2005 ENGINE

Engine Mechanical System (G4EB-GSL 1.5L) - Accent

GENERAL

SPECIFICATIONS

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	SPEC	LIMIT
General		
Type	In-line, SOHC	
No. of cylinder	4	
Bore	75.5 mm (2.97 in.)	
Stroke	83.5 mm (3.29 in.)	
Total displacement	1495 cc	
Compression ratio	10.0	
Firing order	1 - 3 - 4 - 2	
Valve timing		
Intake valve opens (BTDC)	12°	
Intake valve closes (ABDC)	52°	
Exhaust valve opens (BBDC)	52°	
Exhaust valve closes (ATDC)	12°	
Valve overlap	24°	
Cylinder head		
Flatness of gasket surface	Max. 0.03 mm (0.0012 in.)	0.08 mm (0.00315 in.)
Flatness of manifold mounting surface	Max. 0.15 mm (0.0059 in.)	0.3 mm (0.0118 in.)
Dimension for reworking oversize		
Valve seat hole		
Intake		
0.03 O.S.	28.8 ~ 28.821 mm (1.134 ~ 1.135 in.)	
0.06 O.S.	29.1 ~ 29.121 mm (1.146 ~ 1.1467 in.)	
Exhaust		
0.03 O.S.	34.3 ~ 34.325 mm (1.350 ~ 1.351 in.)	
0.06 O.S.	34.6 ~ 34.625 mm (1.362 ~ 1.363 in.)	
Valve guide hole diameter		

Timing Belt			
Crankshaft sprocket bolt	140 ~ 150	1400 ~ 1500	103 ~ 111
Camshaft sprocket bolt	80 ~ 100	800 ~ 1000	59 ~ 74
Timing belt tensioner bolt	20 ~ 27	200 ~ 270	15 ~ 20
Timing belt cover bolt	10 ~ 12	100 ~ 120	7 ~ 9
Front case bolt	12 ~ 15	120 ~ 150	9 ~ 11
Engine Mounting			
Engine mounting insulator bolt	90 ~ 110	900 ~ 1100	66.4 ~ 81.1
Engine mounting bracket to engine nuts and bolts	50 ~ 65	500 ~ 650	36.9 ~ 48.0
Transaxle mount insulator bolt	90 ~ 110	900 ~ 1100	66.4 ~ 81.1
Transaxle insulator bracket to side member bolts	30 ~ 40	300 ~ 400	22.1 ~ 29.5
Front roll stopper insulator bolt	45 ~ 60	450 ~ 600	33.2 ~ 44.3
Front roll stopper bracket to sub-frame bolt	30 ~ 40	300 ~ 400	22.1 ~ 29.5
Rear roll stopper insulator bolt	45 ~ 60	4520 ~ 600	33.2 ~ 44.3
Rear roll stopper bracket to sub-frame bolt	30 ~ 40	300 ~ 400	22.1 ~ 29.5
Oil filter	12 ~ 16	120 ~ 160	9 ~ 12
Oil pan bolts	10 ~ 12	100 ~ 120	7 ~ 9
Oil pan drain plug	40 ~ 45	400 ~ 450	30 ~ 33
Oil screen bolts	15 ~ 22	150 ~ 220	11 ~ 16
Timing belt upper cover bolts	10 ~ 12	100 ~ 120	7 ~ 9
Timing belt lower cover bolts	10 ~ 12	100 ~ 120	7 ~ 9
Surge tank to inlet manifold nuts and bolts	15 ~ 20	150 ~ 200	11 ~ 15
Alternator support and nut	20 ~ 25	200 ~ 250	15 ~ 18
Alternator lock bolt	15 ~ 22	150 ~ 220	11 ~ 16
Alternator brace mounting bolt	20 ~ 28	200 ~ 280	15 ~ 21
Cooling system			
Coolant pump pulley	8 ~ 10	80 ~ 100	6 ~ 7
Coolant pump bolt	12 ~ 15	120 ~ 150	9 ~ 11
Coolant temperature gauge unit	10 ~ 12	100 ~ 120	7 ~ 9

CAUTION: Be careful not to burn yourself the engine and engine oil are hot.

1. Use a filter wrench to remove the oil filter.
2. Before installing the new oil filter on the engine, clean oil filter sealing base plate with shop towel.

   Apply engine oil to the surface of rubber packing.

