1088 Crawler Excavator

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Lep 8-86401

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SAFETY

This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED. The message that follows the symbol contains important information about safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death. 1-1-C

To prevent injury always follow the Warning, Caution and Danger notes in this section and throughout the manual.

Put the warning tag shown below on the key for the keyswitch when servicing or repairing the machine. One warning tag is supplied with each machine. Additional tags Part Number 331-4614 are available from your service parts supplier.



WARNING: Read the operator's manual to familiarize yourself with the correct control functions. 46-27

WARNING: Operate the machine and equipment controls from the seat position only. Any other method could result in serious injury. 48-55

WARNING: This is one man machine, no riders allowed. 35-8

WARNING: Before starting engine, study Operator's Manual safety messages. Read all safety signs on machine. Clear the area of other persons. Learn and practice safe use of controls before operating.
It is your responsibilty to understand and follow manufacturers instructions on machine operation, service, and to observe pertinant laws and regulations. Operator's and Service Manuals may be obtained from your J.I.Case dealer 45-2

WARNING: If you wear clothing that is too loose or do not use the correct safety equipment for your job, you can be injured. Always wear clothing that will not catch on objects. Extra safety equipment that can be required includes hard hat, safety shoes, ear protection, eye or face protection, heavy gloves and reflector clothing 45-3-A

WARNING: When working in the area of the fan belt with the engine running, avoid loose clothing if possible, and use extreme caution. 35-4

WARNING: When doing checks and tests on the equipment hydraulics, follow the procedures as they are written. DO NOT change the procedure. 47-44

WARNING: When putting the hydraulic cylinders on this machine through the necessary cycles to check operation or to remove air from a circuit, make sure all people are out of the way. 47-45

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STANDARD TORQUE DATA FOR NUTS AND BOLTS

Where no special torque data is specified, the following torque figures should be applied. Threads should be lubricated with engine oil or chassis grease.

TORQUE SPECIFICATIONS ± 10%									
SIZE	GRADE 8.8			GRADE 10.9			GRADE 12.9		
	lb-ft	Nm	kg/m	lb-ft	Nm	kg/m	lb-ft	Nm	kg/m
M5	4	5.5	0.56	5.5	7.5	0.76	6.6	9	0.92
M6	6.6	9	0.92	9.2	12.5	1.27	11	15	1.53
M8	16.5	22.5	2.3	23	31.5	3.2	26.5	36	3.67
M10	32	44	4.5	45	62	6.3	55	75	7.65
M12	57	77.5	7.9	81	110	11.2	95	130	13.2
M14	88	120	12.2	125	170	17.3	155	210	21.4
M16	140	190	19.4	195	265	27	236	320	32.6
M18	192	260	26.5	269	365	37.2	320	435	44.3
M20	273	370	37.7	383	520	53	457	620	63.2
M22	369	500	51	516	700	71.4	619	840	85.6
M24	471	640	65.2	665	900	92	796	1080	110
M27	702	950	97	996	1350	137.7	1195	1620	165.2
M30	955	1300	132.5	1328	1800	183.6	1593	2160	220.3

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GENERAL SPECIFICATIONS

Capacities

Engine Oil Capacity (with filter change)	15.4 litres	4 US gallons
Engine Cooling System (with cab heater)	19.2 litres	5.07 US gallons
Fuel Tank	330 litres	87.1 US gallons
Hydraulic Oil Tank Capacity	130 litres	34.3 US gallons
Total Hydraulic System Capacity	210 litres	55.4 US gallons
Final Drive Transmission Capacity (each side)	1.7 litres	1.80 US quarts
Swing Reduction Gear Capacity	3.5 litres	3.7 US quarts
Track Front Idlers	0.25 litres	0.26 US quarts
Track Lower Rollers	0.26 litres	0.28 US quarts

NOTE: *These capacities are only a guide to the quantities. Always use the dipstick, sight gauge or level plug to make sure that fluid levels are correct.*

Drawbar Pull

Drawbar Pull	182000 N	40940 lb

Drive Speed

Drive Speed	3.15 kph	1.96 mph

Electrical System

Type of System ..... 24 volts, negative ground

Alternator
- Manufacturer ..... Bosch
- Output ..... 28 volts at 45 amperes
- Resistance of rotor winding ..... 9.0 ohms
- Resistance of stator winding ..... 0.22 ohms
- Minimum brush length ..... 14 mm (0.55 inch)

Batteries
- Number of batteries required 2
- Voltage of each battery ..... 12 volts
- Reserve capacity ..... 160 minutes
- Cold cranking capacity at -17°C (0°F) ..... 800 amperes
- Load for capacity (load) test ..... 400 amperes

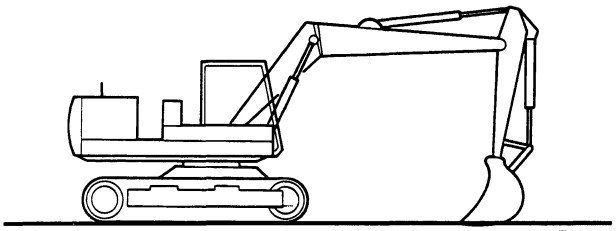
Starter Motor
- Manufacturer ..... Bosch
- No load test at 27°C (80°F)
  - volts ..... 23 volts
  - current draw ..... 85 amperes maximum
  - armature speed ..... 7000 rpm minimum
- Brush length ..... 8.5 mm (0.3125 inch) minimum
- Armature run-out ..... 0.03 mm (0.001 inch) maximum
- Commutator diameter ..... 42.5 mm (1.74 inch) minimum
- Armature end play ..... 0.05 to 0.4 mm (0.002 to 0.15 inch)

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Removal

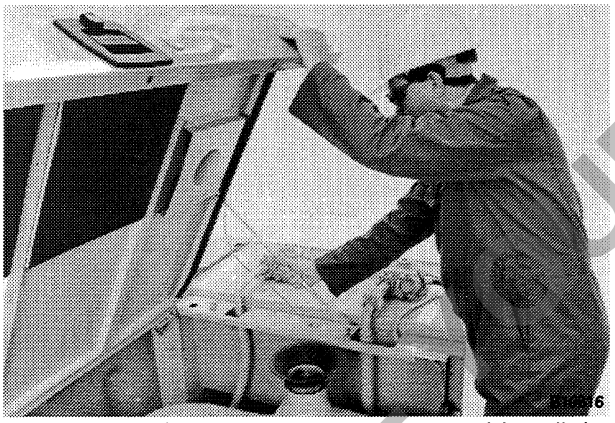
WARNING: *When the machine is operating, the engine systems and the hydraulic pump systems heat up to a high temperature. To avoid the possibility of being burnt by hot metal or scalded by hot oil or water, allow the machine to cool before starting any maintenance work.*

STEP 1



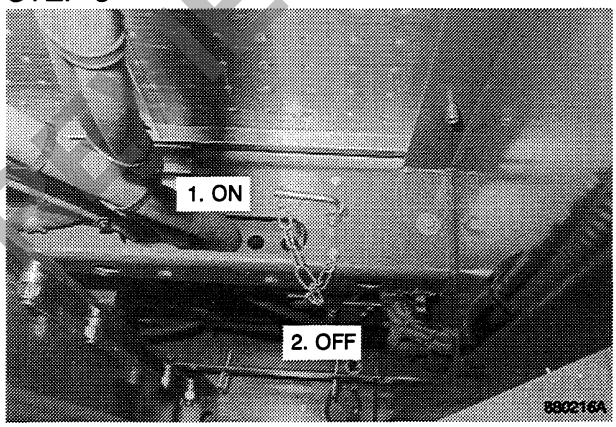
Put the machine on level ground. Lower the attachment to the ground. Stop the engine and allow the systems to cool.

STEP 2



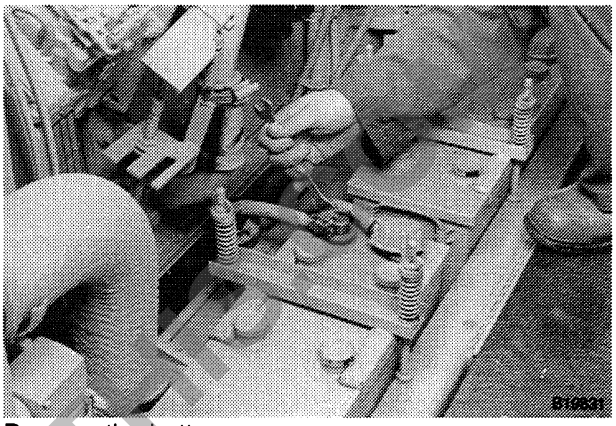
Raise the engine upper access cover and install the support rod.
Lift and remove the engine front cover.

STEP 3



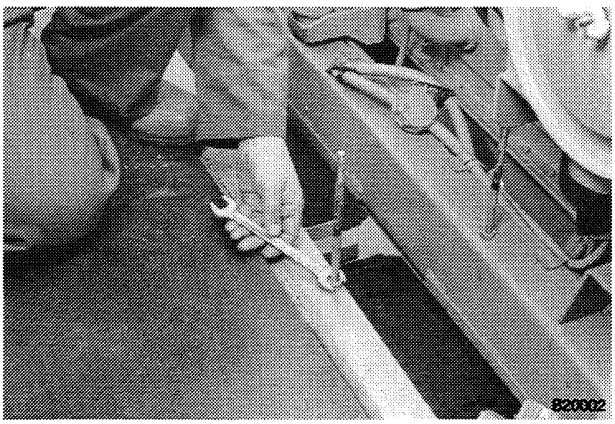
Turn the master disconnect switch, located under the left hand side of the walkway, to the OFF position and remove the key.

