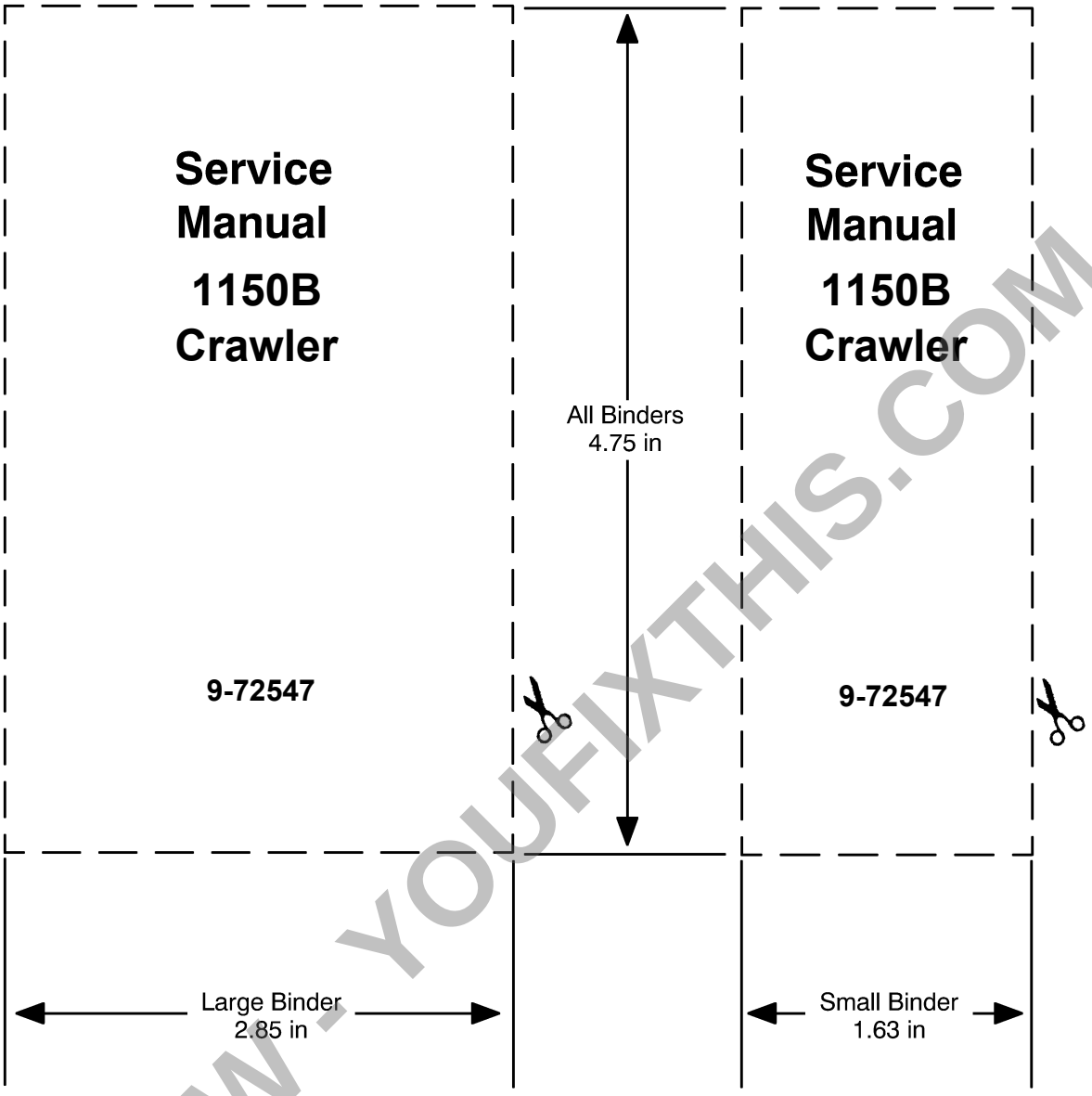


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MODEL 1150B CRAWLER

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September 1978

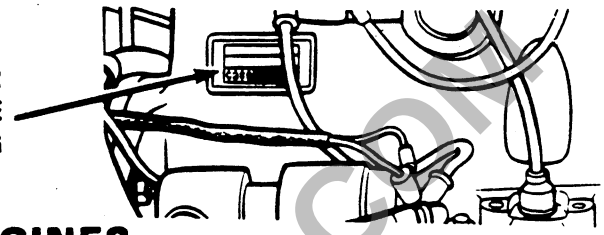
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Section 1010

GENERAL ENGINE SPECIFICATONS 1150B CRAWLER LOADER AND DOZER

THE MODEL AND ENGINE SERIAL NUMBER IS STAMPED ON A PLATE LOCATED ON THE SIDE OF THE ENGINE ABOVE THE CRANKING MOTOR.



DIESEL ENGINES

General

Type	6 Cylinder, 4 Stroke Cycle, Valve-in-Head
Firing Order	1-5-3-6-2-4
Bore	4-3/8 Inches
Stroke	5 Inches
Piston Displacement	451 Cubic Inches
Compression Ratio	16.5 to 1
No Load Governed Speed	2240 - 2280 RPM
Rated Engine Speed	2100 RPM
Engine Idling Speed	725 to 775 RPM
Exhaust Valve Rotators	Positive Type
*Valve Tappet Clearance (Exhaust)	(Hot) .020 Inch (Cold) .025 Inch
(Intake)	(Hot and Cold) .015 Inch

*Hot Settings Are Made After the Engine Has Operated At Thermostat Controlled Temperature For At Least Fifteen Minutes.

Piston and Connecting Rods

Rings per Piston	3
Number of Compression Rings	2
Number of Oil Rings	1
Type Pins	Full Floating Type
Type Bearing	Replaceable Precision, Steel Back, Copper-Lead or Aluminum Alloy Liners

Main Bearings

Number of Bearings	7
Type Bearings	Replaceable Precision Steel Back, Copper-Lead or Aluminum Alloy Liners

Engine Lubricating System

Crankcase Capacity	14 Quarts
with Filter Change	15 Quarts
Oil Pressure	45 to 60 PSI with Engine Warm and Operating at Rated Engine Speed
Type System	Pressure and Spray Circulation
Oil Pump	Gear Type
Oil Filter	Full Flow Spin on Type

Fuel System

Fuel Injection Pump	Robert Bosch, Type PES Multiple Plunger
Pump Timing	30 Degrees Before Top Dead Center (Port Closing)
Fuel Injectors	Pencil Type (Opening Pressure 3200 PSI)
Fuel Transfer Pump	Plunger Type, Integral Part of Injection Pump
Governor	Variable Speed, Fly-Weight Centrifugal Type, Integral Part of Injection Pump
1st Stage Fuel Filter	Full Flow Spin on Type
2nd Stage Fuel Filter	Full Flow Spin on Type

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MAINTENANCE CHART

CAUTION: The following chart is based on maximum intervals. If the machine operates in severe conditions, service more often.

NOTE: See page 1050-4 for a listing of fluids and lubricants.

INTERVAL	SERVICE	INSTRUCTIONS
Run-In Period After First 20 Hours	Drain and refill engine crankcase oil.	
	Change engine oil filter.	Section 23
	Check fan belt tension.	Section 8016
	Replace transmission pressure line and control valve filters.	Section 6013
Every 10 Hours or Daily, Whichever Occurs First	Check engine oil level.	
	Check transmission oil level.	Section 6013
	Check hydraulic oil level.	Section 4011
	Clean air cleaner dust cup and intake screen.	Section 2051
	Check radiator coolant level.	
	Check fuel sediment bowls for water. If found, drain bowls, filter and fuel tank.	Section 33
	Grease equipment pivot points.	
	Grease the torsion bar pivot blocks.	
	Check track tension, adjust as required.	Section 5010
	Check machine for broken, loose or missing parts.	
Every 125 Hours	Grease drive shaft universals.	
	Grease brake pedal fittings.	
	Drain and refill engine crankcase.	
	Check final drive oil level.	
	Check fan belt tension.	Section 8016

