

John Deere Agriculture

7200 and 7400 Tractors
SERVICE REPAIR MANUAL
7200, 7400

tm1551, April 1999



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DEALER PREDELIVERY SERVICE

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Group 10 - SyncroPlus SyncroPlus is a trademark of Deere & Company. Transmission

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Quick Reference Specifications

Engine

Slow Idle	800-900 rpm
Fast Idle	2225-2325 rpm
Rated Engine Speed	2100 rpm

Valve Clearance:

Intake:	
7200	0.35 mm (0.014 in.)
7400	0.35 mm (0.014 in.)
Exhaust:	
7200	0.45 mm (0.018 in.)
7400	0.45 mm (0.018 in.)

Capacities

Fuel tank:	
Open Station	136 L (36 gal)
Open Station (Optional)	219 L (58 gal)
Cab	204 L (54 gal)
Cooling system	19 L (20 qt)
Crankcase with Filter	18 L (19 qt)
Transmission, Differential and Hydraulic system:	
SyncroPlus TM	57 L (15 gal)
SyncroPlus TM with MFWD	64 L (17 gal)
SyncroPlus TM with Creeper	61 L (16 gal)
..... SyncroPlus TM with MFWD and Creeper	68 L (18 gal)
PowrQuad TM	57 L (15 gal)
PowrQuad TM with MFWD	64 L (17 gal)
PowrQuad TM with Creeper	61 L (16 gal)
PowrQuad TM with MFWD and Creeper	68 L (18 gal)
Mechanical Front Wheel Drive:	
Axle Housing:	8.5 L (9 qt)
Wheel Hub	1.9 L (2 qt)
Hi-Crop Axle Housings (combined)	7.6 L (2 gal)

Torques

Front Axle:	
Regular or Wide Axle	600 N·m (445 lb-ft)
Two-Wheel Drive:	
Front Wheel-to-Hub	310 N·m (230 lb-ft)
Hi-Crop Rim-to-Disk	310 N·m (230 lb-ft)
Hi-Crop Disk-to-Hub	310 N·m (230 lb-ft)
MFWD:	
Rim-to-Disk	310 N·m (230 lb-ft)
Hi-Crop Rim-to-Disk	600 N·m (445 lb-ft)
Disk-to-Hub	600 N·m (445 lb-ft)
Hi-Crop Disk-to-Hub	600 N·m (445 lb-ft)
Cab Mounting Bolts	204 N·m (150 lb-ft)

Group 05 - Safety

Handle Fluids Safely-Avoid Fires



When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.

Prevent Battery Explosions



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

Metric Bolt and Cap Screw Torque Values

Property Class and Head Markings	4.8		8.8		9.8		10.9		12.9	
										
Property Class and Nut Markings	5		10		10		10		12	
										

Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated [{para} "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. {/para}]		Dry [{para} "Dry" means plain or zinc plated without any lubrication. {/para}]		Lubricated [{para} "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. {/para}]		Dry [{para} "Dry" means plain or zinc plated without any lubrication. {/para}]		Lubricated [{para} "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. {/para}]		Dry [{para} "Dry" means plain or zinc plated without any lubrication. {/para}]		Lubricated [{para} "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. {/para}]		Dry [{para} "Dry" means plain or zinc plated without any lubrication. {/para}]	
	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft	N-m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	190
M16	100	73	125	92	190	140	240	175	275	200	350	255	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

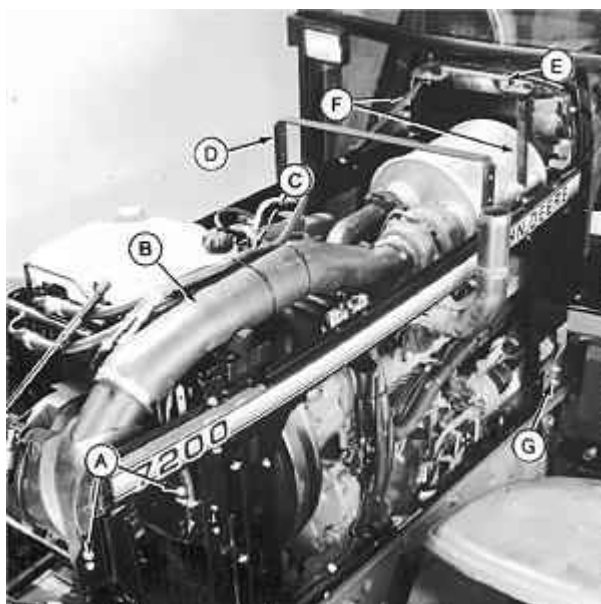
Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class.

Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to the strength of the original.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or

Remove Engine



LEGEND:

- A Air Cleaner Retaining Cap Screws
- B Air Cleaner Hose
- C Hood Release Cross-Linkage
- D Hood Support Cross Member
- E Rear Hood Support
- F Diagonal Braces
- G Left-Side Hood Support Retaining Cap Screws

Disconnect ground cables.

Remove front grille screen, hood and side shields.

