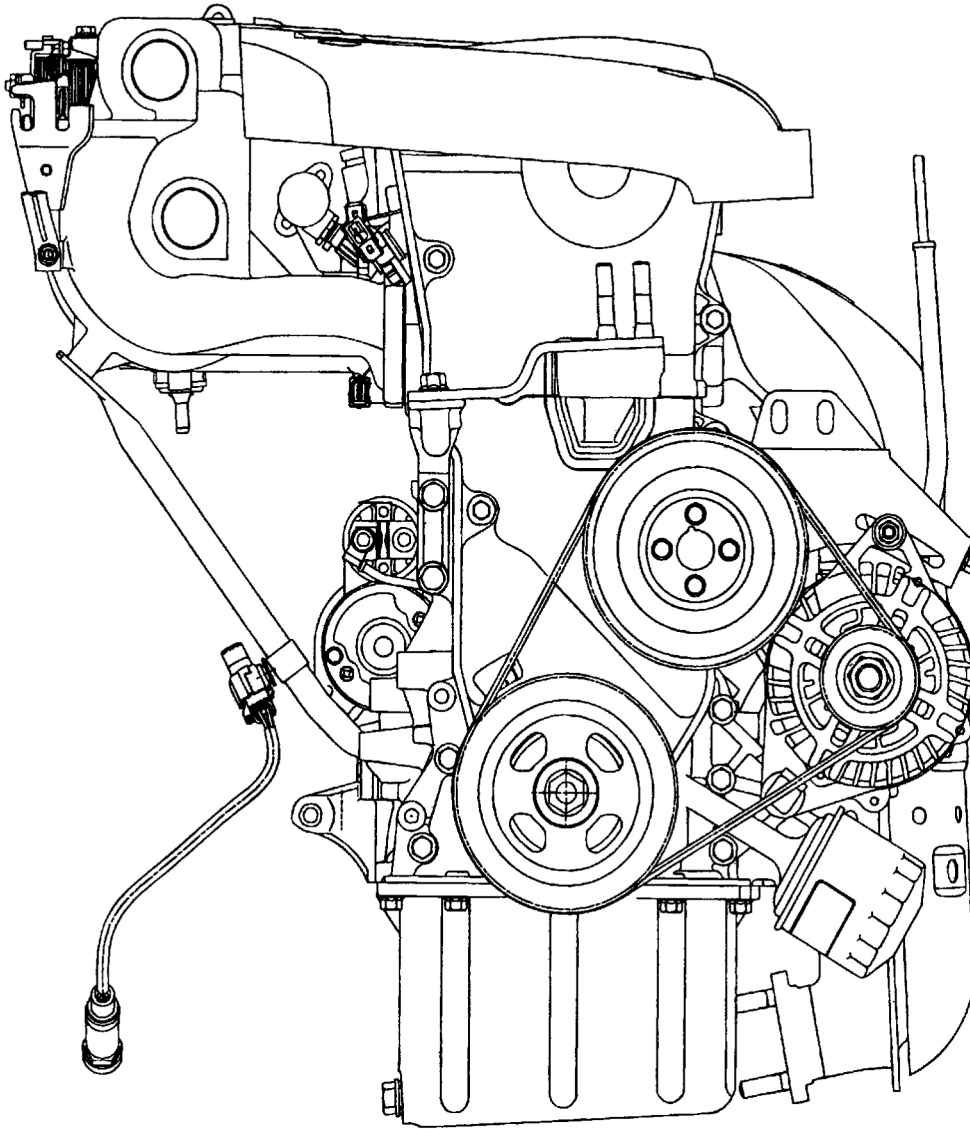


## 2002 Hyundai Elantra GLS

2002 ENGINE 2.0L 4 Cylinder DOHC - Elantra

### FRONT VIEW



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**Fig. 1: Front View Of Engine**  
Courtesy of HYUNDAI MOTOR CO.

