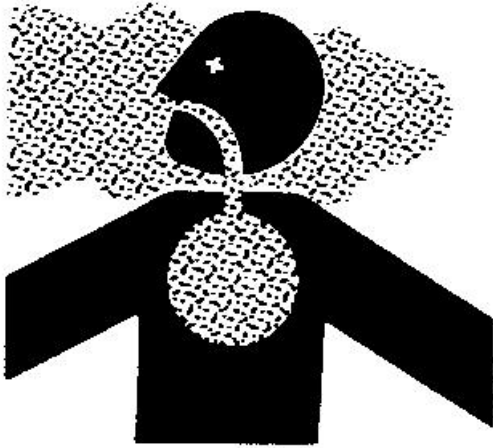


Group 05 - Safety

Work In Ventilated Area



Engine exhaust fumes

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

Recognize Safety Information



Safety-alert symbol

This is a safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.

Avoid Backover Accidents

Group 05 - Engine

Specifications

Item	Measurement	Specification
Cap Screw (M12 x 30)	Torque	125 N·m (92 lb.-ft.)
Cap Screw (M12 x 50)	Torque	125 N·m (92 lb.-ft.)
Torsional Damper Cap Screw	Torque, Lubricated	60—80 N·m (44—59 lb.-ft.)
Torsional Damper Cap Screw	Torque, Dry	53—67 N·m (39—49 lb.-ft.)
Torsional Damper Cover Cap Screw	Torque	4.8—7.2 N·m (42.4—63.7 lb.-in.)
Engine-to-Mid-Frame Cap Screw	Torque	438 N·m (323 lb.-ft.)
Front Support to Engine Cap Screw (A)	Torque	288—352 N·m (212—260 lb.-ft.)
Front Support to Engine Cap Screw (B)	Torque	288—352 N·m (212—260 lb.-ft.)
Engine to Front Support Cap Screw (C)	Torque	163—245 N·m (120—181 lb.-ft.)
Frame Cap Screw	Torque	438 N·m (323 lb.-ft.)

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.

Lifting Bracket

JDG11260

20 Engine Repair

Engine Lifting Sling

JDG23

20 Engine Repair

Flywheel Turning Tool

JDE83

20 Engine Repair

Other Material

Number	Name	Use
• TY6333 (us)	Multi-Purpose Grease	20 Engine Repair

John Deere Engine Repair—Use Component Technical Manual



Component Technical Manual

Group 05 - Fuel System

Specifications

Item	Measurement	Specification
Fuel Tank Front Support Plate Cap Screw	Torque	11.3 N·m (100 lb.-in.)
Fuel Tank Rear Support Bracket Cap Screw	Torque	60 N·m (44.2 lb.-ft.)
Main Fuel Tank Strap Cap Screw	Torque	60 N·m (44 lb.-ft.)
TORX® Screw	Torque	1.3 N·m (11.5 lb.-in.)
Auxiliary Fuel Tank Cap Screw	Torque	60 N·m (44.2 lb.-ft.)
Fuel Cooler Cap Screw and Nut	Torque	30 N·m (22.1 lb.-ft.)

Injection Pump, Nozzle, and Governor Repair—Use Component Technical Manual



Component Technical Manual

For complete repair information, use the relevant component technical manual (CTM) listed on the front cover of this manual.

Group 05 - Battery, Starter and Alternator

Starter Repair—Use Component Technical Manual



Component Technical Manual

For complete repair information the component technical manual (CTM) is also required. Use the CTM—Alternators and Starting Motors in conjunction with this machine manual.

Prevent Battery Explosions



Battery Explosions

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

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

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).

Remove and Install Battery

[1] -



CAUTION:

Keep all sparks and flames away from batteries, as gas given off by electrolyte is explosive. To avoid sparks, connect ground cable last and disconnect it first.

To avoid shocks and burns, disconnect battery ground cable before servicing any part of electrical system.