STEP 4



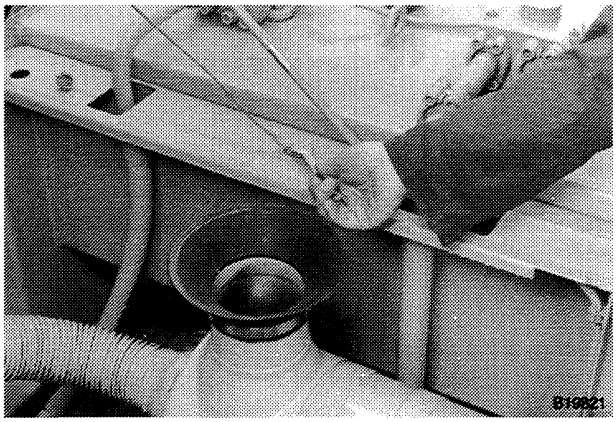
Remove the battery cover.
Disconnect the negative (-) cable first as shown. Disconnect the remaining cables.
Remove the battery securing clamps and remove the batteries.

STEP 5



For safety, remove the battery securing bolts and nuts.

STEP 6



Remove the bolt, spacers and nut securing the engine upper access cover safety cable. Close the cover.

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WARNING: Use insulated gloves or mittens when working with hot parts. 47-41A

CAUTION: Lower all attachments to the ground or use stands to safely support the attachments before you do any maintenance or service. 49-11

CAUTION: Pin sized and smaller streams of hydraulic oil under pressure can penetrate the skin and result in serious infection. If hydraulic oil under pressure does penetrate the skin, seek medical treatment immediately. Maintain all hoses and tubes in good condition. Make sure all connections are tight. Make a replacement of any tube or hose that is damaged or thought to be damaged. DO NOT use your hand to check for leaks, use a piece of cardboard or wood. 40-6-A

CAUTION: When removing hardened pins such as a pivot pin, or a hardened shaft, use a soft head (brass or bronze) hammer or use a driver made from brass or bronze and a steel head hammer. 46-17

CAUTION: When using a hammer to remove and install pivot pins or seperate parts using compressed air or using a grinder, wear eye protection that completely encloses the eyes (approved goggles or other approved eye protectors). 46-13

CAUTION: Use suitable floor (service) jacks or chain hoist to raise wheels or tracks off the floor. Always block machine in place with suitable safety stands. 40-7-A

CAUTION: When servicing or repairing the machine. Keep the shop floor and operator's compartment and steps free of oil, water, grease, tools, etc. Use an oil absorbing material and or shop cloths as required. Use safe practices at all times. 40-8

CAUTION: Some components of this machine are very heavy. Use suitable lifting equipment or additional help as instructed in this Service Manual. 40-10

DANGER: Engine exhaust fumes can cause death. If it is necessary to start the engine in a closed place, remove the exhaust fumes from the area with an exhaust pipe extension. Open the doors and get outside air into the area. 48-56

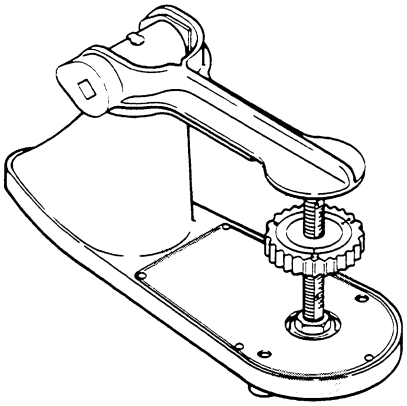
DANGER: When the battery electrolyte is frozen, the battery can explode if (1), you try to charge the battery, or (2), you try to jump start and run the engine. To prevent the battery electrolyte from freezing, try to keep the battery at full charge. If you do not follow these instructions, you or others in the area can be injured. 48-35

DANGER: Batteries contain acid and explosive gas. Explosions can result from sparks, flames or wrong cable connections. To connect the jumper cables correctly to the battery of this machine see the Operator's Manual. Failure to follow these instructions can cause serious injury or death.

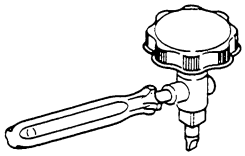
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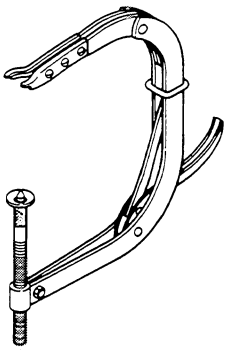
SPECIAL TOOLS



CAS-1357 VALVE SPRING TESTER



VALVE ADJUSTING TOOL



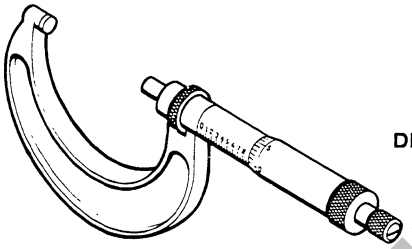
CAS-10240 VALVE SPRING COMPRESSOR



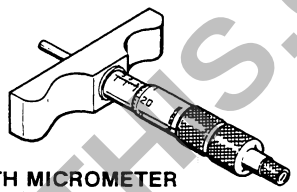
CAS-1694 INJECTION BORE CLEANER



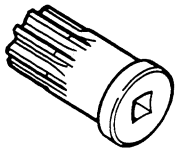
VALVE GUIDE REAMER
CAS-1743



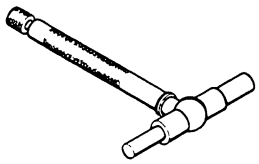
0 TO 25 MM MICROMETER
CAS-10285M



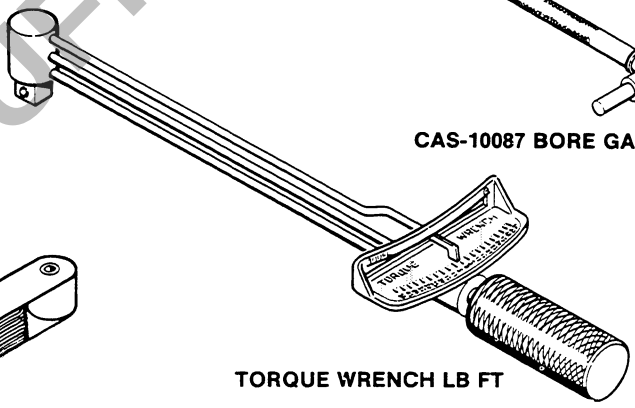
DEPTH MICROMETER
CAS-10064-1M



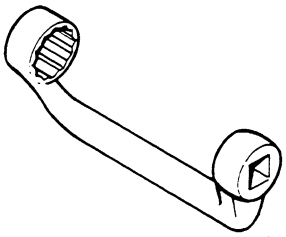
CAS-1690 ENGINE TURN OVER TOOL



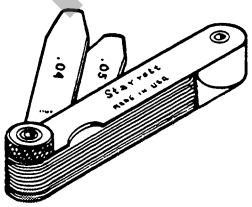
CAS-10087 BORE GAUGE SET



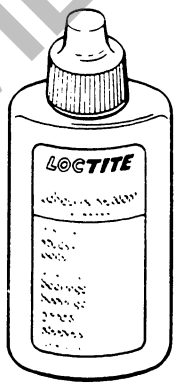
TORQUE WRENCH LB FT
TORQUE WRENCH INCH POUND



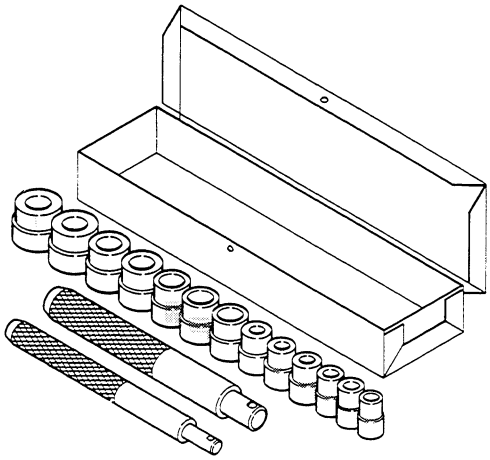
CAS-1066A WRENCH



FEELER GAUGE METRIC



THREAD SEALANT WITH TEFLON - B17503 6 ml TUBE



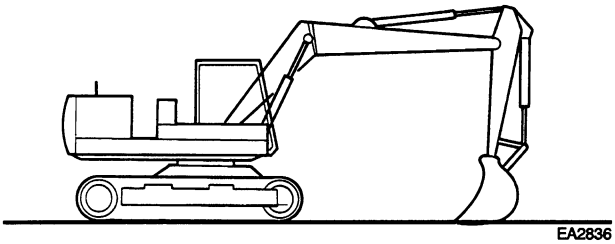
A157B BUSHING DRIVER SET
"SNAP-ON"

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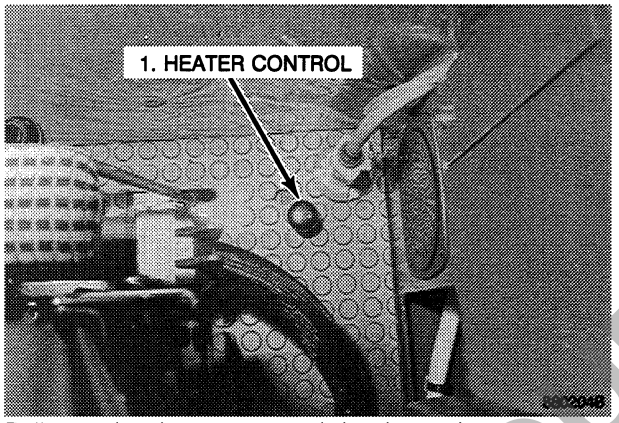
Removal

STEP 1



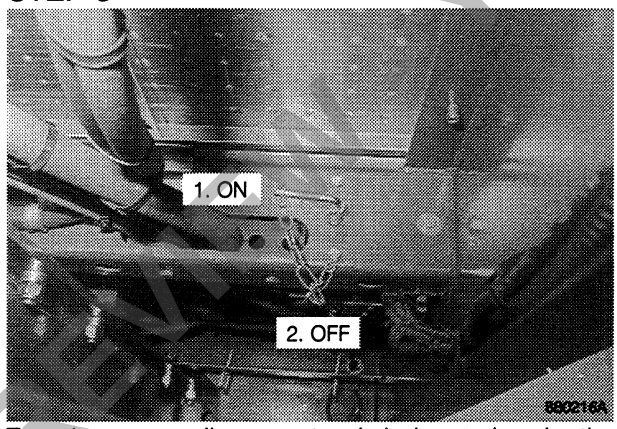
Put the machine on level ground. Lower the attachment to the ground. Stop the engine.

