SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2001	
GROUP	
Engine Mechanical System	General

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TROUBLESHOOTING

Symptom	Probable cause	Remedy
Low compression	Blown cylinder head gasket	Replace gasket
	Worn or damaged piston rings	Replace rings
	Worn piston or cylinder	Repair or replace piston and/or cylinder block
	Worn or damaged valve seat	Repair or replace valve and/or seat ring
Oil pressure drop	Low engine oil level	Check engine oil level
	Faulty oil pressure switch	Replace
	Clogged oil filter	Replace
	Worn oil pump gears or cover	Replace
	Thin or diluted engine oil	Change and determine cause
	Oil relief valve stuck (open)	Repair
	Excessive bearing clearance	Replace
High oil pressure	Oil relief valve stuck (closed)	Repair
Excessive engine rolling and vibration	Loose engine roll stopper (front, rear)	Re-tighten
	Loose transaxle mount bracket	Re-tighten
	Loose engine mount bracket	Re-tighten
	Loose center member	Re-tighten
	Broken transaxle mount insulator	Replace
	Broken engine mount insulator	Replace
	Broken engine roll stopper insulator	Replace
Noisy valves	Thin or diluted engine oil (low oil pressure)	Change
	Worn or damaged valve stem or valve guide	Replace
	HLA abnormal operation	Speed the engine up (for venting) or Replace the HLA
Connecting rod and/main bearing noise	Insufficient oil supply	Check engine oil level
	Thin or diluted engine oil	Change and determine cause
	Excessive bearing clearance	Replace

Timing belt noise	Incorrect belt tension	Adjust belt tension

Symptom	**Probable cause**	**Remedy**
Low coolant level	Leakage of coolant	|
	1. Heater or radiator hose	Repair or replace parts
	2. Faulty radiator cap	Tighten or replace clamps
	3. Thermostat housing	Replace gasket or housing
	4. Radiator	Repair or replace
	5. Engine coolant pump	Replace parts
Clogged radiator	Foreign material in coolant	Replace coolant
Abnormally high coolant temperature	Faulty thermostat	Replace parts
	Faulty radiator cap	Replace parts
	Restriction to flow in cooling system	Clear restriction or replace parts
	Loose or missing drive belt	Adjust or replace
	Faulty Engine coolant pump	Replace
	Faulty temperature sender or wiring	Repair or replace
	Faulty electric fan	Repair or replace
	Insufficient coolant	Refill coolant
Abnormally low coolant temperature	Faulty thermostat	Replace
	Faulty temperature sender or wiring	Repair or replace
Leakage from oil cooling system	Loose connections	Retighten
	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	Re-tighten
	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

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SPECIFICATIONS

General

Description	Specification 1.8L	Specification 2.0L
Type	In-line, Double Over Head Camshaft	In-line, Double Over Head Camshaft
Number of cylinders	4 - 1.8L Eng. [G4GM]	4 - 2.0L Eng. [G4GF]
Bore	82 mm (3.228 in.)	82 mm (3.228 in.)
Stroke	85 mm (3.346 in.)	93.5 mm (3.681 in.)
Total displacement	1795 CC (109.54 cu.in.)	1975 CC (120.52 cu.in.)
Compression ratio	10.0	10.3
Firing order	1-3-4-2	1-3-4-2
Idle R.P.M	800±100	800±100
Ignition timing at idling speed	BTDC 10°±5°/ 800 rpm	BTDC 10°±5°/ 800 rpm

Cylinder block

Description	Specification
Cylinder bore	82.00-82.03 mm (3.2283-3.2295 in.) [1.8L, 2.0L]
Out-of-roundness and taper of cylinder bore	Less than 0.01 mm (0.0004 in.)
Clearance with piston	0.02-0.04 mm (0.0008- 0.0016 in.)

Piston

Description	Specification
O.D.	81.97-82.00 mm (3.2271-3.2283 in.) [1.8L, 2.0L]
Service size	0.25, 0.50, 0.75, 1.00 mm (0.010, 0.020, 0.030, 0.039 in.) oversize

Piston ring

Description		Specification	Limit
Side clearance	No. 1	0.04-0.08 mm (0.0015-0.0031 in.)	0.1 mm (0.004 in.)
	No. 2	0.03-0.07 mm (0.0012-0.0027 in.)	
End gap 1.8L	No. 1	0.23-0.38 mm (0.0090-0.0149 in.)	1 mm (0.0394 in.)
	No. 2	0.45-0.60 mm (0.0177-0.0236 in.)	1 mm (0.0394 in.)
	Oil ring side rail	0.20-0.60 mm (0.0078-0.0236 in.)	1 mm (0.0394 in.)
End gap 2.0L	No. 1	0.23-0.38 mm (0.0090-0.0149 in.)	1 mm (0.039 in.)
	No. 2	0.33-0.48 mm (0.0130-0.0189 in.)	1 mm (0.039 in.)
	Oil ring side rail	0.20-0.60 mm (0.0078-0.0236 in.)	1 mm (0.039 in.)
Service size	|	0.25, 0.50, 0.75, 1.00 mm (0.010, 0.020, 0.030, 0.039 in.) oversize	|

Connecting rod

Description	Specification	Limit
Bend	0.05 mm (0.0020 in.) or less	|
Twist	0.1 mm (0.004 in.) or less	|
Connecting rod big end to crankshaft side clearance	0.100-0.250 mm (0.0039-0.0098 in.)	0.4 mm (0.0157 in.)

Connecting rod bearing

Description	Specification
Oil clearance	0.2024-0.044 mm (0.0009-0.0017 in.)
Undersize	0.25, 0.50, 0.75 mm (0.01, 0.02, 0.03 in.)

Camshaft

Description	Dimensions	Specification	Limit
Cam height (Intake 1.8L)	|	44.449 mm (1.7499 in.)	44.349 mm (1.7460 in.)
Cam height (Intake 2.0L)	|	44.049 mm (1.7342 in.)	43.949 mm (1.7302 in.)
Cam height (Exhaust)	|	45.049 mm (1.7736 in.)	44.949 mm (1.7696 in.)
		28 mm	

Journal O.D.	|	(1.1023 in.)	|
Bearing oil clearance	|	0-0.025 mm (0-0.0009 in.)	|
End play	|	0.01-0.2 mm (0.004-0.008 in.)	|
Pin O.D.	|	45 mm (1.77 in.)	|
Journal O.D.	|	57 mm (2.244 in.)	|
Bend	|	0.03 mm (0.0012 in.) or less	|
Out-of-roundness, taper of journal and pin	|	0.01 mm (0.0004 in.) or less	|
End play	|	0.06-0.260 mm (0.0023-0.010 in.)	0.30 mm (0.0118 in.)
Undersize rework dimension of pin	0.25 mm (0.010 in.)	44.725-44.740 mm (1.7608-1.7614 in.)	|
	0.50 mm (0.020 in.)	44.475-44.490 mm (1.7509-1.7516 in.)	|
	0.75 mm (0.030 in.)	44.225-44.240 mm (1.7411-1.7417 in.)	|
Undersize rework dimension of journal	0.25 mm (0.010 in.)	56.727-56.742 mm (2.2333-2.2339 in.)	|

Crankshaft

Description	Dimensions	Specification
Undersize rework dimension of journal	0.50 mm (0.020 in.)	56.477-56.492 mm (2.2235-2.2240 in.)
	0.75 mm (0.030 in.)	56.227-56.242 mm (2.2136-2.2142 in.)

Flywheel

Description	Specification	Limit
Runout	0.1 mm (0.0039 in.)	0.13 mm (0.0051 in.)

Cooling method: Water-cooled, Pressurized, Forced circulation with electrical fan

Coolant

Description	Specification
Quantity	6 lit (6.3 U.S qts., 5.2 Imp. qts.)

Radiator

Description	Specification
Type	Pressurized corrugated fin type
Performance	43250 Kcal/h

Radiator cap

Description	Specification
Main valve opening pressure	81.4-110 kpa (11.8-15.6 psi., 0.83-1.1kg/cm2)
Vacuum valve opening pressure	-6.86 kpa (-1.00 psi, -0.07 kg/cm2) or less

Coolant pump (Centrifugal type impeller)

Description	Specification
Type	Wax pellet type with jiggle valve
Valve opening temperature	82°C (177°F)
Full-opening temperature	95°C (201°F)

Drive belt

Description	Specification
Type	V-ribbed belt

Engine coolant temperature sender

Description	Specification
Type	Thermistor
Resistance	90.5-117.5 OHM at 70°C (158°F) 21.3-26.3 OHM at 115°C (239°F)

Engine coolant temperature sensor

Description	Specification
Type	Heat-sensitive thermistor
Resistance	2.27-2.73 KOHM at 20°C (68°F) 290-354 OHM at 80°C (176°F)

Automatic transaxle oil cooler

Description	Specification
Performance	1,200 Kcal/h

Oil pump

Description	Specification
Clearance between outer circumference and front case.	0.12-0.18 mm (0.0047-0.0070 in.)
Front case tip clearance	|
Side clearance	|
Inner gear	0.02-0.065 mm (0.0008-0.0025 in.)
Outer gear	0.02-0.07 mm (0.008-0.0027 in.)
Engine oil pressure at engine idle speed [Oil temperature is 90 to 100°C (194 to 215°F)]	166 KPa (1.7 kg/cm2, 24.2 psi)
Relief spring (Free height)	43.8 mm (1.724 in.)
Relief spring (Load)	3.7 kg at 40.1 mm (8.15 lb/1.578 in.)

Air cleaner

Description	Specification
Type	Dry type
Element	Unwoven cloth type

Exhaust pipe

Description	Specification
Muffler	Expansion resonance type
Suspension system	Rubber hangers

Valve

Description	Specification
Valve length (Intake)	102.34 mm (4.029 in.)
Valve length (Exhaust)	104.8 mm (4.1259 in.)
Stem O.D. (Intake)	5.965-5.98 mm (0.2348-0,2354 in.)
Stem O.D. (Exhaust)	5.93-5.95 mm (0.2334-0.2342 in.)

Face angle thickness of valve head (Margin)

Description	Specification	Limit

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.)

Valve stem to valve guide clearance

Description	Specification	Limit
Intake	0.02-0.05 mm (0.0008-0.0019 in.)	0.10 mm (0.0039 in.)
Exhaust	0.05-0.085 mm (0.0019-0.0033 in.)	0.15 mm (0.059 in.)

Valve guide

Description	Specification
Installed dimension O.D. (Intake)	11 mm (0.433 in.)
Installed dimension O.D. (Exhaust)	11 mm (0.433 in.)
Service size	0.05, 0.25, 0.50 mm, (0.002, 0.010, 0.020 in.) oversize

Valve seat

Description	Specification
Width of seat contact (Intake)	1.1-1.5 mm (0.043-0.059 in.)
Width of seat contact (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

Valve spring

Description	Specification
Free length	46.07 mm (1.8137 in.)
Load	25.5 kg/37 mm 57.3 kg/28 mm
Installed height	37 mm (1.456 in.)
Squareness	1.5° or less

Valve timing

Description	Specification (1.8L)	Specification (2.0L)
Intake valve: Opens (BTDC)	6°	8°
Intake valve: Closes (ABDC)	46°	40°
Exhaust valve: Opens (BBDC)	50°	50°
Exhaust valve: Closes (ATDC)	10°	10°

Cylinder head

Description	Specification	Limit
Flatness of gasket surface	Max. 0.05 mm (0.0020 in.)	0.1 mm (0.0039 in.)
Flatness of manifold mounting surface	Max. 0.15 mm (0.0059 in.)	0.3mm (0.0118 in.)
Oversize rework dimensions of valve seat hole (Intake)	0.3 mm (0.012 in.) O.S. 0.6 mm (0.024 in.) O.S.	33.300-33.325 mm (1.3110-1.3120 in.) 33.600-33.625 mm (1.3228-1.3238 in.)
Oversize rework dimensions of valve seat hole (Exhaust)	0.3 mm (0.012 in.) O.S. 0.6 mm (0.024 in.) O.S.	28.800-28.821 mm (1.1338-1.1346 in.) 29.100-29.121 mm (1.1456-1.1465 in.)
Oversize rework dimensions of valve guide hole (both intake and exhaust)	0.05 mm (0.002 in.) O.S.	11.05-11.068 mm (0.435-0.4357 in.)
	0.25 mm (0.010 in.) O.S.	11.25-11.268 mm (0.443-0.4436 in.)
	0.50 mm (0.020 in.) O.S.	11.50-11.518 mm (0.453-0.4535 in.)

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SERVICE STANDARD

Standard value

Antifreeze	Mixture ratio of anti-freeze in coolant
ETHYLENE GLYCOL BASE FOR ALUMINUM	50 %

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TIGHTENING TORQUE

Cylinder Block

Item	Nm	kg.cm	lb.ft
Front engine support bracket bolt and nut	35-50	350-500	25-37
Front roll stopper bracket bolt	70-90	700-900	51-65
Rear roll stopper bracket bolt	70-90	700-900	51-65
Rear engine support bracket bolt	35-50	350-500	25-37

Engine Mounting

Item	Nm	kg.cm	lb.ft
Right mounting insulator (large) nut	90-110	900-1100	65-80
Right mounting insulator (small) nut	45-60	450-600	33-44
Right mounting bracket to engine nuts and bolts	50-65	500-650	36-47
Transaxle mount insulator nut	90-110	900-1100	65-80
Transaxle insulator bracket to side member bolts	30-40	300-400	22-29
Rear roll stopper insulator nut	50-60	500-600	33-43
Rear roll stopper bracket to center member bolts	45-60	500-600	36-43
Front roll stopper insulator nut	45-60	450-600	33-43
Front roll stopper bracket to center member bolts	30-40	300-400	22-29
Center member to body bolts	60-80	600-800	43-58

Main Moving

Item	Nm	kg.cm	lb.ft
Connecting rod cap nut	50-53	500-530	34-39
Crankshaft bearing cap bolt	27-33+ (60°-65°)	270-330+ (60°-65°)	20-24+ (60°-65°)
Fly wheel M/T bolt	120-130	1200-1300	88-95
Drive plate A/T bolt	120-130	1200-1300	88-95

Cooling system

Item	Nm	kg.cm	lb.ft
Alternator support bolt and nut	20-25	200-250	14-18
Alternator lock bolt	15-22	150-220	11-16

Alternator brace mounting bolt	20-24	200-240	14-17
Coolant pump pulley	8-10	80-100	6-7
Coolant pump bolt	20-27	200-270	14-19
Coolant temperature sender	10-12	100-120	7-9
Coolant temperature sensor	15-20	150-200	11-14
Coolant outlet fitting bolt	15-20	150-200	12-14
Thermostat housing bolt	15-20	150-200	11-14

Lubrication system

Item	Nm	kg.cm	lb.ft
Oil filter	17-25	170-250	12.3-18
Oil pan bolts	6-8	60-80	4-6
Oil pan drain plug	35-45	350-450	25-33
Oil screen bolts	15-22	150-220	11-16
Oil pressure switch	13-15	130-150	9.7-11

Intake and Exhaust system

Item	Nm	kg.cm	lb.ft
Air cleaner body mounting bolts	8-10	80-100	6-7
Air duct & resonator mounting bolts	4-6	40-60	3-4
Intake manifold to cylinder head nuts and bolts	15-20	150-200	11-14
Intake manifold stay to cylinder block bolts	23-30	230-300	17-22
Throttle body to surge tank bolts	15-20	150-200	11-14
Exhaust manifold to cylinder head nuts	43-55	430-550	32-40
Exhaust manifold cover to exhaust manifold bolts	15-20	150-200	11-14
Oxygen sensor to front muffler	50-60	500-600	36-43
Front exhaust pipe to exhaust manifold nuts	30-40	300-400	22-29
Front exhaust pipe bracket bolts	30-40	300-400	22-29
Front exhaust pipe to catalytic converter bolts	40-60	400-600	29-43
Catalytic converter to main muffler ass'y nuts	30-40	300-400	22-29
Main muffler hanger support bracket bolts	10-15	100-150	7-11

Cylinder head

Item	Nm	kg.cm	lb.ft
Cylinder head bolt- M10	30+(60°-65°) +(60°-65°)	300+(60°-65°) +(60°-65°)	22+(60°65°) +(60°-65°)
Cylinder head bolt- M12	35+(60°-65°) +(60°-65°)	350+(60°-65°) +(60°-65°)	26+(60°-65°) +(60°-65°)
Intake manifold nuts	18-25	180-250	13-18
Exhaust manifold nut	30-40	300-400	22-30
Cylinder head cover bolt	8-10	80-100	6-7

Camshaft bearing cap bolt	14-15	140-150	10-11
Rear plate bolt	8-10	80-100	6-7

Timing Belt

Item	Nm	kg.cm	lb.ft
Crankshaft pulley bolt	170-180	1700-1800	125-133
Camshaft sprocket bolt	100-120	1000-1200	74-89
Timing belt tensioner bolt	43-55	430-550	31-40
Timing belt cover bolt	8-10	80-100	6-7
Front case bolt	20-27	200-270	14-20
Timing belt idler bolts	43-55	430-550	31-40

M/T: Manual Transaxle

A/T: Automatic Transaxle

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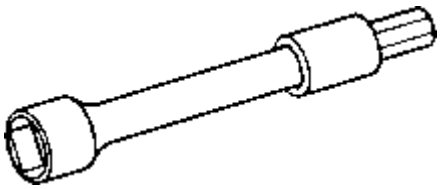
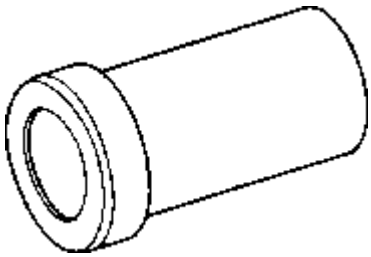
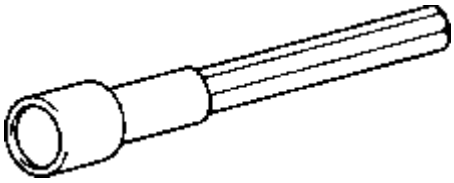
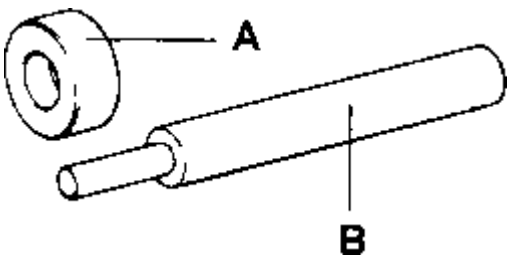
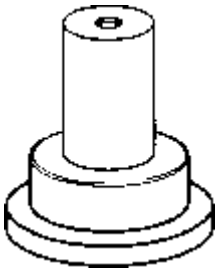
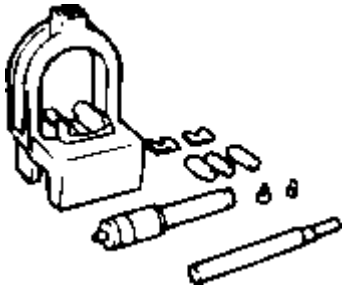
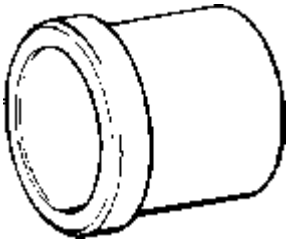
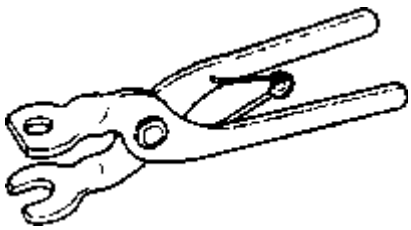
SPECIAL TOOLS

Tool (Number and name)	Illustration	Use
Cylinder head bolt wrench 09221-32001 09221-11000		Removal and tightening of the cylinder head bolt
Camshaft oil seal installer 09221-21000		Installation of the camshaft oil seal
Valve spring compressor & adapter 09221-29100		Removal and installation of the inlet or exhaust valve.
Valve stem oil seal installer 09222-22000		Installation of the valve stem oil seal
Valve guide installer 09221-22000 A/B		Removal and installation of the valve guide
		1. Installation of the

Crankshaft rear oil seal installer 09231-21000		engine rear oil seal 2. Installation of the crankshaft rear oil seal
Piston pin remover and installer kit 09234-33001		Removal and installation of piston pin (Use with 09234-33003)
Piston pin setting tool insert 09234-33003		Removal and installation of piston pin (Use with 09234-33001)
Mounting bushing remover and installer 09216-22000		Removal and installation of engine mounting bushing (Use with 0921B-22100)
Mounting bushing remover and installer arbor 09216-21000		Installation of front oil seal
Valve stem seal remover 09222-29000		Removal of valve stem seal

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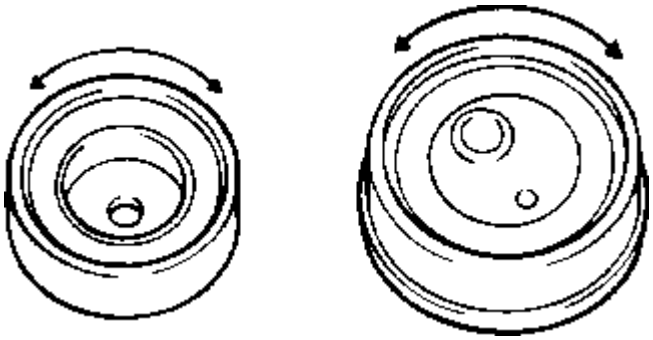
INSPECTION

SPROCKETS AND TENSIONER PULLEY, AND IDLER PULLEY.



Check the camshaft sprocket, crankshaft sprocket, tensioner pulley, and idler pulley for abnormal wear, cracks, or damage. Replace as necessary.

Inspect the tensioner pulley and the idler pulley for easy and smooth rotation and check for play or noise. Replace as necessary.

Replace if there is a grease leak.

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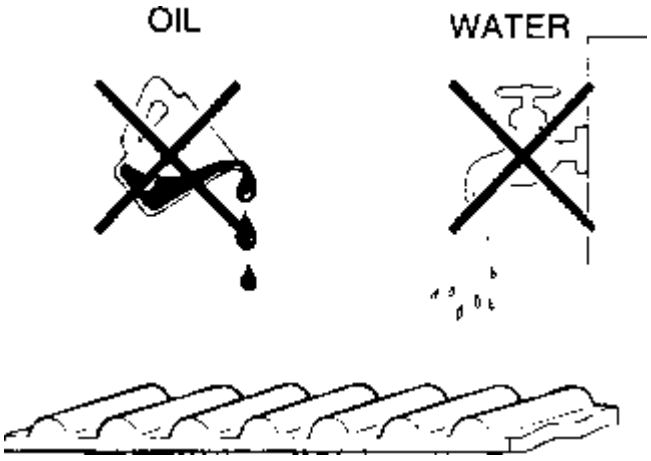
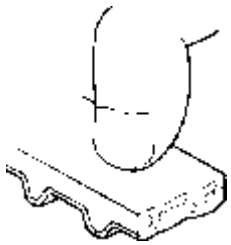
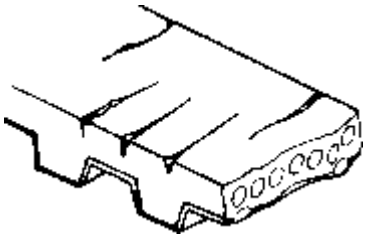
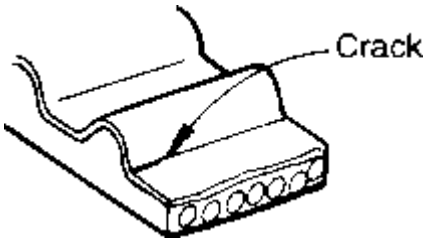
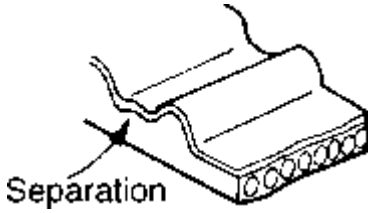
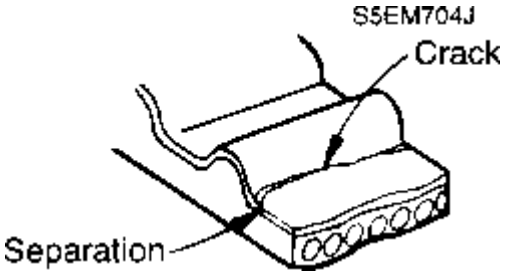
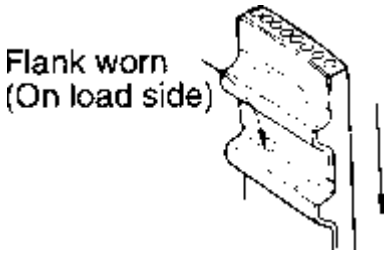
TIMING BELT

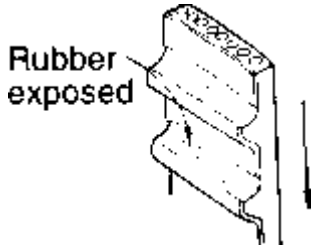
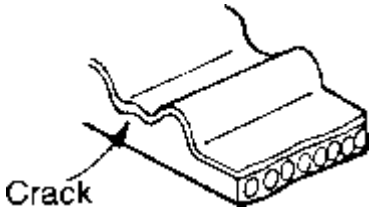
Check the belt for oil or dust deposits. Replace, if necessary. Small deposits should be wiped away with a dry cloth or paper. Do not clean with solvent.



When the engine is overhauled or belt tension adjusted, carefully check the belt. If any of the following flaws are evident, replace the belt.

Description	Flaw conditions

Hardened back surface Back surface glossy. Non-elastic and so hard that when your fingernail is pressed into it, no mark is produced.	
Cracked back surface rubber	
Cracked or separating canvas	
	
	
Badly worn teeth (initial stage) Canvas on load side tooth flank worn (Fluffy canvas fibers, rubber gone and color changed to white, and unclear canvas texture)	
Badly worn teeth (last stage) Canvas on load side tooth flank worn down and rubber exposed (tooth width reduced)	

	
Cracked tooth bottom	
Missing tooth	
Side of belt badly worn **NOTE** **Normal belt should have precisely cut sides as if cut by a sharp knife.**	
Side of belt cracked	

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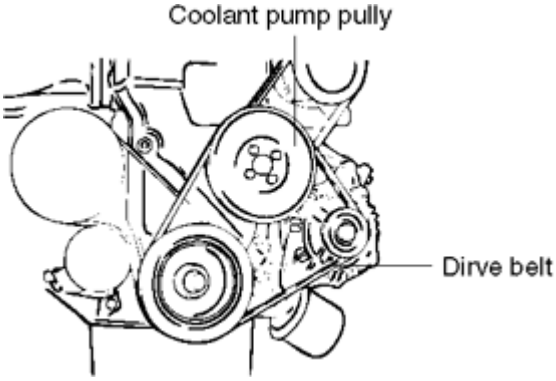
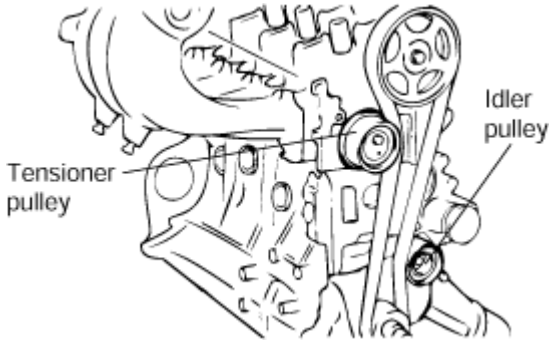
DISASSEMBLY

Remove the crankshaft pulley, coolant pump pulley and drive belt.

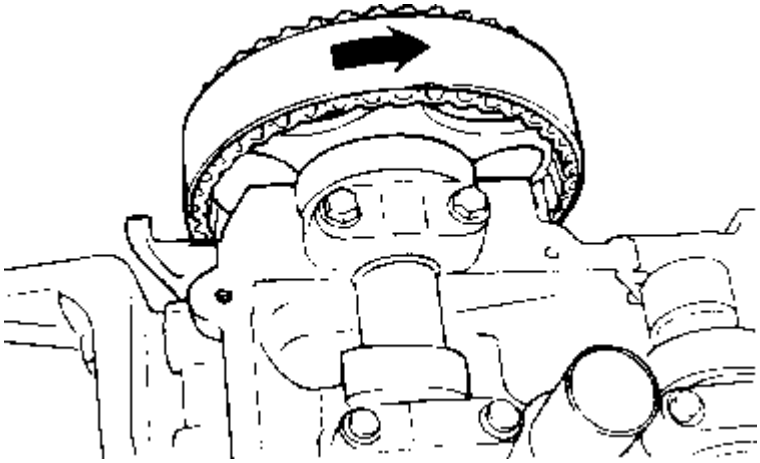


Remove the timing belt cover.

Remove the timing belt tensioner pulley.



Remove the timing belt.

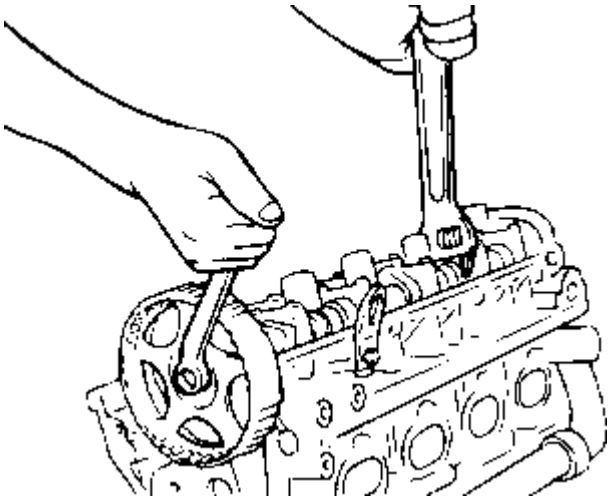


NOTE

If the timing belt is reused, make an arrow indicating the turning direction (or the front of the engine) to make sure that the belt is reinstalled in the same direction as before.

Remove the idler pulley.

Remove the camshaft sprocket.



NOTE

Be careful not to damage the cylinder head with the wrench.

Remove the crankshaft sprocket from crankshaft.

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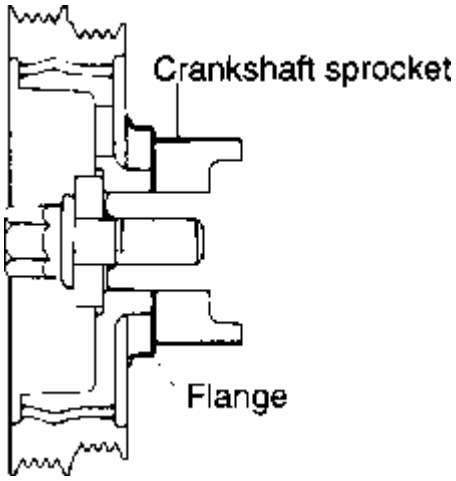
REASSEMBLY

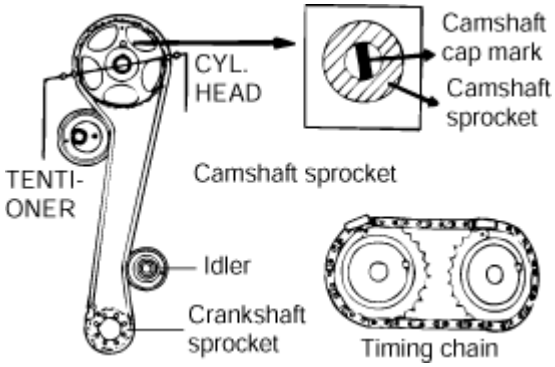
Install damper pulley flange and crankshaft sprocket as shown. Pay close attention to their mounting direction.



Install the camshaft sprocket and tighten the bolt, to the specified torque.

TORQUE SPECIFICATION	
Camshaft sprocket bolt	100-120 Nm (1000-1200 kg·cm, 74-89 lb·ft)

Align the timing marks of the camshaft sprocket and crankshaft sprocket with the No. 1 piston placed at top dead center and its compression stroke.



Install the timing belt tensioner and idler pulley.

Install the timing belt on the camshaft

Install the timing belt on the crankshaft.

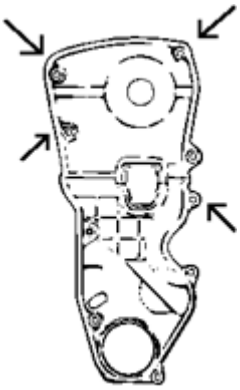
When the timing belt is installed on the camshaft sprocket, make sure that the tension side is tighten the timing belt tensioner pulley pushing toward the water pump.

Turn the crankshaft one turn in operating direction (clockwise) and realign crankshaft sprocket timing mark.

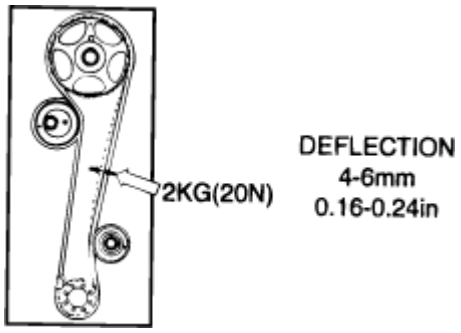
> **CAUTION**
>
> **Do not turn the crankshaft in a counterclockwise direction. the crankshaft should be turned smoothly.**

TORQUE SPECIFICATION	
Tensioner pulley	43-55 Nm (430-550

installing bolt	kg·cm, 32-41 lb·ft)



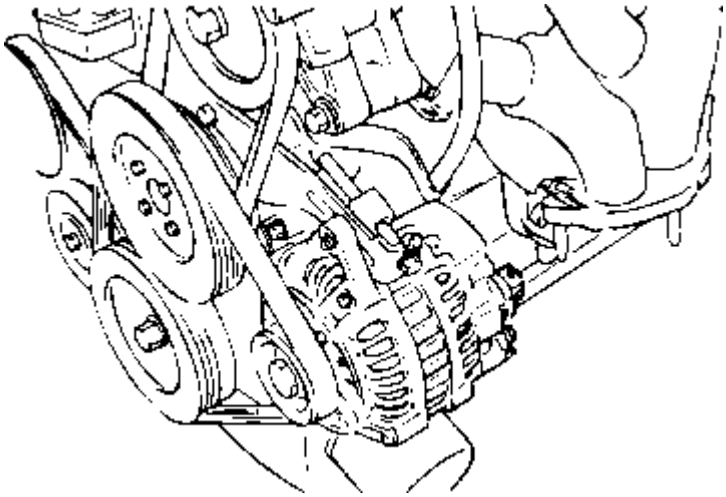
Then recheck the belt tension. The tension side of timing belt is pushed in horizontally with a moderate force [approx. 2kg (20N, 5lb)], the timing belt cog end is approx. 4-6mm (0.18-0.24 in.) away.



