John Deere Agriculture

6415, 6615 Classic, 6110E and 6125E South America Tractors - Repair

REPAIR SERVICE MANUAL

6110E, 6125E, 6415, 6615 (SN:-001473, 400001-, 001474-, -000620)

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TM800419, May 2011

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Group 05 - Safety Regulations

Live With Safety



Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.

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.

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Group 05 - Specifications

Engine

[In accordance with SAE J 1995]

6110E

Engine / Manufacturer ..... John Deere

Type: 4045H

Intake ..... Turbocharged

No. of Cylinders 4

Inner diameter ..... 106.5 mm (4.19 in.)

Cylinder travel ..... 127.0 mm (5.00 in.)

Displacement ..... 4.5 L

Firing order 1-3-4-2

Compression ratio 17.0:1

Power at rated speed kW ..... 80.9 kW (110 cv)

Maximum speed ..... 2300 rpm

Maximum torque ..... 429 N.m (316.4 lb-ft)

Speed at maximum torque ..... 1400 rpm

Torque bulge ..... 28 %

Injection Pump Type ..... Rotary DP100

6125E - 6 Cylinders

Engine / Manufacturer ..... John Deere

Type: 6068T

Intake ..... Turbocharged

No. of Cylinders 6

Inner diameter ..... 106.5 mm (4.19 in.)

Cylinder travel ..... 127.0 mm (5.00 in.)

Displacement ..... 6.8 L

Power at rated speed ..... 92 kW (125cv)

Maximum speed ..... 2300 rpm

Maximum torque ..... 496 N.m (365.8 lb-ft)

Speed at maximum torque ..... 1400 rpm

Torque bulge ..... 30 %

Injection Pump Type ..... Rotary DP100

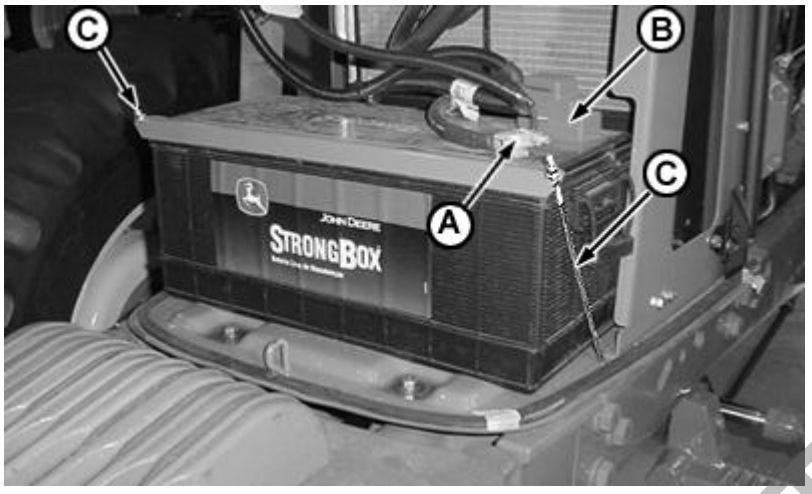
6125E - 4 Cylinders

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Removing Engine

IMPORTANT:



Before removing engine, mark connections of cables and hoses to facilitate installation.

→NOTE:

Removing a 6-cylinder engine is only slightly different from removing a 4-cylinder engine.

[1] - Open hood and disconnect battery terminals (A) and (B).

CAUTION:

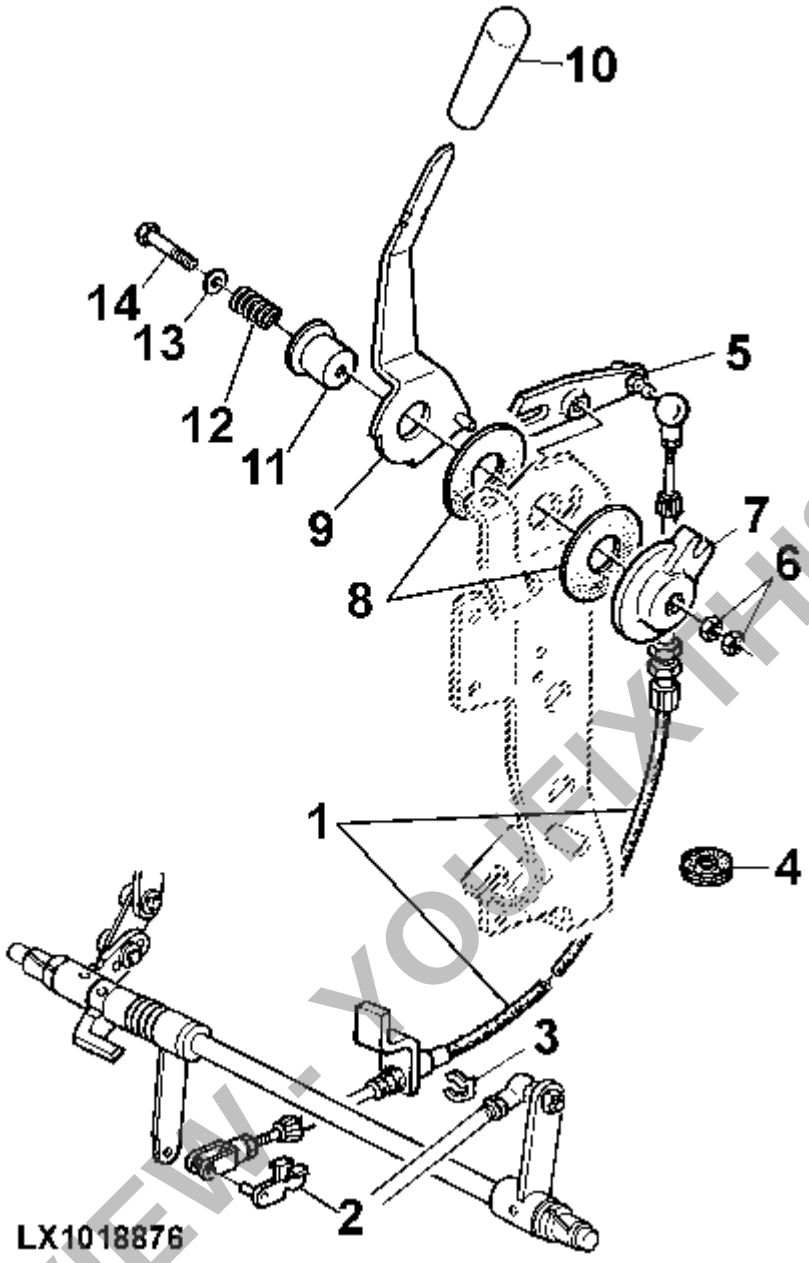
Disconnect the negative terminal first. Always reconnect the positive terminal first. Always pay attention to battery terminals.

