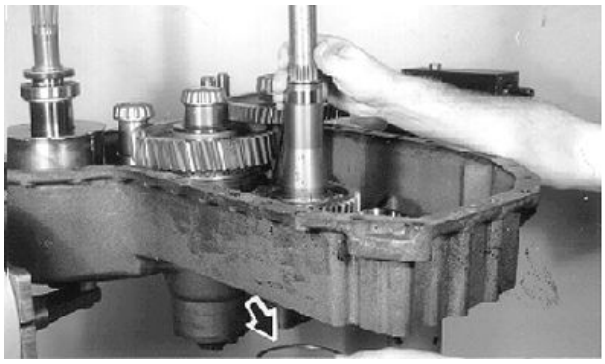
TX,03,BD2839 -19-12NOV03-1/20

Remove Drive Shaft—Manual Shift

Remove snap ring (arrow) from groove of ball bearing at bottom end of shaft. Remove drive shaft.

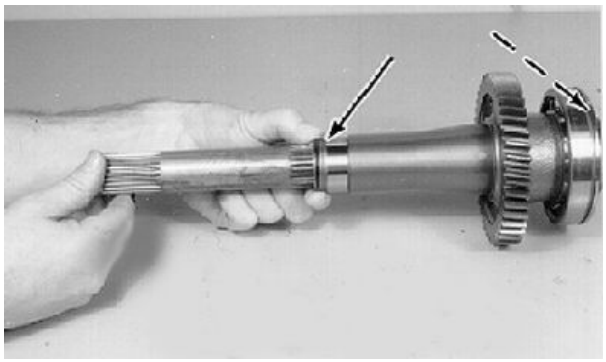


T101540 —UN—22OCT96

TX,0350,SS3426 -19-12NOV03-1/1

Disassemble and Assemble Drive Shaft—Manual Shift

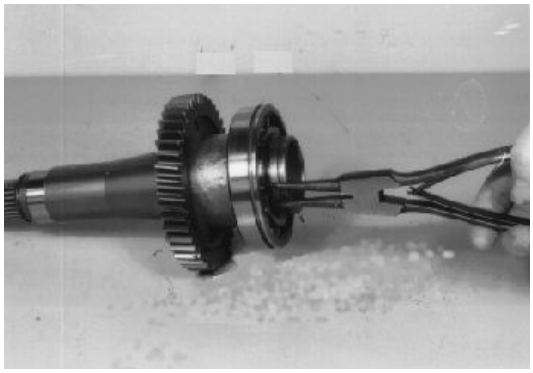
1. Remove sealing rings (arrows).



T101541 —UN—22OCT96

TX,0350,SS3427 -19-12NOV03-1/5

2. Remove snap ring.



T101542 —UN—08JUL96

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TX,0350,SS3427 -19-12NOV03-2/5

6. Press synchronizer hub on shaft and against shaft shoulder.
7. Rotate synchronizer ring so its tabs fit in recesses of synchronizer hub.

T104664 —UN—29OCT96

TX,03,BG154 -19-12NOV03-5/15

8. Install synchronizer assembly sliding collar over hub. Insert synchronizer assembly springs and detents (3 used) into hub.

T104665 —UN—29OCT96

TX,03,BG154 -19-12NOV03-6/15

9. Install second synchronizer ring. Align marks made during disassembly if re-using ring.

T104666 —UN—29OCT96

Continued on next page

TX,03,BG154 -19-12NOV03-7/15

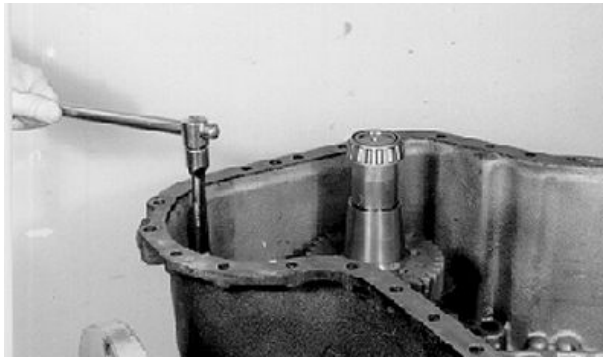
7. Install bearing (bearing is a press fit). Install sealing ring.

T104565 —UN—22OCT96

TX,03,BD2829 -19-12NOV03-7/7

Remove, Disassemble, and Assemble Idler Shaft—Manual Shift

1. Loosen cap screws on idler shaft shield.



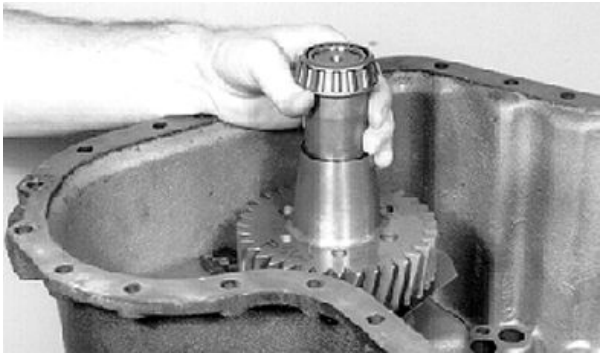
T102272 —UN—10OCT96

TX,0350,SS3434 -19-12NOV03-1/3

2. Remove idler shaft and shield.

IMPORTANT: Always keep bearing cones and bearing cups as a matched set. If either requires replacement, both must be replaced.

3. Remove bearing cones from both ends of shaft. Bearing cones are a press fit.
4. Press new bearings onto shaft.



T102273 —UN—10OCT96

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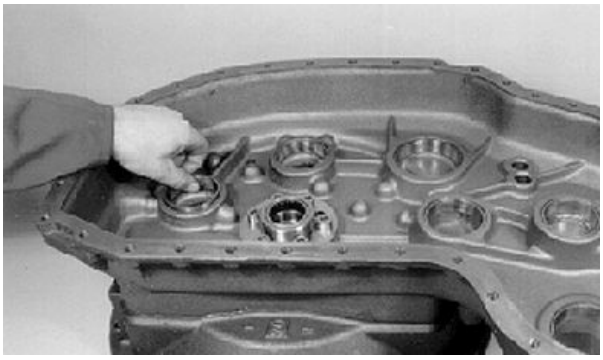
TX,0350,SS3434 -19-12NOV03-2/3

12. Install new bearing cups or ensure old bearing cups are returned to same bore with matching bearing cones.



T104717 —UN—31OCT96

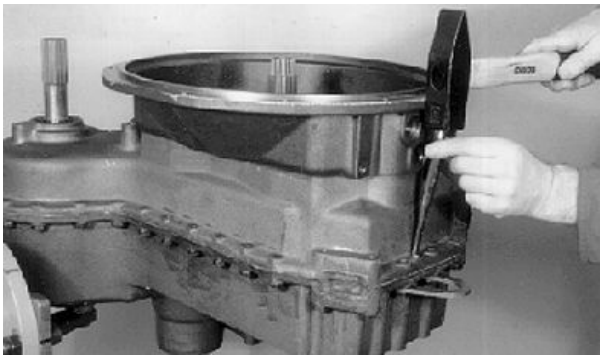
TX,0350,SS3440 -19-12NOV03-7/10

13. Install eyebolts and a hoist.
14. Apply cure primer, then High Flex Form-in-Place Gasket to the surface of the two transmission case halves. Check the sealing ring positions of the different shafts.
15. Align the dowel holes.

T104718 —UN—31OCT96

TX,0350,SS3440 -19-12NOV03-8/10

16. Install dowels and cap screws.



T104719 —UN—31OCT96

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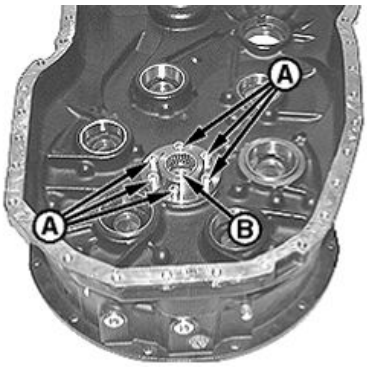
TX,0350,SS3440 -19-12NOV03-9/10

7. Remove six socket-head screws (A) and pull stator shaft out.
8. Inspect bushing (B) and replace if necessary.

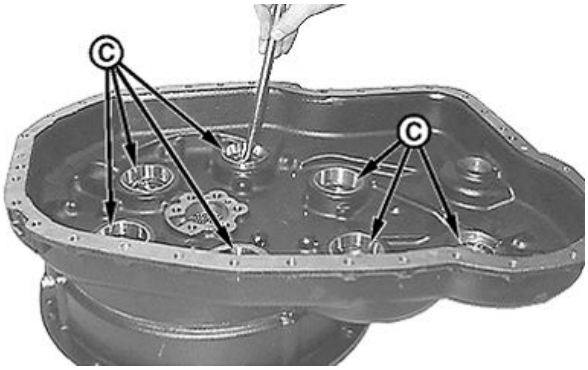
IMPORTANT: If either the bearing cone or cup requires replacement, replace both as a set.

9. Remove bearing cups (C), if necessary.
10. Install eyebolts. Using chain and hoist, remove transmission case (D) from converter housing (E).
11. Inspect and replace torque converter bushing (arrow), if necessary. (See Assemble Converter Side of Case—Power Shift, in this group, for correct installation of bushing.)

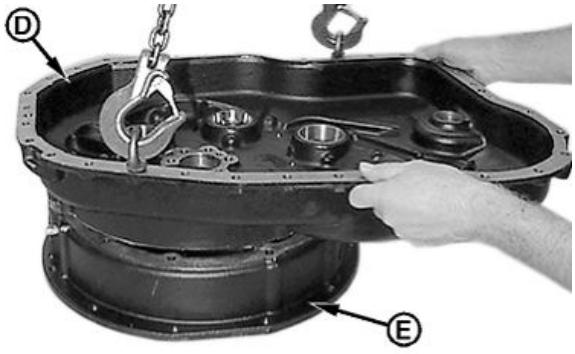
A—Socket-Head Screw (6 used)
B—Bushing
C—Bearing Cup (7 used)
D—Transmission Case
E—Converter Housing



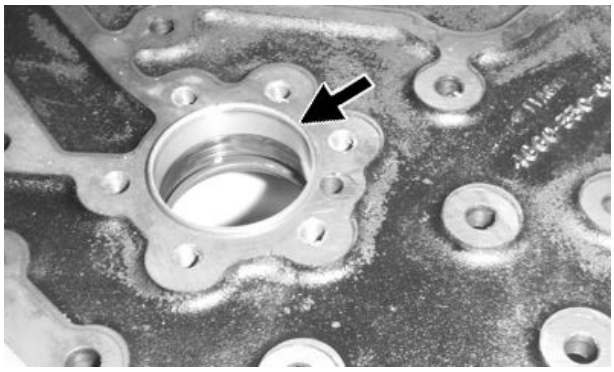
T117571B —UN—08OCT98



T117581 —UN—08OCT98



T117582 —UN—08OCT98



T108083B —UN—11MAR97

CED,OUO1032,1003 -19-05OCT98-2/2

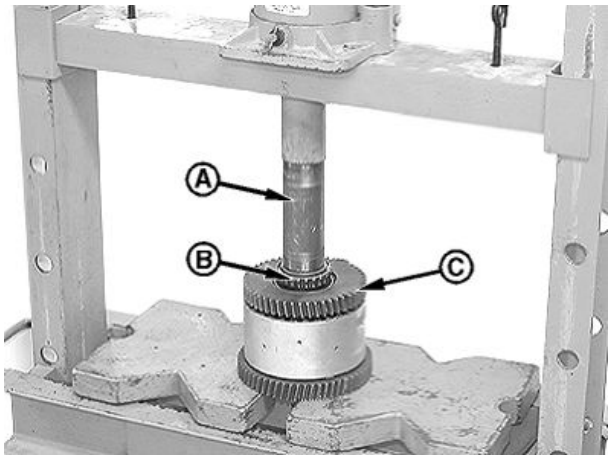
IMPORTANT: Do not preload the bearing. Hub must rotate relatively easily without any end play.

Use a hand press to install bearing cone (B). A motorized press will not provide the control needed to properly install the bearing.

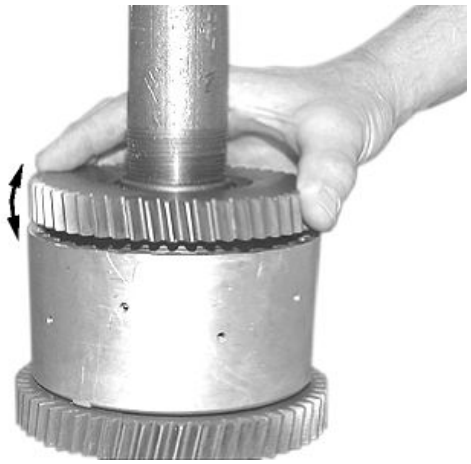
23. Install bearing cone (B) using piece of pipe (A) and a hand press (do not use a motorized press). Press the bearing cone on the shaft until bearing rollers just contact the outer race.

    Check for end play by rocking gear hub (C) up and down. Slowly push the bearing on the shaft while rocking the gear hub until no end play can be felt. Do not preload the bearing.

A—Piece of Pipe
B—Bearing Cone
C—Gear Hub



T115475C —UN—24SEP98



T115476B —UN—18MAY98

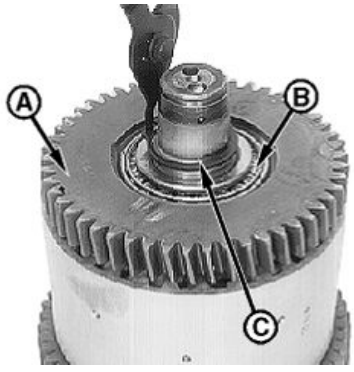
CED,OUO1032,723 -19-05JUN00-13/17

IMPORTANT: Use snap ring with correct thickness. Snap ring should have a thickness that fits the exposed width of the snap ring groove.

NOTE: The snap ring thickness is available in increments of 0.1 mm, from 2.5 mm to 3.2 mm.

24. Install snap ring (C).

A—Gear Hub
B—Bearing
C—Snap Ring



T117250 —UN—24SEP98

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CED,OUO1032,723 -19-05JUN00-14/17

NOTE: Keep bearings in same location on gear hub shaft if not replacing.

19. Inspect bearing and hub bearing surface (A). Replace if necessary.
20. Soak discs in oil for approximately 30 minutes prior to installation. Starting with a plate, alternately install plate and disc pack (D).