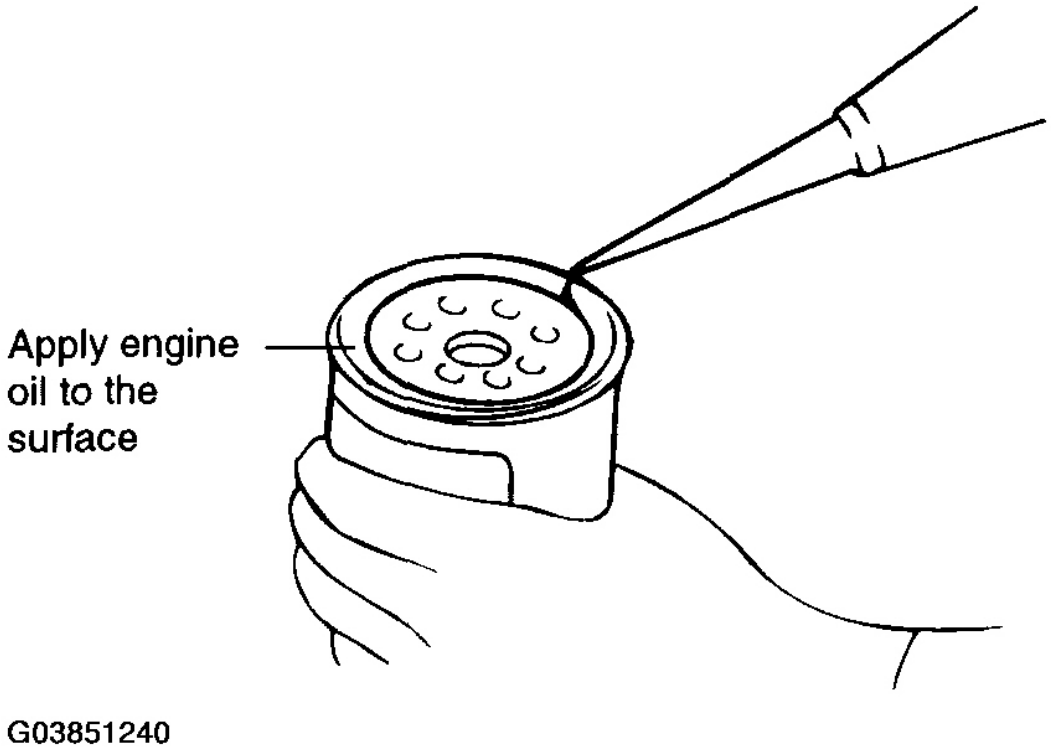

Fig. 5: Applying Clean Engine Oil To Surface Of Rubber Gasket
Courtesy of HYUNDAI MOTOR CO.

3. Tighten the oil filter to the specified torque.

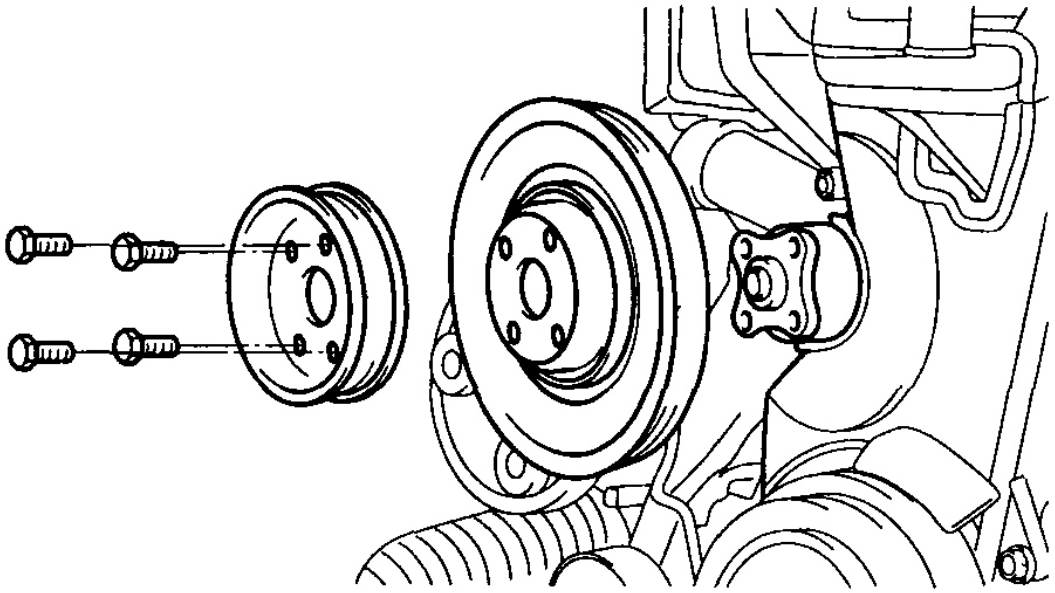

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Fig. 15: Removing Coolant Pump Pulley Mounting Bolt
Courtesy of HYUNDAI MOTOR CO.

5. Remove the coolant pump pulley, generator belt, power steering pulley and power steering belt.
6. Remove the timing cover upper side mounting bolt.

	wiring	
	Faulty electric fan	Repair or replace
	Insufficient coolant	Refill coolant
Abnormally low coolant temperature	Faulty thermostat	Replace
	Faulty temperature sensor or wiring	Replace or repair
Leakage from oil cooling system	Loose connections	Replace
	Cracked or damaged; hoses, pipes or oil cooler	Replace or repair
Inoperative electrical cooling fan	Damaged : Thermo sensor, Electrical motor, Radiator fan relay, Wiring	Replace or repair
Exhaust gas leakage	Loose connections	Retighten
	Broken pipe or muffler	Repair or replace
Abnormal noise	Detached baffle plate in muffler	Replace
	Broken rubber hanger	Replace
	Pipe or muffler contacting vehicle body	Correct
	Broken pipe or muffler	Repair or replace