STEP 2



Pull up the heater control in the cab to prevent unnecessary draining of engine coolant.

STEP 3



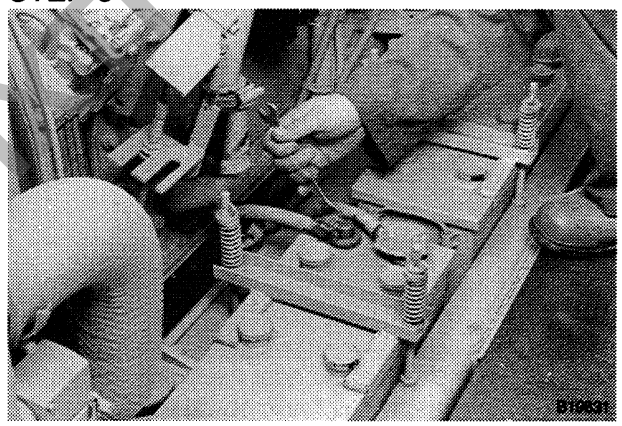
Turn the master disconnect switch, located under the left hand side of the walkway, to the OFF position and remove the key.

STEP 4



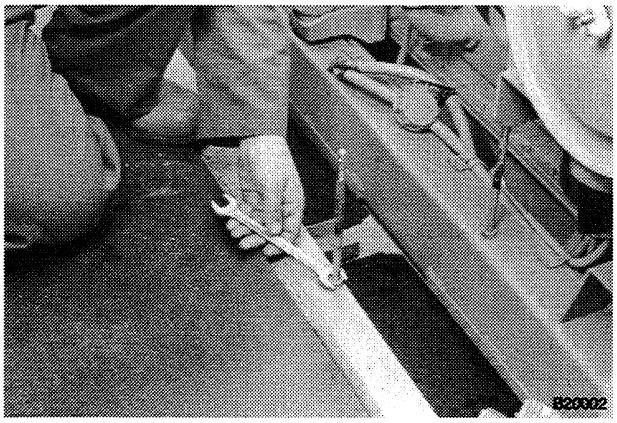
Raise the engine upper cover and install the support rod. Lift and remove the engine front cover.

STEP 5



Remove the battery cover. Disconnect the battery negative (-) cable first as shown. Disconnect the remaining cables. Remove the battery clamps and remove the batteries.

STEP 6



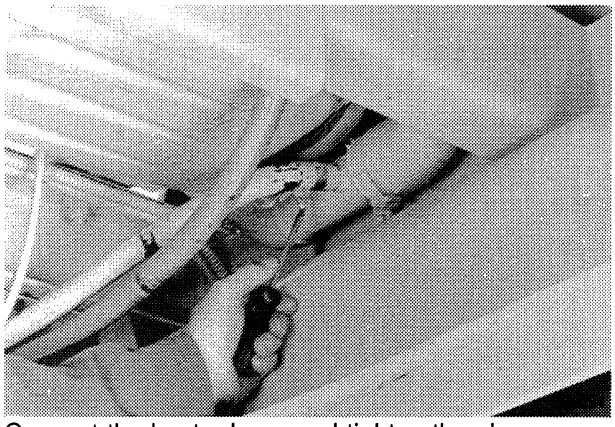
For safety, remove the battery securing bolts and nuts.

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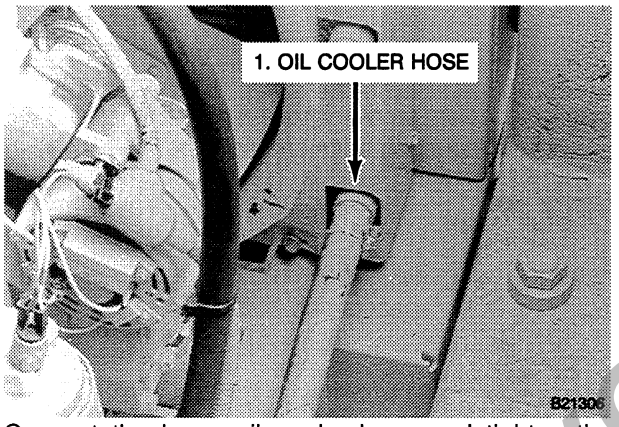
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STEP 30



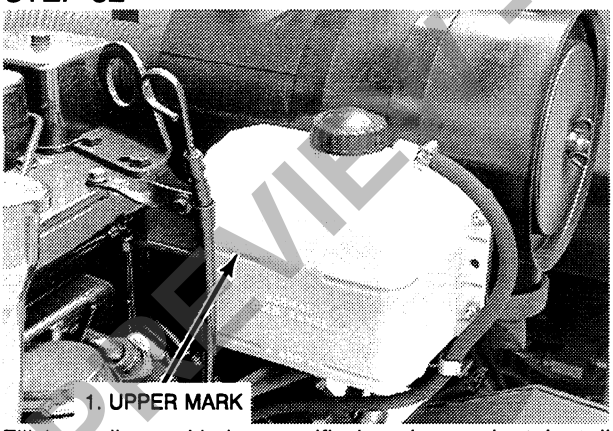
Connect the heater hose and tighten the clamp.

STEP 31



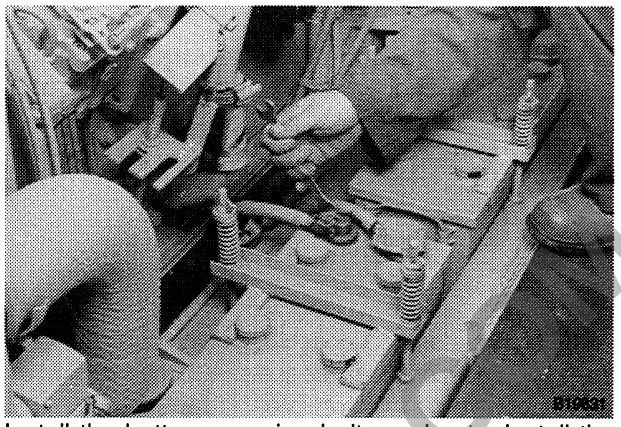
Connect the lower oil cooler hose and tighten the clamp.

STEP 32



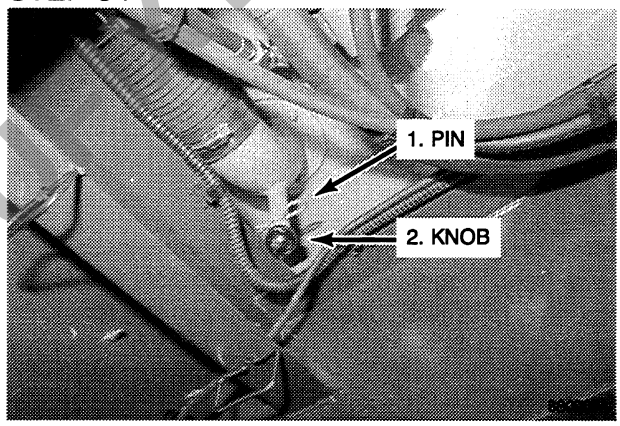
Fill the radiator with the specified engine coolant. Install the radiator cap. Fill the coolant recovery bottle to the upper mark.

STEP 33



Install the battery securing bolts and nuts. Install the batteries and install and tighten the battery securing clamps.
Connecting the negative (-) cable last, connect the battery cables.
Install the battery cover.

STEP 34



Push up the knob and install the pin to open the hydraulic oil tank shutoff valve.

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Section

2425

CYLINDER BLOCK
Crankshaft, Pistons, Rods, Sleeves, Camshaft, Bearings, Seals and Flywheel

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IMPORTANT: *This engine was made using the metric measurement system. All measurements and the checks must be made with metric tools to make sure of an accurate reading when inspecting parts.*

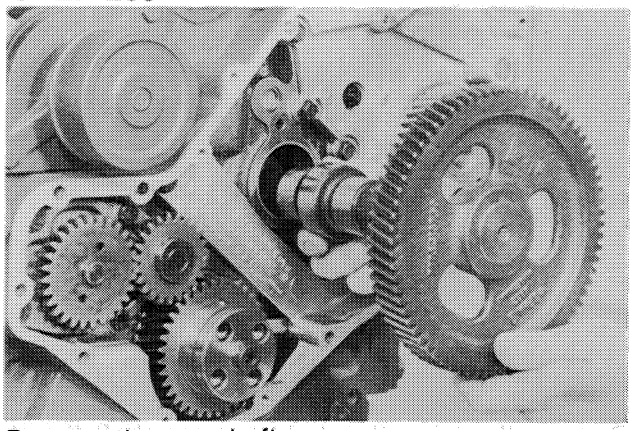
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October, 1984 (Revised October, 1988)

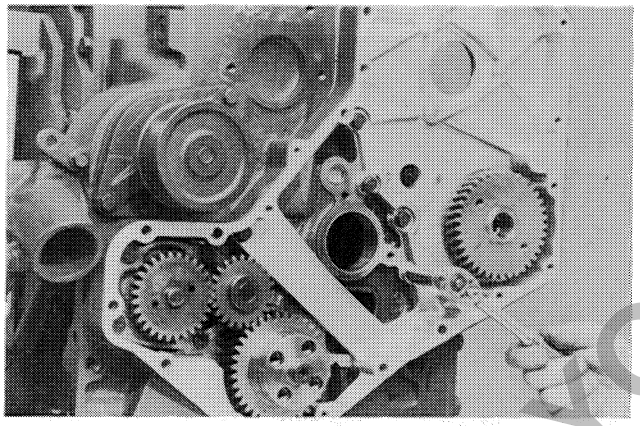
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STEP 239



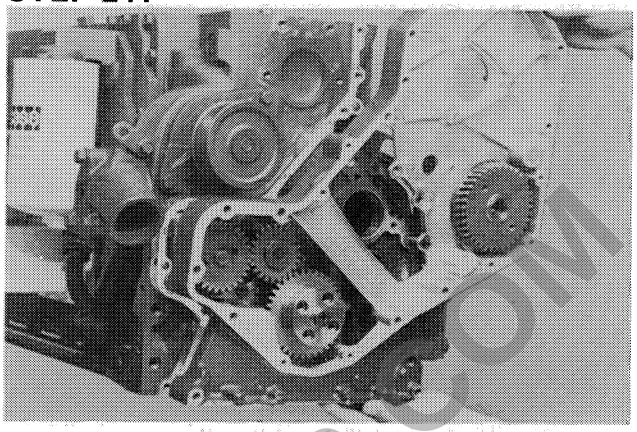
Remove the camshaft.