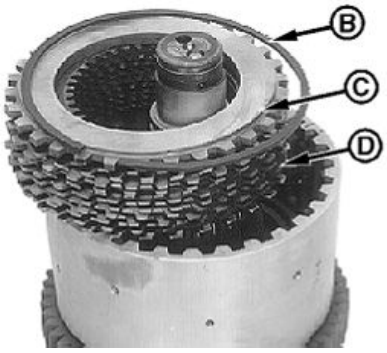
NOTE: If more than one snap ring is installed, stagger the snap ring openings.

21. Install end plate (C) and correct thickness of snap rings (B) determined in step 18.
22. Install snap ring (E).

A—Bearing and Hub Bearing Surface
B—Snap Ring (as required)
C—End Plate
D—Plate and Disc Pack
E—Snap Ring

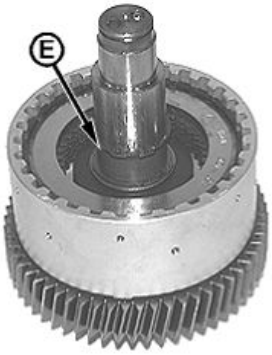
Hub

T117291B —UN—24SEP98



Plates, Discs, End Plate, and Snap Rings

T117249 —UN—24SEP98



Install Snap Ring

T117292B —UN—24SEP98

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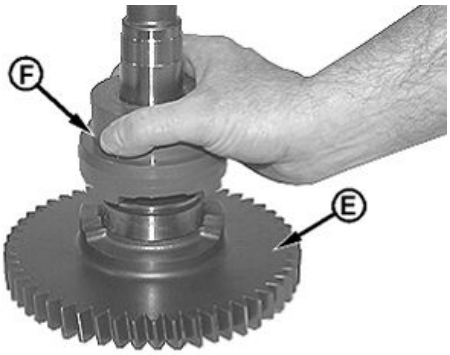
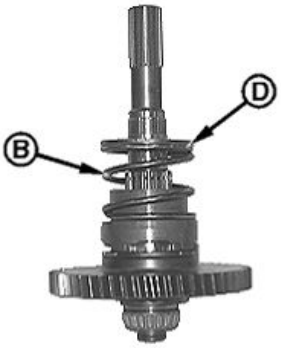
AG,OUO1032,726 -19-12JUL16-11/13

5. Oil sealing surfaces of sliding sleeve (F). Install sliding sleeve until engaged with spur gear (E).
6. Install spring (B) and backing plate (D).
7. Press spring (B) down using DFT1163 snap ring removal and Installation tool (A). (See DFT1163 MFWD Snap Ring Removal and Installation Tool in Group 9900 for instructions to make tool.)
8. Install cover (G) and spacer (H).
9. Press bearing (I) onto MFWD shaft.
10. Install new sealing ring on end of shaft.

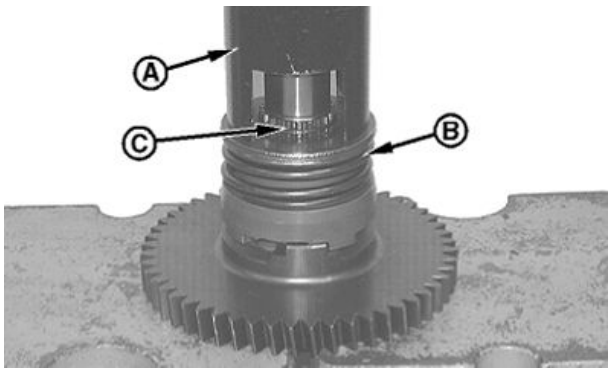
A—DFT1163 MFWD Shaft Snap Ring Removal and Installation Tool
B—Spring
C—Snap Ring
D—Backing Plate
E—Spur Gear
F—Sliding Sleeve
G—Cover
H—Spacer
I— Bearing



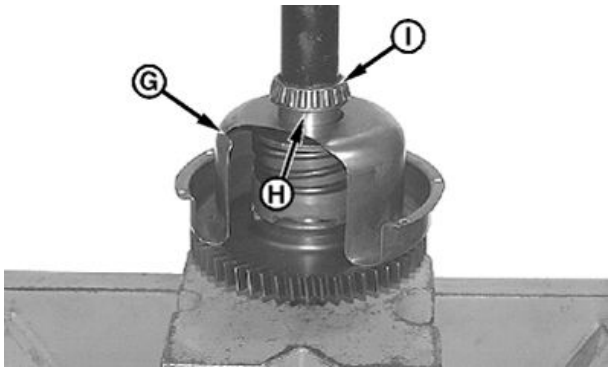
T117346B —UN—25SEP98



T117339B —UN—25SEP98



T117338B —UN—25SEP98



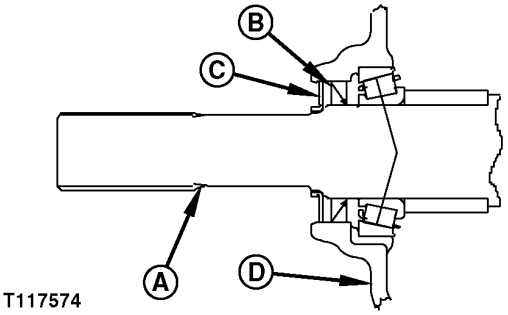
T117814B —UN—15OCT98

CED,OUO1032,733 -19-12NOV03-2/2

Install Outer Components to Assemble Transmission—Power Shift

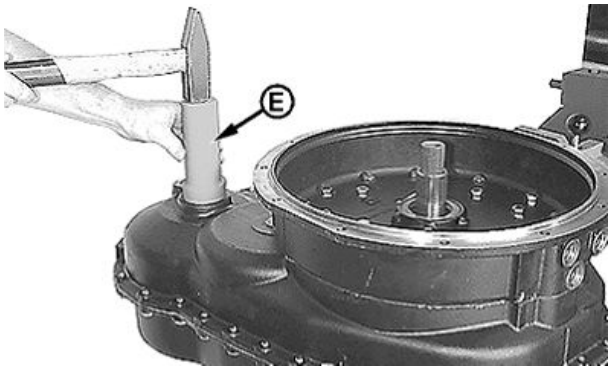
1. Apply a one-to-one mixture of alcohol and water to outer shell and rubber of seal.
2. Using a shaft seal installer (E), install shaft seal (B) with the sealing lip facing the oil chamber.
3. Install new cap (C) against shaft shoulder.

A—MFWD Output Shaft
B—Shaft Seal
C—Cap (Cover Plate)
D—Transmission Case
E—Seal Installer



T117574

T117574 —UN—08OCT98



T117595 —UN—09OCT98

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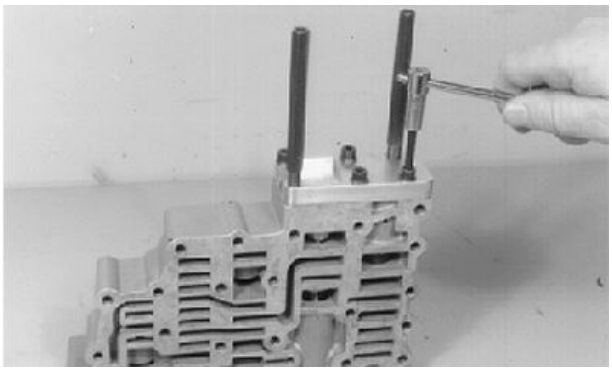
CED,OUO1032,1005 -19-26OCT99-1/5

CAUTION: Cover is spring loaded. Use care when removing cover.

10. Remove two cap screws and install two threaded dowels (M6) with nuts. Loosen nuts uniformly. Remove cap screws, cover and gasket.



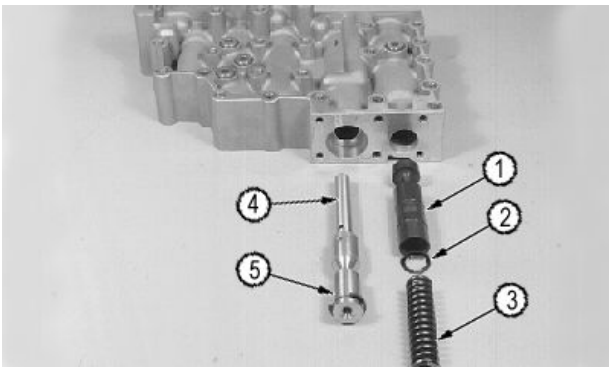
T106691 —UN—17JAN97

TX,0360,SS3655 -19-18AUG10-9/26

NOTE: One pressure regulating valve shim is equal to 115 kPa (1.15 bar) (17 psi). Measure shim thickness and select appropriate shim. See Transmission System Pressure Test in Group 9020-25 of operation and test manual.

11. Remove parts (1—5). Cover (on machine) can be removed to access regulating valve spool shim(s).

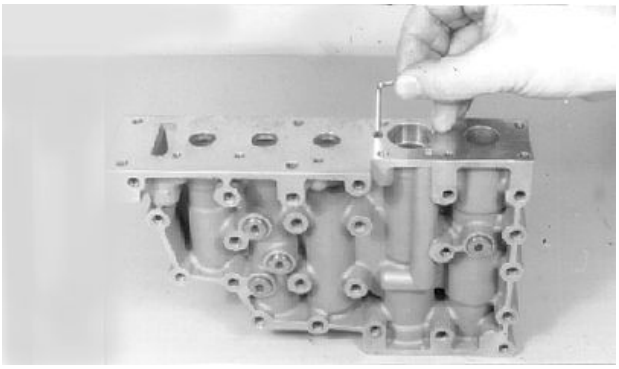
1— Pressure Regulating Valve Spool
2— Shim (as required)
3— Spring
4— Modulation Spool
5— Retaining Ring



T106692 —UN—06FEB97

TX,0360,SS3655 -19-18AUG10-10/26

12. Remove orifice. Check passage of orifice.



T106693 —UN—17JAN97

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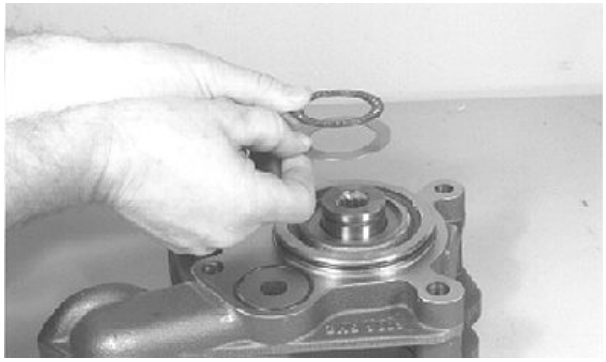
TX,0360,SS3655 -19-18AUG10-11/26

10. Install washer and needle bearing.



T104436 —UN—16OCT96

TX,0360,SS3656 -19-21OCT99-8/12

11. Install disk. (See previous line art for position of disk).

T104437 —UN—16OCT96

TX,0360,SS3656 -19-21OCT99-9/12

12. Install and lubricate O-ring.

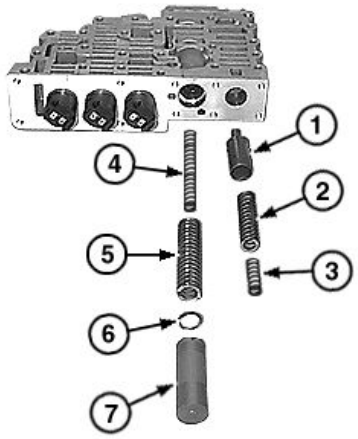
T104438 —UN—16OCT96

Continued on next page

TX,0360,SS3656 -19-21OCT99-10/12

21. Install parts (1—6).

1— Converter Relief Spool
2— Converter Relief Spring
3— Converter Relief Spring
4— Modulation Spring
5— Modulation Shim
6— Modulation Spool



TX1081044A —UN—25AUG10

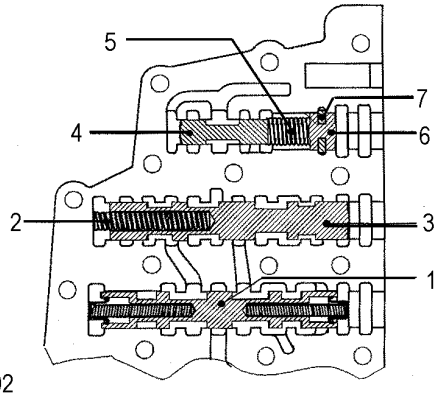
Control Valve Components

CED,OUO1032,1010 -19-18AUG10-18/25

22. Inspect all parts. Put clean oil on all components.

23. Use this art as reference for the forward and reverse shift valve, neutral shift valve and pressure reducing valve.

1— Forward/Reverse Shift Valve Spool with Springs
2— Neutral Shift Valve Spring
3— Spool
4— Pressure Reducing Valve Spool
5— Spring
6— Plug
7— Retaining Plate



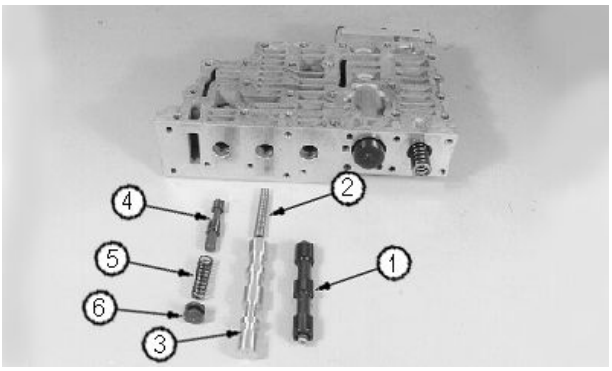
T106702

T106702 —UN—17JAN97

CED,OUO1032,1010 -19-18AUG10-19/25

24. Install parts (1—6).

1— Forward/Reverse Shift Valve Spool with Springs
2— Neutral Shift Valve Spring
3— Spool
4— Pressure Reducing Valve Spool
5— Spring
6— Plug



T106703 —UN—06FEB97

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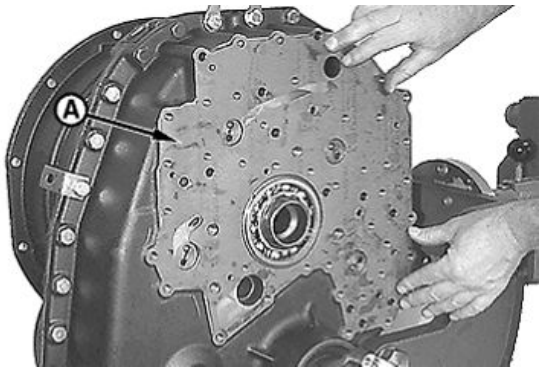
CED,OUO1032,1010 -19-18AUG10-20/25

NOTE: Use petroleum jelly or grease to hold gasket and check ball and spring in place during assembly.