## 2002 Hyundai Elantra GLS

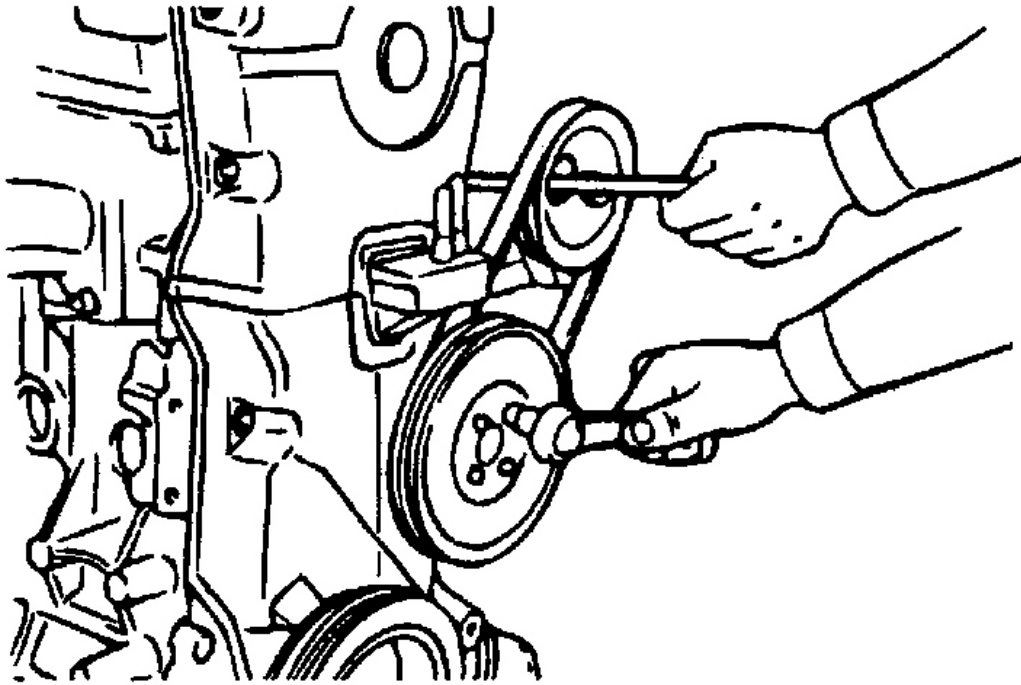
2002 ENGINE 2.0L 4 Cylinder DOHC - Elantra

100°C (194 to 215T)]	166 KPa (1.7 kg/cm <sup>2</sup> , 24.s psi)	
<b>Relief spring</b>		
Free height	43.8 mm (1.724 in.)	
Load	3.7kg at 40.1 mm (3.15 lb/1.578 in.)	
<b>Air cleaner</b>		
Type	Dry type	
Element	Unwoven cloth type	
<b>Exhaust pipe</b>		
Muffler	Expansion resonance type	
Suspension system	Rubber hangers	
<b>Valve</b>		
Valve length	114.34 mm (4.5016 in.)	
Intake	116.8 mm (4.5984 in.)	
Exhaust		
Stem O.D.	5.965-5.98 mm (0.2348- 0.2354 in.)	
Intake	5.950-5.965 mm (0.2343- 0.2348 in.)	
Exhaust		
<b>Face angle thickness of valve head (Margin)</b>		
Intake	1.15 mm (0.0452 in.)	0.8 mm (0.031 in.)
Exhaust	1.35 mm (0.0531 in.)	1.0 mm (0.039 in.)
<b>Valve stem to valve guide clearance</b>		
Intake	0.02-0.05 mm (0.0008- 0.0019 in.)	0.10 mm (0.0039 in.)
Exhaust	0.035-0.065 mm (0.0014- 0.0026 in.)	0.13 mm (0.0051 in.)
<b>Valve guide</b>		
Installed dimension O.D.	46 mm (1.811 in.)	
Intake	54.5 mm (2.146 in.)	
Exhaust	0.05, 0.25, 0.50 mm	
Service oversize	(0.002, 0.010, 0.020 in.) oversize	
<b>Valve seat</b>		
Width of seat contact		
Intake	1.1-1.5 mm (0.043-0.059 in.)	
Exhaust	1.3-1.7 mm (0.051-0.066 in.)	
Seat angle	45°	
Oversize	0.3, 0.6 mm (0.012, 0.024 in.) oversize	