Drain engine coolant from radiator and engine block.

For tractors WITH left-side exhaust, perform the following step:

Remove left-side exhaust pipe.

For ALL tractors, perform the following steps:

Remove cap screws (A) and tie bands from air cleaner assembly.

Remove air cleaner assembly and hose (B) at the turbocharger.

Plug turbocharger inlet.

Disconnect alternator wiring.

Remove parts (C-G).

Sealants and Adhesives Cross-Reference Chart

U.S. PART NUMBER	CANADIAN PART NUMBER	SIZE	DESCRIPTION	LOCTITE [™] NUMBER	SIMILAR LOCTITE [™] PRODUCT	
Bonding						
TY21517	-	3 gm	Gel Instant Adhesive	454	416, 409, or 495	
TY15435	TY15702	4 gm	Fast Cure Epoxy	445	453	
Gasketing						
TY16021	TY9484	50 ml	High Flex		17430 -	
TY6304	TY9484	50 ml	Flexible General Purpose		515 518	
Priming						
TY6305	TY9485	6 oz	Speed Cure of Gasketing and Threadlocking Products			764 -
Retaining						
TY8311			TY15801	50 ml	General Purpose	660 -
T43515			TY9479	50 ml	Maximum Strength	680 635
[{para}T43515 replaces TY15969{/para}]						
Threadlocking						
TY9370	TY9477	6 ml	Medium Strength		242 241	
T43512	TY9473	50 ml	Medium Strength		242 241	
TY9371	TY9478	6 ml	High Strength		271 262 or 609	
T43513	TY9474	50 ml	High Strength		271 262 or 609	
Thread Sealing						
TY9374	TY9481	6 ml	Pipe Sealant w/ TEFLON [™]		592 565 or 567	
TY9375	TY9480	50 ml	Pipe Sealant w/ TEFLON [™]		592 565 or 567	

PowrQuad™ Shift and Park Linkage Symptom/Cause Chart

This chart provides a probable cause of a known symptom. The chart is to be used for information only along with the adjustment procedures throughout this group.

Symptom:

Probable Cause:

Tractor does not always move in Forward or Reverse

Range box to PowerQuad Module rod in lower hole of arm or incorrectly adjusted
Upper F-N-R rod not correctly adjusted
F-N-R arm cam washers improperly adjusted at PowrQuad™ module

Tractor will not go to 1F or 4R

Lower 1-2-3-4 speed rod not properly adjusted

Two detents are felt when shifting lever from Neutral to Forward or Reverse

F-N-R upper rod not properly adjusted
Lower 1-2-3-4 rod adjusted too short
F-N-R and 1-2-3-4 cams not properly adjusted

Transmission makes a ticking noise while driving

Upper park rod adjusted too long
Park arm return spring in shift quadrant not properly installed

Tractor rolls when left in Park on incline

Upper park rod adjusted too short
Lower park rod not properly assembled

Difficult to move lever from Park to Forward or Reverse around Neutral latch

Park disengage stop not properly adjusted in quadrant
Upper park rod not properly adjusted
Linkage binding

Tractor does not stay in range

Range linkage not properly adjusted
Fork not properly adjusted in transmission (see Section 50, Group 25)

Transmission does not shift to 3F when shuttle stop for 3F is used

Upper 1-2-3-4 adjusted too short
F-N-R and 1-2-3-4 cams not properly adjusted

Transmission does not shift to Neutral or engages in Forward or Reverse when lever is in Neutral

F-N-R and 1-2-3-4 cams not properly adjusted/no adjustment remaining
F-N-R rod not properly adjusted

High effort to shift from Neutral to Forward and Reverse

Shift rods or linkage are dragging or binding

PowrQuad™ Shift and Park Linkage Adjustment

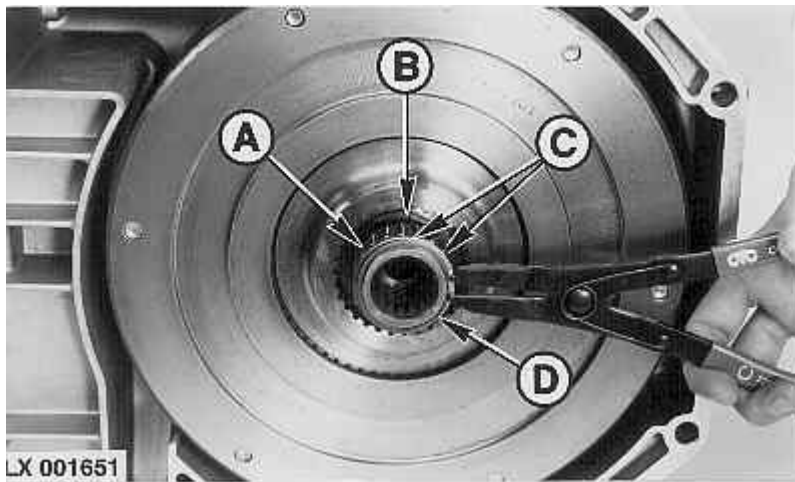


CAUTION:

Perform all adjustments with the tractor on level ground and the wheels blocked, unless otherwise noted.