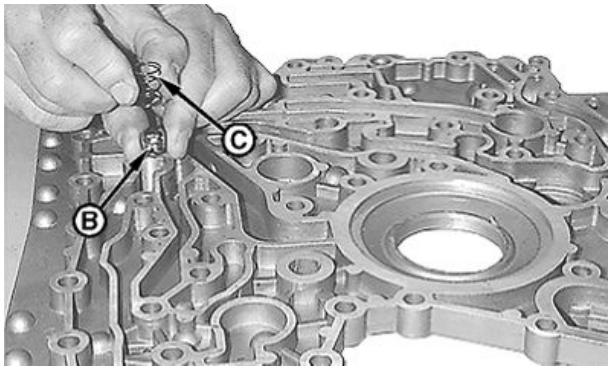
7. Install gasket (A) on transmission case.
8. Install check ball (B) and spring (C) in manifold plate.
9. Install manifold plate (D). Make sure check ball (B) and spring (C) are in place.
10. Install TORX® head screws (E). Starting with inside cap screws first and continuing to the outside, tighten cap screws to specification.

Specification	
Transmission Manifold Plate TORX® Head Screws—Torque	23 N·m (204 lb-in.)

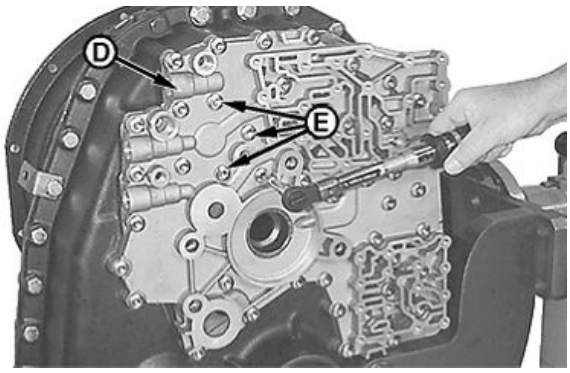
A—Gasket
B—Check Ball
C—Spring
D—Manifold Plate
E—TORX® Head Screw (43 used)



T117678 —UN—12OCT98



T117679 —UN—12OCT98



T117680 —UN—12OCT98

TORX is a registered trademark of Camcar/Textron

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TX03399,00018C4 -19-16NOV00-2/3

23. Install JDG393 Lifting Bracket (1) and D01043AA Load Positioning Sling (2) on engine.
24. Remove engine mounting cap screws front and rear.
25. Raise engine and tilt until oil pan clears frame.

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

Specification	
Engine—Weight	403 kg approximate 890 lb. approximate

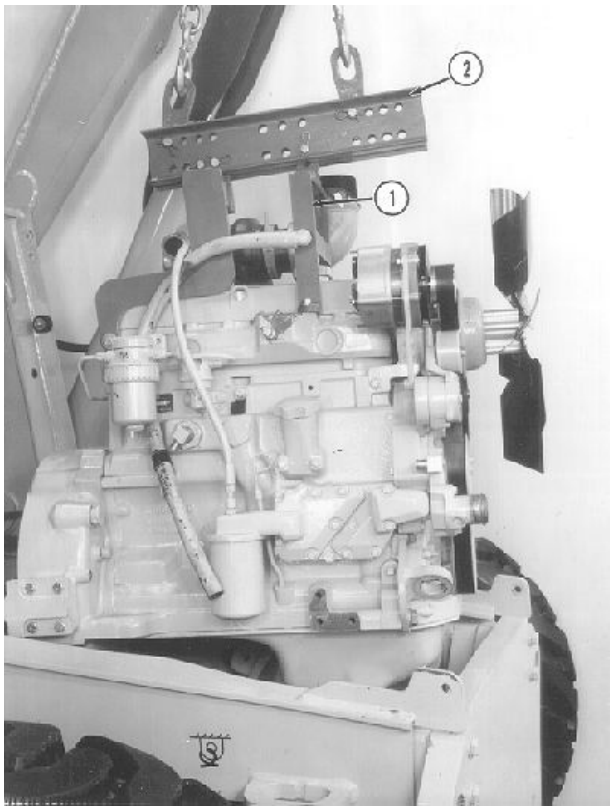
26. Install floor stand(s) to support transmission.
27. Remove transmission-to-flywheel housing cap screws.

IMPORTANT: When removing engine, take care not to damage torque converter flex plate.

28. Remove engine.

1— JDG393 Lifting Bracket

2— D01043AA Load Positioning Sling



T106156 —UN—25FEB97

Lifting Bracket & Load Positioning Sling

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OUO1030,000074B -19-30MAY12-9/16

4. Remove nozzle from holder.
5. Clean or replace nozzle as required.

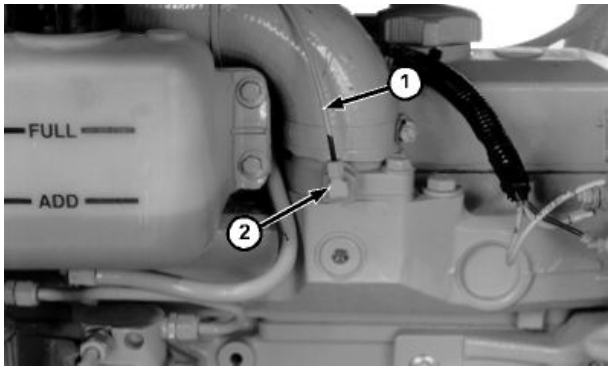
T88491 —UN—21OCT88

TX,05,BD2846 -19-27MAY99-2/3

IMPORTANT: Arrow on nozzle holder must point up.

6. Install nozzle holder (2) in air inlet with arrow pointing up.
7. Connect starting aid tube (1) to nozzle holder.
8. Install right engine side shield.

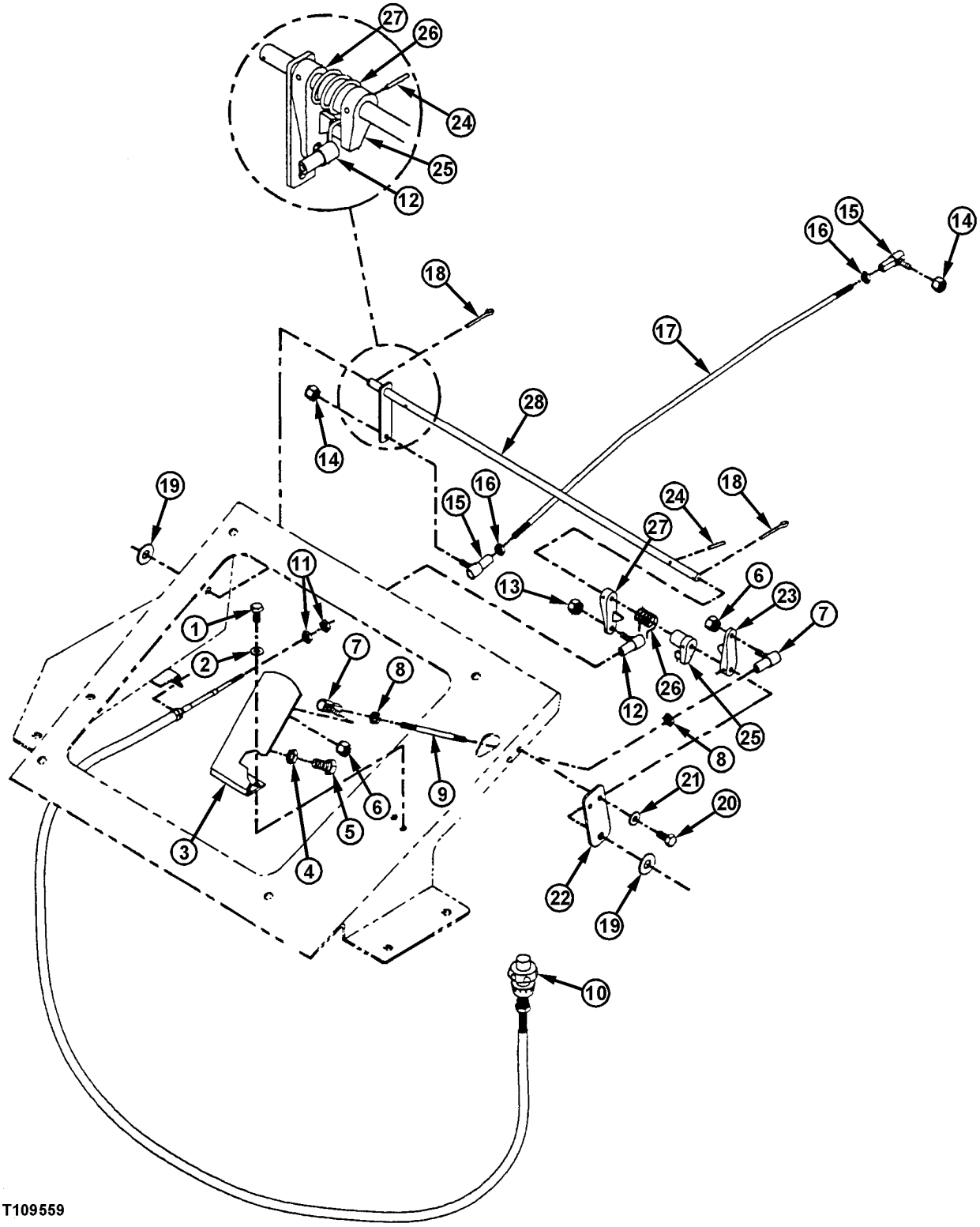
1— Starting Aid Tube **2— Nozzle Holder**



T109555 —UN—03JUN97

TX,05,BD2846 -19-27MAY99-3/3

Disassemble and Assemble Speed Control Linkage—With Speed Control Knob (S.N. —872334)



T109559 —UN—30JUN97

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CED,OUO1010,154 -19-30MAY12-1/2

1— Clamp
2— Hose
3— Clamp
4— Air Filter Restriction Switch
5— Fitting
6— Air Cleaner Housing
7— Clamp
8— Tube
9— Clamp
10— Cap
11— Cap Screw (2 used)
12— Washer (2 used)
13— Bracket
14— Band
15— Cap Screw
16— Washer
17— Spacer
18— Spring
19— Nut
20— Secondary Element
21— Primary Element
22— Latch (3 used)
23— Cover
24— Valve
25— Air Cleaner Assembly

1. Remove and install parts as needed.
2. Inspect elements for wear or damage and replace as necessary.
3. Tighten hose clamp (1) to specification.

Specification

Hose-to-Air Cleaner Housing Clamp—Torque..... 3.4 N·m (30 lb-in.)

4. Tighten hose clamp (7) to specification.

Specification

Cap-to-Air Cleaner Housing Clamp—Torque..... 3.4 N·m (30 lb-in.)

5. Test air intake system. See Air Intake System Leakage Test in this group.

OUO1072,0000BE9 -19-03NOV03-2/2

Air Intake System Leakage Test

IMPORTANT: Any time the air intake system is opened, it must be tested for leaks before the machine is returned to service.

1. Remove air cleaner cover and primary element.
2. Put a plastic bag over secondary element and install primary element and cover.
3. Remove plug or ether start aid nozzle holder from air intake tube and install JDG51 adapter (A).
4. Connect air pressure regulator to JDG51 adapter using hose and fitting.

CAUTION: Plastic bag can be sucked into engine if engine is started when trying to close valves.

5. Pressurize air intake system to specifications.

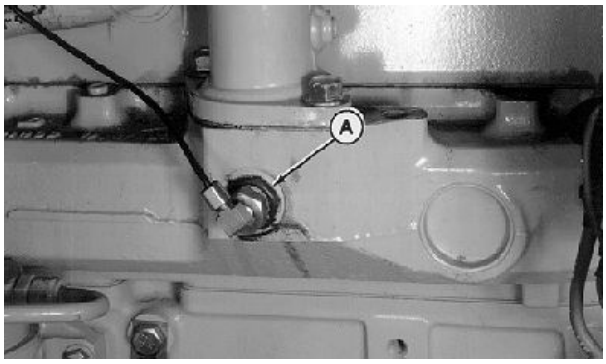
Specification

Air Intake—Pressure.....13.8—20.7 kPa (0.13—0.21 bar) (2—3 psi)

If system cannot be pressurized, turn engine slightly to close valves. Check plastic bag.

6. Spray soap solution over all connections from the air cleaner to the turbocharger or air inlet to check for leaks. Repair all leaks.

T5906AP —UN—23FEB89



T103547 —UN—05SEP96

A—JDG51 Adapter

TX,05,QQ8853 -19-27MAY99-1/1

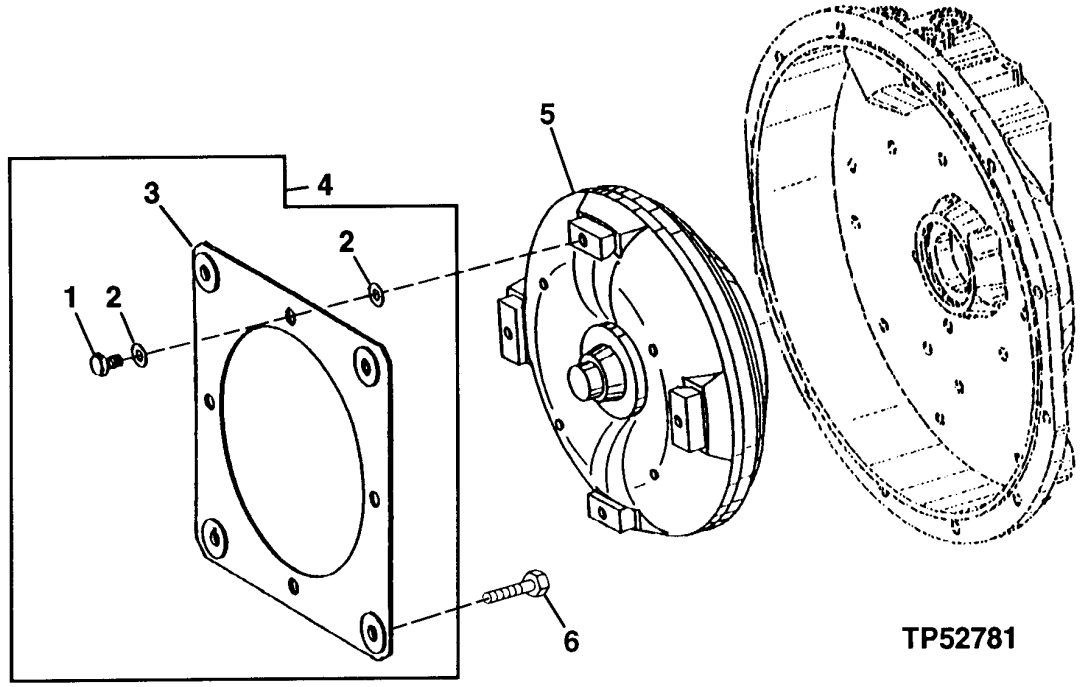
Remove and Install Torque Converter

NOTE: Torque converter has no internal service parts. If replacement is necessary, install a new torque converter.

