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Group 05 - Safety

Recognize Safety Information



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.

Understand Signal Words







A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this

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Machine Specifications, Continued

→NOTE:

Specifications and design subject to change without notice.

	5415	5615	5715
ELECTRICAL SYSTEM			
Type	12 V Negative Ground	12 V Negative Ground	12 V Negative Ground
Battery	12 V Cold Cranking Amps 550 (Load Capacity)	12 V Cold Cranking Amps 550 (Load Capacity)	12 V Cold Cranking Amps 550 (Load Capacity)
Specifications			
BCI Group	27 F	27 F	27 F
Alternator	70 A	70 A	70 A
Starter Motor	12 V, 2.5 kW	12 V, 2.5 kW	12 V, 2.5 kW
TRANSMISSION			
Standard	Synchronized 9/3	Synchronized 9/3	Synchronized 9/3
Gear Selection	Lever	Lever	Lever
Changing	Manual	Manual	Manual
BRAKES			
Type	Hydraulically Activated Wet Disk	Hydraulically Activated Wet Disk	Hydraulically Activated Wet Disk
PTO			
Type (standard)	Fully Independent, 540 rpm	Fully Independent, 540 rpm	Fully Independent, 540 rpm
PTO Speed (540 rpm)	2400 rpm	2400 rpm	2400 rpm
Size	280 mm (11 in.)	280 mm (11 in.)	280 mm (11 in.)
Clutch	Lever-operated	Lever-operated	Lever-operated
HYDRAULIC SYSTEM			
Type	Open Center	Open Center	Open Center
Pump	Tandem, Gear-type	Tandem, Gear-type	Tandem, Gear-type
Pump Flow			
Steering	11.9 cc (0.73 cu. in.)	11.9 cc (0.73 cu. in.)	11.9 cc (0.73 cu. in.)
Implement	28.8 cc (1.76 cu. in.)	28.8 cc (1.76 cu. in.)	28.8 cc (1.76 cu. in.)
Flow Rate [Flow rate at 90% pump efficiency and engine at rated speed.]			

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Machine Specifications, Continued

→NOTE:

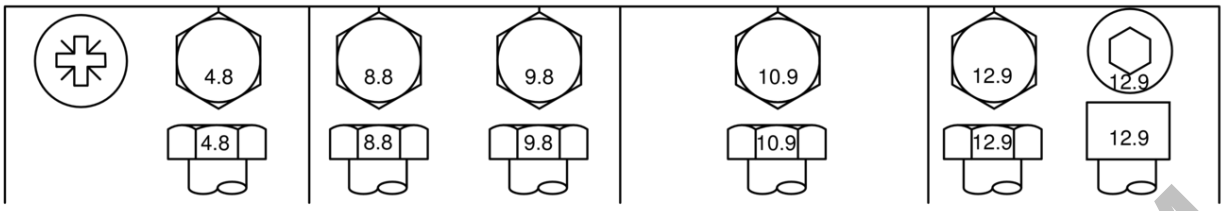
Specifications and design subject to change without notice.

	5415	5615	5715
CAPACITIES			
Fuel Tank	95 L (25 U.S. gal)	95 L (25 U.S. gal)	95 L (25 U.S. gal)
Engine Cooling System	10.8 L (11.4 U.S. qt.)	10.8 L (11.4 U.S. qt.)	10.8 L (11.4 U.S. qt.)
Crankcase (including filter)	8.5 L (9 U.S. qt.)	8.5 L (9 U.S. qt.)	8.5 L (9 U.S. qt.)
Transmission/Hydraulic System			
Dry Clutch (CollarShift and Synchronized Transmissions, w/o MFWD)	38 L 10 U.S. gal.	38 L 10 U.S. gal.	38 L 10 U.S. gal.
Dry Clutch (CollarShift and Synchronized Transmissions, MFWD)	41.8 L (11 U.S. gal.)	41.8 L (11 U.S. gal.)	41.8 L (11 U.S. gal.)
Mechanical Front Wheel Drive (MFWD)			
Wheel Hubs	0.6 L (0.6 U.S. qt.)	0.6 L (0.6 U.S. qt.)	0.6 L (0.6 U.S. qt.)
Axle Housing	5 L (5.2 U.S. qt.)	5 L (5.2 U.S. qt.)	5 L (5.2 U.S. qt.)

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Metric Bolt and Screw Torque Values