ENGINE AND TRANSAXLE ASSEMBLY

REMOVAL

1. Remove the battery.

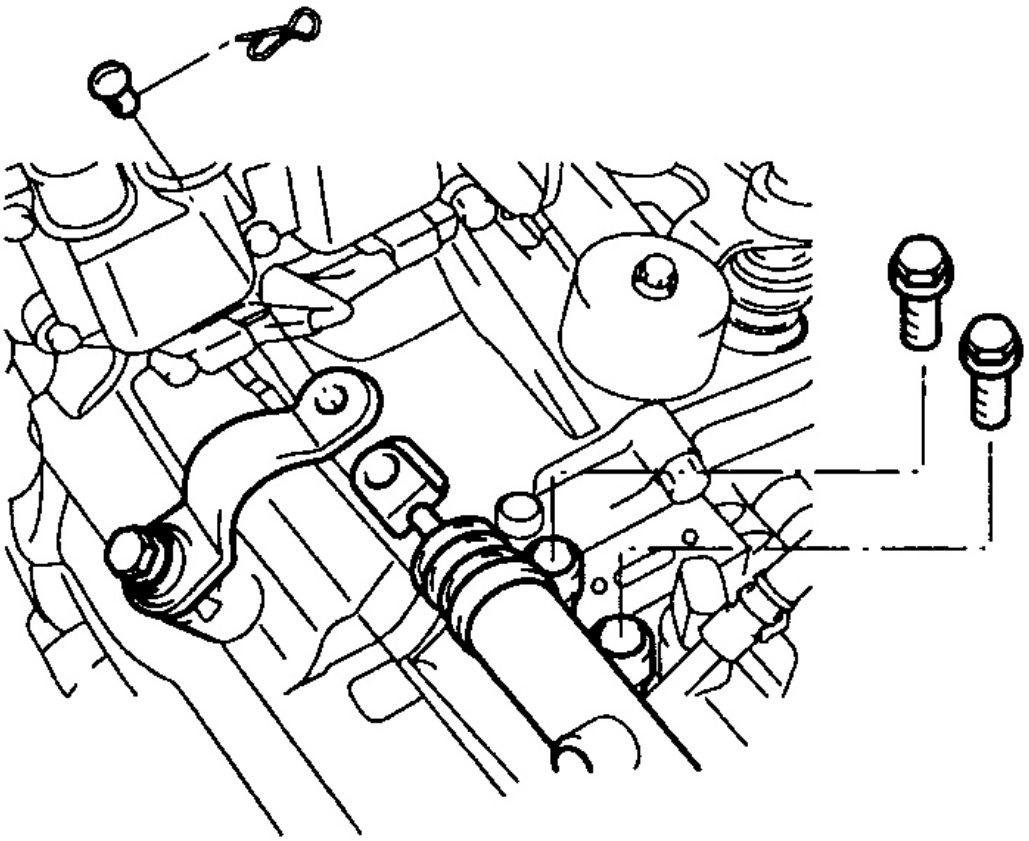

Fig. 42: Removing Clutch Release Cylinder
Courtesy of HYUNDAI MOTOR CO.

16. For vehicles with manual transaxles, remove the shift control cable from the transaxle.

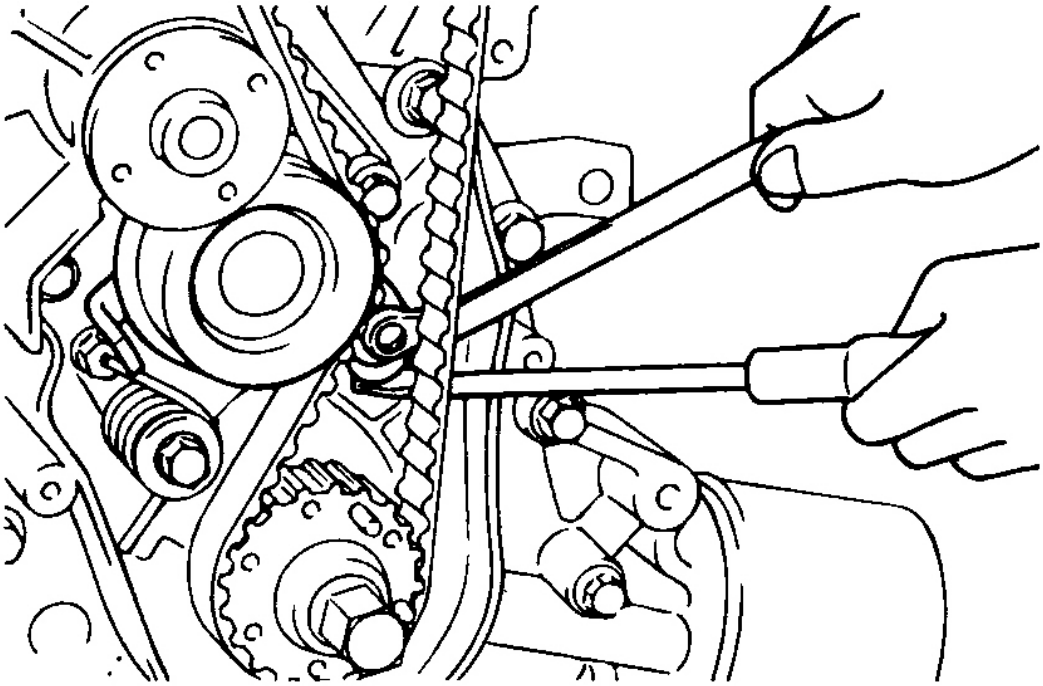

Fig. 64: Moving Timing Belt Tensioner Pulley Toward The Coolant Pump
Courtesy of HYUNDAI MOTOR CO.