Install the timing belt cover.

TORQUE SPECIFICATION	
Timing belt cover bolt	8-10 Nm (80-100 kg·cm, 6-7.4 lb·ft)

Install the crankshaft pulley. In this case, make sure that the crankshaft sprocket pin fits the small hole in the pulley.



TORQUE SPECIFICATION	
Crankshaft pulley bolt	170-180 Nm (1700-1800 kg·cm, 125-133 lb·ft)

Install the coolant pump pulley.

Install the drive belt and adjust the belt tension.

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2001	
GROUP	
Engine Mechanical System	Cylinder Head Assembly

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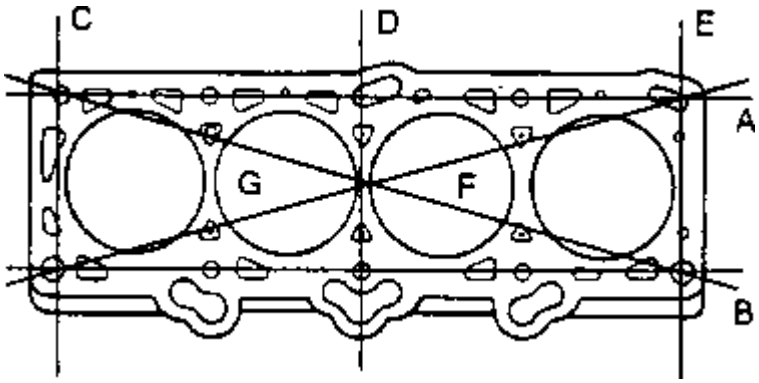
INSPECTION

Check the cylinder head for cracks, damage and coolant leakage.

Remove scale, sealing compound and carbon deposits completely. After cleaning oil passages, apply compressed air to make certain that the passages are not clogged.

Check the cylinder head surface for flatness by using a straight edge from the direction of A, B, ...as shown. If flatness exceeds service limit in any direction, replace the cylinder head, or lightly machine the cylinder head surface.



MEASUREMENT SPECIFICATION	
Cylinder head surface flatness	Less than 0.05 mm (0.002 in)

MEASUREMENT SPECIFICATION	
Cylinder head surface flatness	0.1 mm (0.0040 in)

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CHECKING COMPRESSION PRESSURE

Before checking compression, check the engine oil level. Make sure the starter motor and battery are in normal operating condition.

> **NOTE**
>
> **Always use a fully-charged battery to obtain specified engine revolution.**

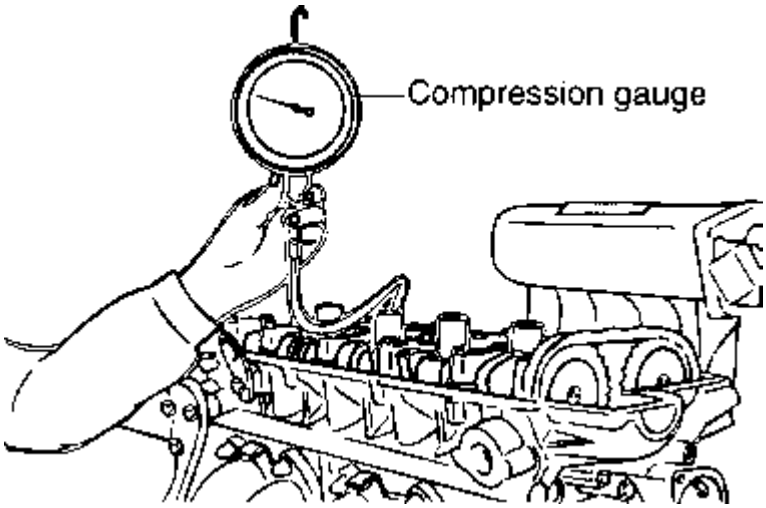
Start the engine and wait until engine coolant temperature reaches 80-95°C (176-205°F)

Stop the engine and disconnect the spark plug cables.

Remove the spark plugs.

Crank the engine to remove any foreign objects in the cylinders.

Screw the compression gauge into the spark plug hole.



Fully open the throttle.

Crank the engine and read the gauge.

Standard value [at 250-400rpm]	14.5kg/cm2 (1.47Mpa, 213psi)
Limit	13kg/cm2 (1.37Mpa, 199psi)

Repeat steps 6 through 8 on all cylinders, making sure that the pressure differential for each of the cylinders is within the specified limit.

Limit	Max.l.0 kg/cm2 (100kpa, 14psi) between cylinders

If a cylinder's compression or pressure differential is below the specification, add a small mount of oil through the spark plug hole and repeat steps 6 through 9.

If the addition of oil brings the compression up, it is possible that there is wear between the piston ring and cylinder wall.
If compression remains the same, valve seizure, poor valve seating or a compression leak from the cylinder head gasket are all possible causes.
If compression in any two adjacent cylinder is low and if adding oil does not help compression, there is leakage past the gasket surface. If so, replace cylinder head gasket.

TORQUE SPECIFICATION	
Spark plug	20-30 Nm (200-300 kg·cm, 15-21 lb·ft)

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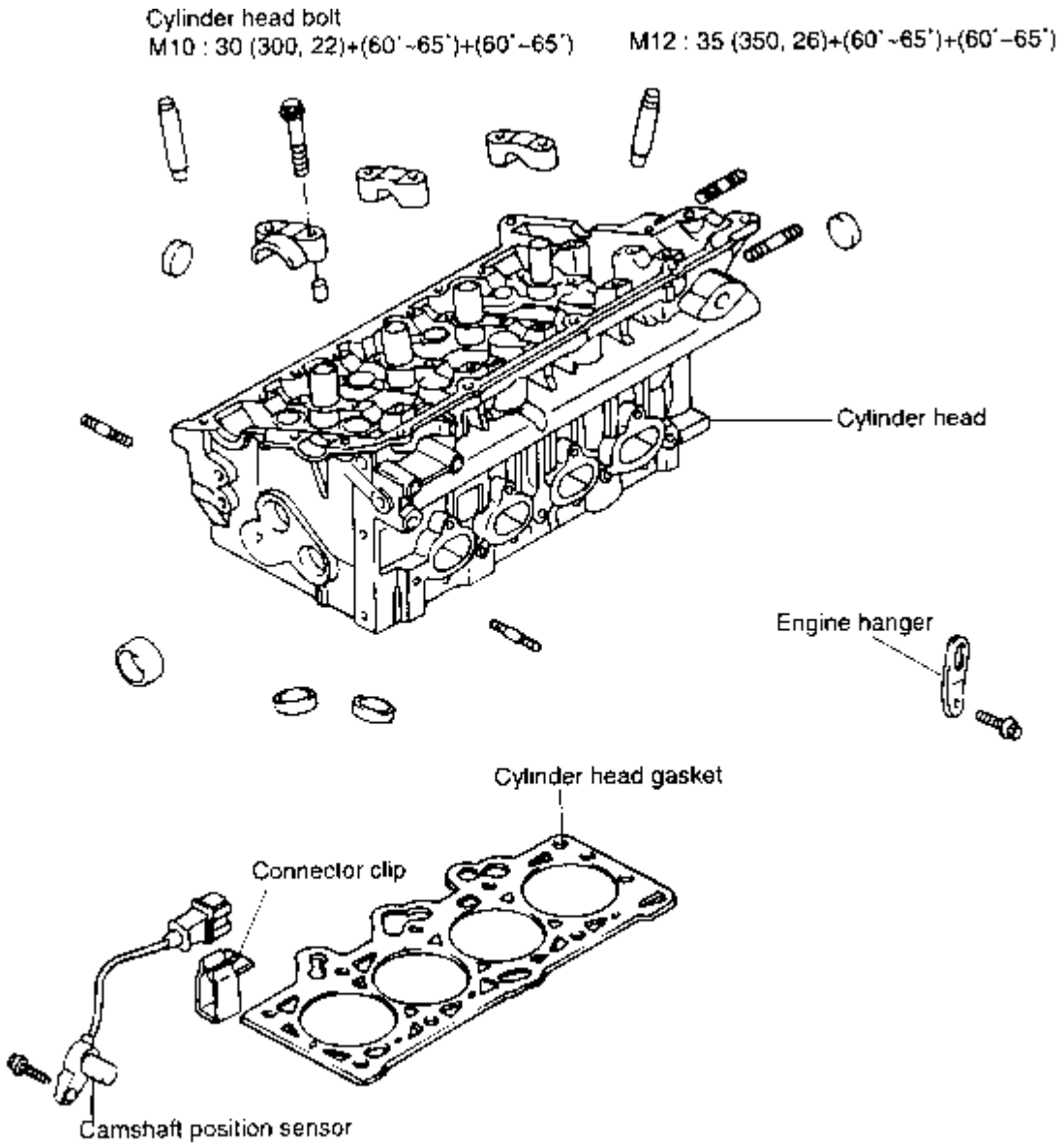
COMPONENTS



TORQUE : Nm (kg.cm, lb.ft)

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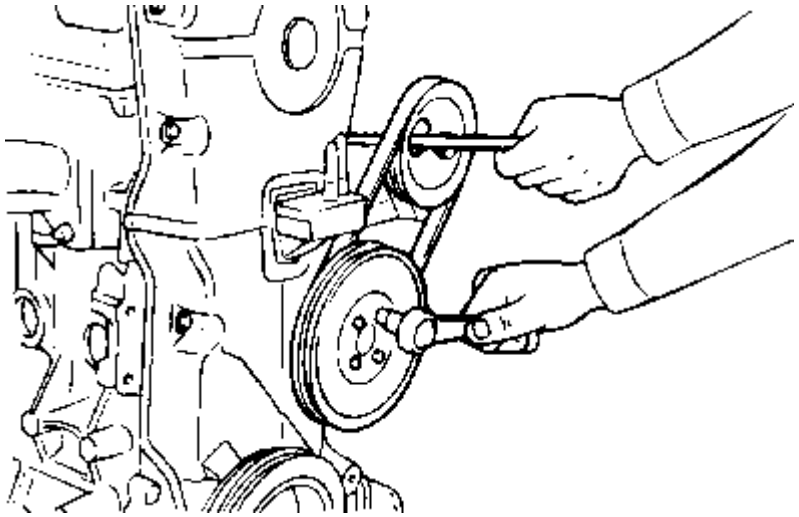
DISASSEMBLY



Drain the coolant and disconnect the upper radiator hose.

Remove the breather hose (between the air cleaner and the head cover).

Remove the air-intake hose.

Remove the vacuum hose, fuel hose and coolant hose.

Remove the cables from the spark plugs. The cables should be removed by holding the boot portion.

Remove the ignition coil.

Remove the power steering oil pump and bracket.

Remove the intake manifold.

Remove the heat protector and exhaust manifold assembly.

Remove the coolant pump pulley and the crankshaft pulley.

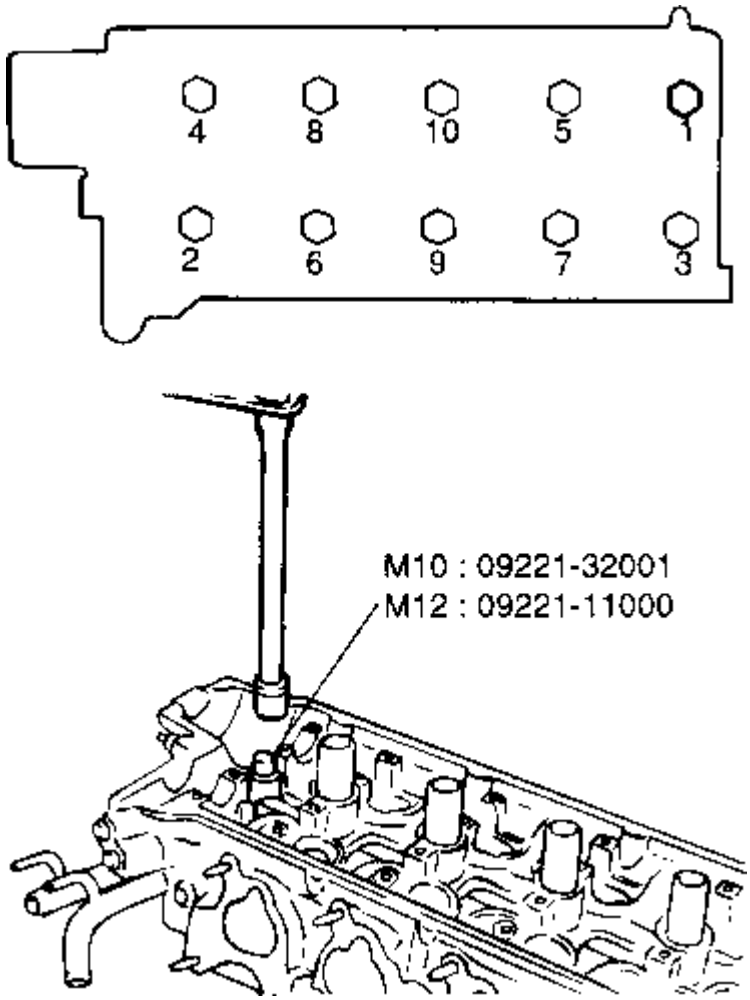
Remove the timing belt cover.

Remove the timing belt tensioner pulley.

Remove the timing belt.

Remove the head cover.

Remove the cylinder head assembly. The cylinder head bolts should be removed by using Special Tool, Cylinder Head Bolt Wrench (09221-32001, 09221-11000), in the sequence as shown in the illustration in two or three steps.



Remove the gasket pieces from the cylinder block top surface and cylinder head bottom surface.

NOTE

Make sure that the gasket pieces do not fall in the engine.

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DISASSEMBLY

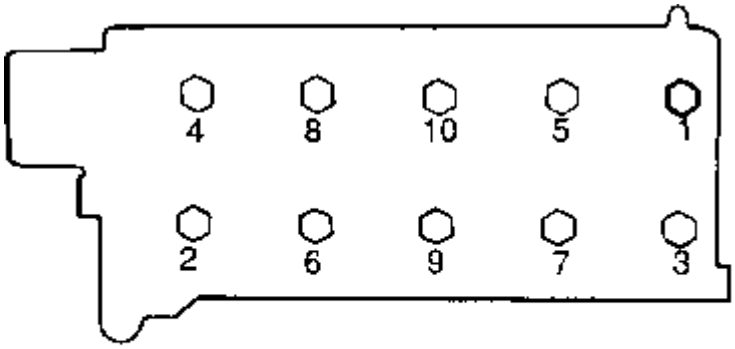
Clean all gasket surfaces of the cylinder block and the cylinder head.

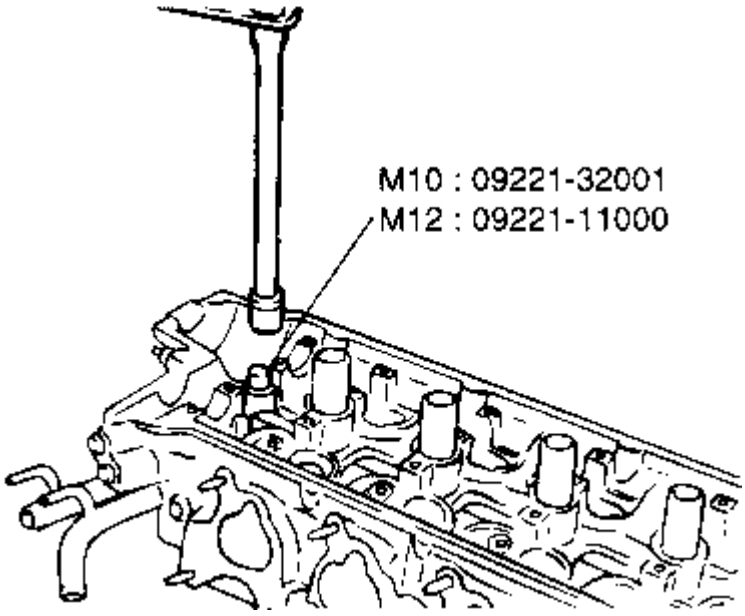
Install a new cylinder head gasket onto the cylinder head assembly. sealant to the gasket and do not reuse the old cylinder head gasket.

Install the cylinder head bolts. Starting at top center, tighten all cylinder head bolts in sequence as shown in illustration, using the Cylinder Head Bolt Wrench (09221-11001). Repeat the procedure, retightening all cylinder head bolt to the specified torque.

Cylinder head bolt

M10	30Nm (300kg.cm,221b.ft)+(60°-65°)+ (60°-65°)
M12	35Nm (350kg.cm,261b.ft)+(60°-65°)+ (60°-65°)

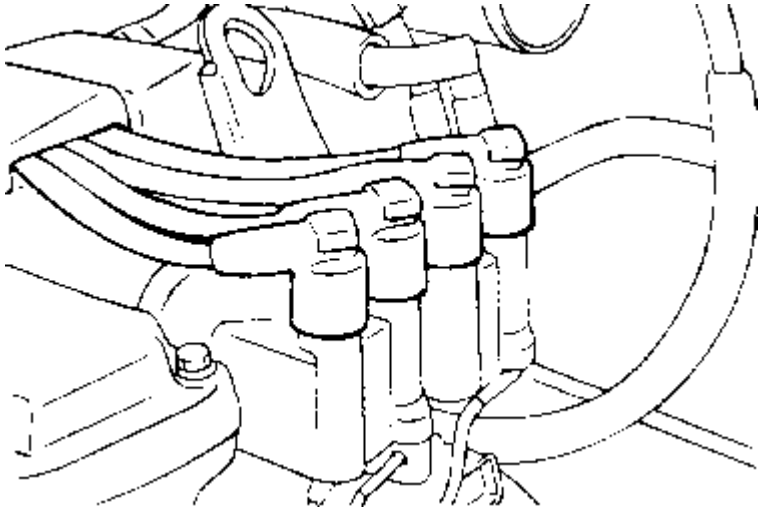




NOTE

When tightening the cylinder head bolt, using special tool and torque wrench, tighten the bolt to

the specified torque [M10:30 Nm, M12: 35 Nm] and then turn the torque wrench 60°-65° and repeat it one more time as shown in illustration.



Install the timing belt tensioner pulley.

Install the timing belt on the camshaft sprocket, making sure that the tension side is tightened by turning the camshaft sprocket in reverse, all timing marks are in alignment.

Adjust the timing according to "Timing Belt"

Install the rocker cover and tighten the bolts to the specified torque.

TORQUE SPECIFICATION	
Rocker cover belt	8-10 Nm (80-100 kg·cm, 5.9-7.4 lb·ft)

Install the timing belt cover.

Install the new intake manifold gasket and the intake manifold. Tighten the nuts and bolts to the specified torque.

Install the new exhaust manifold gasket and the exhaust manifold. Tighten the exhaust manifold attaching nuts to the specified torque.

Install the surge tank and tighten the nuts bolts to the specified torque.

TORQUE SPECIFICATION	
Manifold nuts and bolts (both intake and exhaust)	15-20 Nm (150-200 kg·cm, 11-14 lb·ft)

TORQUE SPECIFICATION	
Surge tank to inlet manifold nuts and bolts	15-20 Nm (150-200 kg·cm, 11-14 lb·ft)

Install the power steering oil pump and bracket.

Install the ignition coil.

Install the air intake hose.

Connect the vacuum hose, fuel hose and water hose.

Install breather hose.

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2000	
GROUP	
Engine Mechanical System	Cylinder Head Assembly

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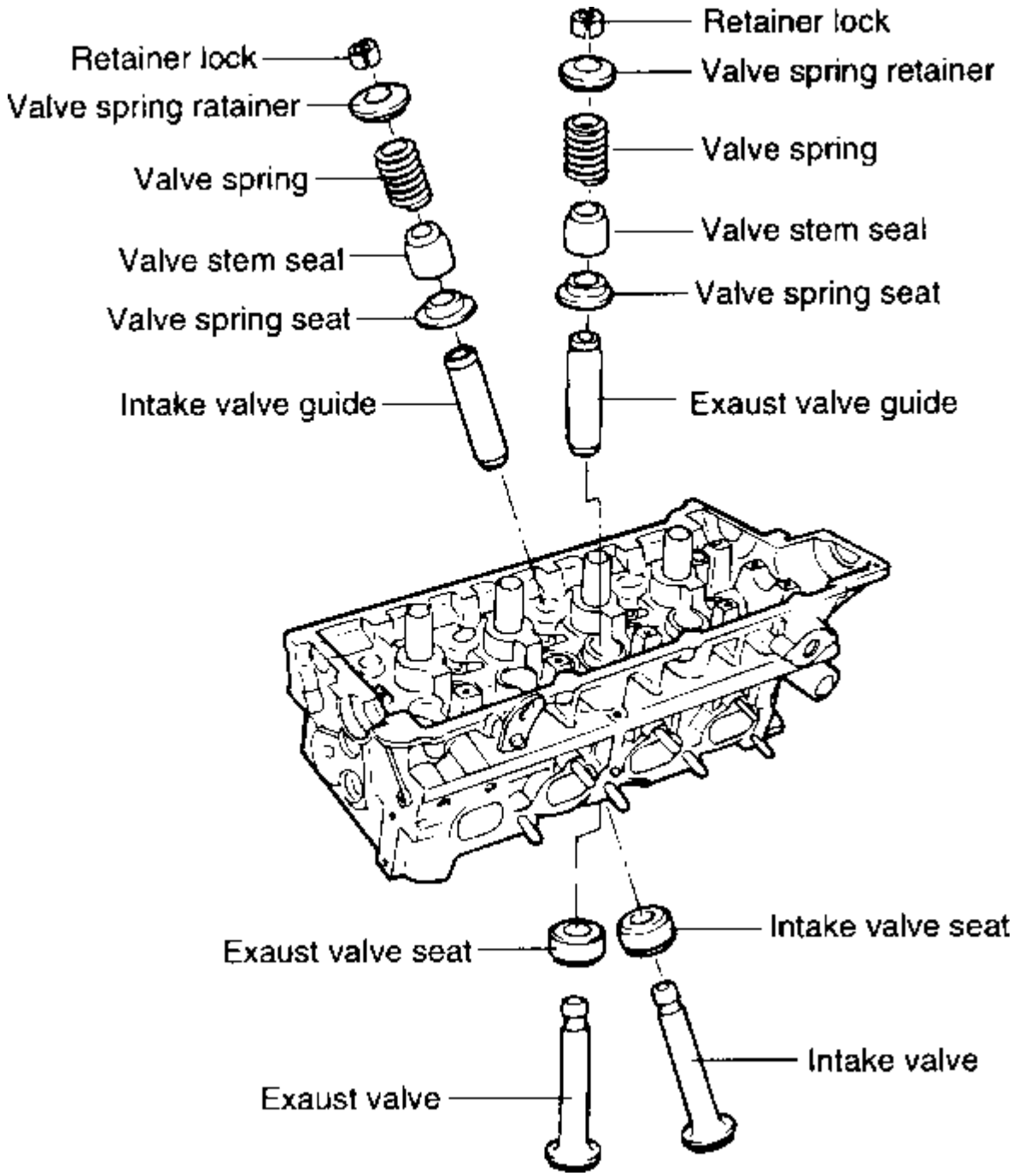
VALVES AND VALVE SPRINGS

COMPONENTS



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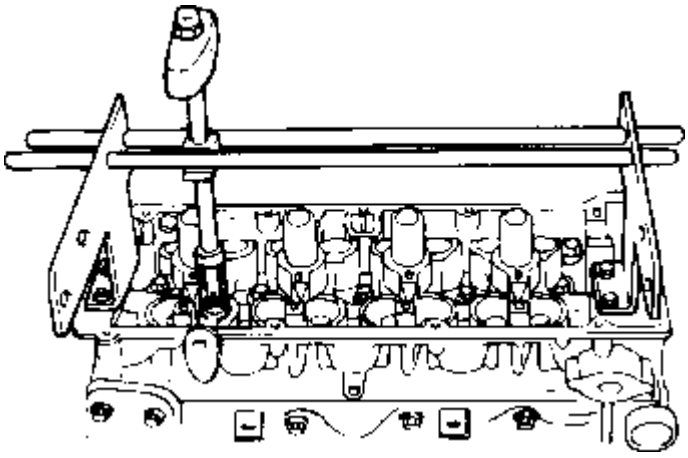
DISASSEMBLY

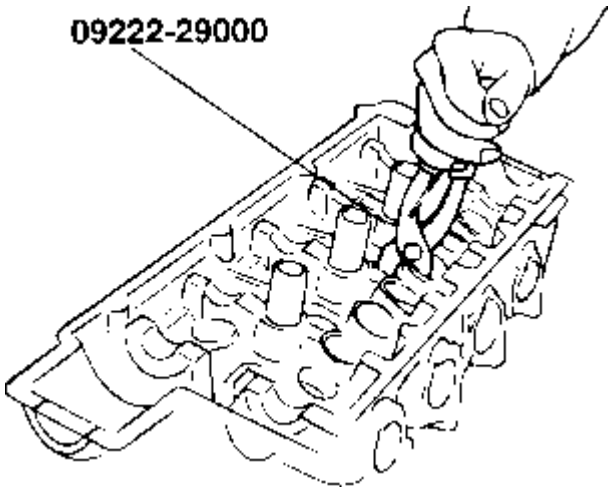
Using the special tool, Valve Spring Compressor (09221-29100) remove the retainer lock. Next remove the spring retainer, valve spring, spring seat and valve.



NOTE

Keep these parts in order so they can be reinstalled in their original positions.

Remove the valve stem seals using special tool. Valve stem oil seal remover (09222-29000).



NOTE

Do not reuse the valve stem seals.

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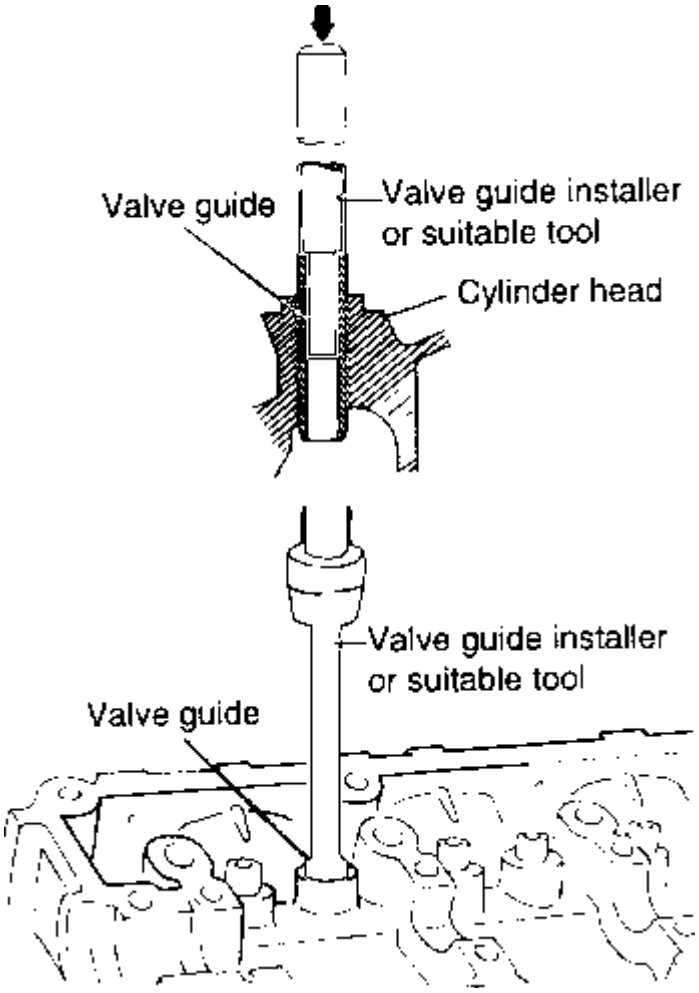
VALVE GUIDE REPLACEMENT PROCEDURES

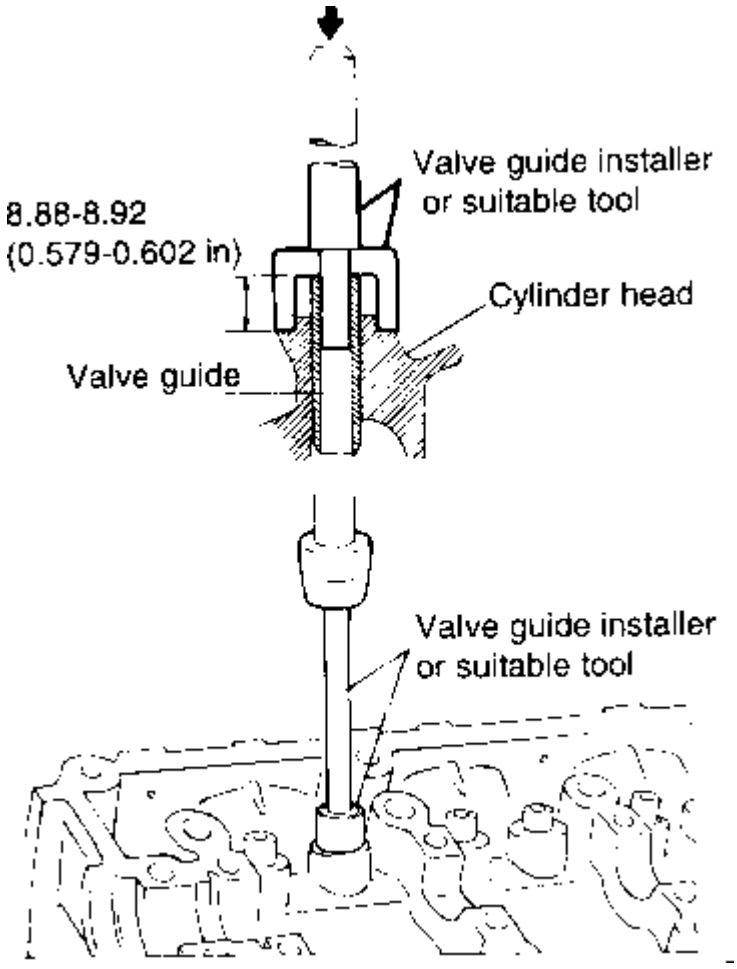
The valve guide is installed using a press fit. Using a Valve Guide Installer (09221-22000) or suitable tool, replace the valve guide described in the following procedure.

Using the Valve Guide installer push rod, push the valve guide out toward the cylinder block with a press.



Machine the valve guide insert hole in the cylinder head to the specified oversize of the new valve guide.

Using the Valve Guide Installer adapter (09222-29000) and Valve Guide installer or suitable tool, press fit the valve guide. Using the valve guide installer makes it possible to press fit the valve guide to a predetermined height. Install the valve guide from the top of the cylinder head. Note that intake and exhaust valve guides differ in length (42.7 mm [1.68 in] for intake and 39.1 mm [1.54 in.] for exhaust).



After installing the valve guides, insert new valves and check the clearance.

Whenever valve guides are replaced, check for valve-to-seat contact, and recondition the valve seats as necessary.

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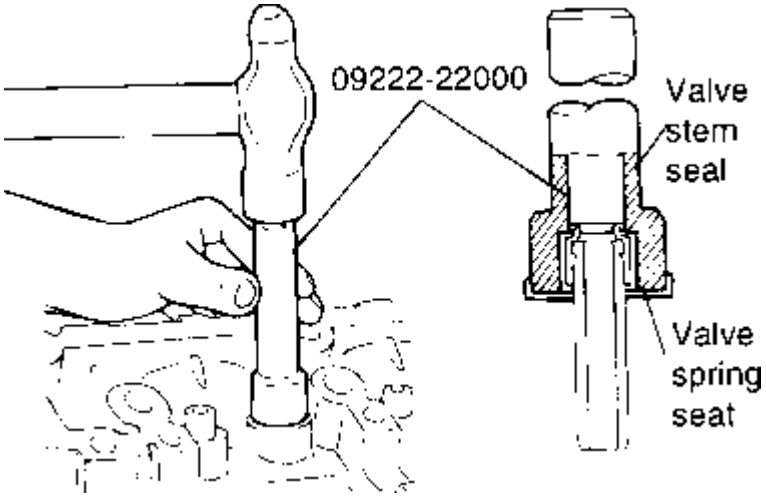
INSTALLATION

NOTE

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

After installing the spring seat, fit the stem seal onto the valve guide.

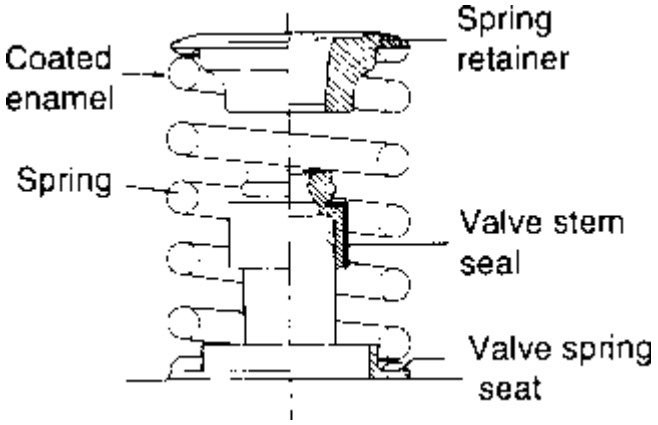
To install, fit the seal in by lightly tapping the Special Tool, Valve Stem Oil Seal Installer (09222-22000)



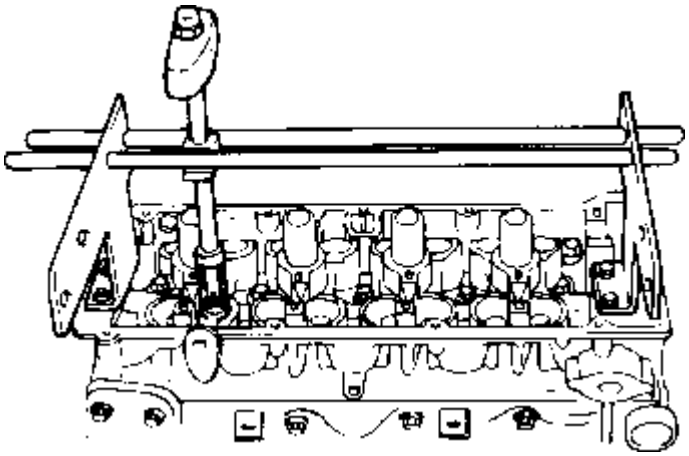
The seal is installed in the specified position by means of the special tool. Incorrect installation of the seal will adversely affect the lip I.D. and eccentricity, resulting in oil leaking down the valve guides. Therefore, when installing, be careful not to twist the seal. Do not reuse old stem seals.