IMPORTANT:

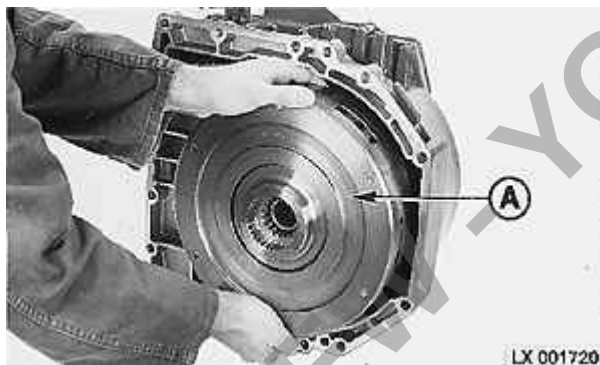
All of the following adjustment procedures must be completed in the order listed to ensure proper operation of shift and park linkages.

**LEGEND:**

- | | |
|---|-----------------|
| A | Needle Bearing |
| B | Thick Snap Ring |
| C | Washers |
| D | Thin Snap Ring |

Remove SyncroPlus™ clutch housing. (See Remove SyncroPlus™ Clutch Housing, Group 00.)

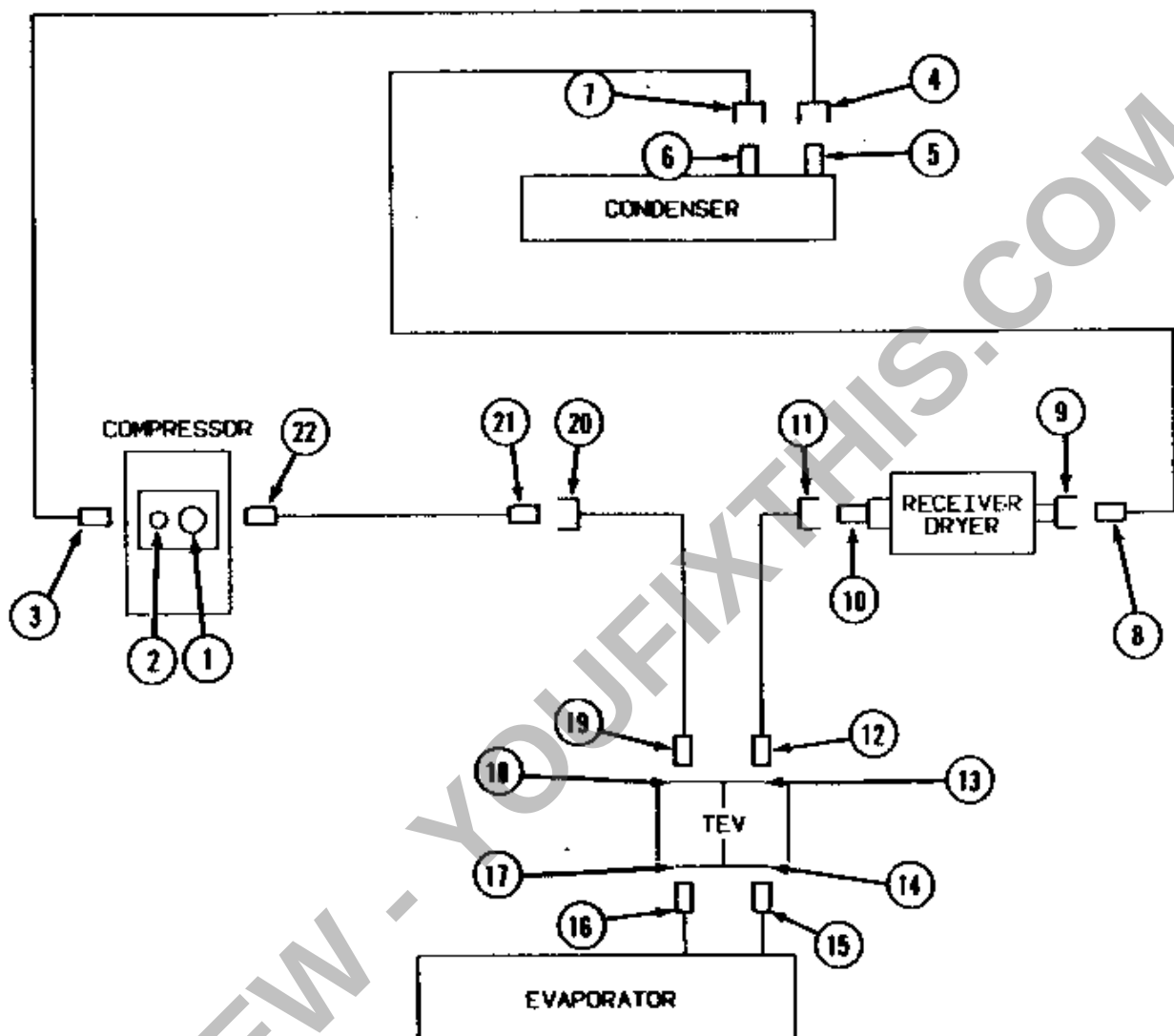
Remove snap rings (B) and (D), needle bearing (A), and washers (C).