8. Remove the timing belt.

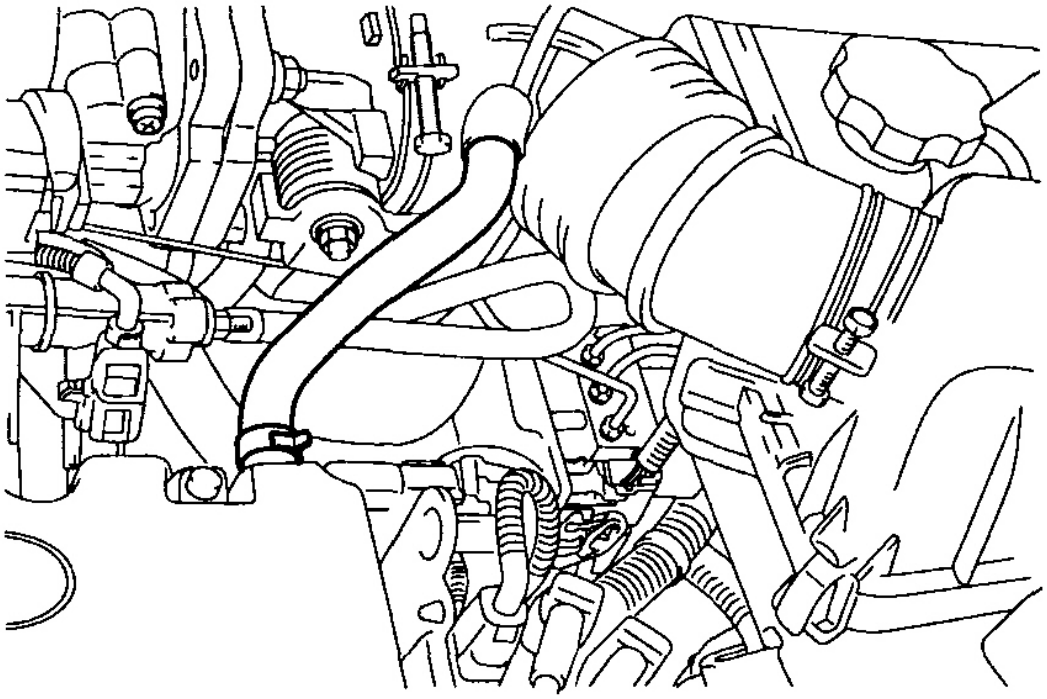

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Fig. 84: Removing Breather Hose And PCV Valve
Courtesy of HYUNDAI MOTOR CO.

2. Remove the timing belt cover.
3. Remove the rocker cover.
4. Loosen the flange bolts and remove the rocker arm shaft, rocker arms and rocker arm shaft springs as an assembly.
5. Remove the bolts, the rocker arms and arm shaft springs from the rocker arm shaft.

INSPECTION

ROCKER ARM

1. Check the rocker face.

   Replace if damaged or pressed.

2. Check the contact surface on the cam and valve stem. If badly worn or damaged, replace it.
3. Check the hydraulic lash adjuster (HLA) face that contacts the valve stem. If badly worn or damaged, replace the HLA.