**2002 Hyundai Elantra GLS**

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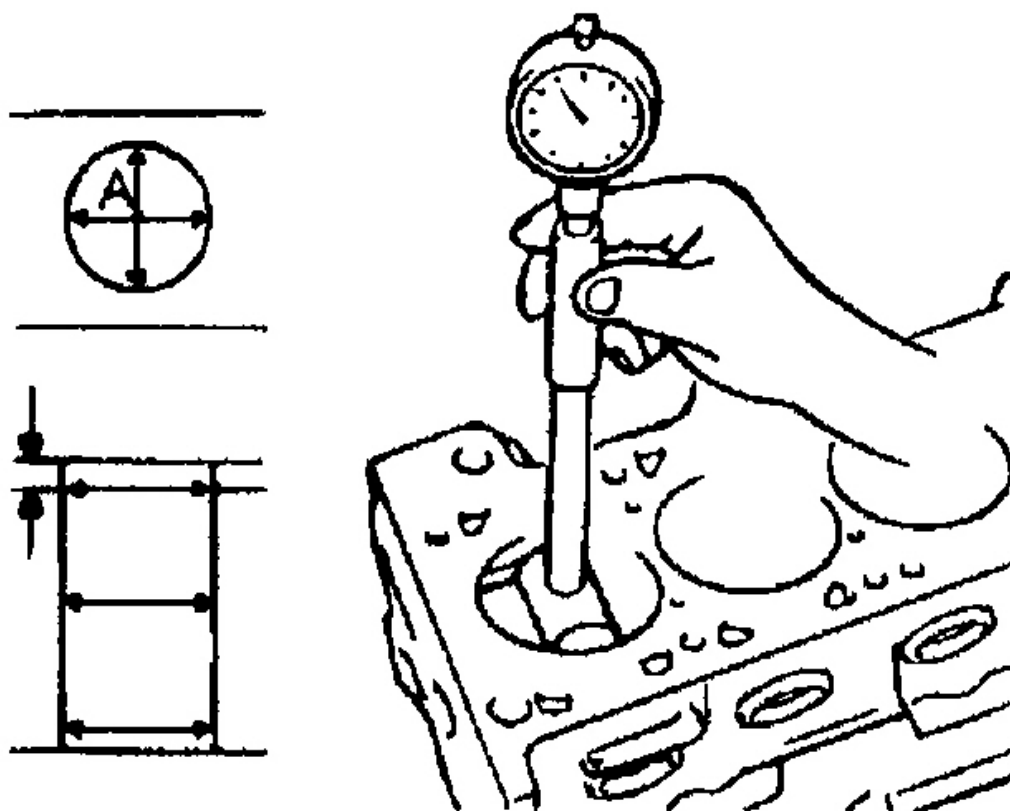
Center Member Bolt	
Rear Roll Stopper Insulator Nut	37-48 (50-65)
Right Mounting Bracket-To-Engine Nuts & Bolts	37-48 (50-65)
Right Mounting Insulator Nut (Large)	65-80 (90-110)
Right Mounting Insulator Nut (Small)	33-44 (45-60)
Transaxle Insulator Bracket-To-Side Member Bolts	30-37 (40-50)
Transaxle Mount Insulator Nut	65-80 (90-110)
Exhaust Components	
Exhaust Manifold Cover-To-Exhaust Manifold Bolts	11-15 (15-20)
Exhaust Manifold-To-Cylinder Head Nut	32-40 (43-55)
Exhaust Pipe-To-Manifold Nut	22-30 (30-40)
Front Exhaust Pipe Bracket Bolts	22-30 (30-40)
Front Exhaust Pipe-To-Catalytic Converter Bolts	30-43 (40-60)
Main Muffler Hanger Support Bracket Bolts	89-133 INCH Lbs. (10-15)
Flexplate-To-Crankshaft Bolt	89-95 (120-129)
Flywheel-To-Crankshaft Bolt	89-95 (120-129)
Front Case Bolts	14-20 (19-27)
Heat Protector Bolts	11-15 (15-20)
Intake Manifold Bracket Bolts	13-18 (18-24)
Intake Manifold Nuts	12-17 (16-23)
Intake Manifold-To-Cylinder Head Bolts	12-17 (16-23)
Oil Drain Plug	25-33 (35-45)
Oil Filter	9-12 (12-16)
Oil Pump Relief Valve	30-37 (40-50)
Oil Screen Bolt	11-16 (15-22)
Oxygen Sensors	37-43 (50-60)
Starter Bolt	20-25 (27-34)
Thermostat Housing	11-15 (15-20)
Throttle Body-To-Intake Manifold Bolt	11-15 (15-20)
Throttle Body-To-Surge Tank Bolts	11-15 (15-20)
Timing Belt Idler Bolt	31-40 (43-55)
Timing Belt Tensioner Bolt	31-40 (43-55)
Torque Converter-To-Drive Plate Bolt	33-38 (45-52)



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**Fig. 22: Removing Water Pump Pulley**  
Courtesy of HYUNDAI MOTOR CO.

5. Remove the timing belt upper cover.



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**Fig. 34: Measuring Cylinder Bore**  
Courtesy of HYUNDAI MOTOR CO.

4. If a cylinder ridge exists, cut away with a ridge reamer.
5. Oversize pistons are available in four sizes.

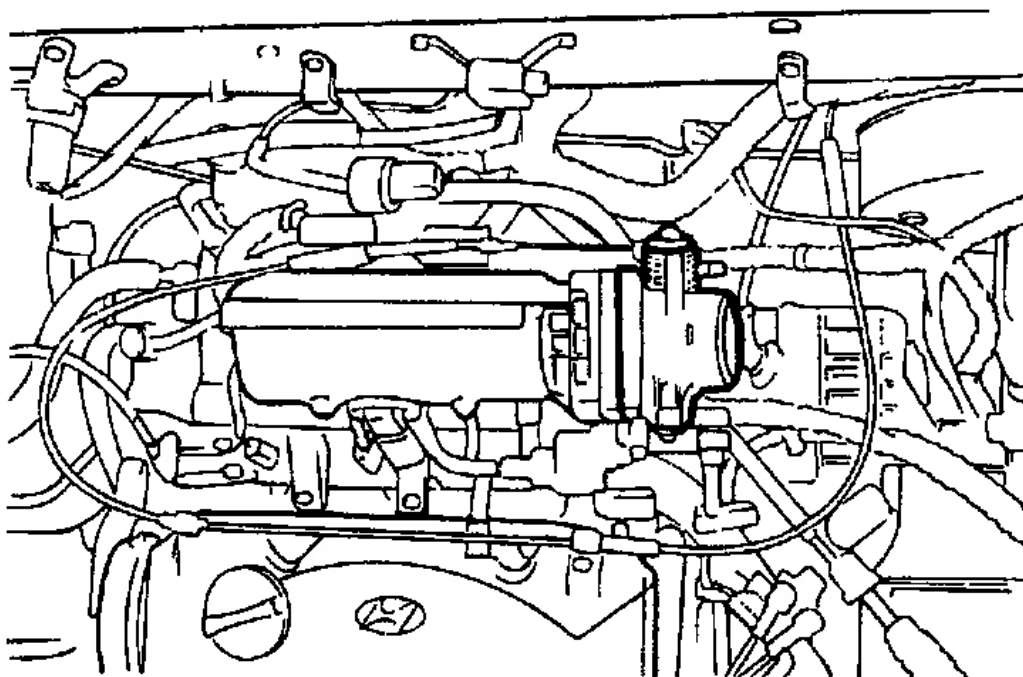
**Piston service size and mark mm (in.)**

