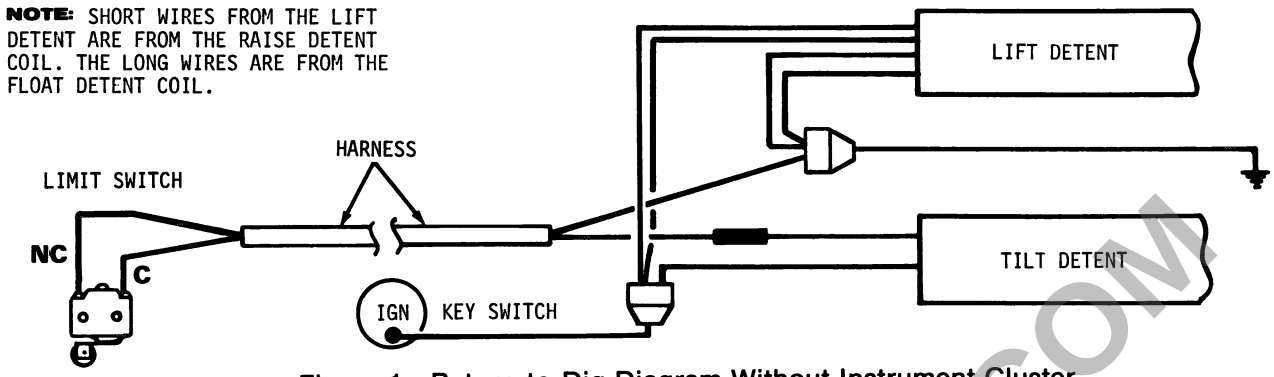

Figure 1 - Return-to-Dig Diagram Without Instrument Cluster

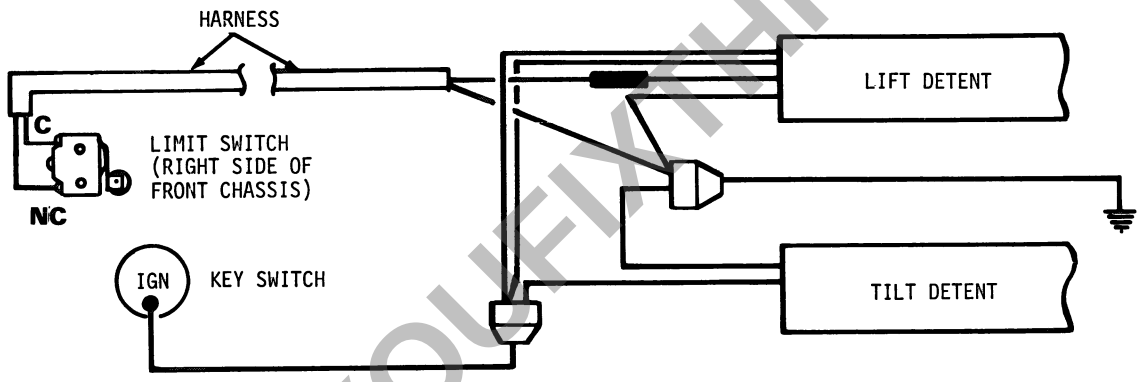

Figure 2 - Bucket Height Control Diagram Without Instrument Cluster

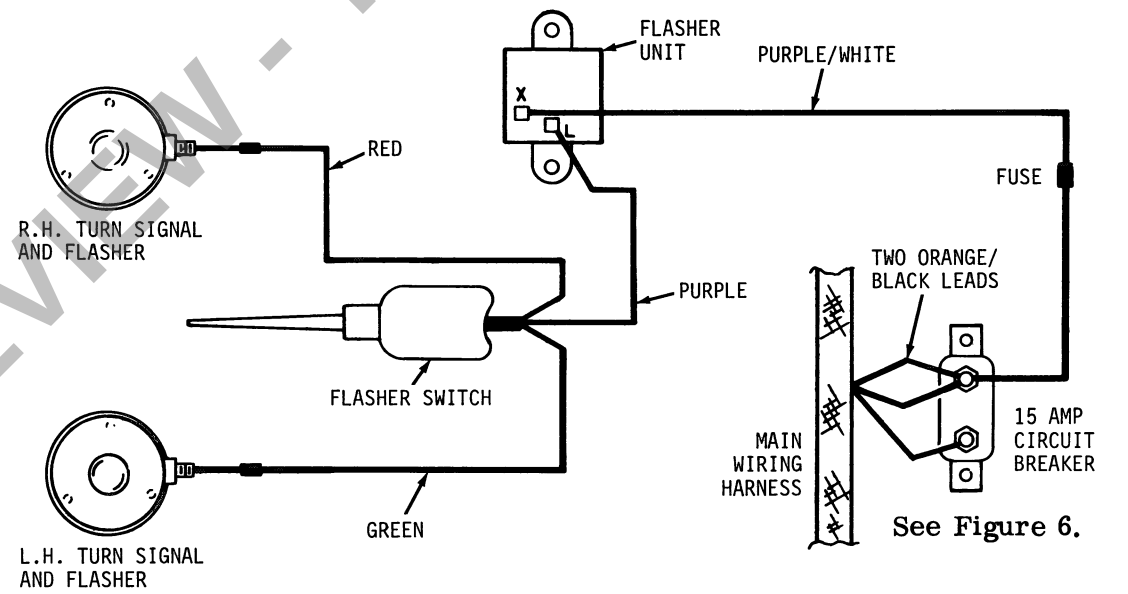

Figure 3 - Turn signal Diagram Without Instrument Cluster

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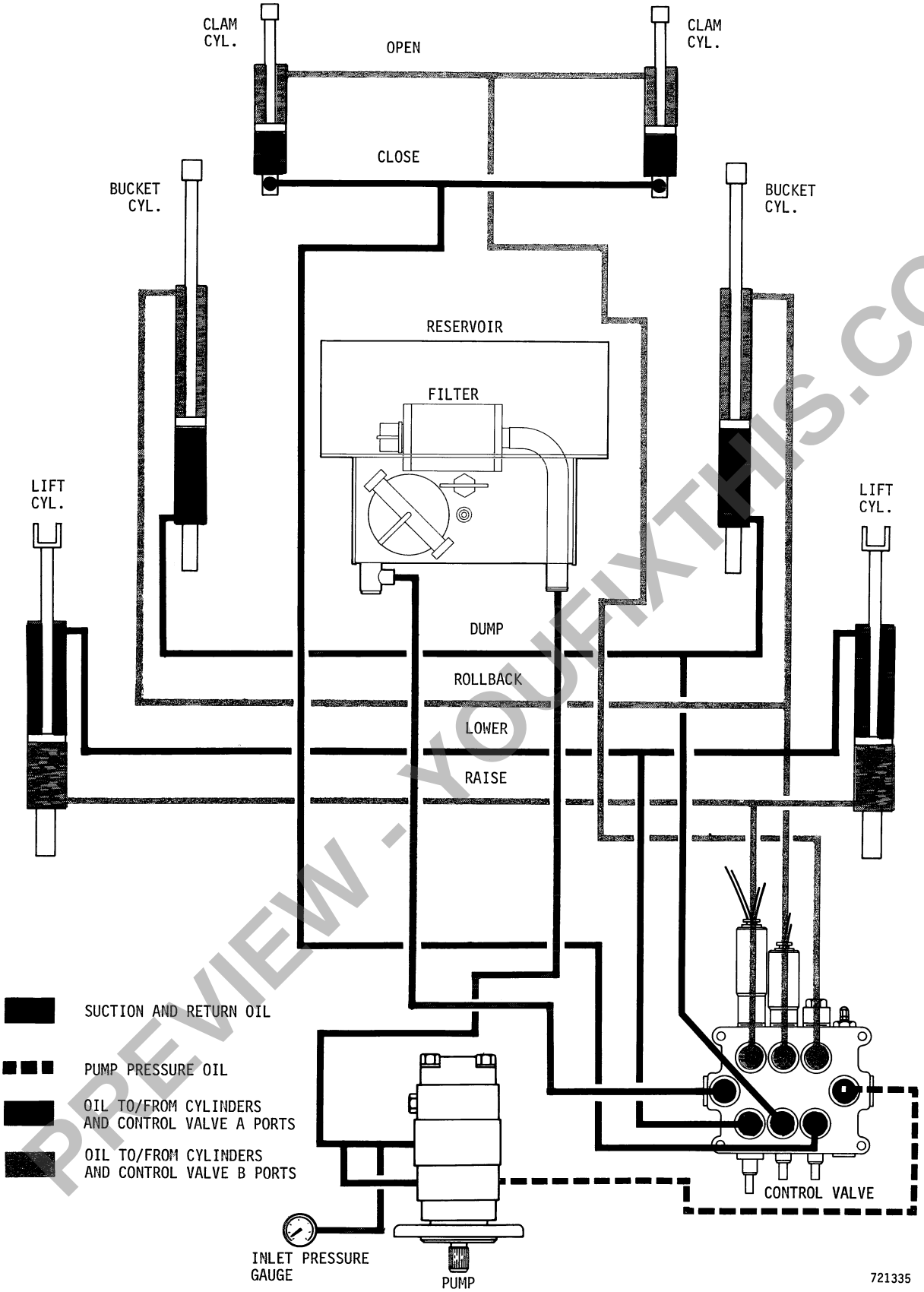

Figure 2 - Loader Hydraulic Diagram

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FRACTION to DECIMAL to MILLIMETER CONVERSION TABLE