Follow safety instructions about battery handling (see Section 05, in this Manual).

Loosen rod (C) and remove battery.

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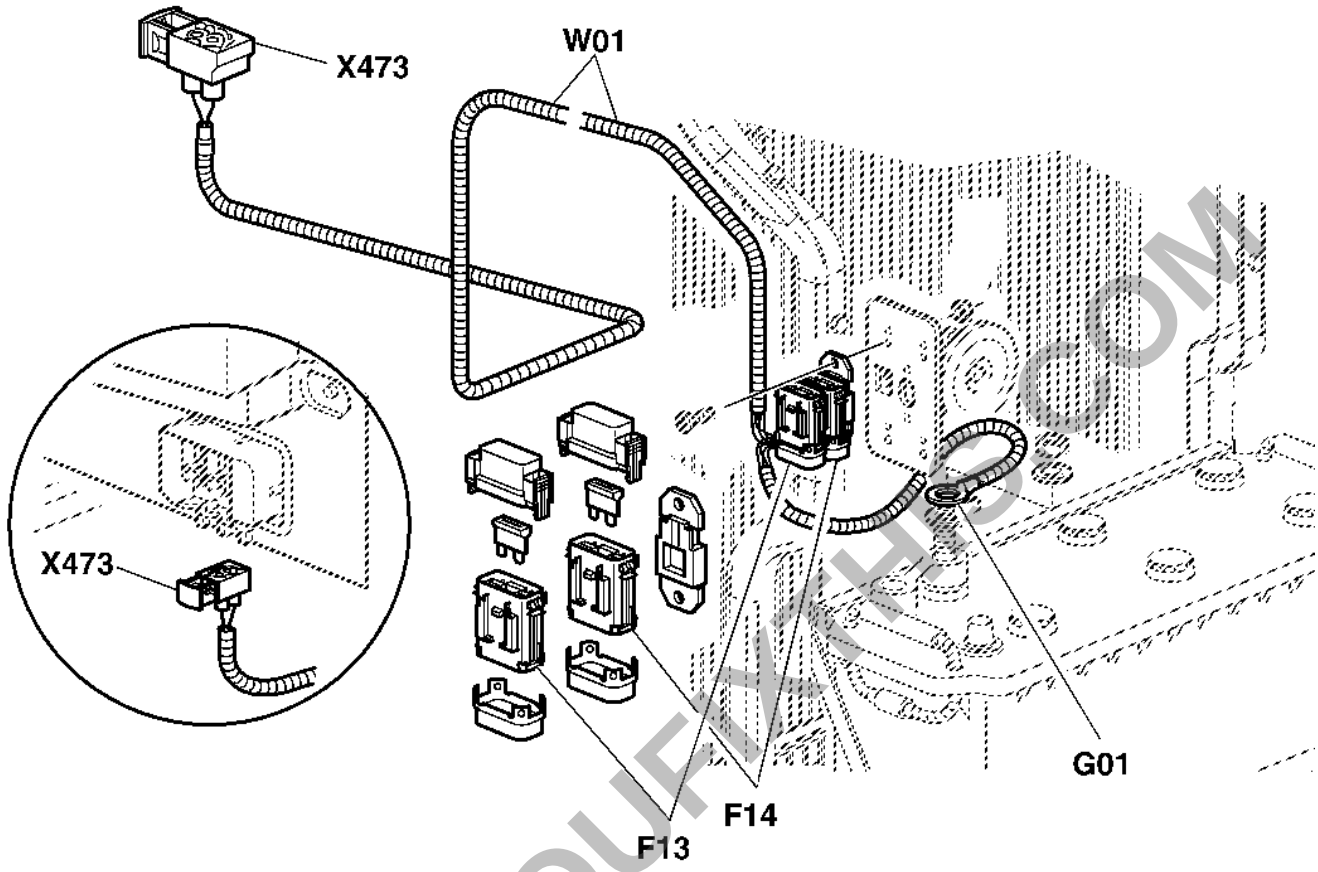


LEGEND:

1	Bowden cable
2	Locking pin
3	Spring clip
4	Rubber pad
5	Lever
6	Hex nut (2 used)
7	Friction plate
8	Blade (2 used)
9	Lever
10	Hand throttle knob
11	Bushing
12	Spring
13	Washer
14	Attaching bolt