Apply engine oil to each valve stem. Insert the valves into the valve guides. Avoid using force when inserting the valve into the seal. After insertion, check to see if the valve moves smoothly.

Install springs and spring retainers. Valve springs should be installed with the enamel coated side toward the valve spring retainer.



Using special tool, Valve Spring Compressor (09221-29100), compress the spring. Be careful that the valve stem seal is not distorted by the bottom of the retainer. Then install the retainer locks. After installation of the valves, make certain that the retainer locks are properly installed.



Install the cylinder head. Refer to "Cylinder Head"

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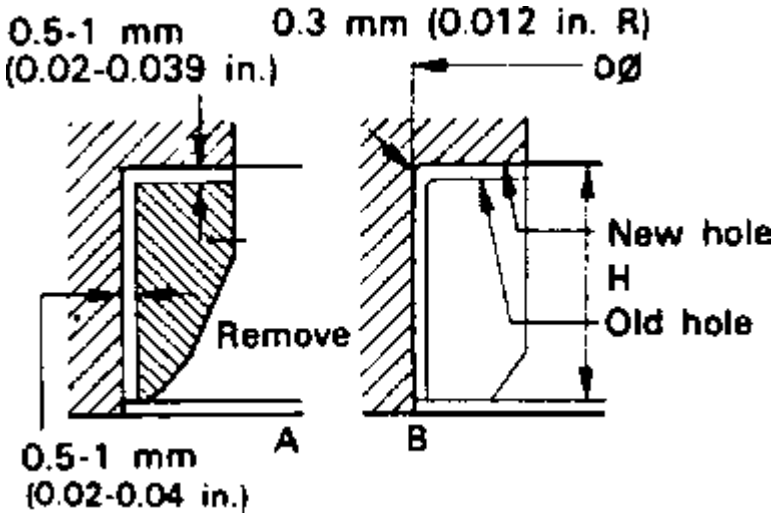
VALVE SEAT INSERT REPLACEMENT PROCEDURE.

Any valve seat insert that has been worn over the service limit should be removed at normal temperature after cutting away most of the insert wall, using valve seat cutters, as shown in Fig A.



Valve Seat Insert Oversizes

Description	Size mm (in.)	Size mark	Seat insert height H mm (in.)	Cylinder head I.D. mm (in.)
Intake valve seat insert	0.3 (0.012) O.S.	30	5.1-5.3 (0.201-0.209)	29.8-29.821 (1.173-1.174)
	0.6 (0.024) O.S.	60	5.4-5.6 (0.213-0.220)	30.1-30.12 (1.185-1.186)
Exhaust valve seat	0.3 (0.012) O.S.	30	5.9-6.1 (0.232-0.240)	27.3-27.321 (1.074-1.075)
	0.6 (0.024) O.S.	60	6.2-6.4 (0.244-0.252)	27.6-27.621 (1.086-1.087)

After removing the seat insert, machine the seat insert bore using a reamer or a cutter. Cut to the size shown in the table.

Heat the cylinder head to about 250°C (480°F) and press in the oversize seat insert. The oversize seat insert should be at normal room temperature for installation. After installing a new valve seat insert, resurface the valve seat using the same procedure described in the first paragraph of "Valve Seat Insert".

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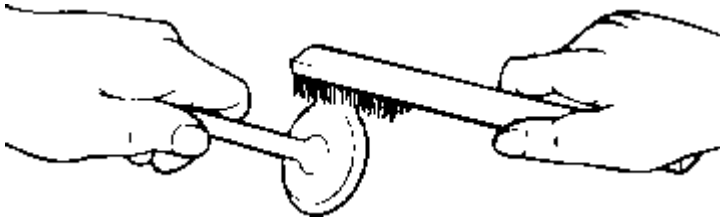
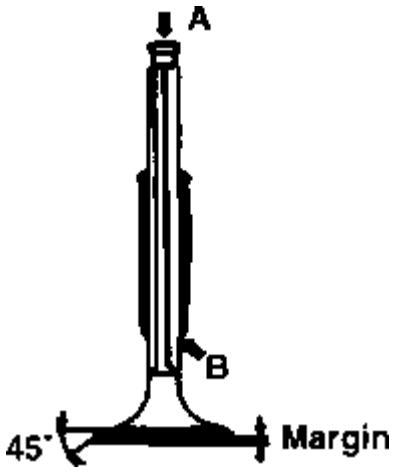
INSPECTION

VALVES

Using a wire brush, clean the valve thoroughly.



Check each valve for wear, damage and distortion of head and stem at B. Repair or correct if necessary. If stem end A is pitted or worn, resurface as necessary. This correction must be limited to a minimum. Also resurface the valve face. Replace the valve if the margin has decreased to less than the service limit.



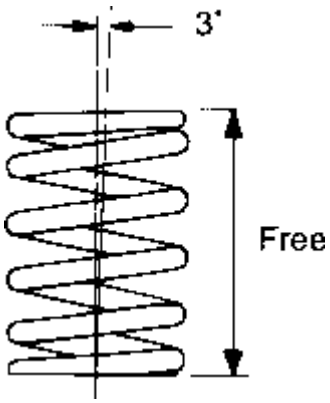
MARGIN

MEASUREMENT SPECIFICATION	
Intake	1.1 mm (0.0433 mm)
Exhaust	1.3 mm (0.0512 mm)

MARGIN

MEASUREMENT SPECIFICATION	
Intake	0.8 mm (0.0391 in)
Exhaust	1.0 mm (0.039 in)

VALVE SPRINGS



Check the valve spring free length and tension. If they exceed the service limit, replace the spring.

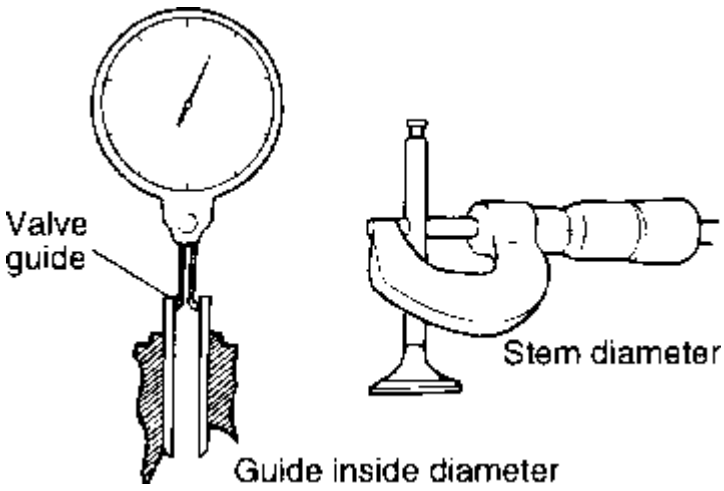
Using a square, test the squareness of each spring. If the spring is excessively out of square, replace it.

VALVE SPRING

MEASUREMENT SPECIFICATION	
Free height	46.07 mm (1,8137 in)
Load	25.5kg at 37 mm
Load	57.3kg at 28 mm

SPECIFICATION	
Out of square	3° or less

VALVE GUIDES



Check the valve stem to guide clearance. If the clearance exceeds the service limit, replace the valve guide with next oversize part.

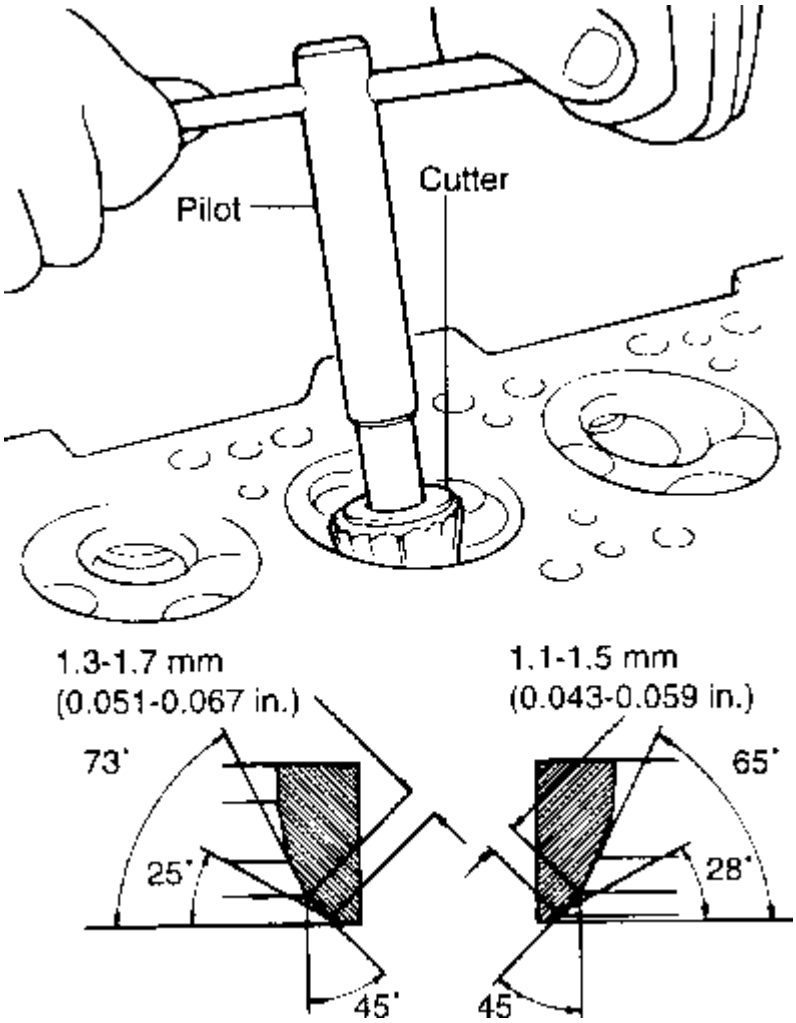
VALVE STEM-TO-GUIDE CLEARANCE

MEASUREMENT SPECIFICATION	
Intake	0.020-0.050 mm (0.0008-0.0019 in)
Exhaust	0.050-0.085 mm (0.0019-0.0033 in)

VALVE STEM-TO-GUIDE CLEARANCE

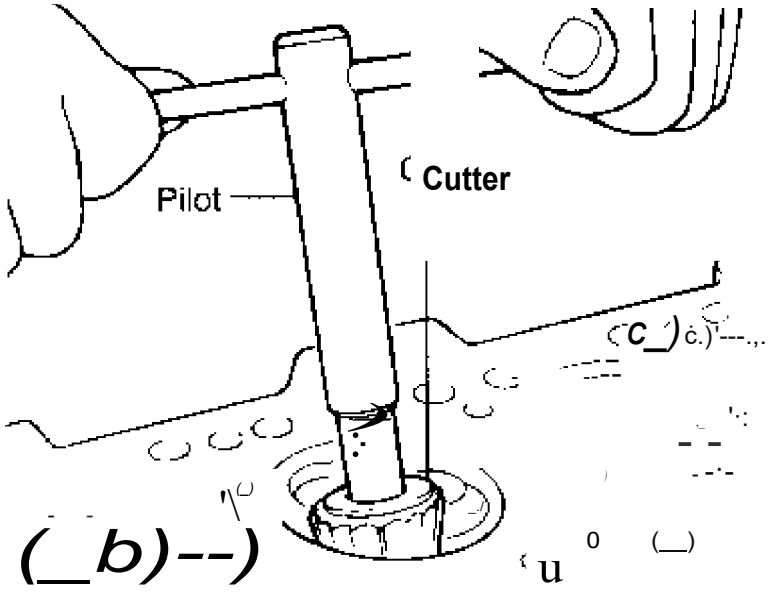
MEASUREMENT SPECIFICATION	
Intake	0.1 mm (0.004 in)
Exhaust	0.15 mm (0.006 in)

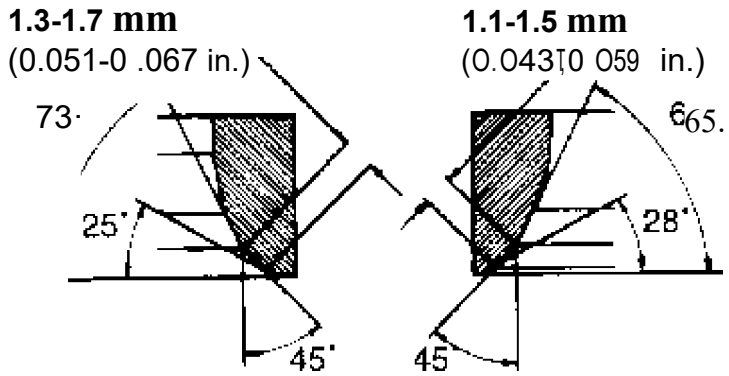
VALVE SEAT INSERT



Check the valve seat for evidence of overheating and improper contact with the valve face. Replace the seat if necessary.

Before reconditioning the seat, check the valve guide for wear. If the valve guide is worn, replace it, then recondition the seat. Recondition the valve seat with a valve seat grinder or cutter. The valve seat contact width should be within specifications and centered on the valve face.


Pilot
Cutter


1.3-1.7 mm
(0.051-0 .067 in.)
73·
25·
45·
1.1-1.5 mm
(0.043T0 059 in.)
65.
28·
45

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2000	
GROUP	
Engine Mechanical System	Intake & Exhaust System

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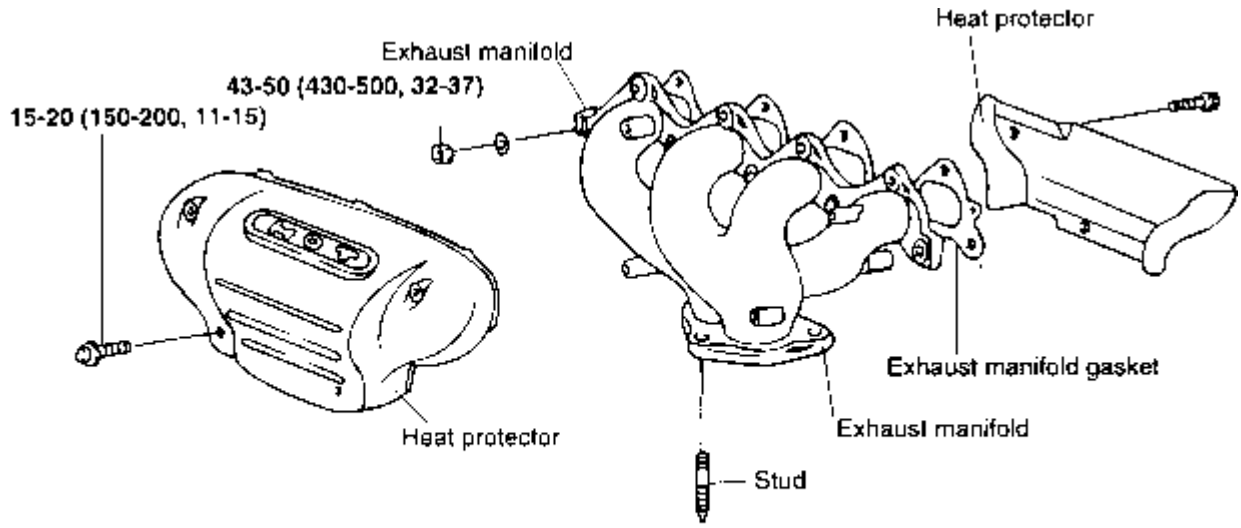
COMPONENTS



TORQUE: Nm (kg.cm, lb.ft)

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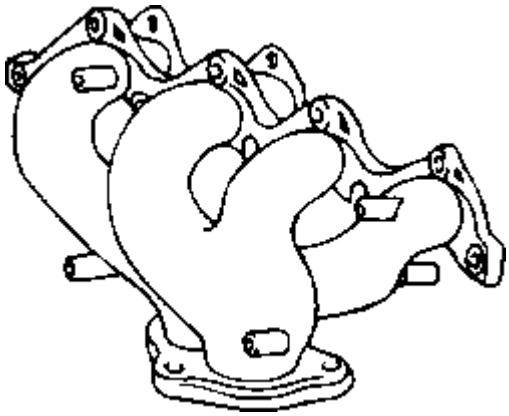
DISASSEMBLY



Remove the exhaust manifold heat protector.

Remove the exhaust manifold ass'y from cylinderhead.

Remove the exhaust manifold gasket.

INSPECTION

EXHAUST MANIFOLD

Check for damage or cracking

REASSEMBLY

Install the exhaust manifold in the reverse order of removal.

> **CAUTION**
>
> **Replace the exhaust manifold gasket and lock nut at the time of reassembling.**

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2000	
GROUP	
Engine Mechanical System	Intake & Exhaust System

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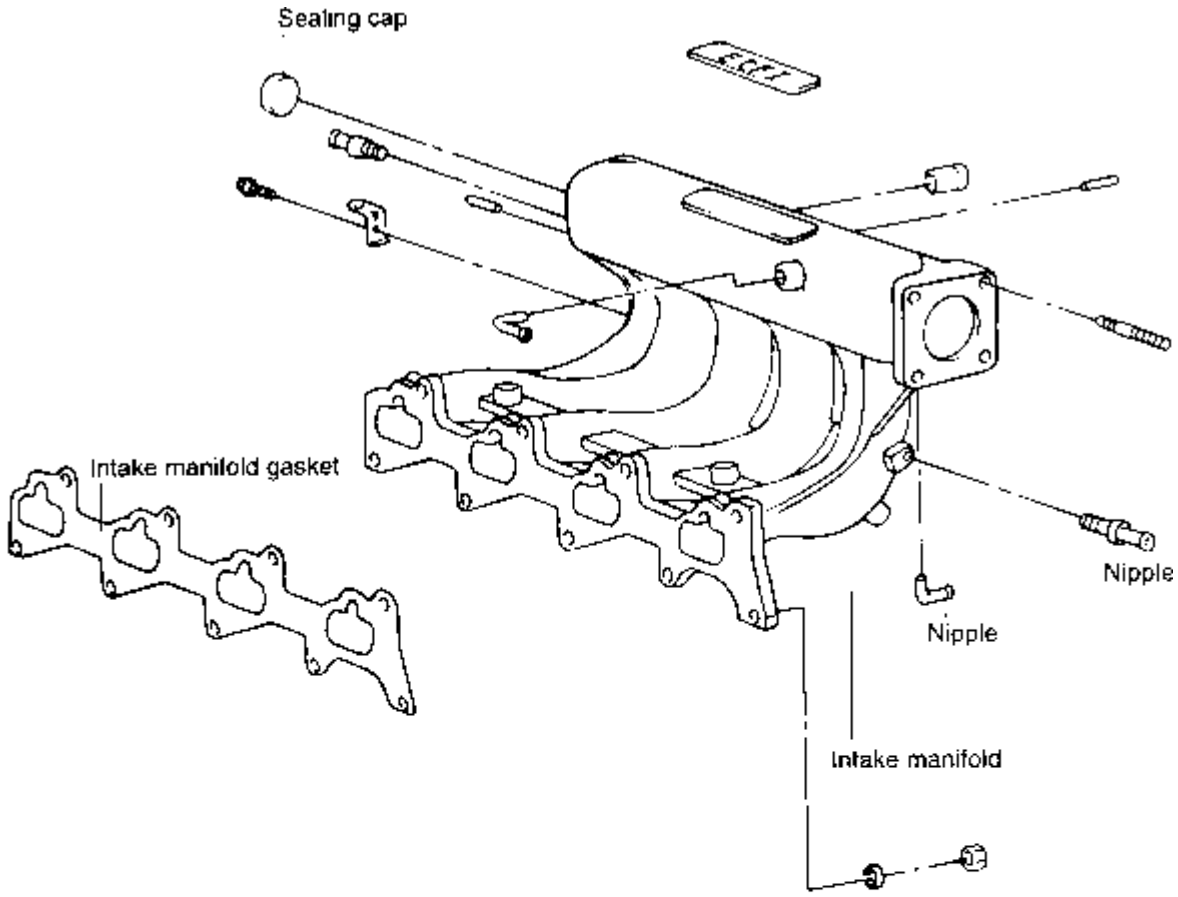
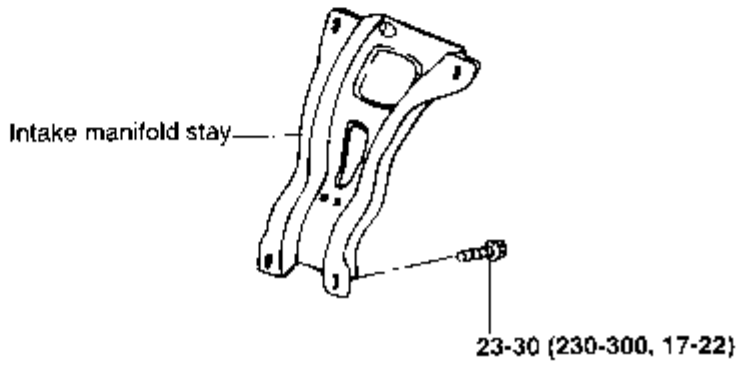
COMPONENTS





TORQUE : Nm (kg.cm, lb.ft)

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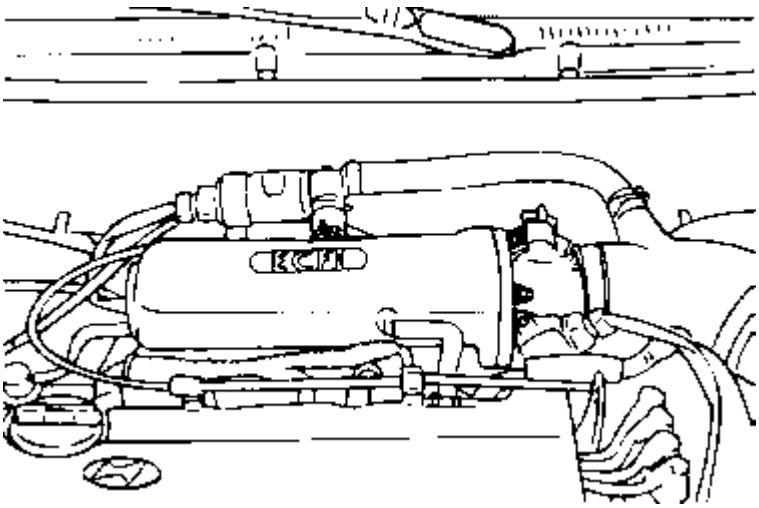
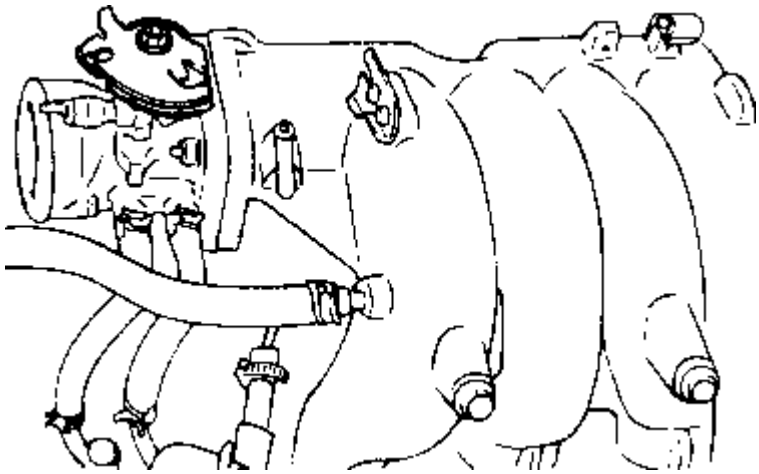
DISASSEMBLY

Remove the idle speed actuator.



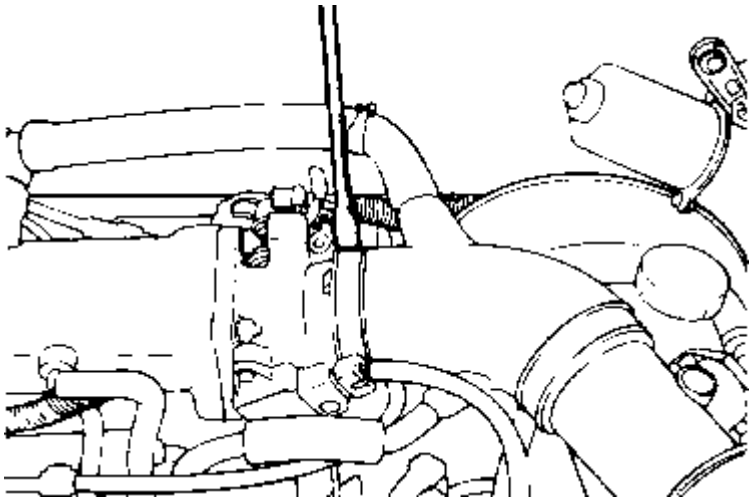
Remove the Intake air hose connected to the throttle body.



Remove the accelerator cable.

Remove the P.C.V. hose and brake booster vacuum hoses.

Disconnect the vacuum hose connections.

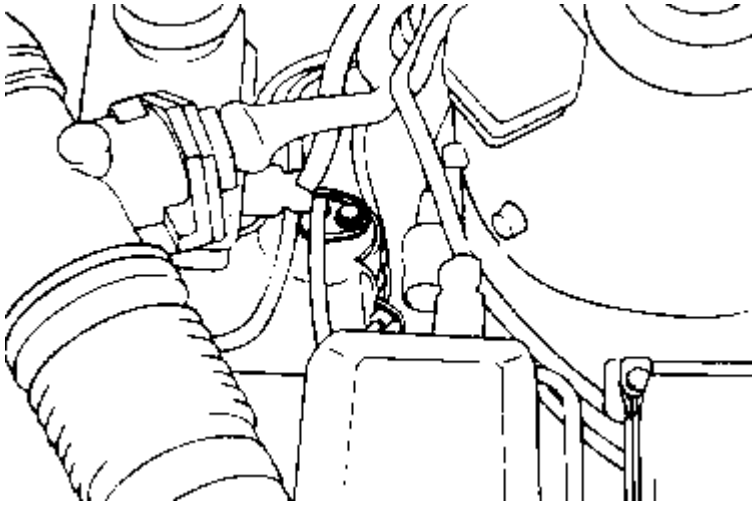


Disconnect the high pressure fuel hose connection after relieving pressure in the fuel pipe line to prevent fuel overflow.

Remove the surge tank stay.

Remove the surge tank assembly and gasket.

Disconnect the fuel injector harness connector.

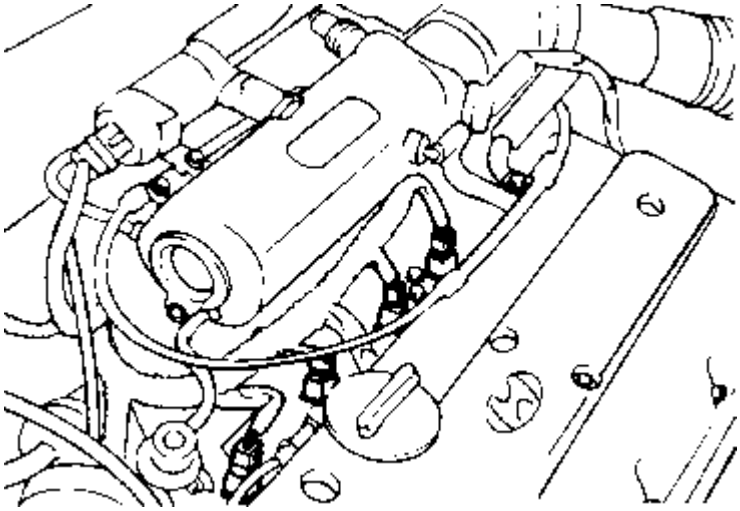


Remove the delivery pipe with the fuel injectors and pressure regulator attached.

> **CAUTION**
> **Be careful not to drop the injectors when removing the delivery pipe.**

Remove the insulator from the intake manifold and disconnect the heater hose.

Remove the intake manifold.



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INSPECTION

INTAKE MANIFOLD

Check for damage or cracking of any part.

AIR HOSE

Check for damage or cracking of any part.

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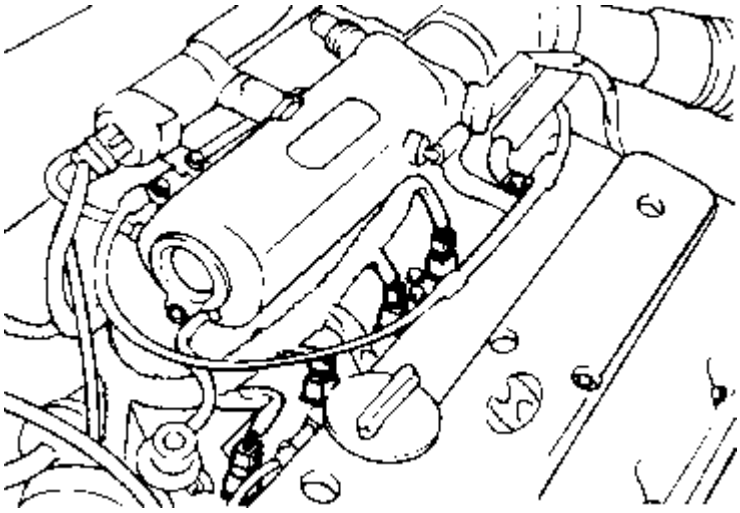
REASSEMBLY



Replace the intake manifold gasket and install the intake manifold

Install the insulator to the intake manifold and connect the heater hose

> **CAUTION**
>
> **Be careful not to drop the injectors when removing the delivery pipe.**

Ensure that insulators are correctly inserted into the delivery pipe hole.

Install the delivery pipe with the fuel injectors and pressure regulator attached.

Connect the fuel injector harness connector.

Install the intake manifold stay.

Connect the high pressure fuel hose connection.

Connect the vacuum hose connections.

Install the P.C.V hose and brake booster vacuum hose.

Install the intake air hose to the throttle body.

Install the accelerator cable.

Install the idle speed actuator.

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2001	
GROUP	
Engine Mechanical System	Intake & Exhaust System

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REASSEMBLY

Temporarily install the front exhaust pipe, the catalytic converter assembly, the center exhaust pipe, and the main muffler, in that order.

Tighten the parts securely. Make sure there is no interference with any body components.

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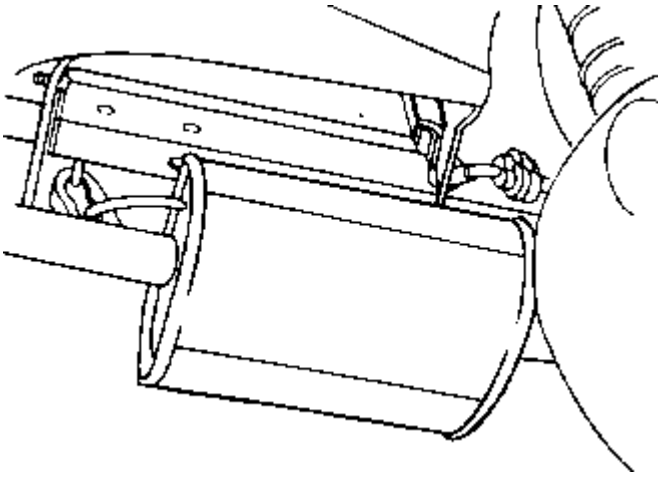
DISASSEMBLY

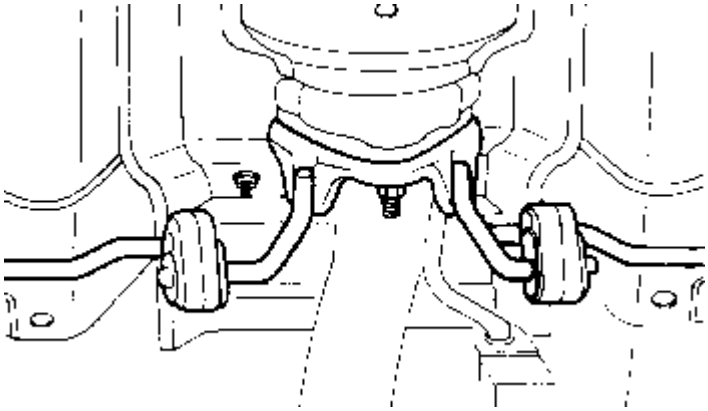
MAIN MUFFLER

> **CAUTION**
>
> **Before removing or inspecting the exhaust system, ensure that the exhaust system has cooled sufficiently.**

Disconnect the main muffler from the center muffler.

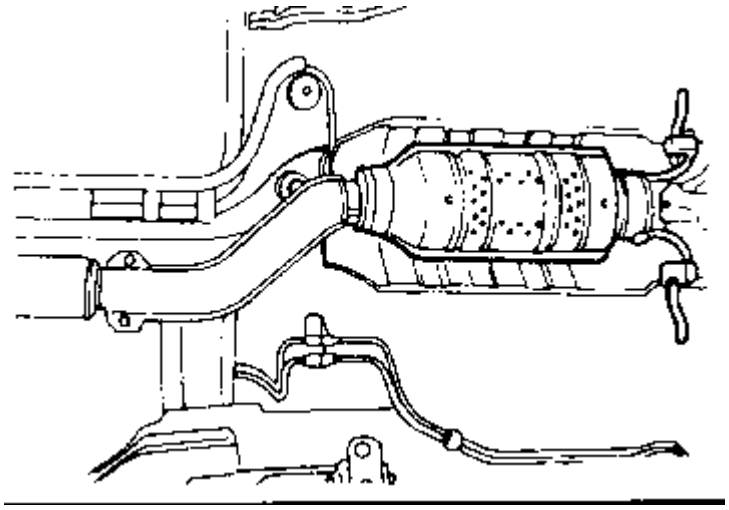


Remove the rubber hangers and take out the main muffler.