Remove and install torque converter. (See Remove and Install Transmission in Group 0300.)

TX,06,QQ8856 -19-14JAN97-1/1

Disassemble and Assemble Torque Converter



TP52781—UN—21OCT96

1— Cap Screw (4 used)
2— Washer (8 used)
3— Plate (2 used)
4— Plate
5— Torque Converter
6— Cap Screw

1. Disassemble parts as shown.

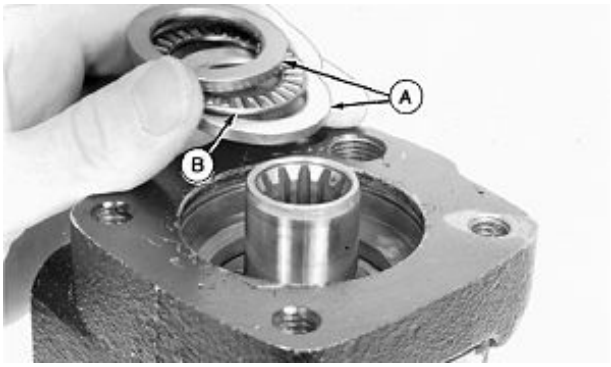
NOTE: Torque converter has no internal service parts. If replacement is necessary, install a new torque converter.

2. Inspect torque converter and replace if damaged.
3. Assemble parts as shown.

TX,06,QQ8857 -19-28FEB97-1/1

11. Remove races (A) and thrust bearing (B).

A—Bearing Races **B—Thrust Bearing**



T84972 —UN—24OCT88

TX,09,BG125 -19-14SEP99-8/11

12. Remove cap screws to remove gerotor assembly.

T84973 —UN—24OCT88

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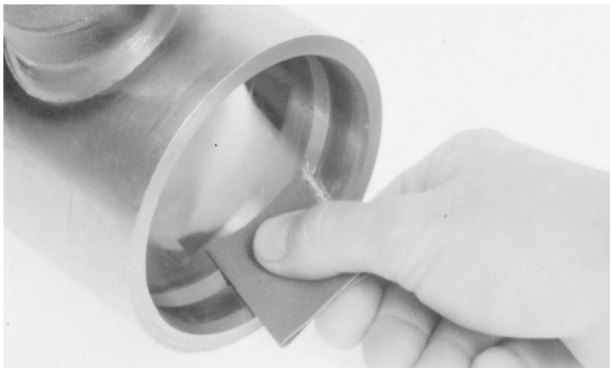
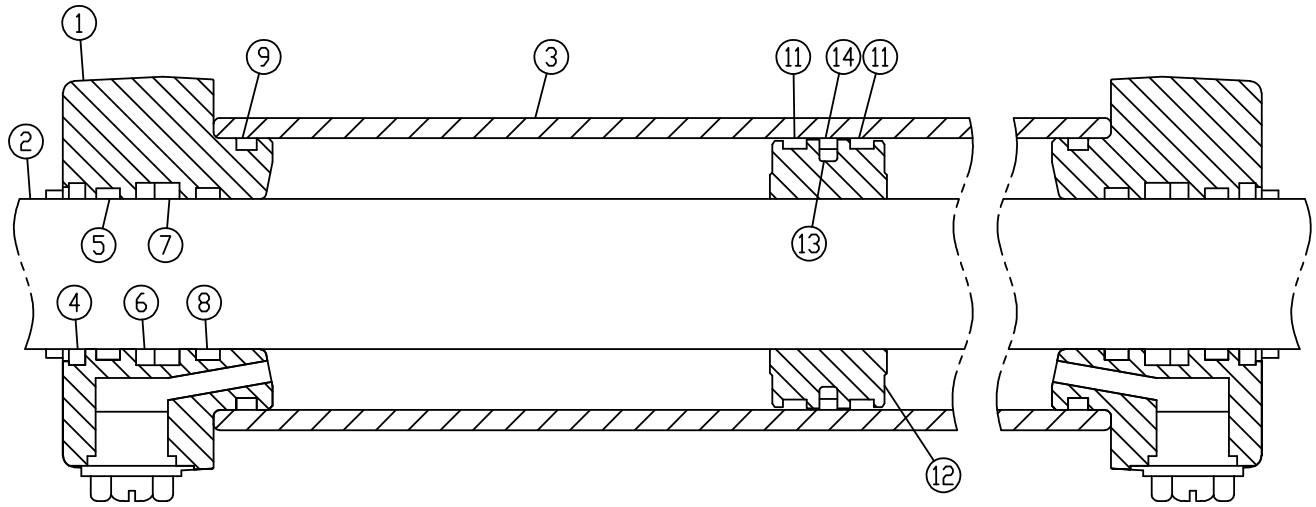
TX,09,BG125 -19-14SEP99-9/11

11. Inspect snap ring groove. If necessary, clean groove of nicks or burrs.



T6119AO —UN—19OCT88

TX,09,QQ8704 -19-29SEP99-7/7



T161937

T161937 —UN—21NOV02

1— Rod Guide (2 used)
2— Cylinder Rod
3— Cylinder Body
4— External Wiper Seal (2 used)
5— Wear Ring (2 used)
6— Backup Ring (2 used)
7— Internal Wiper Seal (2 used)
8— Wear Ring (2 used)
9— Seal Ring (2 used)
11— Wear Ring (2 used)
12— Rod Piston
13— O-Ring
14— Seal Ring

4. Install seals and rings in rod guides (1) and on cylinder rod piston (12).
5. Install rod into cylinder body (3).
6. Install rod guides (1) onto rod (2) and into body (3).

OUO1010,0000658 -19-17DEC03-4/4

Remove and Install Priority Valve (S.N. —880053)

NOTE: See Remove and Install Priority Valve (S.N. —880053) and Disassemble and Assemble Priority Valve (S.N. —880053) in Group 2160.

CED,OUO1032,1437 -19-27JUL99-1/1

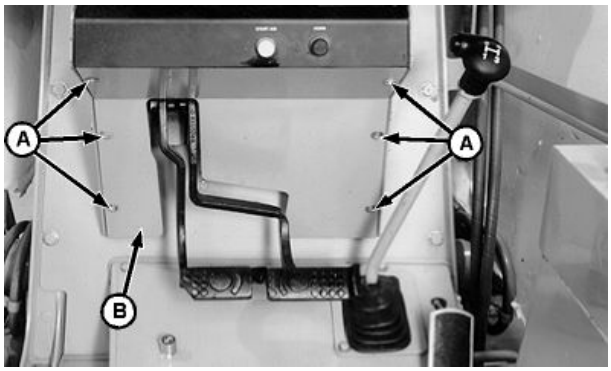
Remove and Install Priority Valve (S.N. 880054— 883904)

NOTE: See Remove and Install Hydraulic Pump/Priority Valve (S.N. 880054—) and Disassemble and Assemble Hydraulic Pump with Priority Valve (S.N. 880054—883904) in Group 2160.

OUO1010,00004AA -19-30MAY12-1/1

13. Install bottom front console cover (B) and cap screws (A).
14. Bleed brakes. See Bleed Service Brakes (S.N. —880907) in this group.)

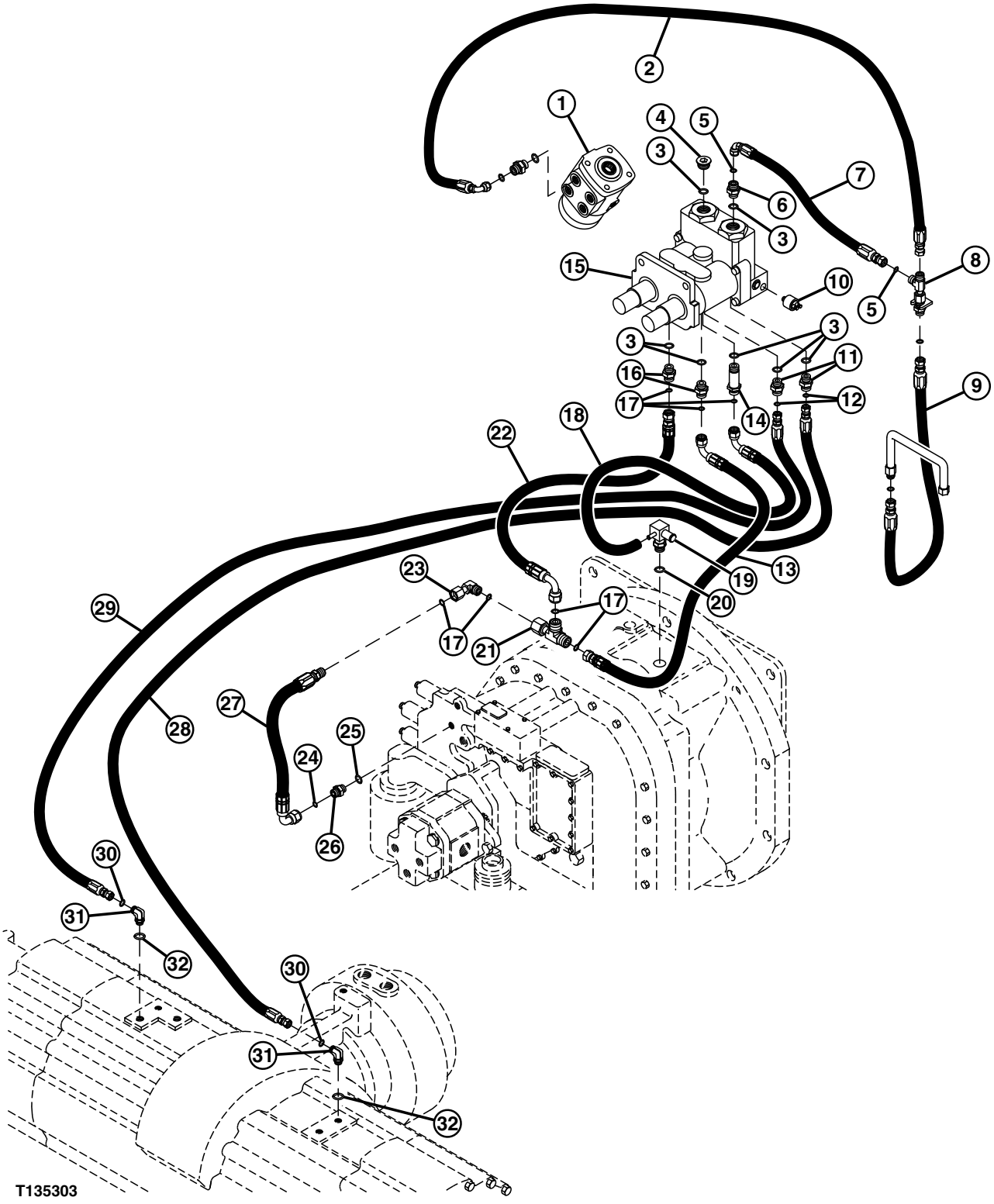
A—Cap Screws (6 used) **B—Console Cover**



T108368 —UN—15MAY97

OUO1010,0000499 -19-07NOV00-5/5

Remove and Install Service Brake Hoses and Fittings (S.N. 880908—)



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OUO1010,000049A -19-07NOV00-1/2

Section 15
Hitch Attachments

Contents

Page

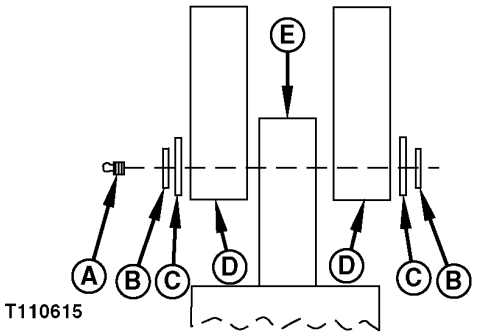
Group 1511—Hitch, Drawbar and Weights
Remove and Install Counterweights and Drawbar 15-1511-1

Group 1520—Three-Point Hitch
Remove, Disassemble, Assemble, and Install Three-Point Hitch (S.N. —880053)..... 15-1520-1
Remove, Disassemble, Assemble, and Install Three-Point Hitch (S.N. 880054—)..... 15-1520-3
Three-Point Hitch Shim Requirements (S.N. —880053)..... 15-1520-5
Upper Lift Arm Mount, Left and Right Side, Shimming (S.N. —880053)..... 15-1520-6
Lift Cylinder Mount, Rod End, Shimming (S.N. —880053)..... 15-1520-6
Upper Lift Arm, Vertical Link Mount, Shimming (S.N. —880053)..... 15-1520-7
Upper Lift Arm, Tilt Cylinder Mount, Shimming (S.N. —880053)..... 15-1520-7
Draft Link, Vertical Link Mount, Shimming (S.N. —880053)..... 15-1520-7
Draft Link, Tilt Cylinder Mount, Shimming (S.N. —880053)..... 15-1520-8
Pitch Cylinder Mount, Shimming (S.N. —880053)..... 15-1520-8
Draft Link Mount, Left and Right Side, Shimming (S.N. —880053)..... 15-1520-8

Upper Lift Arm, Vertical Link Mount, Shimming (S.N. —880053)

1. Install washers (C) between snap rings (B) and upper lift arm (D).
2. Do not install washers between upper lift arm (D) and vertical link (E).
3. Make sure grease fitting (A) is on the left.

A—Grease Fitting
B—Snap Ring (2 used)
C—3.3 mm (0.125 in.) Thick Washer (2 used)
D—Upper Lift Arm
E—Vertical Link, Top End



T110615 —UN—01AUG97

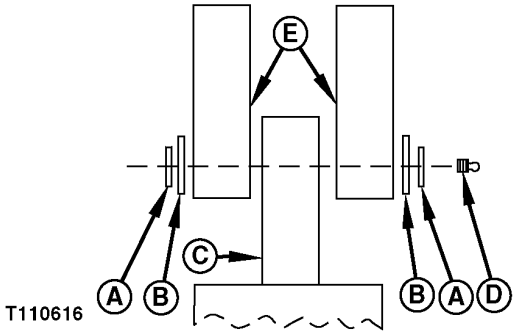
CED,OUO1020,3472 -19-27AUG99-1/1

Upper Lift Arm, Tilt Cylinder Mount, Shimming (S.N. —880053)

NOTE: Use same procedure for optional Fifth Function Tilt Cylinder (if equipped).

1. Install washers (B) between snap rings (A) and upper lift arm (E).
2. Do not install washers between upper lift arm (E) and tilt cylinder (C).
3. Make sure grease fitting (D) is on the right.