Bolt or Screw Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated ["Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.]		**Dry** ["Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B, F13E or F13H zinc flake coating.]		**Lubricated** ["Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.]		**Dry** ["Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B, F13E or F13H zinc flake coating.]		**Lubricated** ["Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.]		**Dry** ["Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B, F13E or F13H zinc flake coating.]		**Lubricated** ["Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C, F13F or F13J zinc flake coating.]		**Dry** ["Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B, F13E or F13H zinc flake coating.]	
	N˙m	**lb.-in.**	**N˙m**	**lb.-in.**	**N˙m**	**lb.-in.**	**N˙m**	**lb.-in.**	**N˙m**	**lb.-in.**	**N˙m**	**lb.-in.**	**N˙m**	**lb.-in.**	**N˙m**	**lb.-in.**
M6	4.7	42	6	53	8.9	79	11.3	100	13	115	16.5	146	15.5	137	19.5	172
									N˙m	**lb.-ft.**	**N˙m**	**lb.-ft.**	**N˙m**	**lb.-ft.**	**N˙m**	**lb.-ft.**
M8	11.5	102	14.5	128	22	194	27.5	243	32	23.5	40	29.5	37	27.5	47	35
			N˙m	**lb.-ft.**	**N˙m**	**lb.-ft.**	**N˙m**	**lb.-ft.**								
M10	23	204	29	21	43	32	55	40	63	46	80	59	75	55	95	70
	N˙m	**lb.-ft.**														
M12	40	29.5	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	46	80	59	120	88	150	110	175	130	220	165	205	150	260	190
M16	100	74	125	92	190	140	240	175	275	200	350	255	320	235	400	300
M18	135	100	170	125	265	195	330	245	375	275	475	350	440	325	560	410
M20	190	140	245	180	375	275	475	350	530	390	675	500	625	460	790	580
M22	265	195	330	245	510	375	650	480	725	535	920	680	850	625	1080	800
M24	330	245	425	315	650	480	820	600	920	680	1150	850	1080	800	1350	1000
M27	490	360	625	460	950	700	1200	885	1350	1000	1700	1250	1580	1160	2000	1475
M30	660	490	850	625	1290	950	1630	1200	1850	1350	2300	1700	2140	1580	2700	2000
M33	900	665	1150	850	1750	1300	2200	1625	2500	1850	3150	2325	2900	2150	3700	2730
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2770	4750	3500

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For stainless steel fasteners or for nuts on U-bolts, see the tightening instructions for the specific application. Tighten plastic insert or crimped steel type lock nuts by turning the nut to the dry torque shown in the chart, unless different instructions are given for the specific application.

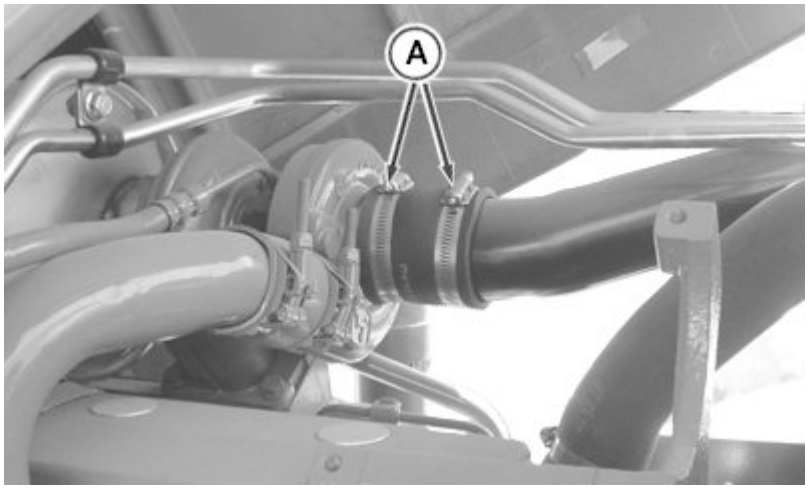
Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class. Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.

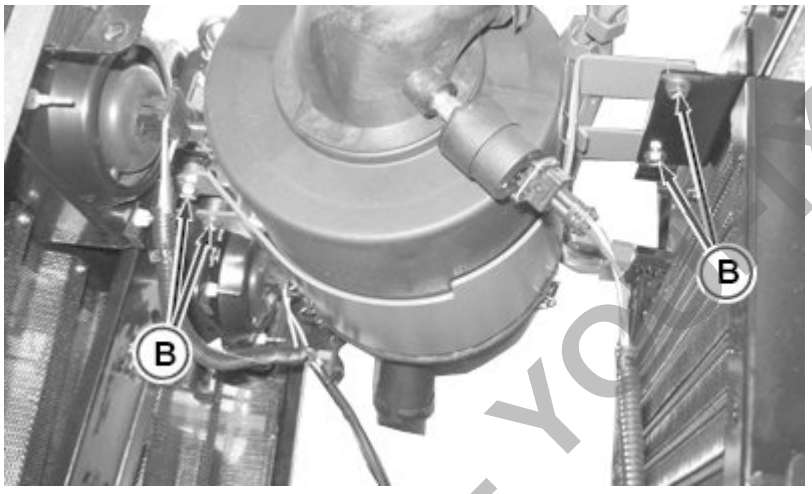
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Remove Engine

[1] -





LEGEND:

A	Clamp
B	Cap Screw (4 used)

Remove hood and side screens. (See " Remove and Install Hood " in section 80, Group 25)