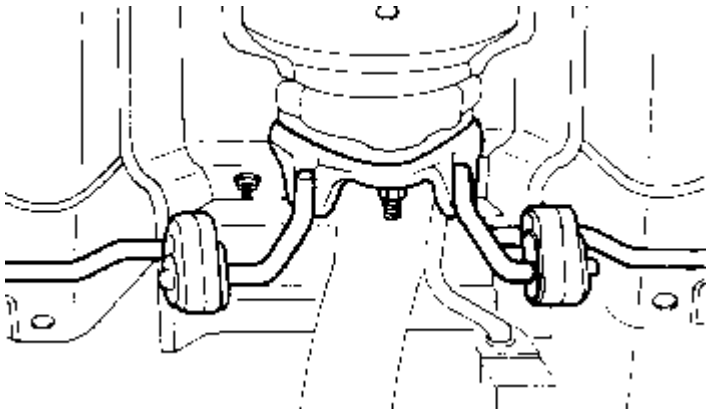


CENTER MUFFLER

Remove the center muffler assembly from the catalytic converter (unleaded vehicle) or front exhaust pipe (leaded vehicle).

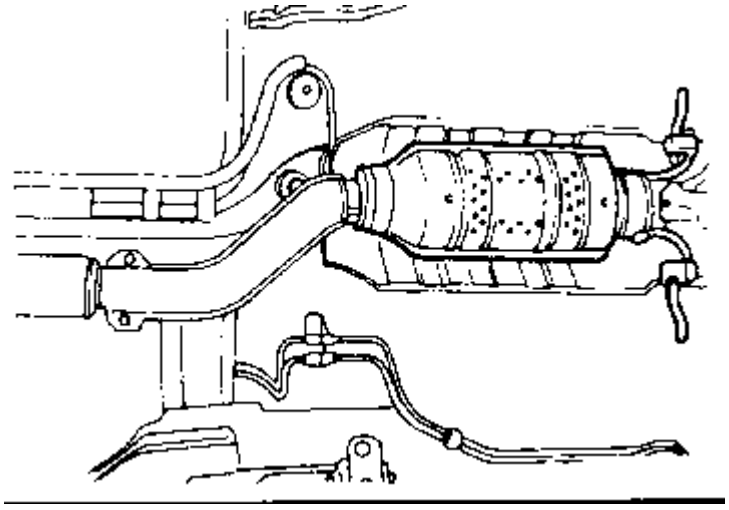


Remove the rubber hanger, then remove the center muffler.

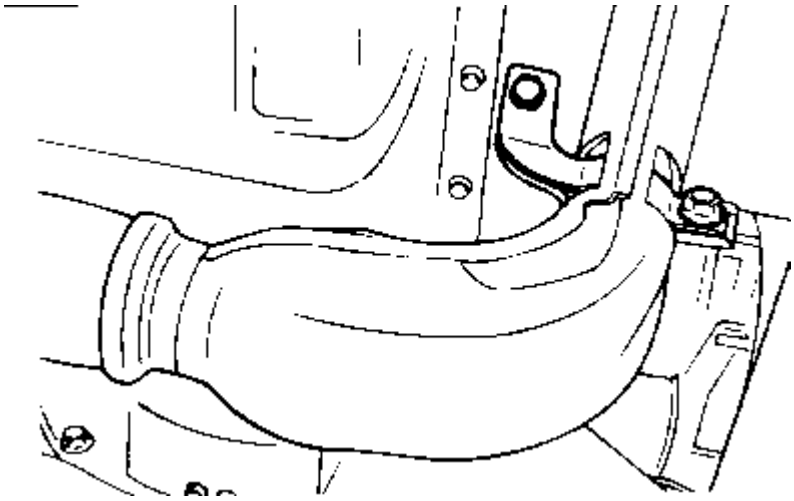


CATALYTIC CONVERTER

Remove the catalytic converter from the center muffler and the front exhaust pipe.



Remove the rubber hanger and catalytic converter.



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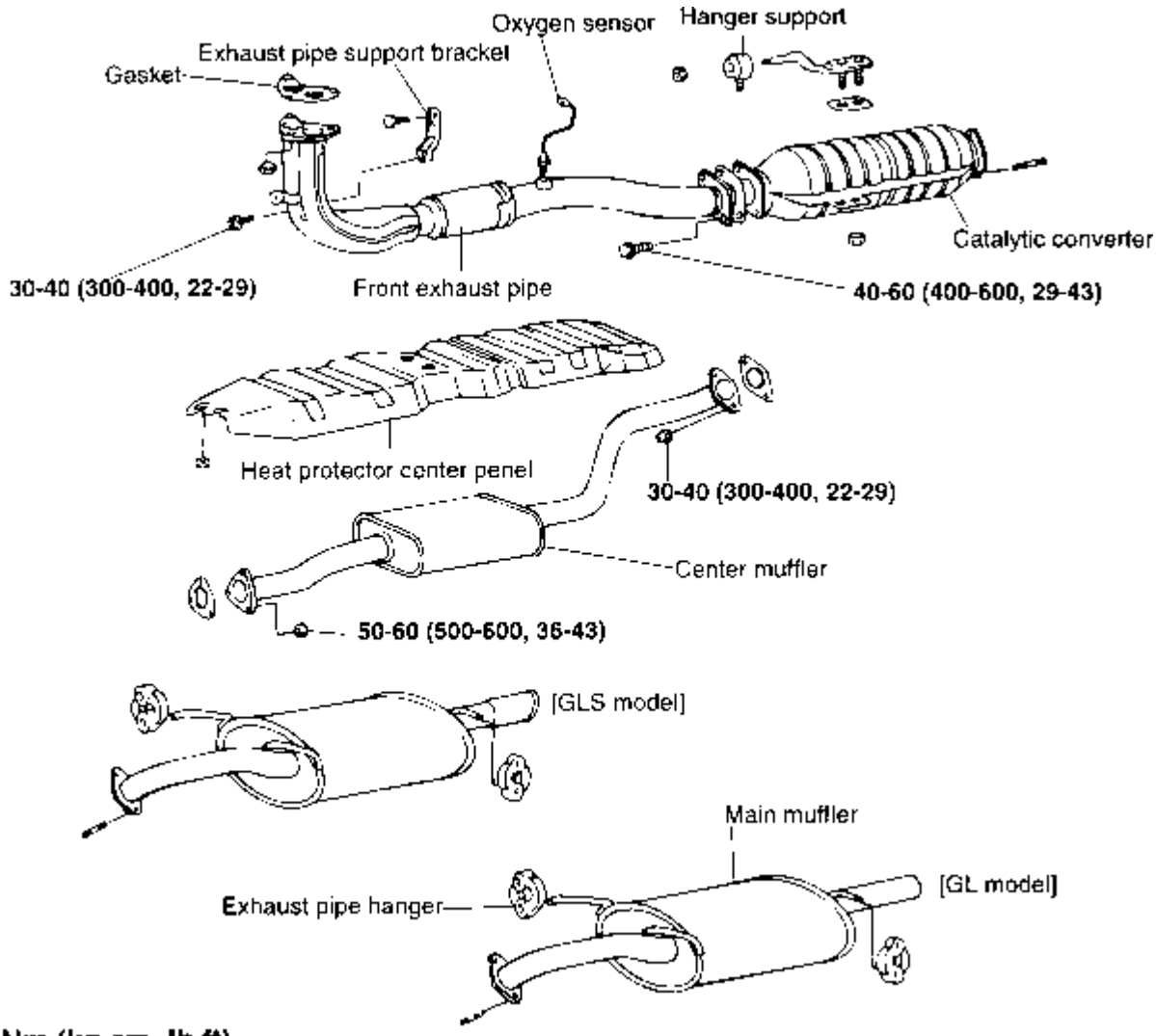
COMPONENTS



TORQUE : Nm (kg.cm, lb.ft)

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2000	
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Engine Mechanical System	Intake & Exhaust System

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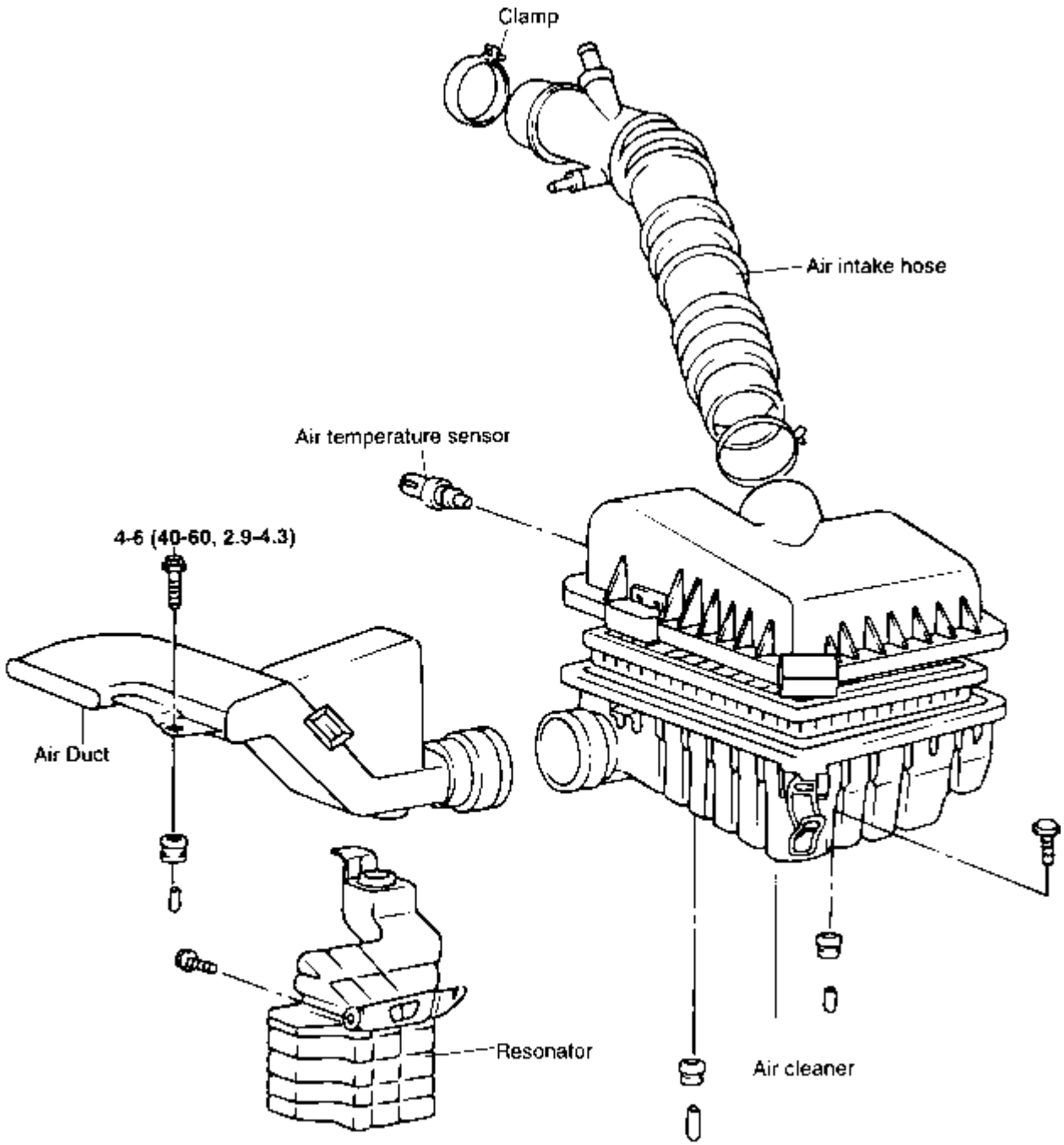
COMPONENTS



TORQUE: Nm (kg.cm, lb.ft)

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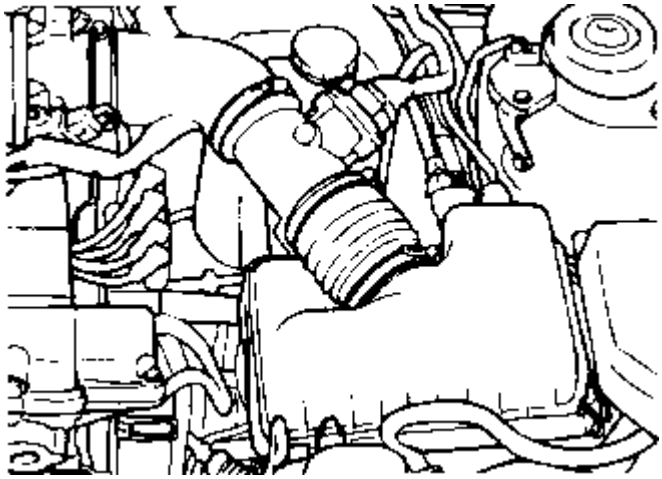
DISASSEMBLY



Remove the air duct connected to the air cleaner.

Disconnect the intake air temperature sensor harness.

Remove the air intake hose from the air cleaner side.

Remove the air cleaner cover and filter.

Remove the air cleaner mounting bolts and remove the air cleaner.

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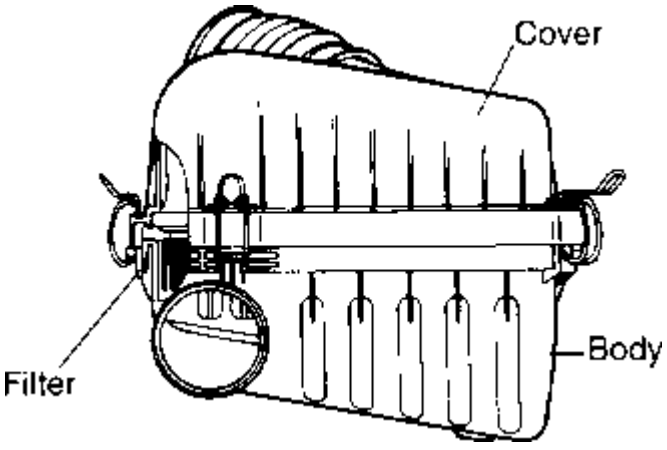
INSPECTION

Check the air cleaner body, cover, or filter for distortion, corrosion or damage.

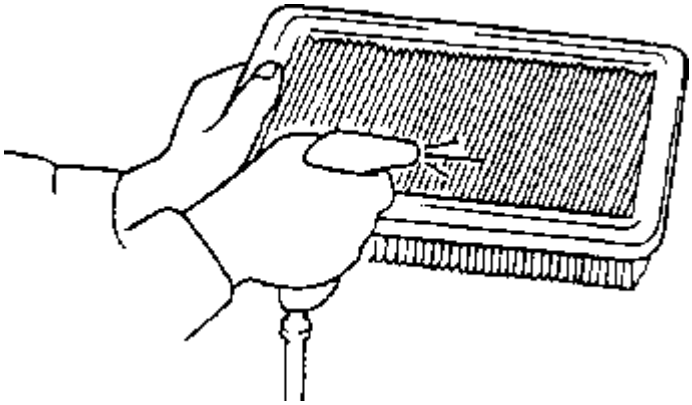
Check the air duct for damage.

Check the resonator for distortion or damage.



Check the air cleaner filter for restriction, contamination or damage. If the filter is slightly restricted, remove dust and other contaminants by blowing air from the upper side through the filter.

Check the air cleaner housing for restrictions, contamination or damage.



REASSEMBLY

Install the air cleaner is the reverse order of removal.

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2001	
GROUP	
Engine Mechanical System	Lubrication System

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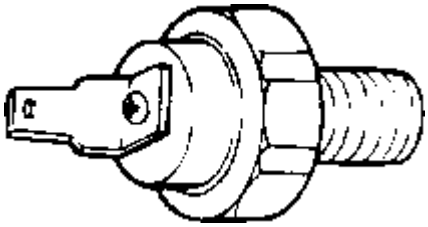
OIL PRESSURE SWITCH

If "OIL PRESSURE" indicating lamp lightens when ignition switch is set to "ON" and goes out when engine is started and runs at idle, then everything is in order. If "OIL PRESSURE" lamp does not lighten when ignition switch is set to "ON," check switch, lamp and wiring.

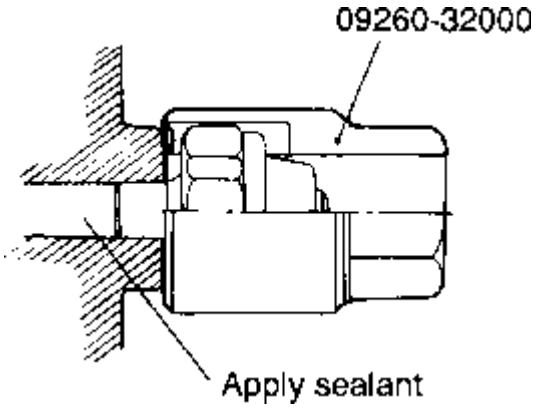


If there is current flow when ignition switch is set to "ON" and if there is no current flow when engine is running at idle, switch is good.

If switch is good, check lamp and wiring.

Pressure of oil switch operation
14.71-29.42 kpa (0.15-0.3 kg/cm2, 2.1-4.3 psi)

Using the special tool (09260-32000), tighten the switch to the specified torque.



NOTE

Do not overtorque the oil pressure switch.

TORQUE SPECIFICATION	
Oil pressure switch and sender assembly	8-12 Nm (80-120 kg·cm, 5.8-8.7 lb·ft)

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2001	
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Engine Mechanical System	Lubrication System

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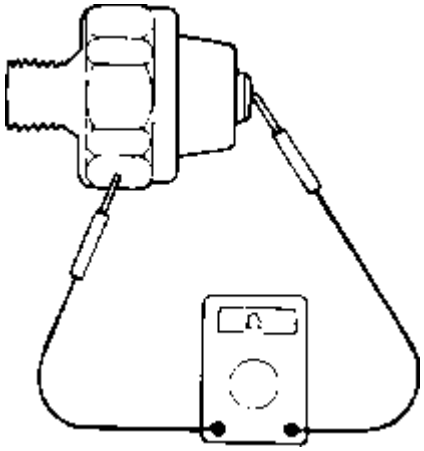
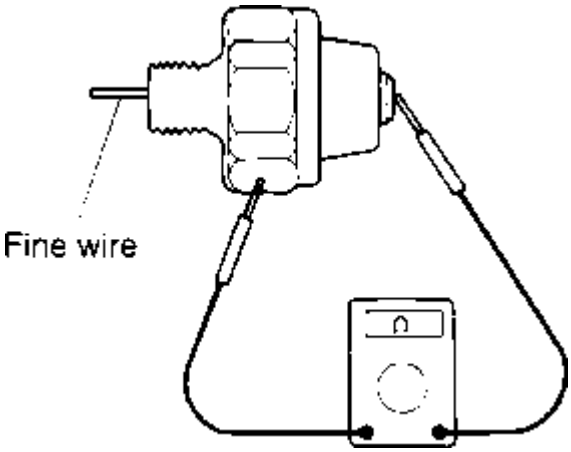
INSPECTION

OIL PRESSURE SWITCH

Use an ohmmeter to check the continuity between the terminal and the body. If there is no continuity, replace the oil pressure switch.



Check the continuity between the terminal and the body when the fine wire is pushed. If there is continuity even when the fine wire is pushed, replace it.



If there is no continuity when a 50 kpa (7 psi) vacuum is applied through the oil hole, the switch is operating properly. Check to see that air doesn't leak. If air leaks, the diaphragm is broken. Replace the switch.

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2001	
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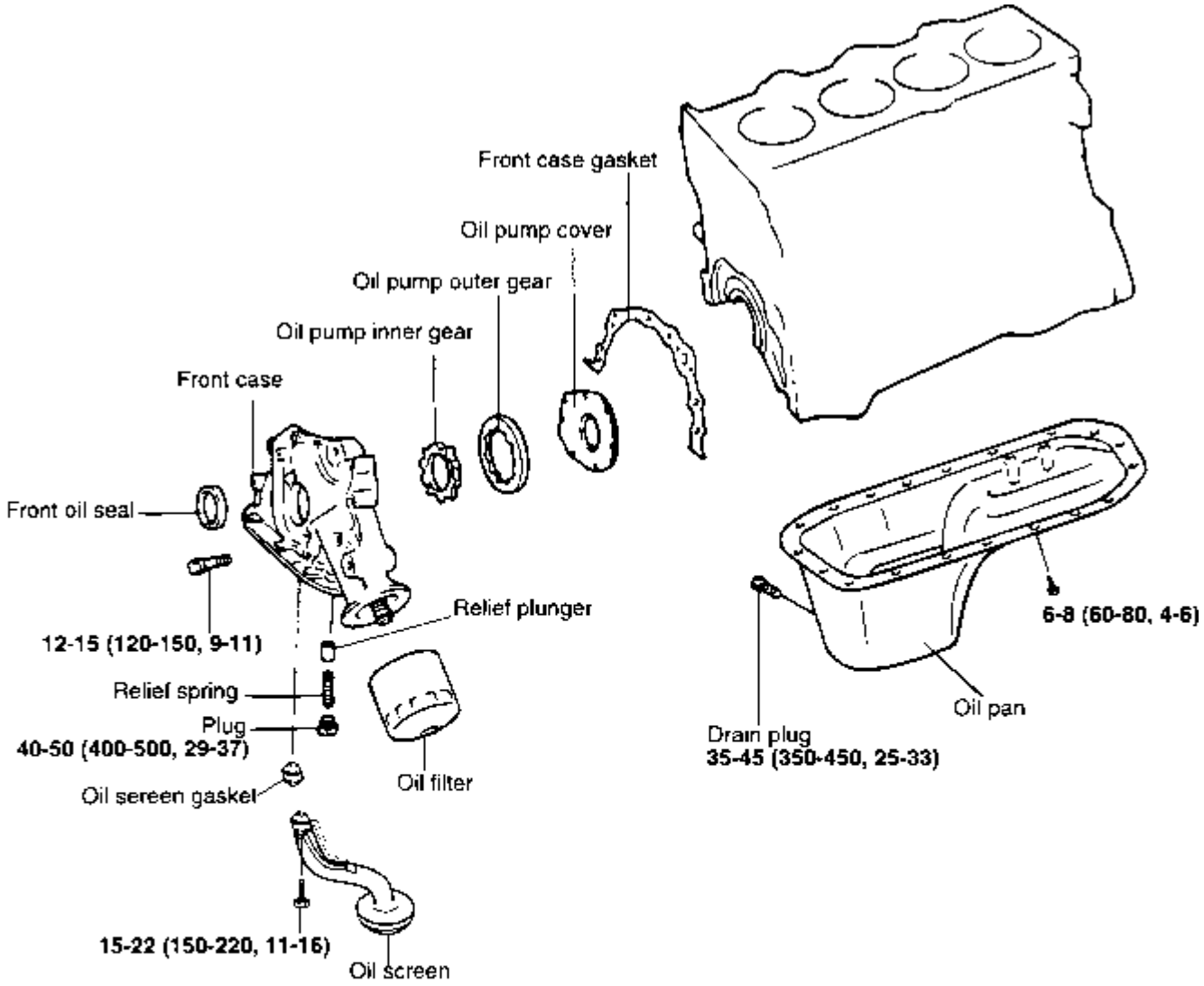
COMPONENTS



TORQUE : Nm (kg.cm, lb.ft)

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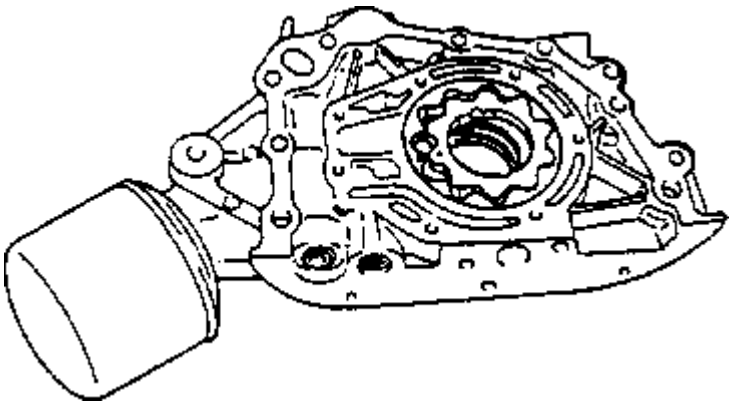
DISASSEMBLY



Remove the timing belt. Refer to "Timing Belt."

Remove all the oil pan bolts.

Remove the oil pan.

Remove the oil screen.

Remove the front case assembly.

Remove the oil pump cover.

Remove the inner and outer gears from the front case. The mating marks on the inner and outer gears indicate the direction of installation. Make sure that the inner and outer gears are installed as shown.

Remove the plug and remove the relief spring and relief plunger.

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INSPECTION

FRONT CASE

Check the front case for cracks or damage. Replace as necessary.

Check the front oil seal for worn or damaged lips. Replace if defective.

OIL PAN AND OIL SCREEN

Check the oil pan for failure, damage or cracks. Replace if defective.

Check the oil screen for failure, damage and cracks and replace if defective.

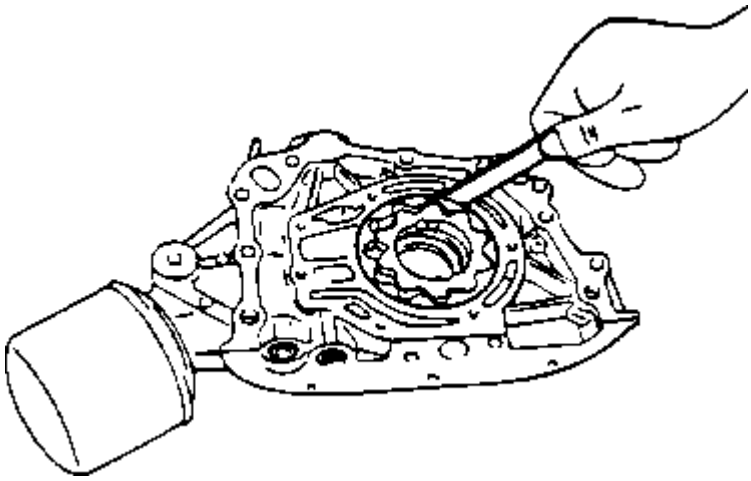
FRONT CASE AND OIL PUMP COVER

Worn (especially stepped) or damaged surfaces contacting gears.

OIL PUMP GEARS

Worn or damaged gear tooth surfaces.

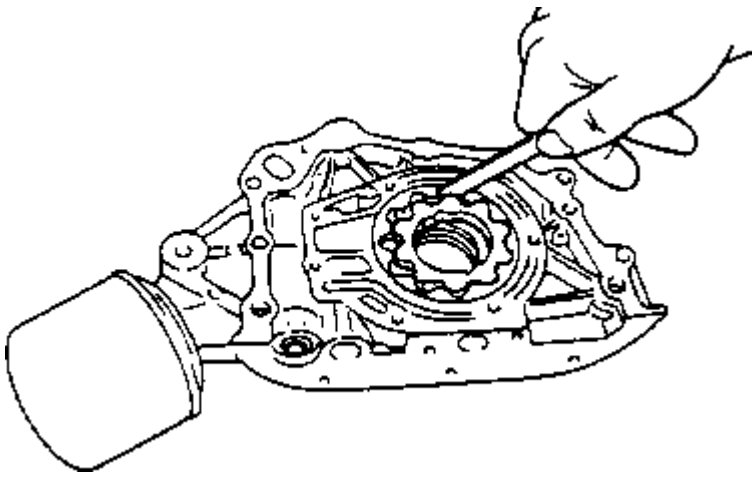
Clearance between outer gear and front case.



Outer gear

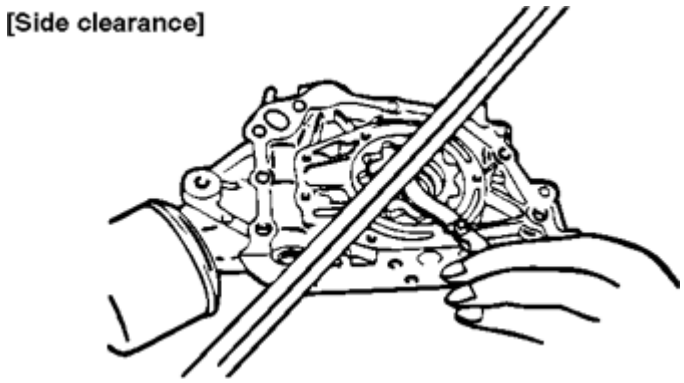
Clearance between outer circumference and front case	0.12-0.185mm (0.005-0.007 in.)

Check the tip clearance on the pump rotor



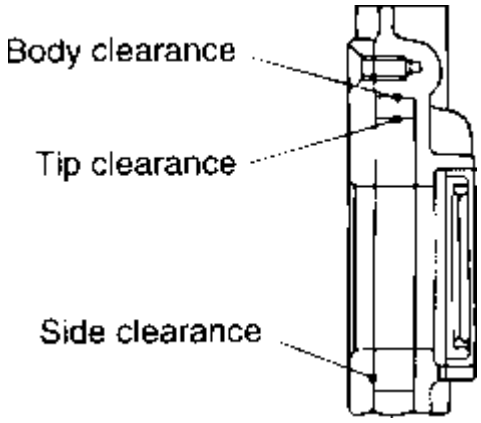
MEASUREMENT SPECIFICATION	
Tip clearance on the pump rotor	0.025-0.069 mm (0.001-0.003 in)

Check the axial clearance on the outer pump rotor



MEASUREMENT SPECIFICATION	
Axial clearance on the outer pump rotor	0.06-0.11 mm (0.0024-0.0043 in)

Check the axial clearance on the inner pump rotor.



MEASUREMENT SPECIFICATION	
Axial clearance on the inner pump rotor	0.04-0.085 mm (0.0018-0.0033 in)

RELIEF VALVE AND SPRING

Check sliding condition of the relief valve inserted in the front case.

Inspect for distorted or broken relief valve spring.

Standard value

Free height	43.8 mm (1.724 in.)
Load	3.7 kg/40.1 mm (8.14 lb/1.579 in.)

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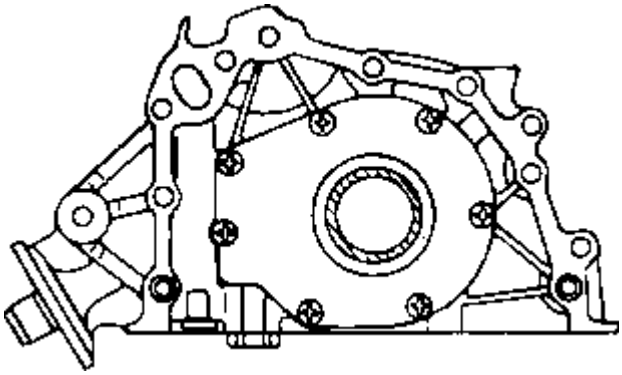
REASSEMBLY

OIL PUMP

Install the outer and inner gears into the front case. Make sure that the inner and outer gears are installed in the same direction as shown.



Install the oil pump cover and tighten the bolts to the specified torque. After the bolts have been tightened, check to ensure that the gear turns smoothly.

TORQUE SPECIFICATION	
Oil pump cover bolt	6-9 Nm (60-90 kg·cm, 4-6.6 lb·ft)

Install the relief valve and spring. Tighten the plug to the specified torque. Apply engine oil to the relief valve.

TORQUE SPECIFICATION	
Relief valve plug	40-50 Nm (400-500 kg·cm, 29-36 lb·ft)

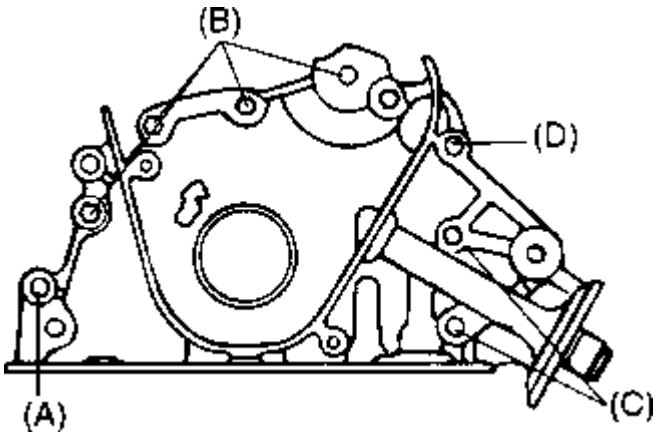
FRONT CASE

Install the front case assembly with a new gasket, and tighten the bolts to the specified torque.

Body length

A	25 mm (0.98 in
B	20 mm (0.787 in
C	38 mm (1.496 in
D	45 mm (1.771 in.

TORQUE SPECIFICATION	
Front case assembly new gasket torque	20-27 Nm (200-270 kg·cm, 14.5-19.8 lb·ft)



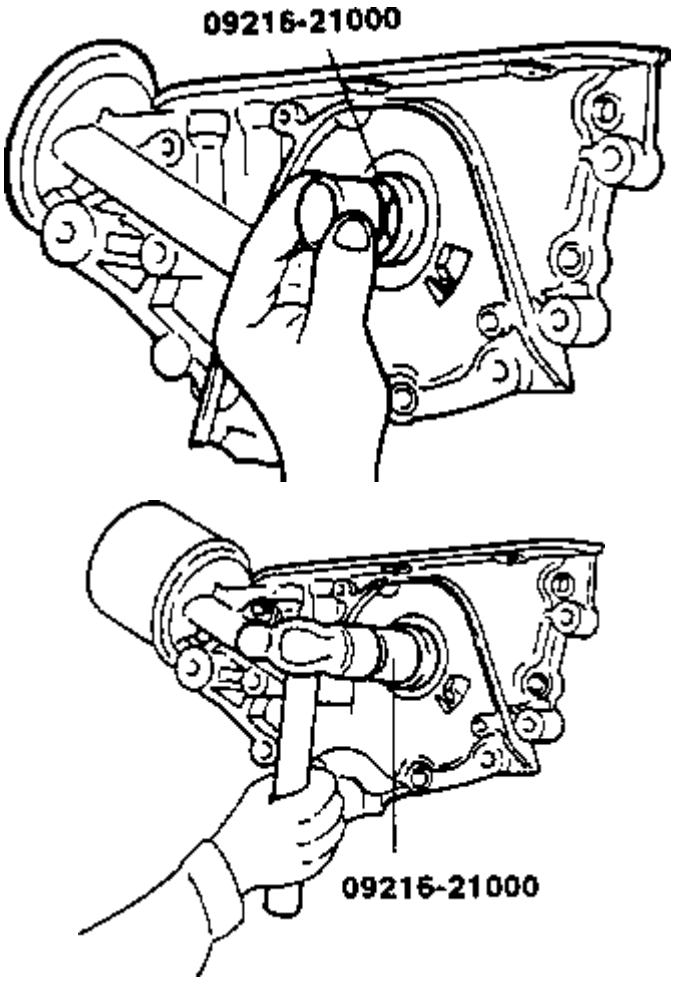
OIL SEAL

Inspect for worn, distorted spring lips.