Lift clutch (A) out of clutch housing.

Clutch Components-Exploded View

Air Conditioning System-Diagram

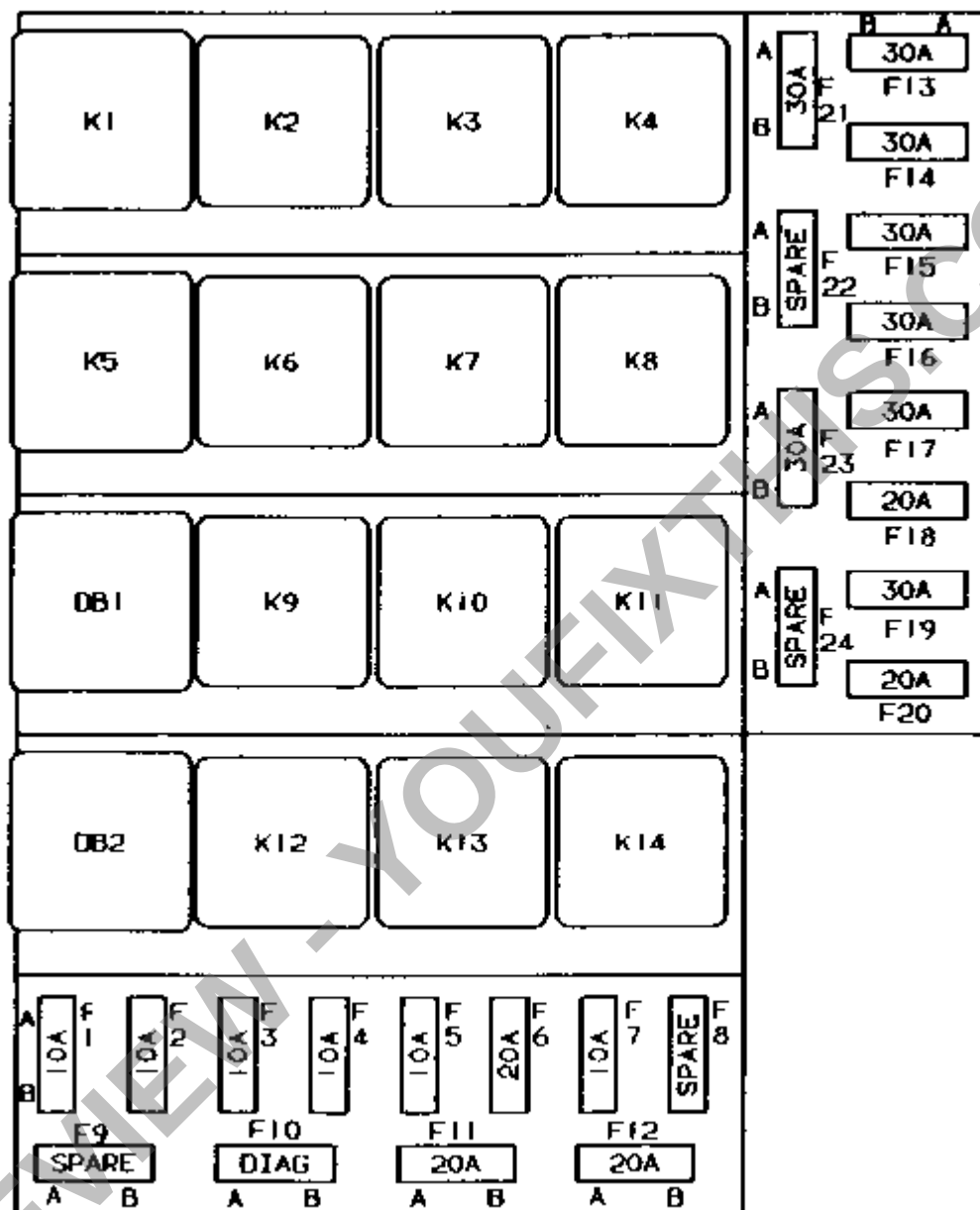


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Disconnect and replace the air cleaner restriction switch (E) as required.

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Load Center Fuses, Relays, and Diodes-Open Station



LEGEND:

- F1 CCU-Creeper Sensor, and Radar
- F2 CCU-PTO, Brakes, MFWD and Differential Lock Switches
- F3 Tachometer Display Module
- F4 CCU-Central Computer
- F5 HCU-Hitch Controller
- F6 Blank
- F7 CCU-Central Computer Program
- F8 Blank
- F9 Spare
- F10 Diagnostic Calibration Hitch Controller Central Control Unit
- F11 Left Tail Lights

Group 05 - Controls

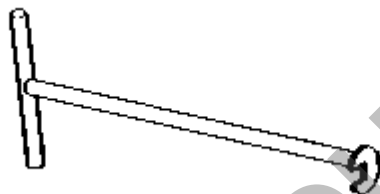
Essential or Recommended Tools

→NOTE:

Order tools from the U.S. SERVICE-GARD[™] or European Microfiche Tool Catalogs.