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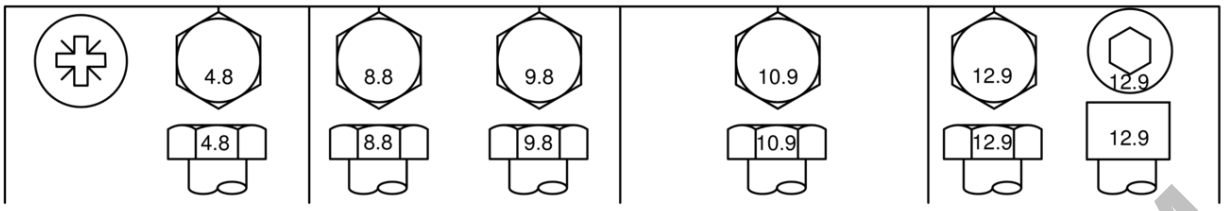
LEGEND:

G01	Terminal with ring, for positive terminal of battery
F13	Main fuse
F14	Main fuse
X473	Connecting point — power supply harness (W08)

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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

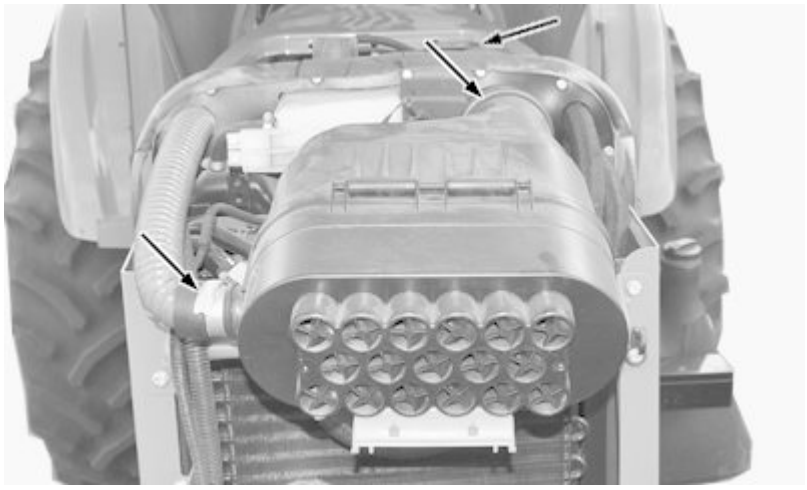
Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For stainless steel fasteners or for nuts on U-bolts, see the tightening instructions for the specific 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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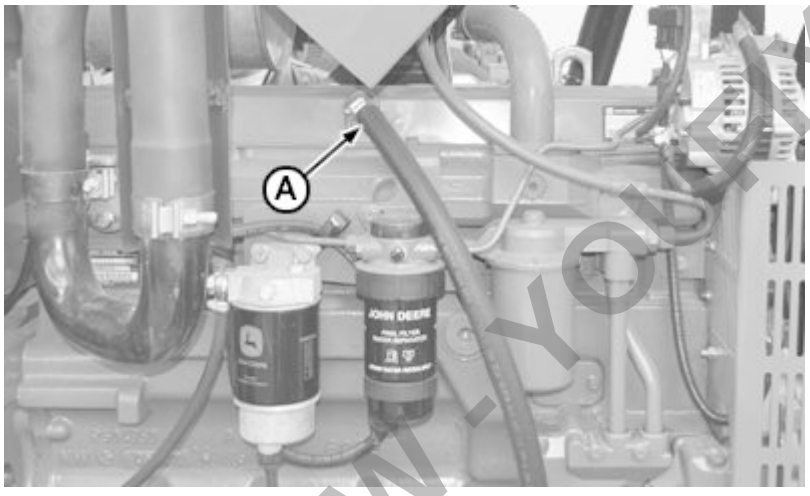
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Check air intake system restriction by measuring vacuum, see "Air Intake System Test", Section 230-15 of Diagnostic Manual.

Checking for Plugging of Crankcase Vent Hose



LEGEND:

A	Vent hose

Remove vent hose and clean with adequate solvent, if necessary.

Checking Expansion Tank Cap

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Group 20 - Cooling system

General information

→NOTE:

For instructions on how to repair coolant pump and thermostat, see Component Technical Manual for “Engines”.

Specifications

Item	Measurement	Specification
Front engine plate drive belt tensioner, attaching bolt	Torque	50 Nm (37 lb-ft)
Deflector roller-to-plate, attaching bolt	Torque	75 Nm (55 lb-ft)
Fan console-to-engine		
M10 bolts	Torque	50 Nm (37 lb-ft)
M12 bolt	Torque	90 Nm (65 lb-ft)
Fan on hub, M10 hex nut	Torque	50 Nm (37 lb-ft)
Coolant drain plug	Torque	4—5 Nm
		3—3.7 lb-ft

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[3] - Installing a wire seal



Slide wire seal of correct gauge over wire.