STEP 240



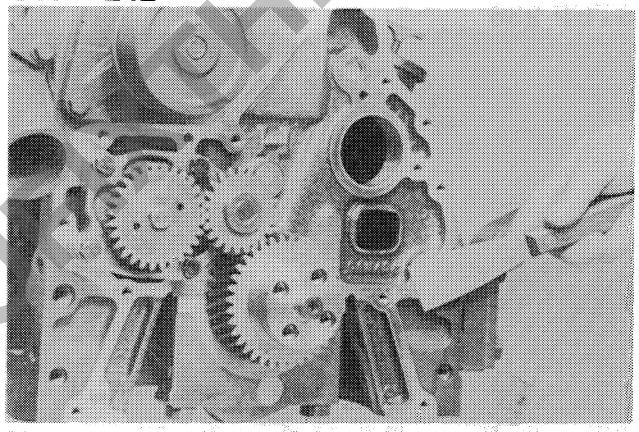
Remove the front housing bolts.

STEP 241



Remove the front housing.

STEP 242



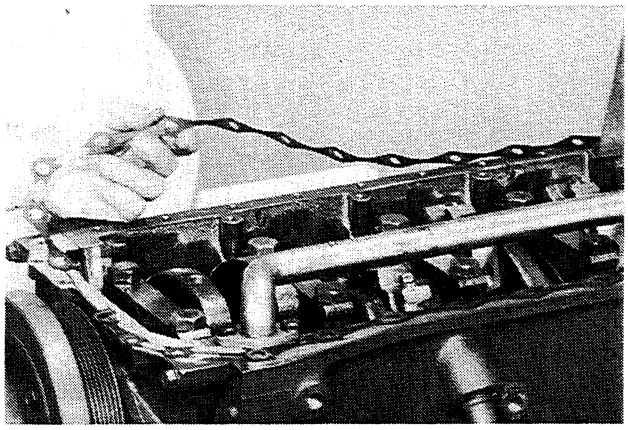
Clean all mounting surfaces of foreign material.

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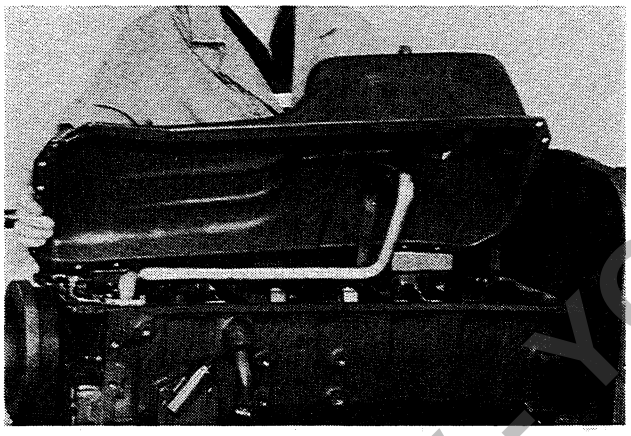
Oil Pan Installation

STEP 61



Install a new oil pan gasket.

STEP 62



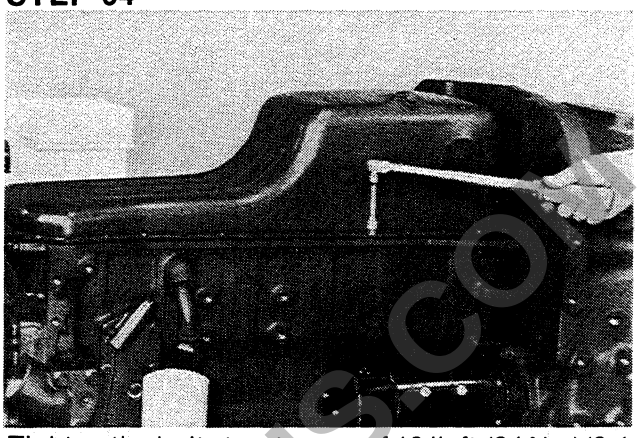
Install the oil pan.

STEP 63



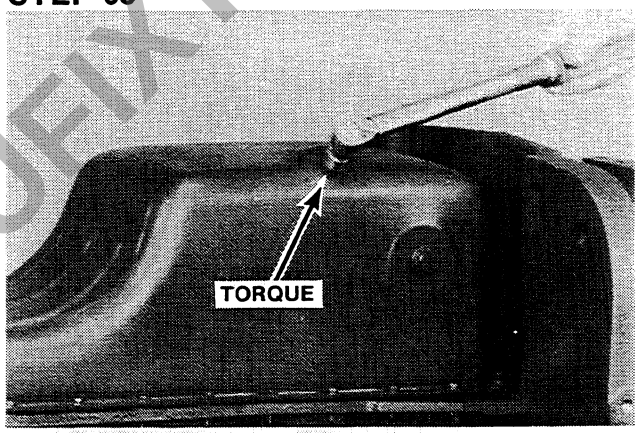
Install the washers and bolts. The concave side of the washer must be toward the oil pan.

STEP 64



Tighten the bolts to a torque of 18 lb ft (24 Nm)(2.4 kgm).

STEP 65



Install the oil pan drain plug and tighten.

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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Section

3412

INJECTION PUMP

Pump Drive Gear, Timing Pin, Fuel Shutoff Solenoid, Primer Pump, and Pump Timing

Written In *Clear And Simple English*

IMPORTANT: *This engine was made using the metric measurement system. All measurements and the checks must be made with metric tools to make sure of an accurate reading when inspecting parts.*

CASE CORPORATION

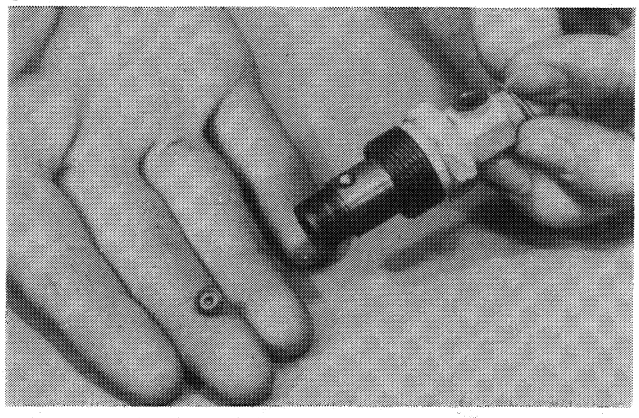
Rac 8-26141

Printed in U.S.A.
October, 1984 (Revised March, 1985)

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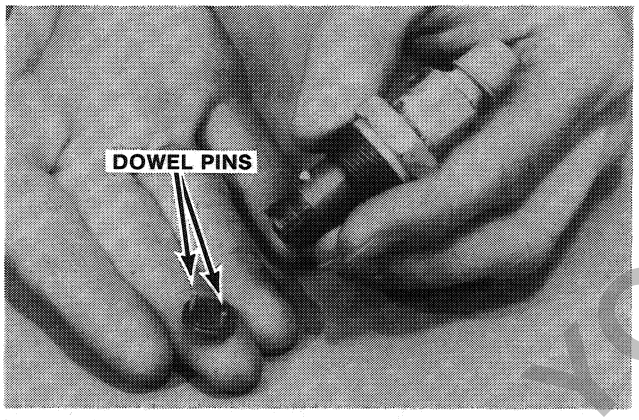
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STEP 32



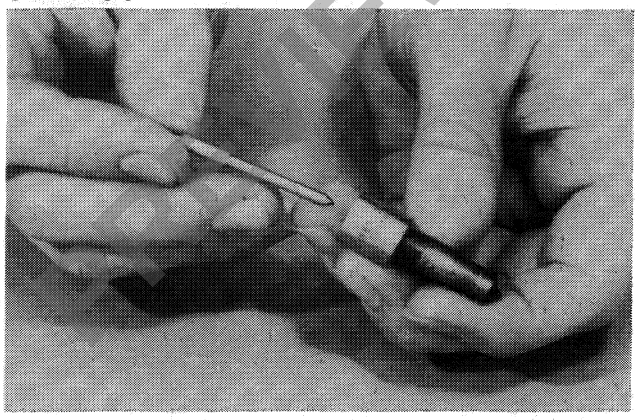
Install the spring seat on the pressure spring. The small diameter end of the spring seat must be toward the pressure spring.