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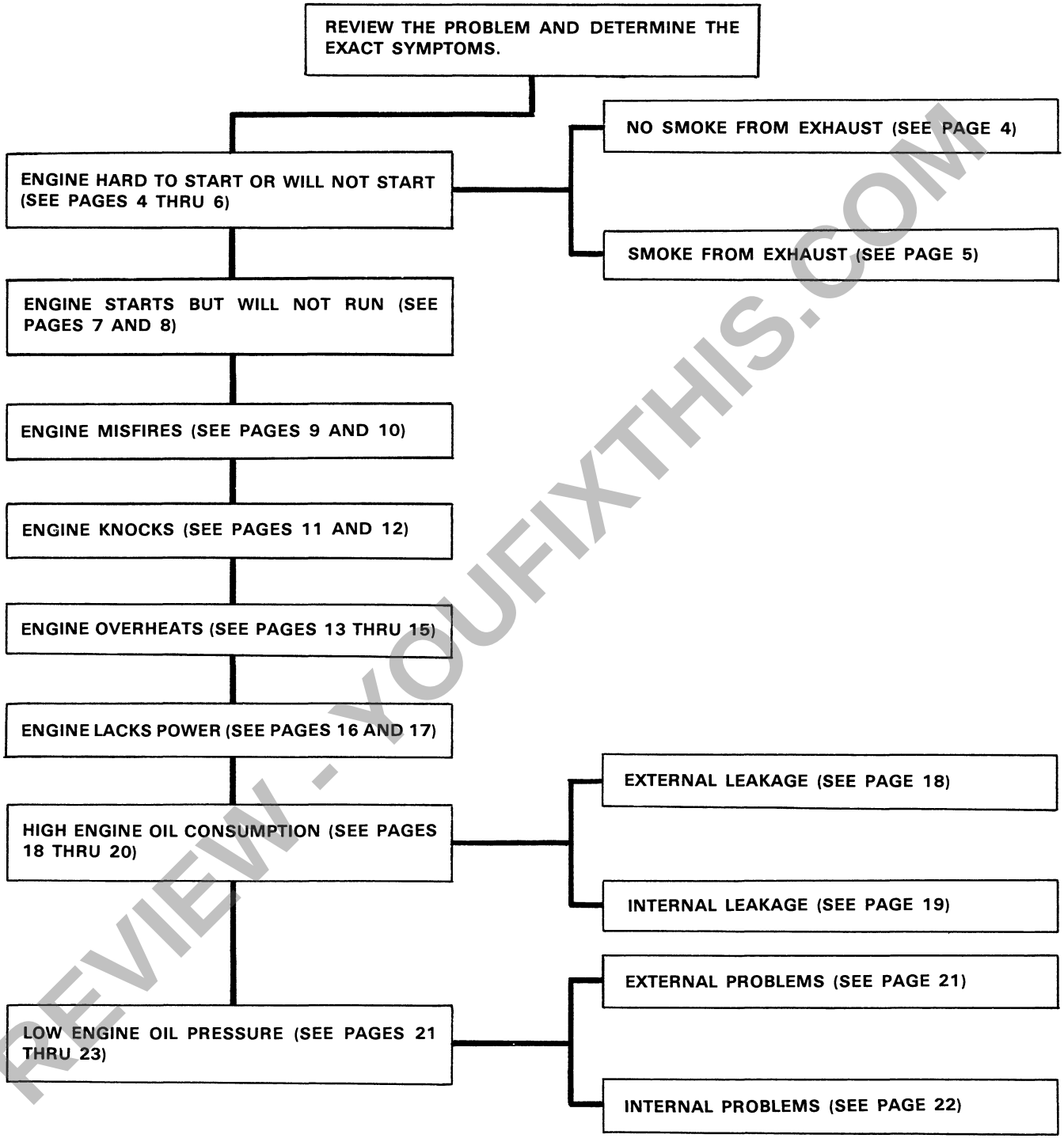
FLUIDS AND LUBRICANTS

COMPONENT	CAPACITY U.S.	CAPACITY Metric	SPECIFICATIONS
Fuel tank	52 gals.	197 liters	No. 2 diesel fuel
Engine crankcase With filter change Without filter change	 14 quarts 13 quarts	 13,2 liters 12,3 liters	Engine oil: CD - Commercial class D. (Service DS, Series 3) MIL-L-45199B Above 32° F. - SAE 30 10° to 50° F. - SAE 20W Below 32° F. SAE 10W
Equipment hydraulic reservoir	15 gals.	57 liters	Case TCH fluid Alternate oils: Engine oil - SD - Service class D. CA - Commercial class A. (Service MS or DG) Above 32° F. - SAE 10W Below 32° F. - SAE 5W Type C-2 transmission and hydraulic fluid such as Tenneco Hytrans Fluid.
Transmission/converter Refill Total System	 14 gals. 15 gals.	 53 liters 57 liters	Case TFD fluid Alternate oils: Tenneco Oil - Code B702-74 American Oil Co. - Industrial No. 26A
Final drives (each)	8 quarts	7,6 liters	Shell Spirex HD SAE 90-140EP API-GL-5 or equivalent
Cooling System	52 quarts	49 liters	Ethylene glycol and water should be mixed for prevailing temperatures. Follow antifreeze manufacturer's specifications.
Batteries	As required		Add colorless, odorless drinking water.
Grease fittings	As required		Above 32° F. Multipurpose or No. 2 lithium-soap base grease Below 32° F. Multipurpose or No. 1 lithium-soap base grease

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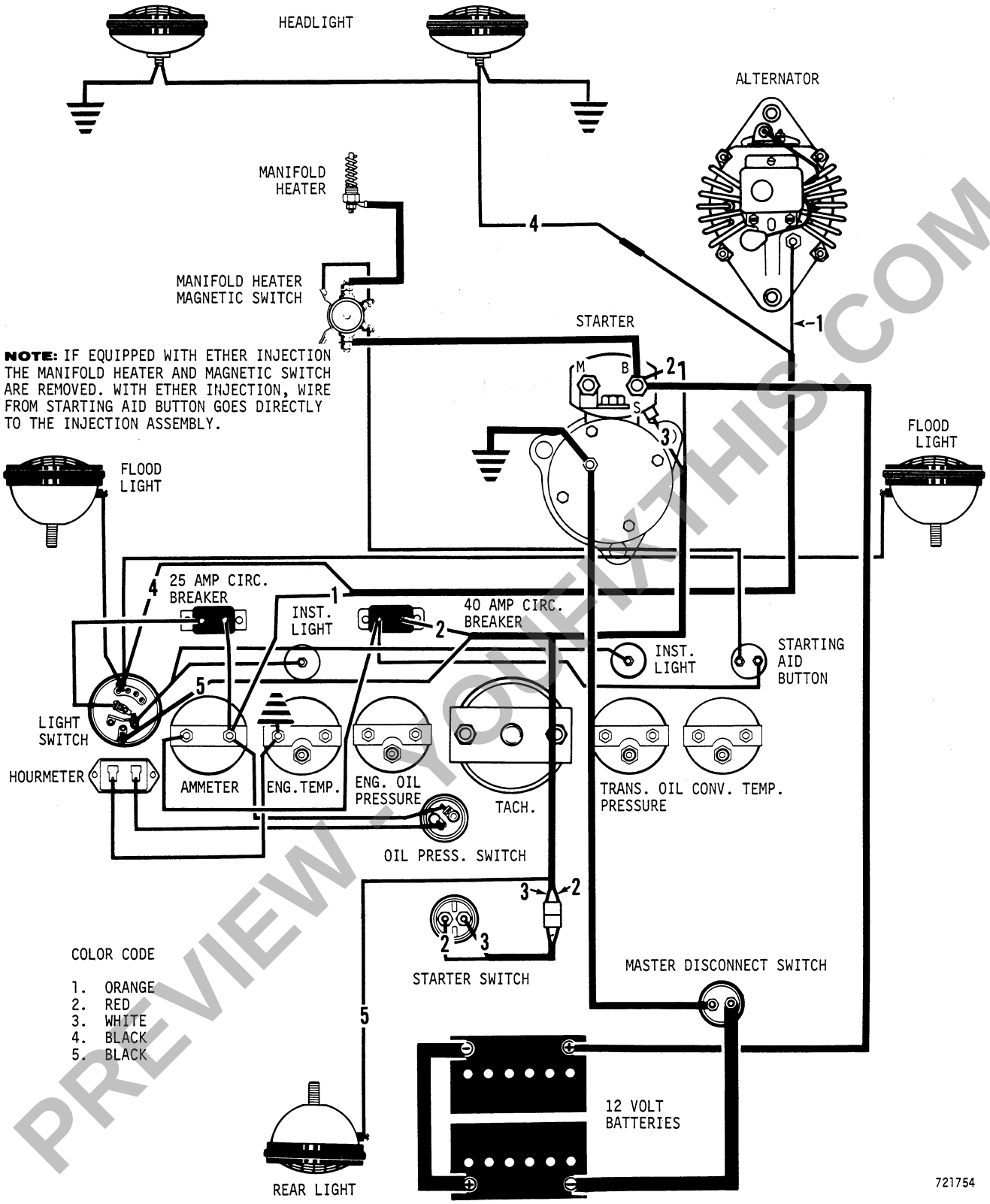
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ENGINE DIAGNOSIS CHART