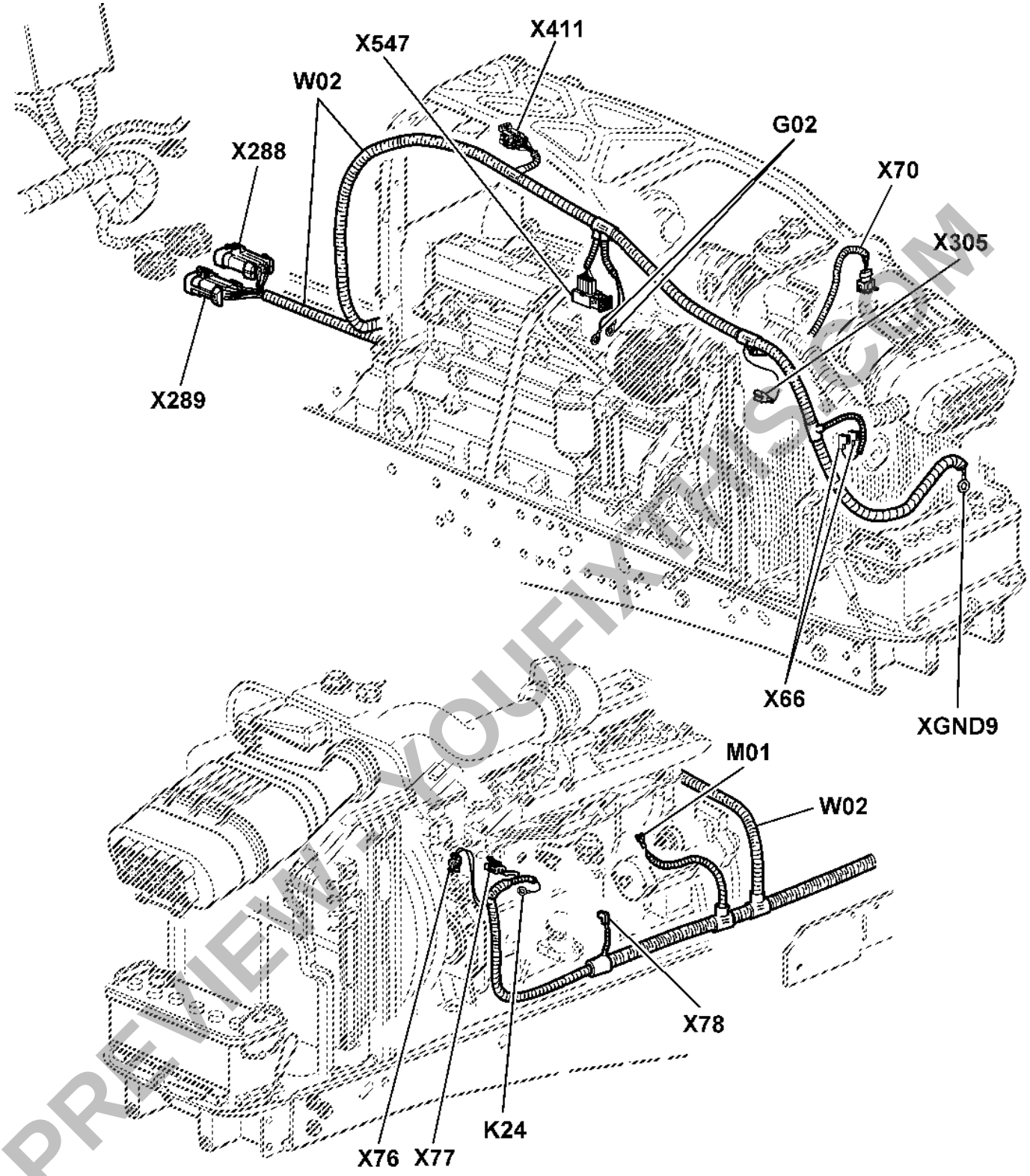
IMPORTANT:

Seal must fit properly over wire insulation; there must not be any play between wire insulation and seal. Furthermore, the outer edges of seal must be perfectly adjusted to terminal body wall.

Deinsulate a wire length of 6 mm (0.24 in.). Align seal with insulation edge.

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6615 Tractors

LEGEND:

G02	Alternator
K24	Terminal with ring, for injection pump shutoff valve
M01	Starter motor
X66/1	Horn connector
X66/2	Horn connector
X70	Connector of sensor unit (oil filter restriction warning light)

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Repairing DEUTSCH connectors

For service socket terminal extraction see DEUTSCH connectors, in Section 40-05.

CAUTION:

Make sure the wires are connected properly.

Term.	Funct.	Wire no. and cross section	Wire Color
A	Ground	050-1	black
B	Battery voltage	142-1	red
C	CAN-BUS	934-1	yellow
D	CAN-BUS	935-1	dark green
E	—	not used	
F	—	not used	
G	—	not used	
H	—	not used	
J	—	not used	

Connect wires to new socket.

Reassemble all parts in reverse order.

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Specifications

Item	Measurement	Specification
Bolts, transmission oil pump-to-clutch housing	Torque	25 N˙m
		18 lb-ft
Clutch return springs	Spring length	43 mm
		1.69 in.
	Test length	31 mm at 364 to 444 N
		1.22 in. at 82 to 100 lb
Bolts, cover-to-clutch drum	Torque	50 N˙m
		35 lb-ft
Engagement override valve spring	Spring length	34 mm
		1.34 in.
	Test length	24,5 mm at 65 to 79 N
		0.96 in. at 15 to 18 lb
Clutch cooling valve spring	Spring length	44 mm
		1.73 in.
	Test length	27 mm at 45 to 55 N
		1.06 in. at 10 to 12 lb
Clutch cooling pilot valve spring	Spring length	84 mm
		3.30 in.
	Test length	64 mm at 157 to 173 N
		2.52 in. at 35 to 39 lb
Filter relief valve spring	Spring length	97 mm
		3.82 in.
	Test length	74 mm at 90 to 110 N
		2.91 in. at 20 to 25 lb
Pressure regulating valve spring	Spring length	135 mm
		5.3 in.
	Test length	118 mm at 318 to 388 N
		4.65 in. at 72 to 87 lb
Lube relief valve spring	Spring length	57 mm
		2.24 in.
	Test length	46,5 mm at 45 to 55 N
		1.83 in. at 10 to 12 lb
Cooler relief valve spring	Spring length	50 mm
		1.97 in.
	Test length	40 mm at 170 to 210 N
		1.57 in. at 38 to 47 lb
Clutch pedal valve springs	Spring length, thin spring	61.9 mm

