880R EXCAVATOR
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C E Div 9-67074
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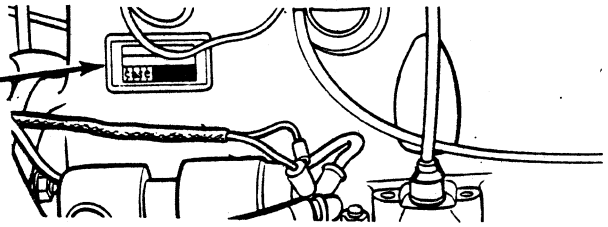
CASE

Section 1010

GENERAL ENGINE SPECIFICATIONS 880R EXCAVATOR

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



General

Type	4 Cylinder, 4 Stroke Cycle, Valve-in-Head Turbo-Charged
Firing Order	1-3-4-2
Bore	4-5/8 Inches
Stroke	5 Inches
Piston Displacement	336 Cubic Inches
Compression Ratio	15.8 to 1
No Load Governed Speed	2330 to 2370 RPM
Rated Engine Speed	2200 RPM
Engine Idling Speed	700 to 750 RPM
Exhaust Valve Rotators	Positive Type
Valve Tappet Clearance (Exhaust)	(Cold) .025 Inch
(Intake)	(Cold) .015 Inch

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 Alloy Liners

Main Bearings

Number of Bearings	5
Type Bearings	Replaceable Precision Steel Back, Copper-Lead Alloy Liners

Engine Lubricating System

Crankcase Capacity	10 Quarts
with Filter Change	11 Quarts
Oil Pressure	45 to 60 Pounds 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 2800 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

CASE

Rac. 9-45781

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Section
1055

GENERAL CLEANING INSTRUCTIONS

CASE CORPORATION Burl. Form 9-66735 Sept. 1976 PRINTED IN U.S.A.

GENERAL CLEANING INSTRUCTIONS

Complete Assemblies

Completely assembled components may be steam cleaned on the outside only, to make for easier removal and disassembly. All openings and breathers must be closed or plugged to prevent possibility of water entering the component.

WARNING: To prevent injury from burns always use a non-flammable solvent for cleaning component parts. DO NOT USE gasoline or other flammable substances.

Rough Parts

Rough parts such as housings, castings, etc., may be cleaned in hot solution tanks with mild alkali solutions, providing these parts do not have ground or polished surfaces. The parts should remain in the tank long enough to be thoroughly cleaned and heated. This will aid the evaporation of rinse water. The parts should be thoroughly rinsed after cleaning to remove all traces of alkali.

Finished or Machined Parts

Parts having ground or polished surfaces such as gears, bearings, shafts and collars, should be cleaned in non-flammable solvent.

IMPORTANT: DO NOT clean machined parts in hot solution tanks with water and alkaline solutions such as sodium hydroxide, orthosilicates or phosphates.

Rubber Parts

Clean rubber parts by washing in clean denatured alcohol. DO NOT use mineral base cleaning solvents such as acetone or paint thinner on any rubber parts. If a mineral base solvent is used, the rubber will start to deteroirate and continue to deteriorate after the part is put back into service. The continued deterioration of the rubber could cause the part to fail.

Drying

All parts cleaned must be thoroughly dried immediately. Use moisture-free compressed air or soft lintless absorbent wiping rags. The rags should be free of abrasive materials such as metal filings, contaminated oil or lapping compound. Bearings may be dried using compressed air, provided the air is directed across the bearings to avoid spinning. Do not spin bearings when drying. Bearings may be rotated slowly by hand to speed the drying process.

CAUTION: When using compressed air keep stream from direction of face. Use only low air pressure.

Corrosion Prevention

Parts that have been cleaned, dried, inspected and are to be immediately reassembled should be coated with a light oil to prevent corrosion. If these parts are to be stored for any length of time, they should be treated with a good RUST PREVENTIVE and wrapped in special paper or other material to prevent corrosion.

Section
2001

ENGINE DIAGNOSIS

CASE CORPORATION

Rac. 9-76365

PRINTED IN U.S.A

GENERAL INFORMATION

Before making any repairs or adjustments on an engine, a mechanic or technician must properly diagnose the trouble.

Locating the trouble and repairing it is only part of the job, a technician must find and eliminate the cause of the trouble as well. Too many repairs are made with no thought to removing the causes that made the repair necessary.

For any engine to start or perform properly, three main requirements must be present.

1. FUEL
2. COMPRESSION
3. IGNITION

When any of these requirements are not present or limited by some mechanical reason the engine will not start or fails to operate properly throughout the power range.

1. FUEL. Fuel system problems can be present anywhere from the fuel tank, through the filters and injection pump as well as the injectors. Correct injection pump timing is important in the overall fuel system performance.

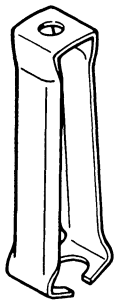
2. COMPRESSION. Compression on an engine is related to the "breathing function". Proper compression is affected by the air cleaner condition, muffler restriction, valve condition and operation including proper valve adjustment, cylinder head gaskets condition of sleeves, rings, pistons, camshaft, and camshaft timing.

3. IGNITION. Ignition is the result of adequate compression to develop enough heat in the air charge on the compression stroke to fire the fuel being injected into the engine cylinders. Proper spray pattern and atomization of the fuel by the injector is very important. Timing the fuel injection pump to the engine to a precise degree BTDC is a vital requirement for proper ignition.

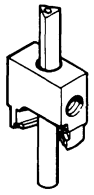
The engine diagnosis contained in the following pages covers many trouble symptoms, the causes, and what will be necessary to repair or eliminate the problem. Under each symptom are listed the most common and reoccuring problems progressively to the not so common problems. Locate your problem symptom in the diagnosis chart and refer to the pages listed for the probable causes and remedies.

INSTALLATION INSTRUCTIONS FOR M20614 TEFLON VALVE SEAL KIT

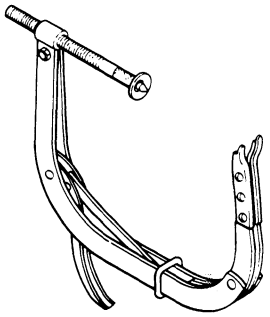
Special Tools Required



M20624 SEAL INSTALLATION TOOL



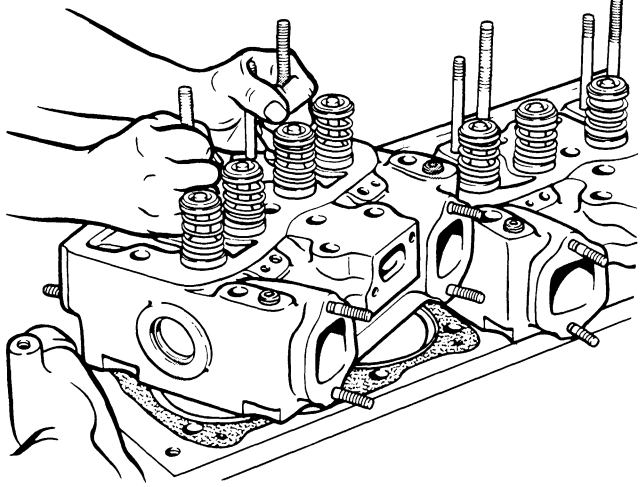
M20617 VALVE GUIDE CUTTING TOOL



VALVE SPRING COMPRESSOR

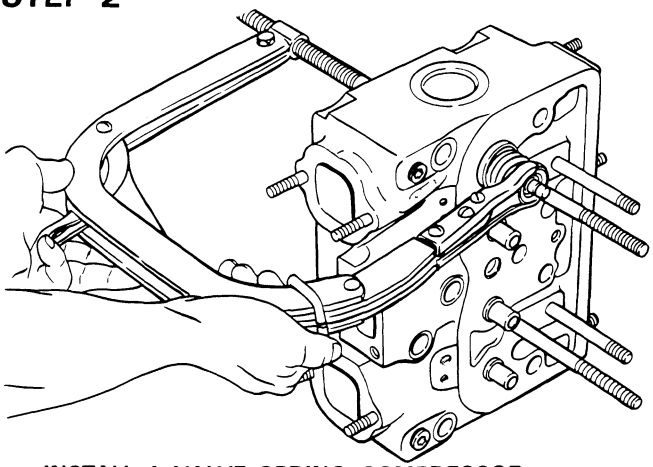
NOTE: FOUR CYLINDER ENGINES REQUIRE TWO M20614 KITS AND SIX CYLINDER ENGINES REQUIRE THREE M20614 KITS.

STEP 1



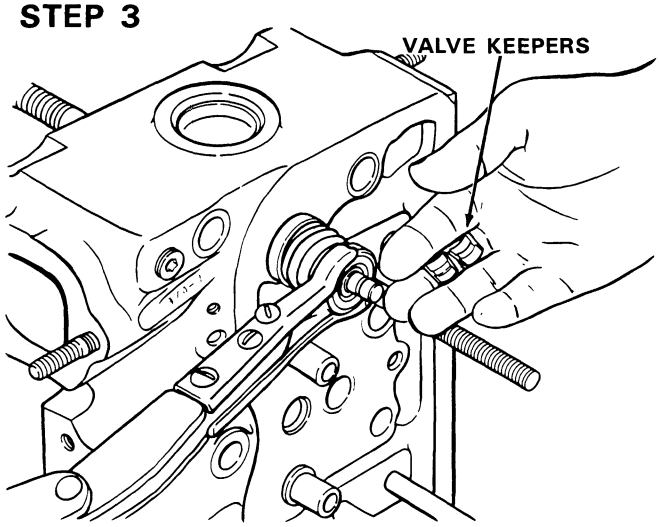
REMOVE THE CYLINDER HEADS FROM THE ENGINE, REFER TO SECTION 2015 FOR HEAD REMOVAL.

STEP 2



INSTALL A VALVE SPRING COMPRESSOR.