Fraction	Decimal	MM	Fraction	Decimal	MM	Fraction	Decimal	MM
1/64	.0156	0.397	23/64	.3593	9.128	45/64	.7031	17.859
1/32	.0312	0.794	**3/8**	**.3750**	**9.525**	23/32	.7187	18.256
3/64	.0468	1.191	25/64	.3906	9.922	47/64	.7343	18.653
1/16	.0625	1.587	13/32	.4062	10.319	**3/4**	**.7500**	**19.050**
5/64	.0781	1.984	27/64	.4218	10.716	49/64	.7656	19.447
3/32	.0937	2.381	7/16	.4375	11.113	25/32	.7812	19.844
7/64	.1093	2.778	29/64	.4531	11.509	51/64	.7968	20.240
1/8	**.1250**	**3.175**	15/32	.4687	11.906	13/16	.8125	20.637
9/64	.1406	3.572	31/64	.4843	12.303	53/64	.8281	21.034
5/32	.1562	3.969	**1/2**	**.5000**	**12.700**	27/32	.8437	21.431
11/64	.1718	4.366	33/64	.5156	13.097	55/64	.8593	21.828
3/16	.1875	4.762	17/32	.5312	13.494	**7/8**	**.8750**	**22.225**
13/64	.2031	5.159	35/64	.5468	13.890	57/64	.8906	22.622
7/32	.2187	5.556	9/16	.5625	14.287	29/32	.9062	23.019
15/64	.2343	5.953	37/64	.5781	14.684	59/64	.9218	23.415
1/4	**.2500**	**6.350**	19/32	.5937	15.081	15/16	.9375	23.812
17/64	.2656	6.747	39/64	.6093	15.478	61/64	.9531	24.209
9/32	.2812	7.144	**5/8**	**.6250**	**15.875**	31/32	.9687	24.606
19/64	.2968	7.541	41/64	.6406	16.272	63/64	.9843	25.003
5/16	.3125	7.937	21/32	.6562	16.669	**1**	**1.0000**	**25.400**
21/64	.3281	8.334	43/64	.6718	17.065			
11/32	.3437	8.731	11/16	.6875	17.462			

INCH to MILLIMETER CONVERSION TABLE

Inch	MM	Inch	MM	Inch	MM	Inch	MM
1	25.400	6	152.000	10	254.000	60	1,524.000
2	50.800	7	177.800	20	508.000	70	1,778.000
3	76.200	8	203.200	30	762.000	80	2,032.000
4	101.600	9	228.600	40	1,016.000	90	2,286.000
5	127.000	10	254.000	50	1,270.000	100	2,540.000

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RUN-IN INSTRUCTIONS

Engine Lubrication

Fill the engine crankcase with CASE HDM oil and install new engine oil filters, after an engine has been rebuilt.

NOTE: *Use a SERIES 3 DS or CD SERVICE CLASSIFICATION oil that has the correct viscosity rating for ambient air temperature, if CASE HDM oil is not used.*

Change the engine oil while the engine is hot and replace the engine oil filters, after the first 20 hours of operation.

Change the engine oil and filters at the given intervals, after the 20 hours, as found in the Operator's Manual.

Run-In Procedure For Rebuilt Engines (With A Dynamometer)

The following procedure must be followed when using a PTO dynamometer to run-in the engine. The dynamometer will make sure of the control of the engine load at each speed and will remove stress on new parts during run-in.

During the run-in, continue to check the oil pressure, coolant level and coolant temperature.

STEP	TIME	ENGINE SPEED	DYNAMOMETER SCALE LOAD*
1	**10 Minutes	1000 RPM	Not Any
2	**10 Minutes	1800 RPM	Not Any
3	20 Minutes	1800 RPM	1/3
4	20 Minutes	1800 RPM	1/2
5	***30 Minutes	100 RPM below rated speed	3/4
6	Tighten the cylinder head bolts to the torque that is found in Section 2015 of the service manual.		

* According to normal dynamometer scale load at rated speed for the specific vehicle model. Decrease this scale load as shown.

** The best run-in procedure will constantly change the throttle between 750 to 1000 RPM, for the first 10 minutes and from 1000 to 1800 RPM, for the next 10 minutes. The purpose of this changing RPM is to change the lubrication and coolant flow.

*** 30 minutes at 3/4 load is a minimum amount of time the engine can be run. It is best that when possible, the engine (especially a turbocharged diesel) must be run for four (4) hours or more, at the above speed and load before checking the full engine horsepower or before using the engine for heavy field work.

Run-In Procedure For Rebuilt Engines (Without A Dynamometer)

STEP	TIME	ENGINE SPEED	LOAD
1	*10 Minutes	1000 RPM	Not Any
2	* 10 Minutes	1800 RPM	Not Any
3	30 Minutes	2/3 Rated RPM	Light Load
4	1 Hour	Full RPM (not over 2000 RPM)	80 to 90%
5	Tighten the cylinder head bolts to the torque that is found in Section 2015 of the service manual.		

* If engine must then run at or near full load to operate the machine, remove the load for the first hour and run at high idle for several minutes at 15 minute intervals.

Run-In Procedure

Keep in one gear lower than normal for the first 8 hours of field operation. DO NOT "lug" the engine for the next 12 hours. Prevent "lugging" by moving the shift lever to a lower gear. The engine must not be "lugged" below the Rated Engine RPM during the early hours of life.

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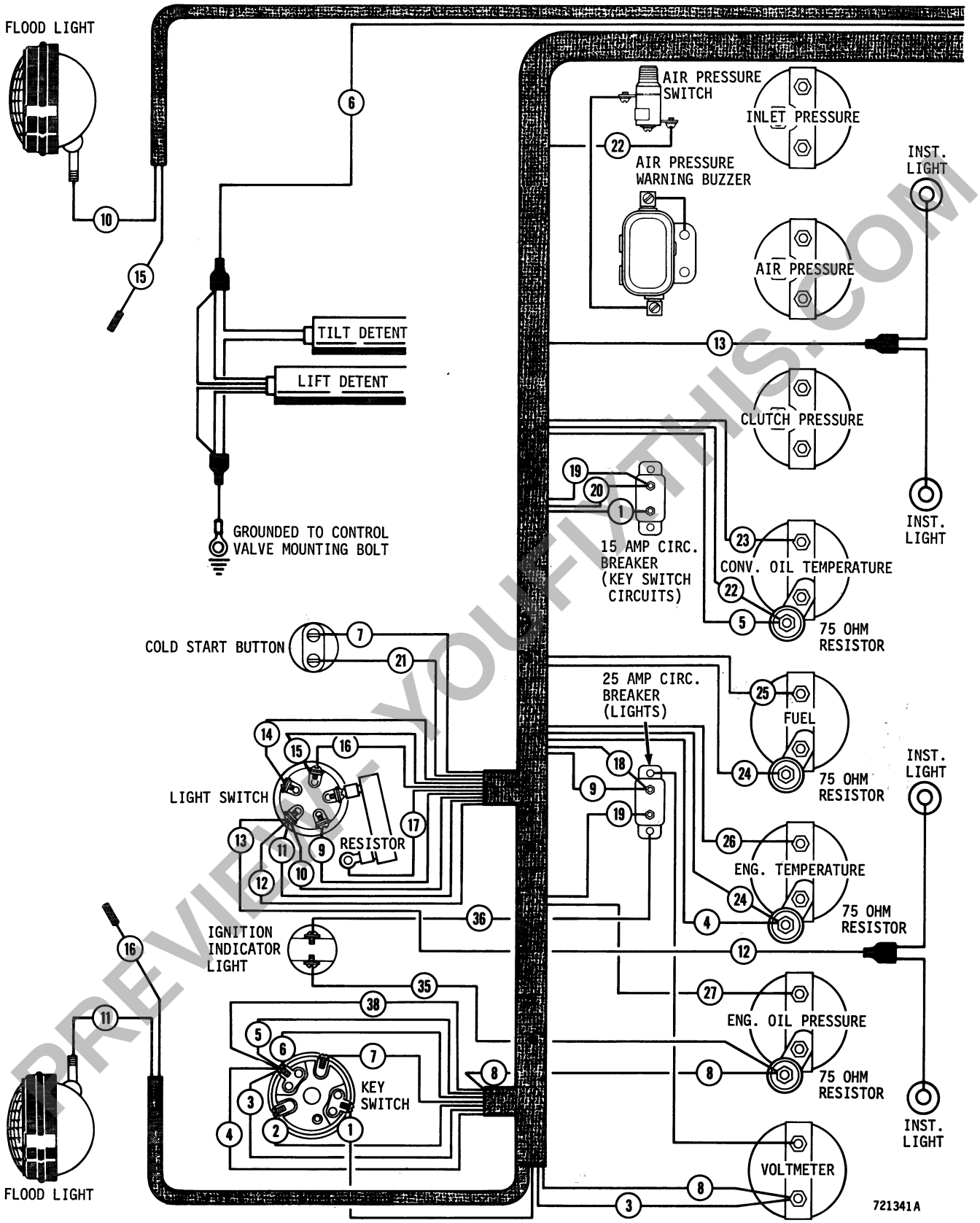