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Specifications

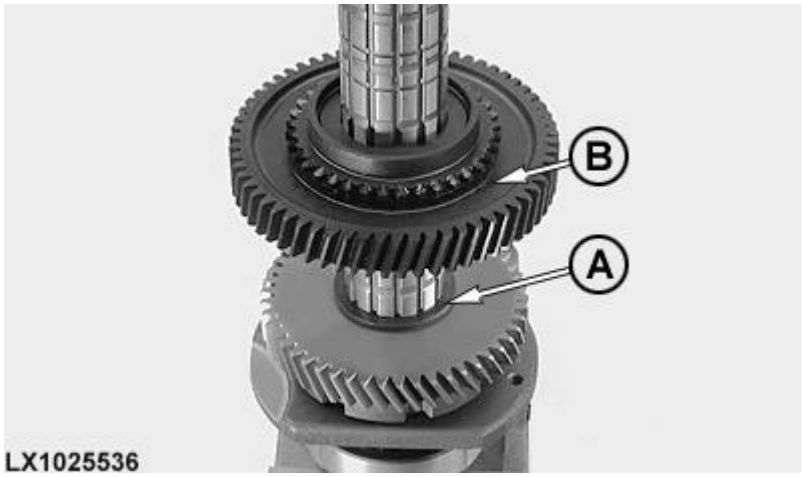
Item	Measurement	Specification
Synchronizer units	Axial play	<0.1 mm
		< 0.004 in.
Reverse	Axial play	0.15 – 0.60 mm
		0.006 – 0.024 in.
Gear, 1st gear	Axial play	0.15 – 0.45 mm
		0.006 – 0.018 in.
Gear, 2nd gear	Axial play	0.15 – 0.45 mm
		0.006 – 0.018 in.
Attaching bolt, intermediate shaft	Torque	55 N˙m
		40 lb–ft
Threaded pins, shifter fork-to-selector shaft	Torque	40 N˙m
		30 lb–ft
Bolts, gear shift cover-to-gear transmission	Torque	25 N˙m
		19 lb–ft
Neutral start switch-to-gear shift cover	Torque	18 to 20 N˙m
		13 to 15 lb–ft

Transmission—Cross-Sectional View

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[12] -



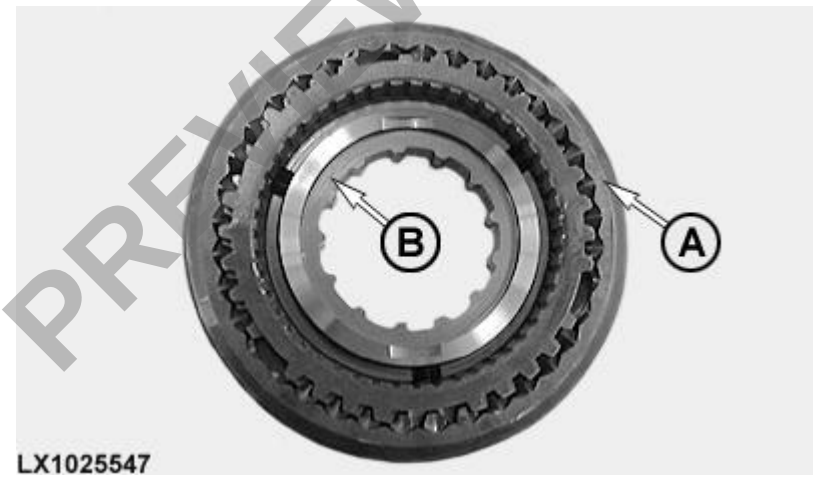
Install thrust washer (A) and gear (B; for range A).

[13] -



Install one locking ring (A).

[14] -



Apply grease to friction surfaces of synchronizers.

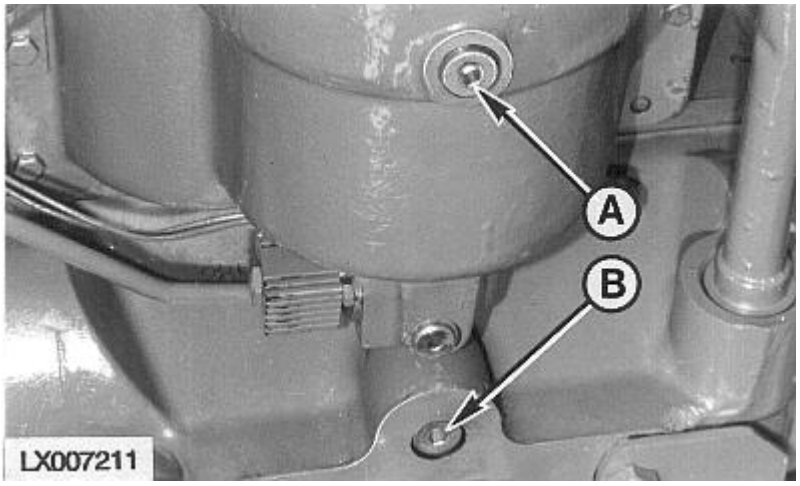
→NOTE:

Install synchronizer (A) with recess (B; for locking ring) pointing downward (facing range gear).