Check for elongated spring ring.

Always use a new oil seal when reassembling.

Use Special Tool, Mounting Bushing Remover and installer Arbor (09216-21000), install the oil seal.

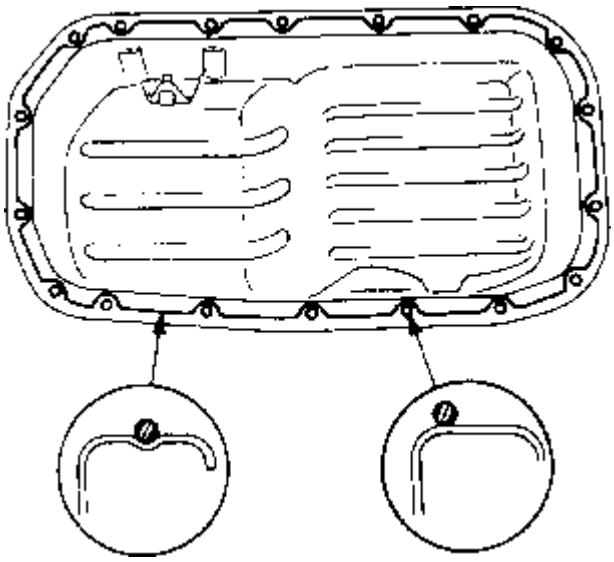


Install the crankshaft sprocket, timing belt and crankshaft pulley. Refer to "Timing Belt".

Install the oil screen.

Clean both gasket surfaces of the oil pan and the cylinder block.

Apply sealant into the groove of the oil pan flange as shown.



CAUTION

1. Apply sealant approx. 4 mm (0.16 in.) in thickness.

1. After application of sealant, do not exceed 15 minutes before installing the oil pan.

Install the oil pan and tighten the bolts to the specified torque.

TORQUE SPECIFICATION	
Oil pan bolt	6-8 Nm (60-80 kg·cm, 4-6 lb·ft)

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2000	
GROUP	
Engine Mechanical System	Cooling System

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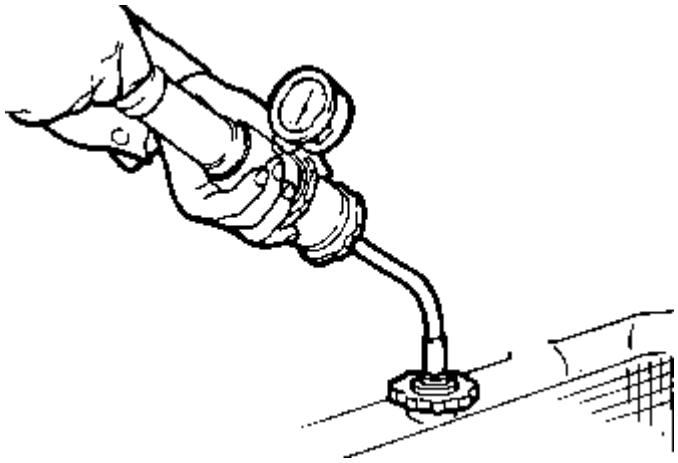
COOLANT LEAK CHECK

Wait until radiator is cool (less than 38°C, 100°F). Loosen radiator cap.

Confirm that the coolant level is up to the filler neck.

Install a radiator cap tester to the radiator filler neck and apply 139.3 KPa (19.9 psi, 1.4 kg/cm2) pressure. Maintain pressure for two minutes, while checking for leakage from the radiator, hoses or connections.



WARNING

Radiator coolant may be extremely hot. Do not open the system while it is hot, or scalding water could spray out causing personal injury. Allow vehicle to be cooled down before servicing this system.

CAUTION

Be sure to completely clean away any moisture from the places checked. When the tester is removed, be careful not to spill any coolant from it. Be careful, when installing and removing the tester and when testing, not to deform the filler neck of the radiator.

If there is leakage, repair or replace the appropriate part.

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2000	
GROUP	
Engine Mechanical System	Cooling System

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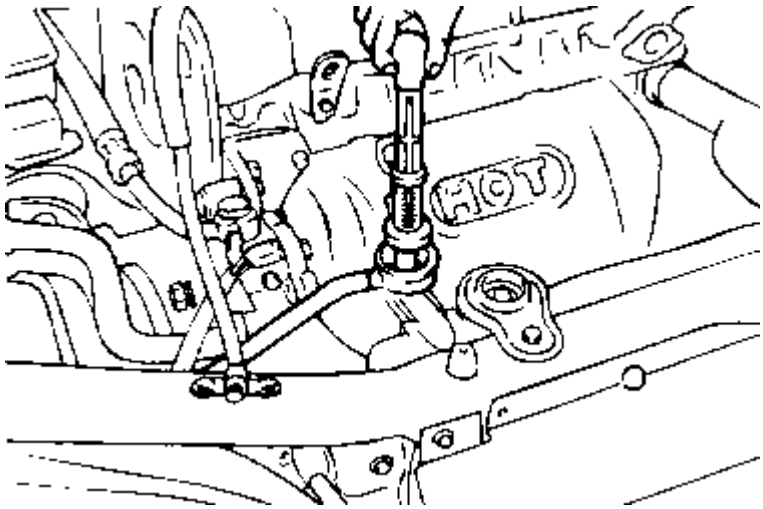
SPECIFIC GRAVITY TEST

Measure the specific gravity of the coolant with a hydrometer.

Measure the coolant temperature, and calculate the concentration from the relation between the specific gravity and temperature. Use the following table for reference.



RELATION BETWEEN COOLANT CONCENTRATION AND SPECIFIC GRAVITY

THE FOLLOWING TABLE IS APPLICABLE ONLY TO THE SPECIFIED HIGH QUALITY ETHYLENE GLYCOL (ANTIFREEZE) COOLANT

Coolant temperature °C (°F) and specific gravity					Freezing temperature °C (°F)	Safe operating temperature °C (°F)	Coolant concentration (Specific volume)
10 (50)	20 (68)	30 (86	40 (104)	50 (122)			
1.054	1.050	1.046	1.042	1.036	-16 (3.2)	-11 (12.2)	30%
1.063	1.058	1.054	1.049	1.044	-20 (-4)	-15 (5)	35%
1.071	1.067	1.062	1.057	1.052	-25 (-13)	-20 (-4)	40%
1.079	1.074	1.069	1.064	1.058	-30 (-22)	-25 (-13)	45%
1.087	1.082	1.076	1.070	1.064	-36 (-32.8)	-31 (-23.8)	50%
1.095	1.090	1.084	1.077	1.070	-42 (-44)	-37 (-35)	55%
1.103	1.098	1.092	1.084	1.076	-50 (-58)	-45 (-49)	60%

Example

The safe operating temperature is -15°C (5°F) when the measured specific gravity is 1.058 at coolant temperature of 20°C (68°F)

CAUTION

If the concentration of the coolant is below 30%, the anti-corrosion property will be adversely affected. In addition, if the concentration is above 60%, both the anti-freeze and engine cooling properties will decrease, adversely affecting the engine. For these reasons, be sure to maintain the concentration level within the specified range. Do not mix brands of coolant.

RECOMMENDED COOLANT

Antifreeze	Mixture ratio of anti-freeze in coolant
ETHYLENE GLYCOL BASE FOR ALUMINUM	50 %

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2001	
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Engine Mechanical System	Cooling System

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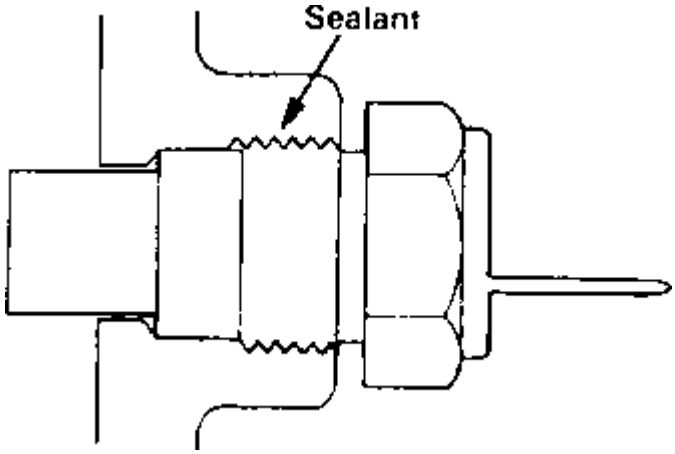
REASSEMBLY

Apply sealant to the threaded portion and tighten to the specified torque.



TORQUE SPECIFICATION	
Coolant temperature sender	10-12 Nm (100-120 kg·cm, 7-9 lb·ft)
Coolant temperature sensor	15-20 Nm (150-200 kg·cm, 11-14 lb·ft)

Connect the harness connector to the Coolant temperature sender, Coolant temperature sensor.

Connect the battery to ground cable.

Refill the system with clean coolant.

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DISASSEMBLY

Drain the coolant down to sensor level or below.

Disconnect the battery ground cable and disconnect the engine harness connector from the sender & sensor.

Remove the sender & sensor

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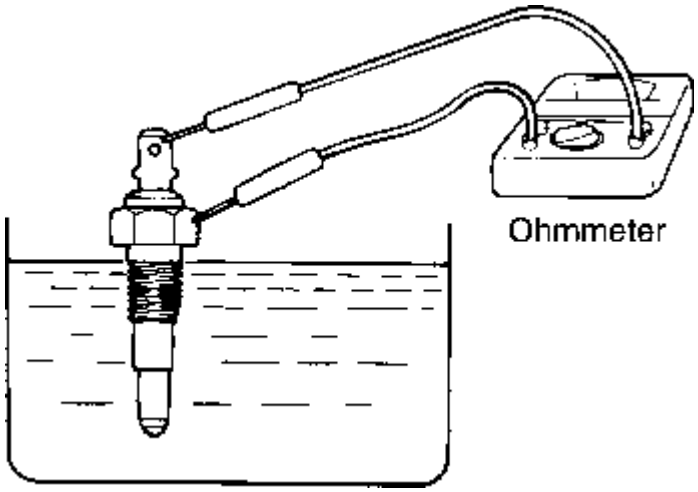
INSPECTION

COOLANT TEMPERATURE SENDER

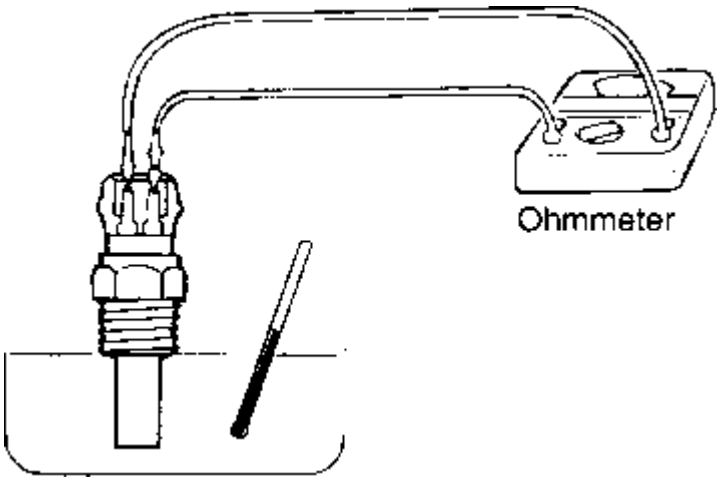
Heat the Engine coolant temperature gauge by submerging it in hot engine coolant.



Check that the resistance is within the specified range.

Resistance:

At 70°C(158°F)	90.5-117.5 OHM
At 115°C(239°F)	21.3-36.3 OHM



COOLANT TEMPERATURE SENSOR

Heat the sensor by submerging it in hot engine coolant.

Check that the resistance is within the specified range.

Resistance:

At 20°C(68°F)	2.21-2.69 kOHM
At 80°C(176°F)	264-328 OHM

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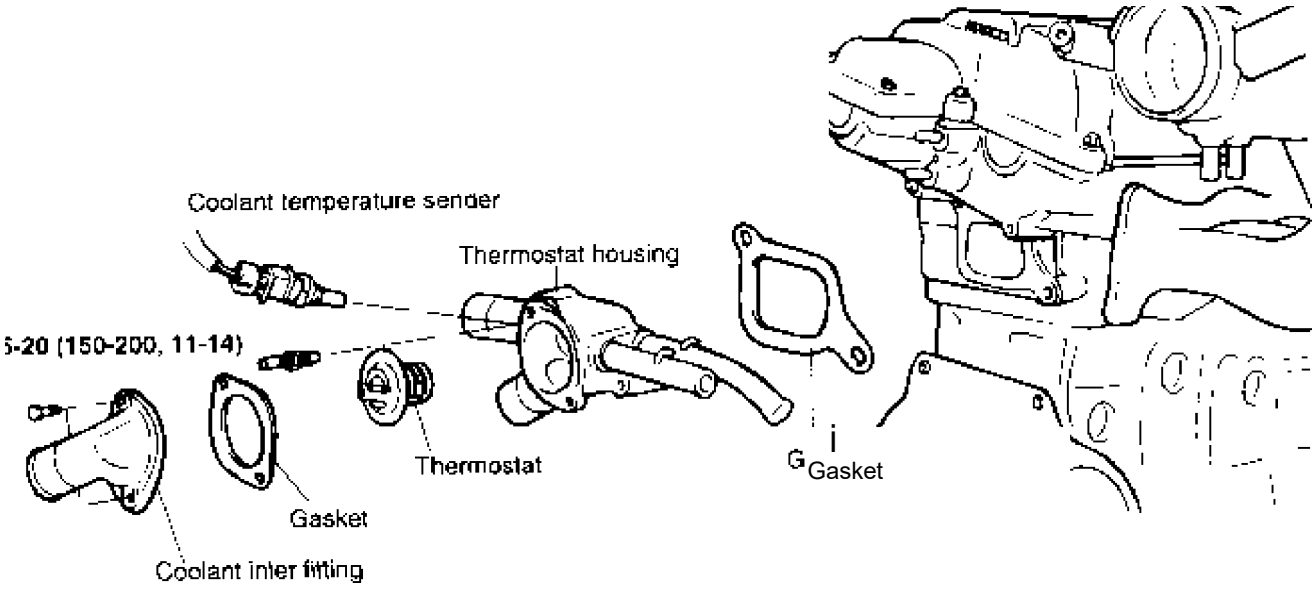
COMPONENTS



TOROUE.·Nm (kg.cm, lb.ft)

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2000	
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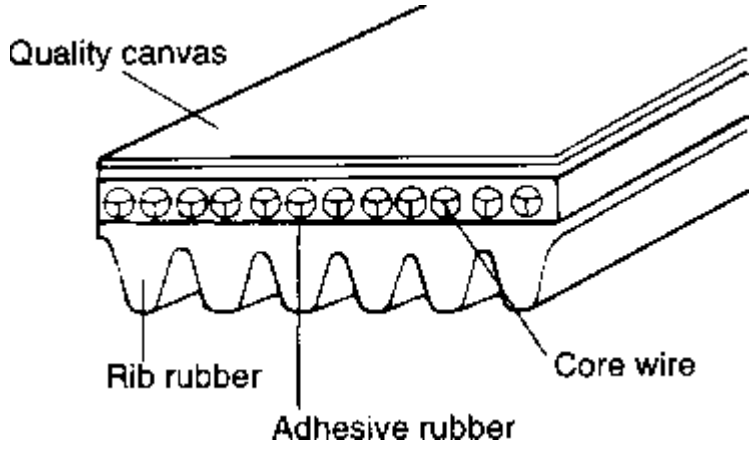
INSPECTION

Check the following items and replace if necessary.



Check the belt surface for damage, peeling or cracks.

Check the belt surface for oil or grease.

Check the belt for worn or hardened areas.

Check the surface of the pulley for cracks or damage.

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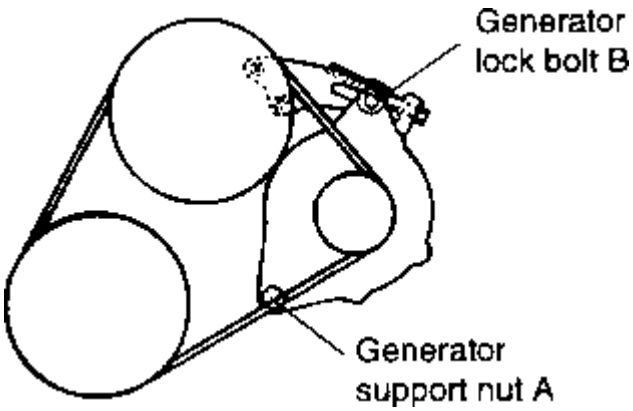
REASSEMBLY



Install the coolant pump pulley to the coolant pump pulley bracket and tighten the bolts firmly.

After installing the belt, adjust the belt tension. See "DRIVE BELTS INSPECTION AND ADJUSTMENT."

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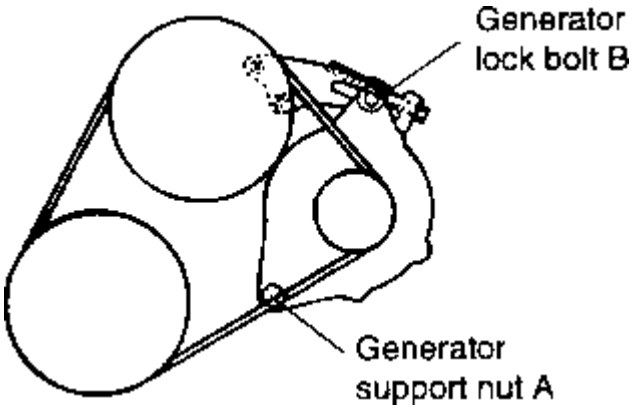
DRIVE BELT AND PULLEY

DISASSEMBLY



Loosen the coolant pump pulley bolts.

Loosen the generator support nut.

Loosen the generator lock bolt, and remove the belt.

Remove the coolant pump pulley bolts.

TORQUE SPECIFICATION	
Generator support nut A	20-25 Nm (200-250 kg·cm, 14-18 lb·ft)
Generator lock bolt B	15-22 Nm (150-220 kg·cm, 11-16 lb·ft)
Generator brace mounting bolt	20-24 Nm (200-240 kg·cm, 14-17 lb·ft)

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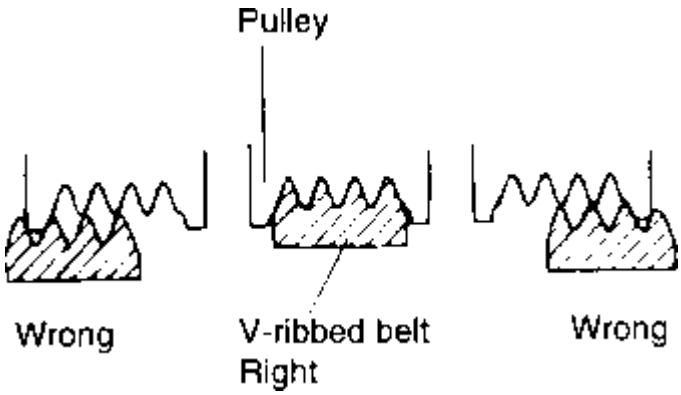
DRIVE BELTS TENSION ADJUSTMENT

Check that the belts are not damaged and fit properly into the pulley grooves.

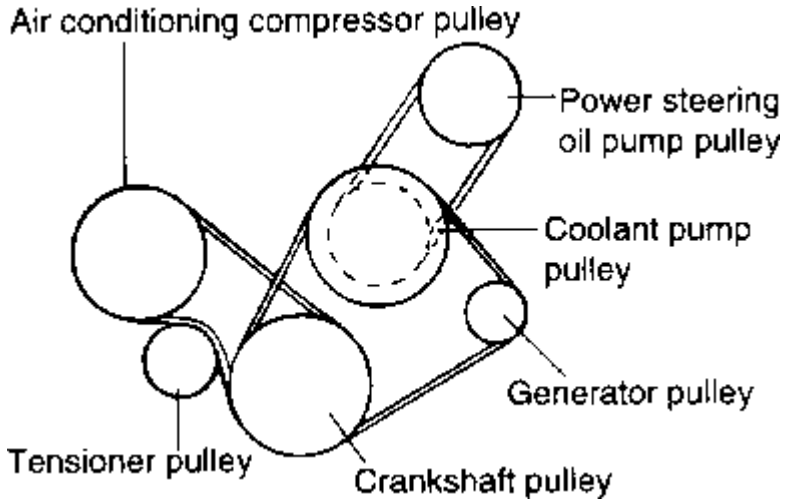


CAUTION

1. **When installing the V-ribbed belt, check that the V-ribs are properly aligned.**
2. **If noise or slippage is detected, check the belt for wear, damage, or breakage on**

the pulley contact surface, and check the pulley for scoring. Also check for the proper belt deflection measurement.

Apply 100 N (22 lbs.) force to the belt back midway between the pulleys as shown in the illustration. Measure the amount of deflection with a tension gauge.



Standard value:

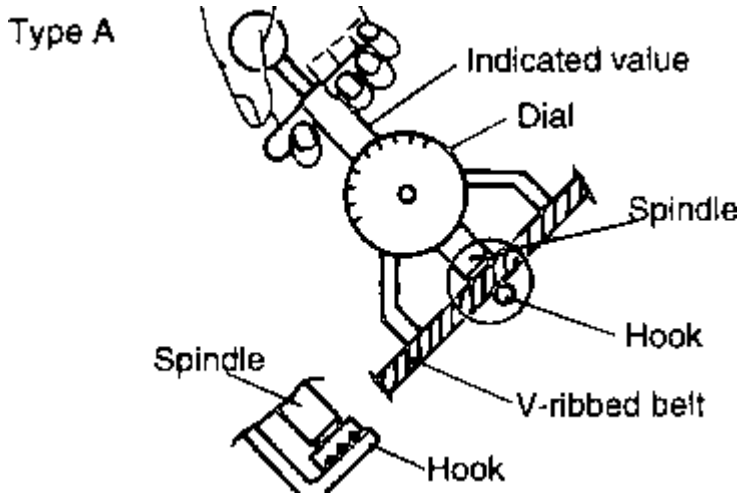
Item		Inspection	New	Used
For generator	Deflection mm (in.)	9.0-10.4 (0.354-0.409)	7.5-9.0 (0.295-0.354)	10 (0.394)
	Tension N (lb)	350-500 (77-110)	500-700 (410-154)	400 (88)
For air conditioner compressor	Deflection mm (in.)	Approx. 8.0 (0.315)	5.0-5.5 (0.197-0.217)	6.0-7.0 (0.236-0.276)
For power steering oil pump	Deflection mm (in.)	6.0-9.0 (0.236-0.354)	-	-

NOTE

1. **The belt tension must be measured between the specified pulleys.**
2. **When a new belt is installed, adjust the tension to the center of the standard range indicated under "New." Let the engine idle for 5 minutes or more, and check the standard value indicated under "Inspection."**
3. **When adjusting a used belt or a newly installed belt after 5 minutes or more of operation, refer to the standard value indicated under "Used."**
4. **Refer to the standard value indicated under "Inspection" for periodic inspections.**

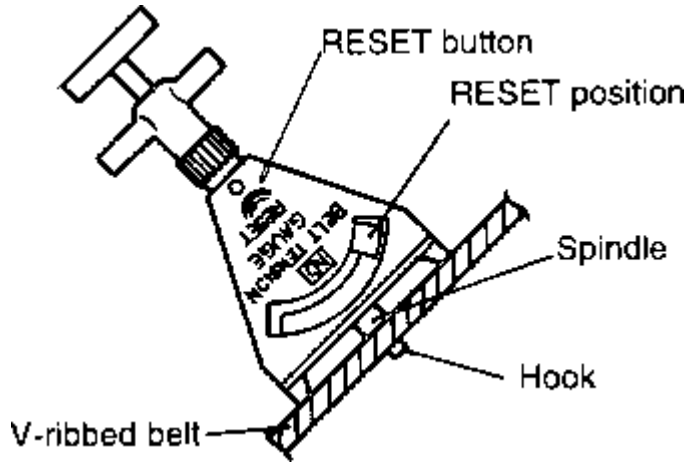
TYPE A TENSION GAUGE

Do not let the dial section of the tension gauge contact other objects during measurement.



TYPE B TENSION GAUGE

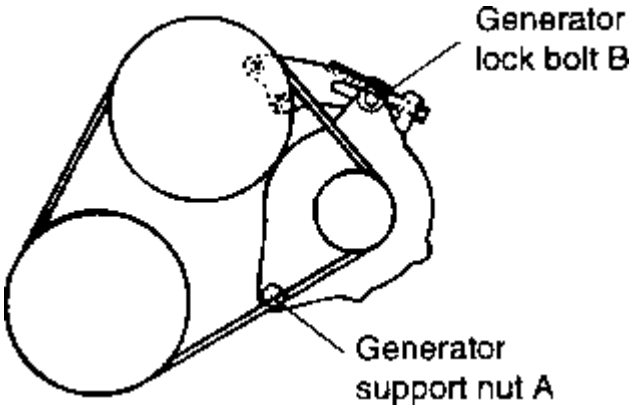
When measuring, turn the reset button in the direction of the arrow to set the gauge needle to the RESET position.



When the tension gauge is removed from the belt, the needle will still indicate the tension. Read the tension after removing the gauge.

ALTERNATOR BELT ADJUSTMENT

> **CAUTION**
>
> **If the belt is too loose, there will be a noise or premature wear. If the belt is too tight, the water pump bearing or the alternator will be damaged.**



Loosen the alternator support nut "A" and the tension adjuster lock bolt "B."

Using the tension adjuster bolt, adjust the belt tension to specification.

Tighten the adjuster lock bolt "B."

Tighten the alternator support nut "A."

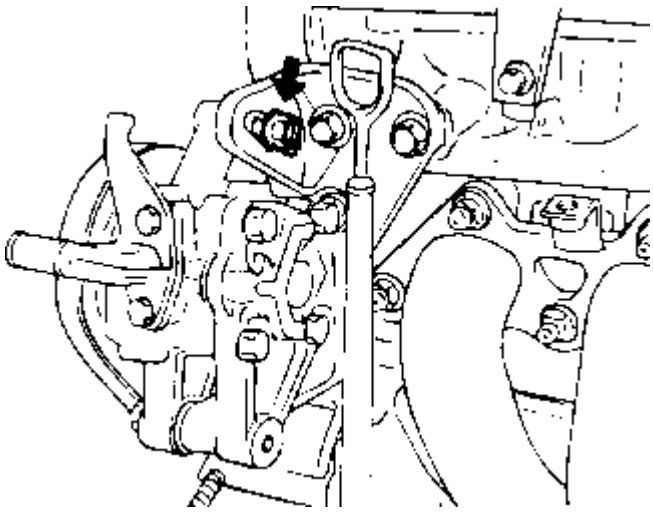
Check the tension or the deflection of belt. Readjust if necessary.

TORQUE SPECIFICATION	
Alternator support nut A	20-25 Nm (200-250 kg·cm, 14-18 lb·ft)
Adjuster bolt B	12-15 Nm (120-150 kg·cm, 9-11 lb·ft)

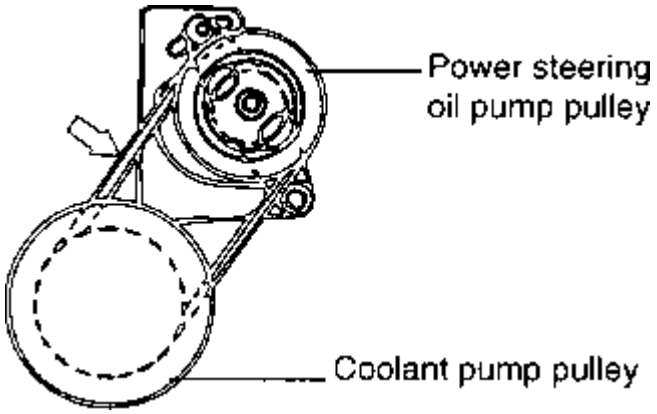
MEASUREMENT SPECIFICATION	
Belt length	875±5 mm (34.4±0.2 in)

POWER STEERING OIL PUMP BELT ADJUSTMENT

Loosen the adjustment bolt of the power steering oil pump.



Adjust the deflection or the tension of the power steering pump to specification.



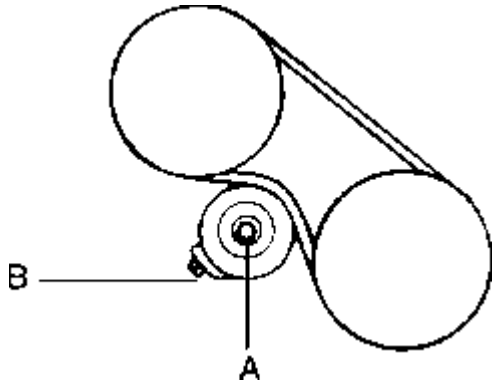
Tighten the adjustment bolt.

Crank the engine one or more revolutions.

Check the belt deflection. Readjust if necessary.

AIR CONDITIONING COMPRESSOR BELT ADJUSTMENT

Loosen the tension pulley adjustment bolt A.

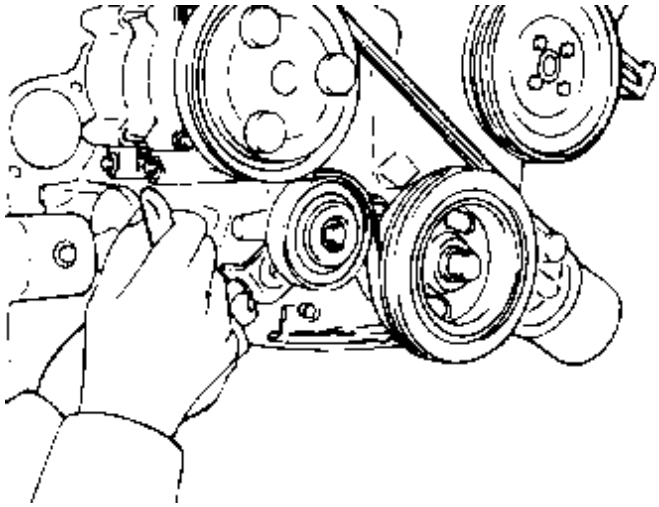


Adjust the belt deflection with adjustment bolt B.

Tighten the fixing bolt A.

Recheck the belt deflection and readjust if necessary.

> **NOTE**
>
> **Before rechecking, crank the engine one or more revolutions.**



SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2001	
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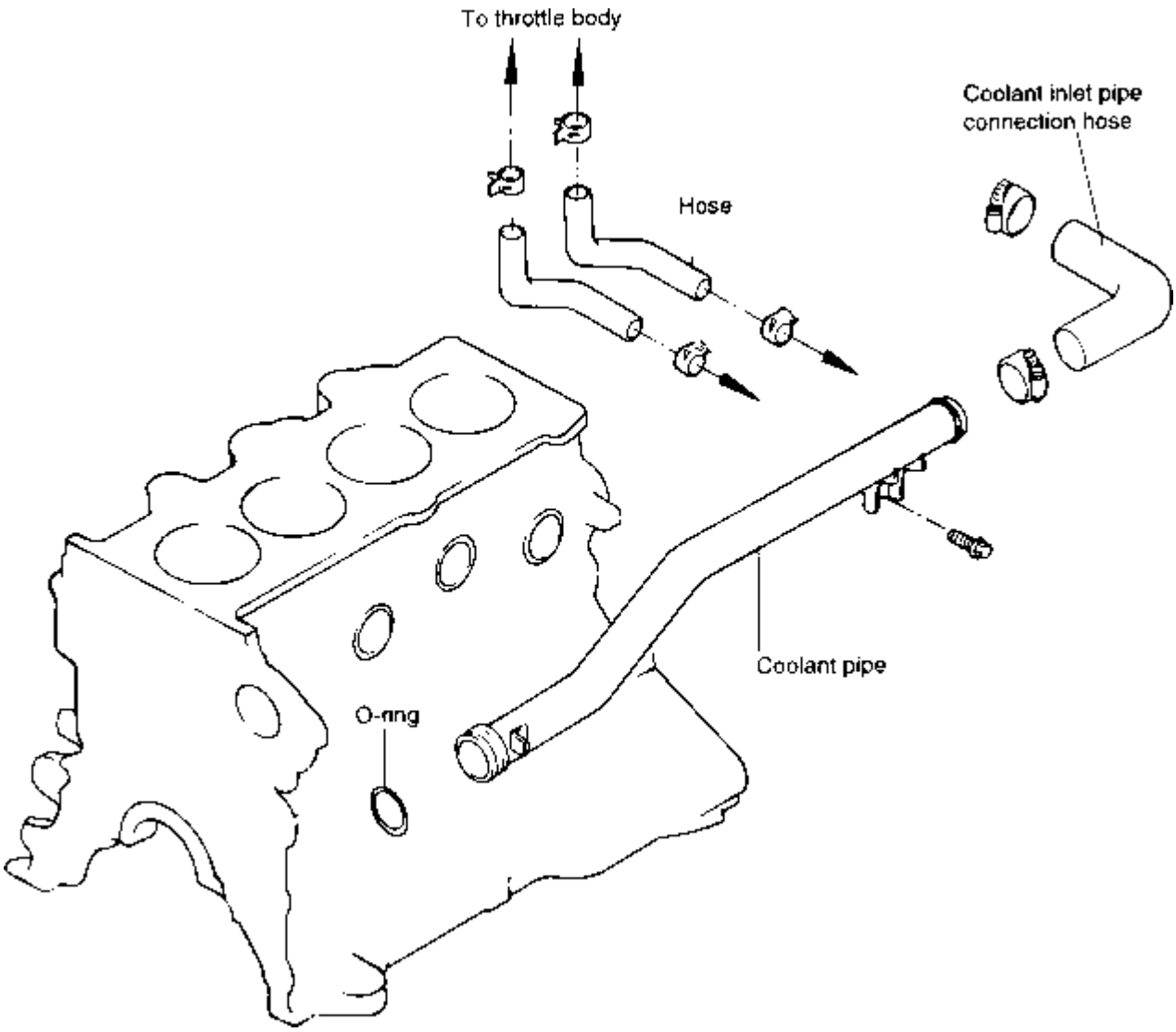

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INSPECTION

Check the coolant pipe and hoses for cracks, damage, or restrictions.