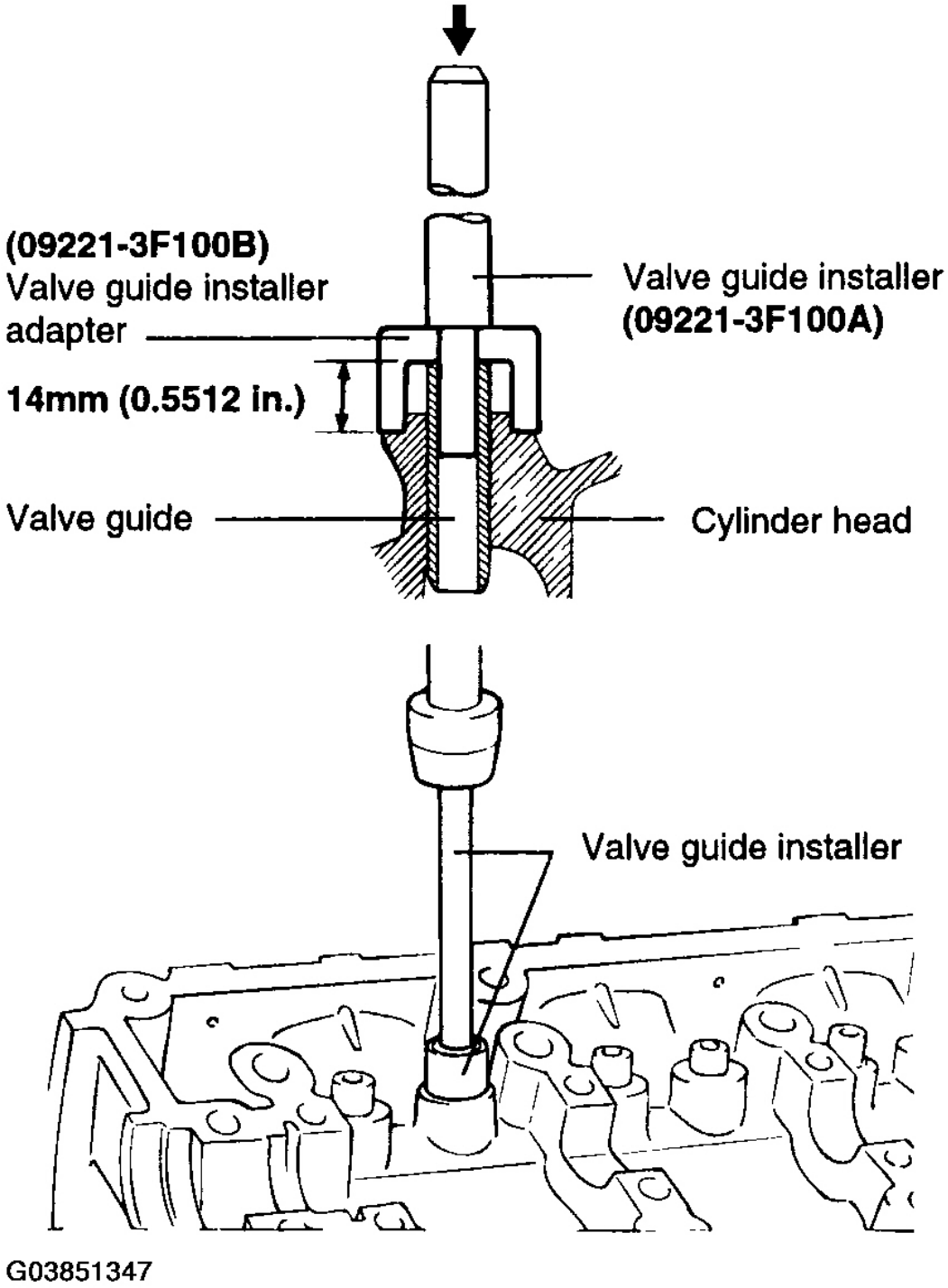

Fig. 94: Installing Valve Guide And Insert New Valves
Courtesy of HYUNDAI MOTOR CO.

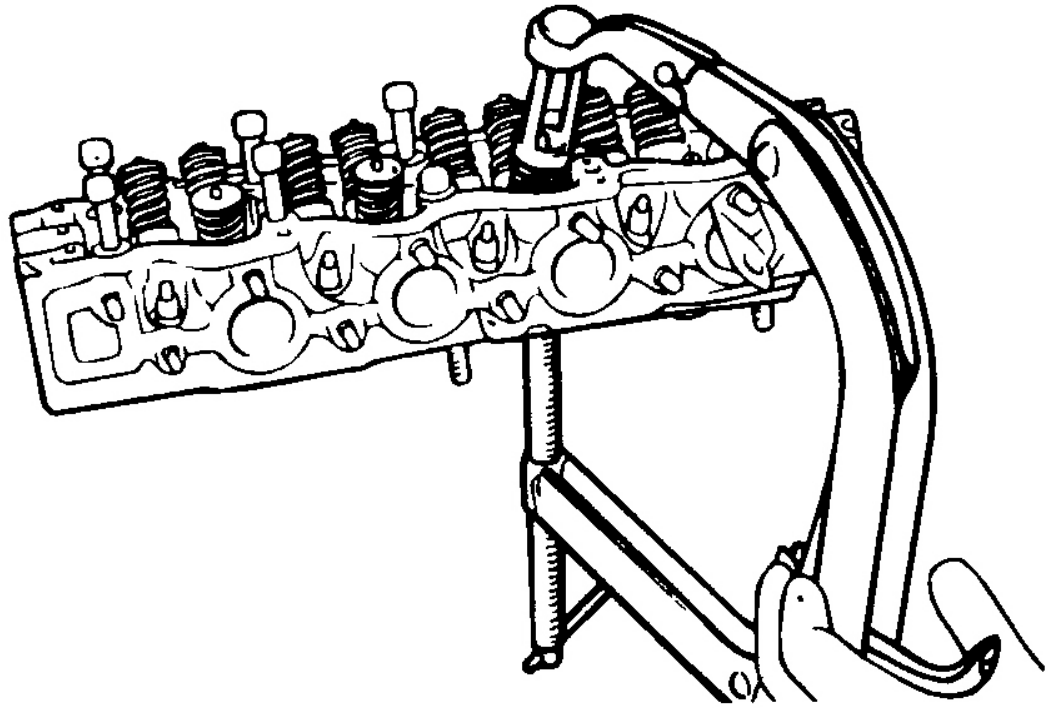

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Fig. 100: Compressing Spring Using Valve Spring Remover And Installer
Courtesy of HYUNDAI MOTOR CO.

5. Install the cylinder head. Refer to "**CYLINDER HEAD** "

MAIN MOVING SYSTEM

CAM SHAFT

COMPONENTS

0.018 ~ 0.036 mm (0.0007 ~ 0.0014 in.)

PLASTIC GAUGE METHOD

A plastic gauge may be used to measure the clearance.

1. Remove oil, grease and any other dirt from bearings and journals.
2. Cut plastic gauge to the same length as the width of the bearing and place it parallel with the journal, away from the oil holes.