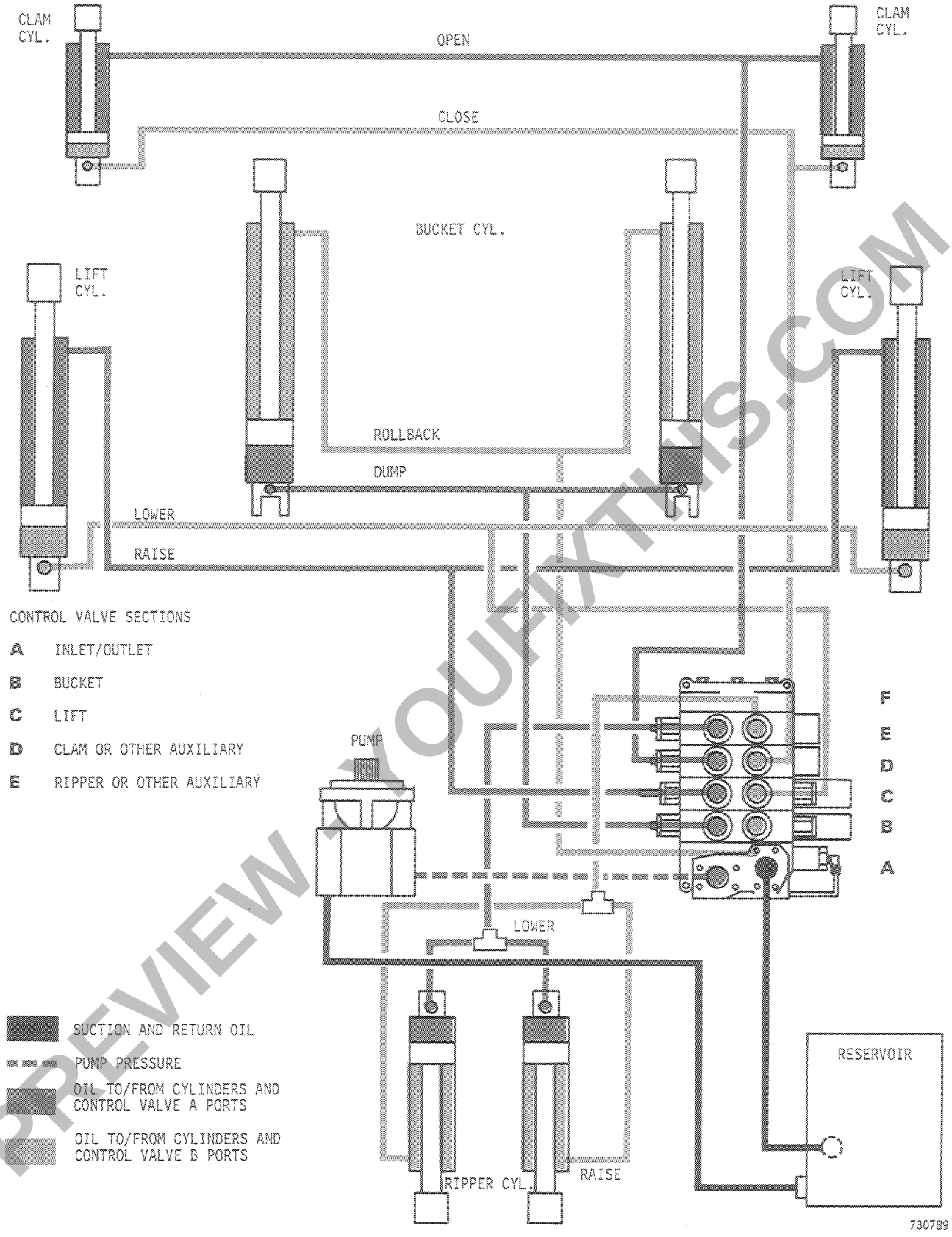
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Figure 1 - Loader Hydraulic Diagram

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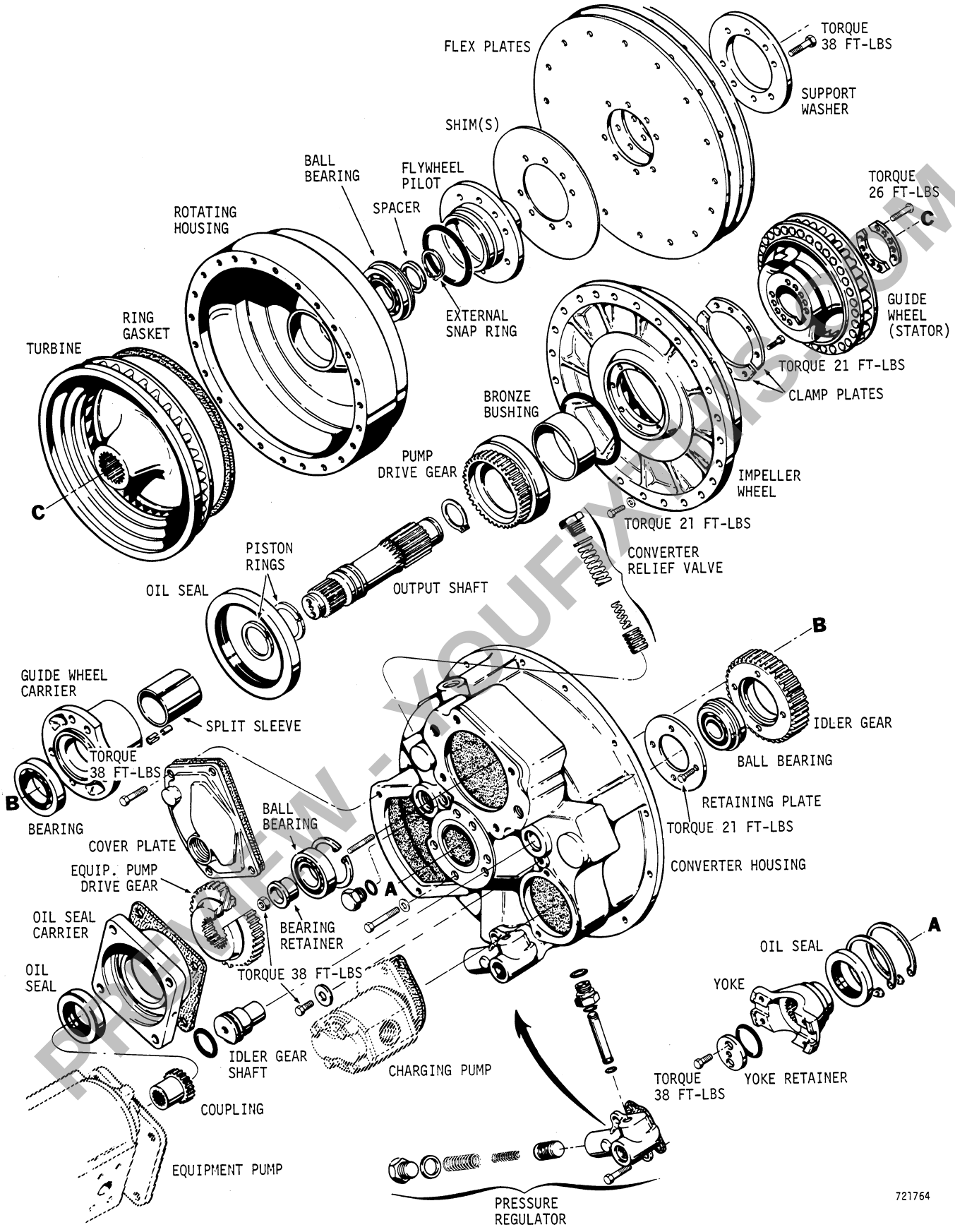
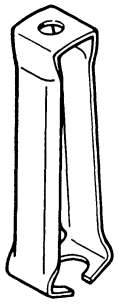


Figure 1 — Torque Converter, Exploded View

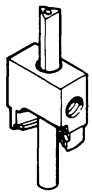
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INSTALLATION INSTRUCTIONS FOR M20614 TEFLON VALVE SEAL KIT

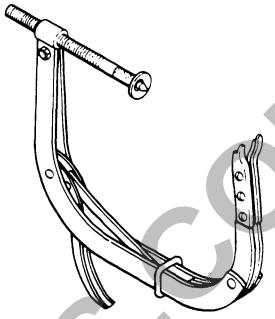
Special Tools Required



M20624 SEAL INSTALLATION TOOL



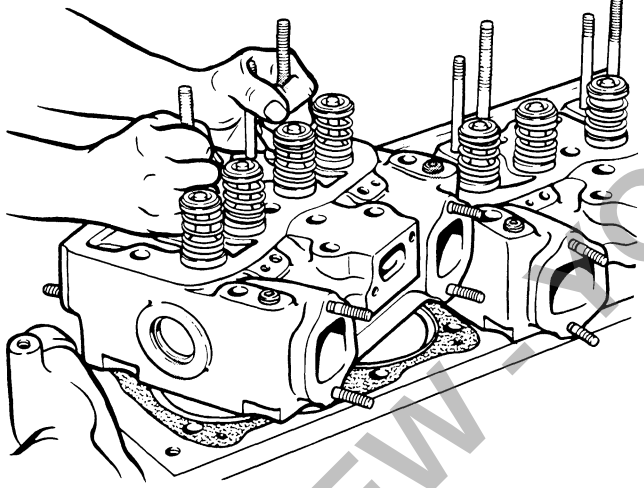
M20617 VALVE GUIDE CUTTING TOOL



VALVE SPRING COMPRESSOR

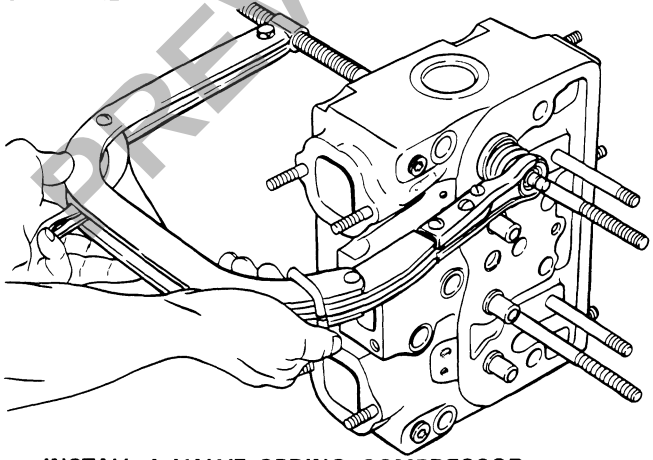
NOTE: FOUR CYLINDER ENGINES REQUIRE TWO M20614 KITS AND SIX CYLINDER ENGINES REQUIRE THREE M20614 KITS.