Replace if necessary.

REASSEMBLY

Fit the O-ring in the groove provided at the coolant inlet pipe end, wet the O-ring with coolant and insert the coolant inlet pipe.

NOTE

1. **Do not apply oil or grease to the coolant pipe O-ring.**
2. **Keep the coolant pipe connections free of sand, dust, etc.**
3. **Insert the coolant pipe fully into the coolant pump.**
4. **Do not reuse o-ring and replace it with a new part.**

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2001	
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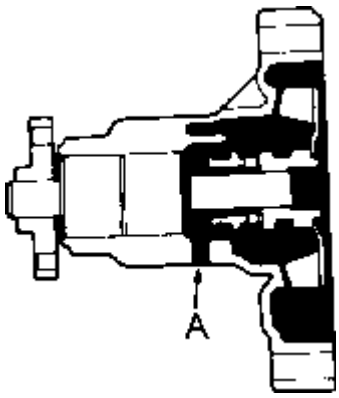
INSPECTION

Check each part for cracks, damage or wear, and replace the coolant pump assembly if necessary.

Check the bearing for damage, abnormal noise and sluggish rotation, and replace the coolant pump assembly if necessary.

Check for coolant leakage. If coolant leaks from hole "A", the seal is defective. Replace the coolant pump assembly.



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DISASSEMBLY

Drain the coolant and disconnect the coolant outlet pipe connection hose from the coolant pump.

Remove the drive belt and engine coolant pump pulley.

Remove the timing belt covers and the timing belt idler.

Remove the coolant pump mounting bolts, then remove the generator brace.

Remove the coolant pump assembly from the cylinder block.

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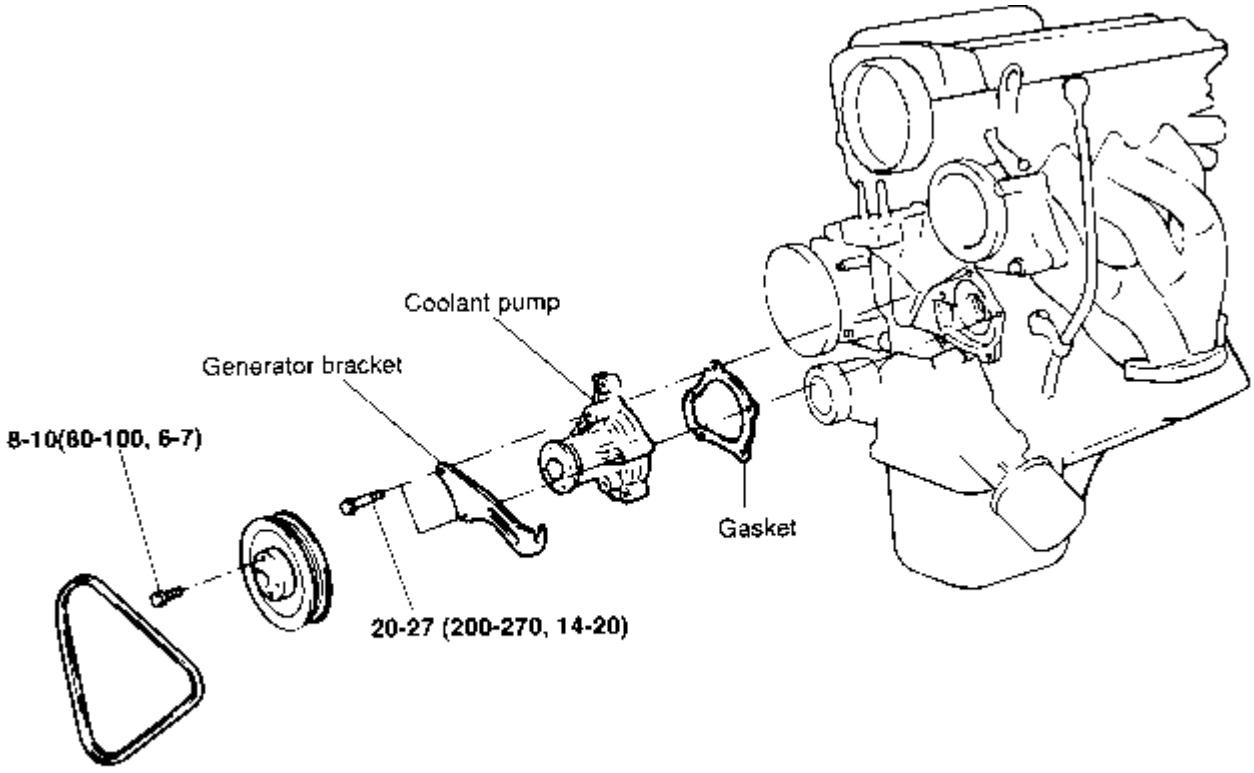

TORQUE : Nm (kg.cm, lb.ft)

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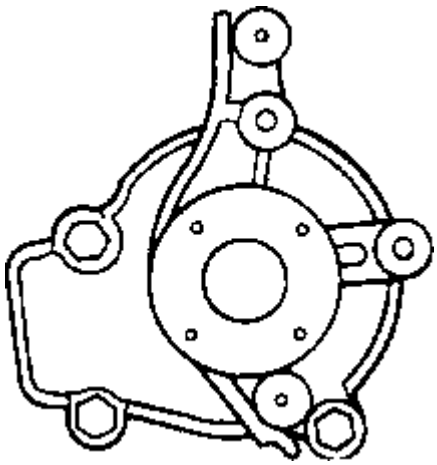
REASSEMBLY



Clean the gasket surfaces of the coolant pump body and the cylinder block.

Install a new coolant pump gasket to the coolant pump and tighten the bolts to specified torque.

TORQUE SPECIFICATION	
Coolant pump to cylinder block	20-27 Nm (200-270 kg·cm, 14-20 lb·ft)

Install the timing tensioner and timing belt. Adjust the timing belt tension.

Install the timing belt covers.

Install the coolant pump pulley and drive belt, and then adjust the belt tension.

Refill the system with clean coolant.

Run the engine and check for leaks.

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2001	
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COMPONENTS

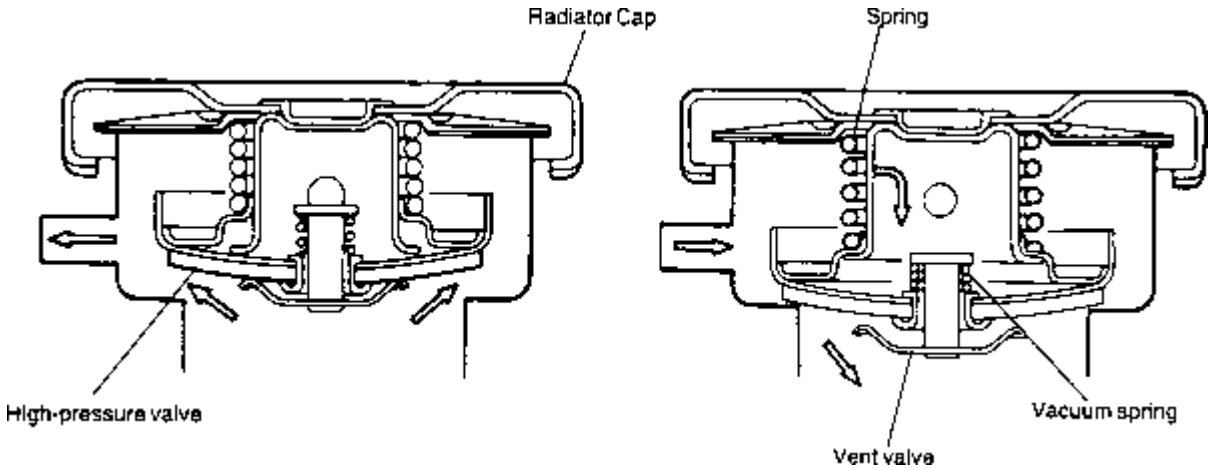

Figure Left: When the pressure rises to the specified level [81.4-108 KPa (0.83-1.1 kg/cm, 11.8-15.6 psi)]

Figure Right: When the pressure is reduced to the specified level [-6.86 KPa (-0.07 kg/cm, -1.00 psi)]

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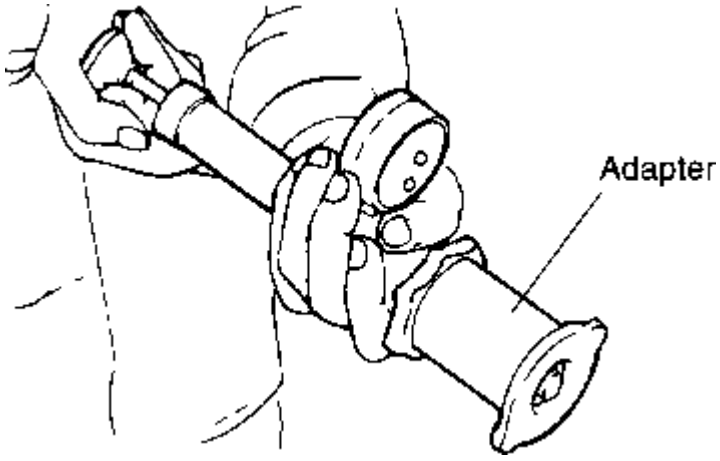
RADIATOR CAP PRESSURE TEST

Use an adapter to attach the cap to the tester.



Increase the pressure until the gauge stops moving.

PRESSURE SPECIFICATION	
Main valve opening pressure	0.83-1.1 kg·cm (81.4-108 kPa, 11.8-15.6 psi)

Limit	0.65 kg·cm (65 kPa, 9.2 psi)

Check that the pressure level is maintained at or below the limit.

Replace the radiator cap if the reading does not remain at or below the limit.

> **NOTE**
>
> **Be sure that the cap is clean before testing, since rust or other foreign material on the cap seal will cause an incorrect indication.**

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REASSEMBLY

Fill the radiator and reservoir tank with clean coolant mixture.

Run the engine until the thermostat opens, and then stop the engine.

Remove the radiator cap, and add coolant up to the filler neck of the radiator, and then fill the reservoir tank to the upper level.

Check that there is no leakage from the radiator, hoses or connections.

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INSPECTION

Check the radiator for bent, broken or plugged fins.

Check the radiator for corrosion, damage, rust or scale.

Check the radiator hoses for cracks, damage or deterioration.

Check the reservoir tank for damage.

Check the radiator cap spring for damage.

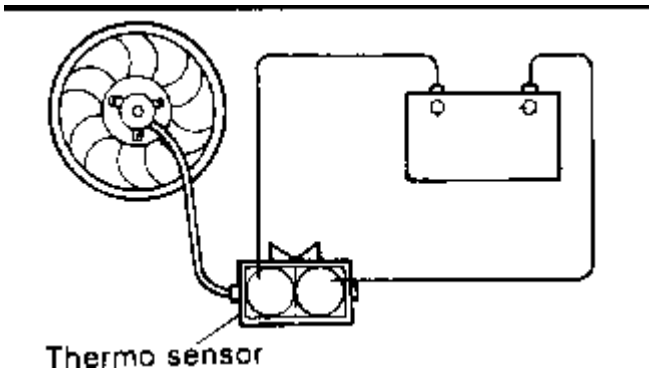
Test the pressure of the cap using a cooling system checker

Check the radiator cap seal for cracks or damage.

RADIATOR FAN MOTOR

Check that the radiator fan rotates when battery voltage is applied to the terminals (as shown in figure).

Check that abnormal noises are not produced while the motor is turning.



A/C SWITCH	RADIATOR FAN MOTOR	REMARK
OFF	OFF	|
	ON	1 .Coolant temperature is higher than 95°C (205°F)2. CTS fails
ON	ON	IG.KEY is turned on

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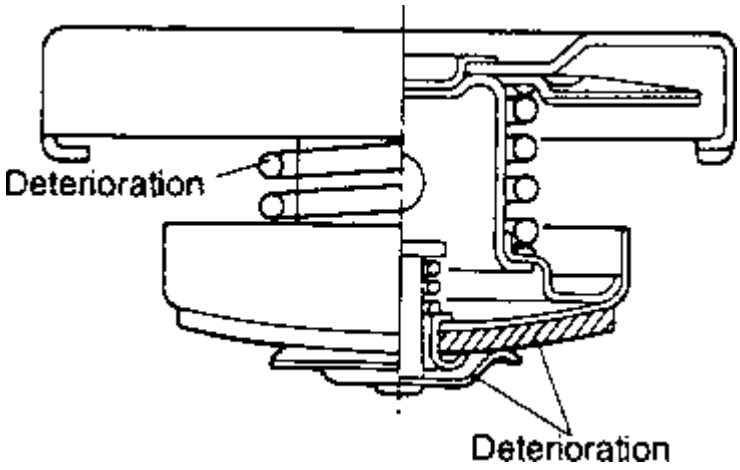
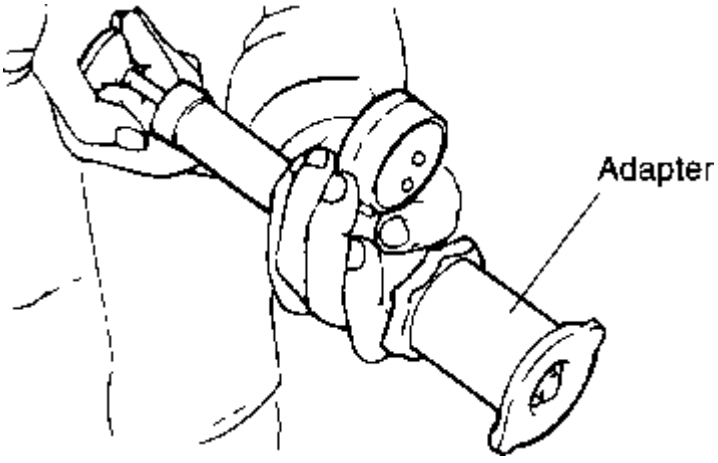
INSPECTION

RADIATOR CAP

Check the radiator cap for damage, cracks and deterioration.



Attach a radiator cap tester to the radiator.



Pump the tester until the pointer stabilizes.

If the pointer stays constant for 10 sec. at a point exceeding the service limit, the radiator cap is good.

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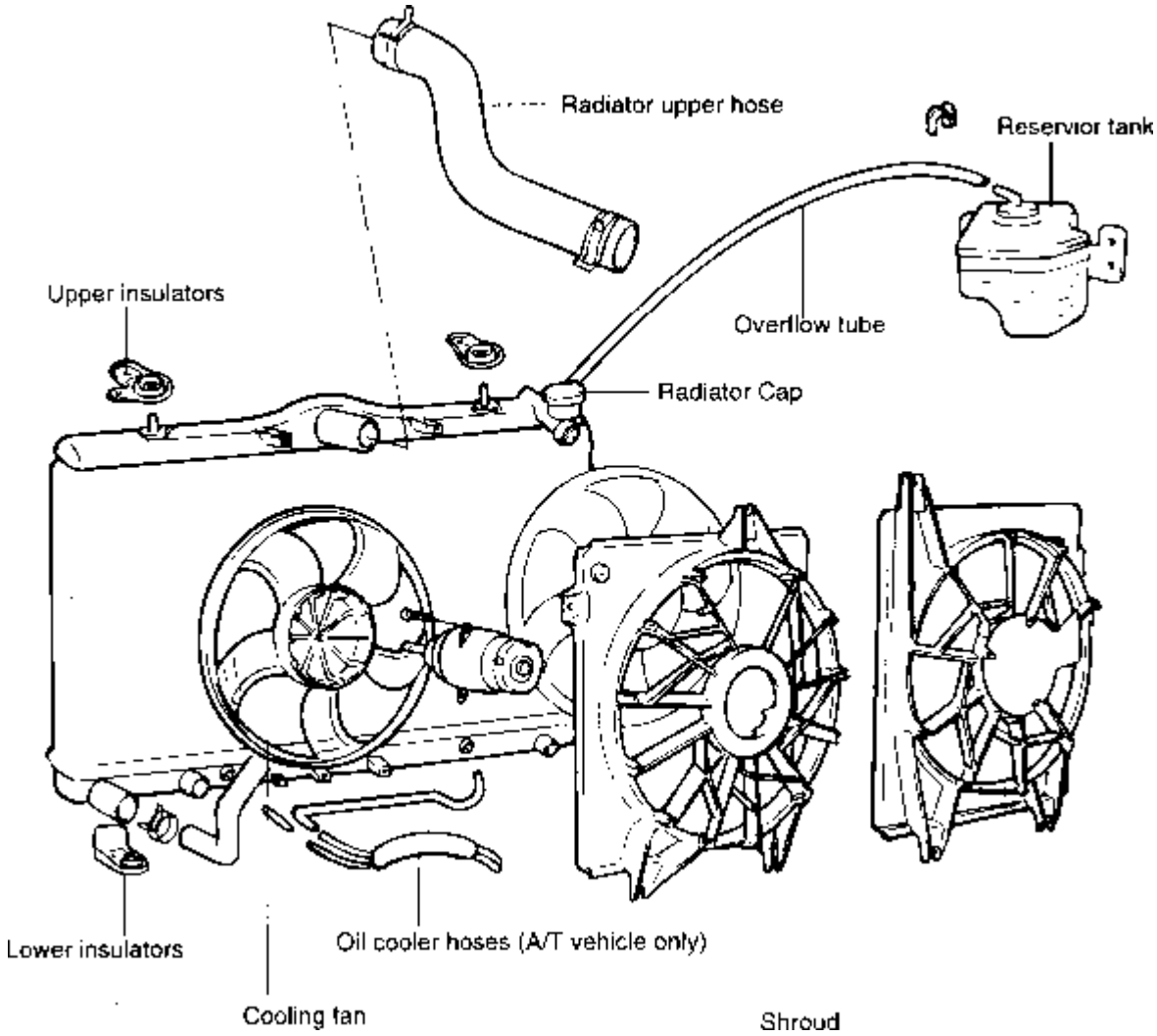

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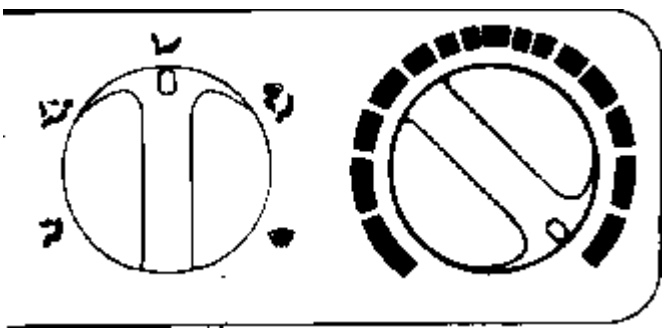
DISASSEMBLY



Disconnect the radiator fan motor connector.

Set the temperature of the heater control to the hot position.

Loosen the radiator drain plug to drain coolant.

Disconnect the upper and lower hose and overflow tube.

For vehicles with automatic transaxles, disconnect the oil cooler hoses from the automatic transaxle.

> **CAUTION**
>
> **Plug the ends of the oil cooler hoses and the automatic transaxle fittings to prevent transaxle fluid from spilling out and foreign material from entering.**

Remove the radiator mounting bolts.

Remove the radiator together with the fan motor.

Remove the fan motor from the radiator.

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2000	
GROUP	
Engine Mechanical System	Cooling System

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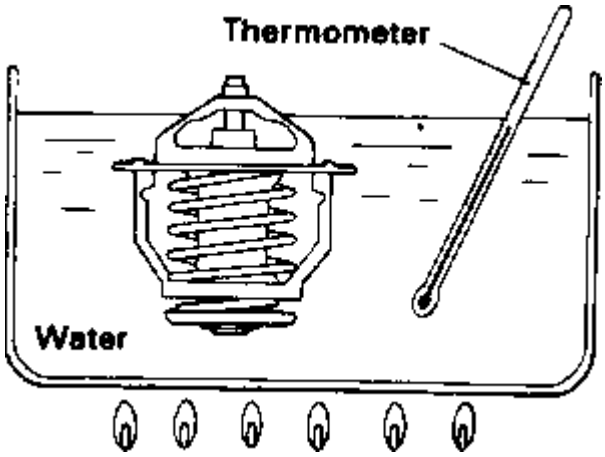
DISASSEMBLY AND INSPECTION

Drain the coolant down to thermostat level or below.

Remove the coolant outlet fitting and gasket.

Remove the thermostat.

Immerse thermostat in hot coolant to check proper valve opening temperature Replace if necessary.



Valve opening temperature	82°C(177°F)
Full opening temperature	95°C(205°F)
Valve lift (at full open)	8.5mm(0.33 in.) or more

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REASSEMBLY

Check that the flange of the thermostat is correctly seated in the socket of the thermostat housing.

Install a new gasket and the coolant outlet fitting.

Refill the system with clean coolant.

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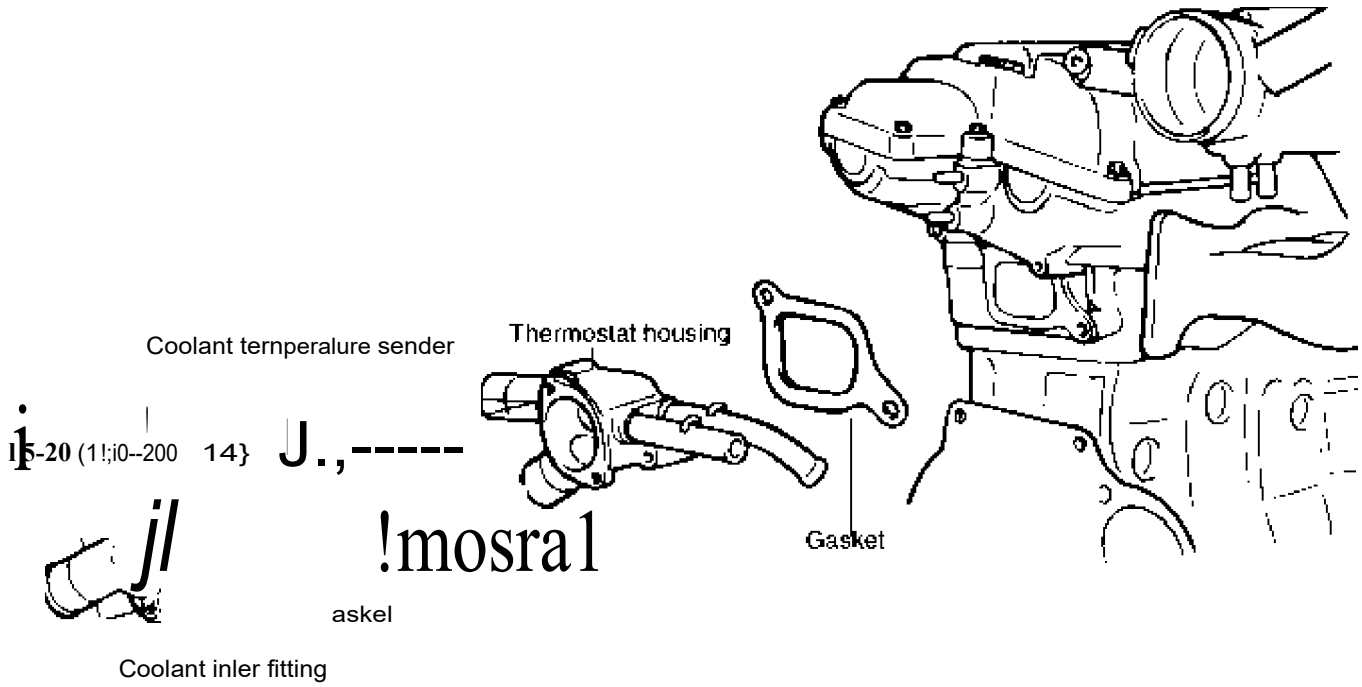
COMPONENTS



TOROUE.·Nm (kg.cm, lb.ft)

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2001	
GROUP	
Engine Mechanical System	Main Moving System

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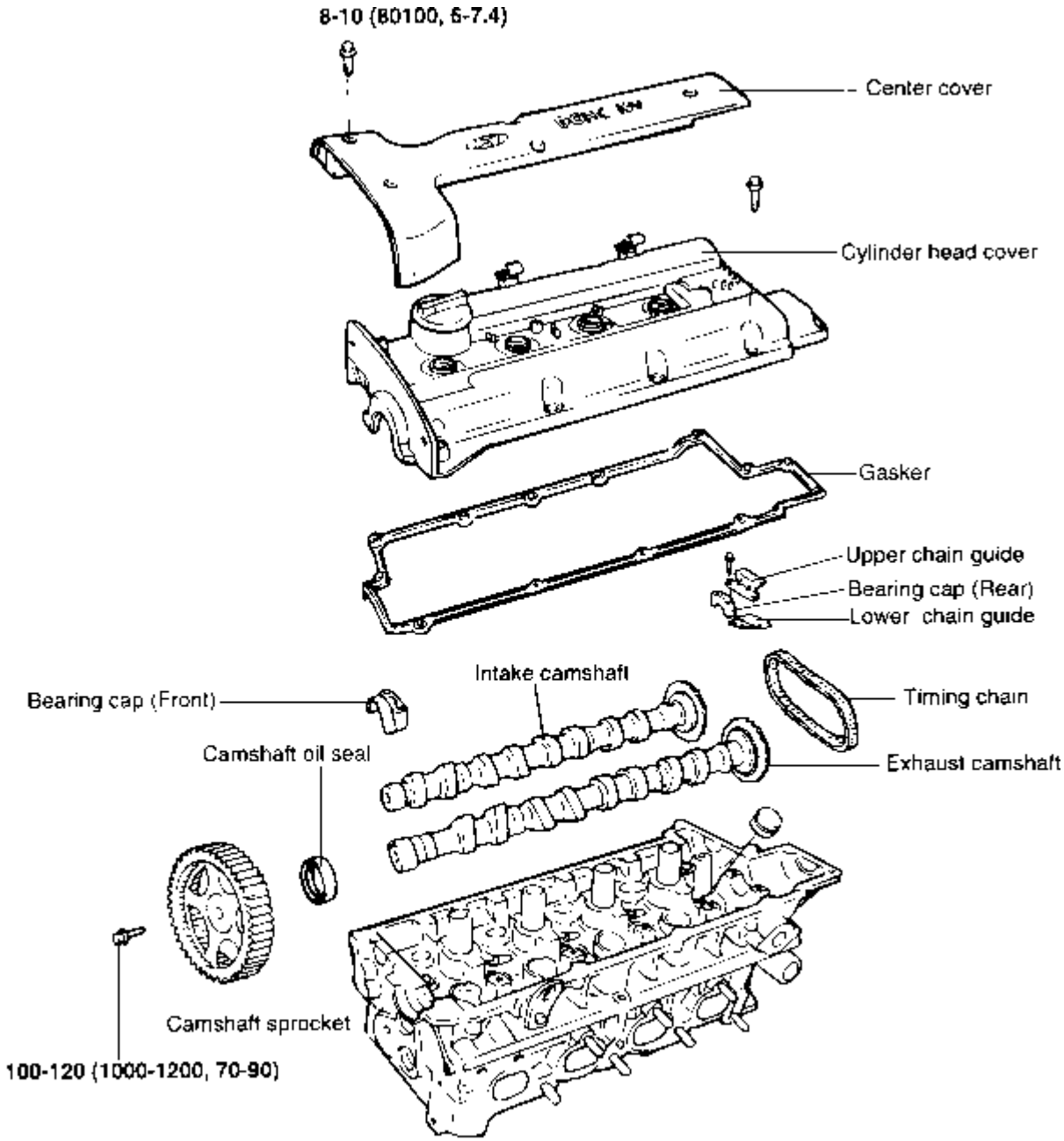
COMPONENTS



TORQUE: Nm (kg.cm, lb.ft)

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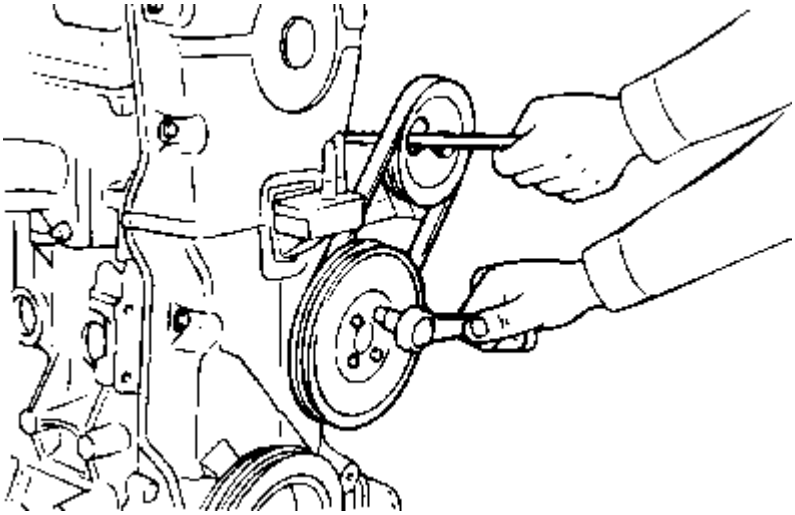
DISASSEMBLY



Disconnect the breather hose and the PCV hose.

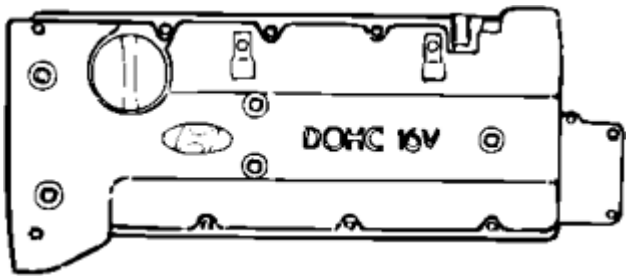
Remove the coolant pump pulley and crankshaft pulley.

Remove the timing belt cover.

Loosen the timing belt tensioner pulley and temporarily secure it.

Remove the timing belt from the camshaft sprocket.

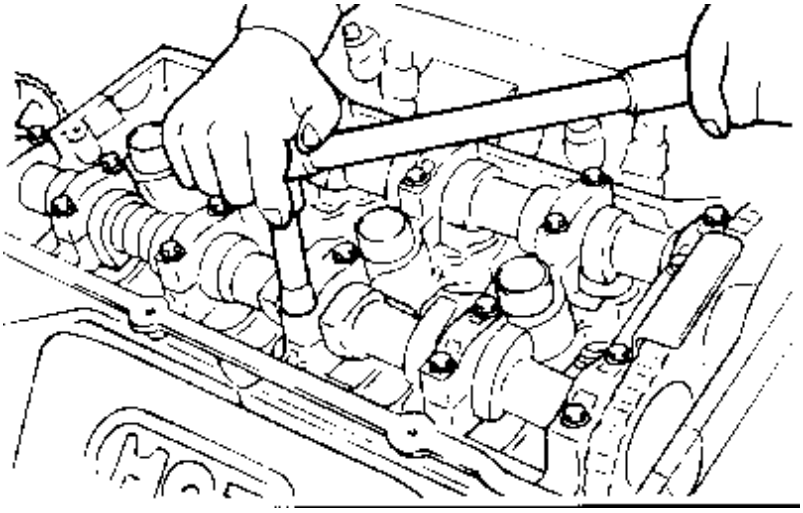
Loosen the center cover bolts and the remove the center cover.



Remove the ignition coil assembly.

Loosen the cylinder head cover bolts and then remove it.

Remove the camshaft sprocket.



Remove the camshaft bearing caps and timing chain.

Remove the camshaft.

Remove the HLA.

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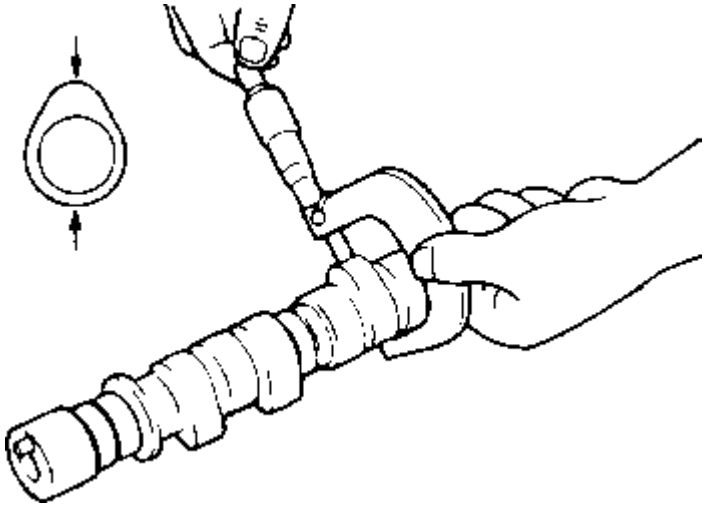
INSPECTION

CAMSHAFTS



Check the camshaft journals for wear. If the journals are badly worn, replace the camshaft.

Check the cam lobes for damage. If the lobe is damaged or worn excessively, replace the camshaft.

MEASUREMENT SPECIFICATION	
Cam height (Intake [1.8L])	44.449 mm (1.7499 in)
Cam height (Intake [2.0L])	44.049 mm (1.7342 in)
Exhaust	45.049 mm (1.7736 in)

MEASUREMENT SPECIFICATION	
Cam height (Intake [1.8L])	44.349 mm (1.7460 in)
Cam height (Intake [2.0L])	43.949 mm (1.7302 in)
Cam height (Intake)	44.949 mm (1.7696 in)

Check the cam surface for abnormal wear or damage, and replace if necessary.