0.25 (0.010) O.S.: 0.25

0.50 (0.020) O.S.: 0.50

0.75 (0.030) O.S.: 0.75

1.00 (0.039) O.S.: 1.00



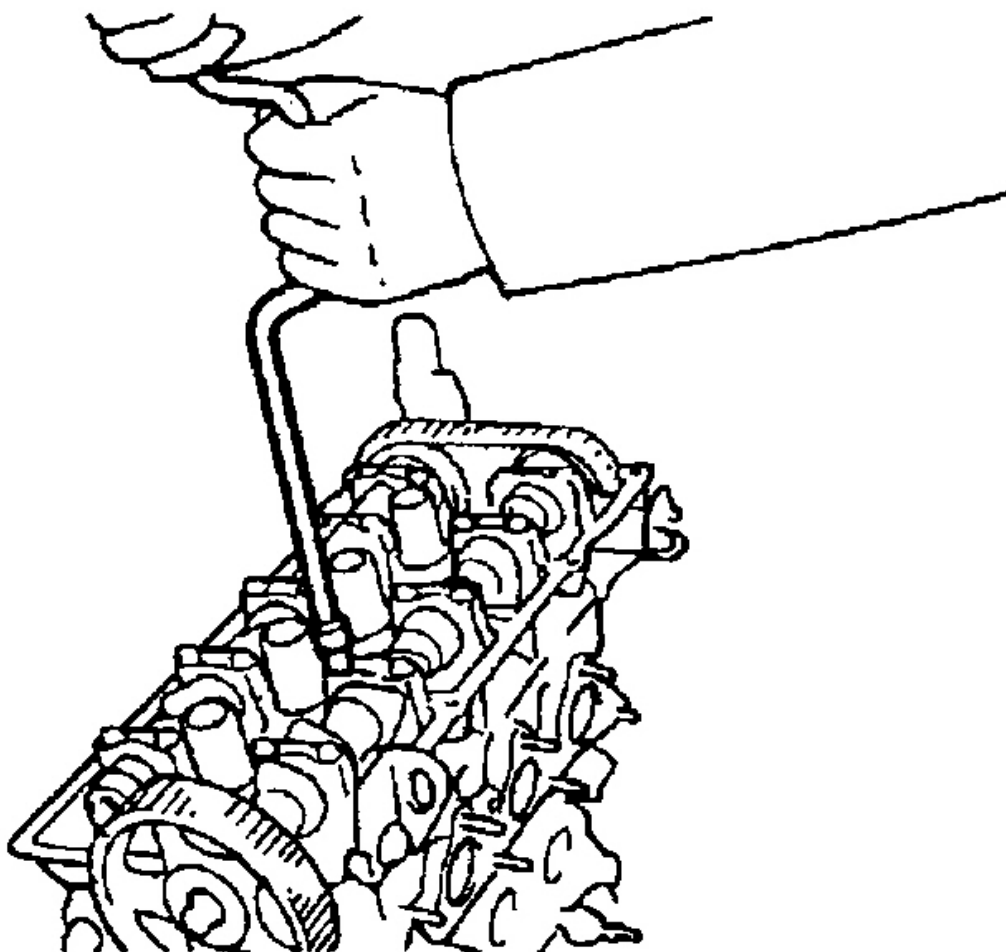
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**Fig. 49: Identifying Accelerator Cable**  
Courtesy of HYUNDAI MOTOR CO.

**NOTE:** When disconnecting hoses, make identification marks to ensure they are reconnected correctly.

**CAUTION:** Be careful not to spill oil or fluid from hoses. Plug the openings to prevent foreign material from entering.

7. Disconnect the radiator upper and lower hoses on the engine side, then remove the radiator assembly.
8. Disconnect the engine ground.
9. Disconnect the brake booster vacuum hose.
10. Remove the main fuel line, the return and vapor hoses from the engine side.
11. Disconnect the heater hoses (inlet and outlet) on the engine side.
12. Disconnect the accelerator cable at the engine side.
13. For vehicles with manual transmission, remove the control cable from the transmission.
14. For vehicles with automatic transmission, remove the control cable from the transmission.
15. Disconnect the speedometer cable from the transmission.