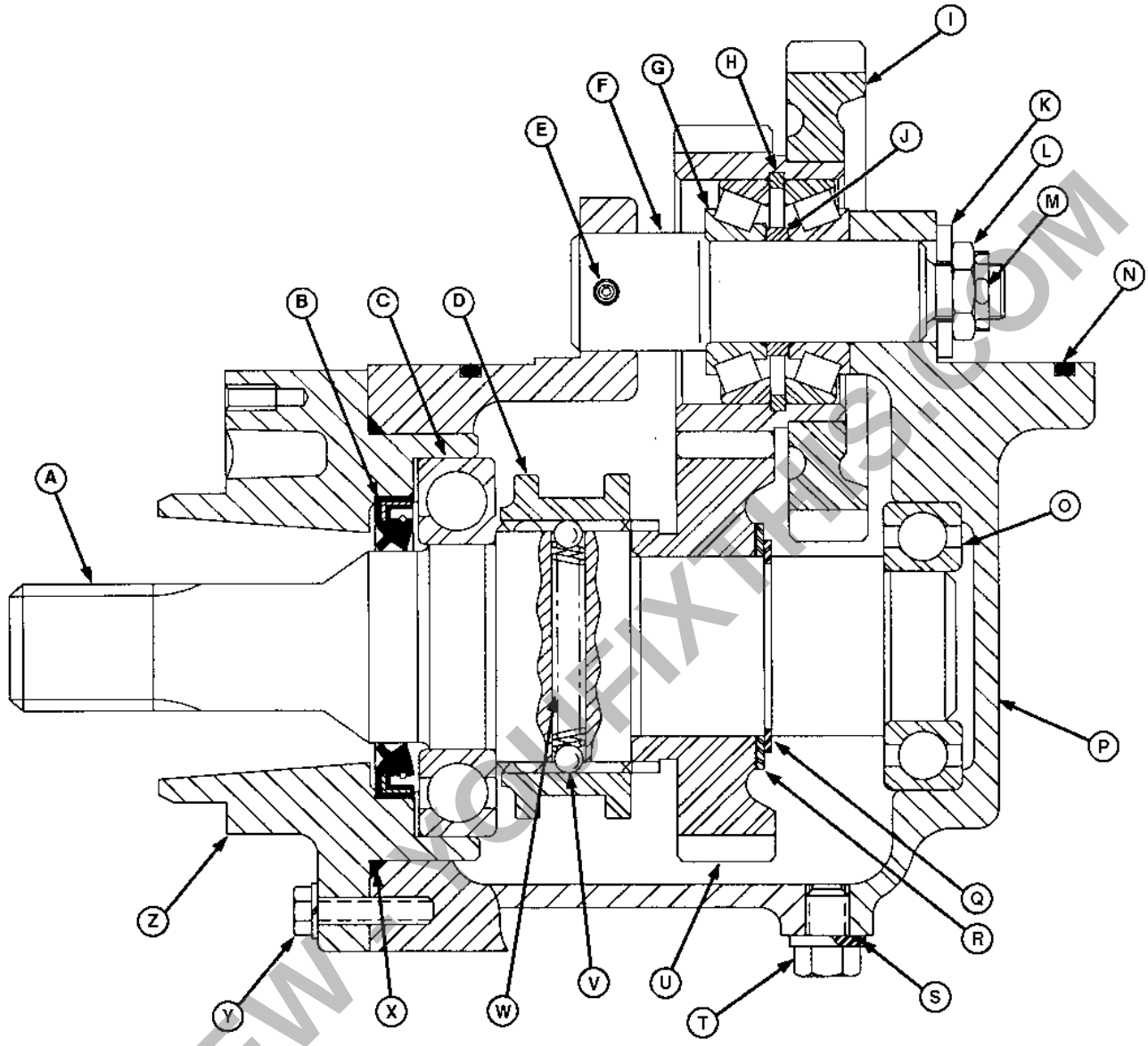
[2] - Loosen clamp (A). Remove cap screws (B) and engine air cleaner assembly.

[3] - Remove battery. (See “ Remove and Install Battery ” in Section 40, Group 05.)

[4] - Remove hydraulic oil cooler. (See “ Remove, Inspect, and Install Hydraulic Oil Cooler—Reference Listing ” in Section 70, Group 06.)

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LEGEND:

A	Output Shaft
B	Seal
C	Bearing
D	Shift Collar
E	Dual Spring Pins
F	Top Shaft
G	Bearing Assembly
H	Snap Ring
I	Driven Gears
J	Spacer
K	Washer
L	Nut
M	Cotter Pin
N	O-Ring
O	Bearing
P	MFWD Drop Gearbox

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Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet , and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