Group 05 - Separation

Specifications

Item	Measurement	Specification
Mid-Frame-to-Transmission Case Cap Screw	Torque	252—308 N·m (186—226 lb.-ft.)
Mid-Frame-to-Engine Cap Screw	Torque	398—478 N·m (294—352 lb.-ft.)
Side Frame Cap Screw	Torque	438 N·m (323 lb.-ft.)
MFWD Bearing Support-to-Transmission Case Cap Screw	Torque	81—121 N·m (60—90 lb.-ft.)
Mid-Wall-to-Transmission Case Cap Screw	Torque	46—70 N·m (34—52 lb.-ft.)
Differential Drive Shaft-to-Mid-Wall	Torque	81—121 N·m (60—90 lb.-ft.)
Differential Drive Shaft	End Play	0—0.13 mm (0—0.005 in.)
Retaining Nut	Torque	200 N·m (148 lb.-ft.)
Wheel Speed Sensor	Torque	11.5—15.5 N·m (9—11 lb.-ft.)
Transmission Shift Linkage Cover-to-Transmission Case Cap Screw	Torque	46—70 N·m (34—52 lb.-ft.)
Transmission Case-to-Differential Case Cap Screw	Torque	284—336 N·m (210—248 lb.-ft.)
Transmission Lube Pump Plug	Torque	29—44 N·m (21—32 lb.-ft.)
Transmission Lube Pump Fitting	Torque	36.8—52.9 N·m (27.1—39.0 lb.-ft.)

Service Equipment and Tools

→NOTE:

Order tools according to information given in the SERVICEGARD[™] Catalog. Some tools may be available from a local supplier.

Flywheel Turning Tool

JDE83

50 Drive System and Transmission Repair

Lifting Bracket

JT01748

50 Drive System and Transmission Repair

Other Material

Number	Name	Use
• TY6333 (us)	Multi-Purpose Grease	50 Drive System and Transmission Repair
• TY24416 (us)	Multi-Purpose HD Lithium Complex Grease	50 Drive System and Transmission Repair
• PM38657 (loctite) • 17430 Loctite [™] (us)	High Flex Form-In-Place Gasket Maker	50 Drive System and Transmission Repair

Group 05 - Steering Repair

Other Material

Number	Name	Use
<ul style="list-style-type: none">• PM37477 (us)• 242 Loctite™ (loctite)	Thread Lock (medium strength)	60 Steering and Brake Repair
<ul style="list-style-type: none">• TY24416 (us)	Multi-Purpose HD Lithium Complex Grease	60 Steering and Brake Repair

Group 05 - Hydraulic Pump and Filter

Specifications

Item	Measurement	Specification
Hydraulic Pumps Mounting Cap Screw	Torque	125 N·m (92 lb.-ft.)
Flange Cap Screw	Torque	20—30 N·m (177—266 lb.-in.)
Hydraulic Oil Filter	Torque	24 N·m (17 lb.-ft.)
Rear Wheel Mounting Cap Screw	Torque	600 N·m (442 lb.-ft.)
Fitting (D)	Torque	33 N·m (24 lb.-ft.)
Hydraulic Pump Mounting Cap Screw	Torque	125 N·m (92 lb.-ft.)
Hydraulic Pumps Housing Bolt	Torque	47 N·m (35 lb.-ft.)
Hydraulic Pumps Housing Cap Screw	Torque	47 N·m (35 lb.-ft.)
Hydraulic Pumps Housing Socket Head Cap Screw	Torque	47 N·m (35 lb.-ft.)
Manifold Flange Cap Screw	Torque	90 N·m (66 lb.-ft.)
Hydraulic Oil Filter	Torque	24 N·m (17 lb.-ft.)

Group 05 - Front Axle—2WD

Service Equipment and Tools

→NOTE:

Order tools according to information given in the SERVICEGARD™ Catalog. Some tools may be available from a local supplier.

Bushing, Bearing, and Seal Driver Master Set

D0145AA

80 Miscellaneous Repair

Specifications

Item	Measurement	Specification
Axle	End Play	0.8 mm (0.030 in.)
2WD Axle Pivot Pin Retainer Cap Screw	Torque	135 N·m (100 lb.-ft.)
Front Wheel Cap Screw	Torque	175 N·m (129 lb.-ft.)
Tie Rod End Nut	Torque	165 N·m (122 lb.-ft.)
Jam Nut	Torque	60 N·m (44.3 lb.-ft.)