A—Snap Ring (2 used)
B—3.2 mm (0.125 in.) Thick Washer (2 used)
C—Tilt Cylinder, Rod End
D—Grease Fitting
E—Upper Lift Arm



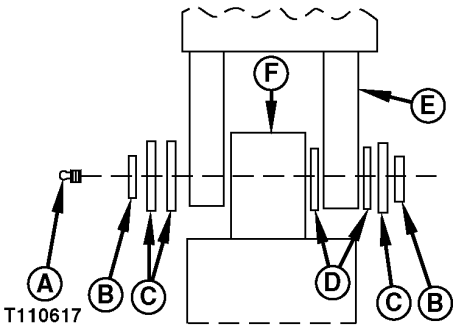
T110616 —UN—01AUG97

CED,OUO1020,3477 -19-27AUG99-1/1

Draft Link, Vertical Link Mount, Shimming (S.N. —880053)

1. Install washers (C) between snap ring (B) and vertical link (E).
2. Install washers (D) between draft link (F) and vertical link (E).
3. Install washers (C and D) between vertical link (E) and snap ring (B).
4. Make sure grease fitting (A) is on the left.

A—Grease Fitting
B—Snap Ring (2 used)
C—4.8 mm (0.188 in.) Thick Washer (3 used)
D—3.2 mm (0.125 in.) Thick Washer (2 used)
E—Thick Vertical Link
F—Draft Link



T110617 —UN—01AUG97

CED,OUO1020,3476 -19-27AUG99-1/1

Service Equipment and Tools

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

SERVICEGARD is a trademark of Deere & Company

TX,18,QQ8284 -19-13DEC93-1/2

Lift Bracket	[1]DFT1101	To remove and install ROPS/FOPS.

[1]Fabricated tool, dealer made. (See Group 9900 for instructions to make tool.)

TX,18,QQ8284 -19-13DEC93-2/2

Specifications

Item	Measurement	Specification
ROPS-to-Frame Cap Screws	Torque	379 ± 76 N·m (280 ± 56 lb-ft)

CED,OUO1032,923 -19-29MAY98-1/1

Remove and Install ROPS/FOPS

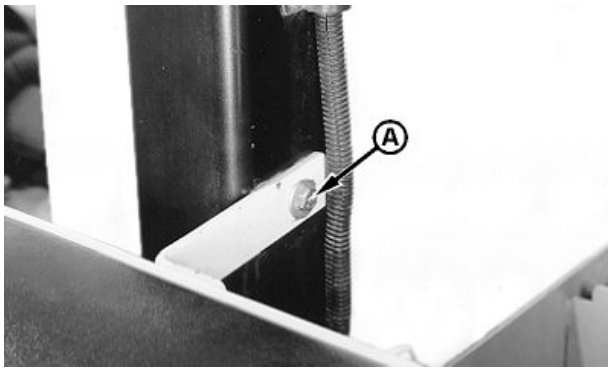
CAUTION: ROPS/FOPS is heavy. Use DFT1101 Cab and ROPS Lift Bracket [1] Lift Bracket or a comparable lifting device to remove ROPS/FOPS.

1. Attach hoist to ROPS/FOPS.
2. Remove cap screws (A) that secure fenders to ROPS/FOPS.
3. Disconnect ROPS/FOPS electrical harness connector (B).
4. Remove all mounting cap screws and washers (C) and remove ROPS/FOPS.
5. Lower ROPS/FOPS into position.
6. Install cap screws and washers (C) and tighten to specification.

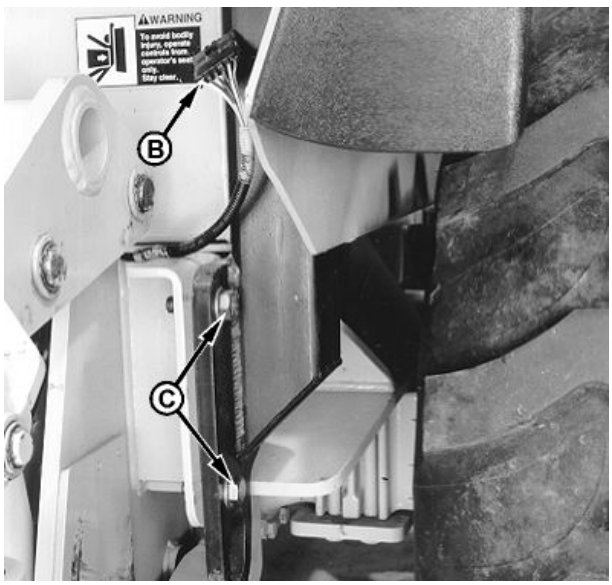
Specification	
ROPS-to-Frame Cap Screws—Torque	379 ± 76 N·m (280 ± 56 lb-ft)

7. Install cap screws (A).
8. Connect ROPS/FOPS electrical harness connector (B).

A—Cap Screws
B—Harness Connector
C—Cap Screws and Washers



T109633 —UN—30JUN97



T109634 —UN—30JUN97

(S.N. —870948) Shown

[1]Fabricated tool, dealer made. (See Group 9900 for instructions to make tool).

TX,18,BD2860 -19-01SEP99-1/1

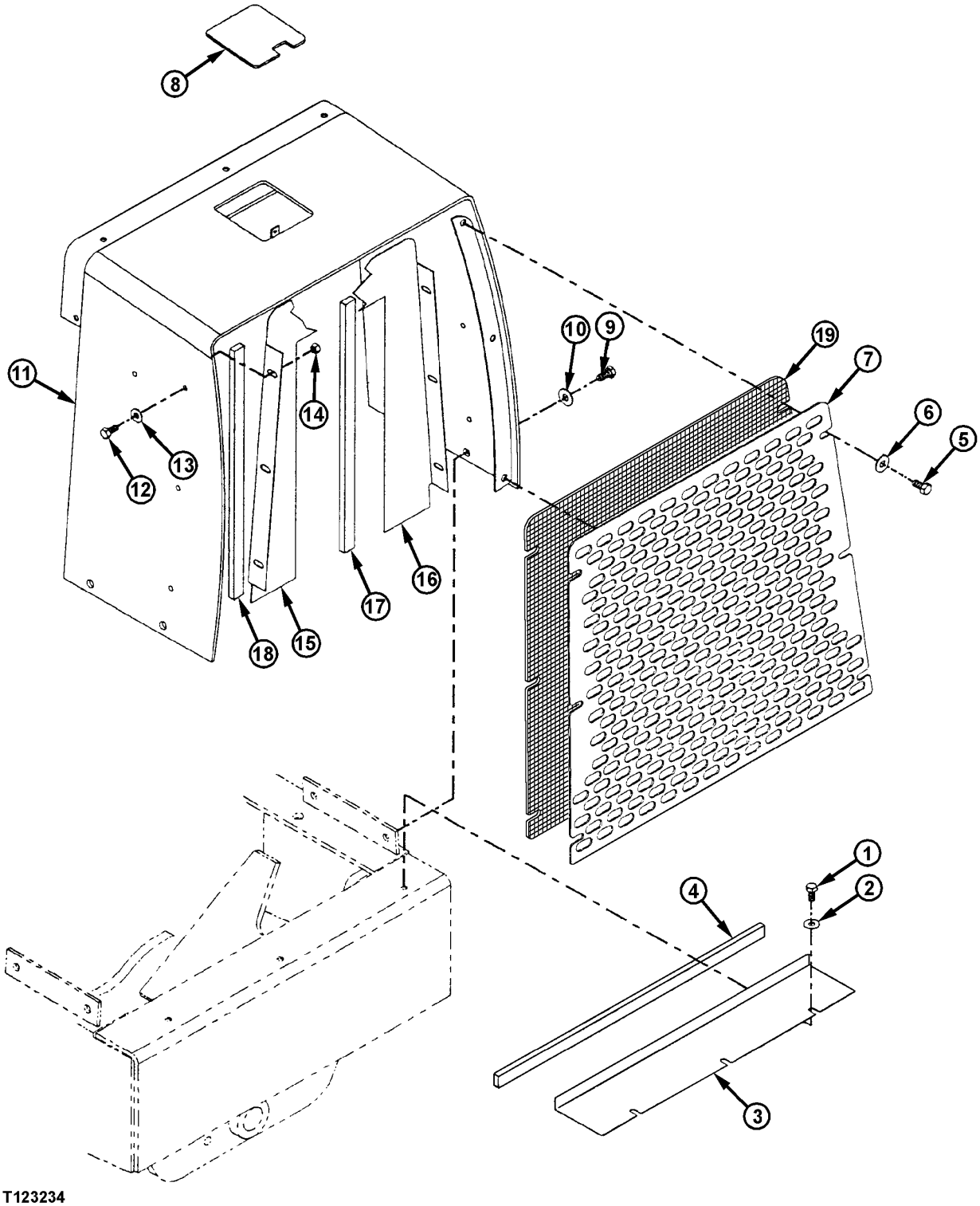
Seat and Seat Belt

1— Grip
2— Handle
3— Nut (3 used)
4— Extension Spring
5— Cap Screw
6— Latch
7— Groove Pin
8— Pin
9— Support
10— Pin (2 used)
11— Extension Spring
12— Latch
13— Nut (2 used)
14— Pin
15— Handle
16— Knob
17— Spring
18— Base
19— Cap Screw and Washer (4 used)
20— Safety Sign

1. Disassemble parts as shown.
2. Inspect for worn or damaged parts.
3. Assemble parts.

TX,18,BG103 -19-05AUG97-2/2

Remove and Install Grille and Cowl (S.N. —882699)



T123234 —UN—11AUG99

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OUO1030,000074F -19-06JAN04-1/2

Section 21
Main Hydraulic System

Contents

Page

Group 2160—Hydraulic System
Other Material 21-2160-1
Specifications 21-2160-2
Specifications 21-2160-2
Hydraulic Pump (S.N. —880053) 21-2160-3
Remove and Install Hydraulic Pump/Priority Valve (S.N. 880054—883904) 21-2160-5
Hydraulic Pump (S.N. —880053)
Remove and Install 21-2160-7
Disassemble and Assemble 21-2160-8
Hydraulic Pump and Priority Valve<linebrk> (S.N. 880054—883904
Remove and Install 21-2160-10
Hydraulic Pump
Disassemble and Assemble (S.N. 883905-) 21-2160-13
Remove and Install Priority Valve (S.N. —880053) 21-2160-16
Priority Valve (S.N. —880053)
DIsasemble and Assemble 21-2160-17
Remove and Install Hydraulic Filter (S.N —883904) 21-2160-19
Remove and Install Hydraulic Filter (S.N 883905—) 21-2160-20
Remove and Install Reservoir (S.N. —883904) 21-2160-22
Remove and Install Reservoir (S.N 883905—) 21-2160-24
Remove and Install Hydraulic Oil Cooler (S.N. —882699) 21-2160-26
Remove and Install Hydraulic Oil Cooler (S.N. 882700—) 21-2160-27
Hydraulic Oil Clean-Up Procedure Using Portable Filter Caddy 21-2160-29

1— Matched Gear Set
2— Gear Housing
3— Washer (4 used)
4— Cap Screw (4 used)
5— Port End Cover
6— Dowel Pin (2 used)
7— Gasket Seal (2 used)
8— Thrust Plate (2 used)
9— Channel Seal (2 used)
10— Channel Seal Backup (2 used)
11— Shaft End Cover
12— Oil Seal

1. Clean outside of pump.
2. Scribe a mark across the pump body sections to aid in assembly.
3. Install hydraulic pump in a bench holding fixture.
4. Remove four cap screws (4) and washers (3).
5. Remove port end cover (5).
6. Make a mark on the gear set (1) shafts to aid in assembly.
7. Remove parts and inspect.
8. Remove and discard oil seal (12).
9. Apply high tack gasket dressing to OD of seal and ID of pump bore. Install new oil seal (12).

IMPORTANT: Lubricate all internal surfaces with clean hydraulic oil before assembly. Premature pump failure can result if pump is assembled dry.

10. Install gear set (1).
11. Apply petroleum jelly to parts (7—9). Install thrust plates (8) making sure the bronze face of plates is toward gear surface.
12. Using alignment marks on housings and gear set, assemble housings together.
13. Install four cap screws (4) and washers (3). Tighten cap screws to specification in an alternating pattern.

Specification

Hydraulic Pump Section Cap Screws (S.N. —880053)—Torque..... 339 N·m (250 lb-ft)

CED,OUO1010,716 -19-27AUG99-2/2

Remove and Install Hydraulic Filter (S.N —883904)

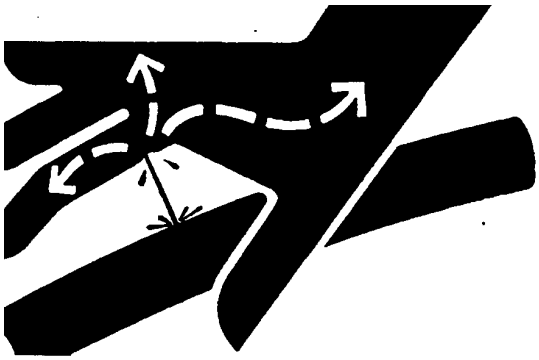
1. Lower all equipment to the ground. Stop engine.
2. Operate controls to relieve pressure in hydraulic system.
3. Disconnect harness from hydraulic filter restriction switch and remove oil filter restriction switch.

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.

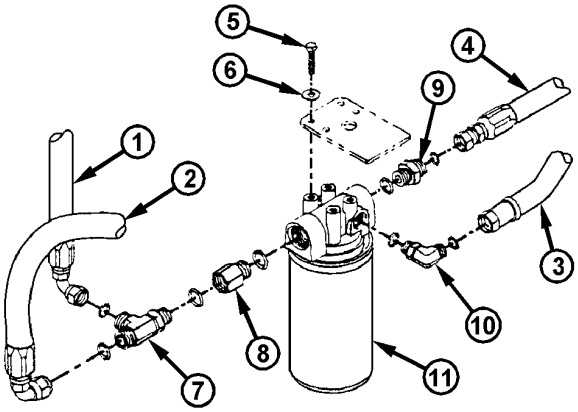
4. Tag and then disconnect hoses (1—4). Close all openings using caps and plugs.
5. Remove cap screws and washers (5 and 6) and remove oil filter assembly (11).
6. Remove fittings (7—10).
7. Inspect and replace parts as necessary.
8. Replace all O-rings.
9. Install fittings (7—10).
10. Install oil filter assembly (11) and cap screws and washers (5 and 6). Tighten cap screws to specification.

Specification	
Filter Mounting Cap Screw—Torque	33 ± 4 N·m (24 ± 3 lb-ft)

11. Connect hoses (1—4).
12. Install oil filter restriction switch and connect harness to switch.
13. Fill hydraulic oil reservoir to proper level. See Transmission, Hydraulic, Axles, and Mechanical Front Wheel Drive Oil in Group 3-1 of operator's manual.