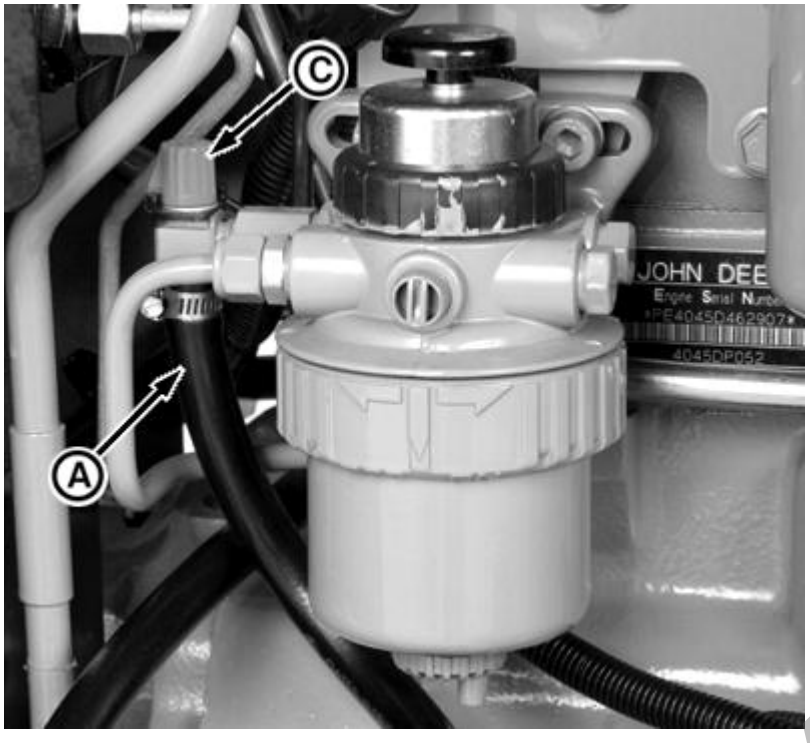
Securely support any machine elements that must be raised for service work.

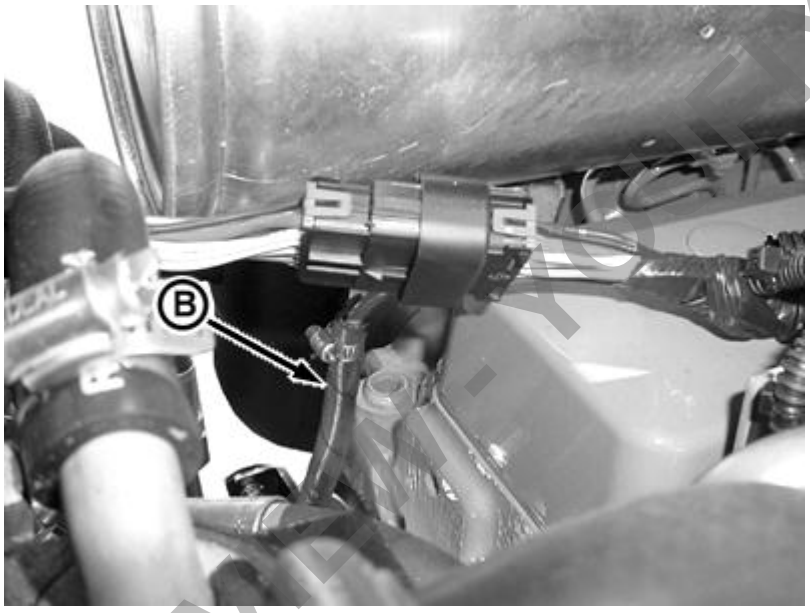
Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical

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LEGEND:

A	Fuel Supply Hose
B	Fuel Return Hose
C	Shut-off valve

Turn shut-off valve (C) to off position.

[8] - Disconnect fuel supply and return hoses (A and B). Close all openings using caps and plugs.

[9] -

→NOTE:

Support hydraulic pump suction line (A). Transmission/hydraulic oil will spill out of transmission filter assembly if line drops below transmission/reservoir oil level.

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C O-Ring
D O-Ring

Depress locking tabs (A). Slide coolant recovery tank (B) towards the right side of tractor and remove.

[5] - Make repairs as needed.

[6] -

IMPORTANT:

Always use new O-rings. Damaged or used O-rings will leak.

Replace O-rings (C and D).

[7] - Install coolant recovery tank (B). Be sure to engage locking tabs (A).

[8] - Install plate and cap screws.

[9] - Connect coolant hose and overflow hose.

[10] - Fill radiator with proper coolant. (See " Heavy Duty Diesel Engine Coolant " in Section 10, Group 20.)

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[4] - Remove muffler clamp (C), oil drain line (E), and air intake tube (F).

[5] - Remove four cap screws (D).

[6] - Remove turbocharger and gasket. Close all openings using caps and plugs.

[7] - Make repairs as necessary.

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LEGEND:

A	Retaining Clip
B	Washer
C	Shaft
D	Knob (2 used)
E	Seat Base
F	Screw (2 used)
G	Cover

Remove seat assembly. (See " Remove and Install Seat and Support—Reference Listing " in Section 90, Group 05.)

[2] - Remove retaining clip (A), washer (B) and shaft (C).

[3] - Remove knobs (D), washers and round head bolts from both sides of the seat.

[4] - Remove seat base (E).