Group 05 - Seat and Support

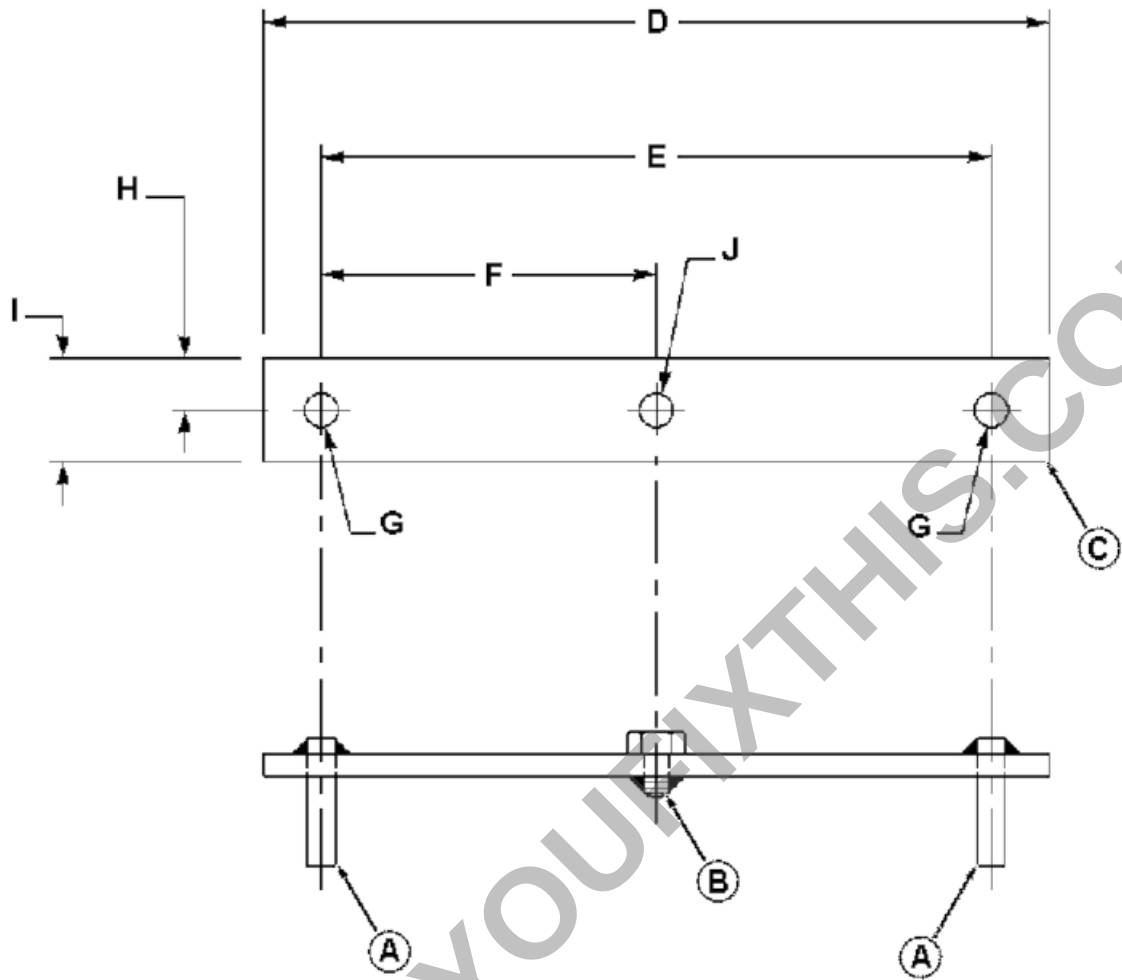
Specifications

Item	Measurement	Specification
OOS and Cab Seat Support Cap Screw	Torque	35 N·m (26 lb.-ft.)

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Group 05 - Dealer Fabricated Tools

DFLV1A-Final Drive Turning Tool



DFLV1A-Final Drive Turning Tool

LEGEND:

- A Round Steel Stock
- B Cap Screw
- C Steel Sheet

	Dimensions	
	5M series Tractors	Others
Round Steel Stock (A)	ø16 x 120 mm (ø0.63 x 4.724 in.)	ø12 x 50 (ø0.472 x 1.969 in.)
Cap Screw (B)	M8 x 15	M8 x 15
Steel Sheet (C)	40 x 10 x 430 mm (1.575 x 0.394 x 16.929 in.)	40 x 10 x 380 (1.575 x 0.394 x 14.960 in.)
(D)	430 mm (16.929 in.)	380 mm (14.961 in.)
(E)	382.5 mm (15.059 in.)	336 mm (13.230 in.)
(F)	191.3 mm (7.529 in.)	168 mm (6.615 in.)
(G)	16 mm (0.63 in.)	12 mm (0.472 in.)
(H)	20 mm (0.787 in.)	20 mm (0.787 in.)
(I)	40 mm (1.575 in.)	40 mm (1.575 in.)
(J)	9 mm (0.354 in.)	9 mm (0.354 in.)