X9811 —UN—23AUG88



T109653

T109653 —UN—30JUN97

1— Oil Filter-to-Hydraulic Control Valve Hose
2— Oil Filter-to-Hydraulic Control Valve Outlet Port Hose
3— Oil Filter-to-Hydraulic Oil Cooler Hose
4— Oil Filter-to-Hydraulic Reservoir Return Hose
5— Cap Screw (4 used)
6— Washer (4 used)
7— Tee Fitting
8— Fitting
9— Fitting
10— Elbow Fitting
11— Oil Filter Assembly

TX,21,BD2814 -19-12JAN05-1/1

Hydraulic Oil Clean-Up Procedure Using Portable Filter Caddy

SERVICE EQUIPMENT AND TOOLS
Portable Filter Caddy
Suction and Discharge Lines—3658 mm (12 ft.) x 3/4 in. ID 100R1 (2 used)
Discharge Wand

If machine has a hydrostatic PTO, go to Hydraulic and PTO Oil Clean-Up Procedure Using Portable Filter Caddy in Group 4000.

IMPORTANT: If hydraulic system is contaminated due to a major component failure, remove, disassemble, and clean the following components:

- **Priority Valve**
- **Pilot Caps on Loader Control Valve**
- **Oil Cooler**
- **All Cylinders**

If the failure created a lot of debris, drain reservoir and connect filter caddy suction line to drain port. Add a minimum of 19 L (5 gal) of oil to reservoir. Operate filter caddy and wash out the reservoir and lines from reservoir to pumps. Drain reservoir and fill with new oil. (See Transmission, Hydraulic, Axles, and Mechanical Front Wheel Drive Oil in Group 3-1 of operator's manual.)

1. Install a new hydraulic oil filter.

IMPORTANT: To prevent cavitation of filter caddy pump, the minimum ID of connector is 1/2 in.

2. Connect filter caddy suction line to drain port at bottom of reservoir. Check to be sure debris has not closed drain port.
3. Put filter caddy discharge line into reservoir filler hole so end is as far away from drain port as possible to obtain a thorough cleaning of oil.

NOTE: Filtering time for reservoir is 0.089 minute x number of liters (0.33 minute x number of gallons). Reservoir capacity is 54.4 L (14.4 gal).

4. Start the filter caddy. Check to be sure oil is flowing through the filters.

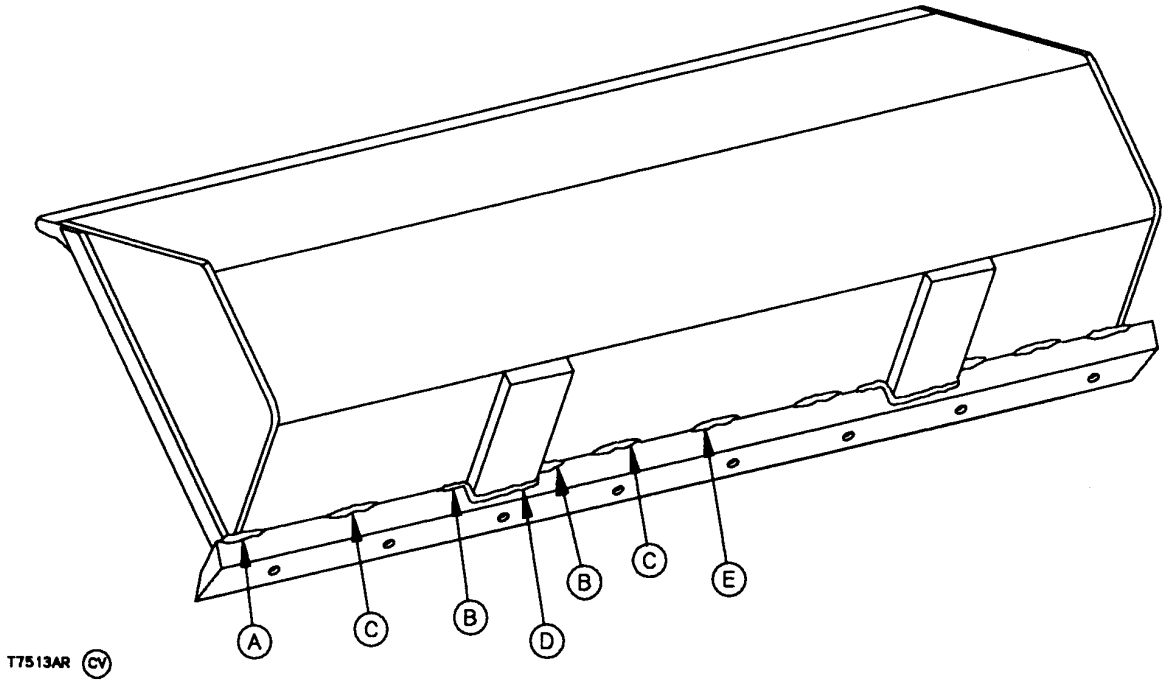
   Operate filter caddy approximately 5 minutes so oil in reservoir is circulated through filter a minimum of four times.
5. Remove filter caddy discharge line from reservoir filler hole and install filler cap. Disconnect special drain hose and fitting from reservoir drain port.
6. Start the engine and run at fast idle.

IMPORTANT: For the most effective results, cleaning procedure must start with the smallest capacity circuit then proceed to the next largest capacity circuit.

7. Operate all functions, one at a time, through a complete cycle in the following order: steering, bucket, and boom. Also include any auxiliary hydraulic functions.

   Each function must go through a minimum of three complete cycles for a thorough cleaning of oil.
8. Stop engine.
9. Remove the filter caddy.
10. Replace hydraulic filter.
11. Check oil level in reservoir. Add oil if necessary. See Transmission, Hydraulic, Axles, and Mechanical Front Wheel Drive Oil in Group 3-1 of operator's manual.

OUO1010,0000490 -19-02NOV00-1/1



T7513AR —UN—15MAY91

A—51 mm (2.0 in.) long X 12 mm (0.5 in.) fillet weld
B—51 mm (2.0 in.) long X 8 mm (0.3 in.) fillet weld
C—40 mm (1.6 in.) long X 8 mm (0.3 in.) fillet weld
D—140 mm (5.5 in.) long X 8 mm (0.3 in.) fillet weld (also wrap corners)
E—76 mm (3.0 in.) long X 8 mm (0.3 in.) fillet weld

IMPORTANT: Cutting edge overlaps bucket at bottom welds. Be careful not to cut into bucket when removing weld.

NOTE: Weld sequence on cutting edge is symmetrical. Use left side notations to guide you to cut welds on the right side.

4. Put bucket into dump position. Remove all bottom welds (A—E) with cutting torch or air arc equipment.
5. Smooth rough surfaces with grinder.
6. Position new cutting edge and hold in place with clamps.

IMPORTANT: Disconnect battery ground strap or turn battery disconnect switch to "OFF".

Have only a certified or qualified welder do this work. Connect welder ground clamp close to each weld area so electrical current does not pass through any bearings.

Remove or protect all parts that can be damaged by heat or weld splatter.

High carbon cutting edges must be preheated to 177°C (350°F), then welded with low hydrogen E-7018 dry rods or A.W.S. E-70T-4 flux core process.

NOTE: Weld sequence on cutting edge is symmetrical. Use left side notations to weld right side.

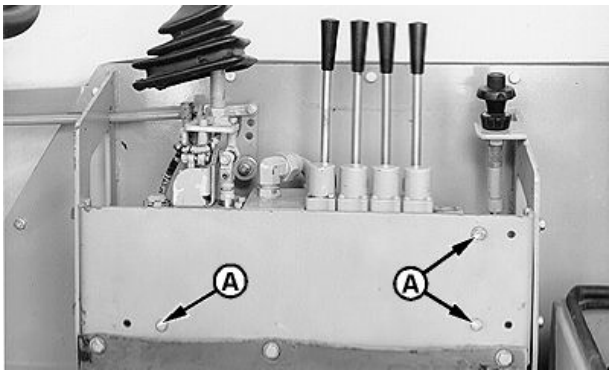
7. Tack weld cutting edge to bucket. Remove clamps.

Continued on next page

TX,31,BG97 -19-05JUN98-2/5

9. Install three cap screws (A) to attach hydraulic control valve to mounting plate.

A—Cap Screw (3 used)

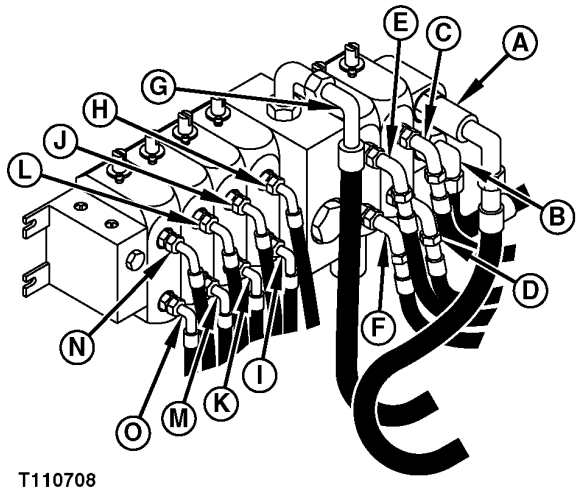


T110713 —UN—22JUL97

OUO1020,00013BD -19-22DEC03-6/10

10. Connect hoses (A—O).

A—To Hydraulic Oil Filter
B—To Priority Valve
C—To Head End of Bucket Cylinder
D—To Rod End of Bucket Cylinder
E—To Head End of Right Loader Boom Cylinder
F—To Rod End of Right Loader Boom Cylinder
G—To Hydraulic Oil Filter
H—To Head End of Lift Cylinder
I— To Rod End of Lift Cylinder
J—To Rod End of Pitch Cylinder
K—To Head End of Pitch Cylinder
L—To Rod End of Tilt Cylinder
M—To Head End of Tilt Cylinder
N—To Auxiliary Connections
O—To Auxiliary Connections



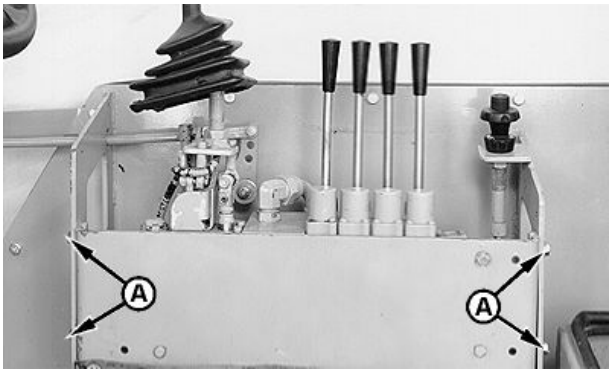
T110708

T110708 —UN—23JUL97

OUO1020,00013BD -19-22DEC03-7/10

11. Install four cap screws (A) to attach control valve mounting plate.

A—Cap Screw (4 used)



T110712 —UN—22JUL97

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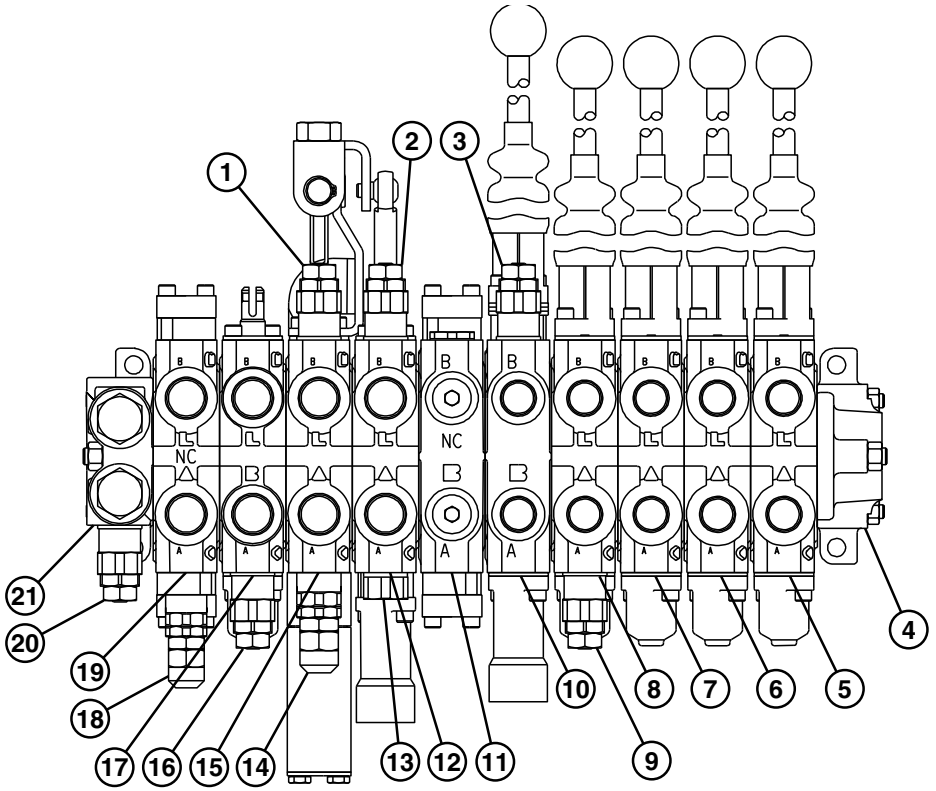
OUO1020,00013BD -19-22DEC03-8/10

Control Valve—Remove and Replace Relief Valves (S.N. 883905—)



T205977

T205977 —UN—15DEC04

Hydraulic Control Valve Component Locations

1— Circuit Relief Valve with Anticavitation—Bucket Dump
2— Circuit Relief and Anti-Cavitation Valve—Boom Up
3— Circuit Relief and Anti-Cavitation Valve—Hitch Lift
4— Outlet Section
5— Hitch Auxiliary Section—Optional or scarifier
6— Hitch Auxiliary Section—Dual Tilt
7— Hitch Section—Tilt
8— Hitch Section—Pitch
9— Circuit Relief and Anti-Cavitation Valve—Pitch Extend
10— Hitch Section—Lift
11— Flow Control Section
12— Boom Section
13— Anti Cavitation Valve—Boom Down
14— Circuit Relief Valve—Bucket Curl
15— Bucket Section
16— Circuit Relief and Anti-Cavitation Valve—Auxiliary Loader Third Function (optional)
17— Auxiliary Section—Loader Third Function (optional)
18— Circuit Relief Valve—Steering Load Sense
19— Priority Section
20— System Relief and Anti-Cavitation Valve
21— Inlet Section

Item	Measurement	Specification
System Relief	Pressure	18 961 kPa 190 bar 2750 psi
Steering Load Sense Relief	Pressure	15 513 kPa 155 bar 2250 psi

Item	Measurement	Specification
Circuit Relief		
Relief Valve Set Tolerance	Pressure	517 — 0 kPa 5.2 — 0 bar 75 — 0 psi
Auxiliary Extend	Pressure	22 100 kPa 221 bar 3200 psi

Continued on next page

TX,31,BG85 -19-01AUG97-1/2

1— Relief Valve
2— O-Ring
3— Backup Ring
4— O-Ring
5— Poppet
6— Spring
7— O-Ring
8— Load Check Plug
9— Socket-Head Cap Screw (2 used)
10— Link Bracket
11— Handle
12— O-Ring
13— Backup Ring
14— O-Ring
15— Plug
16— Clevis Pin (2 used)
17— Cotter Pin (2 used)
18— Boot
19— Socket-Head Cap Screw (4 used)
20— Plate
21— Seal
22— Handle Bracket
23— Handle Pivot
24— Spool
25— Spring Collar (2 used)
26— Spring
27— Spool Bolt
28— End Cap
29— Socket-Head Cap Screw (4 used)
30— O-Ring
31— O-Ring (3 used)
32— Seal
33— Valve

1. Remove cotter pins (17) and clevis pins (16). Then remove handle (11) with bracket (10).
2. Remove socket-head cap screws (19).
3. Remove plate (20), handle bracket (22), handle pivot (23), and boot (18).
4. Remove parts (1—8), (12—15), and (24—32).
5. Inspect parts for wear and damage. Replace as required.
6. Apply clean hydraulic oil on all internal parts before assembly.
7. Install relief valve (1). Use new O-ring and backup rings. Tighten relief valve to specification.