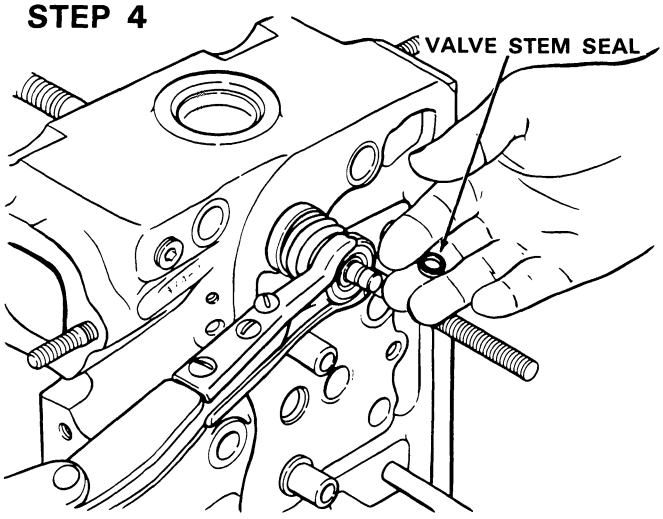
STEP 3



COMPRESS VALVE SPRING AND REMOVE VALVE KEEPERS.

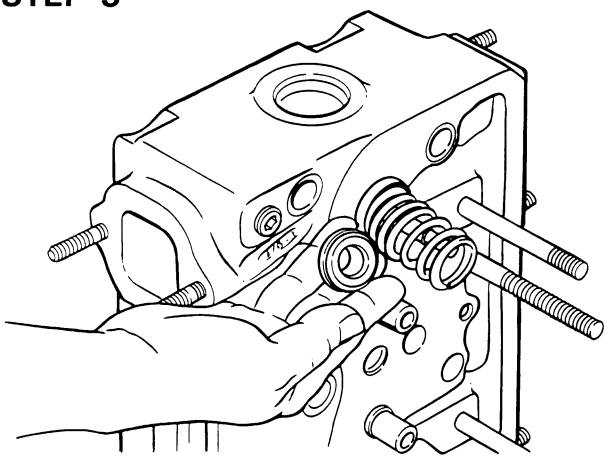
IMPORTANT: VALVES, VALVE RETAINERS OR ROTATORS AND VALVE KEEPERS SHOULD BE MARKED WHEN REMOVED, TO INSURE THAT THEY WILL BE REINSTALLED IN THEIR ORIGINAL LOCATION.

STEP 4



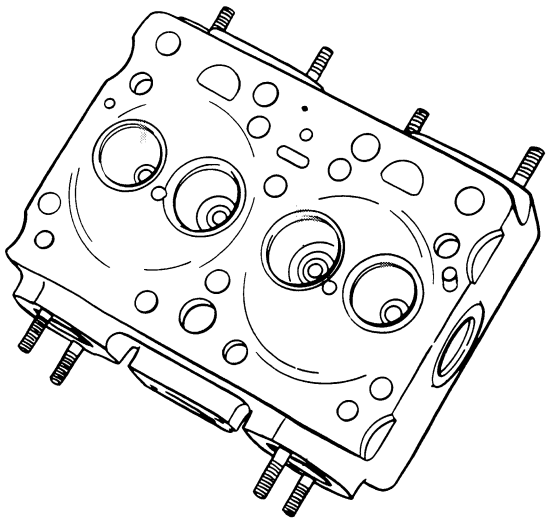
REMOVE VALVE STEM SEAL.

STEP 5



REMOVE VALVE ROTATORS OR SPRING RETAINERS, SPRINGS, SPRING SEATS AND VALVES.

STEP 6

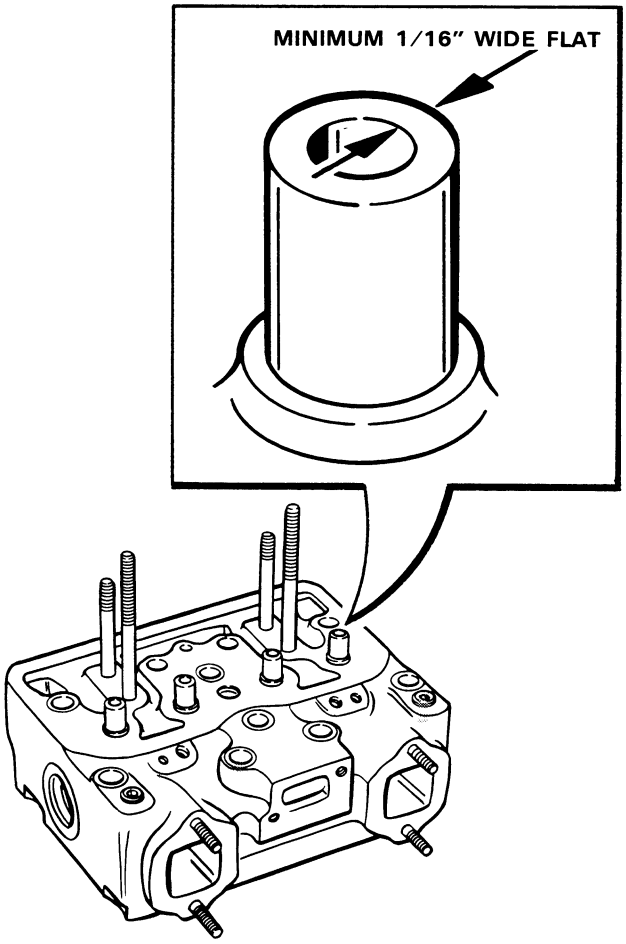


CLEAN CYLINDER HEAD COMPLETELY, REMOVING ALL TRACES OF CARBON AND OTHER DEPOSITS.

STEP 7

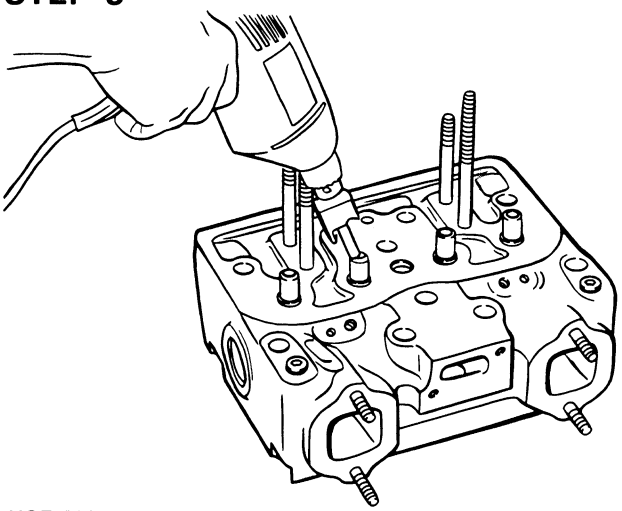
CLEAN VALVES WITH A FINE POWER DRIVEN WIRE BRUSH, REMOVING ALL CARBON AND VARNISH DEPOSITS. BE CAREFUL NOT TO SCRATCH VALVE STEMS.

STEP 8



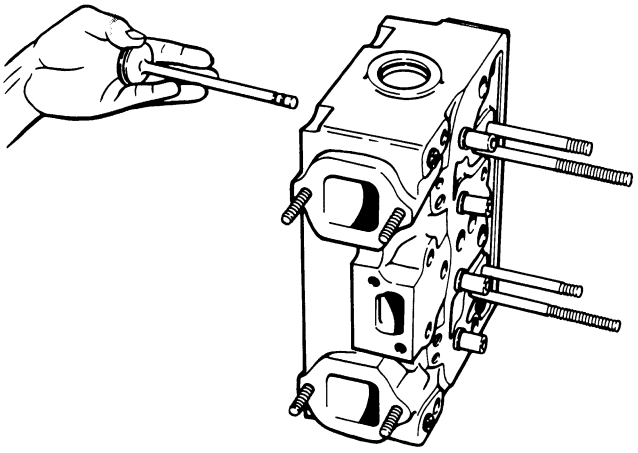
CHECK VALVE GUIDE TOP SURFACE, THERE MUST BE A MINIMUM OF A 1/16" WIDE FLAT AROUND ENTIRE TOP SURFACE.

STEP 9



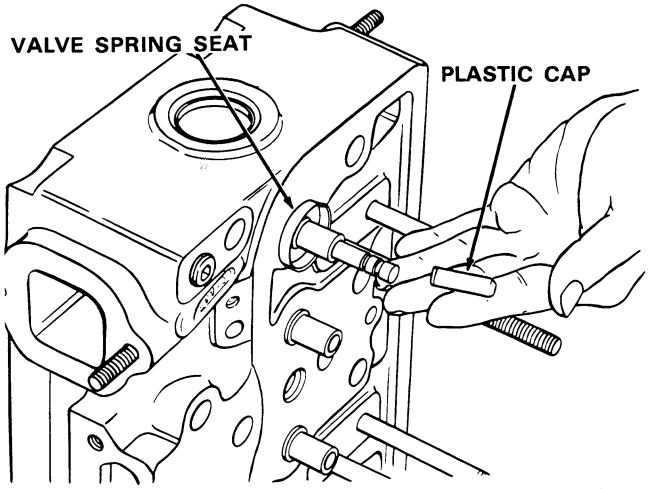
USE M20617 TOOL IN A ELECTRIC DRILL (IF REQUIRED) TO PROVIDE NECESSARY FLAT AREA ON VALVE GUIDE. IMPORTANT: DO NOT EXCEED 450 RPM WHEN DRILLING

STEP 10



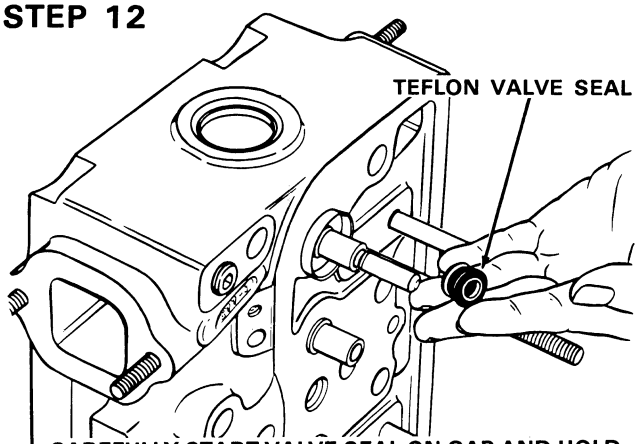
LUBRICATE VALVES WITH CLEAN ENGINE OIL BEFORE REINSTALLING INTO CYLINDER HEAD.