Use: Tool is used to rotate final drive housing to determine rolling drag torque.

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For complete repair information, use the relevant component technical manual (CTM) listed on the front cover of this manual.

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[6] - Install DEF injector with gasket (E) using cap screws (F). Tighten cap screws to specification.

Item	Measurement	Specification
DEF Injector Cap Screw	Torque	8 N·m (70 lb.-in.)

[7] - Connect wire connector (G), DEF injector connector (C), and coolant tubes (B and D). Tighten clamps securely.

[8] - Install heat shield (A).

[2] - Disconnect electrical connector (A).

[3] - Remove blower control knob (B) and nut (C).

[4] - Replace blower switch.

[5] - Install nut (C) and blower control knob (B).

[6] - Connect electrical connector (A).

[7] - Install cab control panel.



CINCH Terminal Extraction Tool

Insert JDG1725 Terminal Extractor Tool (E) into holes (C) next to terminal opening (D) to unlock terminal.

Terminal Extractor Tool

JDG1725

40 Electrical Repair

[6] - Pull wire and terminal (F) from connector body.

[7] -



LEGEND:

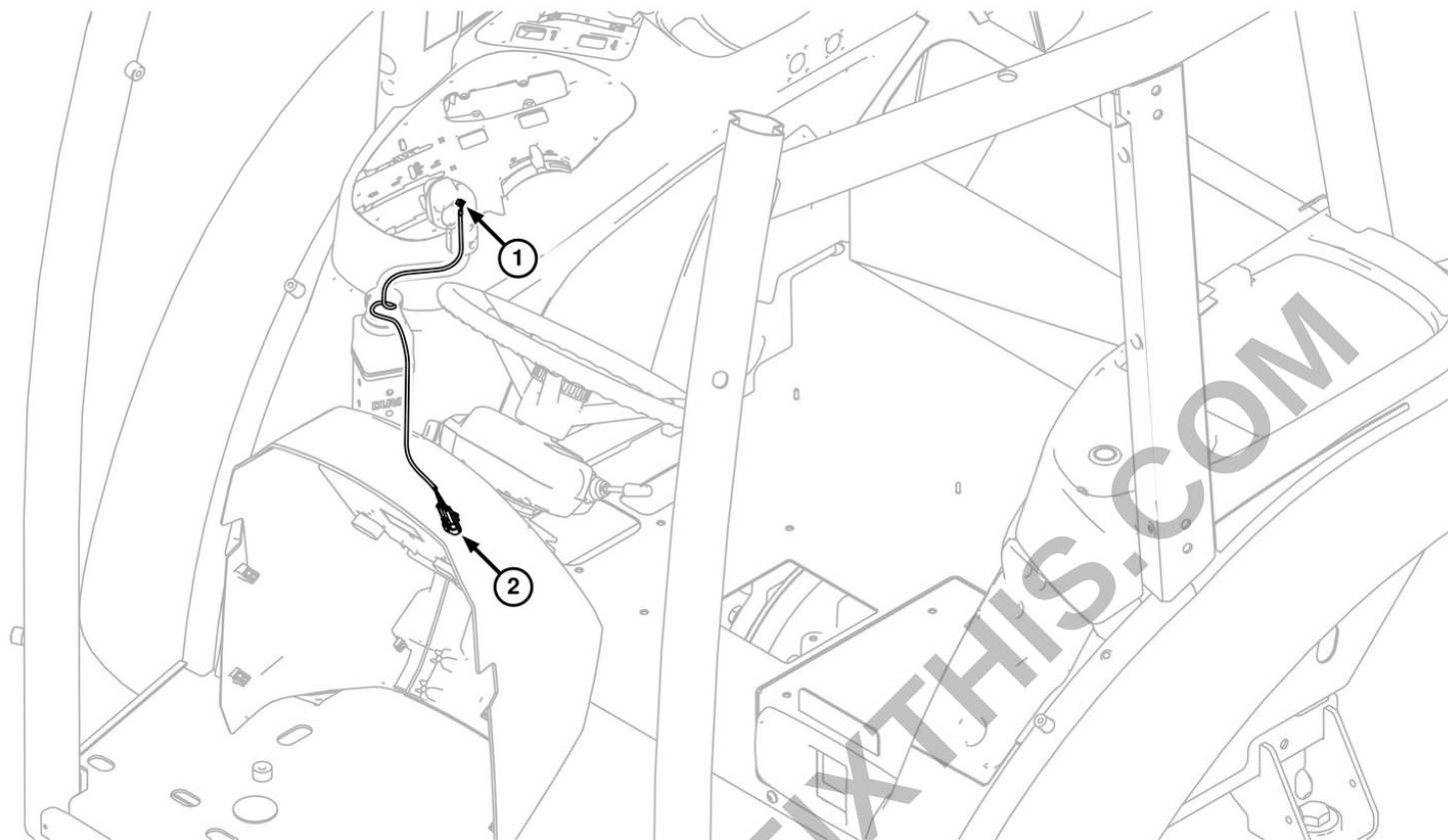
- A JDG1727 Terminal Crimping Tool
[Included in JDG1744 Master Kit]
- B Terminal Receptacle
- C Terminal
- D Wire