Figure 6 - Wiring Diagram Without Instrument Cluster

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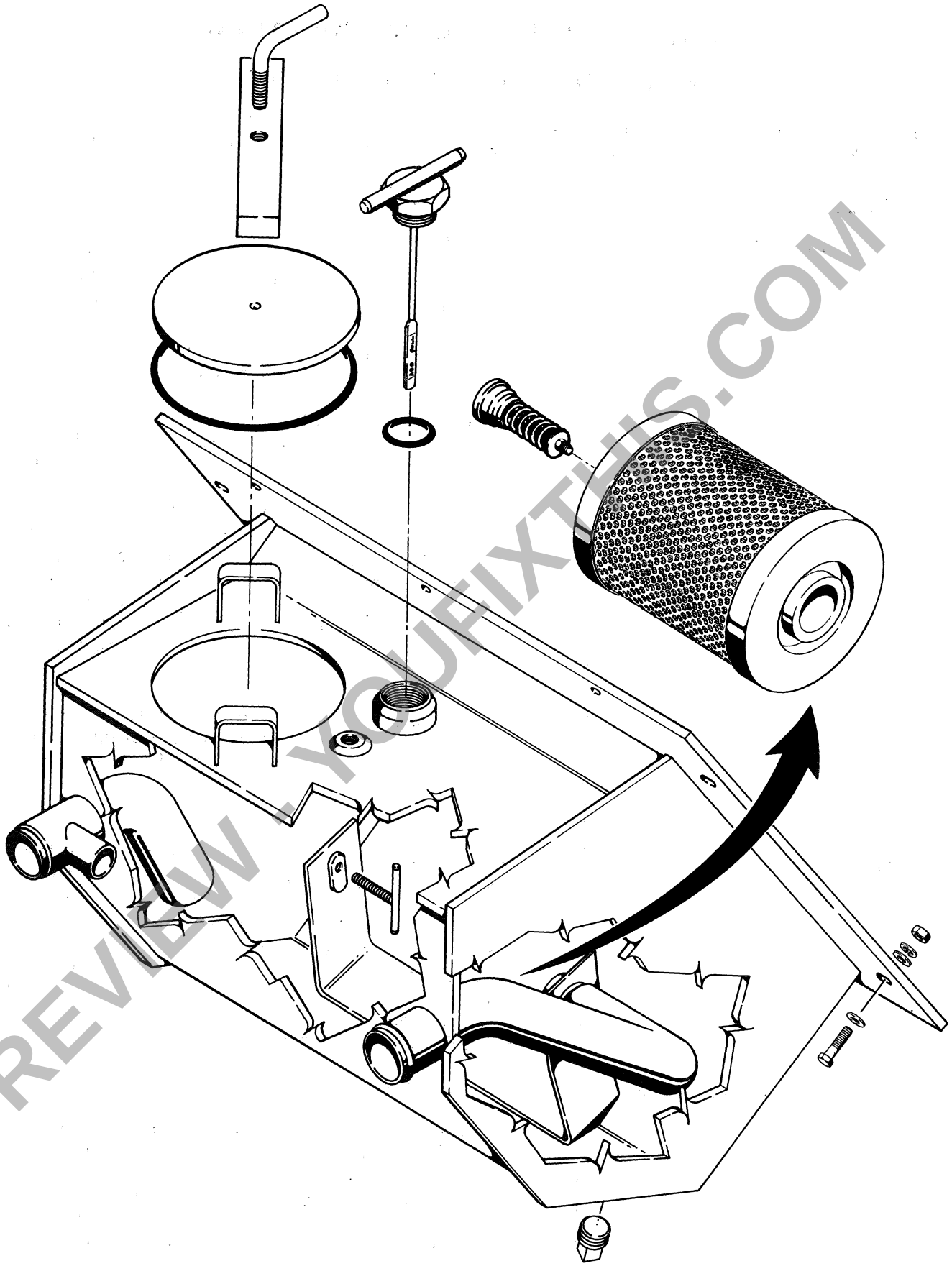

Figure 4 - Hydraulic Reservoir

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Special Torque

	U.S. Value	Metric Value
Camshaft Nut with Lock Washer	95 to 105 Ft. Lbs.	129 to 142 Nm (12.9 to 14.2 kgm)
Camshaft Nut with Hardened Washer	195 to 205 Ft. Lbs.	264 to 278 Nm (26.4 to 27.8 kgm)
Connecting Rod Bolts (Add Lubrication to Threads and Under Bolt Heads with 30W Oil)	95 to 105 Ft. Lbs.	129 to 142 Nm (12.9 to 14.2 kgm)
Crankshaft Pulley Bolt	100 to 110 Ft. Lbs.	136 to 149 Nm (13.6 to 14.9 kgm)
Crankshaft Pulley Nut	125 to 135 Ft. Lbs.	169 to 183 Nm (16.9 to 18.3 kgm)
Crankshaft Main Bearing Bolts		
Without Hardened Washers	145 to 155 Ft. Lbs.	197 to 210 Nm (19.7 to 21.0 kgm)
With Hardened Washers	195 to 215 Ft. Lbs.	264 to 291 Nm (26.4 to 29.1 kgm)
Oil Cooler Outlet Cover Screw	35 to 42 Ft. Lbs.	48 to 57 Nm (4.8 to 5.7 kgm)
Cylinder Head Bolts	195 to 215 Ft. Lbs.	264 to 291 Nm (26.4 to 29.1 kgm)
Cylinder Head Cover Stud Nut	8 to 10 Ft. Lbs.	11 to 14 Nm (1.1 to 1.4 kgm)
Flywheel to Crankshaft Bolts		
Without Hardened Washers	180 to 190 Ft. Lbs.	244 to 258 Nm (24.4 to 25.8 kgm)
With Hardened Washers	230 to 250 Ft. Lbs.	312 to 339 Nm (31.2 to 33.9 kgm)
Intake and Exhaust Manifold Studs	25 to 30 Ft. Lbs.	34 to 41 Nm (3.4 to 4.1 kgm)
Intake Manifold Hex Nuts		
Standard	25 to 30 Ft. Lbs.	34 to 41 Nm (3.4 to 4.1 kgm)
Heavy	35 to 42 Ft. Lbs.	48 to 57 Nm (4.8 to 5.7 kgm)
Exhaust Manifold Hex Nuts	25 to 30 Ft. Lbs.	34 to 41 Nm (3.4 to 4.1 kgm)
Oil Pan Capscrews	15 to 20 Ft. Lbs.	20 to 27 Nm (2.0 to 2.7 kgm)
Oil Pan Drain Plug	29 to 31 Ft. Lbs.	39 to 42 Nm (3.9 to 4.2 kgm)

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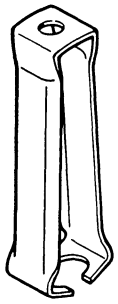
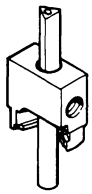
INSTALLATION INSTRUCTIONS FOR M20614 TEFLON VALVE SEAL KIT

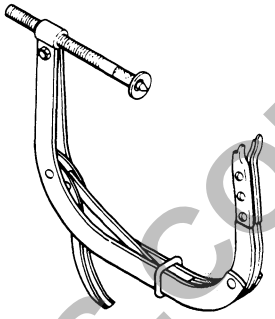
Special Tools Required



M20624 SEAL INSTALLATION TOOL



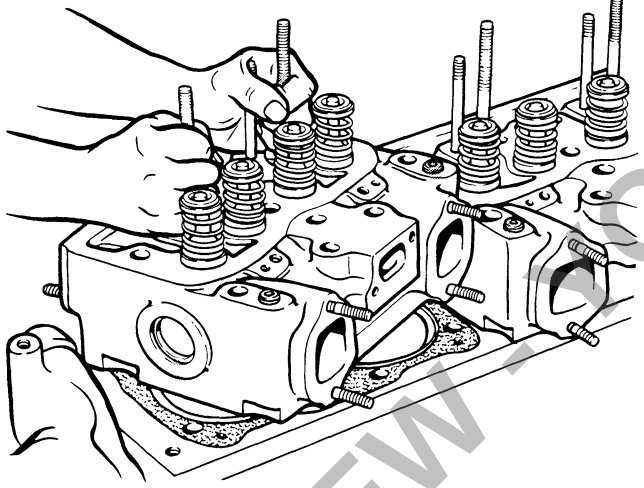
M20617 VALVE GUIDE CUTTING TOOL



VALVE SPRING COMPRESSOR

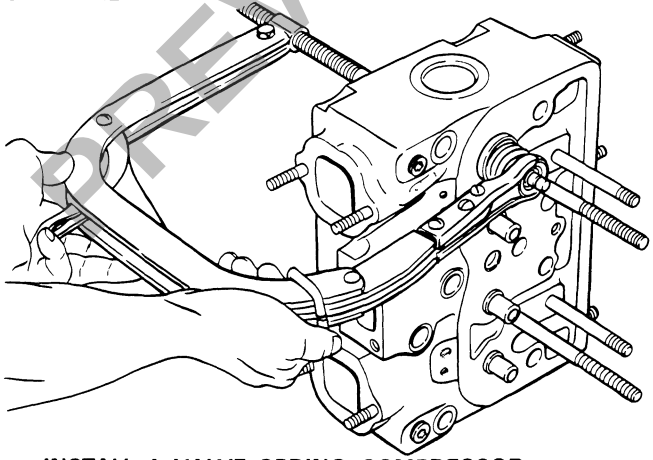
NOTE: FOUR CYLINDER ENGINES REQUIRE TWO M20614 KITS AND SIX CYLINDER ENGINES REQUIRE THREE M20614 KITS.

STEP 1



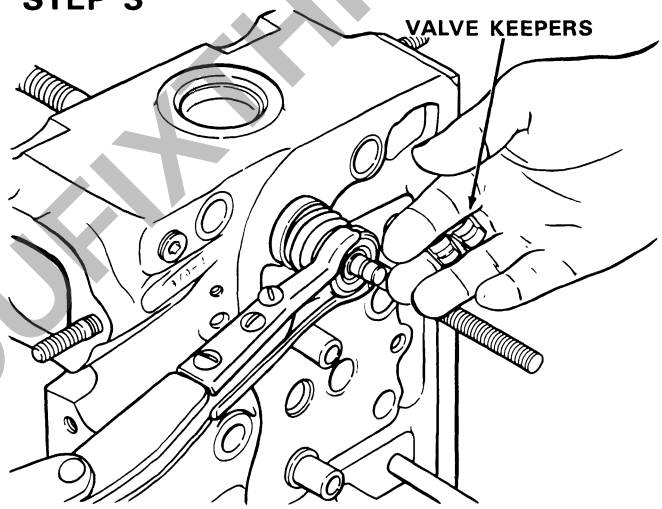
REMOVE THE CYLINDER HEADS FROM THE ENGINE, REFER TO SECTION 2015 FOR HEAD REMOVAL.

STEP 2



INSTALL A VALVE SPRING COMPRESSOR.

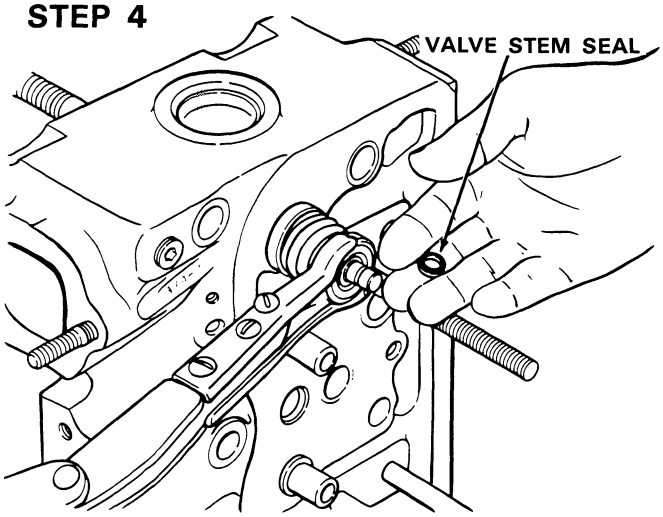
STEP 3



COMPRESS VALVE SPRING AND REMOVE VALVE KEEPERS.