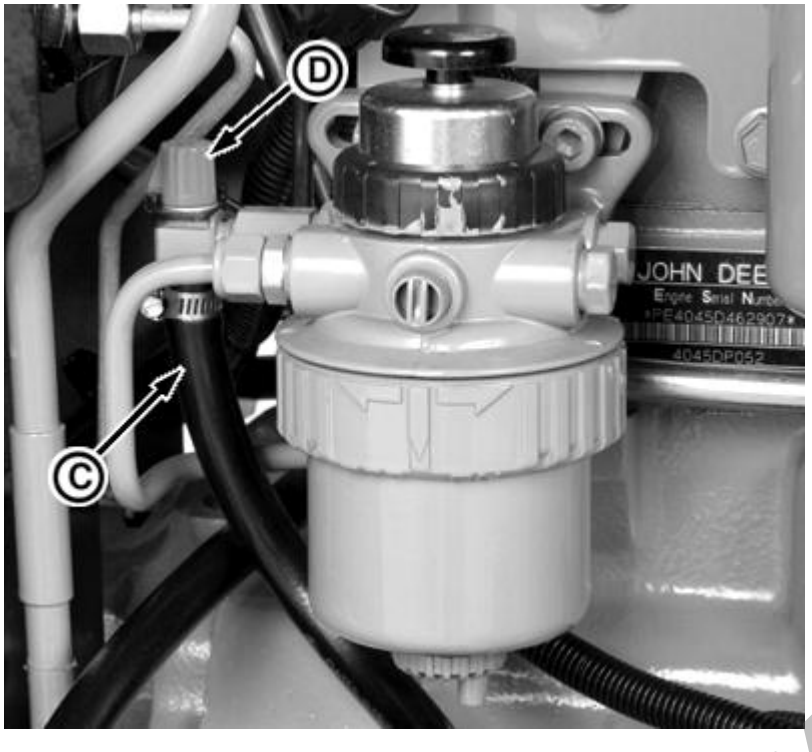
[5] - Remove two screws (F) and cover (G).

[6] -



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LEGEND:

A	Hydraulic Line
B	Return Fuel Line
C	Supply Fuel Line
D	Shut-off valve

Block front and back of rear tires.

[2] - Remove MFWD drive shaft, if equipped. (See " Remove, Inspect and Install MFWD Drive Shaft—Reference Listing " in Section 50, Group 35.)

[3] - Remove hood and disconnect negative (—) battery cable from battery.

[4] -

→NOTE:

Close all openings using caps and plugs.

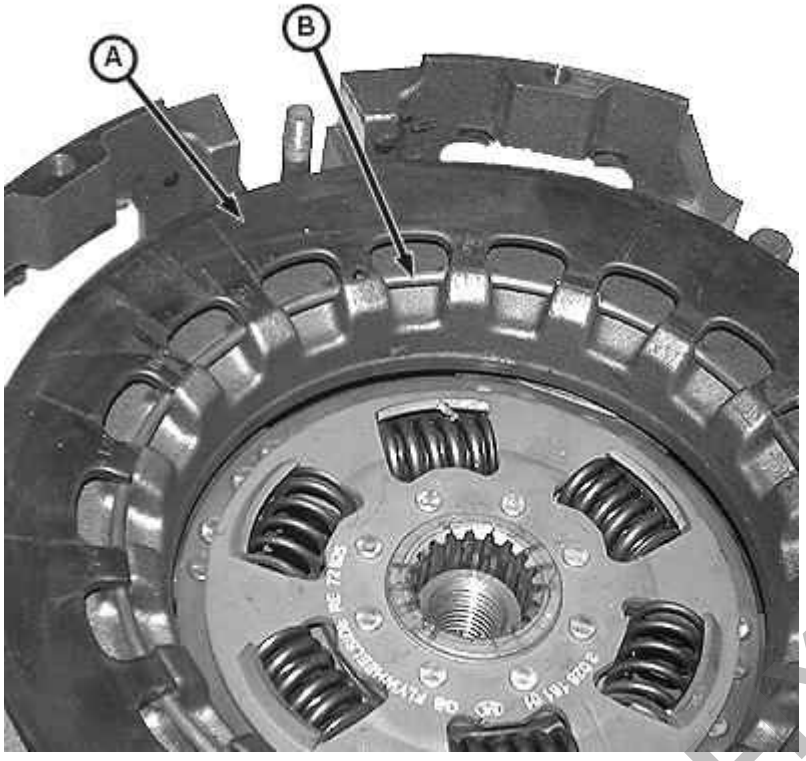
Disconnect hydraulic line (A).

[5] - Turn shut-off valve (D) to off position and disconnect fuel lines (B and C). Route fuel lines towards rear of tractor.

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[7] -



LEGEND:

A	Spring Washer
B	Ring

Install ring (B) in groove on traction clutch front pressure plate. Make sure split in ring (B) aligns with spring pin on pressure plate.

[8] - Install spring washer (A) with concave side upward. Make sure notch in spring washer tab aligns with spring pin on pressure plate.

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A	Brake Line
B	Hydraulic Supply Line
C	Cap Screw
D	Hydraulic Pump Suction Line
E	Brake Valve Return Line

Connect brake line (A).

[9] - Connect hydraulic supply line (B).