STEP 1



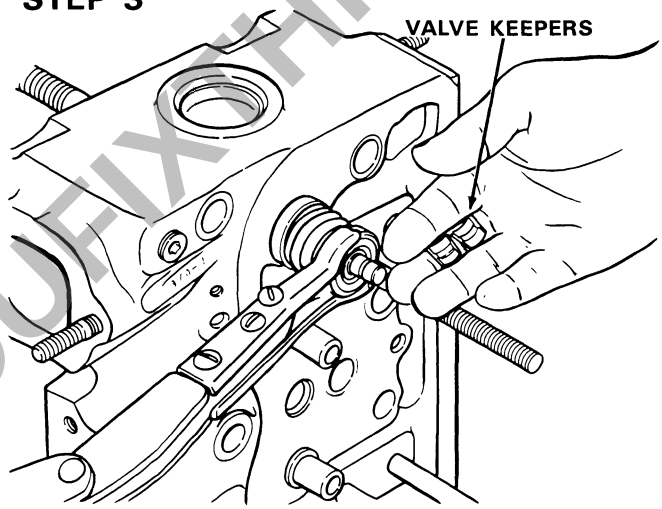
REMOVE THE CYLINDER HEADS FROM THE ENGINE, REFER TO SECTION 2015 FOR HEAD REMOVAL.

STEP 2



INSTALL A VALVE SPRING COMPRESSOR.

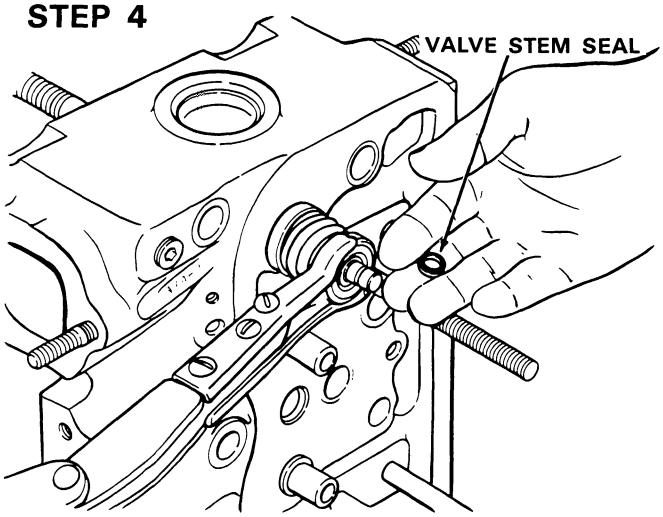
STEP 3



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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GENERAL TORQUE SPECIFICATION TABLE (Revised 7-72)

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.		5				8 ★			
Bolt head identification marks as per grade NOTE: Manufacturing Marks Will Vary									
Bolt Size		Torque Foot Pounds		Torque Meter Kilograms		Torque Foot Pounds		Torque Meter Kilograms	
Inches	Millimeters	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	6.35	9	11	1.2	1.5	12	15	1.7	2.1
5/16	7.94	17	20.5	2.4	2.8	24	29	2.3	4.0
3/8	9.53	35	42	4.8	5.8	45	54	6.2	7.5
7/16	11.11	54	64	7.5	8.9	70	84	9.7	11.6
1/2	12.70	80	96	11.1	13.3	110	132	15.2	18.3
9/16	14.29	110	132	15.2	18.3	160	192	22.1	26.6
5/8	15.88	150	180	20.7	24.9	220	264	30.4	36.5
3/4	19.05	270	324	37.3	44.8	380	456	52.6	63.1
7/8	22.23	400	480	55.3	66.4	600	720	83.0	99.6
1	25.40	580	696	80.2	96.3	900	1080	124.5	149.4
1-1/8	25.58	800	880	110.6	121.7	1280	1440	177.0	199.2
1-1/4	31.75	1120	1240	154.9	171.5	1820	2000	251.7	276.6
1-3/8	34.93	1460	1680	201.9	232.3	2380	2720	329.2	376.2
1-1/2	38.10	1940	2200	268.3	304.3	3160	3560	437.0	492.3

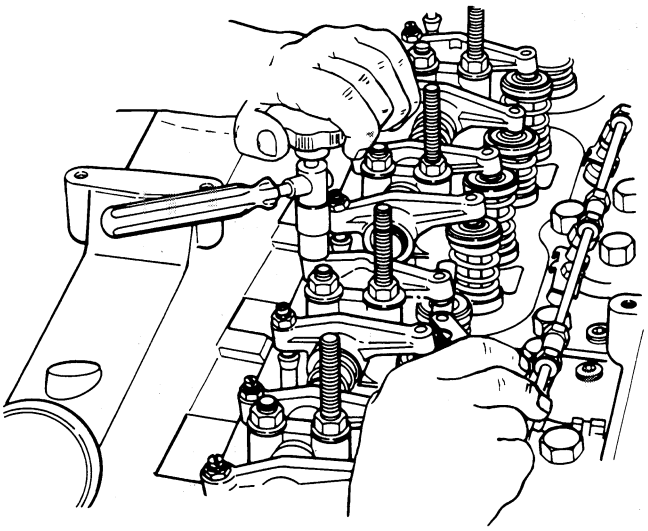
★ Thick nuts must be used with Grade 8 bolts

NOTE: The CASE CORPORATION reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

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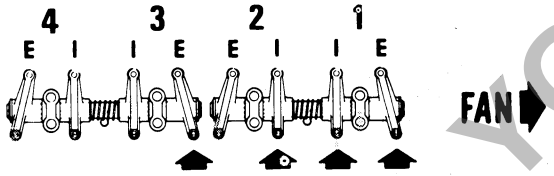
STEP 26



CHECK AND ADJUST THE INTAKE AND EXHAUST VALVES AS POINTED OUT BY THE ARROWS BELOW.

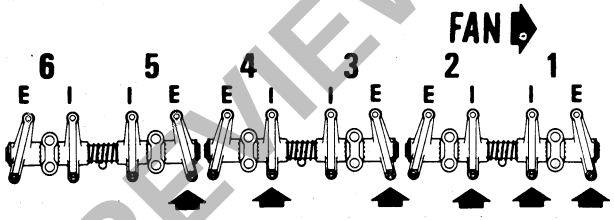
TAPPET CLEARANCE COLD - INTAKE VALVES .015"
EXHAUST VALVES - .025"

FOUR CYLINDER ENGINES



NO. 1 TDC COMPRESSION STROKE

SIX CYLINDER ENGINES



NO. 1 TDC COMPRESSION STROKE

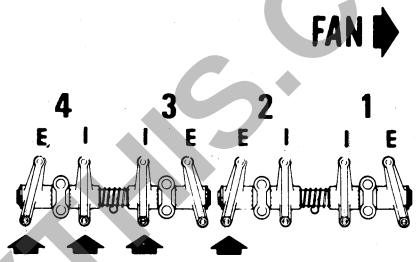
STEP 27

CRANK THE ENGINE ONE COMPLETE REVOLUTION AND ALIGN THE TIMING POINTER WITH THE TDC MARK ON CRANKSHAFT PULLEY.

CHECK AND ADJUST THE INTAKE AND EXHAUST VALVES AS POINTED OUT BY THE ARROWS BELOW.

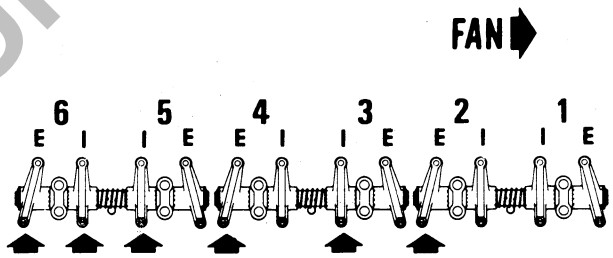
TAPPET CLEARANCE COLD - INTAKE VALVES .015"
EXHAUST VALVES .025"

FOUR CYLINDER ENGINES



NO. 4 TDC COMPRESSION STROKE

SIX CYLINDER ENGINES



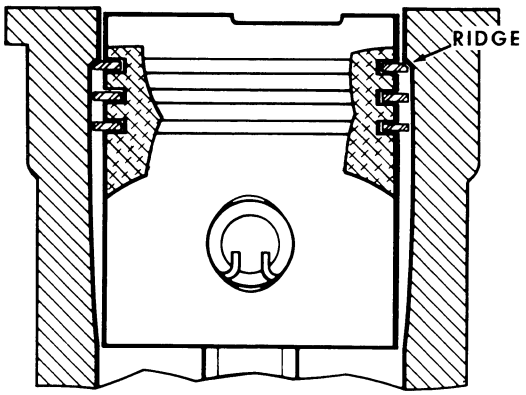
NO. 6 TDC COMPRESSION STROKE

NOTE: AFTER COMPLETING COLD SETTING VALVE TAPPET ADJUSTMENT PROCEED TO STEP 35.