IMPORTANT: VALVES, VALVE RETAINERS OR ROTATORS AND VALVE KEEPERS SHOULD BE MARKED WHEN REMOVED, TO INSURE THAT THEY WILL BE REINSTALLED IN THEIR ORIGINAL LOCATION.

STEP 4



REMOVE VALVE STEM SEAL.

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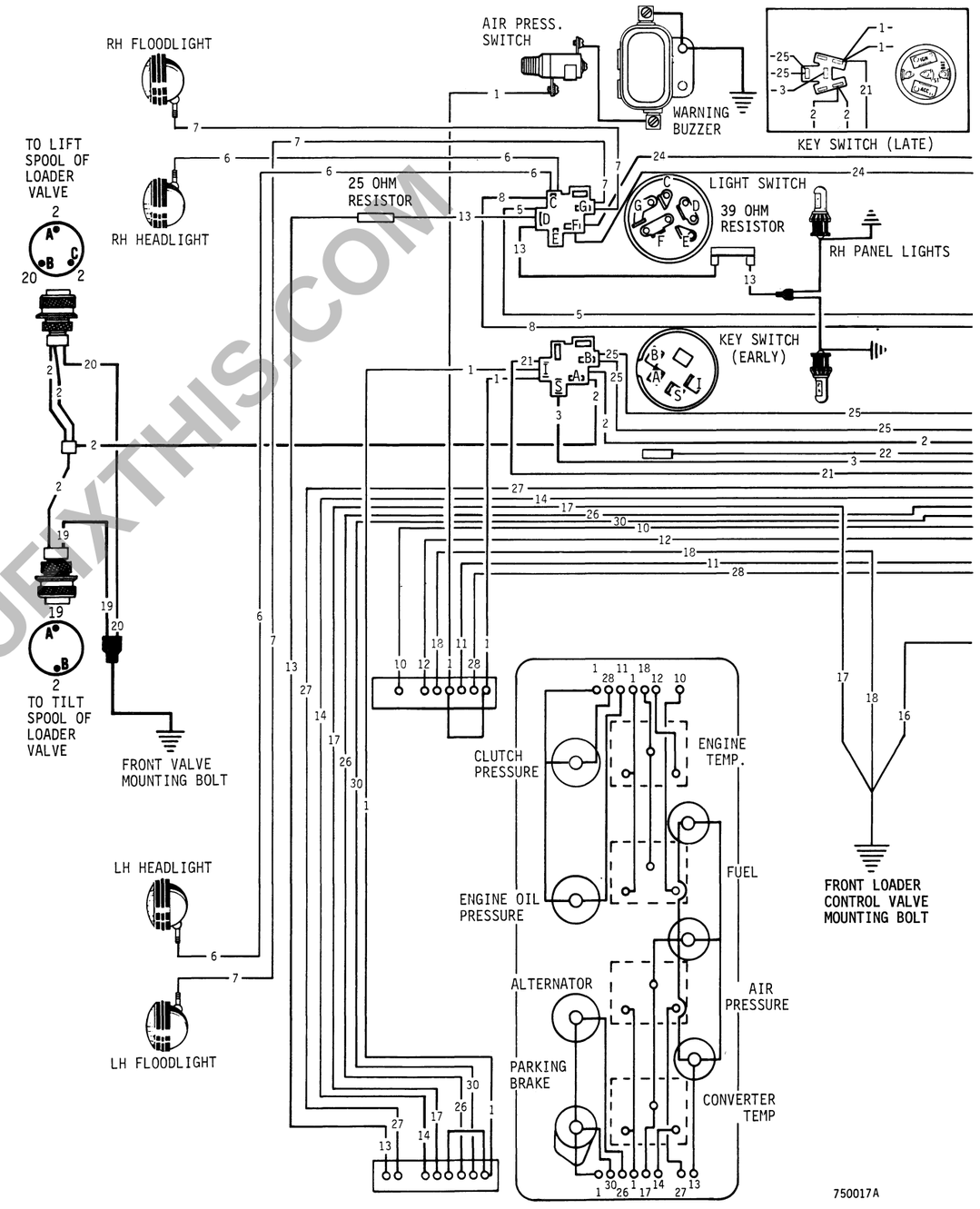

Figure 7 - Wiring Diagram Before Pod Cab or Canopy With Instrument Cluster

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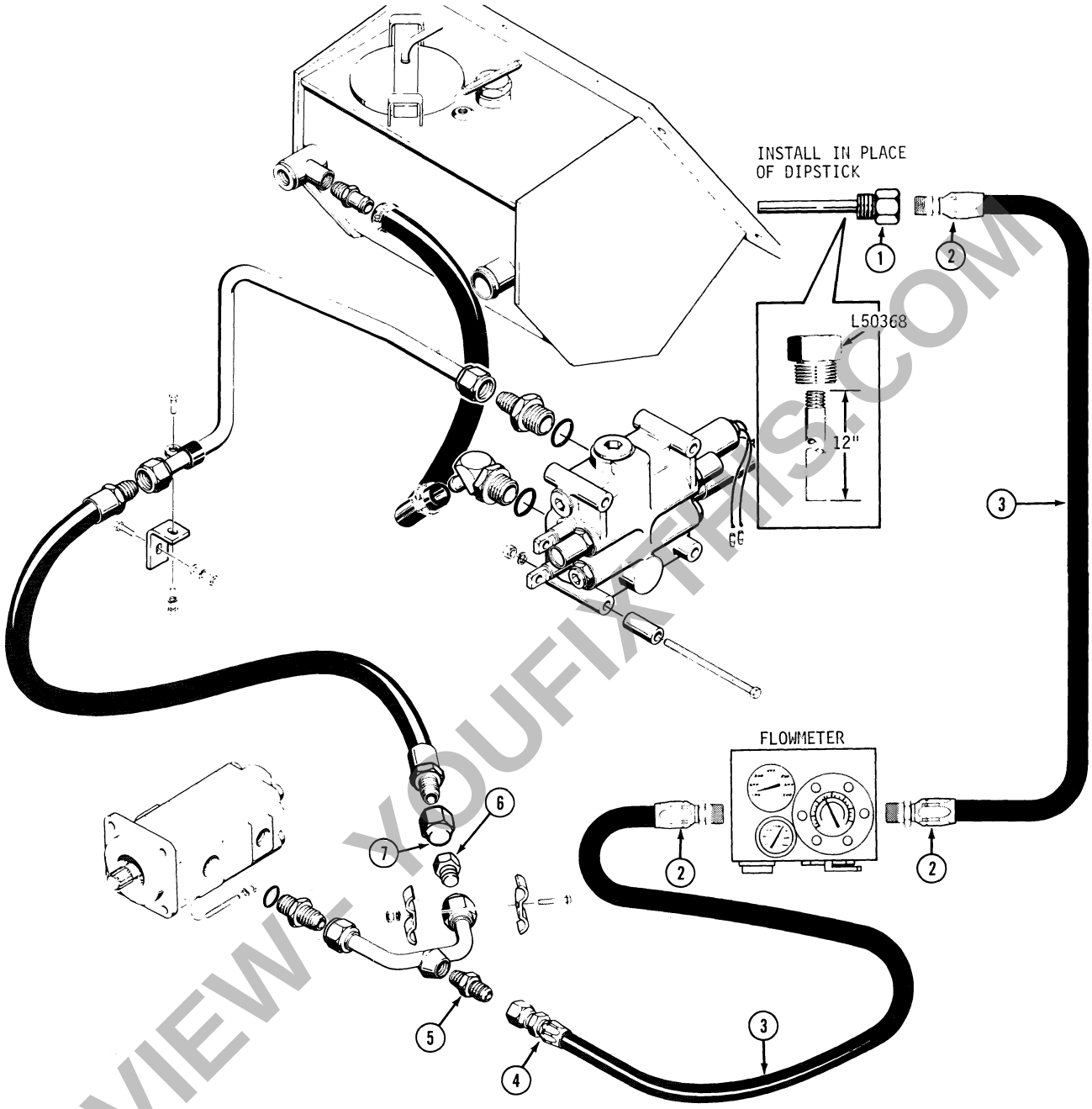

REF.	PART NO.	DESCRIPTION	NO. REQD.
1.	L50368	1-7/8"-12 STRAIGHT THREAD X 3/4" NPT CONNECTOR WITH O-RING	1
2.	220-226	3/4" NPT PIPE FITTING	3
3.	A21574	3/4" I.D. BULK HOSE	
4.	220-206	1-1/16"-12 JIC SWIVEL FITTING	1
5.	218-446	3/4" NPT TO 1-1/16"-12 JIC ADAPTER	1
6.	218-779	1-5/16"-12 JIC PLUG	1
7.	218-758	1-5/16"-12 JIC CAP	1

NOTE: CONNECTIONS AT FLOWMETER OPTIONAL DEPENDING ON HOSES ALREADY AVAILABLE.

742616

Figure 7 - Flowmeter Hookup, Loader Section

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GENERAL TORQUE SPECIFICATION TABLE (Revised 2-74)

USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN

NOTE: These values apply to fasteners as received from supplier, dry, or when lubricated with normal engine oil. They do not apply if special graphited or moly-disulphide greases or other extreme pressure lubricants are used. This applies to both UNF and UNC threads.