Pitch Section (S.N. 882700—883904)—Specification

Relief Valve—Torque..... 27 N·m (20 lb-ft)

8. Install parts (5—8). Tighten plug to specification.

Pitch Section (S.N. 882700—883904)—Specification

Load Check
Plug—Torque..... 27 N·m (20 lb-ft)

9. Install parts (12—15). Use new O-rings and backup ring. Tighten plug to specification.

Pitch Section (S.N. 882700—883904)—Specification

Plug—Torque..... 27 N·m (20 lb-ft)

10. Install seals (21 and 32) and spool (24).
11. Install spring (26) and collars (25). Secure with spool bolt (27).
12. Install end cap (28) and cap screws (29). Tighten cap screws to specification.

Pitch Section (S.N. 882700—883904)—Specification

End Cap Socket-Head
Cap Screws—Torque..... 7—9 N·m (62—80 lb-in.)

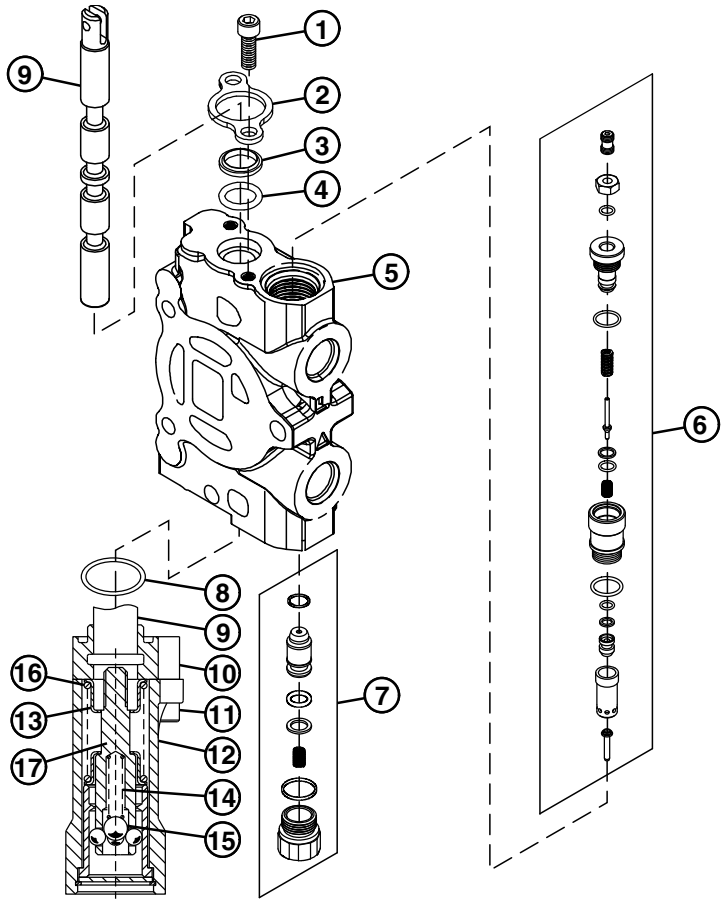
13. Install plate, handle bracket, handle pivot, boot, and socket-head cap screws (19). Tighten screws to specification.

Pitch Section (S.N. 882700—883904)—Specification

End Plate Socket-Head
Cap Screws—Torque..... 6—8 N·m (53—71 lb-in.)

OUO1017,0000B0F -19-16DEC03-2/2

Boom Section—Disassemble and Assemble (S.N. 883905—)



T207262

T207262 —UN—01FEB05

Boom Section Assembly

1— Socket Head Cap Screw (2 used)
2— Plate
3— Wiper
4— O-Ring
5— Valve Body
6— Relief Valve with Anticavitation
7— Anticavitation Check Valve
8— O-Ring
9— Spool
10— Spacer
11— Socket Head Cap Screw (2 used)
12— Detent Body
13— Spring Seat (2 used)
14— Spring
15— Detent Ball (3 used)
16— Spring
17— Spool End Screw

IMPORTANT: Spool must be installed in the same valve section as removed from for proper operation of the hydraulic function.

1. Remove parts (1—4).
2. Remove relief valve (6) and anticavitation check valve (7).

   For repair of relief valve or See Relief Valve with Anti-Cavitation—Disassemble and Assemble (S.N. 883905—) (Group 3160.)

   See Relief Valve with Anti-Cavitation—Disassemble and Assemble (S.N. 883905—)
3. Remove parts (10,11 and 12) to remove spool (9) from valve body (5).
4. Remove O-ring (8) from valve body.
5. Remove parts (13,14 and 15) from detent assembly (12).
6. Using a protective cover or wooden blocks, put spool in vise. Remove spool adapter screw (17) from spool (9).
7. Inspect parts for wear or damage. Replace all O-rings and wiper.
8. Inspect parts for wear or damage. Replace all O-rings and wiper.
9. Prepare threads of spool end screw (17), springs seats (13), spring (16) and spool (9) with cure primer.
10. Apply thread lock and sealer (high strength) to threads of end screw (17).

Continued on next page

TX04577,0000033 -19-01FEB05-1/2

A—Barrel
B—Lock Nut
C—Seal (2 used)
D—Piston
E—O-Ring
F—O-Ring
G—Backup Ring
H—Retaining Wire (S.N. —845680)
I— Rod Guide
J— Seal
K—Wiper Seal
L—Threaded Retainer (S.N. 845681—)
M—Rod
N—Fitting (2 used)
O—Bushing (2 used)
P—Set Screw (2 used) (S.N. 845681—)
Q—Plastic Ball (2 used) (S.N. 845681—)
R—Rod Guide (S.N. —845680)
S—Rod Guide (S.N. 845681—)
T—Retaining Wire Type Guide (S.N. —845680)
U—Threaded Retainer Type Guide (S.N. 845681—)

1. Install bushings (O) (if removed) so slot in bushing is aligned with lubrication fitting.
2. Install lubrication fittings (N).
3. Install seal (J), wiper seal (K), backup ring (G), and O-ring (F) on rod guide (I).
4. For cylinders using threaded retainer type guide (U) (S.N. 845681—), position the threaded retainer (L) onto rod (M).
5. Install rod guide assembly onto rod (M).
6. Install O-ring (E) on rod (M).
7. Install seals (C) on piston (D).
8. Install piston assembly onto rod (M). Apply clean hydraulic oil to rod threads and install lock nut (B). Tighten nut to specification.

Specification

Hitch Lift Cylinder Piston
Lock Nut—Torque..... 420 N·m (310 lb-ft)

9. Apply petroleum jelly on piston seals (C) and lip of barrel (A).

NOTE: To prevent seal damage, the barrel, piston, and rod assembly must be in alignment during installation.

10. Carefully push the piston and rod assembly into barrel (A).
11. Push rod guide assembly into barrel (A).
12. For cylinders with retaining wire type guide (T) (S.N. —845680), perform the following:

NOTE: If end opposite of 90° bend on retaining wire does not have a 45° bend toward the cylinder, bend 13 mm (0.5 in.) of the retaining wire toward the cylinder.

    a. Turn rod guide (I) until hole is seen in slot.
    b. Install end of retaining wire (H) with 90° bend into hole. Turn rod guide (I) to pull retaining wire into barrel (A) until retaining wire is not visible in slot.
    c. Fill slot in barrel with RTV silicone sealant.

13. For cylinders with threaded retainer type guide (U) (S.N. 845681—), perform the following:
    a. Install threaded retainer (L).
    b. Tighten set screws (P).
    c. Install new plastic balls (Q).

TX,15,BG150 -19-27MAY99-2/2

Hydrostatic PTO High Pressure Relief Valve

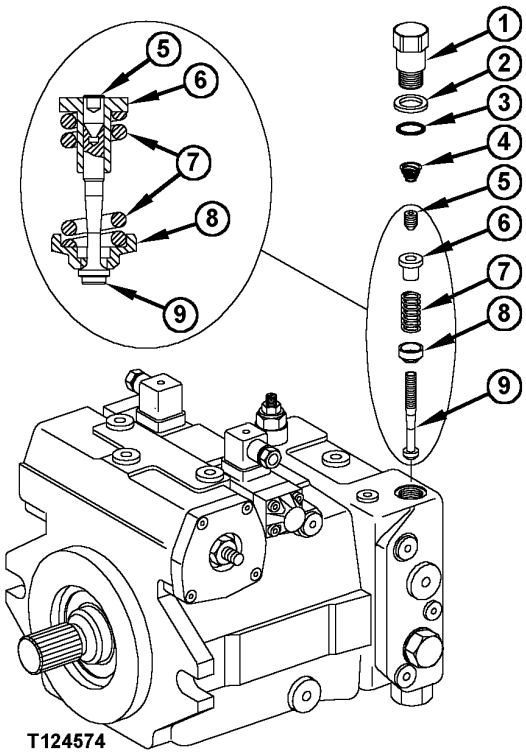
1. Remove and disassemble high pressure relief valve assembly (1—9).
2. Inspect for wear, damage, or contamination. Replace if necessary.
3. Install new backup ring (2) and O-ring (3).
4. Install valve assembly (1—9). Tighten to specification.

Hydrostatic PTO—Specification

High Pressure Relief Valve—Torque	90 N·m (66 lb-ft)

5. Check high pressure relief valve setting and pressure override valve setting. Adjust if necessary. (See Hydrostatic PTO Pump High Pressure Relief Valve and Pressure Override Valve Test and Adjustment—If Equipped in Group 9025-25 of operation and test manual.)

1— Valve Body
2— Backup Ring
3— O-Ring
4— Spring
5— Jam Screw
6— Spring Loading Nut
7— Spring
8— Valve Seat
9— Valve Spindle



T124574 —UN—28SEP99

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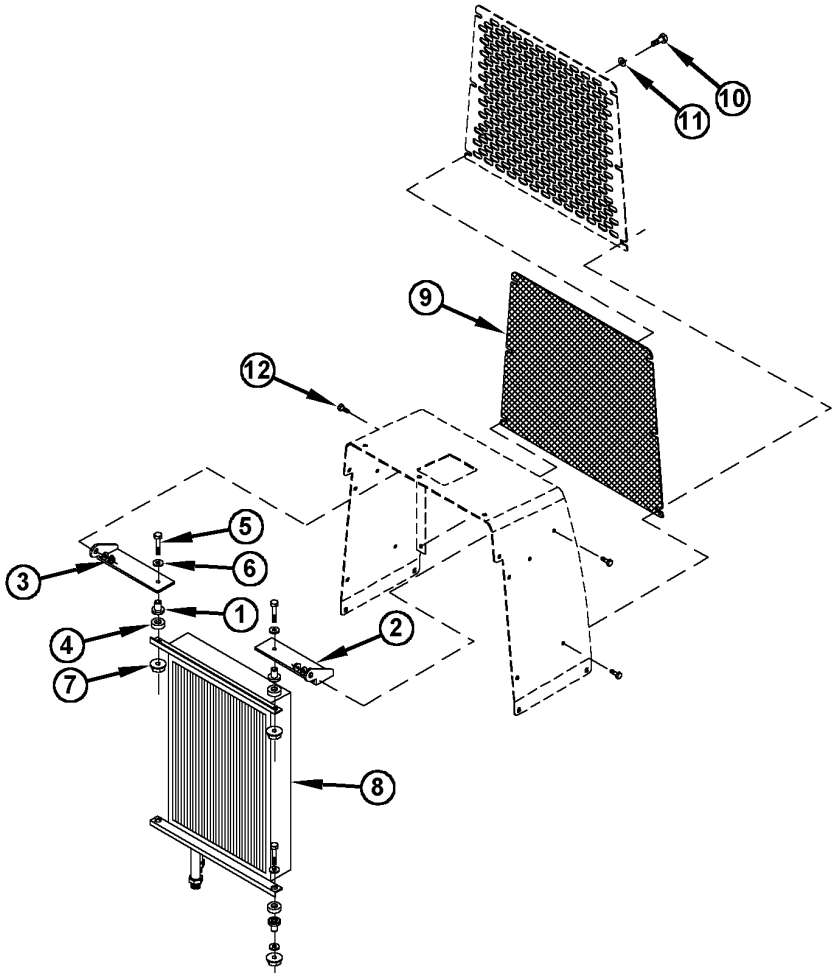
CED,OUO1010,704 -19-06AUG99-3/4

Remove and Install Hydrostatic PTO Oil Cooler (S.N. —882699)



T123154 —UN—16AUG99

1— Rubber Isolator (4 used)
2— Mounting Bracket
3— Mounting Bracket
4— Spacer (4 used)
5— Cap Screw (4 used)
6— Washer (4 used)
7— Nut (4 used)
8— Oil Cooler
9— PTO Grille
10— Cap Screw (6 used)
11— Washer (6 used)
12— Cap Screw (4 used)

CAUTION: Prevent possible injury from unexpected loader boom movement. When working on machine with loader in raised position, use a support or loader boom lock to prevent accidental lowering of loader.