ESSENTIAL TOOLS listed are required to perform the job correctly and are obtainable **only** from SERVICE-GARD[™] or European Tool Catalogs .

RECOMMENDED TOOLS , as noted, are suggested to perform the job correctly. Some tools may be available from local suppliers or may be fabricated.



Park Rod Adjusting Nut Tool JDG952

[{para}RECOMMENDED TOOL-May be fabricated-See Section 99 DFRW108{/para}]

Tighten park rod adjusting nut on PowrQuad[™] transmission.

Shift Console Access

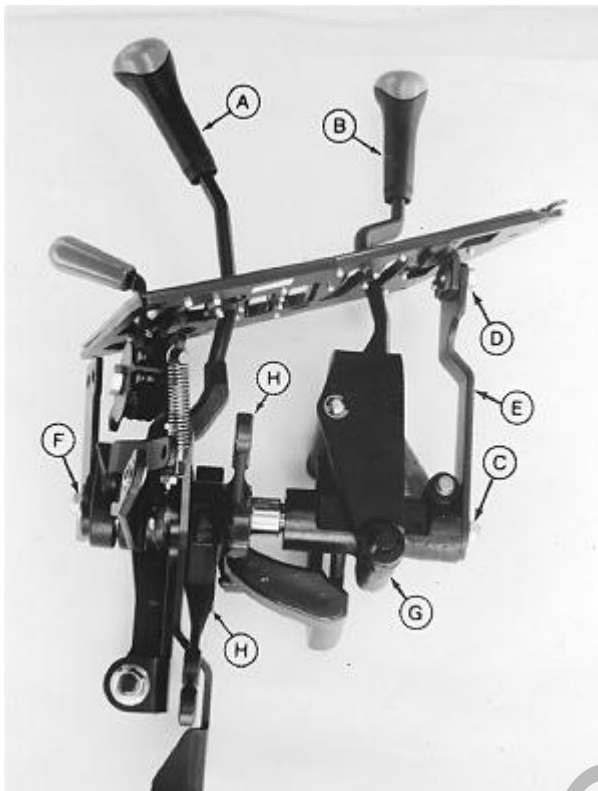
Disconnect the battery ground.



Remove shift console trim ring (A).

Remove the shift control assembly from the console.

Disassemble Shift Control Assembly- SyncroPlus™



LEGEND:

- A Speed Lever Knob
- B Range Lever Knob Cap
- C Nut
- D Bracket-to-Frame Cap Screws (2 used)
- E Bracket
- F Cap Screw with Washer
- G Range Lever Assembly
- H Range Shifter Arms

Remove speed-lever knob (A).

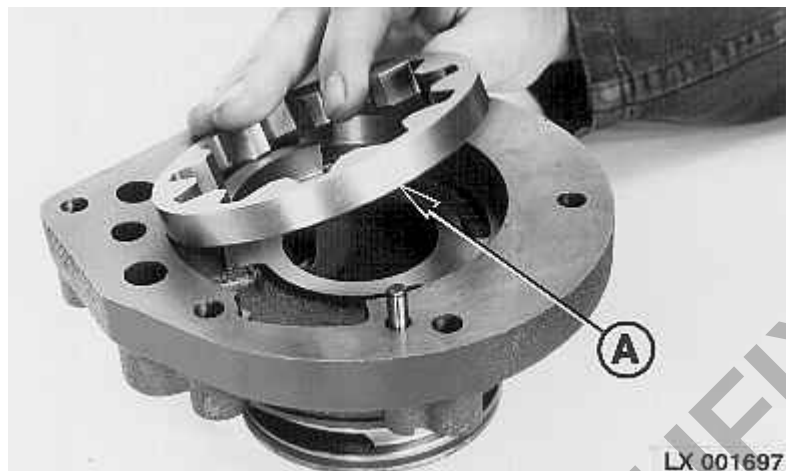
Remove Range-lever knob by removing cap (B) and the nut.

Remove parts (C-H).

Disassemble Transmission Oil Pump

→NOTE:

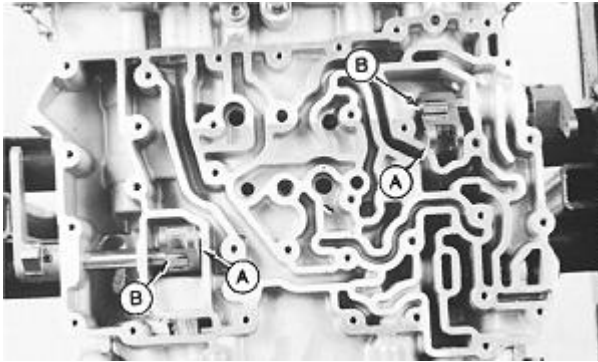
Refer to Clutch Housing-Cross-Sectional View and Transmission Oil Pump Components-Exploded View illustrations during disassembly and assembly of the oil pump.