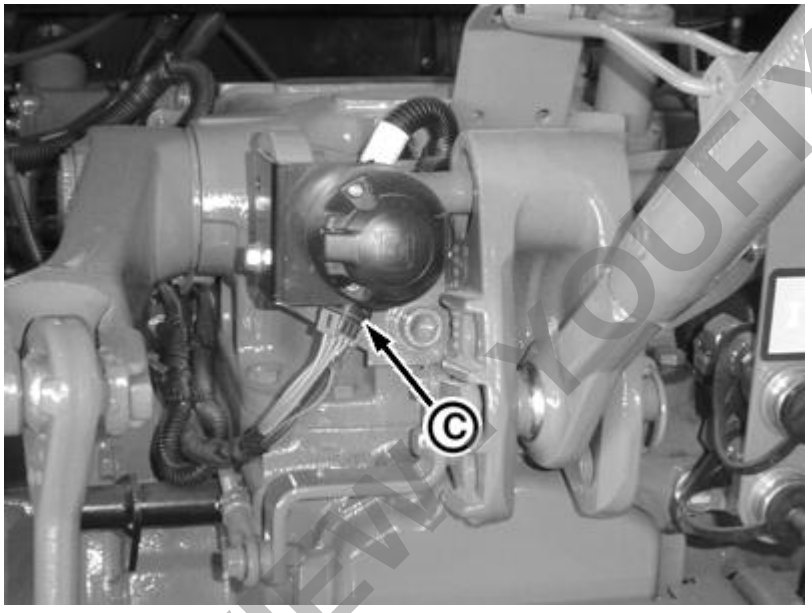
[10] - Install brake valve return line (E) and hydraulic pump suction line (D).

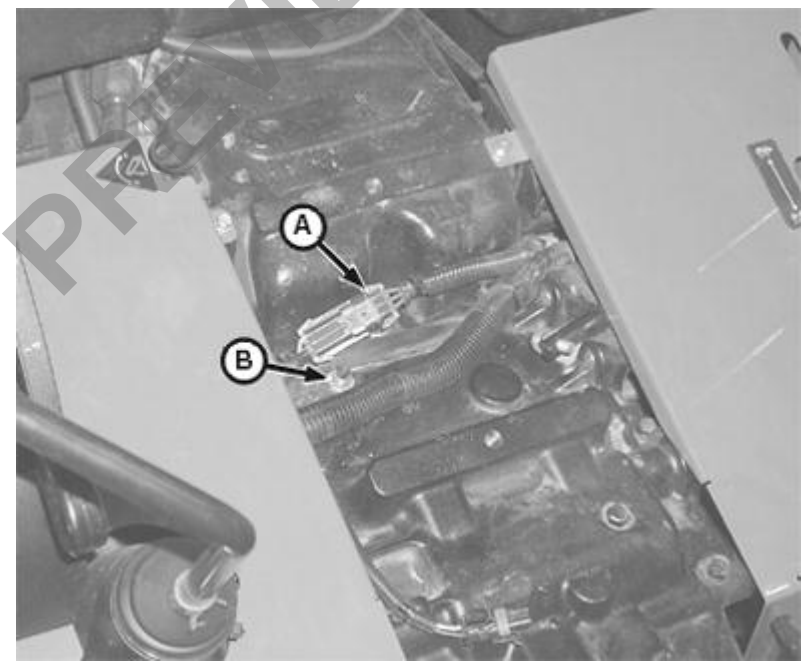
[11] - Install cap screw (C) with clamp retaining hydraulic pump suction line (D) and hydraulic supply line (B).

[12] -

→NOTE:

Install new tie straps as necessary.





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[3] - Install planetary gears with bevel (B) facing carrier using a bushing, bearing and seal driver set and a press.

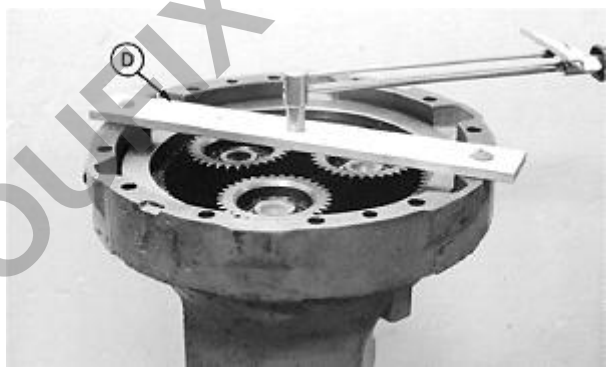
[4] - Install snap ring (C).

[5] -

IMPORTANT:

Before assembling and adjusting final drives, rear axle should be bolted to a tractor wheel.





LEGEND:

A	Special Cap Screw
B	Lock Plate
C	Planetary Carrier Assembly
D	DFLV1A Final Drive Turning Tool

Attach final drive housing to a rear tractor wheel.

[6] - Install planetary carrier assembly (C) onto the axle shaft. Do not install cap screw (A).

→NOTE:

See Section 299 for instruction to make turning tool.

[7] - Rotate final drive housing through three complete revolutions in each direction using DFLV1A Final Drive Turning Tool (D) to insure proper seating of bearing rollers.

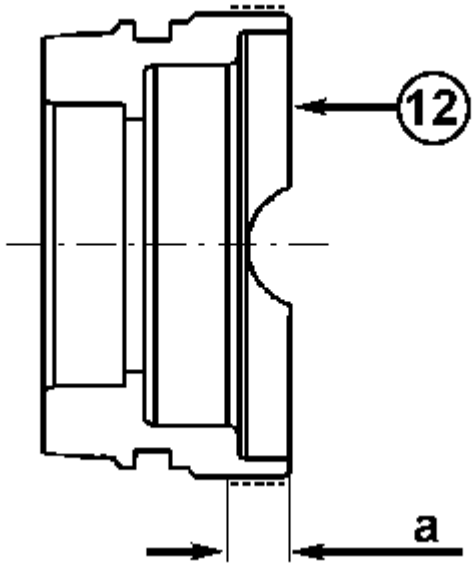
[8] - Rotate final drive housing a minimum of ten revolutions using a torque wrench and Turning Tool to determine rolling drag torque. This is the base line rolling drag torque.