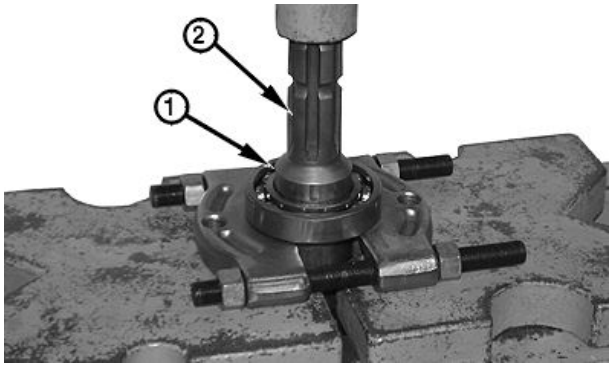
1. Raise loader boom and install loader boom lock.
2. Stop engine. Operate all hydraulic controls to relieve pressure in hydraulic system.
3. Remove cap screws (10) and washers (11). Remove the main grille and PTO grille (9).

Continued on next page

OUO1030,0000740 -19-16AUG16-1/2

7. Remove key from output shaft (2). Remove bearing (1) from output shaft using a knife edge puller and a press.

1— Bearing **2— Output Shaft**

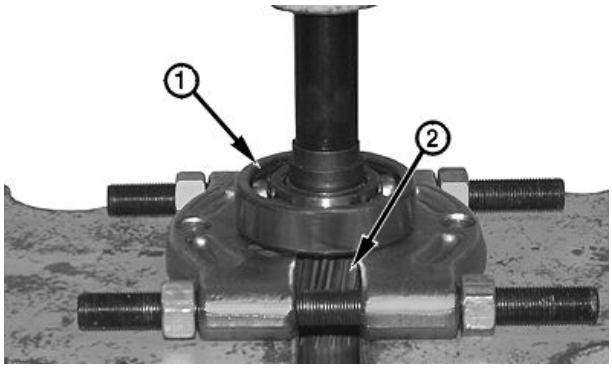


T123248B —UN—19AUG99

CED,OUO1020,3455 -19-02AUG99-6/15

8. Remove oil plug from end of input gear (2) only if replacement of bearing and/or gear is necessary.
9. Remove bearing (1) from input gear using a knife edge puller and a press.
10. Clean and inspect all gear case parts for wear or damage. Replace as necessary.

1— Bearing **2— Input Gear**

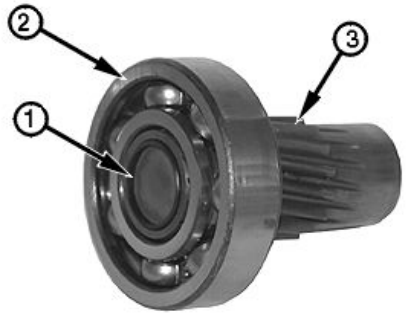


T123249B —UN—19AUG99

CED,OUO1020,3455 -19-02AUG99-7/15

11. Install oil plug (1) (if removed) flush with end of input gear (3).
12. Heat bearing (2) in oven. Install bearing on oil plug side of input gear until it contacts shoulder.

1— Oil Plug **3— Input Gear**
2— Bearing



T123251B —UN—26AUG99

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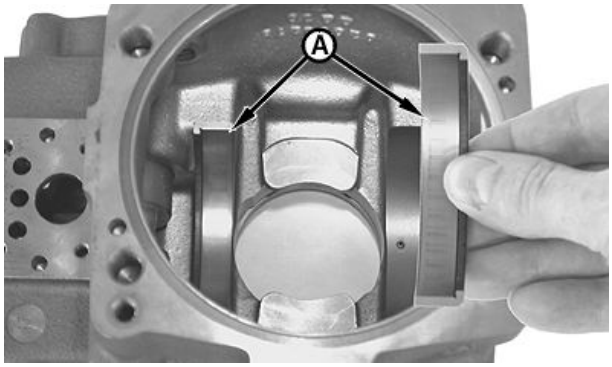
CED,OUO1020,3455 -19-02AUG99-8/15

9. Remove two bearing races (A) (if still in housing).
10. Inspect bearings and bearing races for wear, discoloration, or damage. Replace pump if any of these problems are indicated.

A—Bearing Races (2 used)

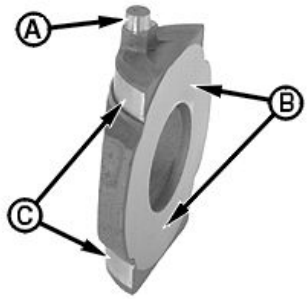


T122718B —UN—27AUG99

CED,OUO1010,710 -19-23AUG99-15/28

11. Inspect swashplate bearing surfaces (A—C) for wear, scoring, or discoloration. Replace pump if any of these problems are indicated

A—Glide Plate Pivot Surface
B—Piston Slipper Contact Surface
C—Bearing Surface

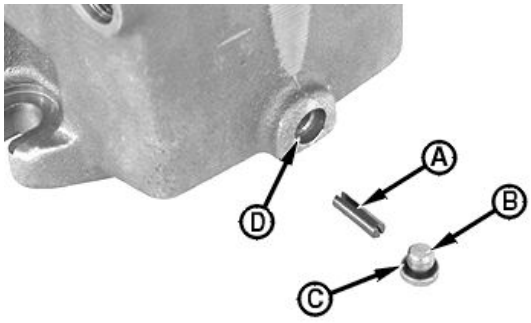


T122719B —UN—16AUG99

CED,OUO1010,710 -19-23AUG99-16/28

12. Remove plug (B) and retaining pin (A) from port (D). Replace O-ring (C).

A—Retaining Pin
B—Plug
C—O-Ring
D—Port



T122707B —UN—16AUG99

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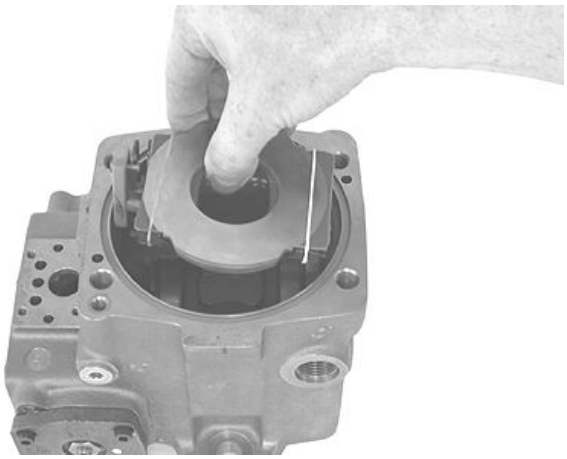
CED,OUO1010,710 -19-23AUG99-17/28

9. Carefully install swashplate.
10. Cut and carefully remove rubber bands. Make sure all of the rubber band is removed.
11. Make sure swashplate is fully seated on bearing races. Rotate servo piston as necessary to allow glide plate to fully seat in glide plate slot.

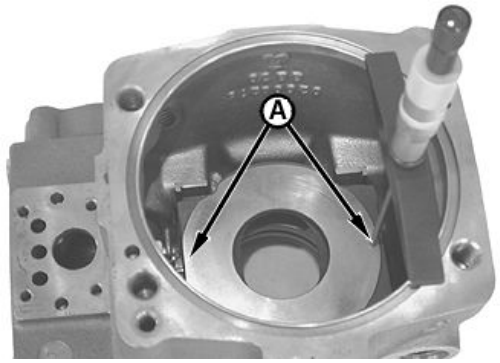
IMPORTANT: If the swashplate is not properly seated in pump housing, damage to pump will occur during pump operation. Make sure swashplate is seated correctly before installing the rotating group.

12. Measure distance between swashplate surface and pump housing-to-port plate mating surface at locations (A). Distance must be equal at both locations. If not, check for the following:
    - A piece of rubber band lodged between bearing and race.
    - One bearing race not properly seated in pump housing.
    - Glide plate not seating correctly in servo piston glide plate slot.

A—Measurement Locations



T122724B —UN—16AUG99

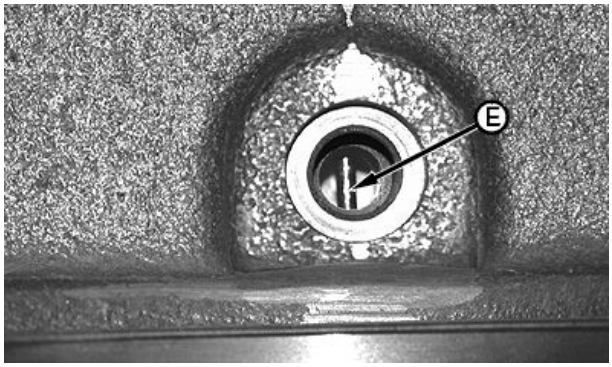


T122725B —UN—16AUG99

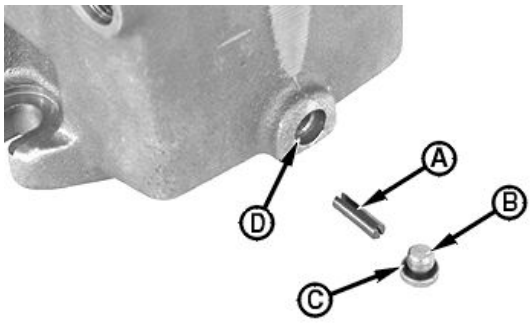
CED,OUO1010,709 -19-23AUG99-10/25

13. Make sure bearing retainer (E) is centered in hole (D). If bearing retainer is not centered in hole, move corresponding bearing as necessary.
14. Align slot in slotted pin (A) with bearing retainer (E), then install into hole (D). Install plug (B) with new O-ring (C).

A—Slotted Pin
B—Plug
C—O-Ring
D—Hole
E—Bearing Retainer



T122726B —UN—16AUG99



T122707B —UN—16AUG99

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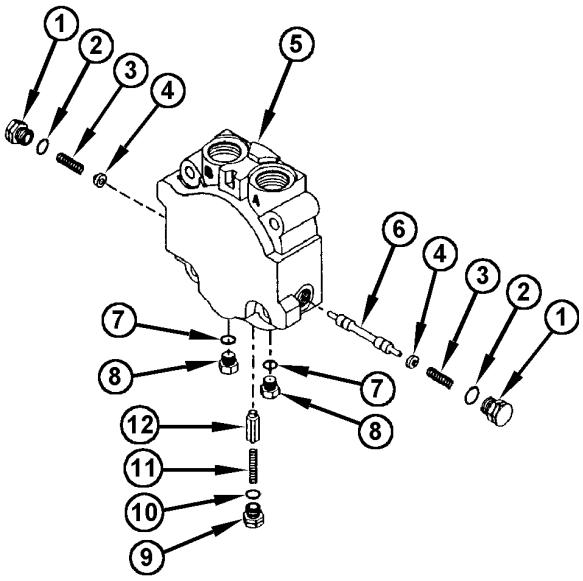
CED,OUO1010,709 -19-23AUG99-11/25

18. Remove and inspect parts (1—12). Discard O-rings.

1— Plug (2 used)
2— O-Ring (2 used)
3— Spring (2 used)
4— Spring Guide (2 used)
5— End Cap
6— Shuttle Spool
7— O-Ring (2 used)
8— Plug (2 used)
9— Plug
10— O-Ring
11— Spring
12— Relief Valve Poppet



T123612

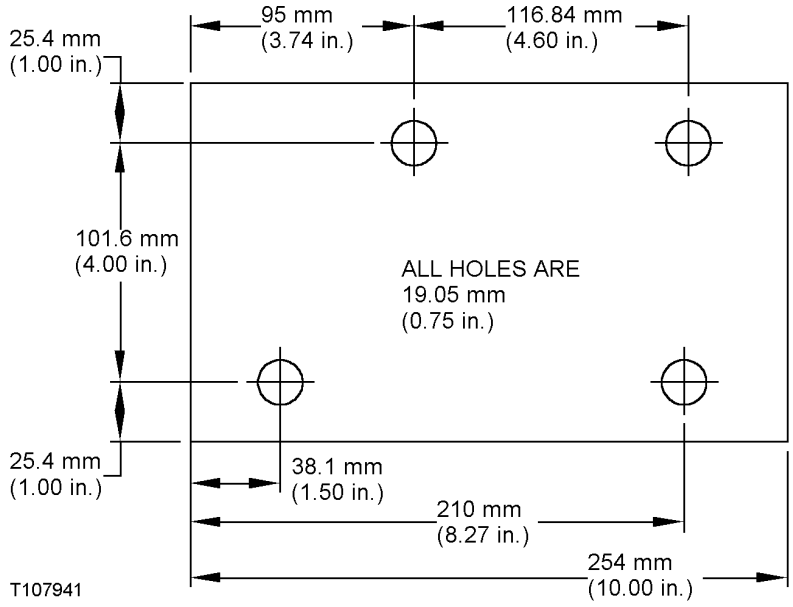
T123612 —UN—25AUG99

CED,OUO1017,103 -19-12AUG99-5/5

- 7/8 in. O-Ring Plug (2 used) drilled for 5/8 in. cap screws. Used to mount bracket to transmission.

TX,0399,SS3029 -19-23OCT95-2/2

DFT1146 Axle Mounting Bracket



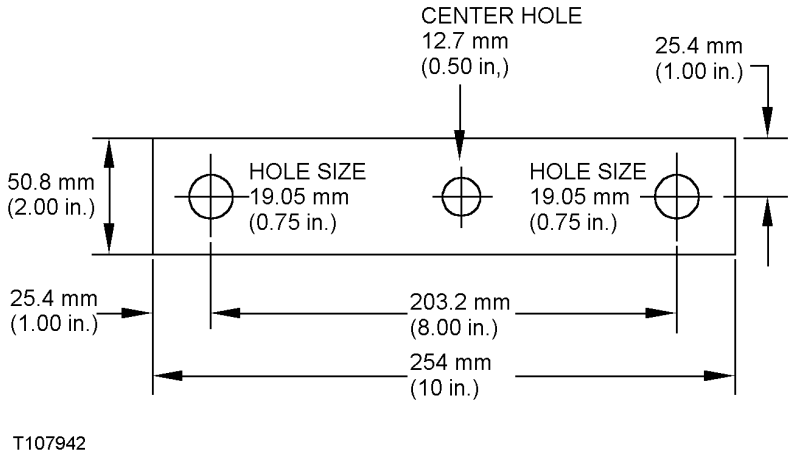
T107941 —19—17MAR97

Used to install axle in engine stand (2 used).

Material Required: 12.7 mm (1/2 in.) 1020 Steel

TX,02,SS3944 -19-26MAY99-1/1

DFT1147 Axle Rolling Torque Bar



T107942 —19—17MAR97

Used to determine axle rolling torque.

Material required: 9.5 mm (3/8 in.) 1020 Steel

TX,02,SS3945 -19-10SEP99-1/1