Crimp terminal



CINCH Terminal Crimping Tool

Replace W708 Multi-Function Control Lever Switch Harness



W708 Multi-Function Control Lever Switch Harness

LEGEND:

- 1 S19 Mid-Mount Solenoid Switch
- 2 X28 Cab/OOS Chassis Harness to Multi-Function Control Lever Switch Harness Connector

[1] - Disconnect battery negative (—) cable.

[2] - Remove multi-function control lever switch. (See Replace Multi-Function Control Lever Switch in Section 40, Group 10.)

[3] - Remove multi-function control lever cover. (See Inspect and Repair Multi-Function Control Lever and Linkage in Section 70, Group 25.)

[4] - Disconnect wire connectors (1 and 2).

[5] - Replace wire harness.

[6] - Connect wire connectors (1 and 2).

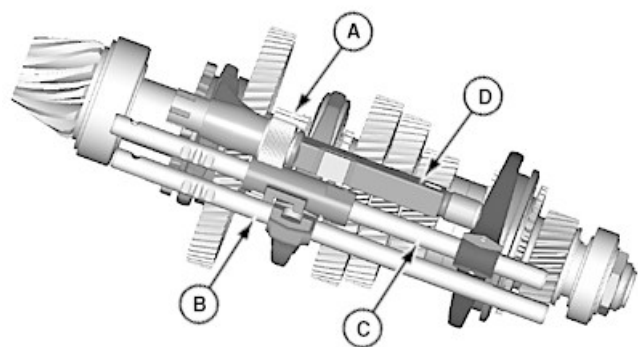
[7] - Install multi-function control lever cover. (See Inspect and Repair Multi-Function Control Lever and Linkage in Section 70, Group 25.)

[8] - Install multi-function control lever switch. (See Replace Multi-Function Control Lever Switch in Section 40, Group 10.)

[9] - Connect battery negative (—) cable.

Disassemble, Inspect, and Assemble Differential Drive Shaft—SS Transmission

[1] -



LEGEND:

- A Differential Drive Shaft Assembly
- B A and B Range Shift Assembly
- C C and D Range Shift Assembly
- D Park Lock Shift Rail Assembly

Differential Drive Shaft—SS Transmission

Remove differential drive shaft assembly. (See Remove and Inspect Transmission in Section 50, Group 05.)

[2] - Remove range shift assemblies (B and C) from transmission differential drive shaft assembly (A).

[3] - Disassemble, inspect, and repair range shift assemblies (B and C), if necessary. (See Disassemble, Inspect, and Repair Range Shift Assembly—SS Transmission in this group.)

[4] - Disassemble, inspect, and assemble park lock shift rail assembly (D), if necessary. (See Disassemble, Inspect, and Assemble Park Lock Shift Rail Assembly in this group.)

[5] -

→NOTE:

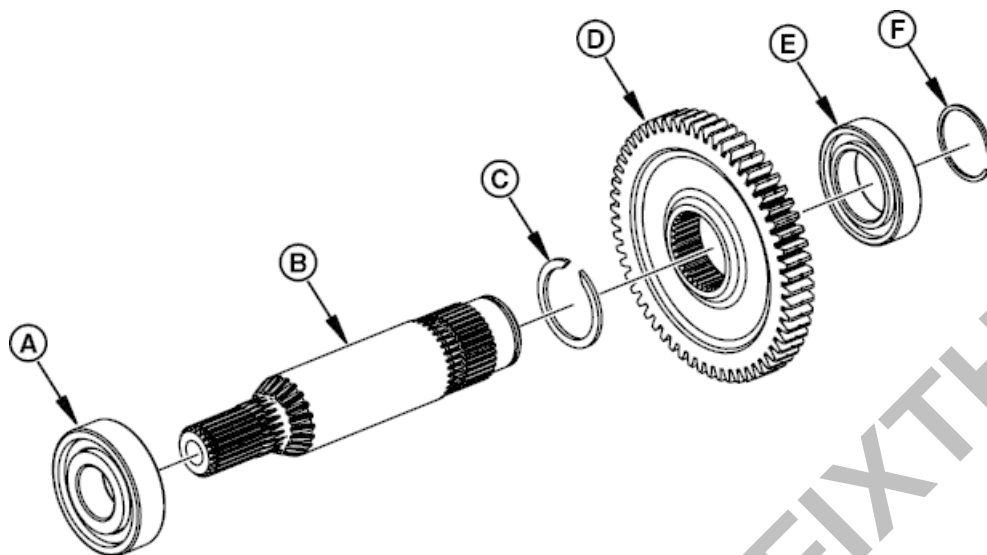
To aid in assembly, keep parts together and in proper sequence as the gear cluster is disassembled.