STEP 11



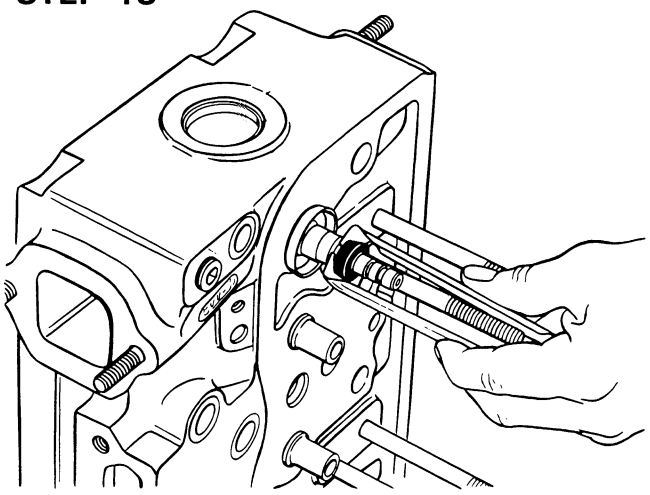
PLACE PLASTIC INSTALLATION CAP, PROVIDED IN KIT, ON THE END OF THE VALVE STEM. NOTE: CAP PREVENTS SHARP EDGES ON VALVE STEM GROOVES FROM CUTTING VALVE SEAL.

STEP 12



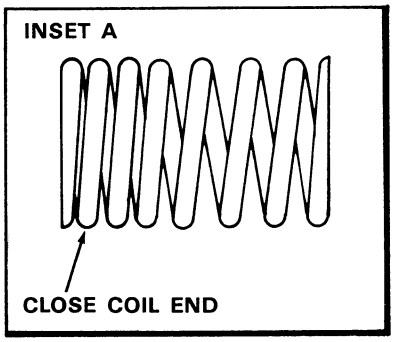
CAREFULLY START VALVE SEAL ON CAP AND HOLD THUMBS AGAINST WHITE SEAL INSERT TO AVOID DISLODGING IT, PUSH SEAL DOWN UNTIL SEAL JACKET TOUCHES TOP OF VALVE GUIDE. REMOVE INSTALLATION CAP AND SAVE, SINCE IT MUST BE REUSED.

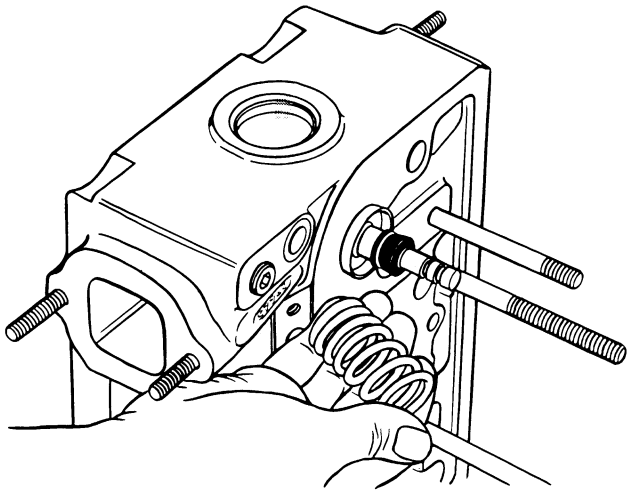
STEP 13



USE M20624 TOOL AND PRESS SEAL DOWN OVER VALVE GUIDE UNTIL SEAL IS FLUSH WITH TOP OF GUIDE.

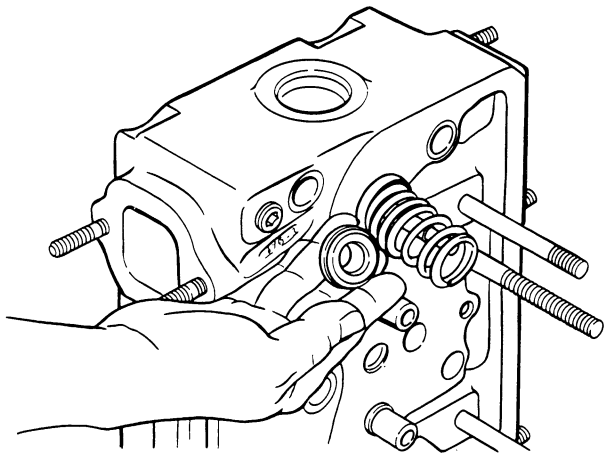
STEP 14





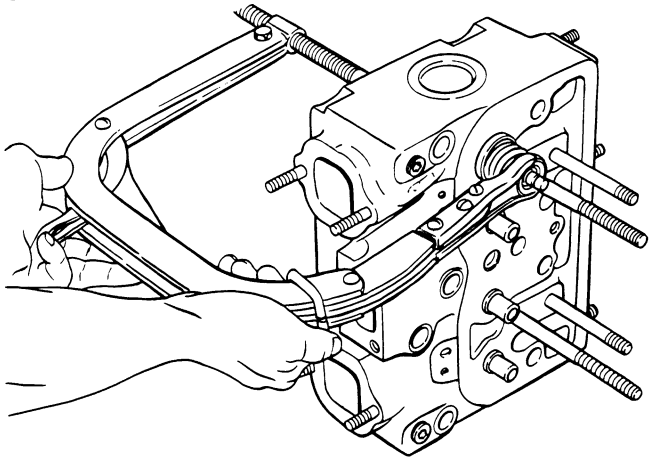
INSTALL THE VALVE SPRING. IMPORTANT: THE CLOSE COIL END OF THE SPRING MUST BE INSTALLED TOWARDS THE CYLINDER HEAD, SEE INSET A.

STEP 15



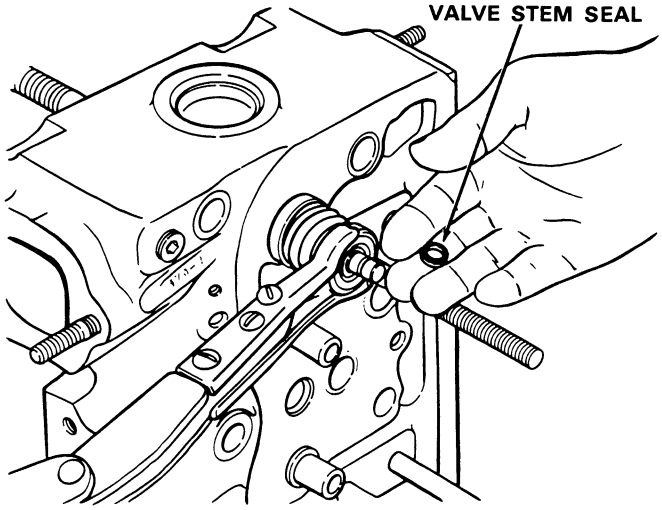
INSTALL VALVE ROTATORS OR SPRING RETAINERS. IMPORTANT: ASSEMBLE VALVE ROTATORS WITH THEIR ORIGINAL VALVES SINCE THEY TEND TO WEAR IN AS A MATCHED SET.

STEP 16



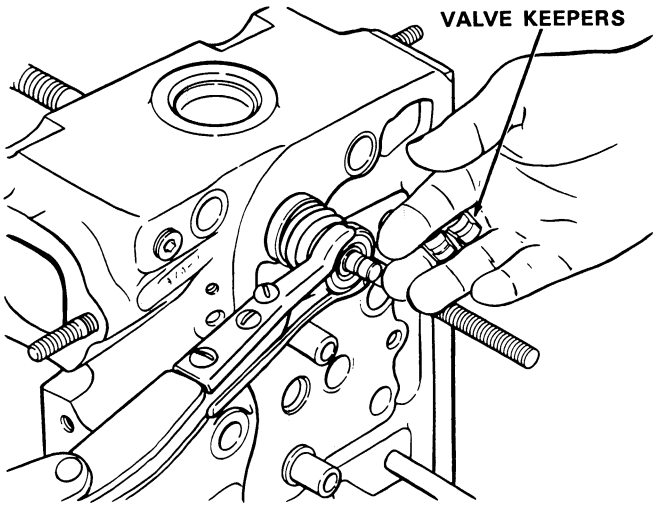
INSTALL VALVE SPRING COMPRESSOR.

STEP 17



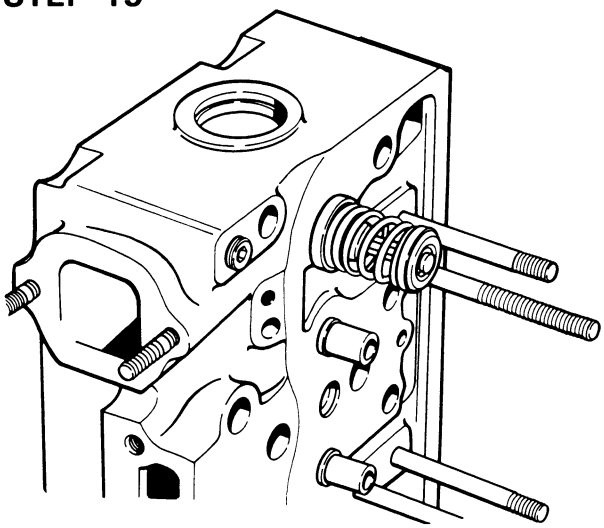
INSTALL STEM SEAL IN LOWER VALVE STEM GROOVE.

STEP 18



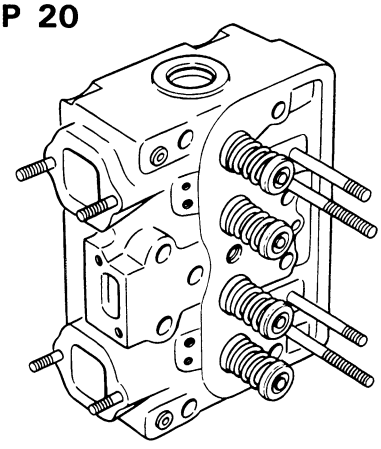
INSTALL VALVE KEEPERS IN OUTER VALVE STEM GROOVE.