Check each bearing for damage. If the bearing surface is excessively damaged, replace the cylinder head assembly or camshaft bearing cap, as necessary.

SPECIFICATION	
Camshaft end play	0.1-0.2 mm (0.004-0.008 in.)

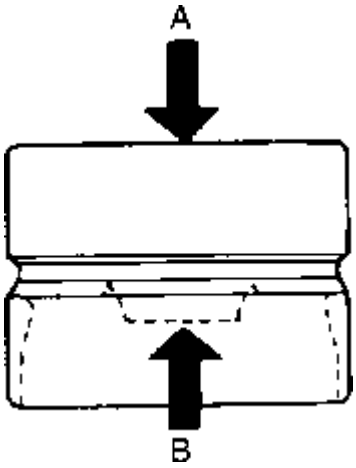
OIL SEAL FRONT CAMSHAFT

Check the lips for wear. If lip threads are worn, replace.

Check the oil seal lip contacting surface of camshaft. If it is worn is stages, replace the camshaft.

HLA (HYDRAULIC LASH ADJUSTER)

With the HLA filled with engine oil, hold A and press B by hand, If B moves, Replace the HLA.

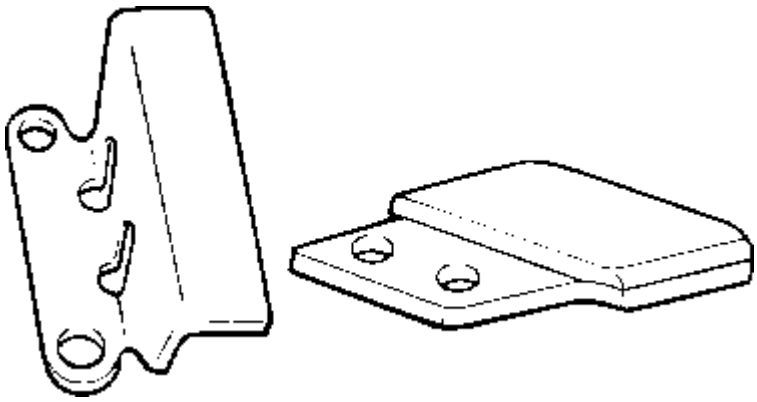


For other specific troubleshooting regarding HLA, refer to the table below.

Problem	Possible cause	Action
Temporary noise on starting a cold engine	Normal	This noise will disappear after the oil in the engine has reached normal pressure.
Continuous noise when engine is started after longer than 48 hours parking.	Oil drain out of the high pressure chamber on HLA, allowing air to get in.	Noise will disappear within 15 minutes when engine run at 2000-3000 rpm. If not disappear, refer to the step 7 below **CAUTION** **Do not run engine all a speed higher than 3000 rpm as this may damage HLA.**

Continuous noise when engine is first started after rebuilding cylinder head.	Insufficient oil in cylinder head oil gallery.	
Continuous noise when engine is after excessive cranking the engine by starter motor or band.	Oil drain out of the highpressure chamber in HLA, allowing air to get in. Insufficient oil in HLA.	
Continuous noise after changing HLA.		
Continuous noise during idle after high speed running.	Engine oil level too high or too low.	Check oil level. Drain or add oil as necessary.
	Excessive amount of air in the oil at high engine speed.	Check oil supply system
	Deteriorated oil	Check oil quality. If deteriorated, replace with specified type and amount of oil.
Noise continues more than 15 minutes.	Low oil pressure	Check oil pressure and oil supply system of each part of engine.
	Faulty HLA.	Remove the cylinder head cover and press down HLA by hand. If it moves, replace HLA. **WARNING** **Be careful of hot HLA.**

CHAIN GUIDE



Check the chain guide for bended, cracks or damage.

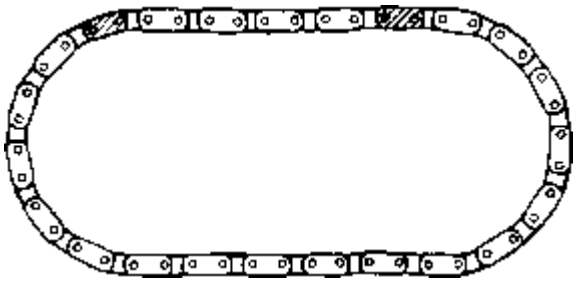
Replace if necessary.

Check the rubber part of chain guide for abnormal wear.

Replace if necessary.

TIMING CHAIN

Check the bushing and plate of timing chain for wear. Replace if it is worn severely.



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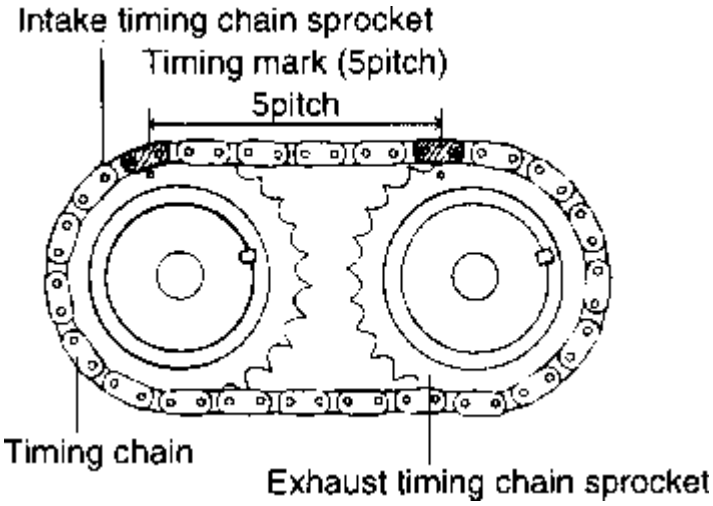
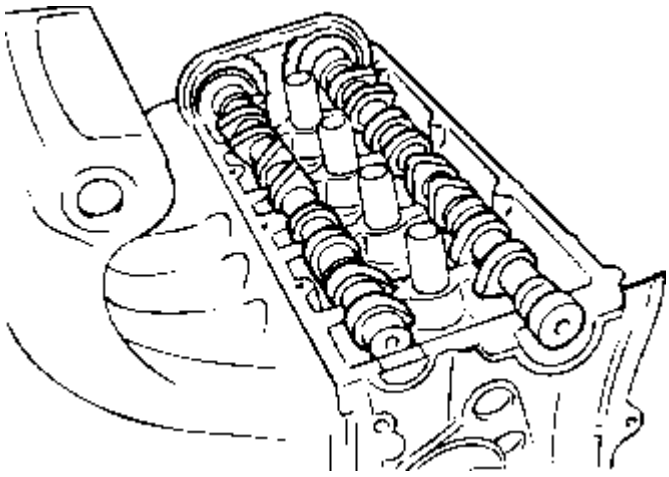
REASSEMBLY

Install the HLA.

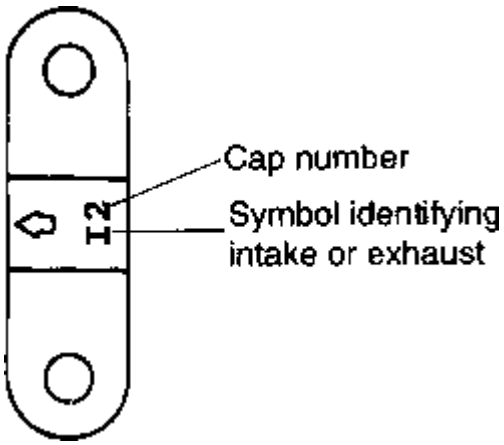
Align the camshaft timing chain with intake timing chain sprocket and exhaust timing chain sprocket as shown.



Install the camshaft after lubricating the journal of camshaft with engine oil.



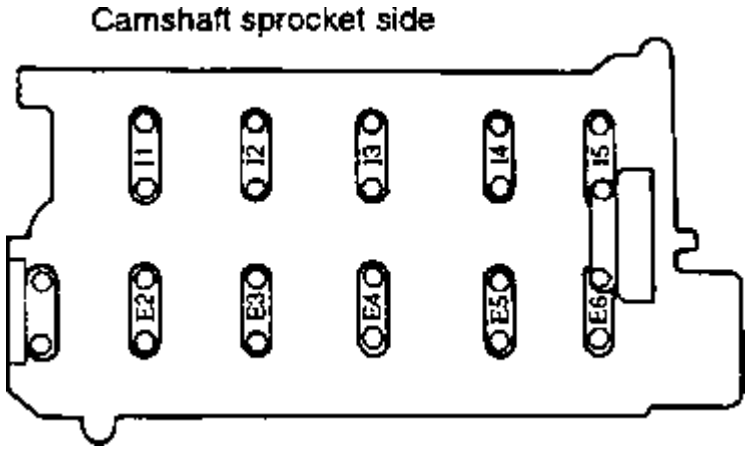
Install the bearing caps. Check the markings on the caps for intake/exhaust identification symbol.



I: Intake camshaft

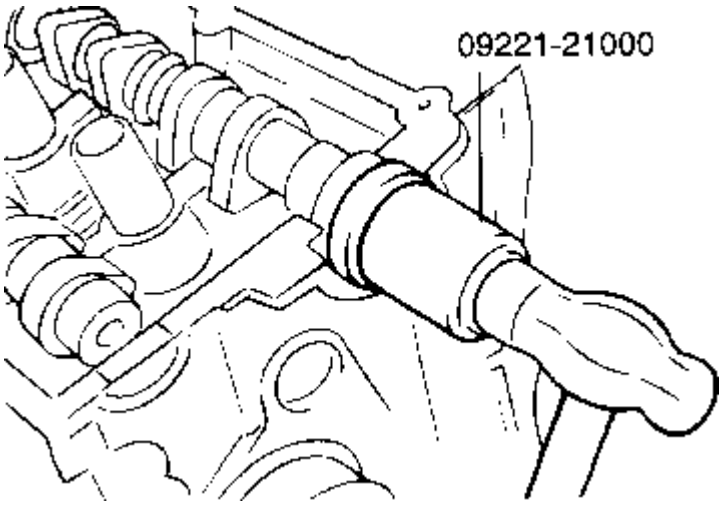
E: Exhaust camshaft

Tighten the bearing caps to the specified torque in two or three steps as shown.

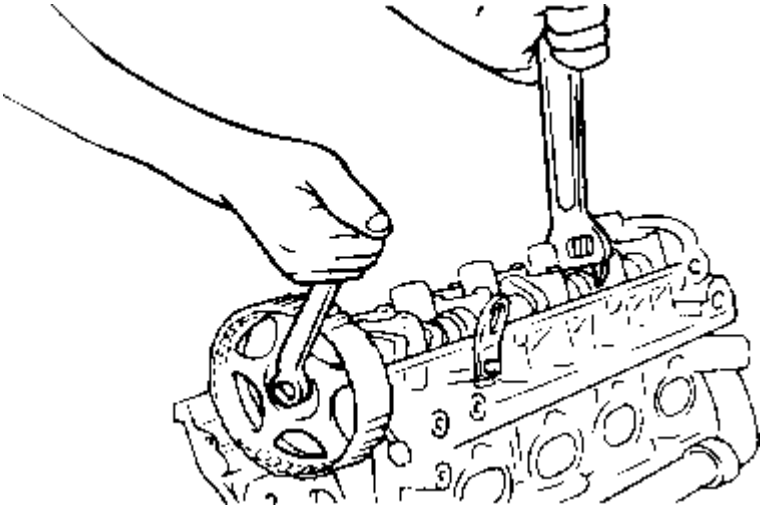


TORQUE SPECIFICATION	
Bearing cap bolt	12-14 Nm (120-140 kg·cm, 9-10 lb·ft)

Using special tool, camshaft oil seal installer (09221-21000), press the camshaft oil seal. Be sure to apply engine oil to the external surface of the oil seal. Insert the oil seal along the camshaft front end and install by driving the installer with a hammer until the oil seal is fully seated.



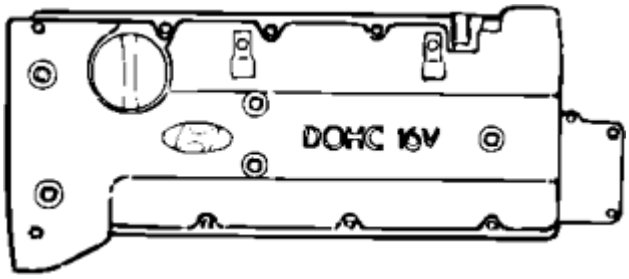
Install the camshaft sprocket to the specified torque.



TORQUE SPECIFICATION	
Camshaft sprocket bolt	80-100 Nm (800-1000 kg·cm, 60-74 lb·ft)

Align the camshaft sprocket and crankshaft sprocket timing marks. The piston in the No.1 cylinder will then be at the being checking to see preceding correctly top dead center on the compression stroke.

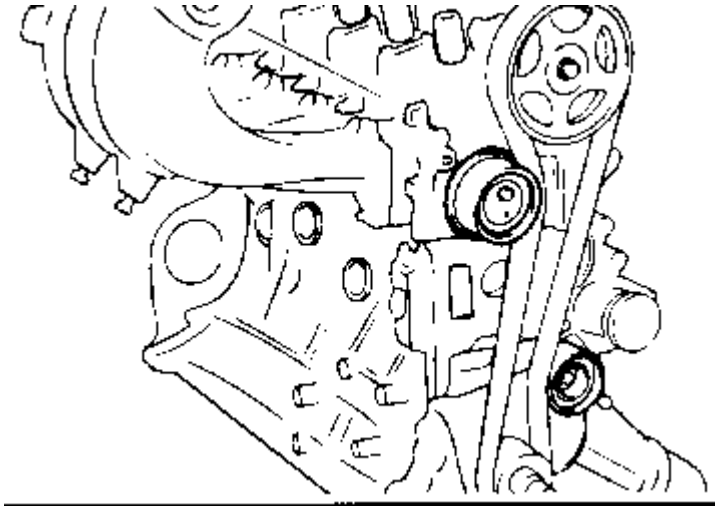
Install the cylinder head cover.



TORQUE SPECIFICATION	
Cylinder head cover bolts	8-10 Nm (80-100 kg·cm, 6-7 lb·ft)

Install the spark plug cables, ignition coil assembly and cylinder head center cover.

Install the timing belt and then tighten the timing belt tensioner pulley.



Install the timing belt cover.

Install the coolant pump pulley and crankshaft pulley.

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2000	
GROUP	
Engine Mechanical System	Main Moving System

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INSPECTION

PISTON AND PISTON PINS

Check each piston for scuffing, scoring wear, and other defects. Replace any piston that is defective.

Check each piston ring for breakage, damage and abnormal wear. Replace the defective rings. When the piston requires replacement, also replace the rings

Check the piston pin fit in the piston pin hole. Replace any defective piston and pin assembly that is defective. The piston pin must be smoothly pressed by hand into the pin hole (at room temperature).

PISTON RINGS

Measure the piston ring side clearance. If the measured value exceeds the service limit, insert a new ring in a ring groove to measure the side clearance. If the clearance still exceeds the service limit, replace the piston and rings together. If it is less than the service limit, replace only the piston rings.

MEASUREMENT SPECIFICATION	
Piston ring side clearance (No. 1)	0.04-0.085 mm (0.0016-0.0031 in)
Piston ring side clearance (No. 2)	0.04-0.085 mm (0.0016-0,0031 in)

MEASUREMENT SPECIFICATION	
Piston ring side clearance (No. 1)	0.1 mm (0.004 in)
Piston ring side clearance (No. 2)	0.1 mm (0.004 in)

To measure the piston ring end gap, insert a piston ring into the cylinder bore. Position the ring at right angles to the cylinder wall by gently pressing it down with a piston. Measure the gap with a feeler gauge. If the gap exceeds the service limit, replace the piston ring·

Item	Standard - mm (in.)	Limit - mm (in.)
Piston ring end gap No. 1	0.15-0.30 (0.00590-0.0118)	1 (0.039)
Piston ring end gap No. 2	0.25-0.40 (0.0080-0.014)	1 (0.039)
Oil ring side rail end gap	0.20-0.70 (0.0780-0.0275)	1 (0.039)

When replacing the ring without correcting the cylinder bore, check the gap with the ring positioned at the bottom of the ring travel.

When replacing a ring, use a ring of the same size.

Piston ring service size and mark

STD	None
0.25 mm (0.010 in.) O.S.	25
0.50 mm (0.020 in.) O.S. 50	50
0.75 mm (0.030 in.) O.S. 75	75
1.00 mm (0.039 in.) O.S. 100	100

NOTE

The mark can be found on the upper side of the ring next to the end.

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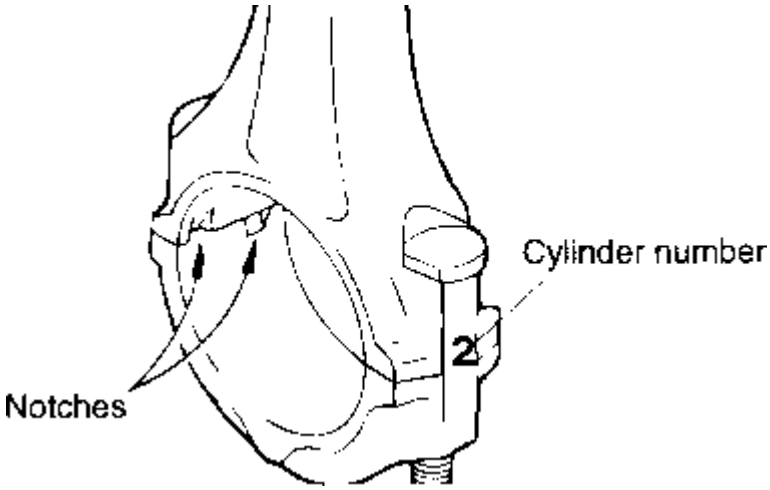
INSPECTION

When reinstalling, make sure that cylinder numbers put on the connecting rod and cap at disassembly match. When a new connecting rod is installed, make sure that the notches for holding the bearing in place are on the same side.



Replace the connecting rod if it is damaged on the thrust faces at either end. Also if step wear or a severely rough surface of the inside diameter of the small end is apparent, the rod must be replaced as well.

Using a connecting rod aligning tool, check the rod for bend and twist. If the measured value is close to the repair limit, correct the rod by a press. Any connecting rod that has been severely bent or distorted should be replaced.

MEASUREMENT SPECIFICATION	
Allowable bend of connecting rod	0.05/100 mm (0.0020/3.94 in)
Allowable twist of connecting rod	0.1/100 mm (0.0039/3.94 in)

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DISASSEMBLY

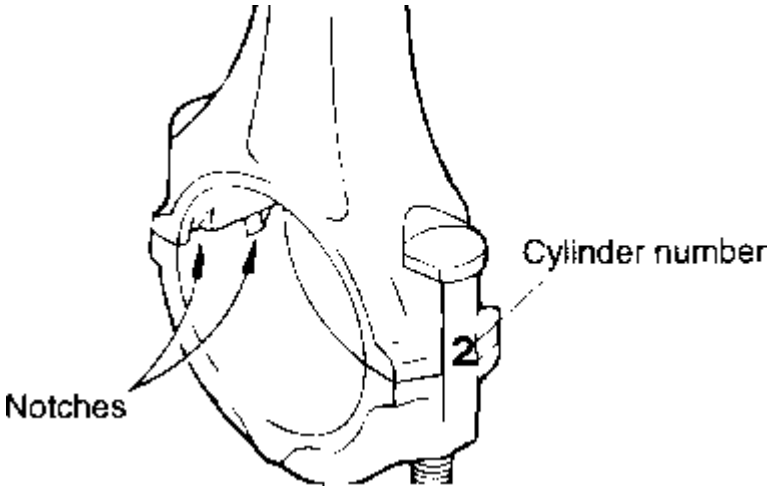
CONNECTING ROD CAP

NOTE

Keep the bearings in order with their corresponding connecting rods (according to cylinder numbers) for proper reassembly.

Remove the connecting rod cap nuts and then remove the caps and the big end lower bearing.

Push each piston-connecting rod assembly toward the top of the cylinder.



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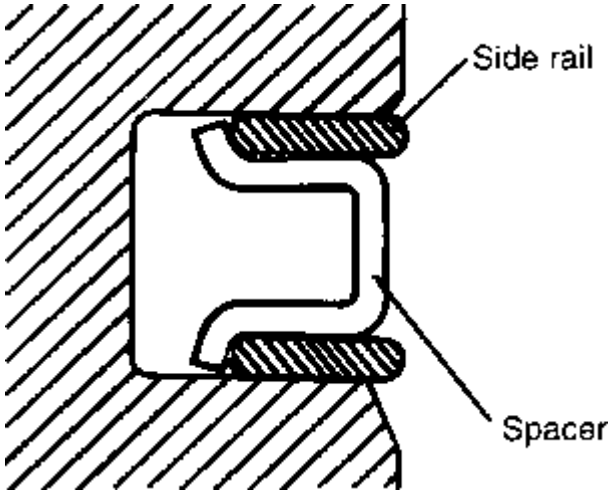
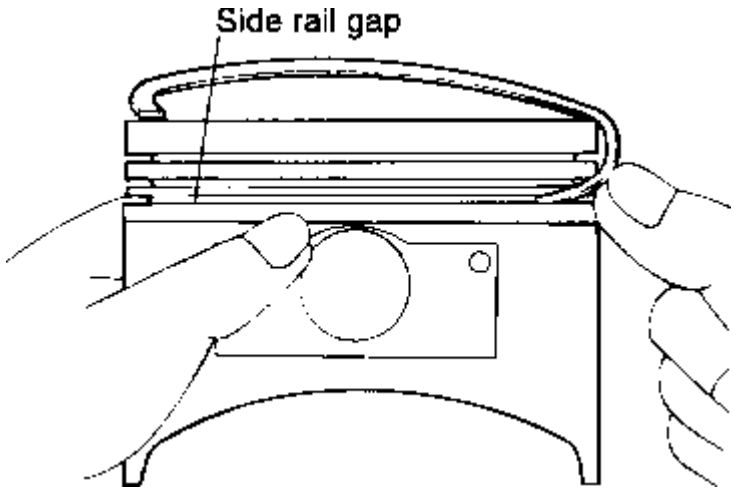
REASSEMBLY

Install the spacer.



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

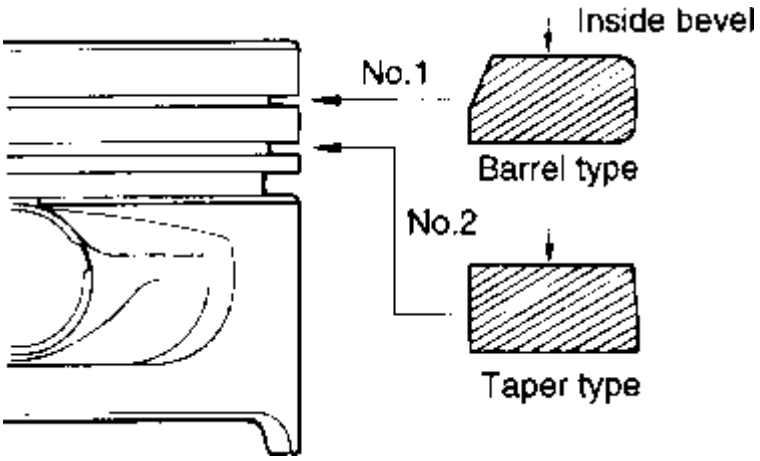


NOTE

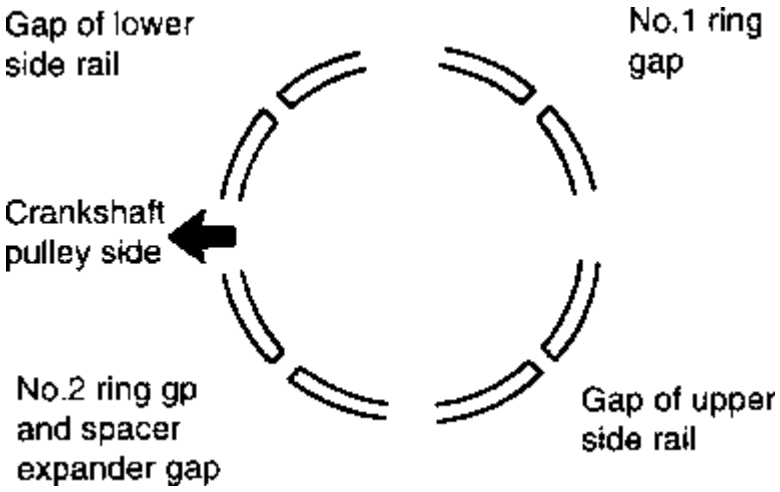
Do not use piston ring expander when installing side rail.

Install lower side rail by same procedure as Step 2.

Using piston ring expander, install No.2 piston ring.



Install No. 1 piston ring.

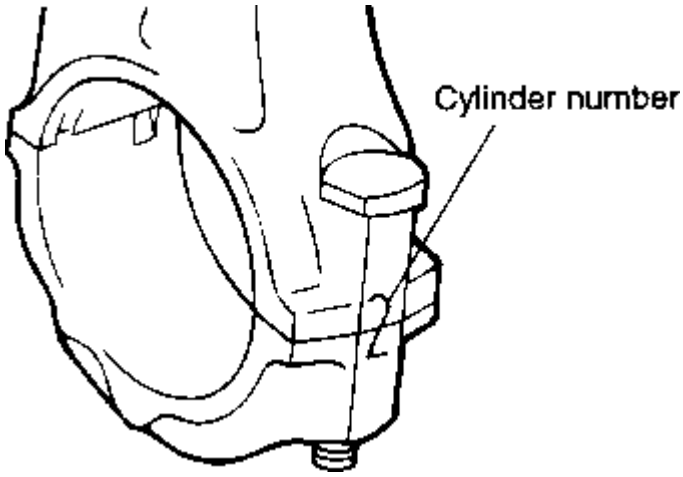


Apply engine oil around piston and piston rings.

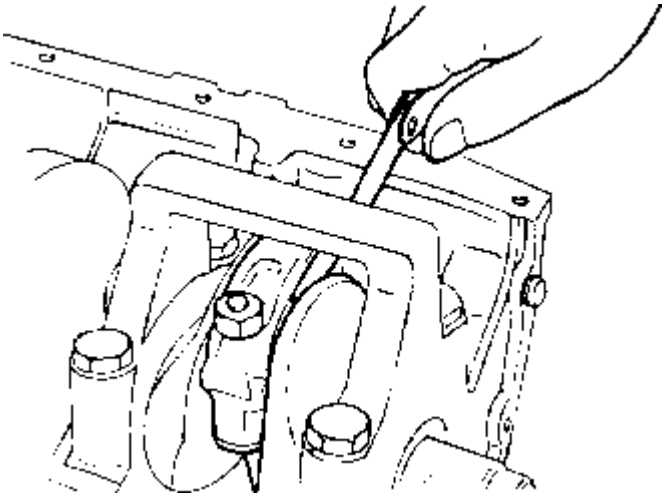
Position each piston ring end gap as far apart from neighbor- ing gaps as possible. Make sure that gaps are not positioned in side rail thrust and pin directions.

Hold piston rings firmly in a piston ring compressor as you insert them into cylinder.

Make sure that front mark of piston and front mark (identification mark) of connecting rod are directed toward front of engine.



When connecting rod cap is installed, make sure that cylinder numbers put on rod and cap at disassembly match.



When new connecting rod is installed, make sure that notches for holding bearing in place are on same side.

Tighten the connecting rod cap nuts.

TORQUE SPECIFICATION	
Connecting rod cap nuts	50-53 Nm (500-530 kg·cm, 36-39 lb·ft)

Check connecting rod side clearance.

MEASUREMENT SPECIFICATION	
Connecting rod side clearance	0.10-0.25 mm (0.004-0.0098 in)

MEASUREMENT SPECIFICATION	
Connecting rod side clearance	0.4 mm (0.0157 in)

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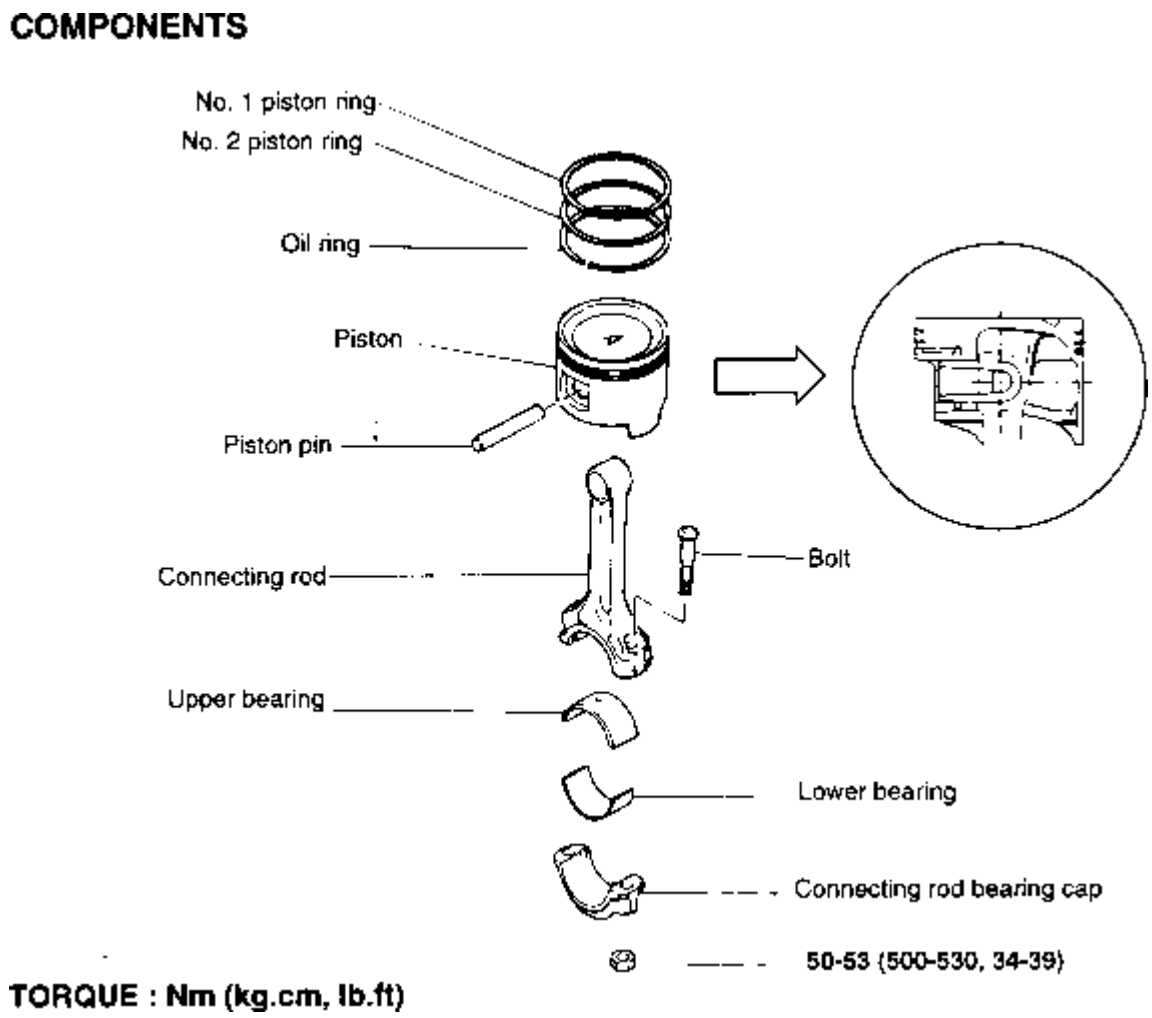
PISTON AND CONNECTING ROD

COMPONENTS



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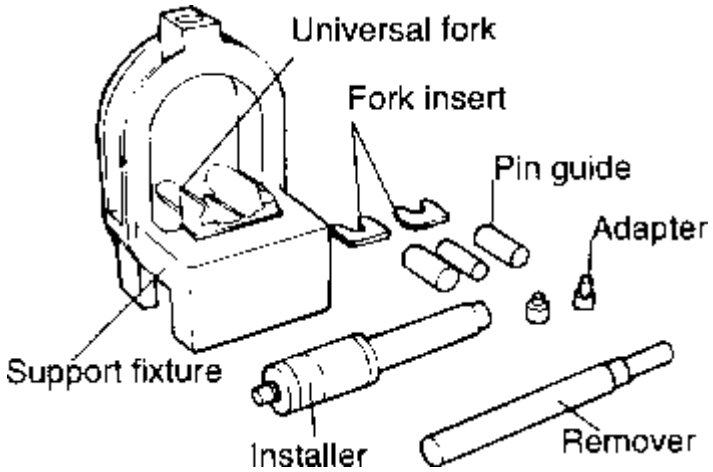
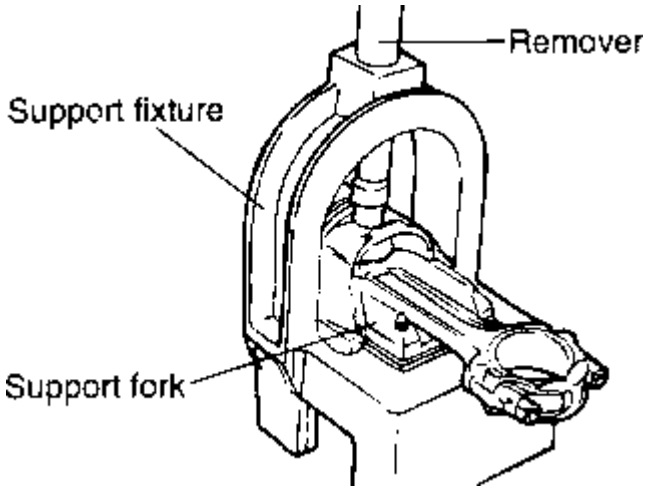
PISTON PIN REMOVAL & INSTALLATION PROCEDURES

Use the special tools (09234-33001) to disassemble and reassemble the piston and connecting rod.



Place the proper insert in the fork of the tool. Insert the position between the connecting rod and the piston.

Insert the proper removal tool through the hole in the arch of the tool.