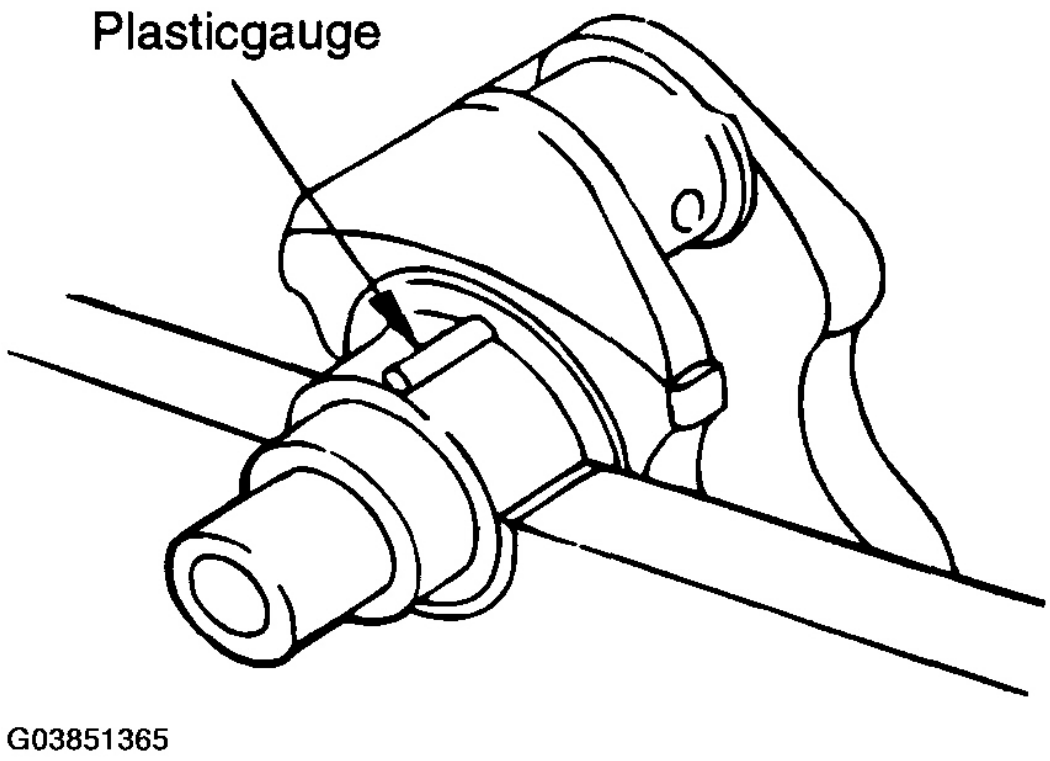


Fig. 112: Measuring Clearance Using Plastic Gauge
Courtesy of HYUNDAI MOTOR CO.

3. Install the crankshaft, bearings, and caps. Tighten them to the specified torque. During this operation, do not turn the crankshaft. Remove the caps.

   Measure the width of the plastic gauge at the widest point using the scale printed on the gauge package. If the clearance exceeds the repair limit, replace the bearing.

   Should the standard clearance not be obtained even after bearing replacement, the journal should be machined to a recommended undersize, and a bearing of the same size should be installed.

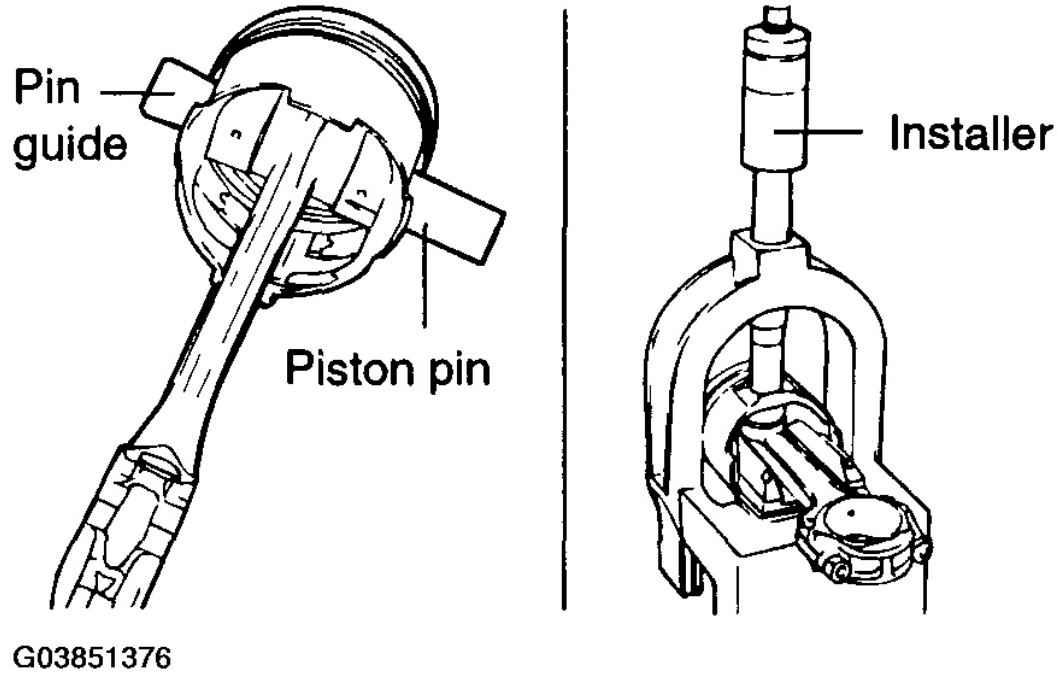


Fig. 123: Installing Pin Guide Through Piston And Into Connecting Rod
Courtesy of HYUNDAI MOTOR CO.

2. Install piston assembly onto fork assembly of tool. Tool will support connecting rod at the piston pin. Be sure to slide the piston assembly into the fork until the pin guide contacts the fork insert.
3. Adjust the installing arbor to the proper length by turning the numbered sleeve on the lettered shaft until the specified alpha-numeric setting from the application chart is obtained. Turn knurled nut to lock numbered sleeve on shaft.
4. Insert the installing arbor through the hole in the arch of the tool. Press the piston pin into the connecting rod until the sleeve on the installing arbor contacts the top of the tool arch. The pin guide will fall out of the connecting rod as the piston pin is pressed in.