STEP 19



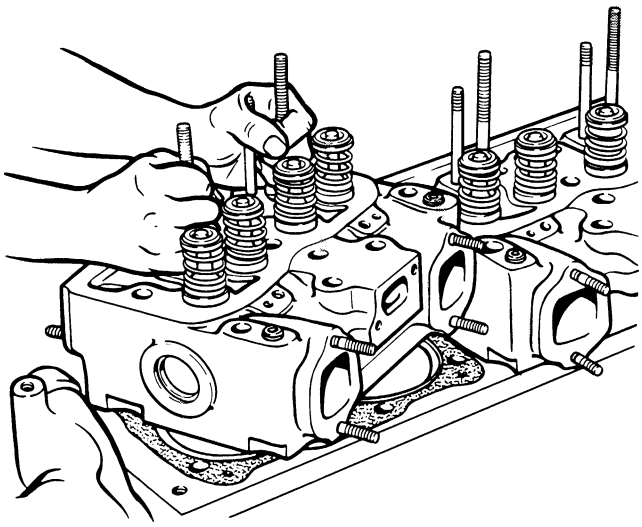
REMOVE SPRING COMPRESSOR AND TAP VALVE STEM END TO SEAT KEEPERS.

STEP 20



INSTALL TEFLON SEALS ON THE OTHER INTAKE AND EXHAUST VALVES, FOLLOWING THE PRECEDING PROCEDURE.

STEP 21



REINSTALL CYLINDER HEAD ON ENGINE FOLLOWING PROCEDURE OUTLINED IN SECTION 2015.

Section 2002

ENGINE TUNE-UP

Rac. 9-76379

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CASE CORPORATION

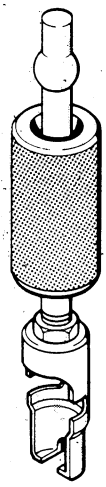
ENGINE TUNEUP

A COMPLETE ENGINE TUNEUP INCLUDES THE PERFORMING OF THE FOLLOWING ITEMS:

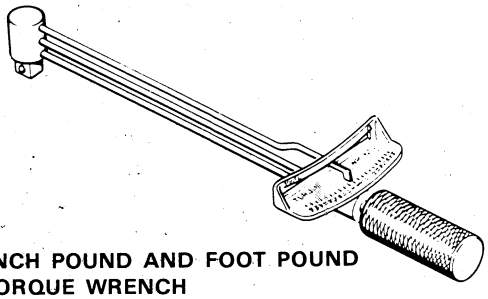
THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY.

SPECIAL TOOLS

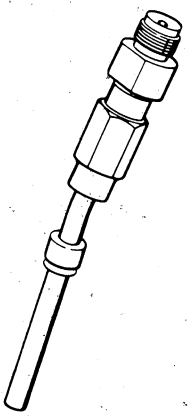
A43277 INJECTOR
BORE CLEANER
(CLAMP TYPE INJECTOR)



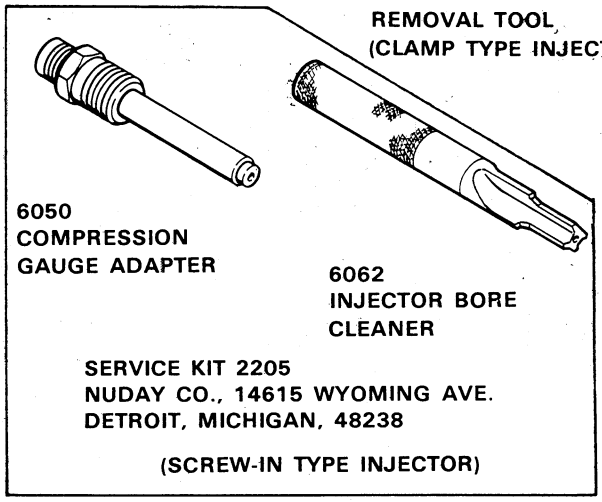
A43278 INJECTOR
REMOVAL TOOL
(CLAMP TYPE INJECTOR)



INCH POUND AND FOOT POUND
TORQUE WRENCH



COMPRESSION GAUGE
ADAPTER
BACHARACH 70-314
(D-558)
(CLAMP TYPE INJECTOR)

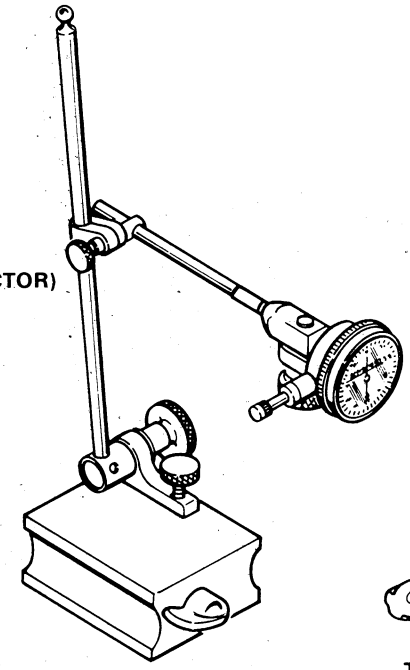


6050
COMPRESSION
GAUGE ADAPTER

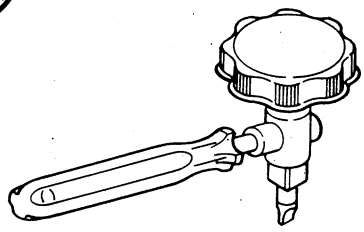
6062
INJECTOR BORE
CLEANER

SERVICE KIT 2205
NUDAY CO., 14615 WYOMING AVE.
DETROIT, MICHIGAN, 48238

(SCREW-IN TYPE INJECTOR)



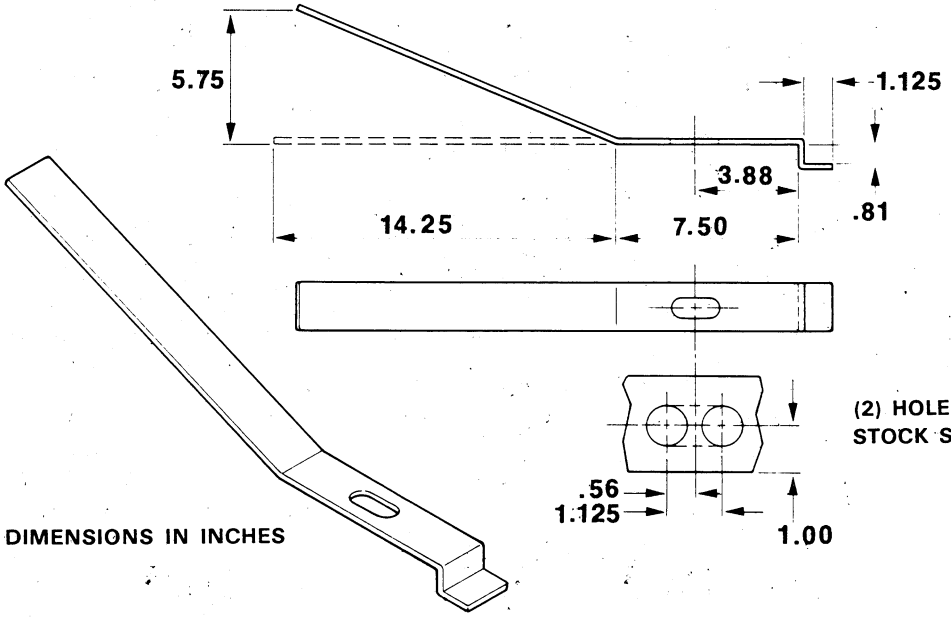
DIAL INDICATOR



TAPPET ADJUSTMENT TOOL

SPECIFICATIONS FOR TOOLS WHICH MUST BE MADE

Valve Spring Compressor Tool



NOTE: ALL DIMENSIONS IN INCHES

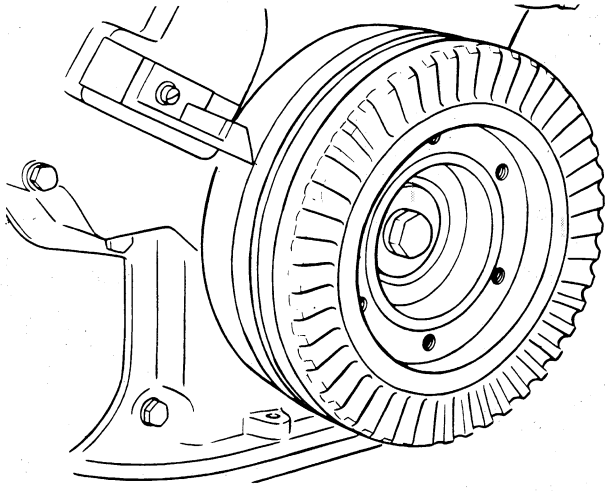
ENGINE TUNEUP PROCEDURE

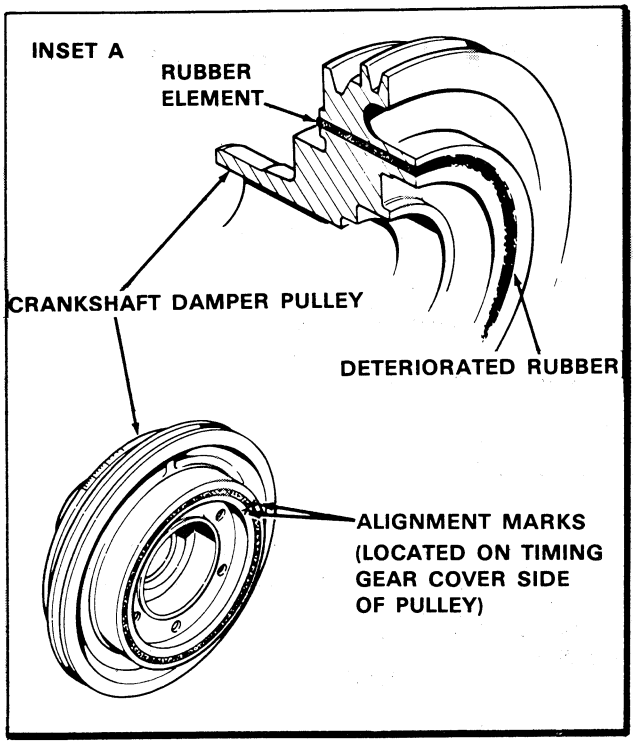
Checking Crankshaft Damper Pulley

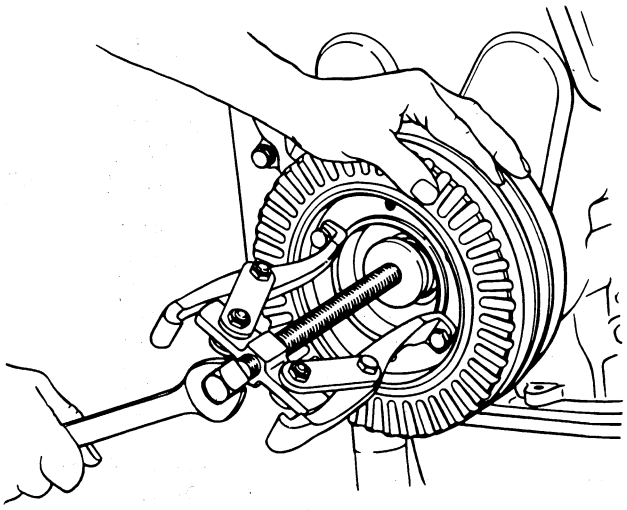
STEP 1

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.