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**Fig. 60: Removing Camshaft Bearing Caps**  
Courtesy of HYUNDAI MOTOR CO.

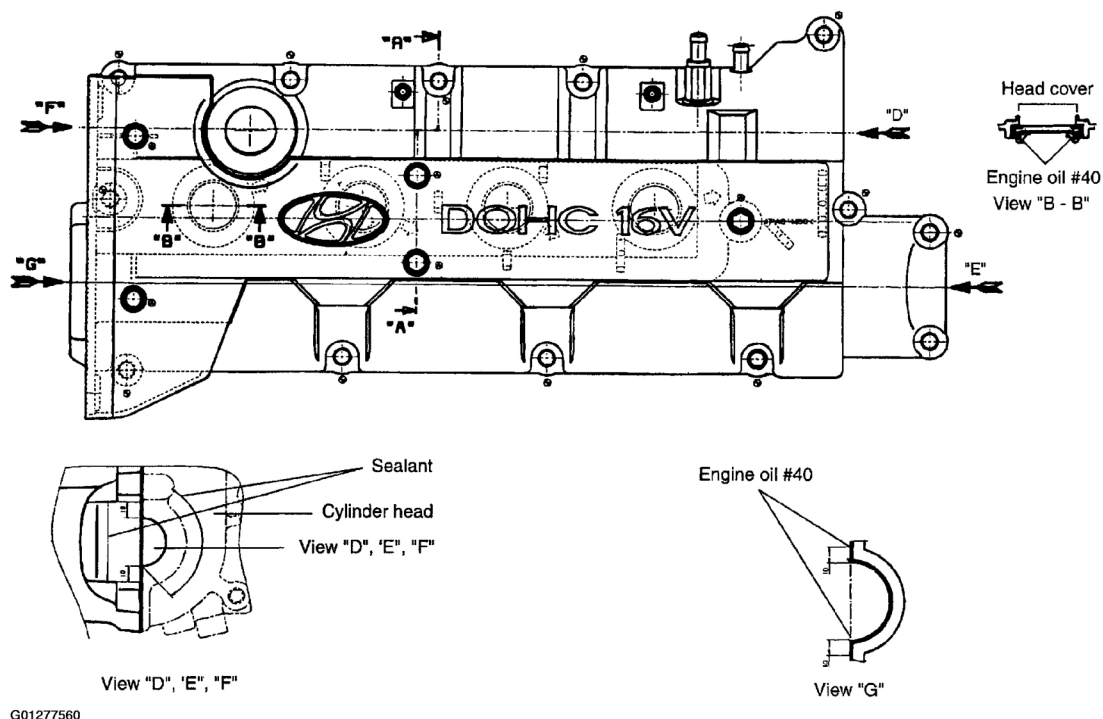
11. Remove the camshaft.
12. Remove the mechanical tappets and shims.

**NOTE:**        **Arrange the mechanical tappets and shims in correct order.**

INSPECTION

CAMSHAFT

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**Fig. 76: Installing Cylinder Head Cover**  
Courtesy of HYUNDAI MOTOR CO.

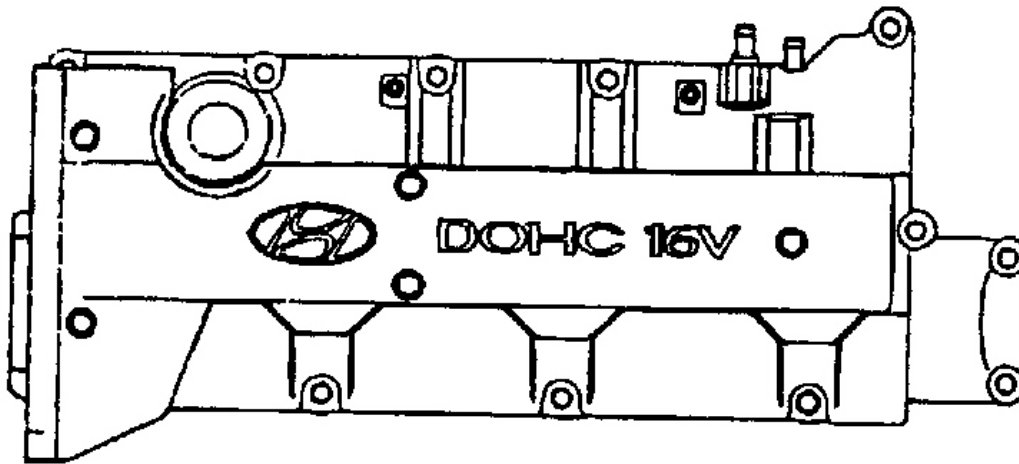
3. Install the cylinder head cover.