SAE Grade No.		2				5				8 *			
Bolt head identification marks as per grade NOTE: Manufacturing Marks Will Vary													
Bolt Size		Torque Foot Pounds		Torque Newton-Meters		Torque Foot Pounds		Torque Newton-Meters		Torque Foot Pounds		Torque Newton-Meters	
Inches	Millimeters	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	6.35	5	6	6.8	8.13	9	11	12.2	14.9	12	15	16.3	20.3
5/16	7.94	10	12	13.6	16.3	17	20.5	23.1	27.8	24	29	32.5	39.3
3/8	9.53	20	23	27.1	31.2	35	42	47.5	57.0	45	54	61.0	73.2
7/16	11.11	30	35	40.7	47.4	54	64	73.2	86.8	70	84	94.9	113.9
1/2	12.70	45	52	61.0	70.5	80	96	108.5	130.2	110	132	149.2	179.0
9/16	14.29	65	75	88.1	101.6	110	132	149.2	179.0	160	192	217.0	260.4
5/8	15.88	95	105	128.7	142.3	150	180	203.4	244.1	220	264	298.3	358.0
3/4	19.05	150	185	203.3	250.7	270	324	366.1	439.3	380	456	515.3	618.3
7/8	22.23	160	200	216.8	271.0	400	480	542.4	650.9	600	720	813.6	976.3
1	25.40	250	300	338.8	406.5	580	696	786.5	943.8	900	1080	1220.4	1464.5
1-1/8	25.58					800	880	1084.8	1193.3	1280	1440	1735.7	1952.6
1-1/4	31.75					1120	1240	1518.7	1681.4	1820	2000	2467.9	2712.0
1-3/8	34.93					1460	1680	1979.8	2278.1	2380	2720	3227.3	3688.3
1-1/2	38.10					1940	2200	2630.6	2983.2	3160	3560	4285.0	4827.4

* Thick nuts must be used with Grade 8 bolts

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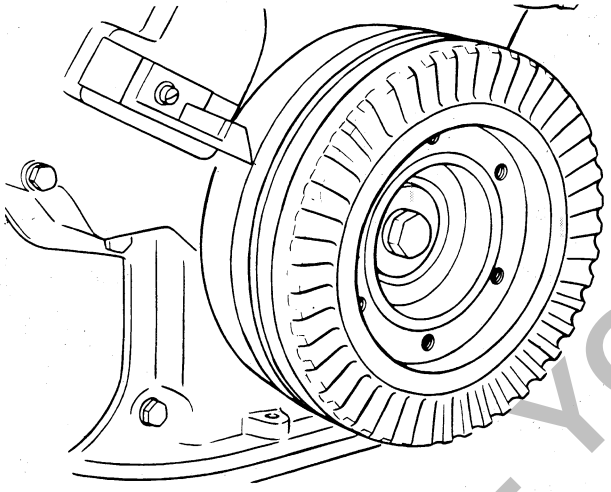
ENGINE TUNEUP PROCEDURE

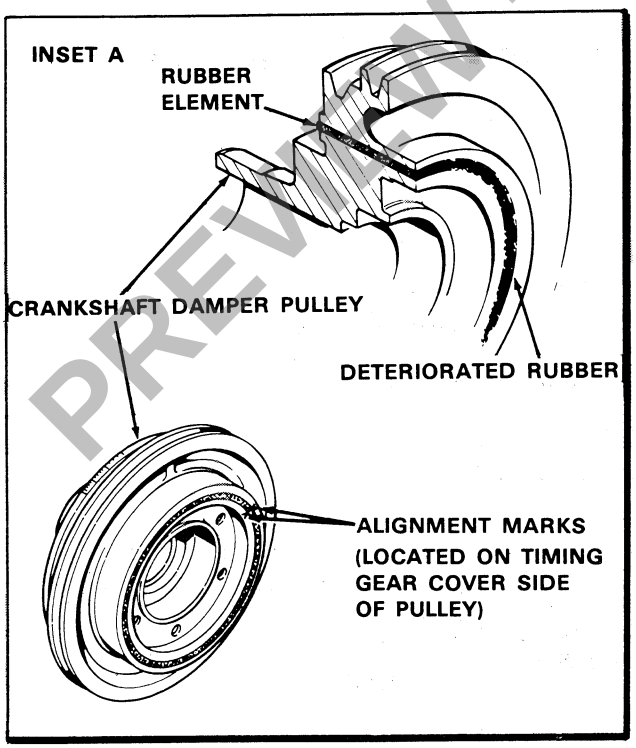
Checking Crankshaft Damper Pulley

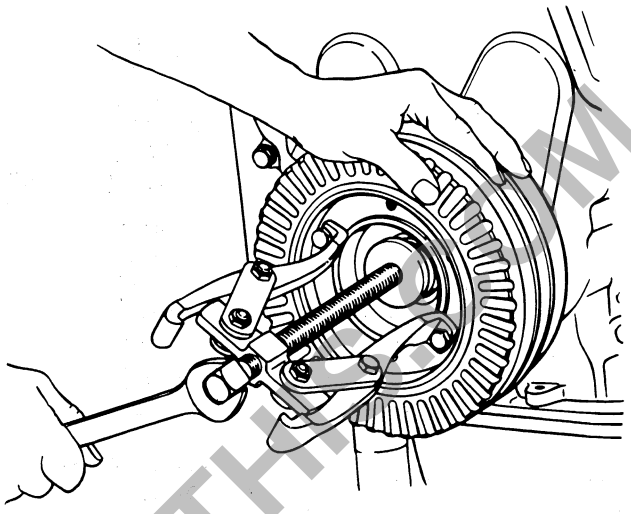
STEP 1

THE RECOMMENDED CHANGE INTERVAL FOR THE CRANKSHAFT DAMPER PULLEY IS 2000 HOURS MAXIMUM. AT ANY TIME OVER 1500 HOURS. CONSIDER CHANGING PULLEY AT ANY MAJOR ENGINE OVERHAUL OR TUNE UP.

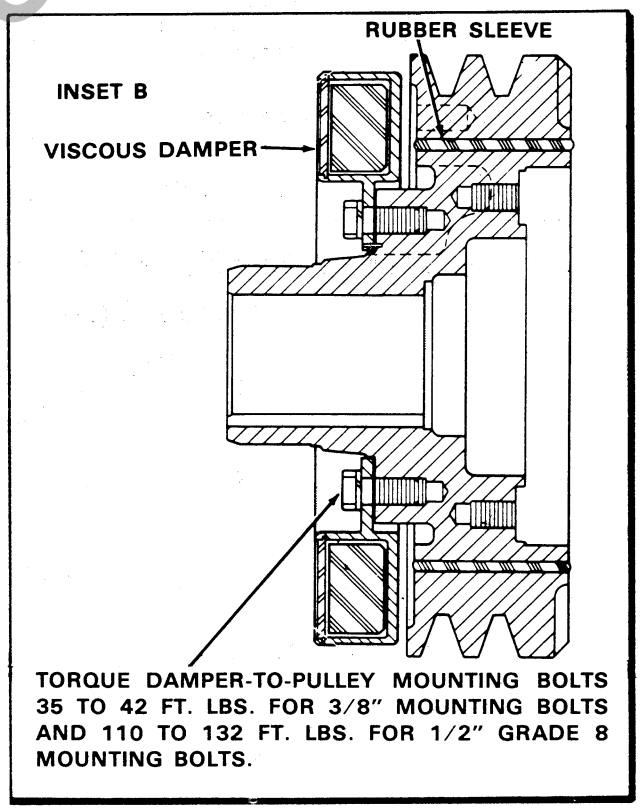
EVERY 500 HOURS AND AT ENGINE TUNEUP, VISUALLY INSPECT RUBBER ELEMENT FOR PEEL AREAS OR RUBBER MISSING. CHECK ALIGNMENT OF THE "V" MARKS BETWEEN THE INNER AND OUTER MEMBERS. IF "V" MARKS SHIFT, ENGINE TIMING WILL BE OFF AND DAMPER PULLEY MUST BE REPLACED.







USE BOLT ON TYPE PULLER TO REMOVE PULLEY. REMOVE VISCOUS DAMPER FROM PULLEY (IF SO EQUIPPED). DO NOT PULL OR HAMMER ON OUTSIDE OF PULLEY OR VISCOUS DAMPER; SERIOUS DAMAGE TO PULLEY, DAMPER, AND RUBBER SLEEVE COULD RESULT.



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REVISION FOR THE W14 ARTICULATED LOADER
SERVICE MANUALS 9-72535, 9-72536, 9-73537 AND 9-72538

Contents of Revision

Spine Tab 9-72539
Table of Contents 9-72539
Section 8011 9-72537

Assembly Instructions

Discard: Old Spine Tab
Old Table of Contents
Section 8011 9-72536
Section 8011A 9-72535

Install: New Spine Tab 9-72539
New Table of Contents 9-72539
Section 8011 9-72537

Summary or Revision

This revision combines sections 8011 and 8011A and updates the wiring diagrams to include coverage for the POD cab and canopy machines.

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CASE CORPORATION

C E Div. 9-72538A
April 1978

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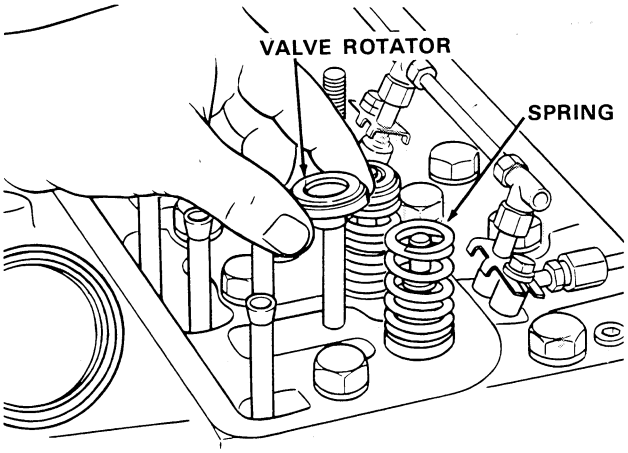
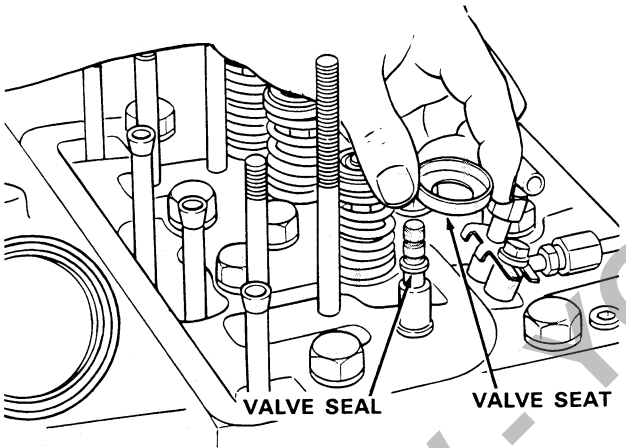
STEP 8



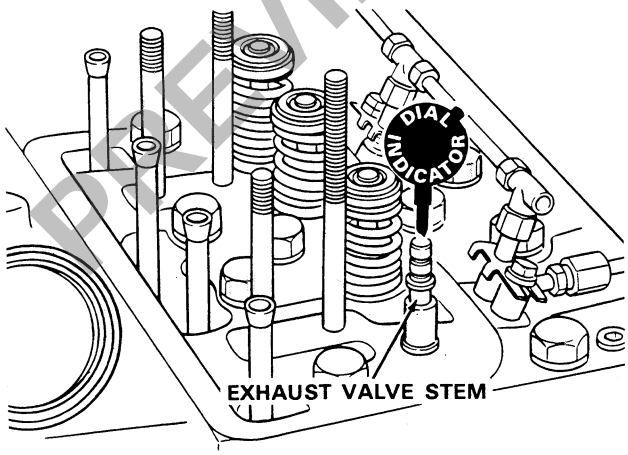
REMOVE VALVE ROTATOR, SPRING AND SEAT.