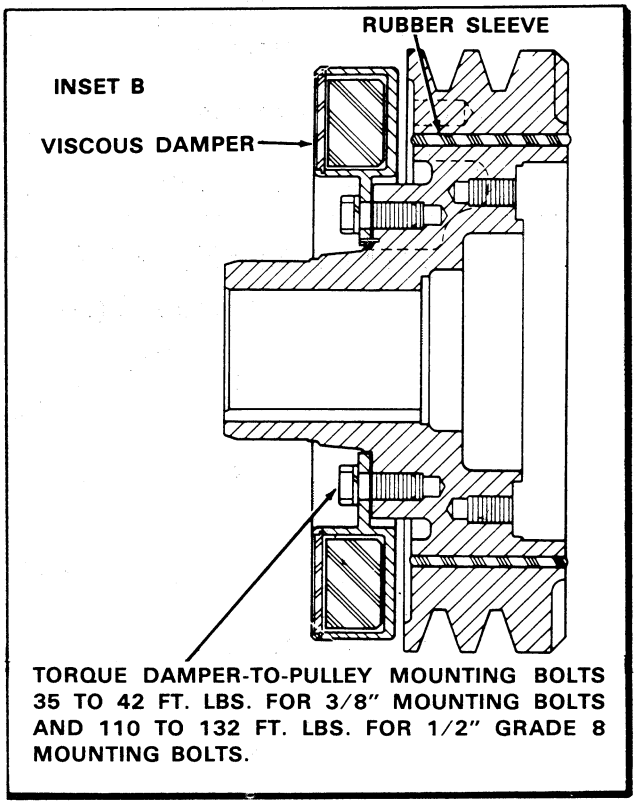
EVERY 500 HOURS AND AT ENGINE TUNEUP, VISUALLY INSPECT RUBBER ELEMENT FOR PEEL AREAS OR RUBBER MISSING. CHECK ALIGNMENT OF THE "V" MARKS BETWEEN THE INNER AND OUTER MEMBERS. IF "V" MARKS SHIFT, ENGINE TIMING WILL BE OFF AND DAMPER PULLEY MUST BE REPLACED.





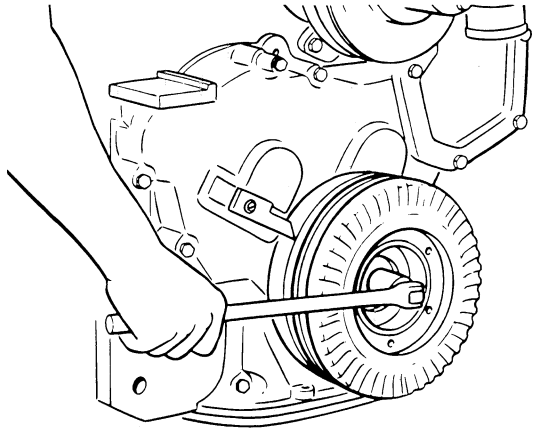


USE BOLT ON TYPE PULLER TO REMOVE PULLEY. REMOVE VISCOUS DAMPER FROM PULLEY (IF SO EQUIPPED). DO NOT PULL OR HAMMER ON OUTSIDE OF PULLEY OR VISCOUS DAMPER; SERIOUS DAMAGE TO PULLEY, DAMPER, AND RUBBER SLEEVE COULD RESULT.



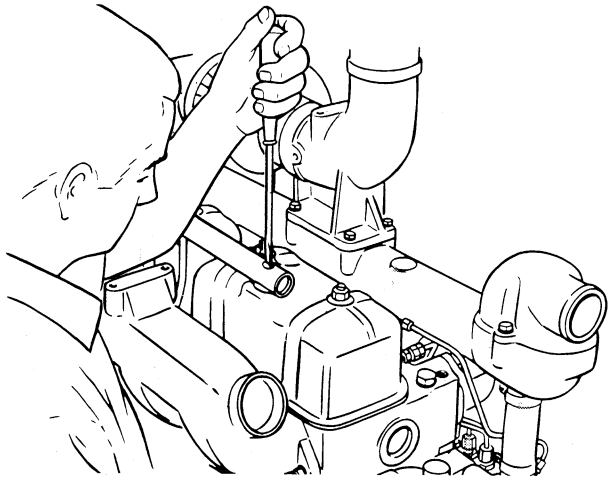
Checking Top Dead Center

STEP 2



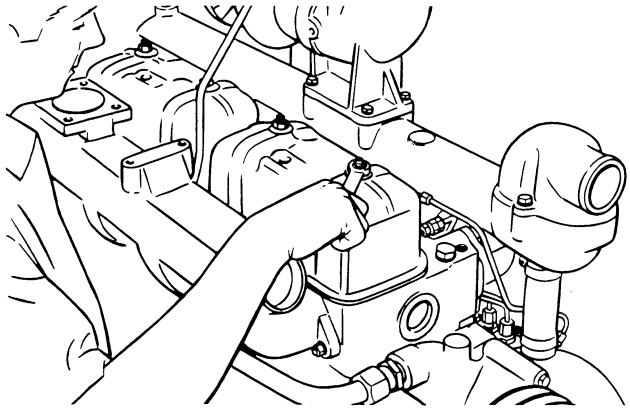
CRANK ENGINE UNTIL 10° BTDC MARK ON CRANKSHAFT PULLEY IS ALIGNED WITH TIMING POINTER.

STEP 3



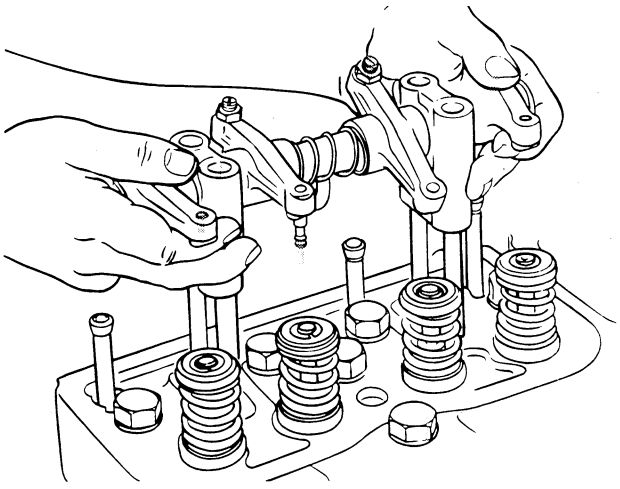
REMOVE BREATHER TUBE.

STEP 4



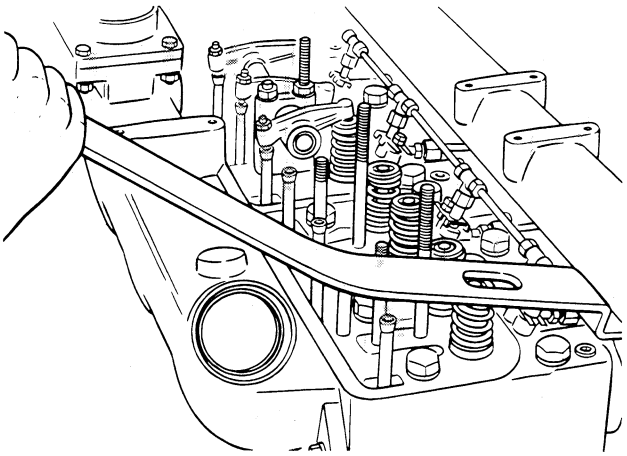
REMOVE VALVE COVER AND GASKET FROM NO. 1 AND NO. 2 CYLINDERS.

STEP 5



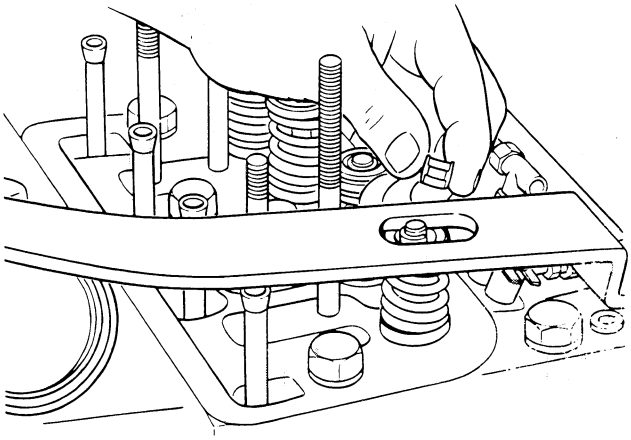
REMOVE ROCKER ARM ASSEMBLY.

STEP 6



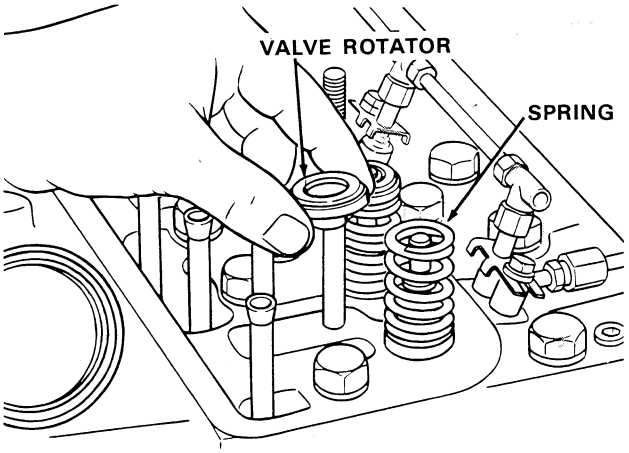
COMPRESS EXHAUST VALVE SPRING ON NO. 1 CYLINDER USING FABRICATED TOOL (SEE PAGE 3).