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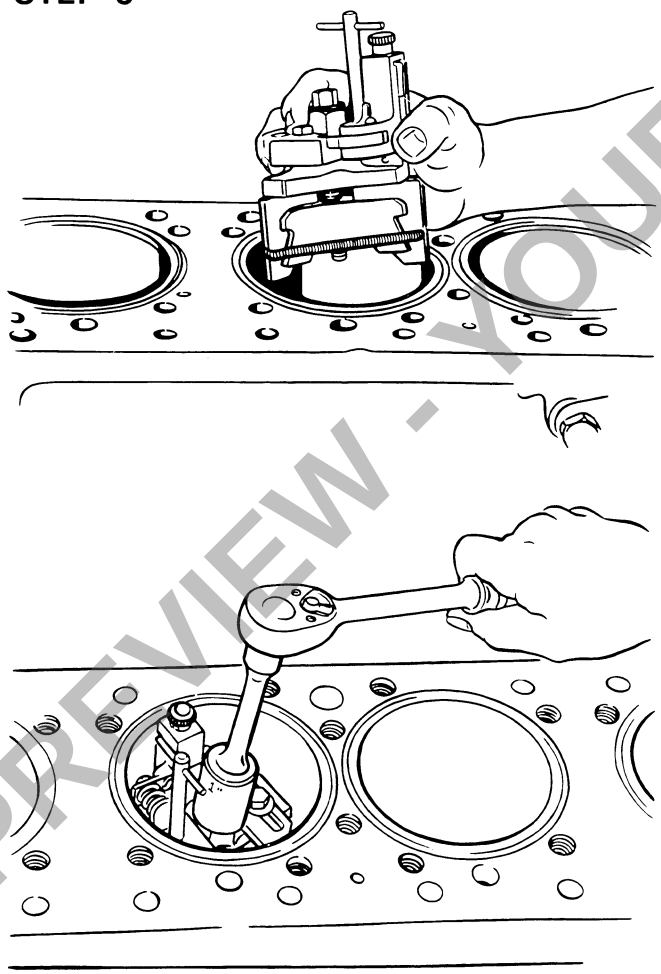
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STEP 5



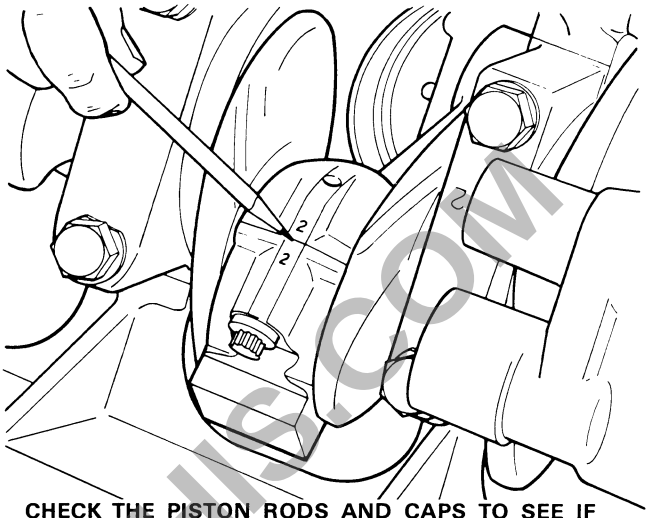
CHECK THE PISTON SLEEVES FOR A RIDGE AT THE TOP OF THE RING TRAVEL. IF A RIDGE IS PRESENT, IT MUST BE REMOVED BEFORE THE PISTONS CAN BE REMOVED.

STEP 6



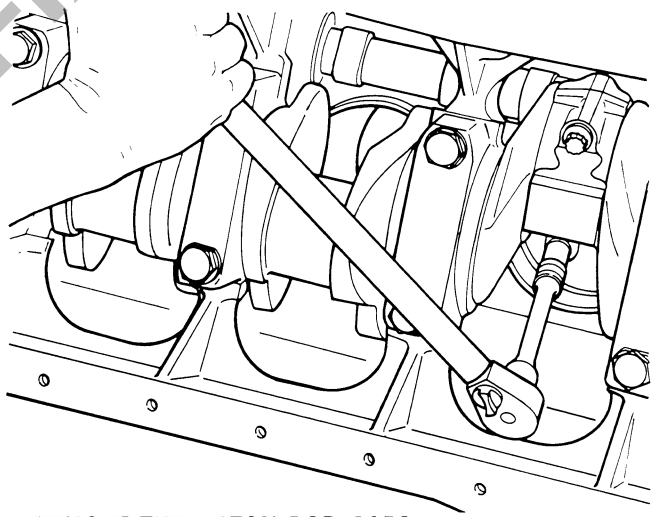
USE A RIDGE REAMER TO REMOVE THE RIDGE OR DAMAGE TO THE PISTON RINGS AND LANDS WILL RESULT.

STEP 7



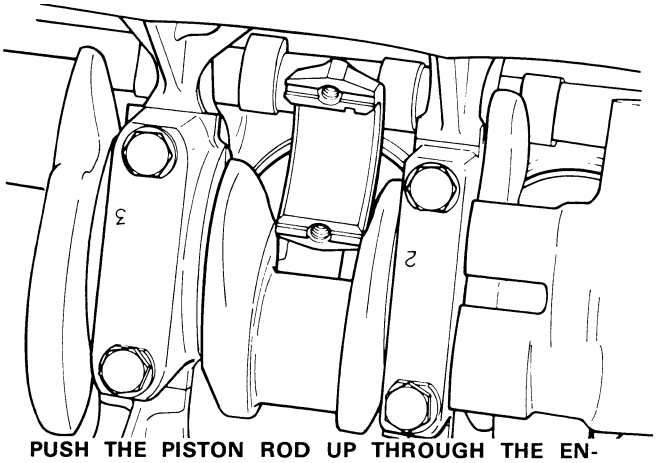
CHECK THE PISTON RODS AND CAPS TO SEE IF THEY ARE NUMBERED AS TO THEIR LOCATION IN THE ENGINE. IF NOT, THEY MUST BE NUMBERED FOR REINSTALLATION IN THEIR ORIGINAL LOCATION.

STEP 8



REMOVE THE PISTON ROD CAPS.

STEP 9



PUSH THE PISTON ROD UP THROUGH THE ENGINE BLOCK.

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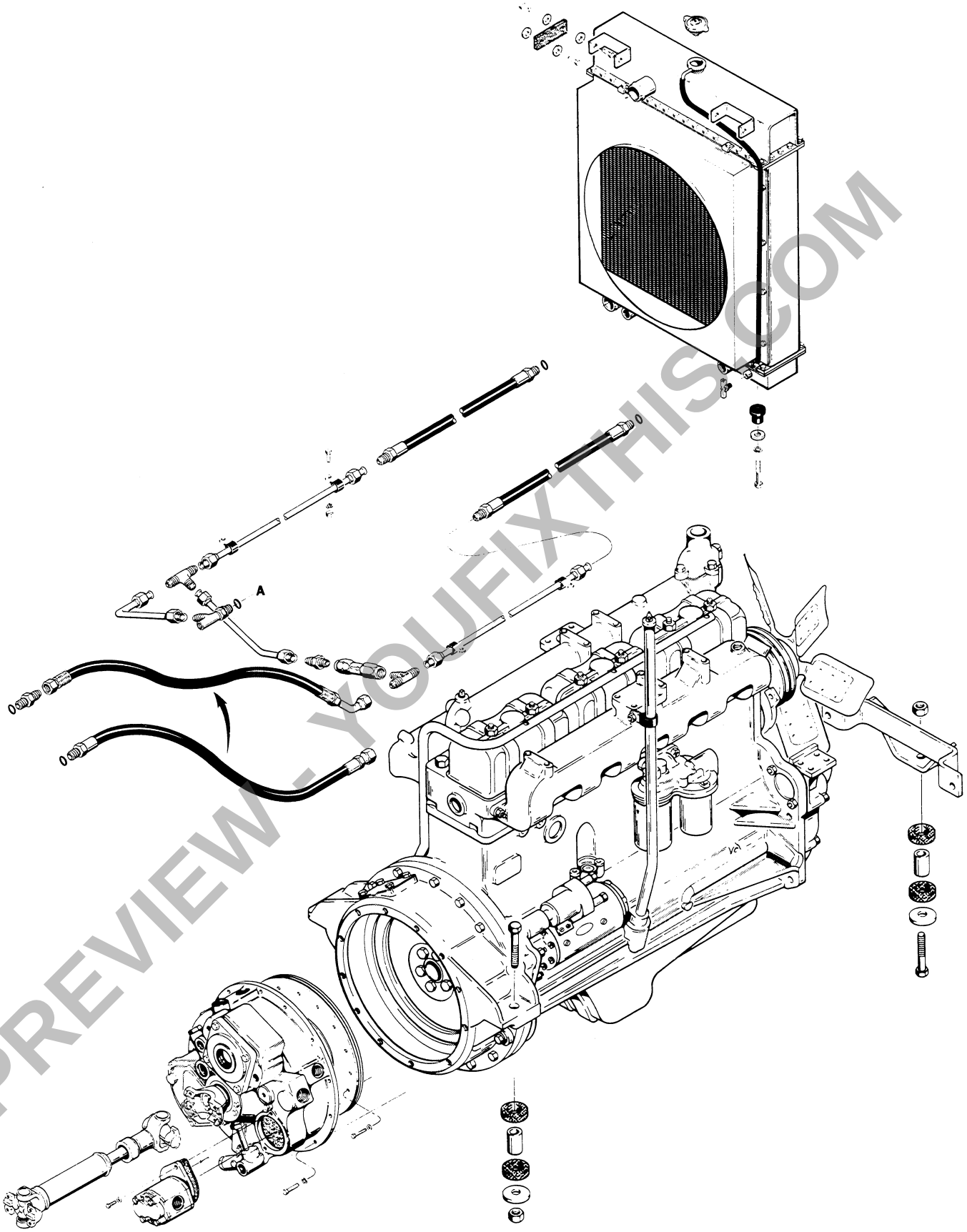
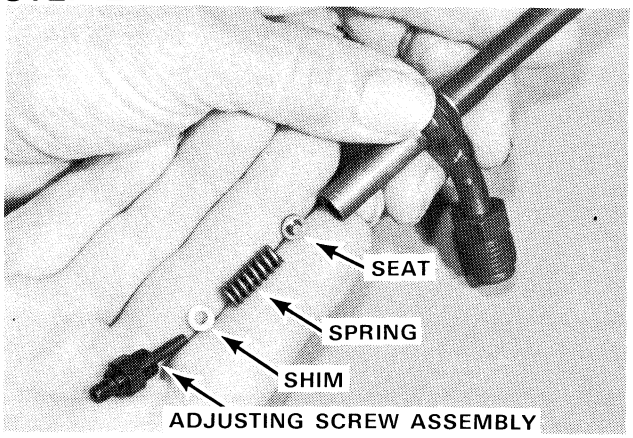