Remove outer pump gear (A) from transmission oil pump.



Remove sealing rings (A).



Remove shift control valve housing from transmission. (See Remove Shift Control Valve Housing, this group.)

Force the control valve inner lever shaft roll pin (A) through the lever into the shaft.

Remove shifter shaft and outer lever.

Remove inner lever.

Remove the lever roll pin from the shifter shaft.

IMPORTANT:

Make sure open sides (B) of levers are installed as illustrated when replacing the levers.

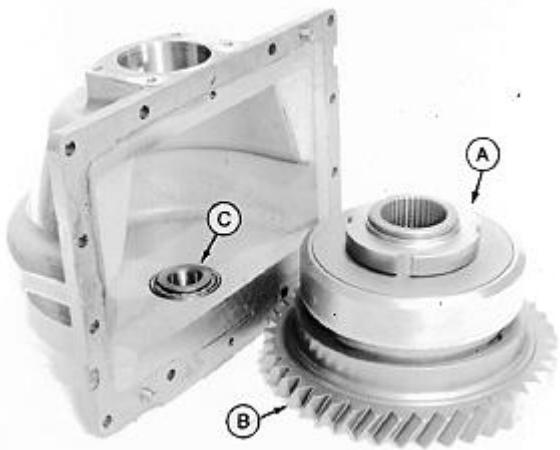
Other Material

Number	Name	Use
• T43512 (TY9370 [{para}Smaller Size{/para}]) (us)	Threadlock and Sealer (Medium Strength)	Shifter rail set screws

Specifications

Item	Measurement	Specification
Adjusting Ring Retaining Cap Screw	Torque	25 N·m (18 lb-ft)
Magnetic Pickup Sensor Cap Screw	Torque	50 N·m (37 lb-ft)
Shifter Cover to Range Box Cap Screws	Torque	70 N·m (52 lb-ft)
Differential Drive Shaft Adjusting Nut	Torque	550 N·m (406 lb-ft)
Differential Drive Shaft	End Play	0.013-0.080 mm (0.0005-0.0030 in.)
Input Shaft	End Play	0.013-0.080 mm (0.0005-0.0030 in.)
Park Pawl Spring	Free Length (approximate) Test Length	62 mm (2.4 in.) 49.3 mm at 93-111 N (1.9 in. at 21-25 lb force)
Detent Springs	Free Length (approximate) Test Length	43 mm (1.7 in.) 35.9 mm at 90-110 N (1.4 in. at 20-24 lb force)

Put the clutch housing on its rear end and remove parts (A-D).



Remove the clutch/drive gear assembly from the housing.

Remove the clutch pack (A) from the drive gear (B).

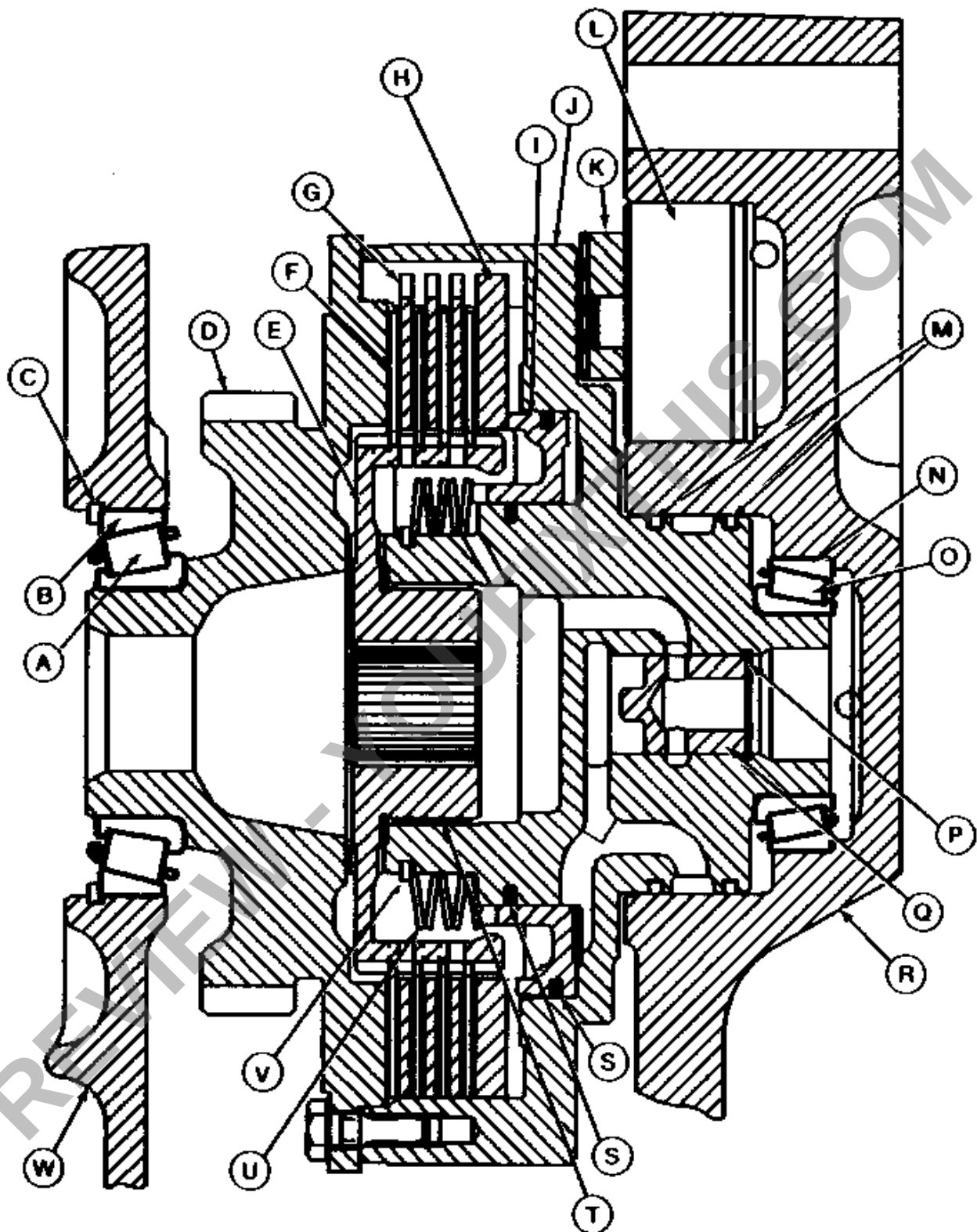
Remove the rear bearing cone (C) and the shaft-to-rear bearing thrust washer.