STEP 33



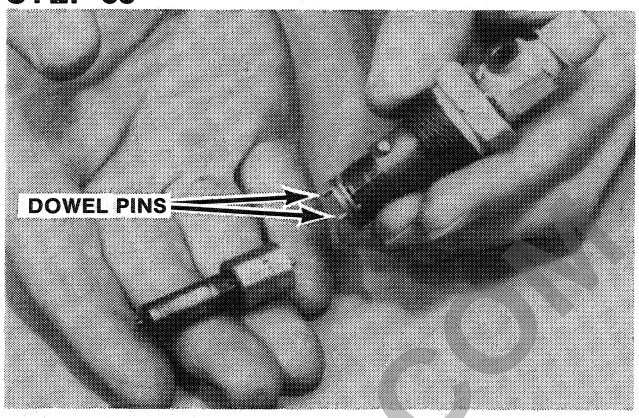
Install the valve stop assembly. Align the dowel pins that are in the valve stop with the dowel pin holes that are in the nozzle holder.

STEP 34



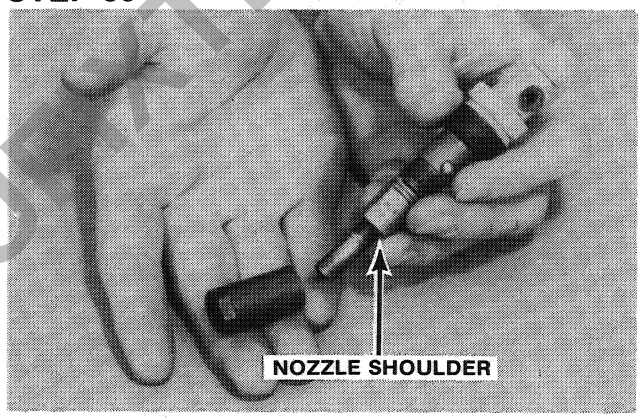
Put a small amount of clean fuel on the nozzle valve and slide the nozzle valve up and down a number of times in the nozzle tip to make sure that there is free movement.

STEP 35



Align the dowel pin holes in the nozzle tip assembly with the dowel pins in the stop valve assembly. Install the nozzle tip assembly on the valve stop assembly.

STEP 36



Add lubrication to the nozzle shoulder. Do not put grease on the holder or the threads of the cap nut. Install the cap nut over the end of the nozzle tip assembly and turn the cap nut clockwise two or three times.

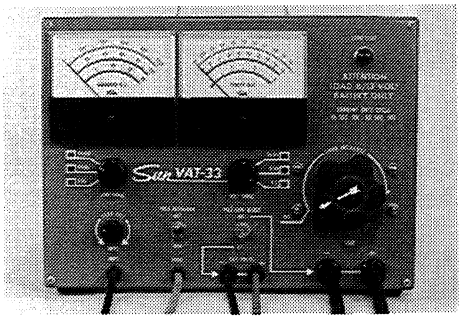
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SPECIAL TORQUES

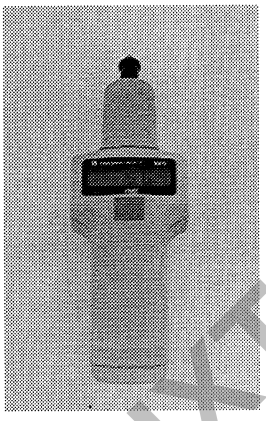
Drive Housing Studs	4.5 to 6.0 Nm	40 to 53 lb in
Starter Motor Mounting Bolts	43 Nm	32 lb ft

SPECIAL TOOLS

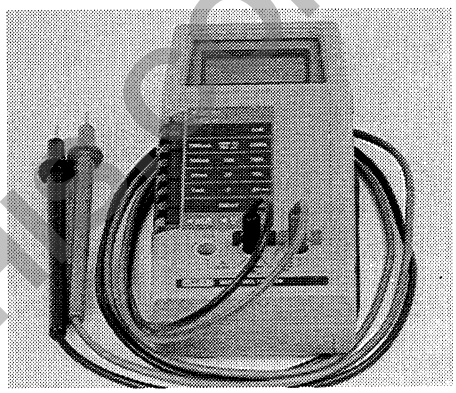
1. Remote Starter Switch



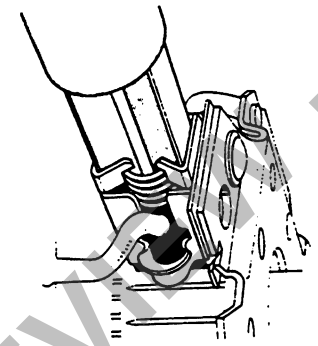
2. Sun Electric VAT-33 Tester



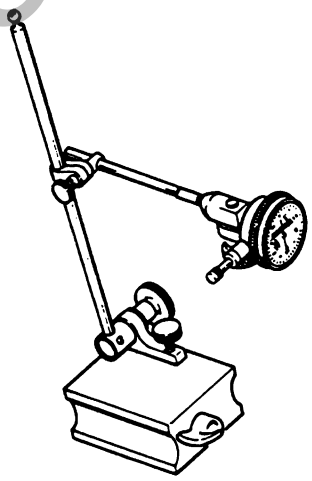
3. Hand Held Tachometer
CASE Part Number CAS-10756



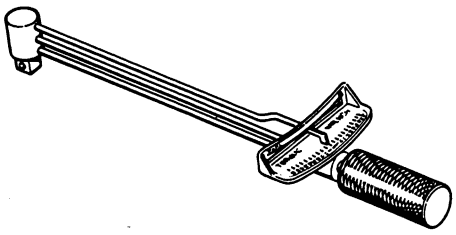
4. Multimeter
CASE Part Number CAS-1559



5. Brush Spring Compression Tool
(Bosch Part Number KDAL 5030)



6. Dial Test Indicator



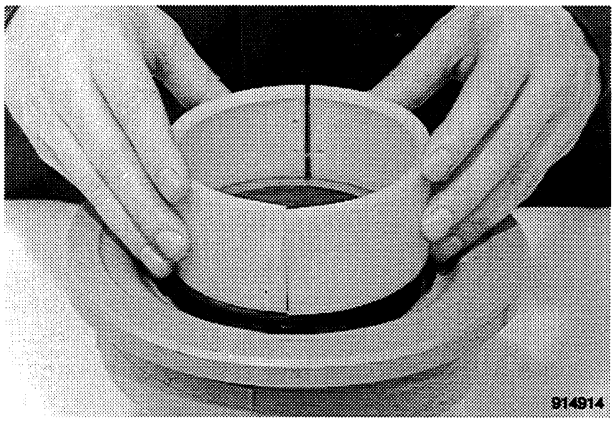
7. Torque Wrench (Nm or lb ft)

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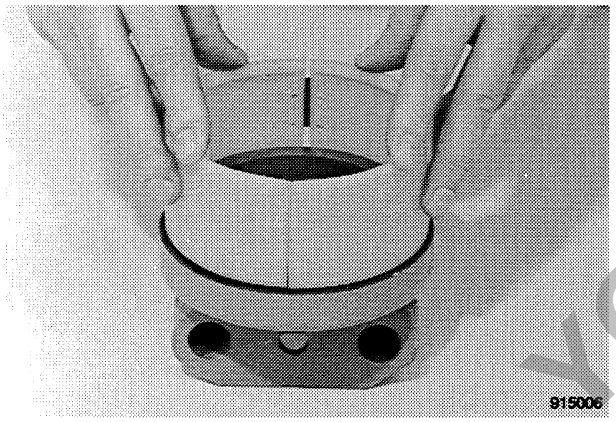
Assembly

STEP 17



Use the special tool CAS 1284 to install the seal assemblies into both sides of the track rollers.

STEP 18



Use the special tool CAS 1284 to install the seal assemblies into both roller mounting brackets.

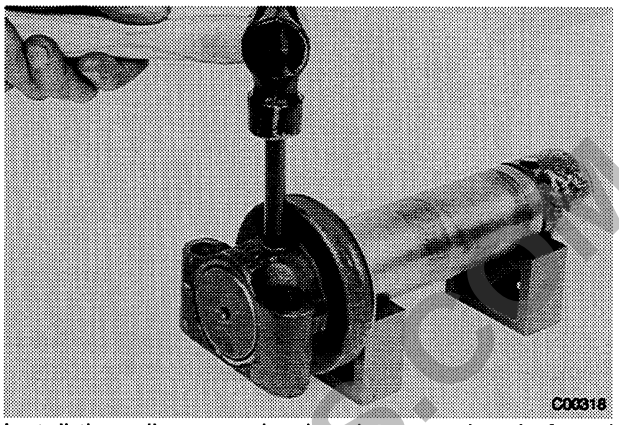
STEP 19



Install a new o-ring onto one end of the shaft and lubricate with petroleum jelly.

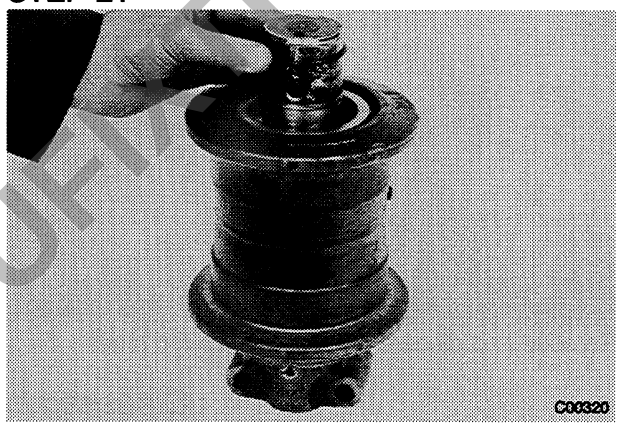
NOTE: *Make sure the flat surfaces on the mounting bracket and shaft are aligned.*

STEP 20



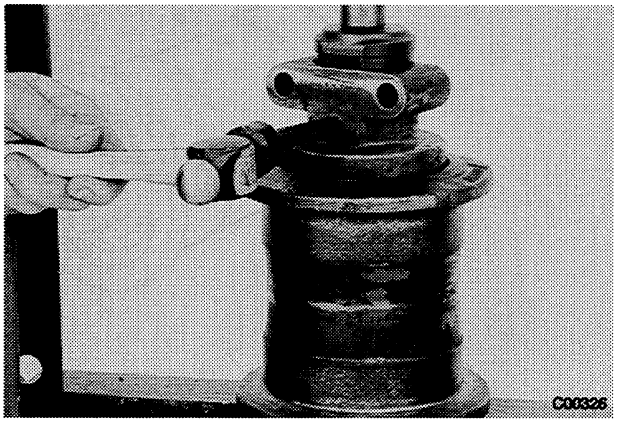
Install the roller mounting bracket onto the shaft and install the roll pin.