Figure 1 — Engine Installation

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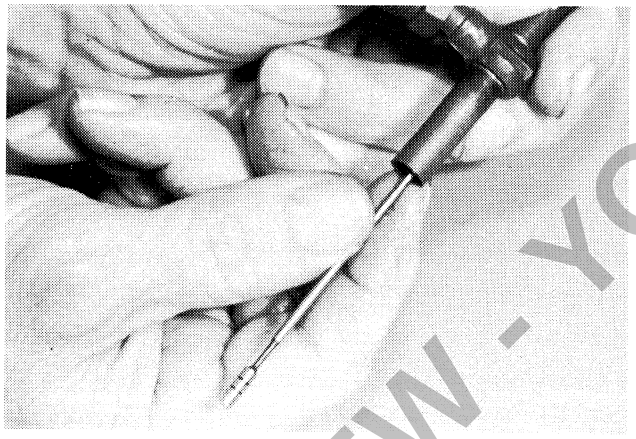
SERVICING INJECTORS

STEP 22



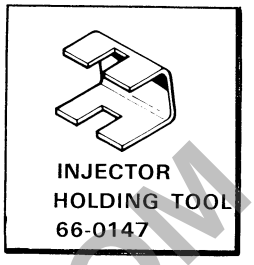
While holding the injector body in one hand, invert it and back out the pressure adjusting screw, allowing the shim, spring and spring seat to fall into your other hand.

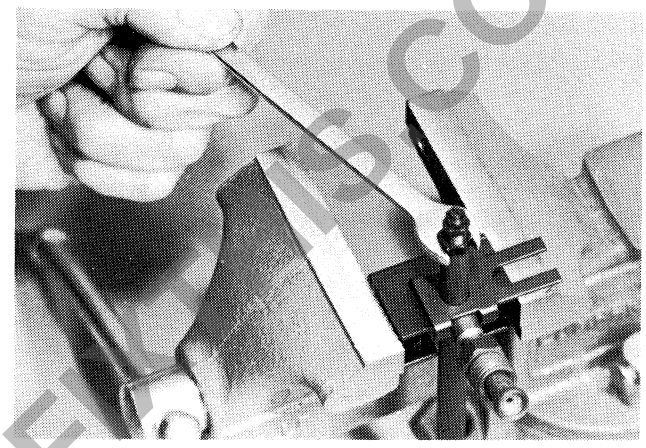
STEP 23



Remove the valve from the body. Handle the valve carefully by the stem. If the valve does not slide freely from the body, use valve retractor, Case Part No. A45373 to remove the valve.

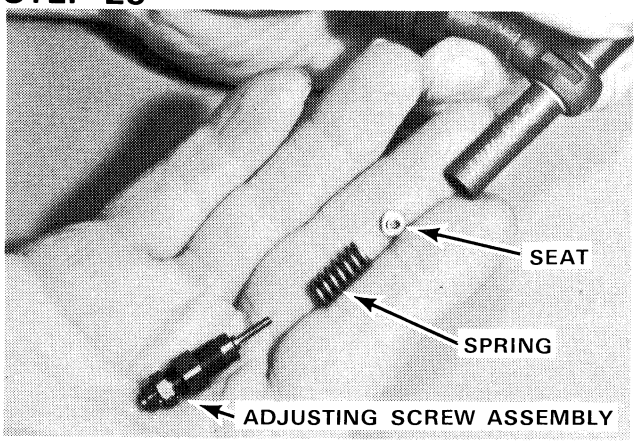
STEP 24





Place the injector in holding tool, Bacharach Part No. 66-0147 and secure the tool in a vise. Loosen the pressure adjusting screw locknut.

STEP 25



While holding the injector body in one hand, invert it and back out the pressure adjusting screw, allowing the spring and spring seat to fall into your other hand.

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IDLERS (WITH LUBRICANT FILL PLUG IN HUB)

General

A drum-type, fabricated idler wheel is used on each side of the crawler. The idler is attached to a pair of idler brackets, which slide on the track frame channels.

Each idler contains a pair of face seal assemblies which provide lifetime lubrication as long as the rubber seals are in good condition. The idlers turn on two tapered bearings which are mounted on the stationary idler shaft. The bearings are preloaded to the correct value by turning the adjusting nut on the outboard side of the idler.

Removal

1. Disconnect the track and allow it to lay on the floor.

2. Remove the slide bars from the top of the track frame.

3. Disconnect the idler yoke from the idler brackets by removing two bolts and lockwashers on each side.

4. If the idler is to be disassembled after removal, loosen the slotted nut on each end of the idler shaft at this time.

5. Remove the bolt, nut and lockwasher from the front of the track frame on both sides. These bolts retain the track channel wear plates and shims.

6. Attach a hoist to the idler. Slide the idler off the track frame. If required, a prybar or heavy hammer may be used. A light coating of grease on the track frame surfaces over which the idler slides will be helpful.

Disassembly

1. Clean the idler exterior as thoroughly as possible.

2. Remove the pipe plug from the wheel and drain oil from the reservoir in the idler hub.

3. Remove slotted nut and washer from one end of the idler shaft.

4. Remove the idler bracket and O-ring. One half of the face seal assembly also will be removed with the bracket. Remove the O-ring from the shaft bore of the bracket.

   NOTE: If the idler is blocked up on a table, support the bracket on the underside of the idler.

5. Remove the bearing spacer and other half of the face seal assembly.

6. Turn the idler over and remove the slotted nut and washer from the shaft.

7. Remove the idler bracket with O-ring and one half of the face seal assembly.

8. Remove the bearing spacer and other half of the face seal assembly.

9. Place the idler in a press and press out the idler shaft. One of the seal retainers will be removed as the shaft comes out. Press the bearing cone off the shaft.

10. A bearing cup is pressed into each side of the idler hub. Do not remove these cups unless they are to be replaced. The seal retainer still in the hub will be removed with the cup. To remove the bearing cups:

    a. Fabricate the special tool shown in Figure 2.

    b. Place the idler hub under a press. Insert the tool as shown in Figure 42 and remove the bearing cup.

    c. Turn the idler over and repeat for the opposite bearing cup.

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4. When removing the special tool, place a soft lint-free cloth on the face seal surface. Place your fingers on the cloth close to the hinged opening and carefully pull the tool out of the metal ring, Figure 8. Removal will be easier if you start where the hinged tool opens. The face seal is properly installed when the metal ring remains seated under LIGHT finger pressure.

5. Wipe the seal faces to remove any foreign material. Place a few drops of light oil on facial tissue and completely coat the sealing faces of the seals to assure corrosion protection and initial lubrication.