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[6] -



Tractors with front-wheel drive

LEGEND:

A	Front-wheel drive housing drain plug
B	Transmission housing drain plug

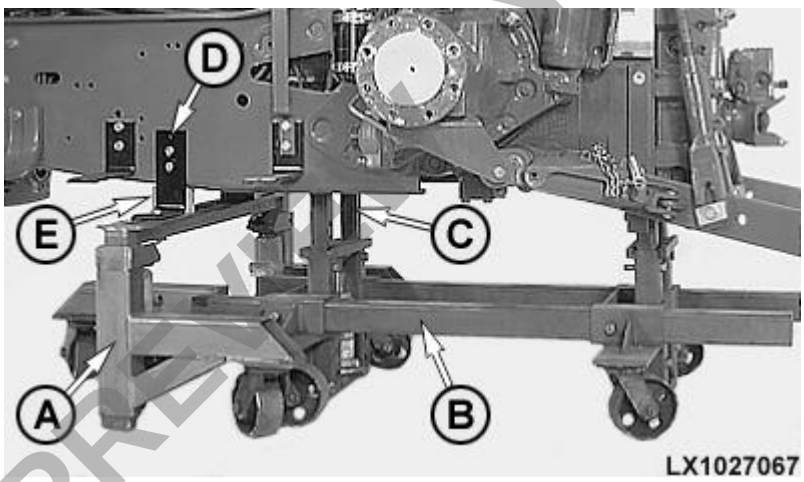
If a swinging drawbar is installed, pull it back.

Remove drain plug (A) and (B) and let transmission oil drain off.

→NOTE:

Collect oil in a container with capacity of at least 60 liters (15 U.S. gal.).

[7] -



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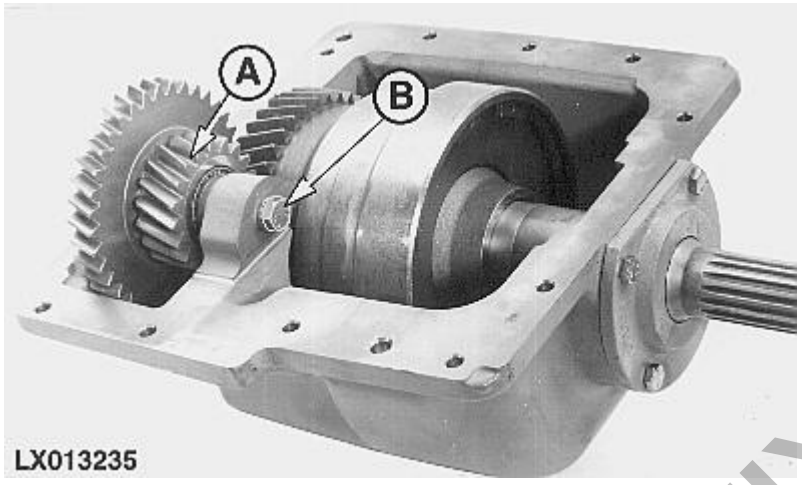
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New solenoid valve

Preliminary work: Remove FWD clutch, see Removing Front-Wheel Drive Clutch, in this Section, Group 00.

[1] - Remove solenoid valve (A).

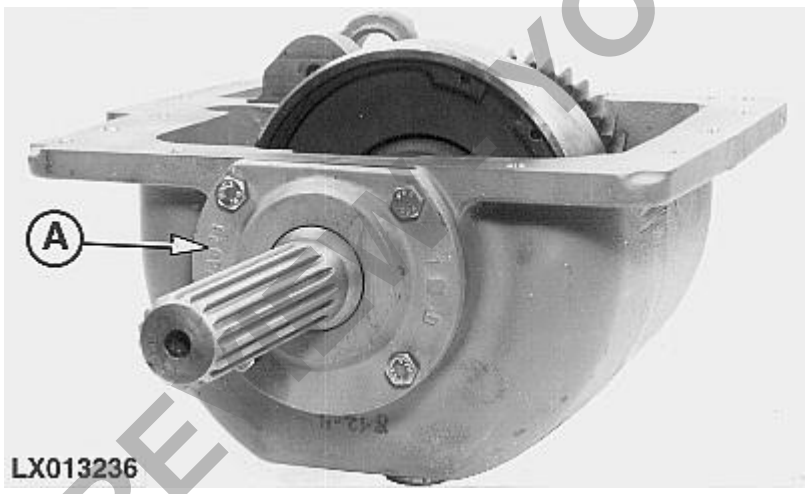
[2] -



Remove bolt (B).

[3] - Remove double gear drive shaft (A).

[4] -



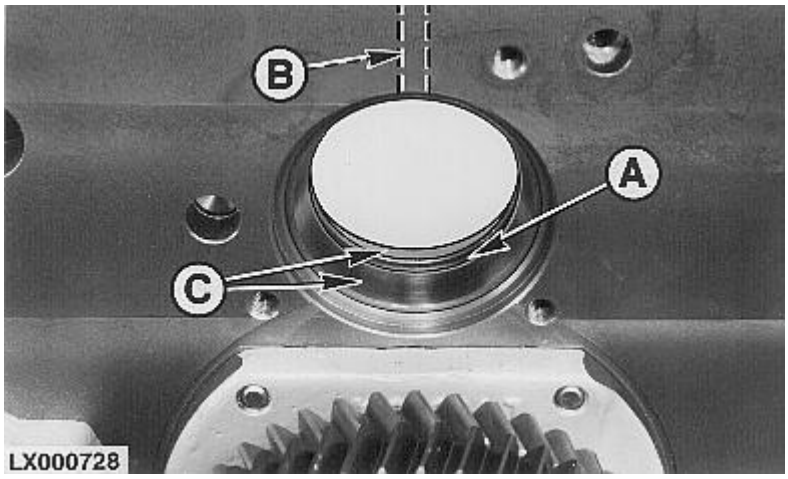
Remove bearing flange (A).

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Installing and adjusting hydraulic pump actuator

[1] -



Insert snap ring (A) into differential housing groove.