Disassemble, Inspect, and Assemble Pump Idler Shaft Assembly—SS Transmission

[1] -

→NOTE:

Bearings (A and E) are press fit on shaft (B).



Pump Idler Shaft Assembly—SS Transmission

LEGEND:

A	Bearing
B	Shaft
C	Snap Ring
D	Gear
E	Bearing
F	Snap Ring

Press off bearing (A).

[2] - Remove snap ring (F).

[3] - Press off bearing (E) with gear (D).

[4] - Remove snap ring (C).

[5] - Inspect all parts for wear or damage. Replace if necessary.

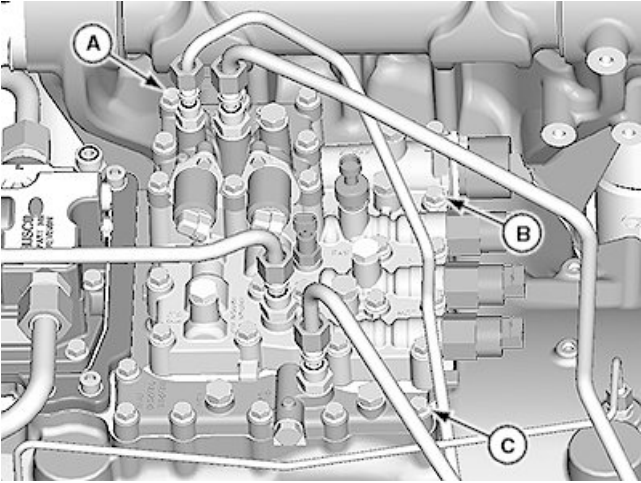
[6] -

→NOTE:

Lubricate all parts with clean transmission-hydraulic oil during assembly.

Install snap ring (C) on shaft (B).

[7] - Install gear (D) on shaft (B).



- LEGEND:**
- A Cap Screw (9 used)
 - B Cap Screw (14 used)
 - C Cap Screw (6 used)

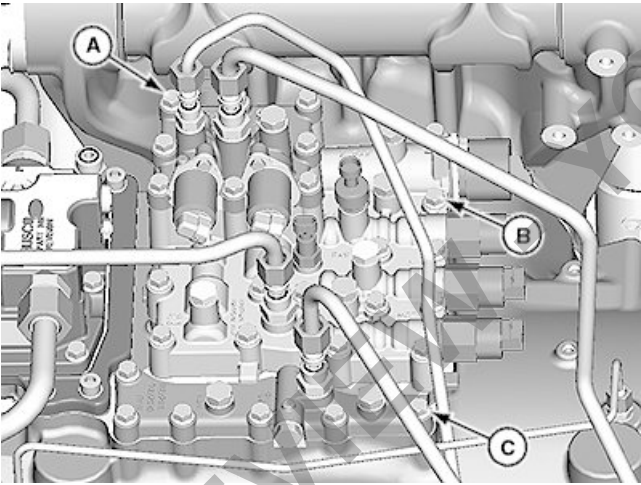
Transmission Control Valve—PR and PR Plus Transmission

Remove cap screws (A, B, and C) and control valve.

[12] - Make repairs as necessary. (See Disassemble, Inspect, and Repair Control Valve—PR and PR Plus Transmission in Section 50, Group 45.)

[13] - Clean mating surfaces of control valve and differential case.

[14] -



- LEGEND:**
- A Cap Screw (9 used)
 - B Cap Screw (14 used)
 - C Cap Screw (6 used)

Transmission Control Valve—PR and PR Plus Transmission

Install transmission control valve using cap screws (A—C). Tighten to specification.