STEP 21



Install the shaft into the roller. Install a new o-ring onto the shaft and lubricate with petroleum jelly.

STEP 22



Put the roller assembly onto a hydraulic press and press the roller mounting bracket onto the shaft until the holes are aligned. Install the roll pin.

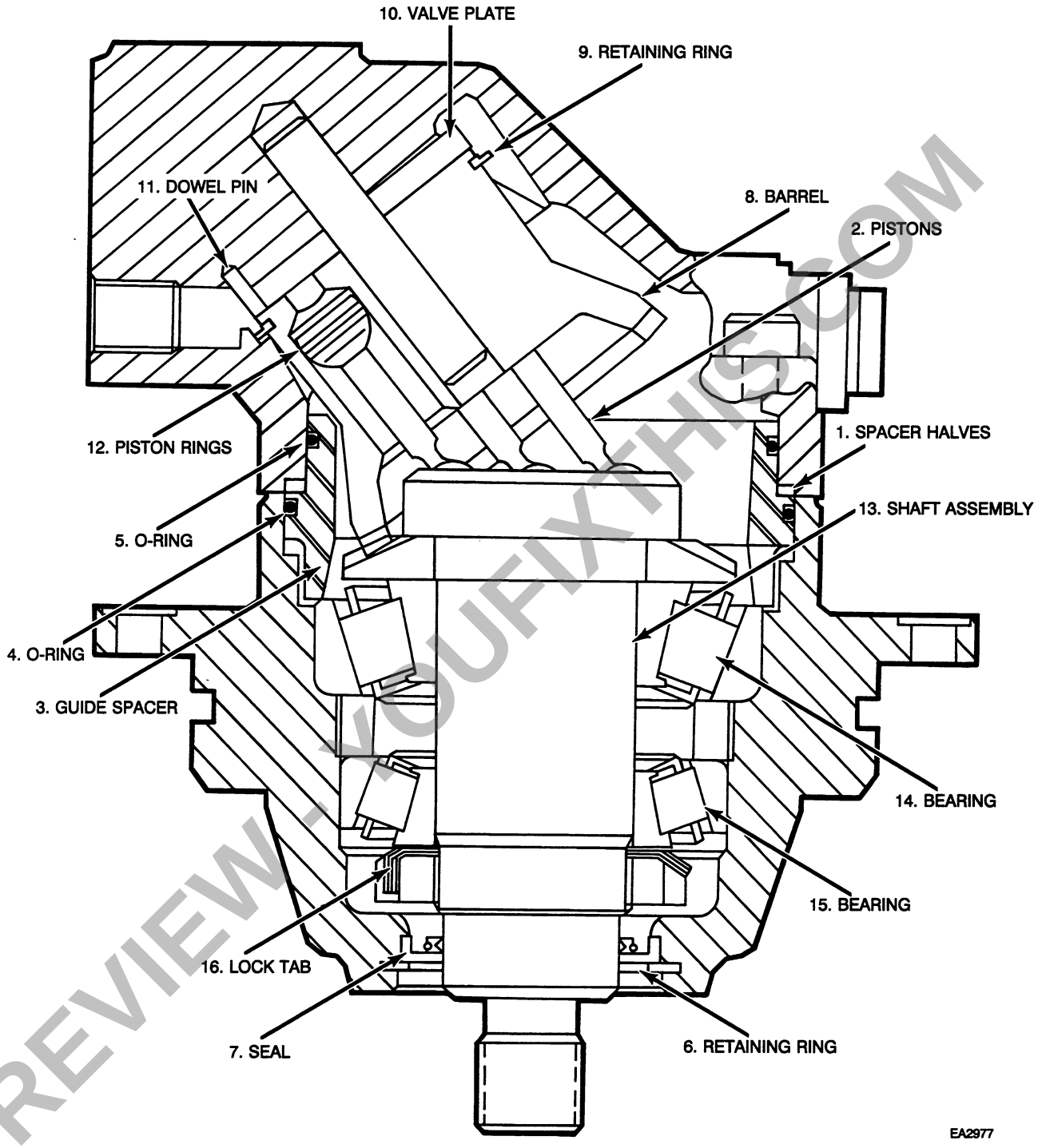
STEP 23

Fill the roller with the correct grade and quantity of oil, refer to Specifications, Page 3.

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Swing Motor Cross Sectional Drawing



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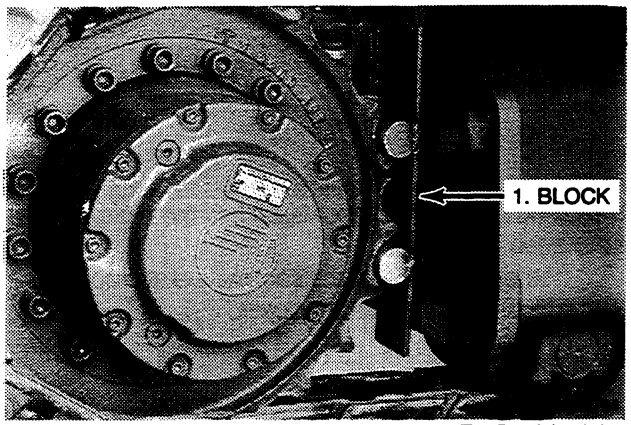
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SETTING THE TRAVEL CIRCUIT RELIEF VALVES.

STEP 1

Connect a multi-tester or a 0 to 600 bar (10000 PSI) pressure gauge to TEST POINT M1.

STEP 2



Install two blocks (Refer to Page 5 Tool To Be Made) between the sprocket wheel and undercarriage, on each track to lock the forward and reverse drive.
Remove the travel valve cover.

STEP 3

Increase the pressure in the Flow Cutoff Valve (AD). Refer to Page 27.

STEP 4

With the engine at full speed press down the right hand travel pedal to engage reverse drive and keep it there.
The pressure must be 400 to 415 bar (5801 to 6019 PSI).
If the pressure is not correct adjust the right hand Circuit Relief Valve (U). Loosen the locknut, and turn the screw clockwise to increase or counterclockwise to decrease the pressure.

STEP 5

Press down the left hand travel pedal for the reverse drive and keep it there.
The pressure must be 400 to 415 bar (5801 to 6019 PSI).
If the pressure is not correct, adjust the right hand travel Circuit Relief Valve (V) by turning the screw clockwise to increase or counterclockwise to decrease the pressure.

STEP 6

Press down the right hand travel pedal for the forward drive and keep it there.
The pressure must be 400 to 415 bar (5801 to 6019 PSI).
If the pressure is not correct, adjust the right hand travel Circuit Relief Valve (X) by turning the screw clockwise to increase or counterclockwise to decrease the pressure.

STEP 7

Press down the left hand travel pedal for the forward drive and keep it there.
The pressure must be 400 to 415 bar (5801 to 6019 PSI).
If the pressure is not correct, adjust the left hand travel Circuit Relief Valve (W) by turning the screw clockwise to increase or counterclockwise to decrease the pressure.

STEP 8

Adjust the Flow Cutoff Valve (AD). Refer to Page 40.

STEP 9

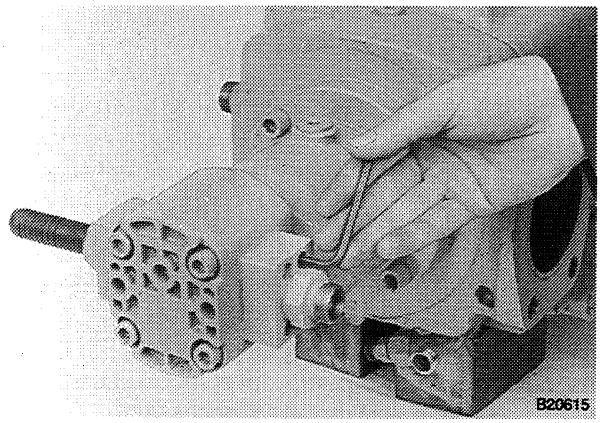
Remove the blocks from the tracks and install the travel valve cover.

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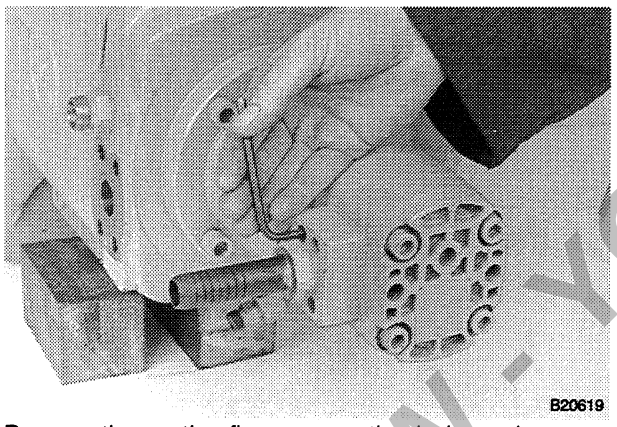
Variable Flow Pump Disassembly

STEP 1



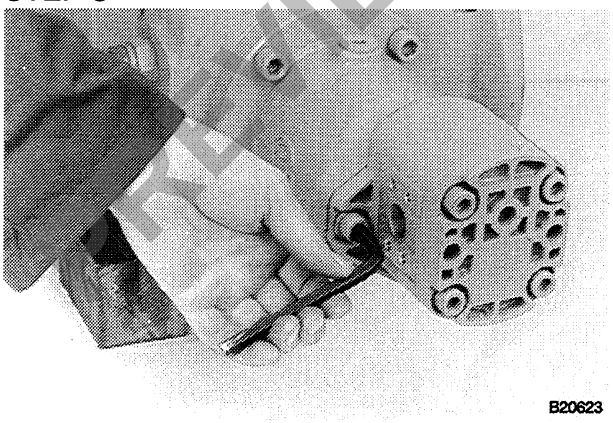
Mark the top of the low pressure pump with a permanent marker for correct assembly. Remove the pressure flange mounting bolts and remove the pressure flange. Remove and discard the o-ring.