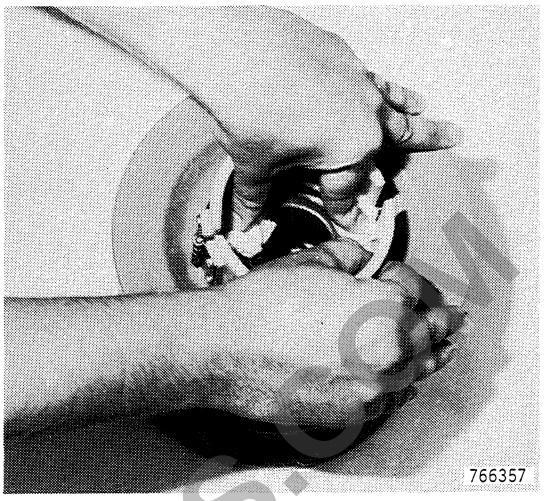


Figure 8

TRACK ROLLERS

Disassembly

1. Remove plug. Use 6 mm Allen wrench. Figure 9.

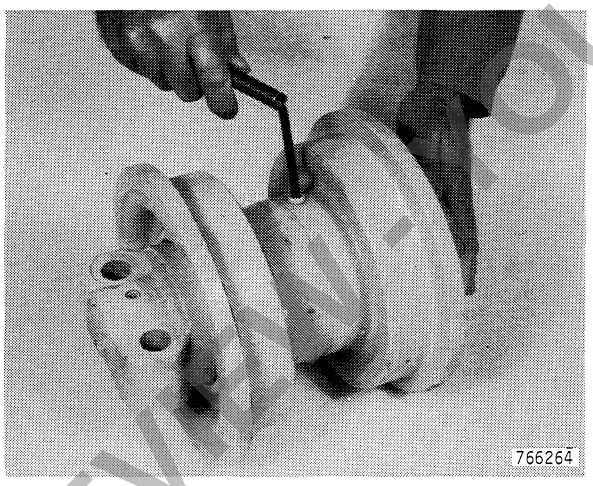


Figure 9

2. Drain oil into container, Figure 10.

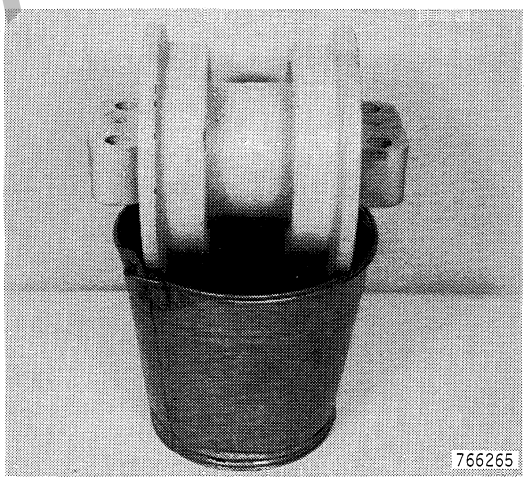


Figure 10

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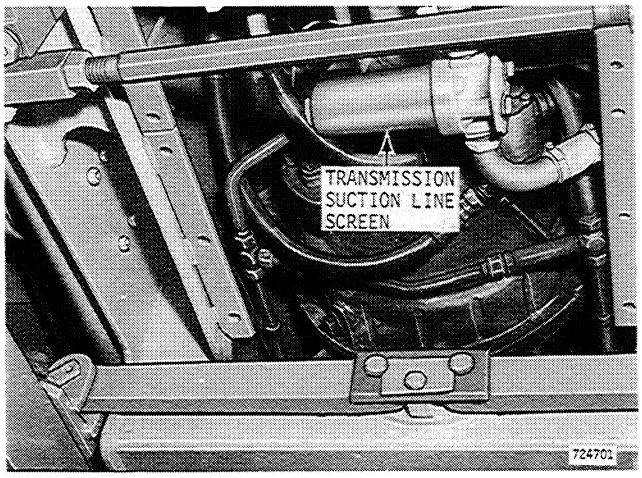


Figure 5

To clean the screen:

1. Drain transmission oil.
2. Unscrew the screen housing from the filter head.
3. Pull the screen away from the head.
4. Clean screen with solvent and blow out excess with compressed air.
5. Inspect the seal on the screen; if damaged, replace the screen.
6. Install the screen.
7. Inspect the O-ring seal in the housing. Replace if damaged.
8. Reinstall the suction screen housing.

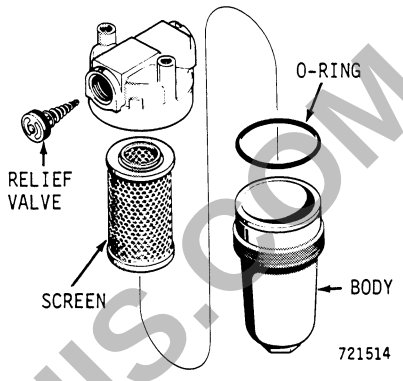


Figure 6

Transmission Breather

Clean the transmission breather every 125 hours of operation. The breather is located on the transmission oil level dipstick. Clean the breather in solvent and blow excess away with compressed air.

TRANSMISSION REMOVAL FROM LOADERS

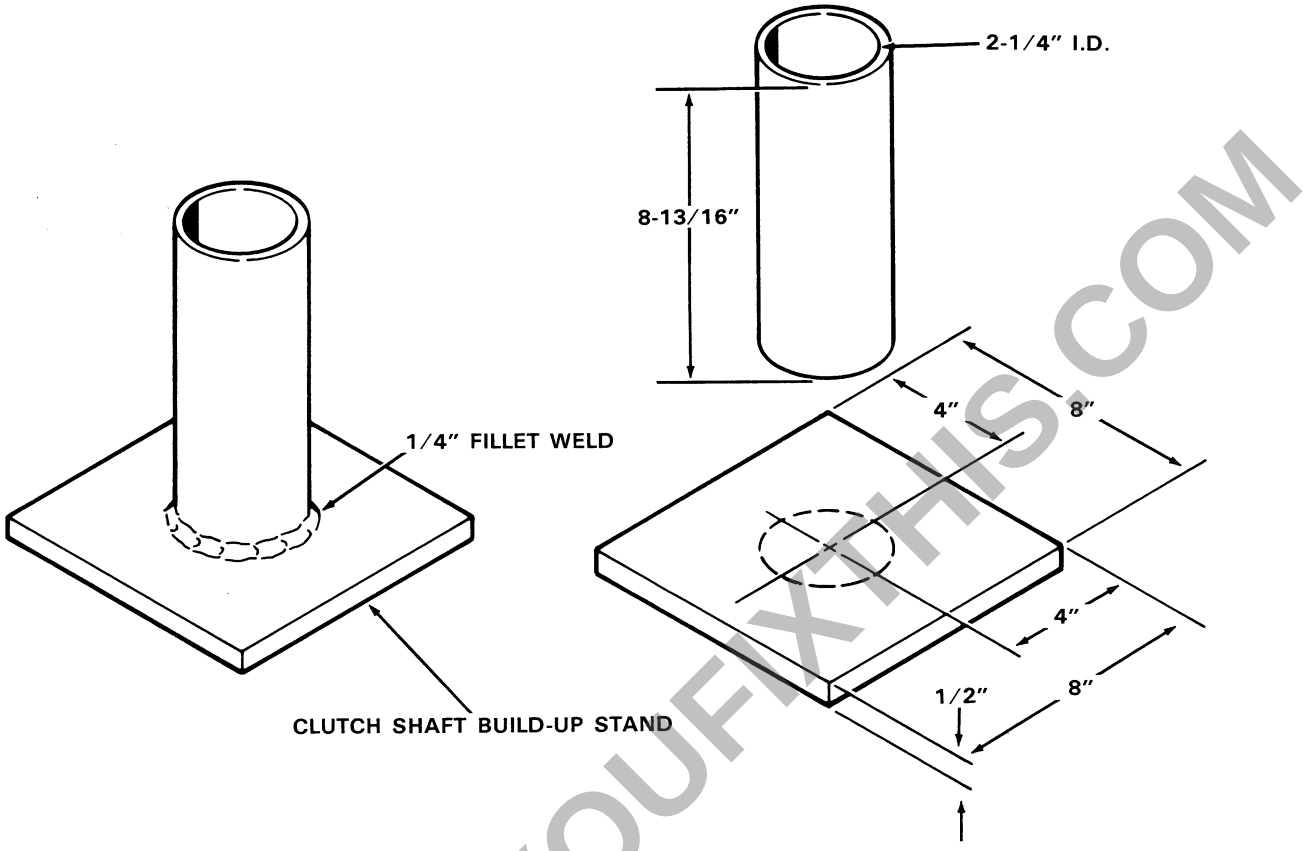
The final drives and transmission are removed from the crawler as an assembly. In general, the procedure consists of disconnecting or removing all bolts, wires, hoses, etc. connected to the transmission/final drives assembly, and then rolling this assembly out the rear of crawler.

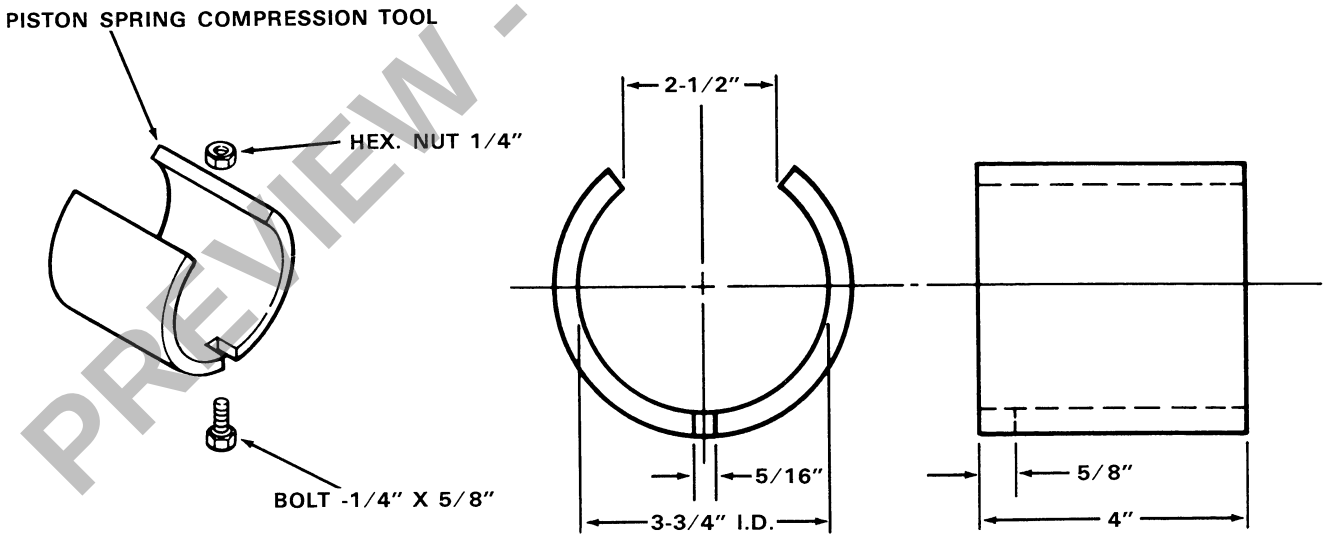
As hoses and tubes are disconnected, close each opening with a clean caplug.