STEP 7



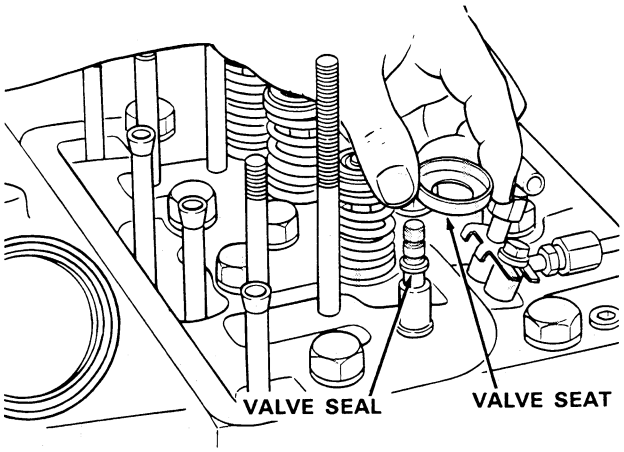
REMOVE VALVE KEEPERS

STEP 8



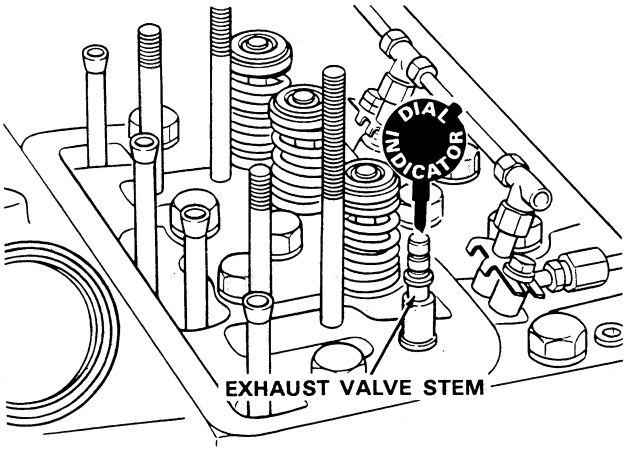
REMOVE VALVE ROTATOR, SPRING AND SEAT.

STEP 9

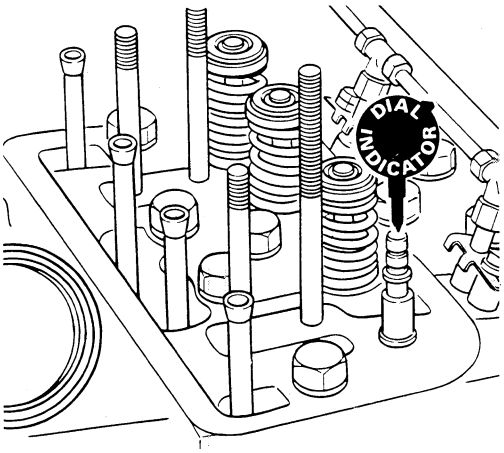


KEEP VALVE SEAL IN PLACE TO PREVENT VALVE FROM FALLING THROUGH VALVE GUIDE IF PISTON IS MOVED TOO FAR

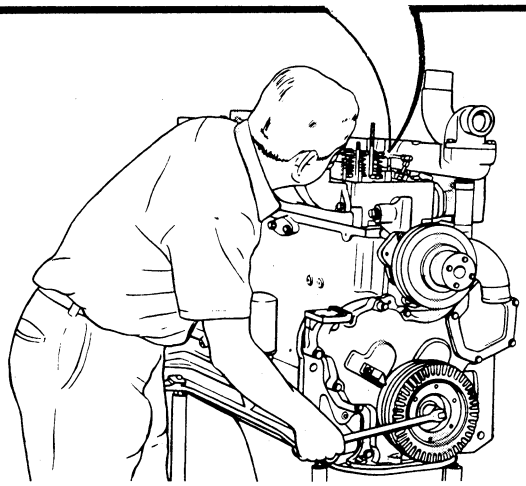
STEP 10



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



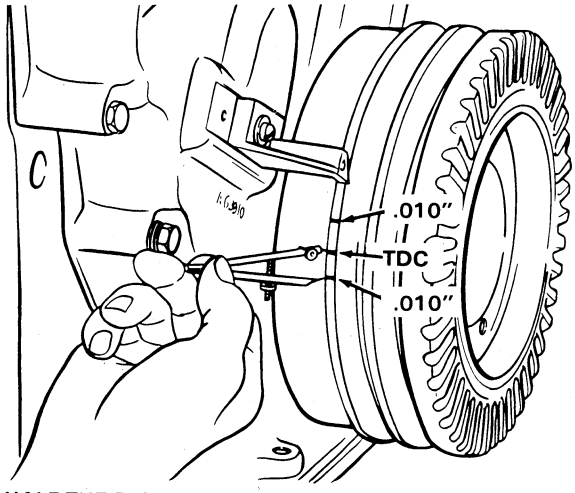
CRANK ENGINE CLOCKWISE UNTIL DIAL INDICATOR HAND STOPS MOVING. RESET INDICATOR TO ZERO.



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

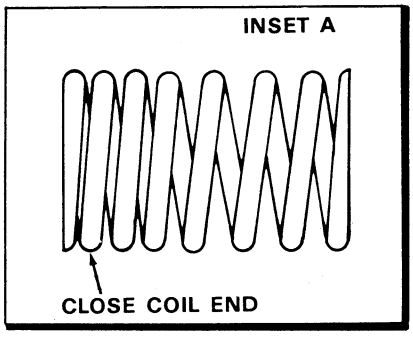
CRANK ENGINE COUNTERCLOCKWISE PAST ZERO MARK ON INDICATOR UNTIL .010" SHOWS ON DIAL. AGAIN, SCRIBE MARK ON CRANKSHAFT PULLEY.

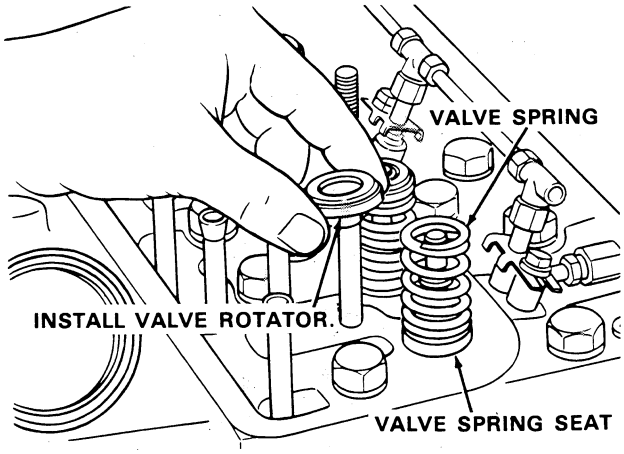
STEP 11



HALF THE DISTANCE BETWEEN THESE TWO SCRIBE MARKS ON CRANKSHAFT PULLEY WILL BE THE TOP DEAD CENTER (TDC) MARK. IF THE SCRIBE MARKS ARE NOT THE SAME AS ORIGINAL MARKS ON PULLEY CHECK DAMPER.

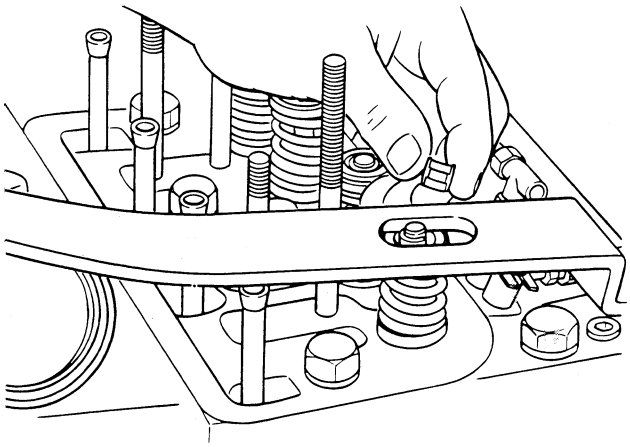
STEP 12





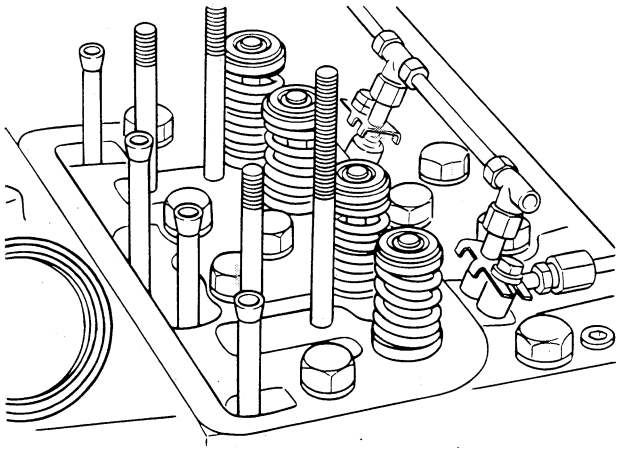
INSTALL SPRING SEAT AND VALVE SPRING. *NOTE:* IF EQUIPPED WITH VALVE SPRING HAVING ONLY ONE CLOSE COIL END, PLACE THIS END TOWARD CYLINDER HEAD, SEE INSET A.

STEP 13



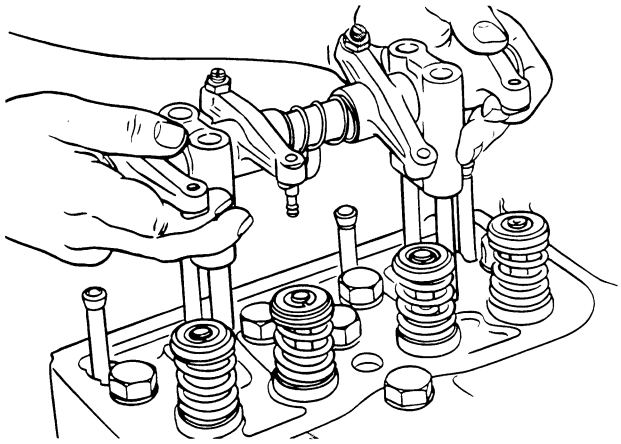
COMPRESS VALVE SPRING USING FABRICATED TOOL. INSTALL SEAL IN LOWER VALVE STEM GROOVE. INSTALL VALVE KEEPERS IN OUTER VALVE STEM GROOVE.