Item	Measurement	Specification
Control Valve-to-Differential Case Cap Screw	Torque—Dry Lubricated	25—31 N·m (18—22 lb.-ft.)

[15] -

IMPORTANT:

When removing or installing hydraulic lines, always support line adapter and fittings with a backup wrench to keep fittings stationary and prevent damage to lines.

D	Gear (30 or 31 Teeth)
E	MFWD Idler Shaft
F	Bearing
G	Cap Screw (3 used)
H	Cover
I	O-Ring

Bearing (F) is press fit on shaft (E).

Changeable MFWD gear ratio: To replace gear (D), remove cap screws (G), cover (H), snap ring (B), and washer (C).

For tractor with fixed MFWD gear ratio:

- a. Remove bearing (A) using a knife-edged puller and press.
- b. Remove parts (B—D).

[2] - Tractor with changeable MFWD gear ratio:

- a. Remove parts (G—I).
- b. Remove snap ring (B) and washer (C).
- c. Replace gear (D) as necessary.

[3] - Remove bearing (F) using a knife-edged puller and press.

[4] - Inspect all parts for wear and damage.

[5] -

→NOTE:

Lubricate all parts with clean transmission-hydraulic oil during assembly.

Install bearing (F) using a bearing, bushing, and seal driver set and a press.

[6] - Install all parts.

[7] - Install bearing (A) using a bearing, bushing, and seal driver set and a press.

[8] -

→NOTE:

Replace O-ring. Used or damaged O-ring will leak.

Tractor with changeable MFWD gear ratio: Install O-ring (I), cover (H), and cap screws (G).

[1] -

→NOTE:

An assistant is required to perform bleeding procedure.

Always bleed equalizing bore first.

[2] - Connect a transparent hose (A) to relevant bleed screw. Insert other end of hose into oil filler neck (B).

[3] -

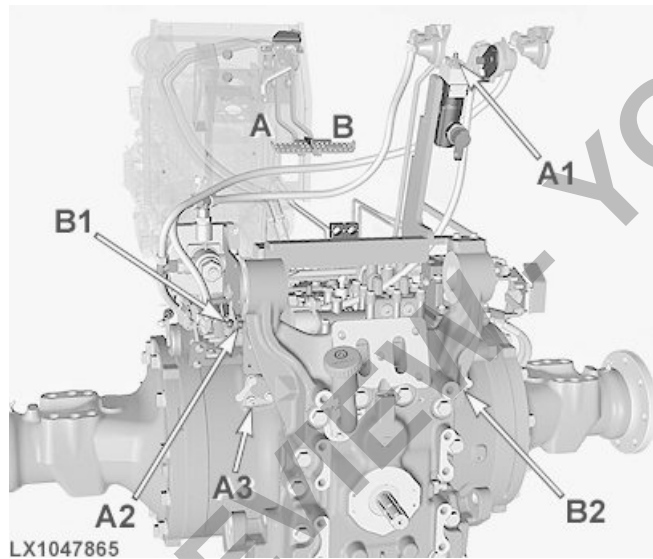
IMPORTANT:

Do not allow brake pedal rebound to upper stop.

Open bleed screw by approximately one turn. Slowly depress brake pedal until it reaches its stop and slowly release it. Repeat this procedure until the emerging oil is free of air bubbles.

[4] - When finished, hold brake pedal depressed and close bleed screw. For correct bleeding sequence of various components, see Bleeding Sequence in next step.

[5] -



LEGEND:

- A Left Brake Pedal
- B Right Brake Pedal
- A1 Bleed Screw on Hydraulic Trailer Brake Valve
- A2 Right Bleed Screw on Trailer Air Brake Valve
- A3 Bleed Screw of Left Rear-Wheel Brake
- B1 Left Bleed Screw on Trailer Air Brake Valve
- B2 Bleed Screw of Right Rear-Wheel Brake

Bleeding Sequence

Bleeding Sequence: For correct bleeding sequence of the various components, see table.

Bleeding Sequence

Determine the correct bleeding sequence by using this table and the illustration
Tractor without hydraulic trailer brake:
Step 1—open A3, depress left brake pedal A
Step 2—open B2, depress right brake pedal B
Tractor with hydraulic trailer brake:
Step 1—open A1, depress left brake pedal A
Step 2—open A3, depress left brake pedal A
Step 3—open B2, depress right brake pedal B

[12] - Adjust control cables. (See Rear SCV Control Cable Adjustment in this group.)