[9] - Install a new cap screw (A). Tighten cap screw until the rolling drag increases 9 Nm (80 lb-in.) above the base line.

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[5] -



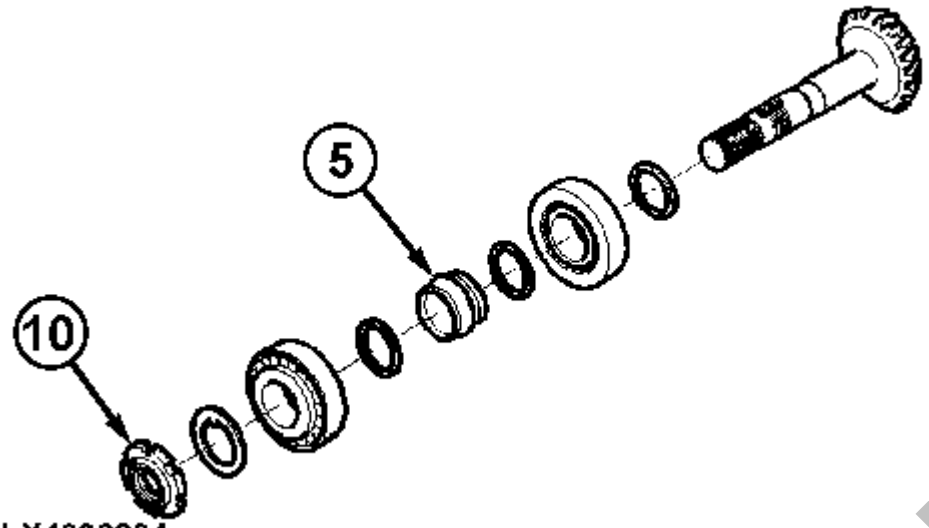
LX1032468

On bushing (12), coat the area marked (a) all the way round with LOCTITE ™ 510; the area is approx. 10 mm (3/8”) wide.

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[2] -



LX1032894

Use a copper mandrel to drive the pinion shaft out of the housing.

Clean the various parts, inspect them for wear or damage and replace as necessary.

After disassembly, the slotted nut and spacer bushing must be replaced with new ones.

[3] - Assemble differential carrier.

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→NOTE:

Bearings (C and F) are press fit on shaft (G).

[1] - Remove snap ring (A) and washer (B).

[2] - Remove shaft (G) using a brass drift and hammer on end of shaft that snap ring was removed from.

[3] - Remove parts (C—E) and (I, J and F).

[4] - Remove screw (L) and lock washer (K). Remove shaft (T).

[5] - Remove parts (M—S).

[6] - Remove snap ring (N) and remove gear (O) from gear (Q).

[7] - Inspect all parts for wear or damage. Replace as necessary.

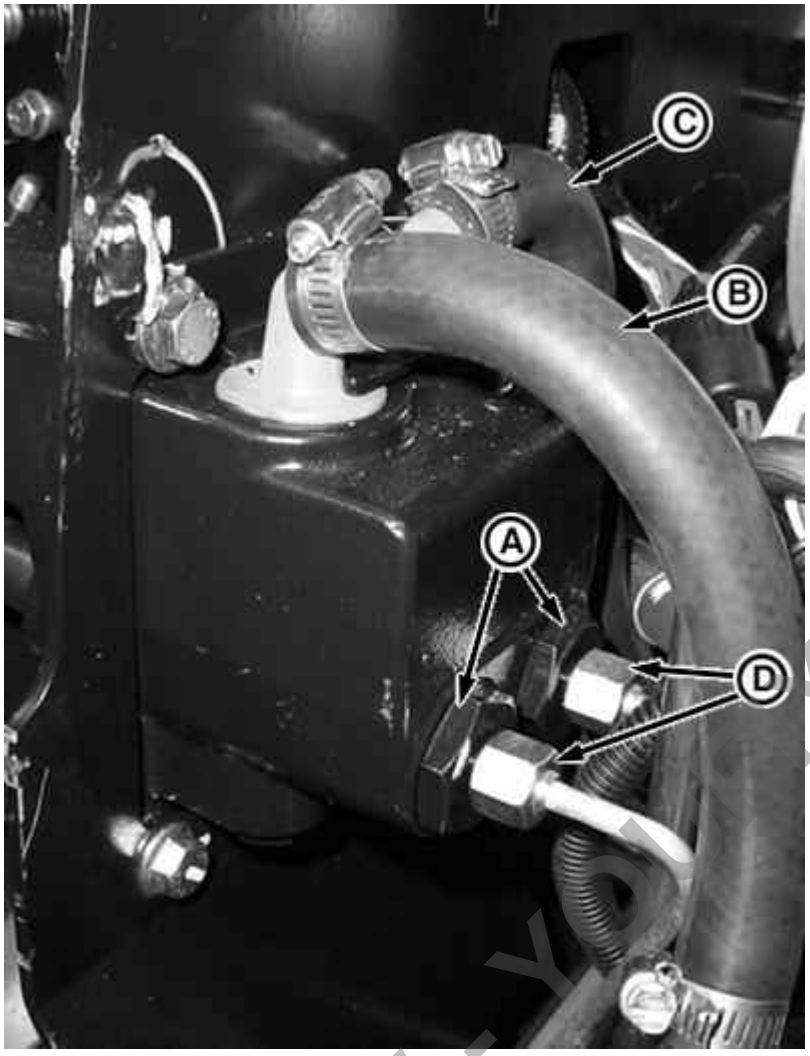
[8] - Lubricate all parts with clean transmission/hydraulic oil during assembly.