CAUTION: Do not exceed 5000 pounds of force when stopping the installing arbor sleeve against the arch.

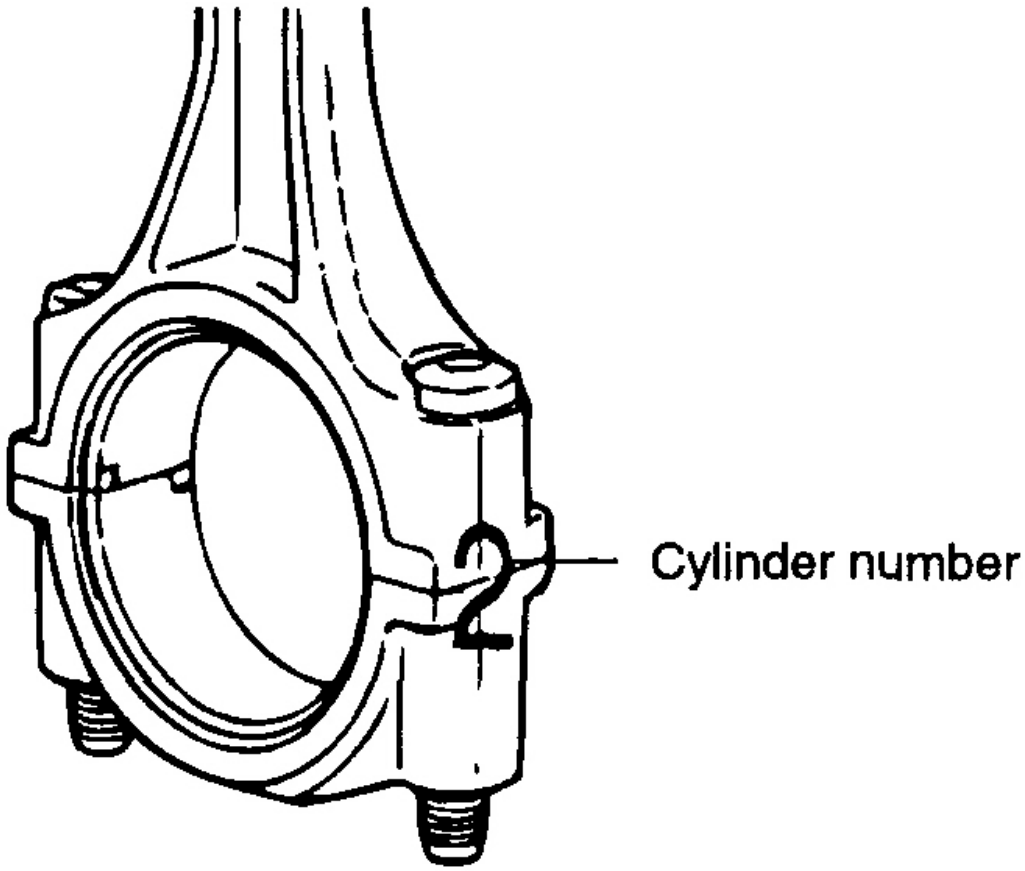


Fig. 131: Identifying Cylinder Number
Courtesy of HYUNDAI MOTOR CO.

11. When new connecting rod is installed, make sure that notches for holding bearing in place are on same side.
12. Tighten the connecting rod cap nuts.

    Tightening torque

    Connecting rod cap nuts

    32 ~ 35 Nm (320 ~ 350 kg.cm, 24 ~ 26 lb.ft)