[13] - Install right-side control console panel. (See Remove and Install Right-Side Control Console—OOS, Mechanical Hitch Control, or see Remove and Install Right-Side Control Console—OOS, Electrohydraulic Hitch Control in Section 90, Group 10.)

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Front Hitch Hydraulic Hose Connection

Connect front hitch hoses (B) to mid-mount bucket work port quick couplers (A).

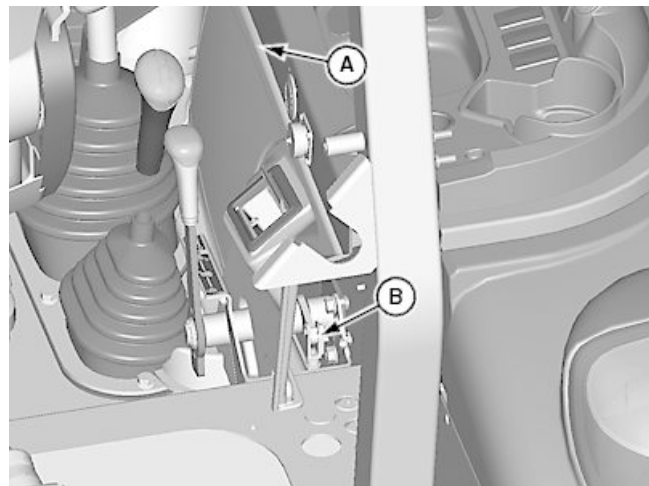
[5] - Perform an operational check.

Group 10 - Control Console

Specifications

Item	Measurement	Specification
Screws on Position Lever Knob, Top Panel, Hand Throttle Assembly	Torque	4 N·m (3 lb.-ft.)
Screws on Central Panel, Top Panel, Hand Throttle Assembly	Torque	4 N·m (3 lb.-ft.)
Console Mounting Cap Screws	Torque	35 N·m (26 lb.-ft.)

[16] -



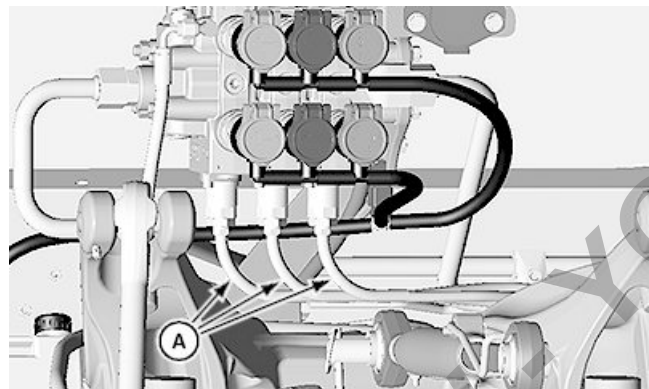
- LEGEND:**
- A Side Panel
 - B Creeper Control Cable

Creeper Control

If equipped, pull creeper control cable (B) through cab floor and connect to lever.

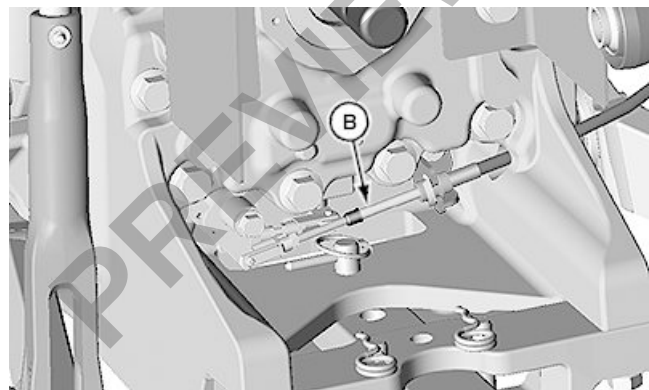
[17] - Install right-hand upholstery (A). (See Remove and Install Right-Hand Upholstery in Section 90, Group 20.)

[18] -



- LEGEND:**
- A Rear SCV Control Cable (3 used)
 - B PTO Speed Shift Control Cable

SCV Control Cables



PTO Speed Shift Control Cable

Slide rear SCV control cables (A) end into spool slot.

[19] - Install SCV cable sleeve and SCV cable retaining nut. Tighten to specification.

Item	Measurement	Specification
SCV Cable Retaining Nut	Torque	16—19 N·m (12—14 lb.-ft.)

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