[9] - Assemble all parts.

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Remove and Install Brake Valve and Pedals



LEGEND:

A	Outlet Fittings
B	Return Hose
C	Supply Hose
D	Brake Lines

[1] - Remove left and right dash panels.

→NOTE:

Close all openings with caps and plugs.

[2] - Disconnect hoses (B and C).

[3] - Disconnect lines (D).

→NOTE:

Outlet fittings are removed to allow clearance for brake valve removal.

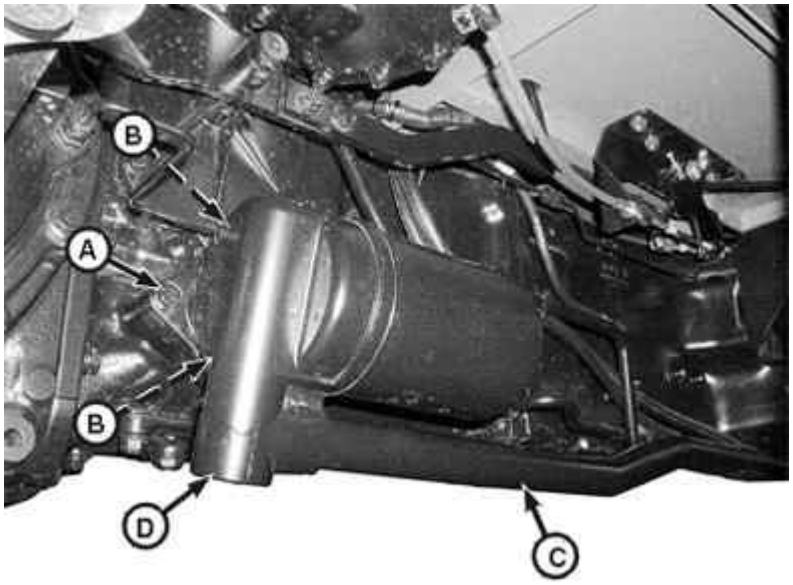
Use care during valve removal to prevent loss of check balls and springs from outlet fitting ports.

[4] - Remove outlet fittings (A).

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Remove and Install Hydraulic Oil Filter/Manifold



[1] - Drain transmission/hydraulic oil.

→NOTE:

Close all openings using caps and plugs.

[2] - Remove cap screw (A). Loosen two cap screws (B).

[3] - Slide filter/manifold (D) to rear and remove from supply tube (C).

[4] -

IMPORTANT:

Replace all O-rings. Damaged or used O-rings will leak.

Install filter/manifold assembly.

[5] - Tighten cap screws (A and B) to specification.

Item	Measurement	Specification
Hydraulic Oil Filter/Manifold Cap Screw	Torque	70 N·m (52 lb-ft)

[6] - Fill transmission with proper oil.

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Group 16 - Single Selective Control Valve

Other Material

LOCTITE PRODUCTS
U.S./Canadian/LOCTITE

[LOCTITE is a registered trademark of the Loctite Corporation.]
No.

Number	Name	Use
• TY9369/NA/222 (us)	Tread Lock and Sealer (Low Strength)	Apply to threads of spool cap-to-valve housing socket head cap screws.
• TY9371/TY9478/271 (us)	Thread Lock and Sealer (High Strength)	Apply to threads of single SCV spool retainer screw.

Service Parts Kits

The following kits are available through your parts catalog:

Tube Kit

Seal Kit

Cap Kit

Load Check Valve Kit

Inspect and Repair SCV Levers and Linkage (OOS)

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LEGEND:

A	Quick-Lock Pin (2 used)
B	Pin
C	Ball
D	Lift Link End
E	Lubrication Fitting (2 used)
F	Link Rod
G	Spring Pin
H	Spring Pin
I	Handle
J	Lift Link Body
K	Plug (2 used)
L	Pin
M	Retainer

[1] - Remove plugs (K).

[2] - Thread link body (J) in until spring pin (H) is centered with plug holes.

[3] - Remove spring pin using a punch and hammer.

[4] - Disassemble all parts.

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

→NOTE:

Install handle (I) with notches toward lift link body (J).

[6] - Assemble all parts.

[7] - Lubricate lift assembly at fittings (E) using multipurpose grease.

Inspect and Repair Center Link—Reference Listing

- Inspect and Repair Center Link

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