STEP 9

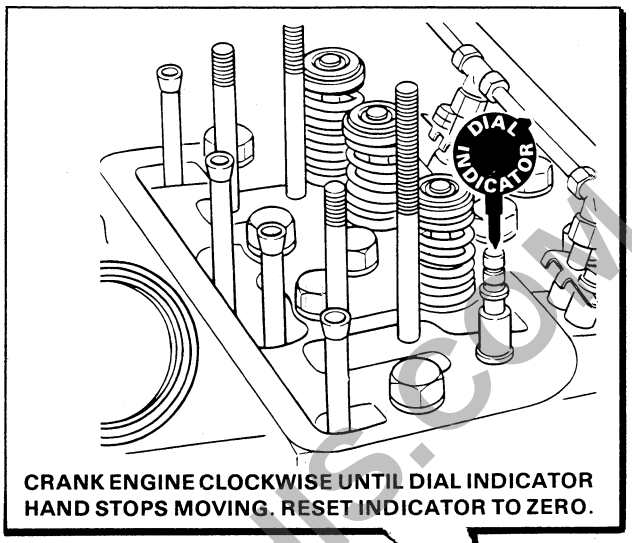


KEEP VALVE SEAL IN PLACE TO PREVENT VALVE FROM FALLING THROUGH VALVE GUIDE IF PISTON IS MOVED TOO FAR

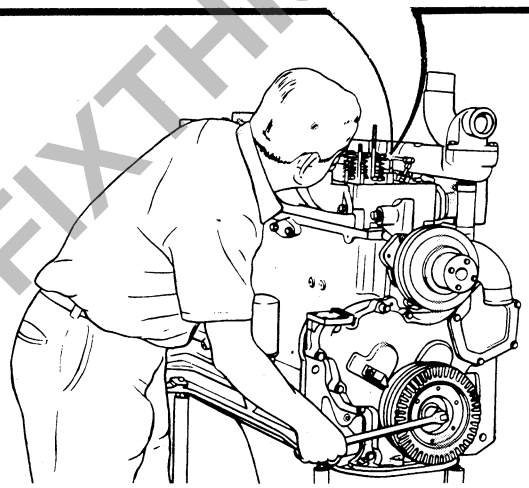
STEP 10



INSTALL DIAL INDICATOR ON END OF VALVE STEM WITH VALVE RESTING ON TOP OF PISTON.



CRANK ENGINE CLOCKWISE UNTIL DIAL INDICATOR HAND STOPS MOVING. RESET INDICATOR TO ZERO.



CRANK ENGINE CLOCKWISE UNTIL .010" SHOWS ON DIAL. SCRIBE A MARK ON CRANKSHAFT PULLEY IN LINE WITH TIMING POINTER.

CRANK ENGINE COUNTERCLOCKWISE PAST ZERO MARK ON INDICATOR UNTIL .010" SHOWS ON DIAL. AGAIN, SCRIBE MARK ON CRANKSHAFT PULLEY.

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ENGINE SINGLE OIL FILTER AND HEAT EXCHANGER (Cont'd)

(Refer to Figure 6)

Assembly and Installation

1. Install the relief valve (17), relief spring (18) with plug (19) to the base (15). The plug should be set to the dimension shown in Inset A.

2. Install the assembled base to the engine block with a new gasket (16). Torque the mounting bolts 80 to 96 ft. lbs.

3. Install the drain valve (1) (if replaced), and new "O" ring (14) to heat exchanger (13). **NOTE:** Make sure the "O" ring is not cut or rolled when seated in the ring groove in the heat exchanger.

4. Install the assembled heat exchanger to the base (15) with adapter (12).

5. Install street tee (10) with plug and hose connector (11) (if replacement was required), to the water manifold.

6. Install adapter (8) and elbow connector (9) (if replacement was required), to engine block.

7. Install the long hose (6) to water manifold connector (11) and the outside tube of the heat exchanger (10) with clamps. **NOTE:** If hose was replaced, cut to same length as replaced hose. Tighten clamps securely.

8. Install the short hose (7) to the connector elbow (9) and to the heat exchanger inner tube with hose clamps. **NOTE:** If hose was replaced, cut to same length as the replaced hose. Tighten clamps securely.

9. Apply a coat of clean oil to the gasket of the new Case oil filter (2). Install the filter by turning in a clockwise direction, until gasket contact is made. Hand tighten 3/8 of a turn. Loosen the filter approximately 1 full turn. Retighten, turning clockwise until gasket contact is made. Hand tighten 3/8 to 1/2 of a turn to obtain the proper seal. **NOTE:** Install the oil pan drain plug with a new nylon gasket and torque 29 to 31 ft. lbs.

10. Add the correct measured amount of new engine oil to the engine crancase.

11. Make certain the tractor is on level ground to assure accurate level readings. Start the engine and check for leaks. **IMPORTANT:** If the engine is equipped with a turbo-charger, proceed with the following. Pull the engine stop control all the way out to stop position. Turn the key switch to start position and crank the engine until the engine oil pressure gauge pointer reaches the green zone or a maximum time lapse of 30 seconds. Wait one minute, then push stop control all the way in. Set the throttle lever at approximately 1/3 open (1000 RPM), start engine and run for 2 minutes at 1000 RPM. This will assure that adequate lubrication has reached the turbo-charger bearings as well as the rest of the engine, before accelerating or applying a load.

12. Shut the engine down and allow to stand for several minutes to allow the oil to drain back to the oil pan. Check the oil level with the dipstick and add if necessary. Check the water coolant level in the radiator and add if necessary.

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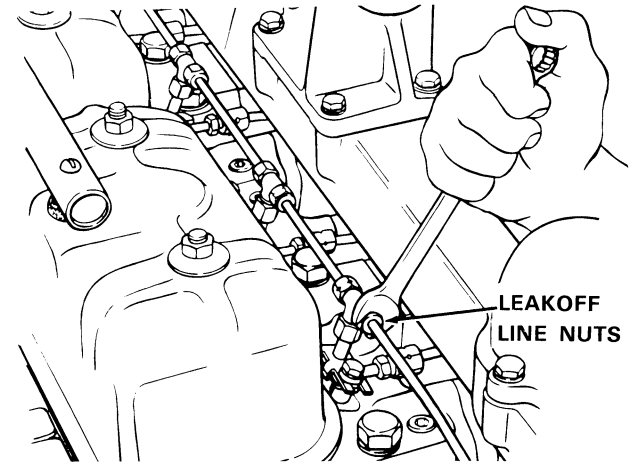
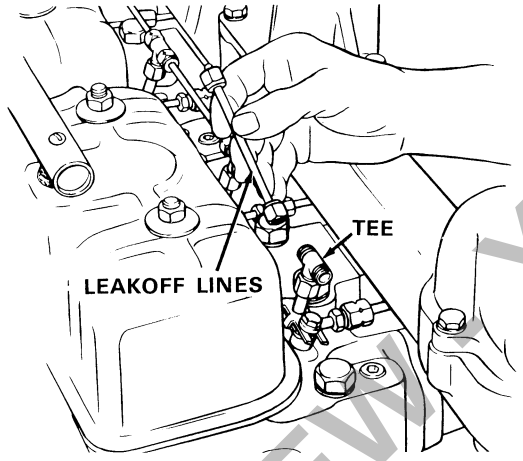
REMOVING INJECTORS

STEP 1



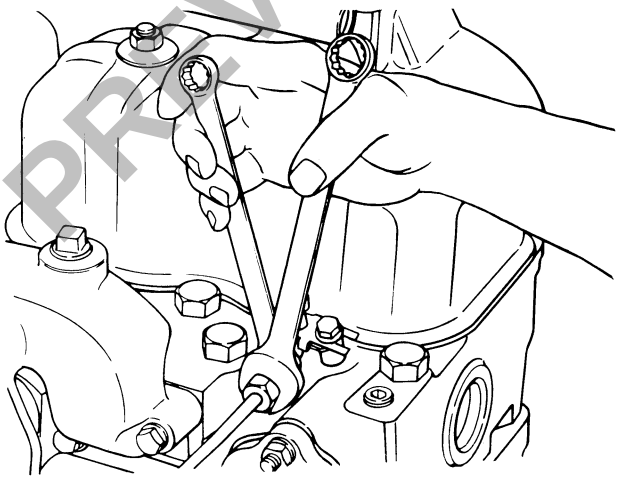
Clean cylinder head area around injectors. Disconnect leakoff line nuts.

STEP 2



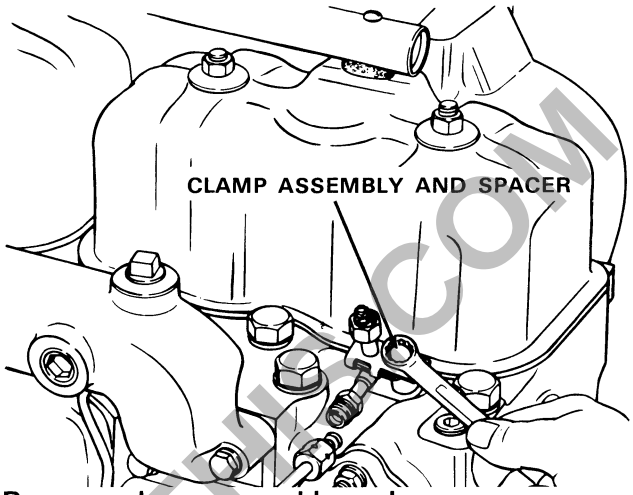
Remove leakoff lines and tee.