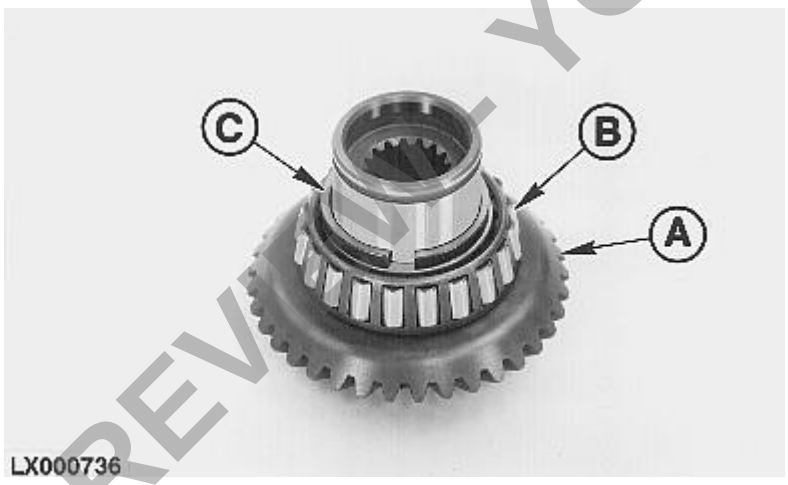
IMPORTANT:

Turn snap ring (A) in relation to differential housing to avoid lubrication bore (B) being covered.

Do not mistake drive shaft snap rings for those of output shaft.

[2] - Install cone bearing cups (C).

[3] -



LEGEND:

A	Drive pinion
B	Bearing cone
C	Spacer ring

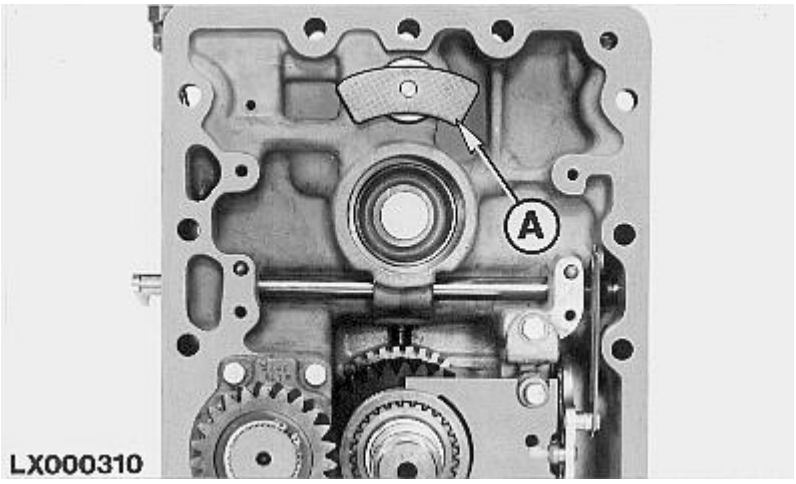
With bearing cone (B) in place, insert drive pinion (A) into differential housing.

[4] - Install second bearing cone.

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[2] -



Remove brake piston with segment (A) from bore.

IMPORTANT:

Make sure piston and brake lining are not damaged during installation.

[3] - If necessary, remove segment from brake piston and insert a new segment.

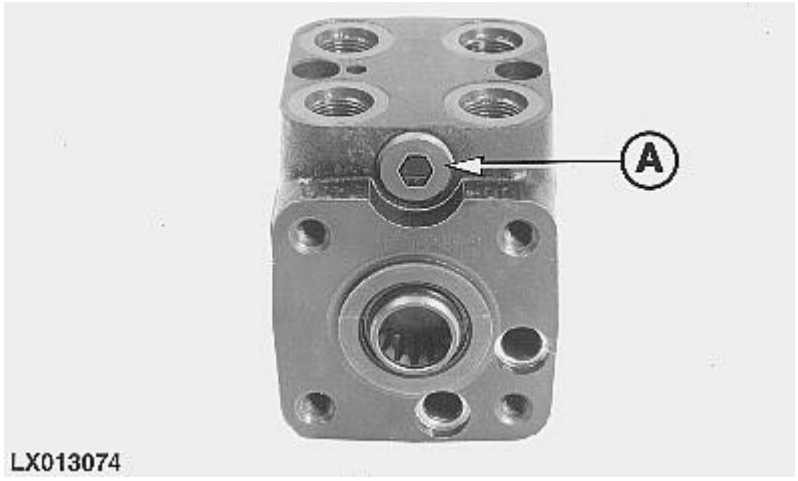
IMPORTANT:

Brake lining must be firmly seated on brake pin.

[4] - Install PTO clutch, see Installing PTO Clutch, in this group.