STEP 14



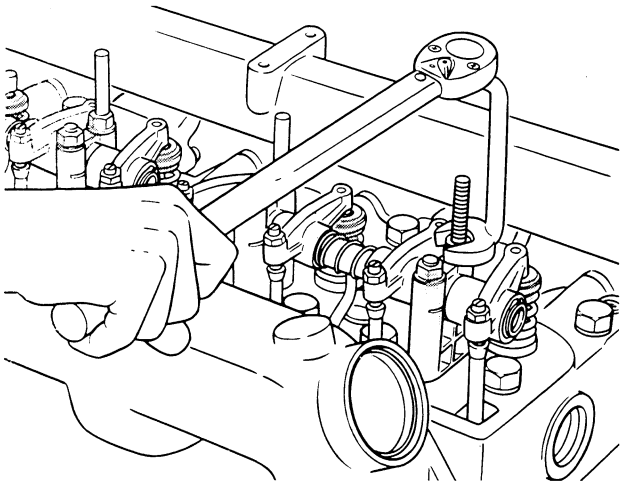
REMOVE SPRING COMPRESSING TOOL. TAP END OF VALVE STEM TO SEAT KEEPERS.

STEP 15



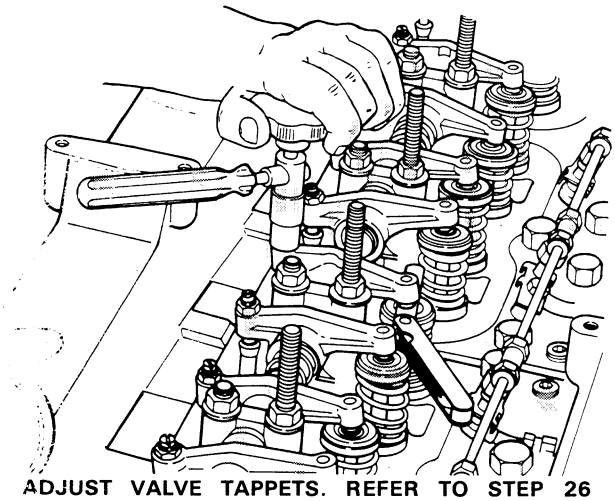
INSTALL ROCKER ARM ASSEMBLY ONTO CYLINDER HEAD.

STEP 16



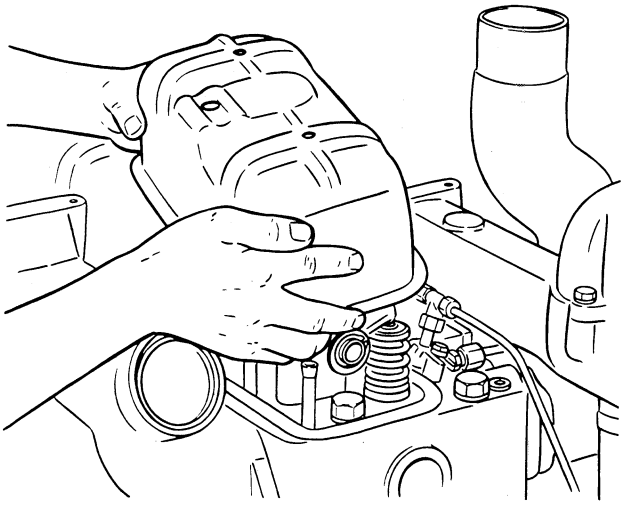
TORQUE ROCKER ARM ASSEMBLY RETAINING NUTS 40 TO 45 FT. LBS.

STEP 17



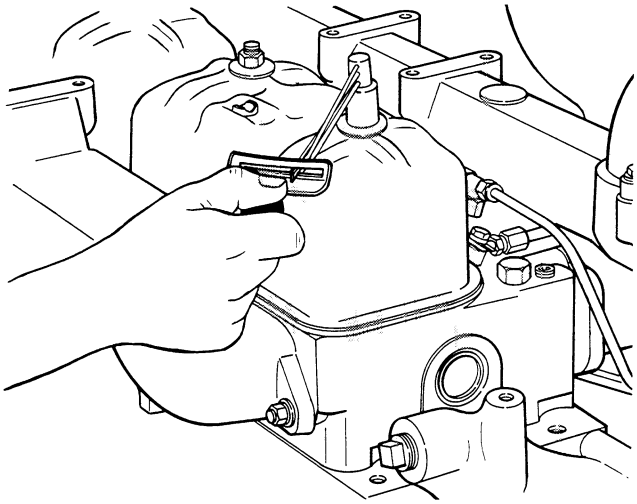
ADJUST VALVE TAPPETS. REFER TO STEP 26 FOR COLD SETTING OR TO STEP 33 FOR HOT SETTING.

STEP 18



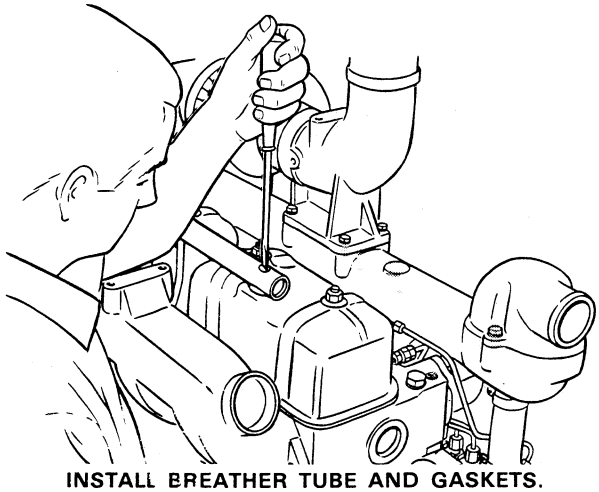
INSTALL VALVE COVERS AND GASKETS.

STEP 19



TORQUE VALVE COVER NUTS 60 TO 70 IN. LBS.

STEP 20

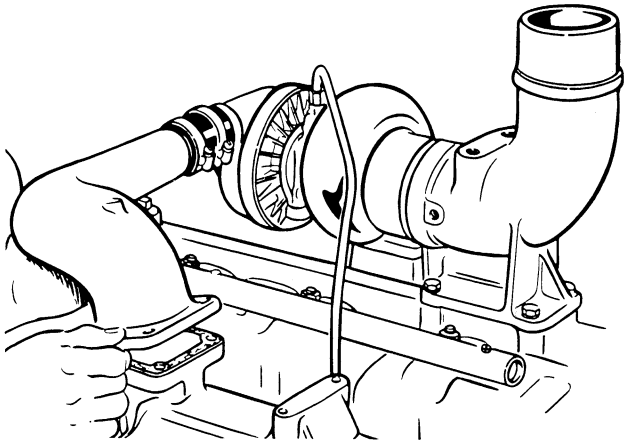


INSTALL BREATHER TUBE AND GASKETS.

Adjusting Tappets

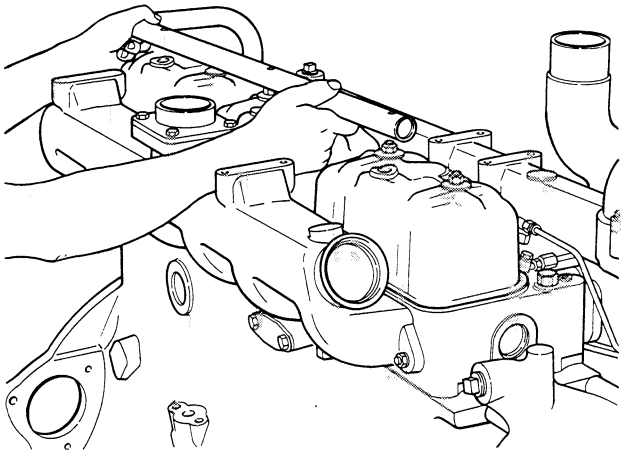
Cold Setting

STEP 21



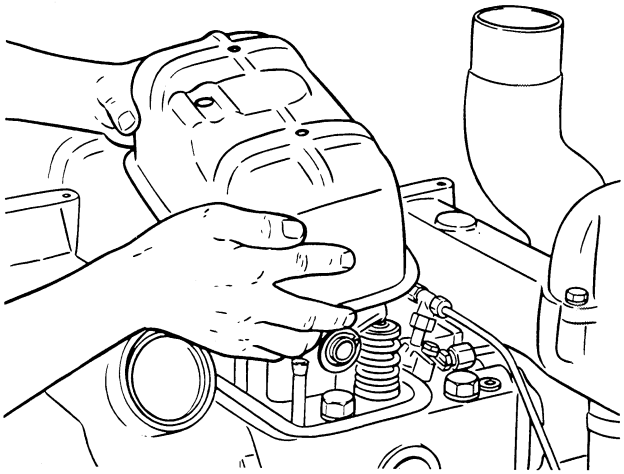
REMOVE TURBOCHARGER INTAKE ELBOW (IF SO EQUIPPED).

STEP 22



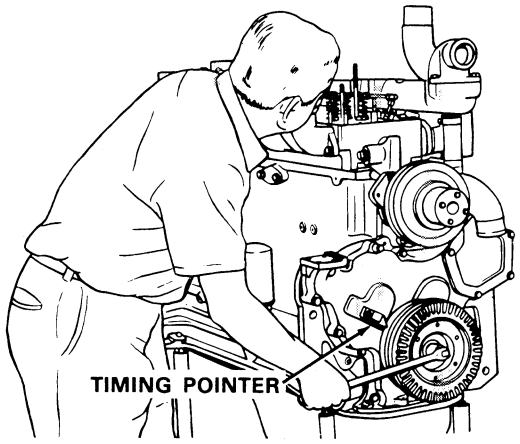
REMOVE BREATHER TUBE.