Remove the rear bearing cup using a JDG811 Bearing Remover.

Install a new bearing cup in the housing, using a 2-5/8 in. driver disk.

F	Bevel Pinion Gear
G	Bevel Pinion
H	Spherical Thrust Washer
I	Bevel Lock Gear
J	Ring Gear
K	Differential Cover
L	Differential Lock Piston
M	Bearing Cup
N	Bearing Cone
O	Differential Lock Oil Line
P	Sealing Ring (2 used)
Q	Right Bearing Quill
R	Separator Plate (3 used)
S	Disk (3 used)
T	Bevel Pinion Shaft
U	Bevel Pinion Shaft Retaining Cap Screw
V	Differential Housing

**LEGEND:**

- A Bearing Cone
- B Bearing Cup
- C Snap Ring
- D Backing Plate with Gear
- E Clutch Hub with Thrust Washers

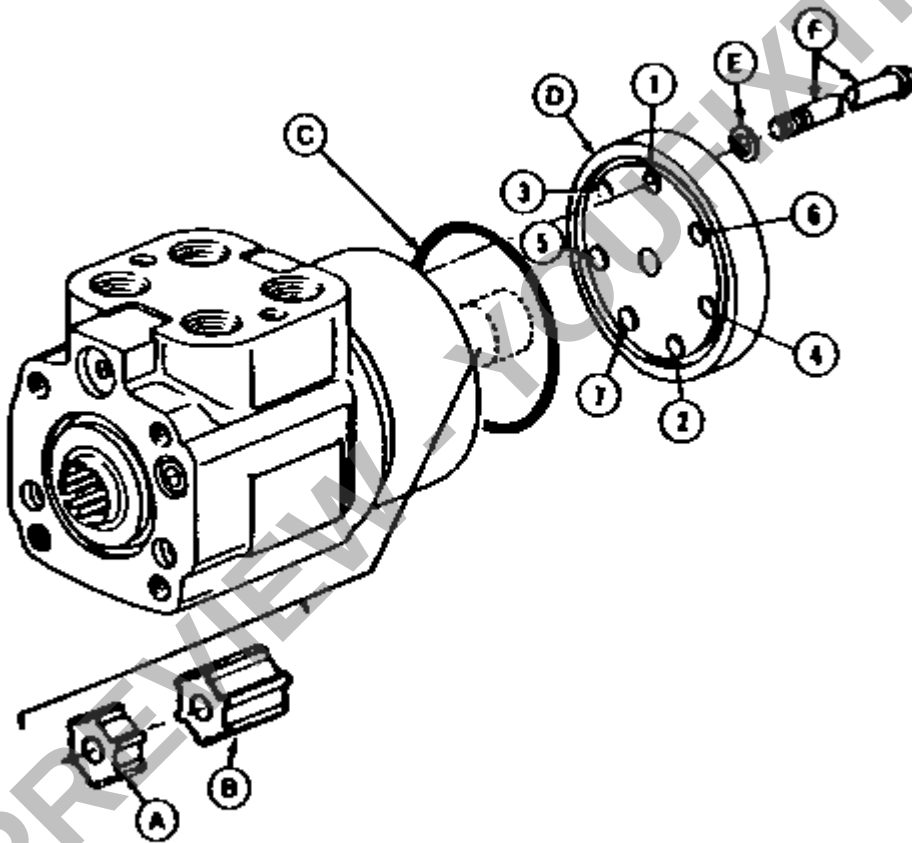
Mark spline end of shaft to assure correct alignment with slotted end.