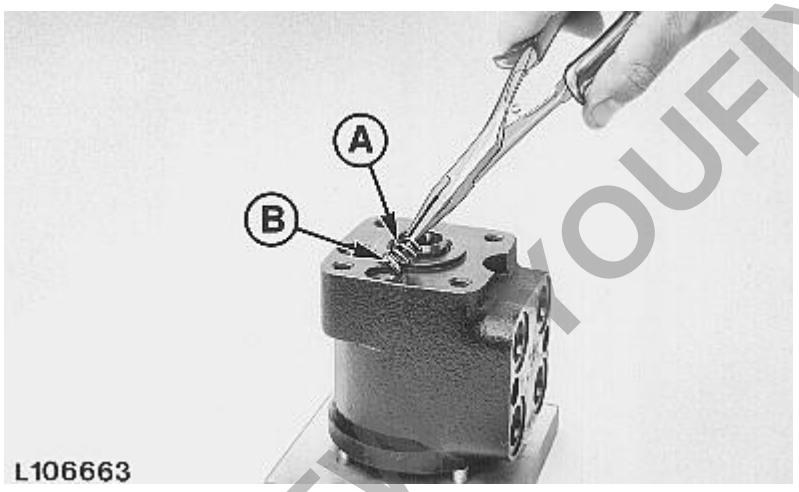
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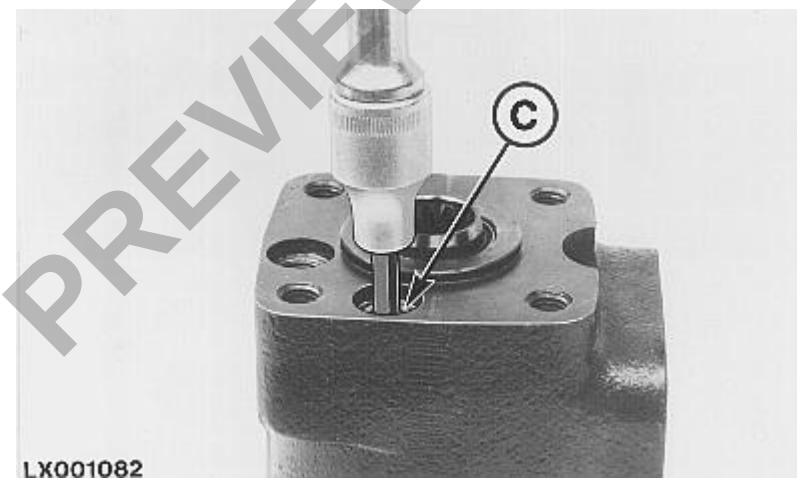
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Tighten threaded plug (A) to following specification:

Item	Measurement	Specification
Threaded plug	Torque	50 Nm 35 lb-ft





Install shock valves:

[1] - Position shock valve balls into their bores.

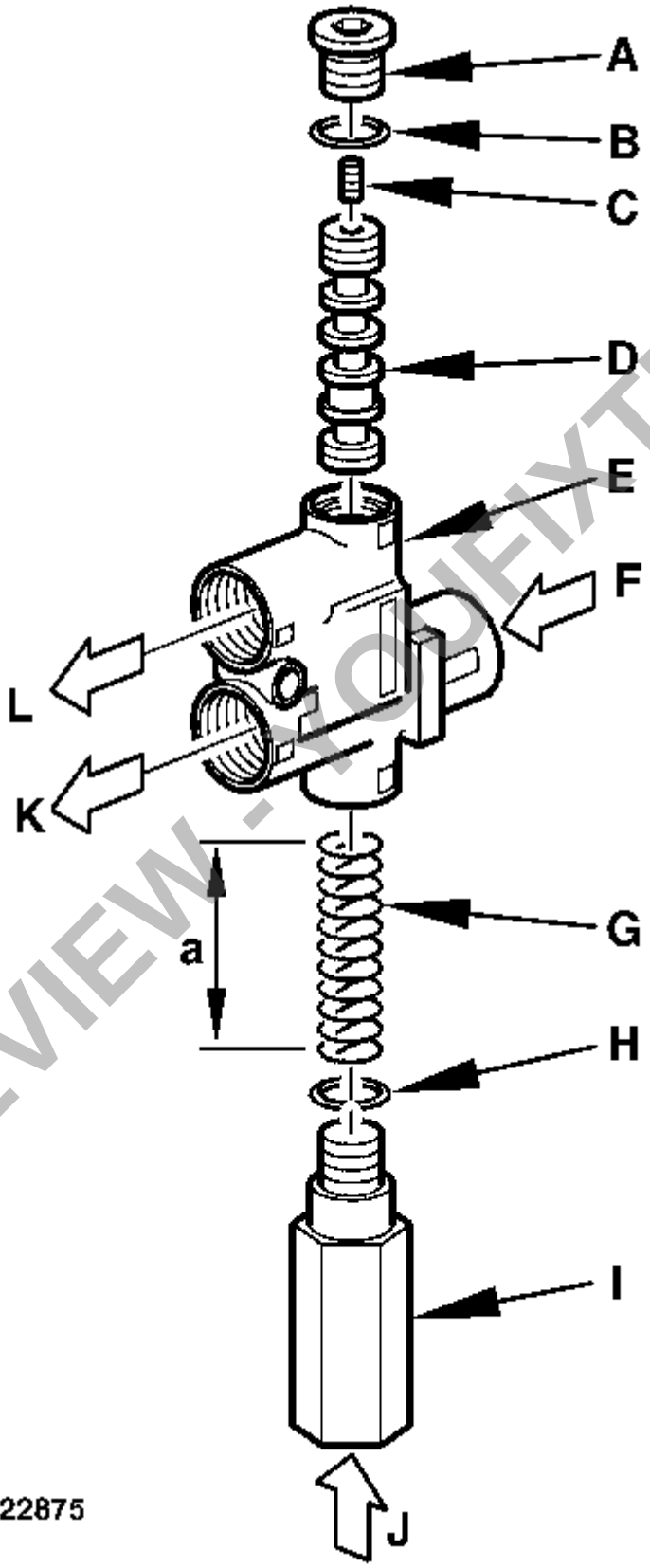
[2] - Coat spring guides (B) with grease and install to springs (A).

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Repairing Priority Valve

CAUTION:



LEGEND:

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[4] - Replace sealing rings.

[5] - Assemble outlet body.

[6] - Consult "Installing Selective Control Valves", in this group, on installing outlet body.

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Group 15 - Main Chassis

Specifications

Item	Measurement	Specification
Main frame to differential housing, attaching screws	Torque	500 N˙m
		365 lb-ft
Main frame to cross-member, attaching screw	Torque	550 N˙m
		405 lb-ft
Main frame to front axle support, attaching screws	Torque	550 N˙m
		405 lb-ft
Basic weight to main frame, attaching screw	Torque	600 N˙m
		445 lb-ft

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