Cylinder head cover:

8-10 Nm (80-100 kg.cm, 6-7 lb.ft)

4. Connect the accelerator cable.
5. Connect the PCV hose and the breather hose to the cylinder head cover.
6. Connect the spark plug cables to the spark plugs.
7. Install the upper timing belt cover with the four bolts.



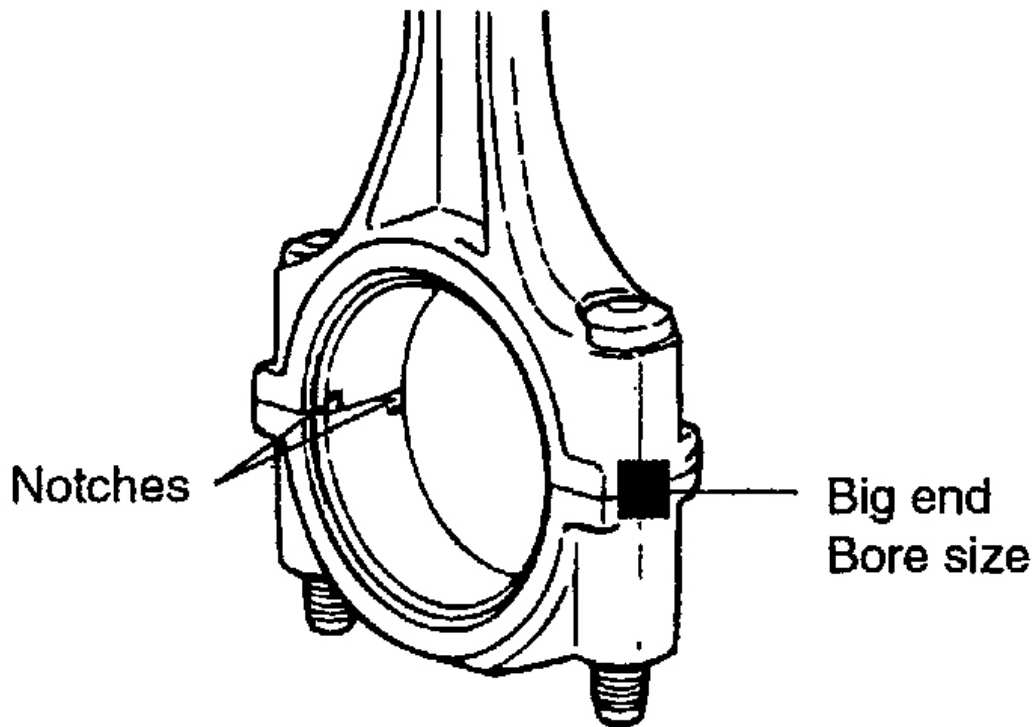


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**Fig. 85: View Of Cylinder Head Cover**  
**Courtesy of HYUNDAI MOTOR CO.**

10. Install the spark plug cables, ignition coil assembly and cylinder head center cover.
11. Install the timing belt and then tighten the timing belt tensioner pulley.

1. Remove the connecting rod cap bolts, then remove the caps and the big end lower bearing.
2. Push each piston connecting rod assembly toward the top of the cylinder.

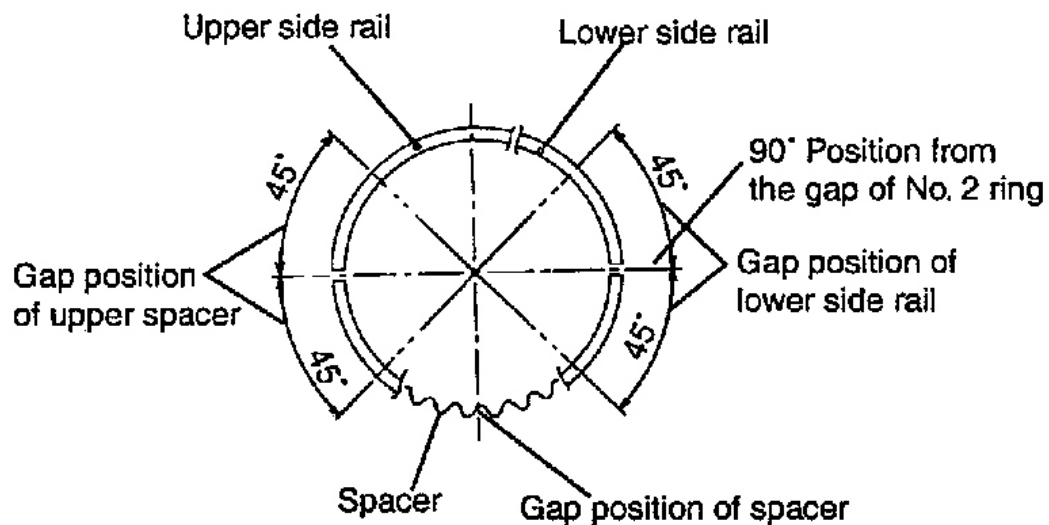


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**Fig. 94: Identifying Connecting Rod Bearing Notches**  
Courtesy of HYUNDAI MOTOR CO.