13. Check connecting rod side clearance.

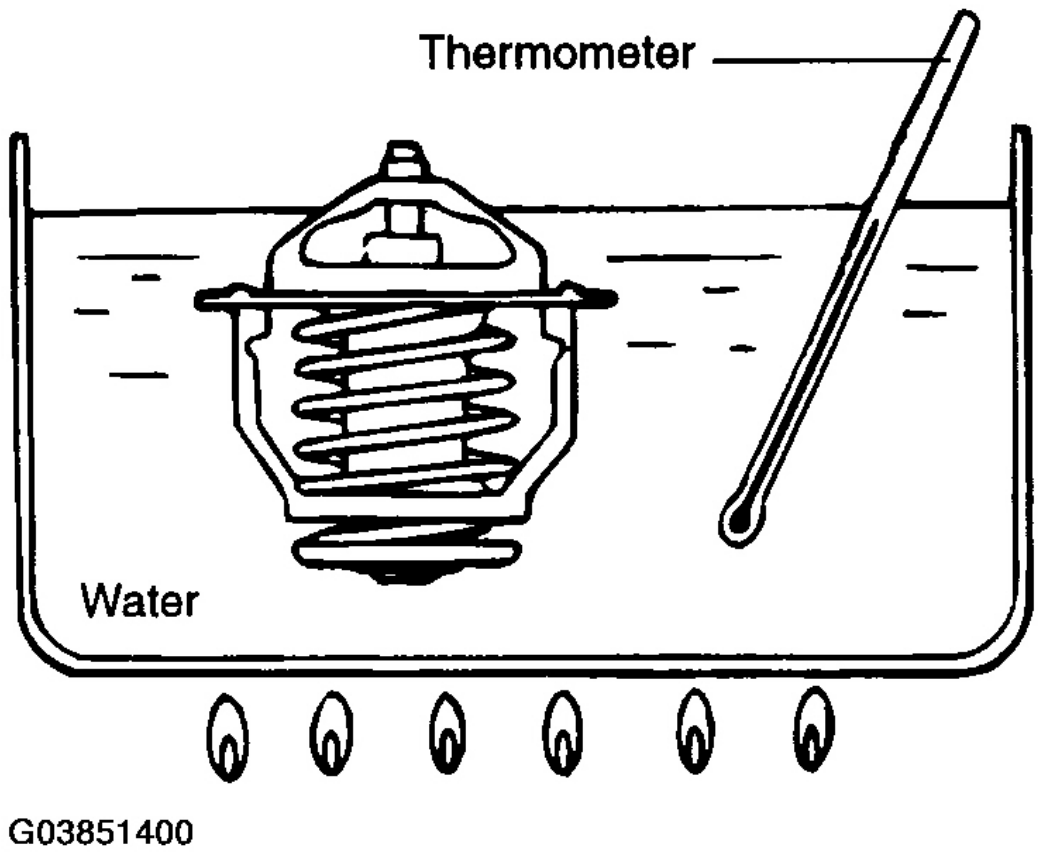


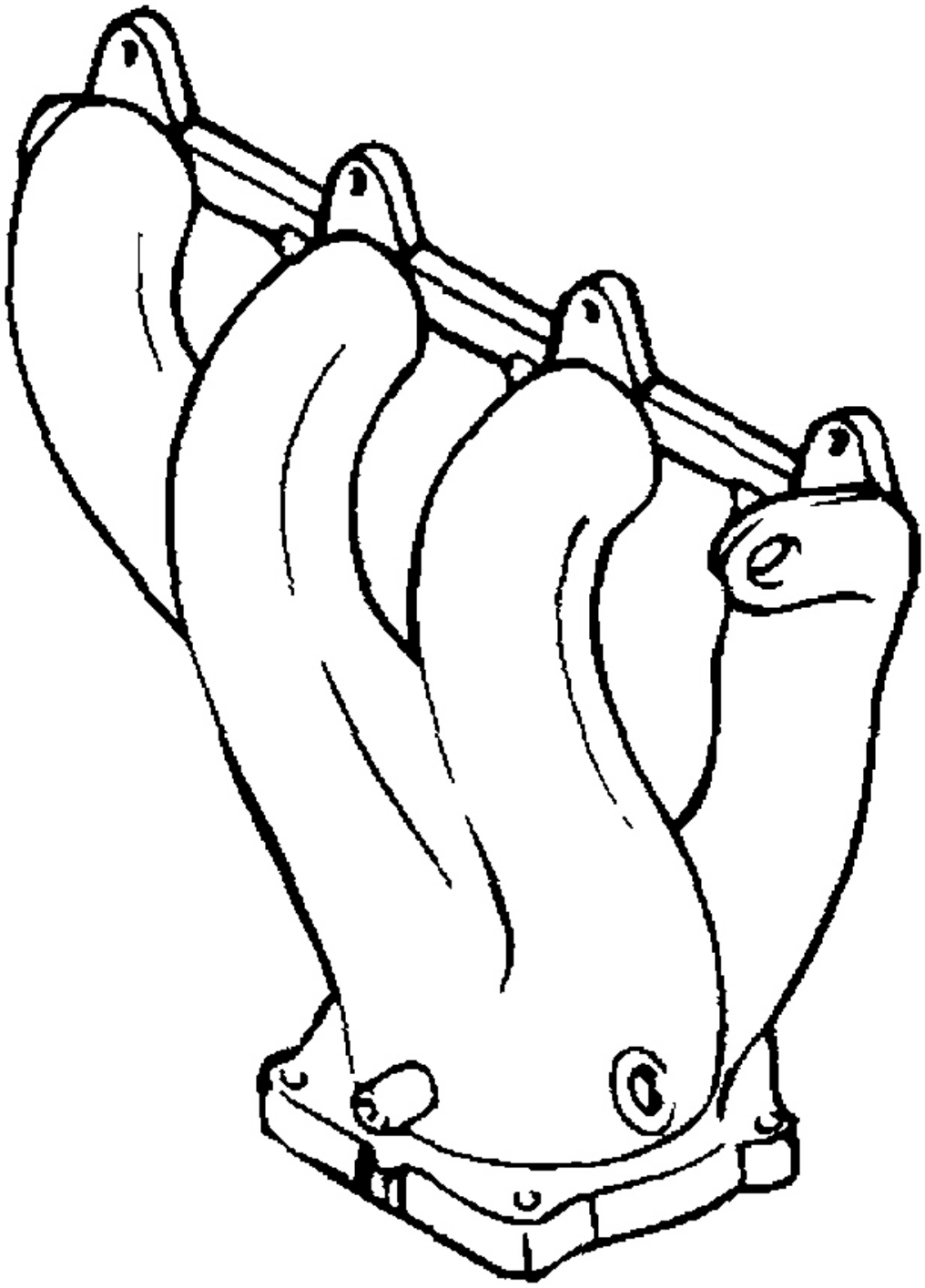
Fig. 147: Immersing Thermostat In Hot Coolant To Check Proper Valve Opening Temperature
Courtesy of HYUNDAI MOTOR CO.

COOLANT TEMPERATURE SENDER

1. Heat the engine coolant temperature sender by submerging it in hot water.
2. Check that the resistance is within the specified range.

   Resistance: 123.8 ~ 172.8 ohm at 60°C (140°F)

   23.5 ~ 29.5 ohm at 115°C (239°F)



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