STEP 23



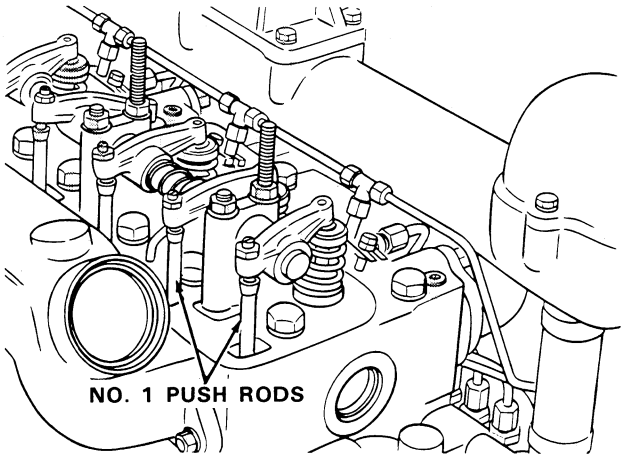
REMOVE VALVE COVERS AND GASKETS FROM ALL CYLINDERS.

STEP 24



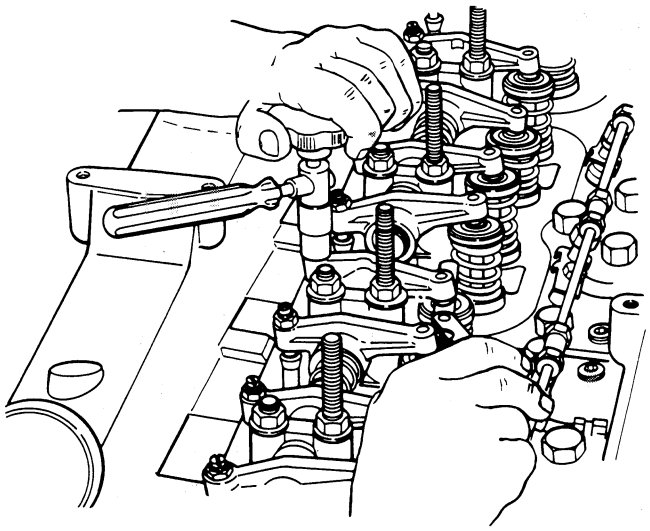
CRANK ENGINE UNTIL TIMING POINTER IS ALIGNED WITH TDC TIMING MARK ON CRANKSHAFT PULLEY.

STEP 25



CHECK PUSH RODS ON NO. 1 CYLINDER FOR LOOSENESS. IF PUSH RODS ARE LOOSE, NO. 1 CYLINDER IS AT TDC ON THE COMPRESSION STROKE. IF PUSH RODS ARE TIGHT, CRANK ENGINE ONE COMPLETE REVOLUTION AND ALIGN TIMING POINTER WITH TDC MARK ON PULLEY.

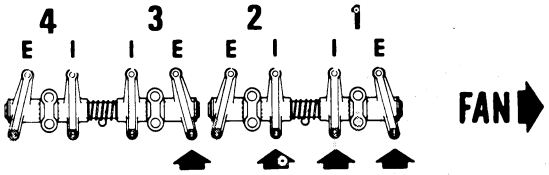
STEP 26



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

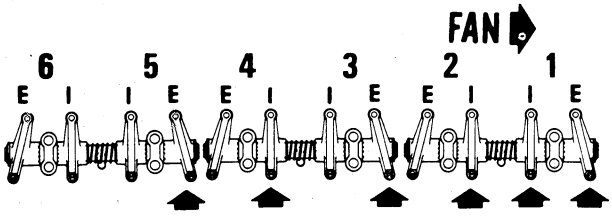
TAPPET CLEARANCE COLD - INTAKE VALVES .015"
EXHAUST VALVES - .025"

FOUR CYLINDER ENGINES



NO. 1 TDC COMPRESSION STROKE

SIX CYLINDER ENGINES



NO. 1 TDC COMPRESSION STROKE

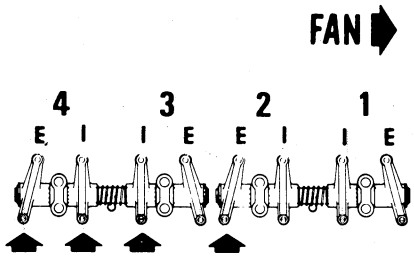
STEP 27

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.

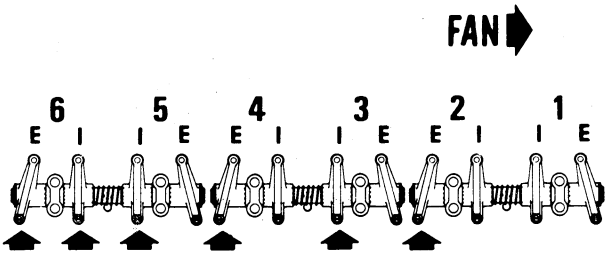
TAPPET CLEARANCE COLD - INTAKE VALVES .015"
EXHAUST VALVES .025"

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.

Suggest:

If the above button click is invalid.

Please download this document

first, and then click the above link

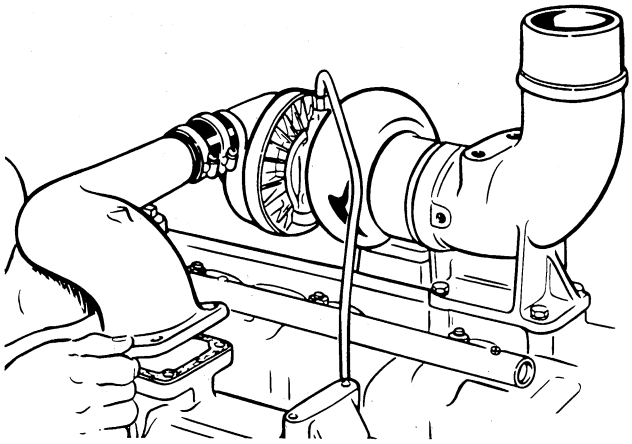
to download the complete manual.

Thank you so much for reading

Adjusting Tappets

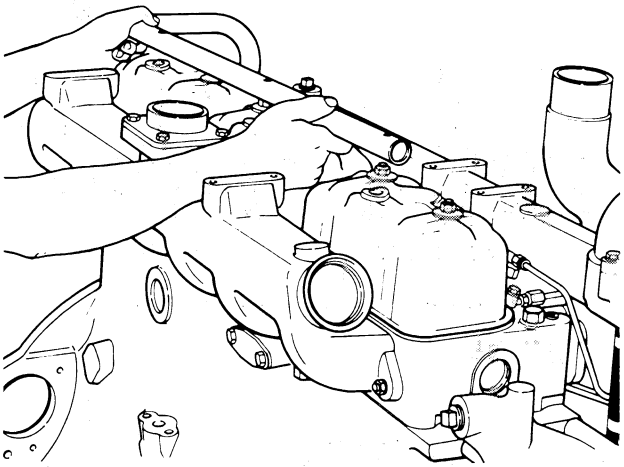
Hot Setting with Engine Stopped

STEP 28



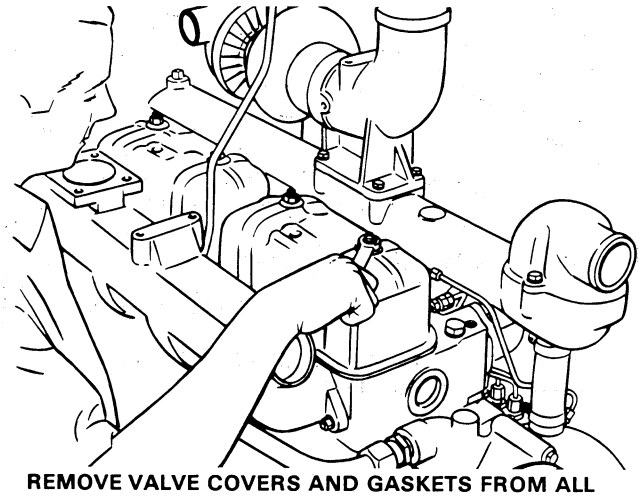
REMOVE TURBOCHARGER INTAKE ELBOW (IF SO EQUIPPED).

STEP 29



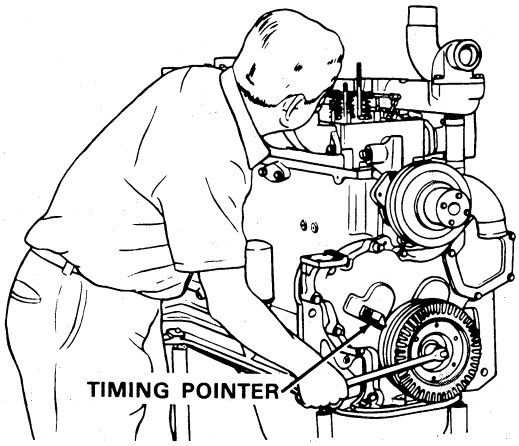
REMOVE BREATHER TUBE

STEP 30



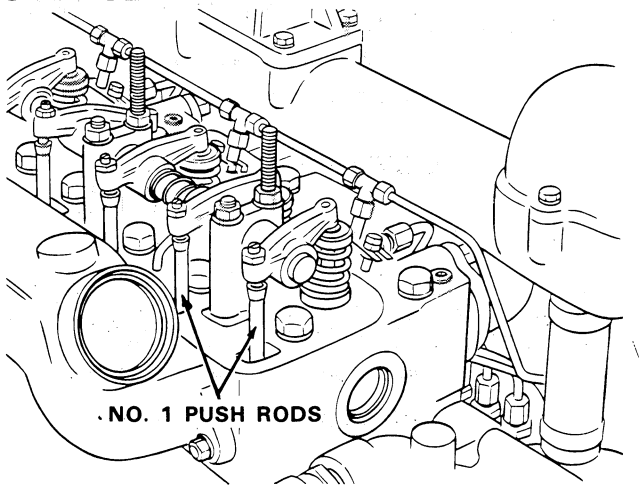
REMOVE VALVE COVERS AND GASKETS FROM ALL CYLINDERS.

STEP 31



CRANK ENGINE UNTIL TIMING POINTER IS ALIGNED WITH TDC TIMING MARK ON CRANKSHAFT PULLEY.

STEP 32



CHECK PUSH RODS ON NO. 1 CYLINDER FOR LOOSENESS. IF PUSH RODS ARE LOOSE, NO.1 CYLINDER IS AT TDC ON THE COMPRESSION STROKE. IF PUSH RODS ARE TIGHT, CRANK ENGINE ONE COMPLETE REVOLUTION AND ALIGN TIMING POINTER WITH TDC MARK ON PULLEY.