**DISASSEMBLY AND REASSEMBLY OF THE PISTON PIN**

1. Using the special tools (09234-33001) and (09234-33002), disassemble and reassemble the piston and connecting rod.



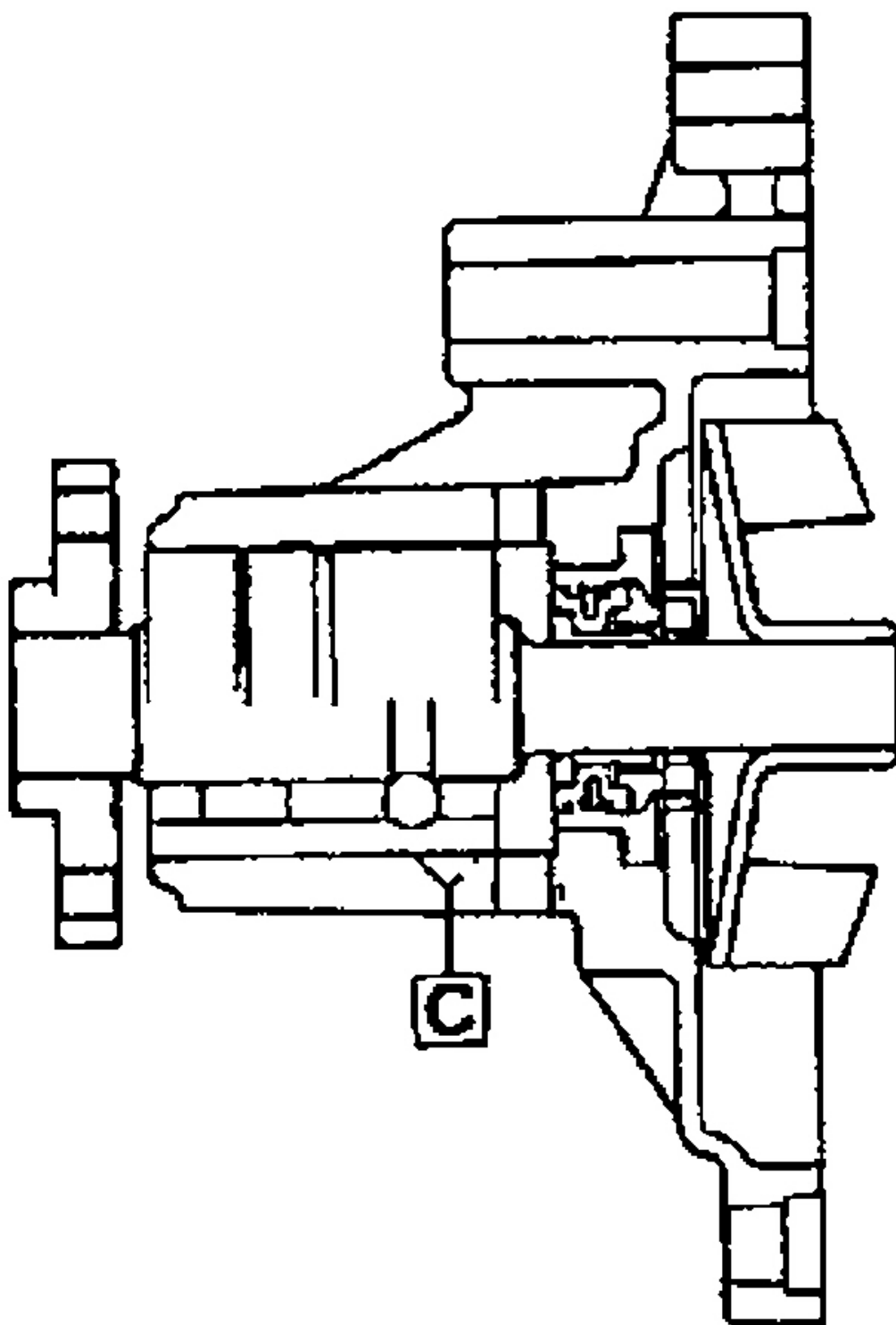
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**Fig. 103: Identifying Spacer Installation**  
Courtesy of HYUNDAI MOTOR CO.