STEP 3



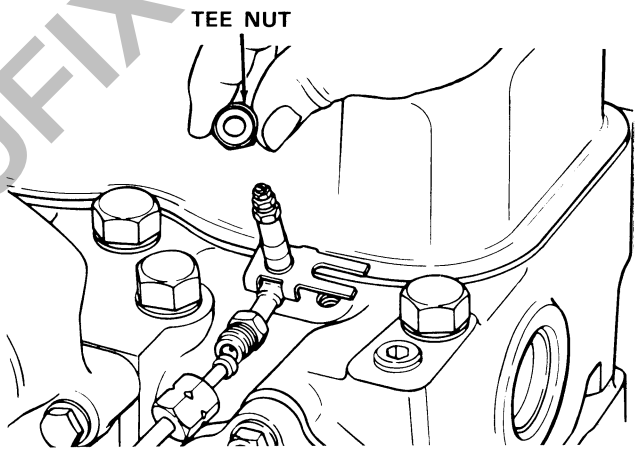
Disconnect inlet fitting using the one-hand and two-wrench method to minimize the chance of damage to the inlet fittings.

STEP 4



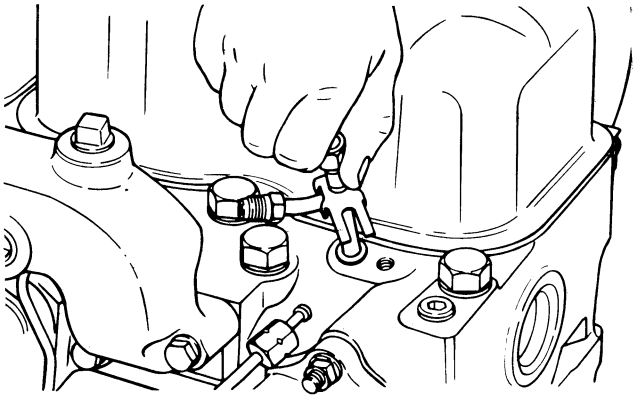
Remove clamp assembly and spacer.

STEP 5



Remove tee nut from injector.

STEP 6



Remove injector by pulling upward and turning. *IMPORTANT:* Never attempt to remove an injector by prying with a screwdriver or similar tool. If an injector can not be easily removed by hand, proceed to Step 7.

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SERVICING THE HYDRAULIC PUMP

General

1. Replace gears in pairs. Also replace bearings in pairs.

2. Replace such parts as O-rings, pocket seals, oil seals, and sealing rings with new parts even though they appear to be in good condition.

   NOTE: Replace serviceable sealing rings only if bearing is being replaced.

3. Service this pump in CLEAN surroundings. Dirt is the enemy of any hydraulic system.

4. Use caution when gripping parts in a vise—do not damage machined surfaces.

Removal

1. Depressurize the hydraulic reservoir and drain the reservoir.

2. Remove accumulated dirt and grease from pump and surrounding area.

3. Loosen a hose clamp and remove the bolts and lockwashers that connect the suction line to the pump.

4. Remove the support clamp from the steering and loader pressure tubes.

5. Disconnect the pressure tubes from the pump and place hoses out of the way. Install clean caplugs in the pressure lines.

6. Provide support for the pump, then remove the pump mounting bolts and lockwashers. Then remove pump from torque converter housing. Pull pump from torque converter housing and remove to a clean workbench for disassembly.

Disassembly

Separating Pump Sections

1. Scribe a line the full length of the pump to assure correct reassembly.

2. Remove the four hex nuts and washers from the end of the studs. If necessary to pry the pump sections apart, use care not to damage machined surfaces.

3. Lift off the port end cover. The thrust plate with pocket seals, roller bearing, and ring seal will also be removed.

4. Remove the 1-1/4" gear housing, drive gear, driven gear, and O-rings from the bearing carrier.

5. Unscrew the four studs and remove them.

6. Remove the bearing carrier.

7. Remove the shaft connector from the 2" drive gear.

8. Remove the 2" gear housing, drive gear, driven gear and O-rings from the shaft end cover. If necessary to pry them loose, take care not to damage machined surfaces.

Shaft End Cover

1. Pry off the thrust plate carefully with a knife blade or thin screwdriver. Remove and discard the pocket seals.

2. Pull out the double lip seal if it is to be replaced.

3. Pull the two roller bearings with a bearing puller only if they or the ring seal are to be replaced.

Bearing Carrier

1. Pry off the thrust plates with a knife

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Section 4051

BACKHOE CYLINDERS

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MARKETER		TRADE NAME
ESSO AUSTRALIA LTD.	*	ESSO TORQUE FLUID 47
	*	ESSOLUBE XD-3 10W
	***	ESSOLUBE XD-3 30
ESSO BRASILEIRA DE PETROLEO S.A.	*	ESSO TORQUE FLUID 47
ESSO CHILE S.A. PETROLERA	*	ESSO TORQUE FLUID 47
ESSO EUROPE INC. AFFILIATES	*	ESSO TORQUE FLUID 47
ESSO STANDARD SOUTH AFRICA (PTY.) LTD.	*	ESSOLUBE XD-3 10W
EXXON COMPANY U.S.A.	*	TORQUE FLUID 47
	*	XD-3, SAE 10W
	***	XD-3, SAE 30
FARMLAND INDUSTRIES, INC.	*	CO-OP DIESEL ENGINE OIL, SAE 10W
FIAT LUBRIFICANTI S.P.A.	*	OLIOFIAT GI/M
FILMITE OIL CORPORATION	*	FILMITE C-3 FLUID SAE 10W
	***	FILMITE C-3 FLUID SAE 30
FINA SA	*	FINAMATIC C-3
FISKE BROTHERS REFINING CO.	***	LUBRIPLATE UTF C-3
FS SERVICES, INC.	*	FS SUPER LUBE SAE 10-10W
GETTY REFINING AND MARKETING CO.	***	TAGOLENE 303 FLUID
GOLDEN BEAR DIVISION OF WITCO CHEMICAL CORPORATION	*	GOLDEN BEAR "CODE 510"
	***	GOLDEN BEAR "CODE 513"
	*	400 SUPREME SAE 10W
GOLDEN FLEECE	*	AUTOFLOW C3 10
	***	AUTOFLOW C3 30
	*	AUTOFLOW AA
	*	GOLDEN FLEECE SUPERFLEET
	***	GOLDEN FLEECE SUPERFLEET
GULF OIL CANADA LIMITED	*	GULF LOW ASH SUPER DUTY MOTOR OIL 5W 20
	*	GULF LOW ASH SUPER DUTY MOTOR OIL 10W
	***	GULF LOW ASH SUPER DUTY MOTOR OIL 15W-40
	*	GULFLUBE MOTOR OIL X.H.D. 5W-20*
	*	GULFLUBE MOTOR OIL XHD SAE 10W
	*	GULF SUPER DUTY MOTOR OIL 10W
GULF OIL CORPORATION	*	GULF HT FLUID C-3
	*	GULF SUPER DUTY MOTOR OIL 10W

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(3) Remove the three bolts and lockwashers that retain the diaphragm on the transmission housing (fig. 5-22). Remove the diaphragm assembly and gasket. Refer to paragraph 6-15 for diaphragm assembly rebuild instructions.

c. Rear Cover (TTB without PTO)

(1) Remove the 18 bolts and lockwashers that retain the rear cover assembly (refer to fig. 5-20). Spring pressure will push the rear cover upward.

(2) Attach a sling to the bolt flange of the rear cover, and remove the rear cover and attached parts. Refer to paragraph 6-14c and d for rear cover assembly rebuild instructions.

d. Internal Brake Components (TTB without PTO). Remove the remaining internal brake components in the manner described in b, above.

e. High-range Clutch Piston Housing (TTB)

(1) Straighten the six locktabs and remove the six bolts and locktabs that attach the high-range clutch piston housing to the transfer drive gear (fig. 5-23). Remove the two step-joint sealrings and the other sealring from the hub of the high-range clutch piston housing.

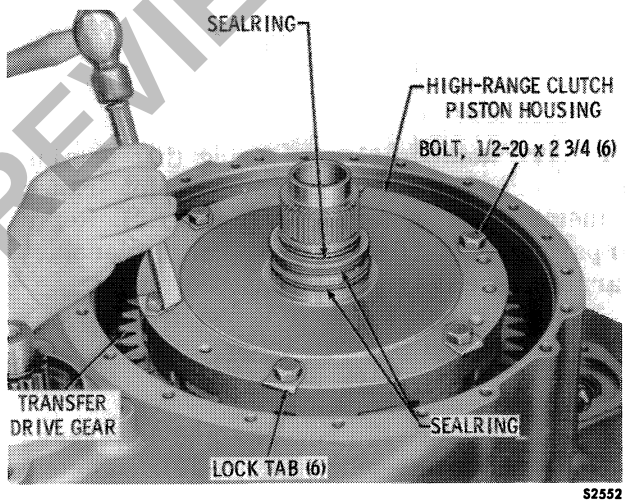

Fig. 5-23. Flattening piston housing bolt locktabs

(2) Pry the high-range clutch piston housing from the transfer drive gear, and remove it as an assembly. Refer to paragraph 6-16 for high-range clutch piston housing rebuild instructions.

5-9. REMOVAL OF RANGE GEARING, CLUTCHES, AND OIL PUMP

a. High-range Clutch Assembly and Transfer Drive Gear

(1) Remove the high-range clutch hub assembly from the transfer drive gear (fig. 5-24). Refer to paragraph 6-17 for high-range clutch hub assembly rebuild instructions.

Note: PTO models have an internal-splined hub.