STEP 2



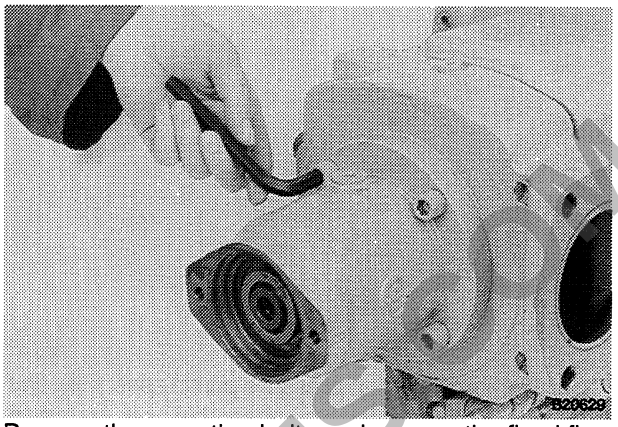
Remove the suction flange mounting bolts and remove the suction flange. Remove and discard the o-ring.

STEP 3



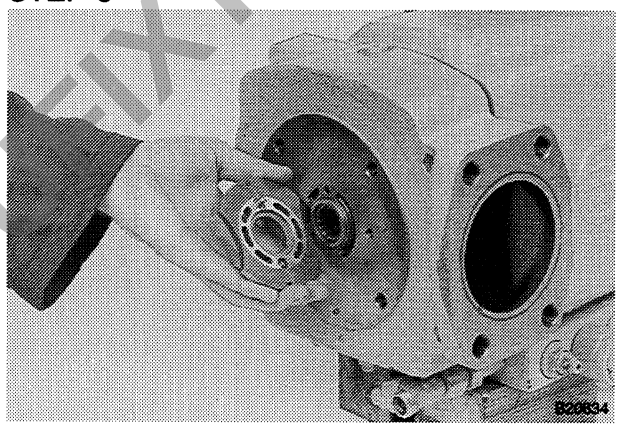
Remove the low pressure pump mounting bolts and lock washers and remove the low pressure pump. Refer to Section 8002 for the low pressure pump disassembly procedure.

STEP 4



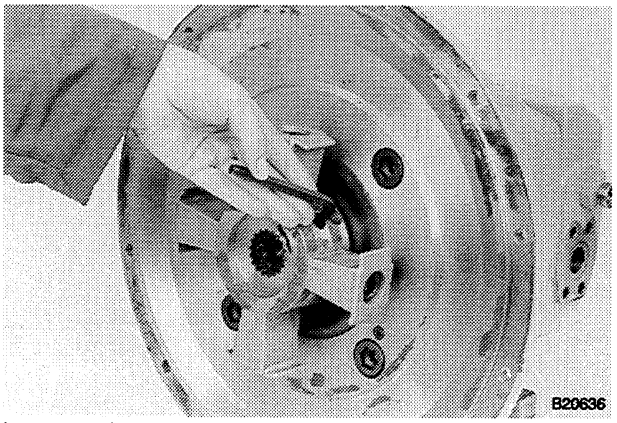
Remove the mounting bolts and remove the fixed flow pump from the bearing housing. Remove and discard the o-ring.

STEP 5



Remove the spacer from the bearing housing.

STEP 6

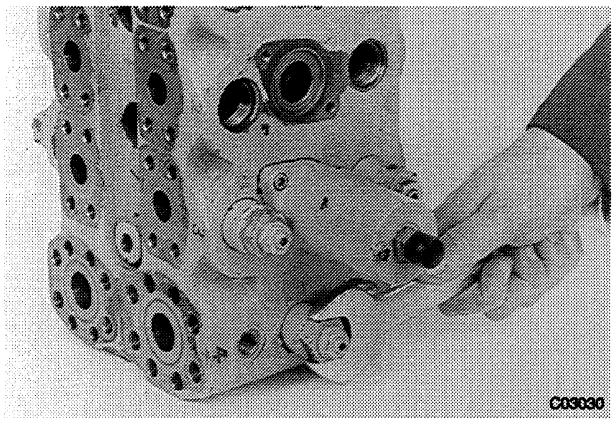


Loosen the two set-screws and remove the drive coupling.

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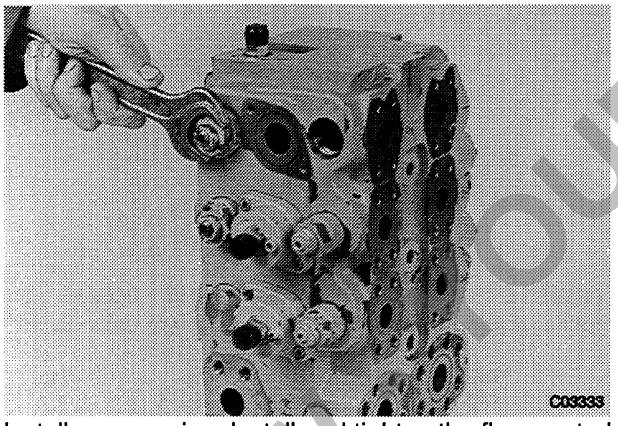
STEP 48



Install a new o-ring. Install and tighten the circuit relief valve into the inlet/outlet section of the valve.

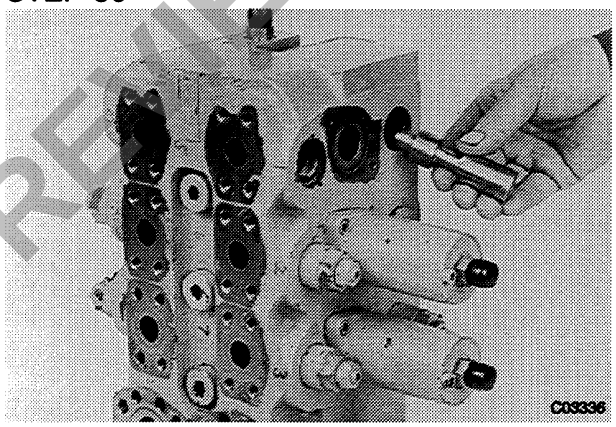
NOTE: *Follow STEPS 49 to 56 to install the circuit relief valves, flow control valves and spools into the dipper and bucket sections of the valve.*

STEP 49



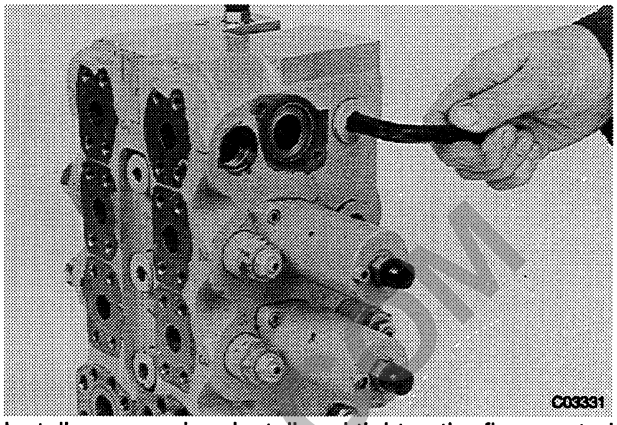
Install a new o-ring. Install and tighten the flow control valve.

STEP 50



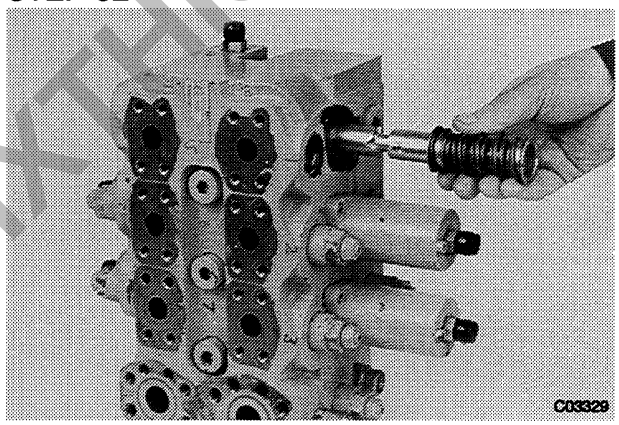
Install the flow control valve spool.

STEP 51



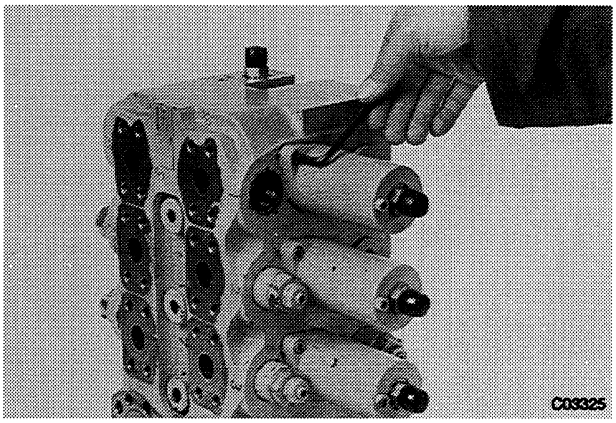
Install a new o-ring. Install and tighten the flow control valve spool plug.

STEP 52



Install the valve spool assembly.