1. Position the crawler so there is enough clear area at the front for the tracks to be stretched out. A master pin should be about halfway up the rear of both sprockets. If necessary, jack up one or both sides of the crawler and position the master pin(s) by operating the track(s).
2. Raise the loader and block it in position. Lower the rear attachment (if any) to the floor. With the engine off, move the rear attachment control lever back and forth to relieve hydraulic pressure.
3. Remove the floorboards.
4. Remove the operator's seat cushion. Disconnect cables from the Master Disconnect switch under the seat.
5. Remove the operator's seat and seat mounting braces.
6. Remove the shield over the batteries. Remove battery cables, batteries, and mounting brackets.
7. Remove the rear attachment.
8. Disconnect the tracks:
   a. Refer to Section 5010 for removal of the master pins.
   b. Attach a hoist to end of track, carry it forward, and stretch it out full length on the ground.
   c. Repeat on opposite side.

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Specifications for Tools Which Must Be Made

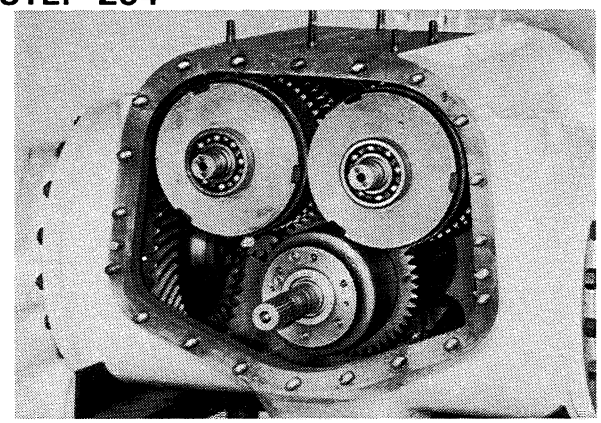




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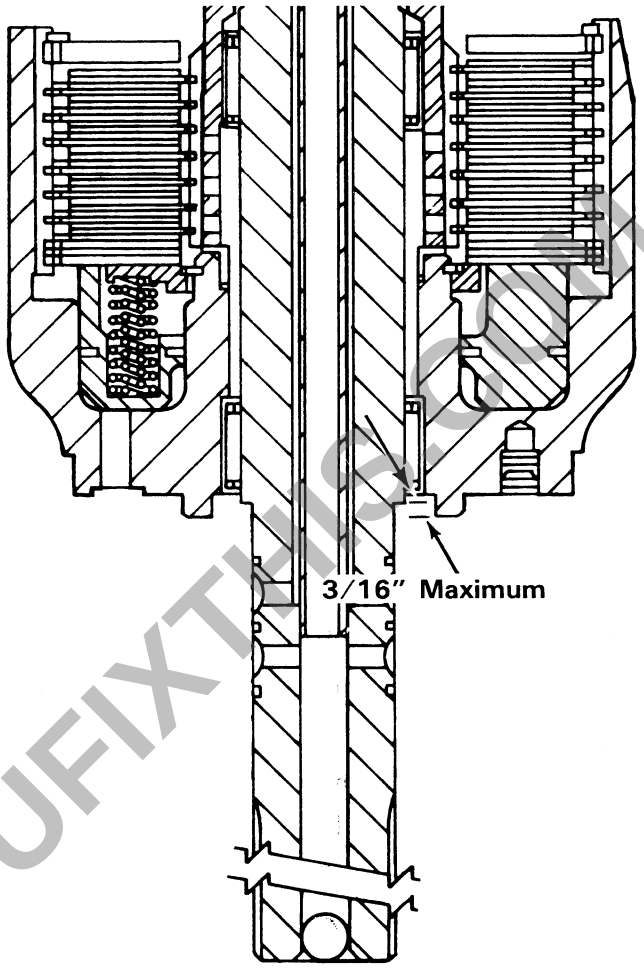
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STEP 254



Measure the distance from step in planetary shaft to rear of Lo range clutch drum The measurement must not exceed 3/16". If measurement is greater than 3/16" one of the Lo range clutch plates is not engaged with sun gear.

NOTE: **Milled O.D. portioned of Lo range drum must be upward and to the right to prevent interference with drive gear.**



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Bucket Height Control Installation and Adjustments on Loader

Actuator Installation and Cable Adjustment

Refer to Figures 16 and 17.

1. Position the rocker arm on the shaft so that the cam follower runs on the cam and the cable goes through its clearance hole in the loader frame without rubbing or bending. To reposition the rocker arm, add or remove washer(s) along the shaft.

2. Adjust the cable:

   a. Have the loader bucket on the ground and control lever in Neutral.

   b. Bottom out the cable at the loader end by pushing the end of the cable into the cable sheath. Adjust the cable length by turning ball joint assembly so that it is 1/32″ to 1/16″ shorter than dimension A.

   c. When the cable is adjusted to the correct length, attach cable to rocker arm with nut and lock washer.

Bucket Height Adjustment

The dump height of the loader is adjusted by turning the cam on the right hand loader upright. Proceed as follows:

1. Start the engine and with the loader bucket on the ground, pull the loader control back to Raise Detent position. The loader will stop at a predetermined height.

2. To increase or decrease this height, loosen the capscrew and turn the cam as shown in Figure 16.

3. Tighten the capscrew and check height by repeating step 1.

   NOTE: The bucket height control adjustment is limited by the slot on the front of the cam.

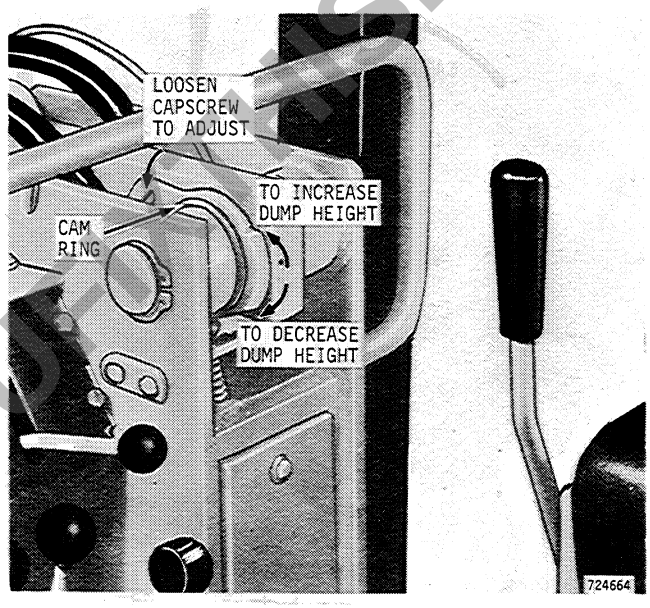


Figure 16

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WINCH REMOVAL

1. Remove dirt from the winch and the area near the winch with steam.

2. Relieve oil pressure caused by the accumulators. Move control lever to Brake Off position and hold until the pressure is relieved.

3. Remove cable from the drum.

4. Drain the oil if the winch is to be disassembled.

5. Remove fairlead or raised arch, if so equipped.

6. Disconnect pressure gauge hose on front of winch, Figure 29.

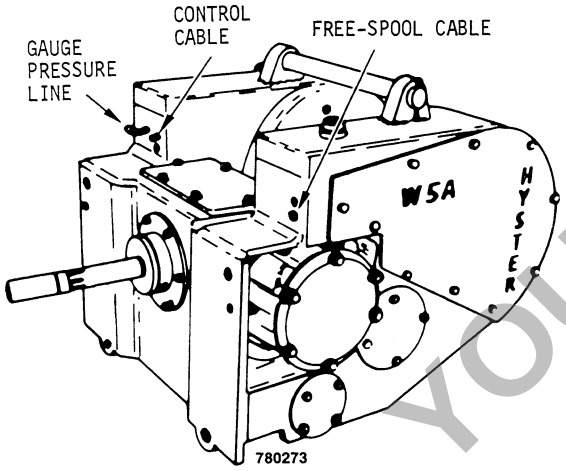


Figure 29

7. Disconnect the winch control mounting capscrews. Disconnect control cables from control levers and mounting bracket.

8. Attach a hoist to winch with at least a 3000 pound (1360.8 kg) capacity. Remove slack from chain or lifting sling. Winch will be balanced when connected as shown in Figure 30.

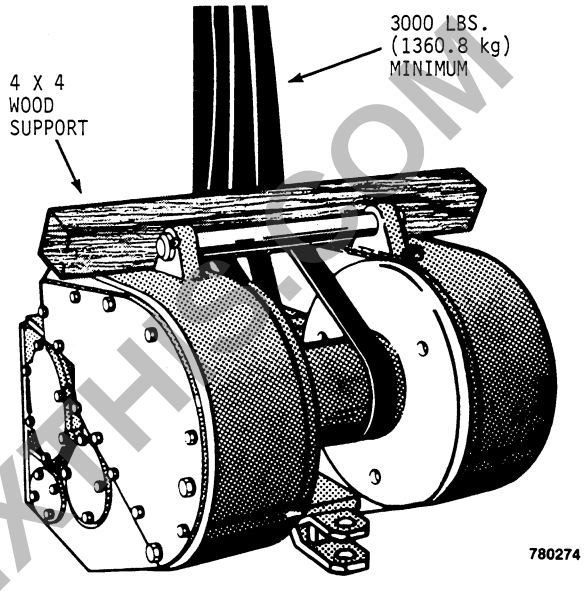


Figure 30

9. Remove the mounting capscrews from each side of the winch. When removing the mounting capscrews, loosen them slightly, then pry the winch away from the crawler. Loosen the mounting capscrews again. Continue this procedure until the winch can be removed.

10. Place a floor jack under front of winch to keep it balanced and pull winch straight back to disengage the PTO shaft. When the PTO shaft is disengaged, lower the winch to the floor feeding the control cables down behind the operator's seat.

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