Install drive shaft (D), engaging slotted end to pin.

Install seal in meter (G).

Align star valleys (F) with mark (D) on splined end of drive shaft and install. Check alignment of reference lines (A).

Align bolt holes without disengaging meter from shaft.

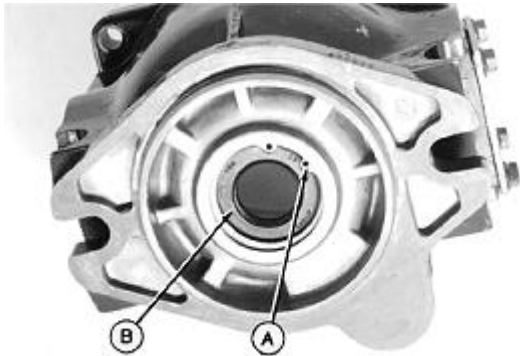


LEGEND:

- | | |
|---|---------------------------------|
| A | Spacer (2WD) (12 mm) (0.5 in.) |
| B | Spacer (MFWD) (22 mm) (0.9 in.) |
| C | Seal |
| D | End Cap |

Remove snap ring (C) and inspect bearing (D).

Remove snap ring and replace shaft seal located below bearing (D). Install new seal in pump housing far enough to install snap ring. Use a 27498 (15/16 in.) pilot and a 27509 (1-5/8 in.) disk for seal installation.



For 40 Cm³ (2.4 In.³) PUMP, perform the following steps:

→NOTE:

Seal can be removed and replaced without disassembling the hydraulic pump.

Remove snap ring (A) and remove shaft seal (B) from housing.

Install new seal in pump housing far enough to install snap ring. Use a 27498 (15/16 in.) pilot and a 27509 (1-5/8 in.) disk for seal installation.

the coupler body.

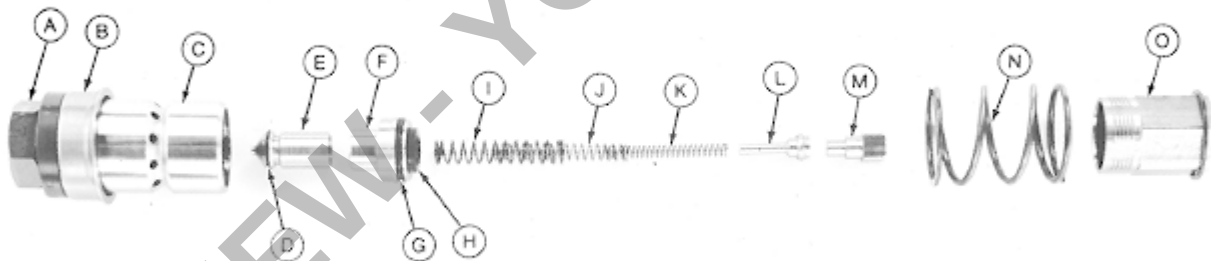


Install the holding tool and coupler assembly in a vertical position in a vise.

⚠ CAUTION:

DO NOT attempt to remove the retainer and spring from the receptacle.

Carefully remove coupler receptacle as illustrated.



LEGEND:

- A JDG711 Holding Tool
- B Collar
- C Coupler Body
- D O-Ring{ftnoteref sgmlid="FN6516805"}{ftnote}{para}Not serviceable{/para}{/ftnote}{/ftnoteref}
- E Poppet
- F Piston
- G O-Ring
- H Seal
- I Spring
- J Spring
- K Spring
- L Valve
- M Seat
- N Spring
- O Coupler Receptacle

[2] - Remove dust cover.

[3] - Hold clutch hub using JDG747 Compressor Clutch Spanner (A) and remove clutch shaft bolt (B).

[4] - Remove clutch hub (C). Remove shims (H) from clutch hub and save for installation.

[5] - Remove and discard snap ring (D). Remove pulley (E) using a plastic hammer or D05277ST Puller, JDG748 Jaws, and JDG771 Forcing Screw Pilot.

[6] - Disconnect clutch coil lead wire. Remove and discard snap ring (F) and remove the clutch coil (G).

[7] -

→NOTE:

The bearing in the pulley is NOT serviceable.

Check pulley bearing operation. Replace pulley and bearing as required.

[8] - Install clutch coil (G) and new snap ring (F) with flat side of snap ring down. Connect clutch coil lead wire.

[9] - Install pulley (E) and new snap ring (D) with flat side of snap ring down. Apply grease to shims (H) and install to clutch hub (C).

[10] - Install clutch hub and shaft bolt (B) and tighten to 14 N·m (10 lb-ft). Install dust cover.

Check Clutch Hub Clearance



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