STEP 53

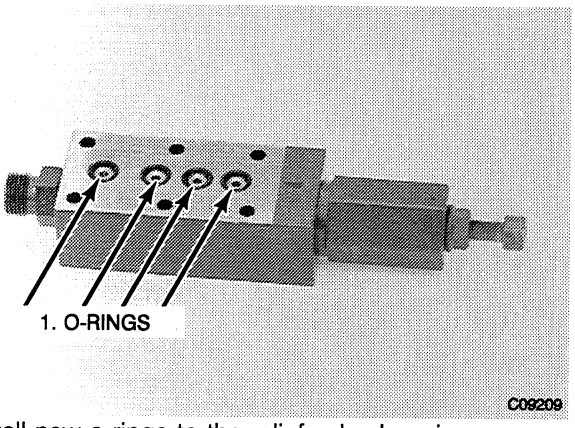


Install a new o-ring into the spool end cap. Install the spool end cap and screws. Tighten the screws to a torque of 9 Nm (6.5 lb ft).

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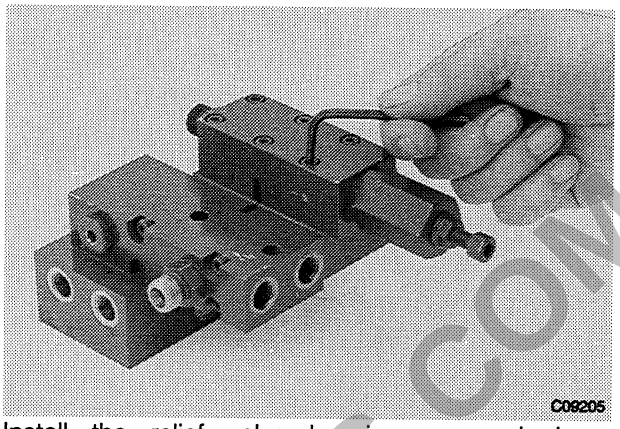
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STEP 51



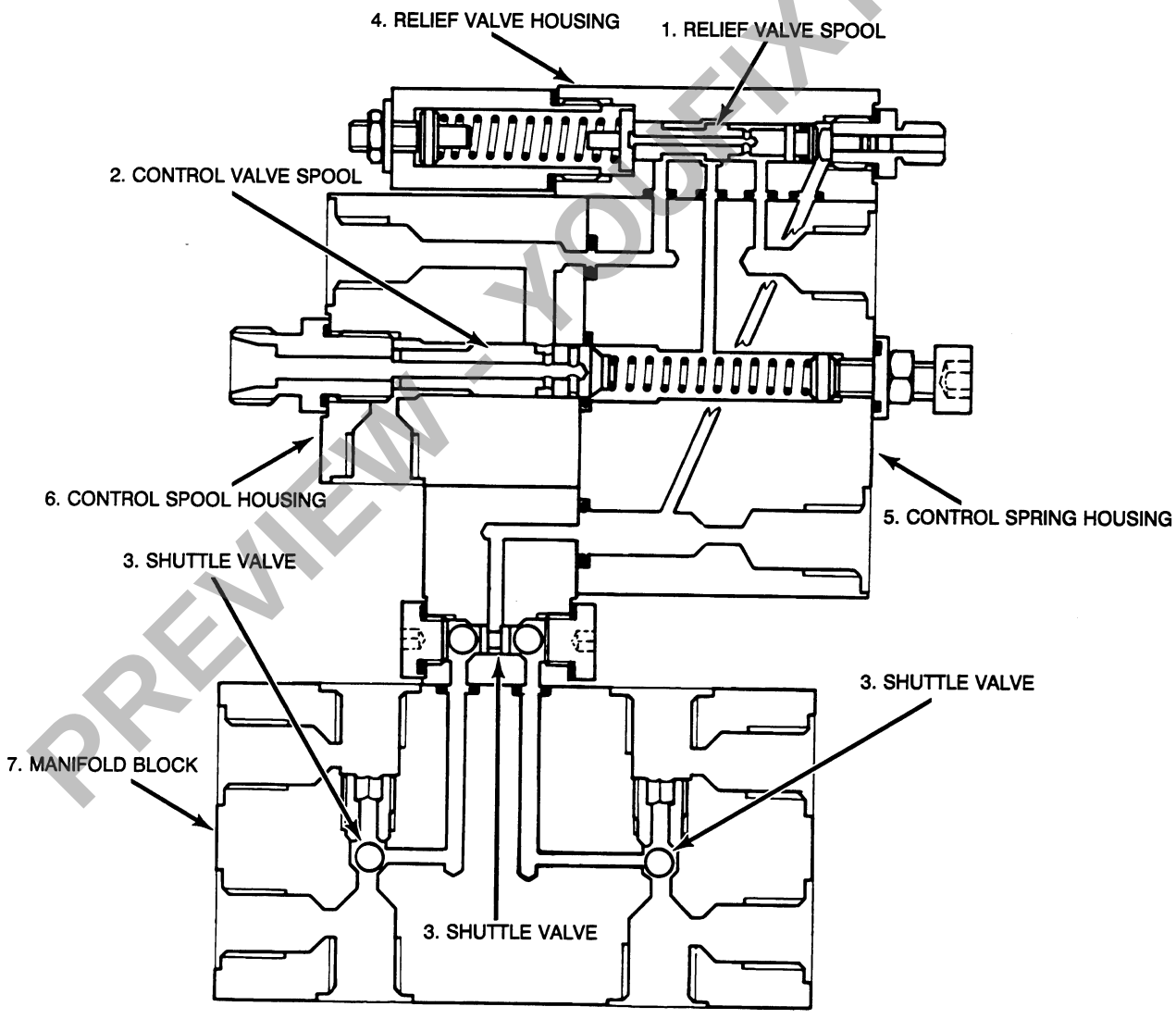
Install new o-rings to the relief valve housing.

STEP 52



Install the relief valve housing as marked on disassembly and install and tighten the screws.

Cross Sectional Drawing of the Counter Rotation Valve

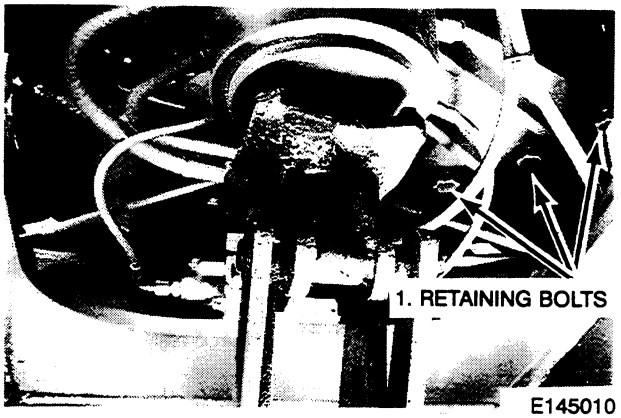


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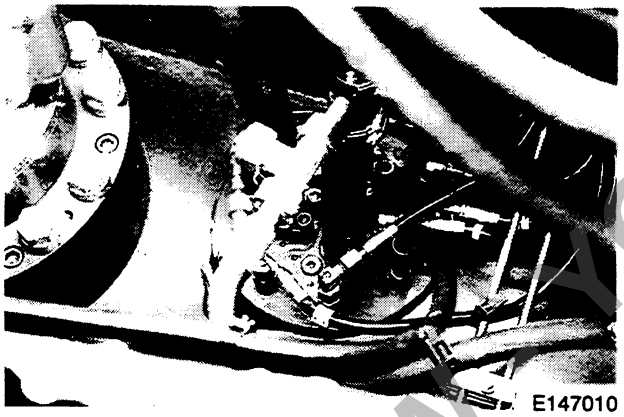
Installation

STEP 10



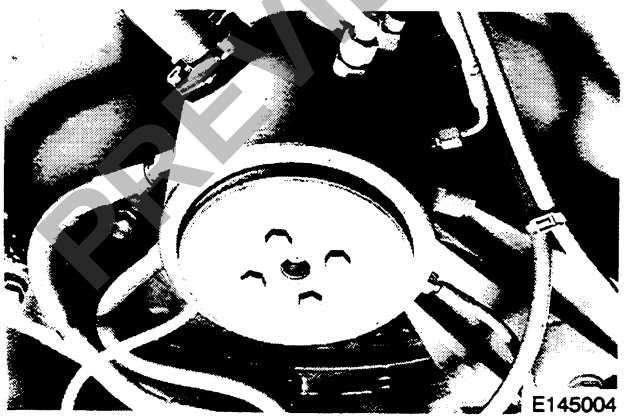
Put the hydraulic swivel under the machine on a hydraulic jack. Raise the hydraulic swivel into position. Install and tighten the retaining bolts 3 off M20 to a torque of 520 Nm (383 lb ft) 6 off M12 10 Nm (81 lb ft)..

STEP 11



Identify, install and tighten the hoses and tubes on the top of the swivel.

STEP 12



Identify, install and tighten the hoses and tubes on the lower part of the swivel.

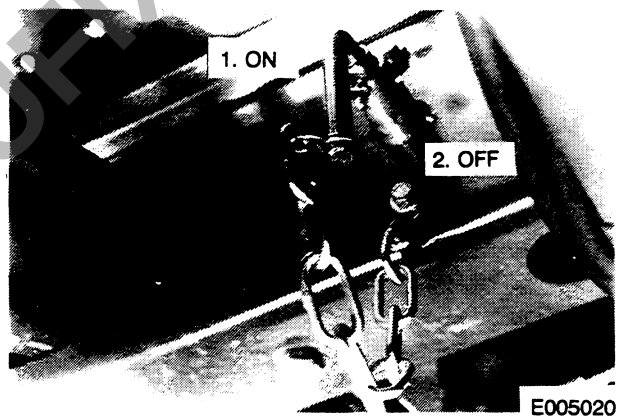
NOTE: *Remove the identification tags from the hoses and tubes after installation.*

STEP 13



Push the knob up to open the hydraulic oil tank shutoff valve and install the locking pin.

STEP 14



Install the key and turn the master disconnect switch to the ON position.

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Section

8018

ATTACHMENT CYLINDERS

8018

For 1088 Crawler Excavators

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CASE CORPORATION

Don 8-86270

Printed in England
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