(2) Remove the snapring from the low-range planetary carrier, and remove the transfer drive gear assembly (fig. 5-24). Refer to paragraph 6-18 for the transfer drive gear rebuild instructions.

b. Low-range Clutch and Planetary

(1) Replace two of the ten self-locking bolts that retain the low-range clutch piston housing with two 3/8-16 x 2 1/2-inch bolts removed from the control valve assembly in 5-3e, above (fig. 5-25). Install the bolts at opposite sides of the piston housing to restrain the spring pressure.

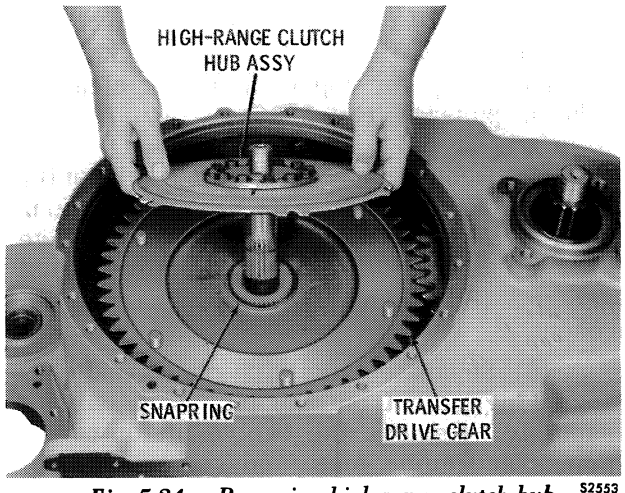

Fig. 5-24. Removing high-range clutch hub assembly (no power takeoff)

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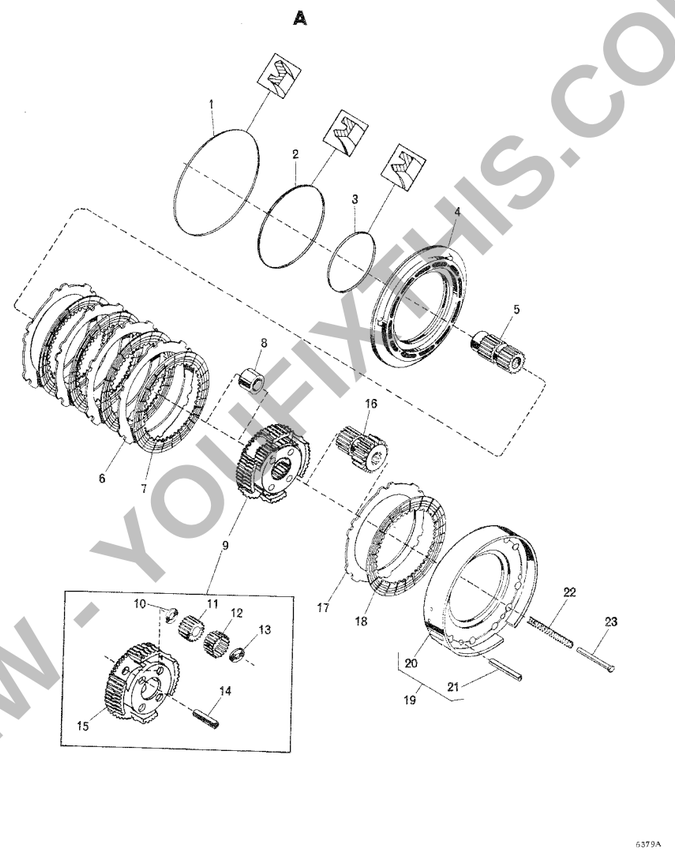
A

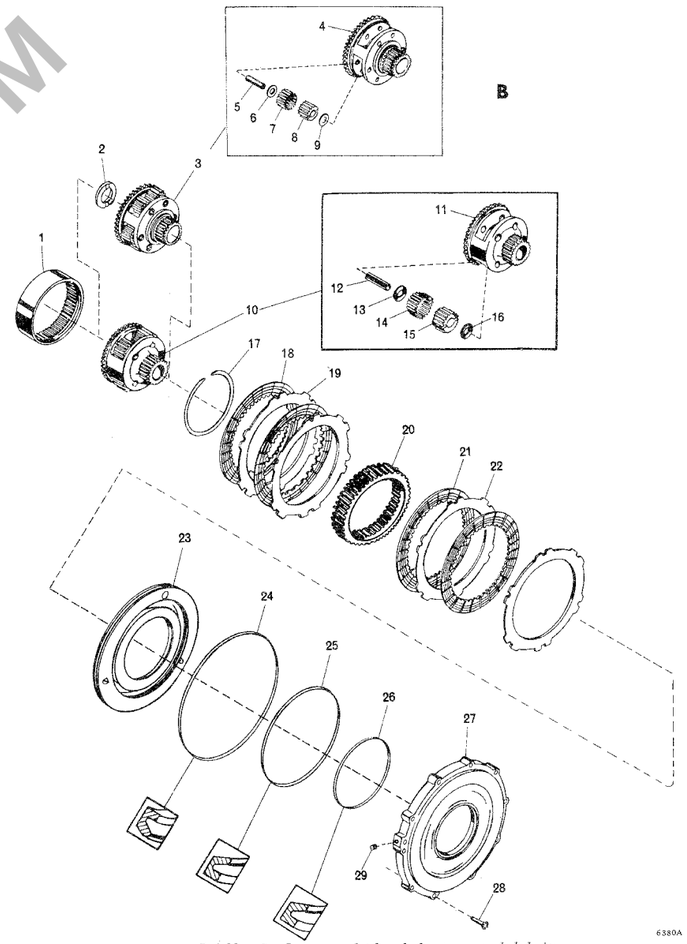
1 - Piston sealring
2 - Piston sealring
3 - Piston sealring
4 - Reverse-range clutch piston
5 - Reverse-and-low-range sun gear (standard-speed low gear)
6 - External-tanged, reverse-range clutch plate (4)
7 - Internal-splined, reverse-range clutch plate (4)
8 - Spacer
9 - Reverse-range planetary carrier assembly
10 - Thrust washer (4)
11 - Planetary pinion (matched set of 4)
12 - Pinion roller (88)
13 - Thrust washer (4)
14 - Spindle (4)
15 - Reverse-range planetary carrier
16 - Reverse-and-low-range sun gear (high speed, low gear)
17 - External-tanged reverse clutch plate
18 - Internal-splined reverse clutch plate
19 - Reverse-and-low-range clutch anchor assembly
20 - Reverse-and-low-range clutch anchor
21 - Anchor pin (6)
22 - Piston return spring (12)
23 - Return spring guide pin (12)

B

1 - Reverse ring gear
2 - Thrust washer
3 - Low-range planetary carrier assembly (high-speed low gear)
4 - Low-range planetary carrier
5 - Spindle (6)
6 - Thrust washer (6)
7 - Pinion roller (120)
8 - Planetary pinion (matched set of 6)
9 - Thrust washer (6)
10 - Low-range planetary carrier assembly (standard-speed low gear)
11 - Low-range planetary carrier
12 - Spindle (4)
13 - Thrust washer (4)
14 - Pinion roller (88)
15 - Planetary pinion (matched set of 4)
16 - Thrust washer (4)
17 - Internal snapring
18 - Internal-splined low-range clutch plate (2)
19 - External-tanged low-range clutch plate (2)
20 - Low-range ring gear
21 - Internal-splined low-range clutch plate (2)
22 - External-tanged low-range clutch plate (2)
23 - Low-range clutch piston
24 - Piston sealring
25 - Piston sealring
26 - Piston sealring
27 - Low-range clutch piston housing
28 - Self-locking bolt, 3/8-16 x 1 1/2 (10) later models 3/8-16 x 1 3/4 (10)
29 - Plug, 1/4-18 PTF



A, foldout 5. Reverse-range clutch and planetary—exploded view



B, foldout 5. Low-range clutch and planetary—exploded view

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AIR COMPRESSOR

Specifications

Manufacturer and model	Bendix-Westinghouse Tu-Flo 300
Number of cylinders	2
Bore and stroke	1-3/4" x 1-5/32"
Test rack specifications	
Horsepower required at 1250 rpm at 90 psi	0.85
Oil pressure required	15 psi
Test speed	1750 rpm
Maximum time to reach 100 psi at 1750 rpm	85 seconds
Pressure regulation by governor	
Governor cut-in	100 psi
Governor cut-out	120 psi
Pressure setting spring	
Free height	1-23/32"
Compresses to	1-7/32" at 112 to 150 pounds
Service specifications and wear allowances	
Maximum cylinder bore taper	.0003"
Maximum cylinder bore out-of-round	.0002"
Piston clearance in piston bore	.002" - .004"
Wrist pin clearance in wrist pin bushings (new)	.0003" - .0008"
Maximum allowable	.0015"
Piston ring groove clearance	See Figure 8.
Crankshaft-to-connecting rod clearance	.0003" - .0021"

Operating and Leakage Tests

1. If the compressor cannot maintain pressure in the air system, perform the following checks:

   a. Leakage past the discharge valves can be detected by removing the discharge line, applying shop air back through the discharge port and listening for escaping air. Also the discharge valves and unloader pistons can be checked for leakage by building up the air system until the governor cuts out, then stopping the engine. With the engine stopped, carefully listen for escaping air at the intake.

   b. To pinpoint leakage, if noted, squirt soapy water around the unloader pistons. If there is no noticeable leakage at the unloader pistons, the discharge valves may be leaking.

   c. If a test rack is available, the compressor can be removed from the machine and tested as described under Testing Rebuilt Compressor on page 7014-14.

   d. Refer to Sections 7015, 7017, and 7019 for additional leakage tests.

Belt Adjustment

The air compressor belt tension should be checked and adjusted, if required, every 100 hours of operation. If a new belt is installed, check the tension after the first 20 hours.

1. Loosen the three compressor mounting bracket bolts.

2. Move the compressor as required to achieve the proper tension:

   a. 1/2" deflection or 90 pounds on a belt tension gauge for all belts in use over 20 hours.

   b. 1/2" deflection or 110 pounds on belt tension gauge for new belts.

3. Tighten mounting bolts. Make sure compressor and fan pulleys are aligned. If misaligned, loosen bolts and reposition the compressor.

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Section 7019

AIR HORN

AND

HORN VALVE

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Section 8016

35 AMP ALTERNATOR

(MODELS WITHOUT INSTRUMENT CLUSTER)

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