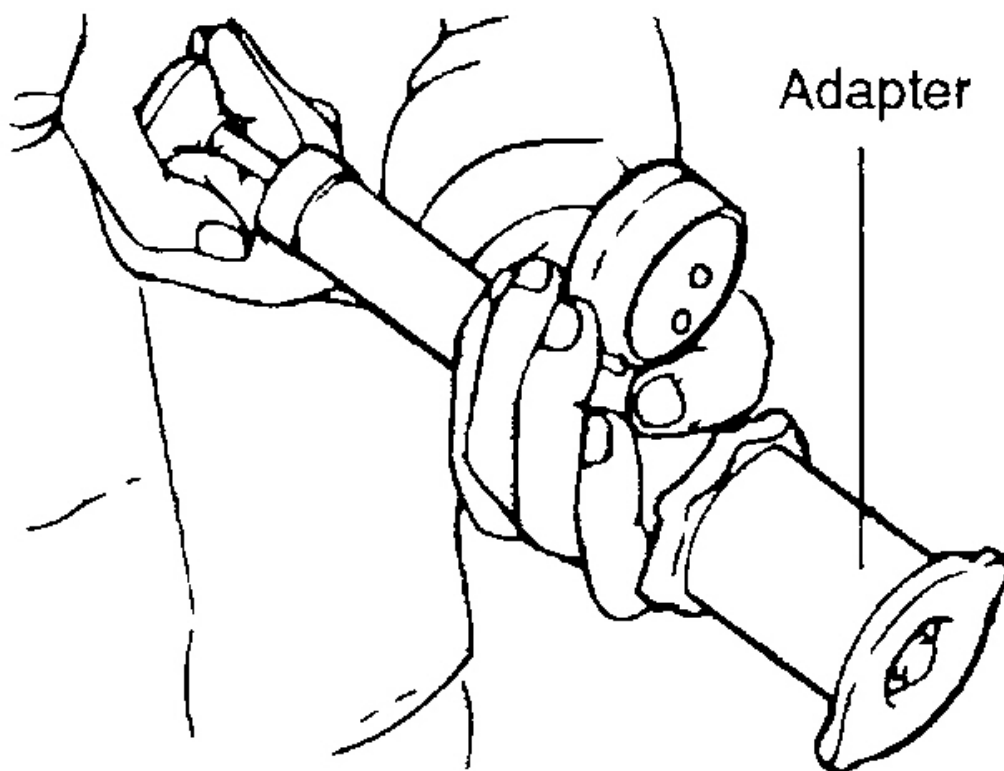
2. Install the upper side rail. To install the side rail, first put one end of the side rail between the piston ring groove and spacer, hold it firmly, and press down with a finger on the portion to be inserted into the groove (as illustrated).

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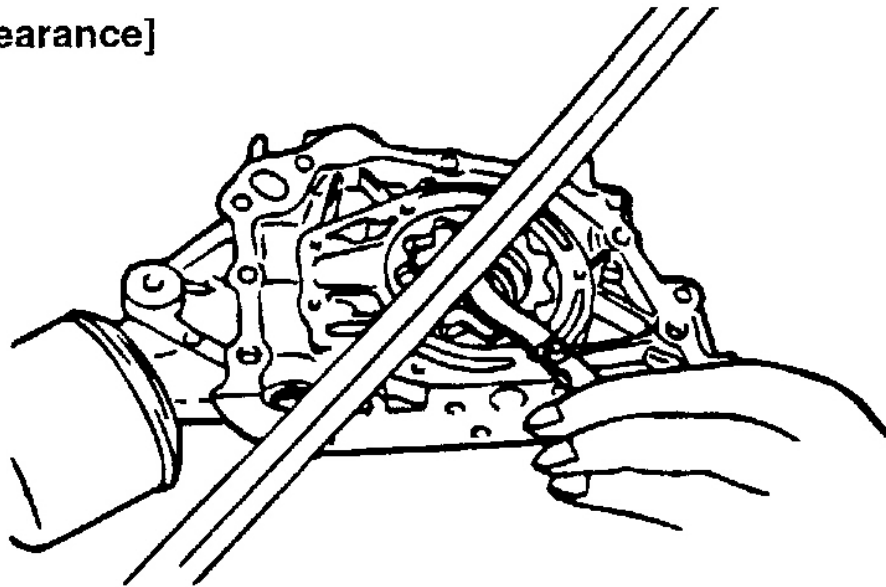
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**Fig. 117: Pressure Testing Radiator Cap**  
Courtesy of HYUNDAI MOTOR CO.

**THERMOSTAT**

**COMPONENTS**

[Side clearance]



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**Fig. 125: Checking Side Clearance**  
Courtesy of HYUNDAI MOTOR CO.

**2002 Hyundai Elantra GLS**

2002 ENGINE 2.0L 4 Cylinder DOHC - Elantra

Over size mm (in.)	Size mark	Oversize valve guide hole size mm (in.)
0.05(0.002)	5	11.05-11.068 (0.4350-0.4357)
0.25 (0.010)	25	11.25-11.268 (0.4429-0.4436)
0.50 (0.020)	50	11.50-11.518 (0.4528-0.4535)

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**Fig. 160: Valve Guide Oversize Specification Table**  
Courtesy of HYUNDAI MOTOR CO.

**REASSEMBLY****NOTE:**

1. Clean each part before assembly.
2. Apply engine oil to the sliding and rotating parts.

1. Install the spring seats.

Using a special tool (09222-22001), tap the seal in position lightly.

**NOTE:**

- Do not reuse old valve stem seals.
- Incorrect installation of the seal could result in oil leakage past the valve guides.

2. Apply engine oil to each valve. Insert the valve into the valve guide. Avoid pushing the valve into the seal by force. After inserting the valve, check that it moves smoothly.