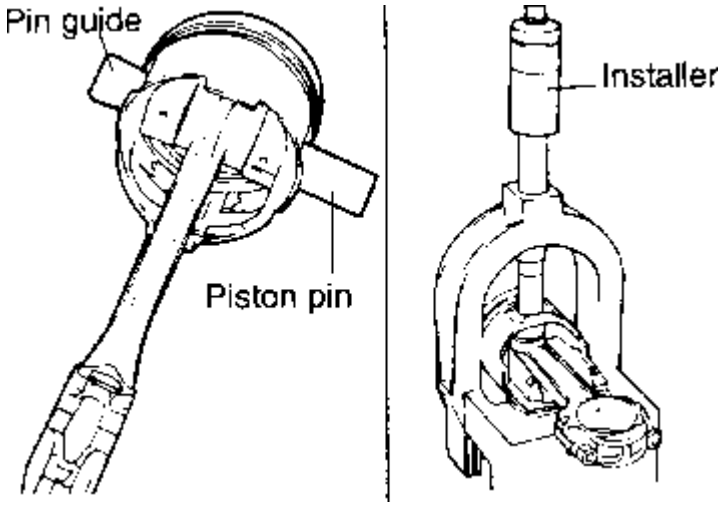


NOTE

Center the piston, rod and pin assembly with the removal arbor.

Press the piston pin out of the connecting rod.

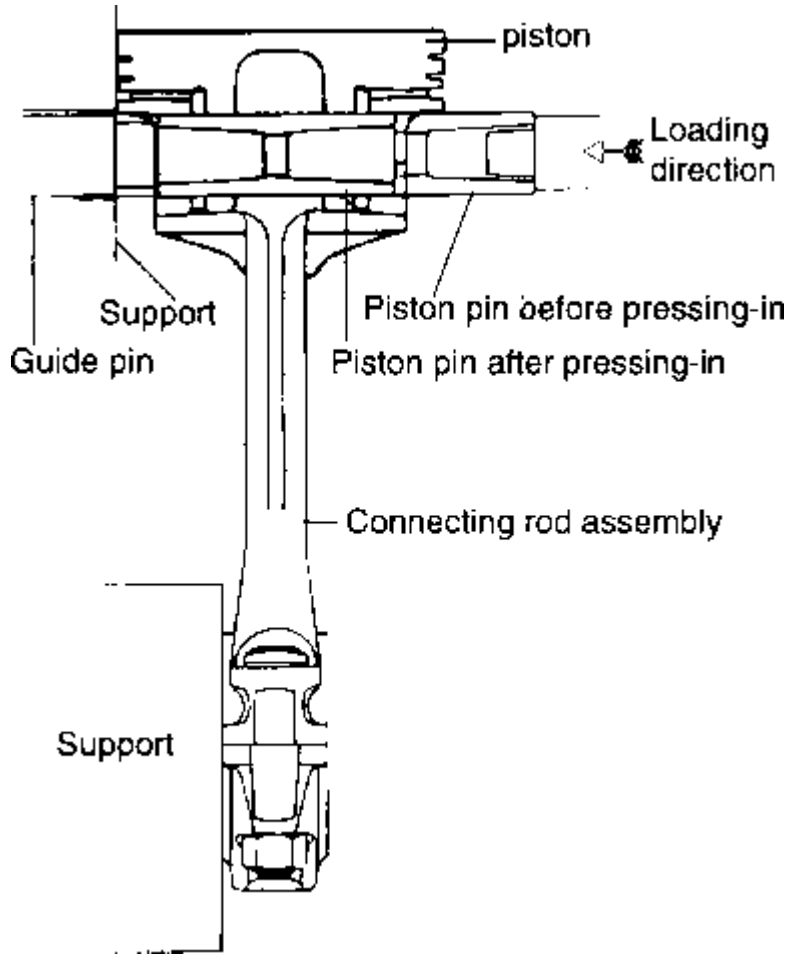
Install proper pin guide (refer to application chart) through piston and into connecting rod. Hand and tap pin guide into piston for proper retention. Drop piston pin into the other side of the piston.



NOTE

The pin guide centers the connecting rod in the piston. When the piston, connecting rod, piston pin and pin guide assembly are positioned on the fork of the tool, the pin guide will also center this assembly in the tool. If too small a pin guide used, the piston assembly will not be located centrally in the tool, and damage may occur to the fork and/or insert of the tool.

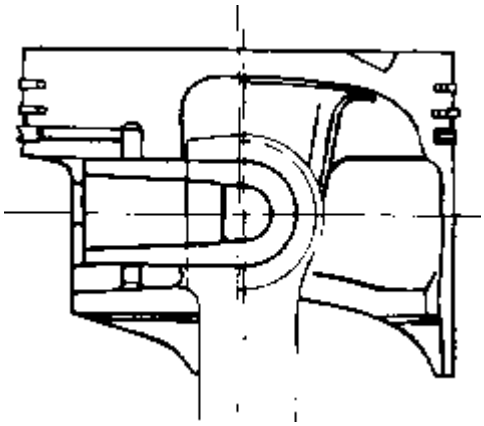
Install piston assembly onto fork assembly of tool. Tool will support connecting rod at the piston pin. Be sure piston assembly is slid onto the fork until the pin guide contacts the fork insert. Adjust the installing arbor to the proper length by turning the numbered sleeve on the lettered shaft until the specified alpha-numeric setting from the application chart is obtained. Turn knurled nut to lock numbered sleeve on shaft.



Insert the installing arbor through the hole in the arch of the tool. Press 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.



SPECIFICATION	
Convex depth (1.8L)	2.05-2.25 mm (0.080-0.088 in)

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2001	
GROUP	
Engine Mechanical System	Main Moving System

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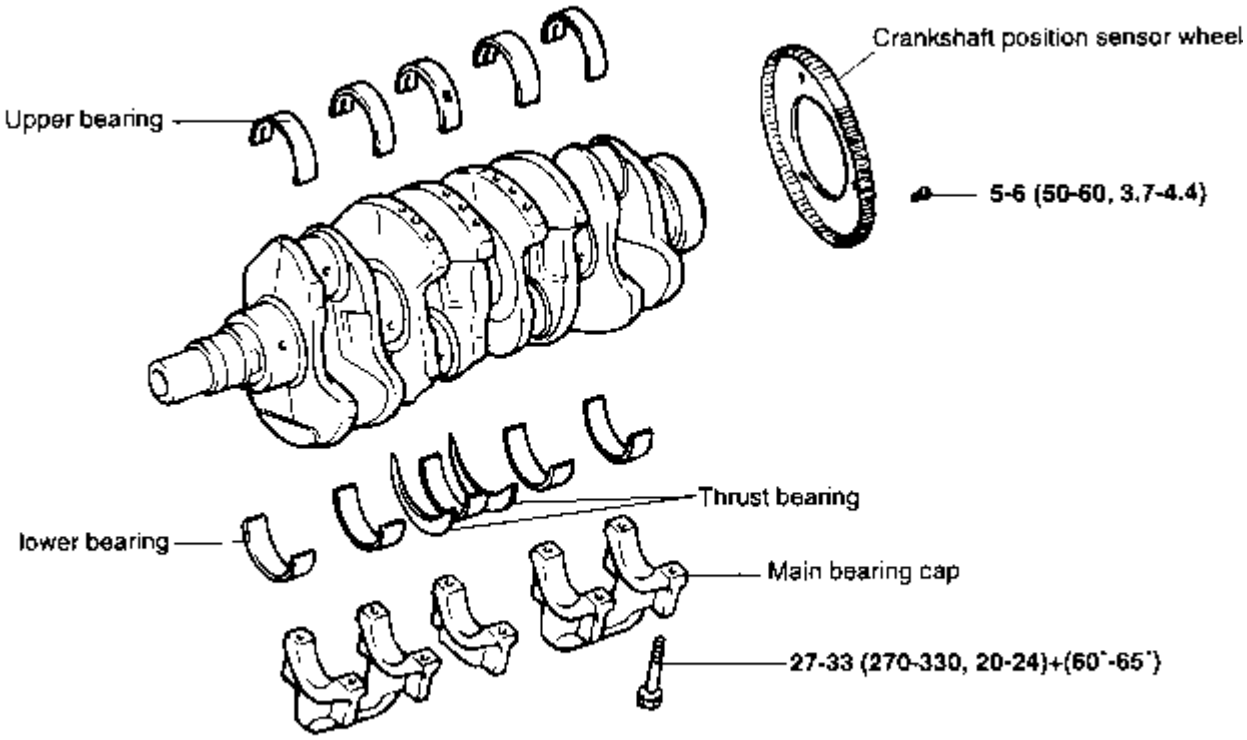
COMPONENTS

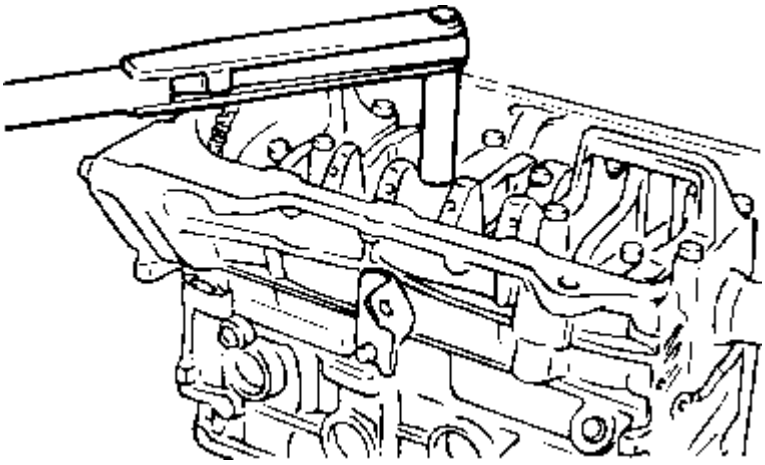
COMPONENTS



TORQUE : Nm (kg.cm, lb.ft)

Return to Main Menu(s): Mechanical Manual Electrical Manual

DISASSEMBLY



Remove the timing belt, front case, flywheel cylinder head assembly and oil pan. For details, refer to respective chapters.

Remove the rear plate and the rear oil seal.

Remove the connecting rod caps.

> **NOTE**
> **Mark the main bearing caps to permit reassembly in the original position and direction.**

Remove the main bearing caps and remove the crankshaft. Keep the bearings in order by cap number.

Remove the crankshaft position sensor wheel.

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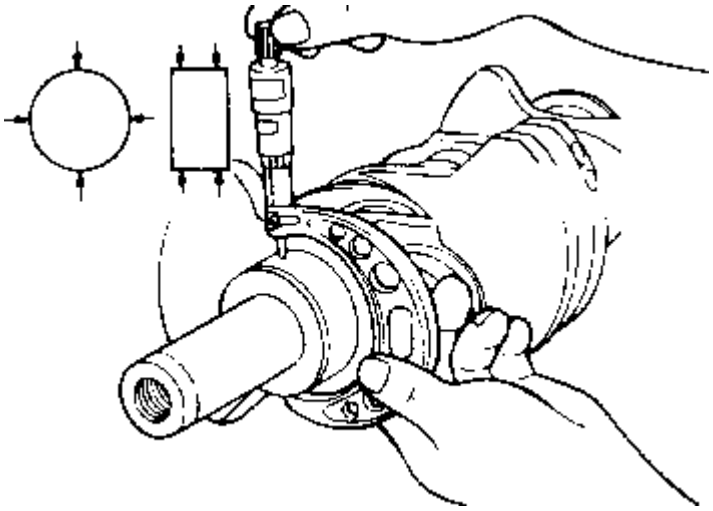
INSPECTION

CRANKSHAFT

Check the crankshaft journals and pins for damage, uneven wear and cracks. Also check oil holes for clogging. Correct or replace any defective part.



Inspect out-of-roundness and taper of crankshaft journal and pin.

MEASUREMENT SPECIFICATION	
Crankshaft journal O.D.	50 mm (1.9685 in)

Crankshaft pin O.D.	45 mm (1.7717 in)
Crankshaft journal, pin out-of-roundness and taper	0.01 mm (0.0004 in)

MAIN BEARINGS AND CONNECTING ROD BEARINGS

Visually inspect each bearing for peeling, melt, seizure and improper contact. Replace the defective bearings.

OIL CLEARANCE MEASUREMENT

To check the oil clearance, measure outside diameter of the crankshaft journal and the crank pin and inside diameter of the bearing. The clearance measurement is the difference between the measured outside and inside diameters.

MEASUREMENT SPECIFICATION	
Crankshaft main bearing	0.028-0.048 mm (0.0011-0.0018 in)
Connecting rod bearing.	0.024-0.044 mm (0.0009-0.0017 in)

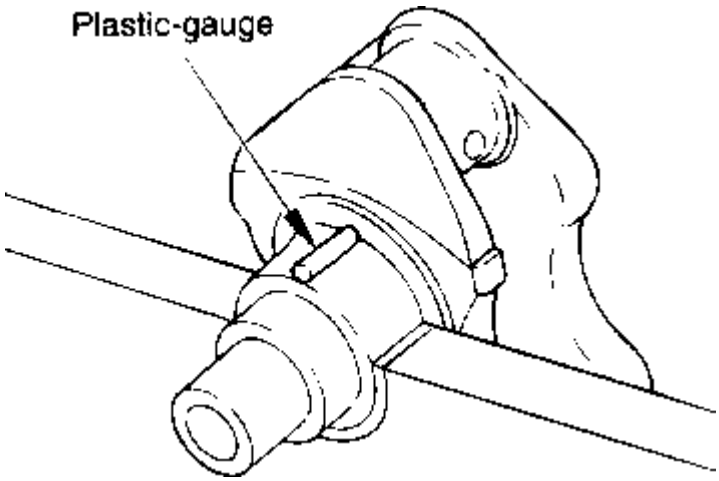
MEASUREMENT SPECIFICATION	
Crankshaft main bearing	0.1 mm (0.0039 in)
Connecting rod bearing.	0.1 mm (0.0039 in)

OIL CLEARANCE MEASUREMENT (PLASTIGAUGE METHOD)

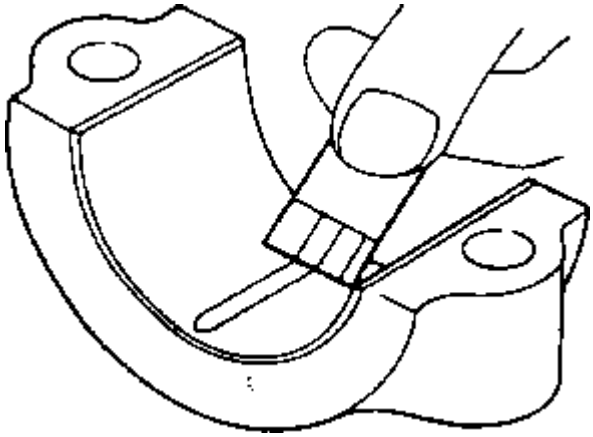
Plastigauge may be used to measure the clearance.

Remove oil, grease and any other dirt from bearings and journals.

Cut plastigauge to the same length as the width of the bearing and place it in parallel with the journal, away from oil holes.



Install the crankshaft, bearings, and caps. Tighten them to the specified torques. During this operation, do not turn the crankshaft. Remove the caps. Measure the width of the plastigauge at the widest point using the scale printed on the gauge package. If the clearance exceeds the repair limit, the bearing should be replaced or an undersize bearing be used. When installing a new crankshaft, be sure to use standard size bearings. Should the standard clearance not be obtained even after bearing replacement, the journal should be ground to a recommended under size, and a bearing of the same size should be installed.



OIL SEAL

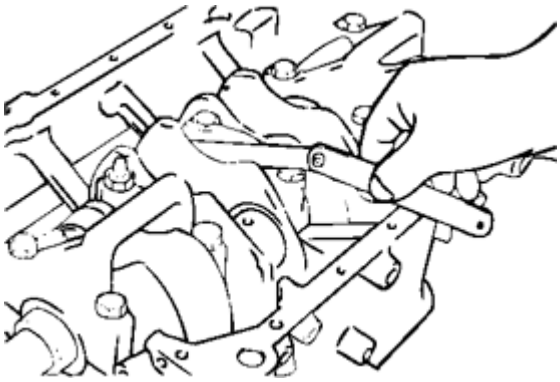
Check front and rear oil seals for damage or worn lips. Replace any defective seat.

BEARING CAPS

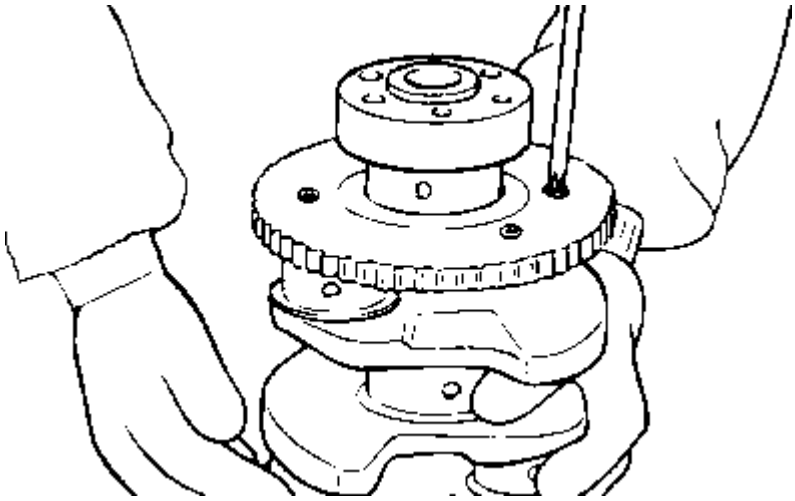
After installing the bearing caps, make sure that the crankshaft turns smoothly and the end play is correct. If the end play exceeds the limit, replace crankshaft bearing.

MEASUREMENT SPECIFICATION	
Bearing caps end play	0.06-0.26 mm (0.0023-0.010 in)

MEASUREMENT SPECIFICATION	
Bearing caps end play	0.30 mm (0.0118 in)



SENSOR WHEEL



Remove the crankshaft sensor wheel.

Check the crankshaft sensor wheel for damage, cracks and wear. Replace if necessary.

Check the clearance between crankshaft sensor wheel and crank position sensor with depth gage.

MEASUREMENT SPECIFICATION	
Clearance between crankshaft sensor wheel and crank position sensor	0.5-1.5 mm (0.020-0.059 in)

NOTE

1. **Measure the depth of the top of sensor wheel tooth and the outside of transaxle housing.**
2. **Measure the difference between sensor length and depth.**
3. **Sensor length is the distance between the end of sensor and inner point of contacting face.**

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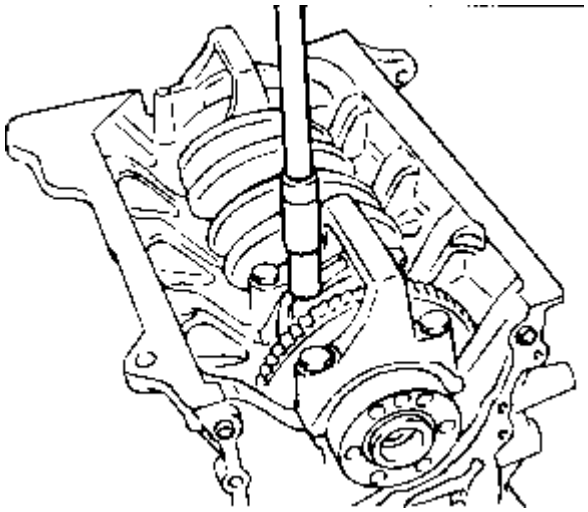
REASSEMBLY

Install the upper main bearing inserts in the cylinder block.



NOTE

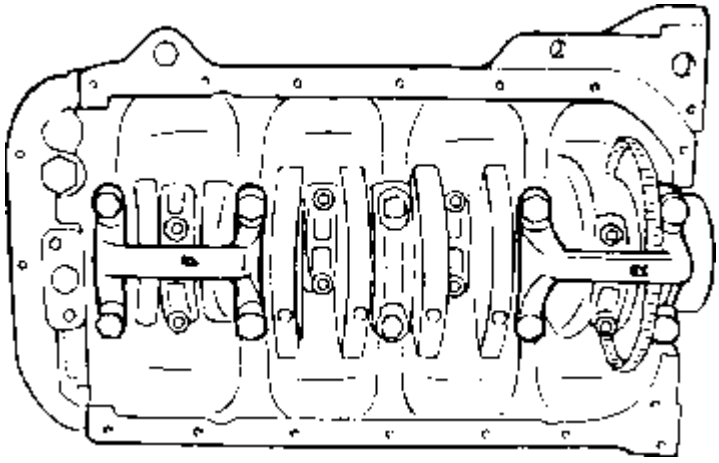
When reusing the main bearings, remember to install them by referring to the location marks made at the time of disassembly.

Install the crankshaft. Apply engine oil to the journals.

Install bearing caps and tighten cap bolts to the specified torque in the sequence of the center, No.2, No.4 front and rear caps. Cap bolts should be tightened evenly in 2 to 3 stages before they are tightened to the specified torque. The caps should be installed with the arrow mark directed toward the crank pulley side of engine. Cap numbers must be corrected.

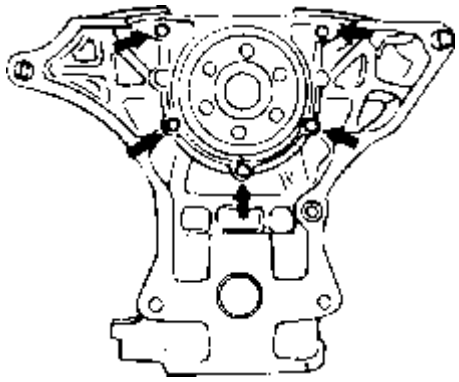
TORQUE SPECIFICATION	
Main bearing cap bolt	55-60 Nm (550-600 kg·cm, 40-43.4 lb·ft)
Connecting rod cap bolt	32-35 Nm (320-350 kg·cm, 23-28 lb·ft)

Make certain that the crankshaft turns freely and has the proper clearance between the center main bearing thrust flange and the connecting rod big end bearing.



MEASUREMENT SPECIFICATION	
Crankshaft end play	0.05-0.175 mm (0.002-0.005 in)

Install the oil seal in the crankshaft rear oil seal case. Use Special Tool, Crankshaft Rear Oil Seal Installer (0923111000) as shown. Press fit the oil seal all the way in, being careful not to misalign it.



Install the rear plate and tighten the bolts.

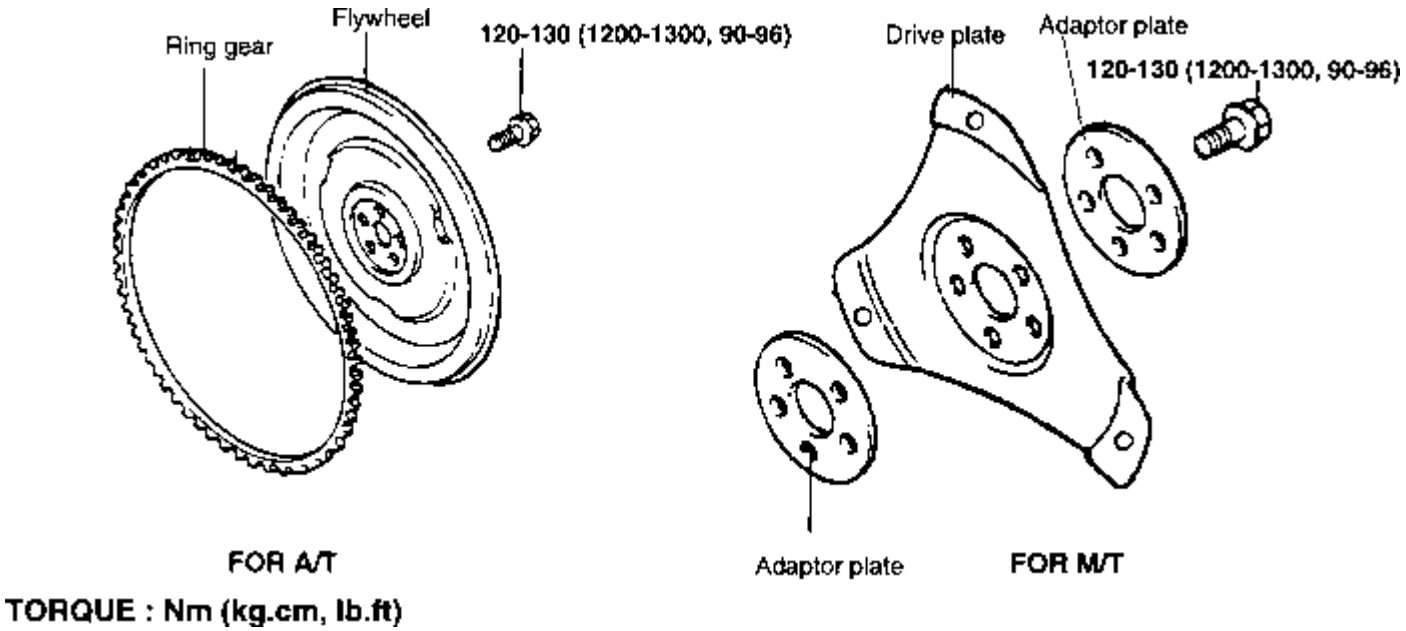
Install the connecting rod caps. Refer to "Piston and Connecting Rods".

Install the flywheel, front case, oil pan and timing belt. For further details, refer to the respective chapters.

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2000	
GROUP	
Engine Mechanical System	Main Moving System

Return to Main Menu(s): Mechanical Manual Electrical Manual

COMPONENTS



TORQUE : Nm (kg.cm, lb.ft)

M/T: Manual Transaxle Vehicles

A/T: Automatic Transaxle Vehicles

Return to Main Menu(s): Mechanical Manual Electrical Manual

DISASSEMBLY

Remove the transaxle and clutch.

Remove the flywheel.

INSPECTION

Check the clutch disc contacting surface of the flywheel for damage and wear. Replace the flywheel if excessively damaged or worn.

Check the clutch disc contacting surface of the flywheel for runout.

MEASUREMENT SPECIFICATION	
Flywheel run-out	0.1 mm (0.004 in)

Check the ring gear for damage, crack and wear, and replace if necessary.

REASSEMBLY

Install the flywheel assembly and tighten the bolts to the specified torque.

TORQUE SPECIFICATION	
Flywheel bolt	120-130 Nm (1200-1300 kg·cm, 90-96 lb·ft)

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2000	
GROUP	
Engine Mechanical System	Engine Block

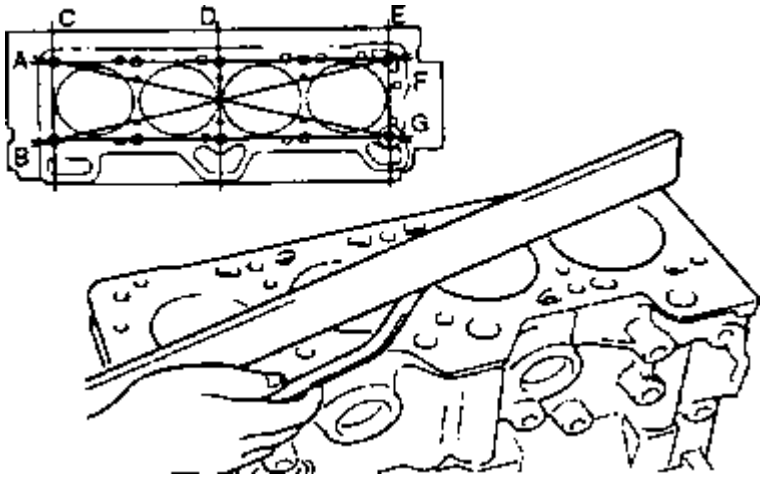
Return to Main Menu(s): Mechanical Manual Electrical Manual

INSPECTION

CYLINDER BLOCK

Visually check the engine block for scores, rust and corrosion. Also check for cracks or any other defects. Repair or replace the block if defective.

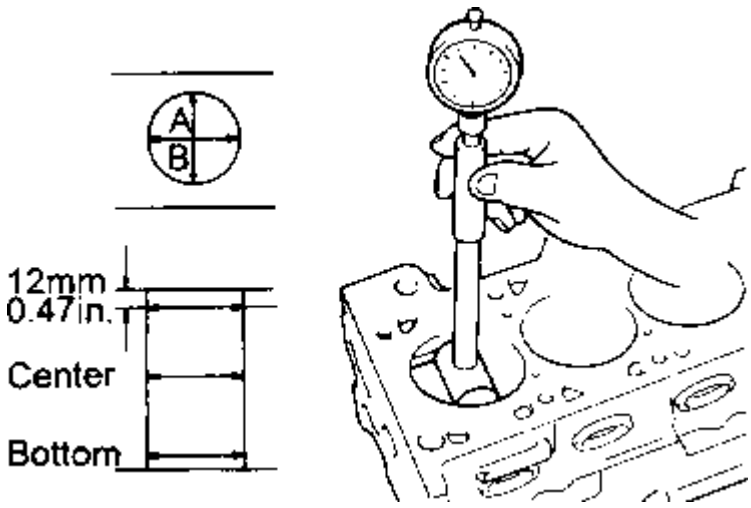
Using a straight edge and feeler gauge, check the block top surface for warp. Make sure that the surface is free from gasket chips or other foreign objects.



MEASUREMENT SPECIFICATION	
Block Top Surface Warp	0.05 mm (0.0020 or less in)

MEASUREMENT SPECIFICATION	
Block Top Surface Warp	0.1 mm (0.0039 in)

Measure the cylinder bore with a cylinder gauge at three levels in the directions A and B. If the cylinder bores show more than the specified out-of round or taper or if the cylinder walls are badly scuffed or scored, the cylinder block should be rebored and honed. New oversize pistons and rings must be fitted. Measuring points are as shown.



SPECIFICATION	
Cylinder I.D	75.5 mm (2.972 in.)

SPECIFICATION	
Cylinder I.D taper	0.02 mm (0.0008 in.) or less

If a cylinder ridge exists, cut away with a ridge reamer.

Oversize pistons are available in four sizes

SPECIFICATION	
Piston service size and mark (O.S.)	0.25 mm (0.010 in.)

SPECIFICATION	
Piston service size and mark (O.S.)	0.50 mm (0.020 in.)

SPECIFICATION	
Piston service size and mark (O.S.)	0.75 mm (0.030 in.)

SPECIFICATION	
Piston service size and mark (O.S.)	1.00 mm (0.039 in.)

When boring the cylinder bore to oversize, keep the specified clearance between the oversize piston and the bore, and make sure that all pistons used are of the same oversize.

The standard measurement of the piston outside diameter is taken at a level 12 mm (0.47 in.) above the bottom of the piston skirt and across the thrust faces.

SPECIFICATION	
Piston-to-cylinder wall clearance	0.025-0.045 mm (0.0008-0.0016 in.)

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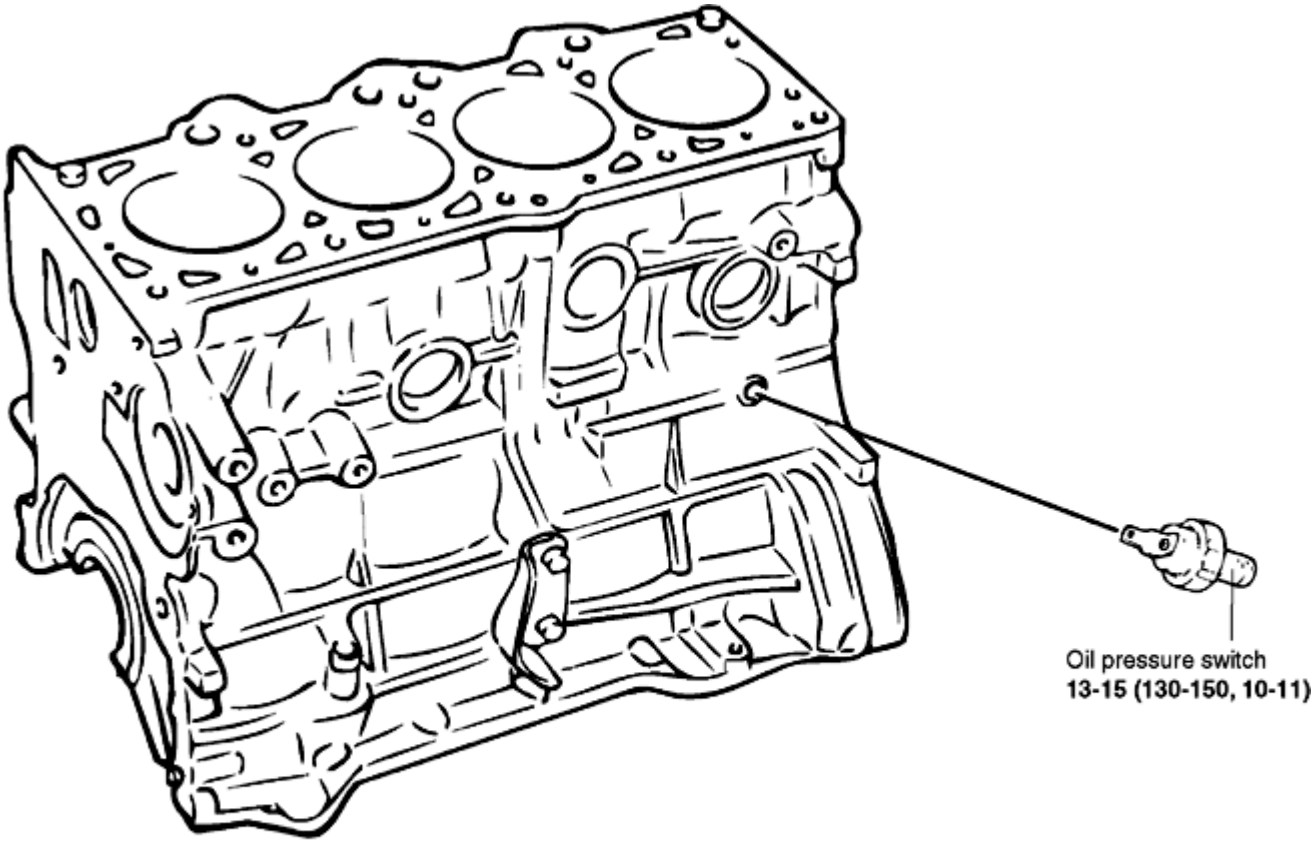
CYLINDER BLOCK



TORQUE : Nm (kg.cm, lb.ft)

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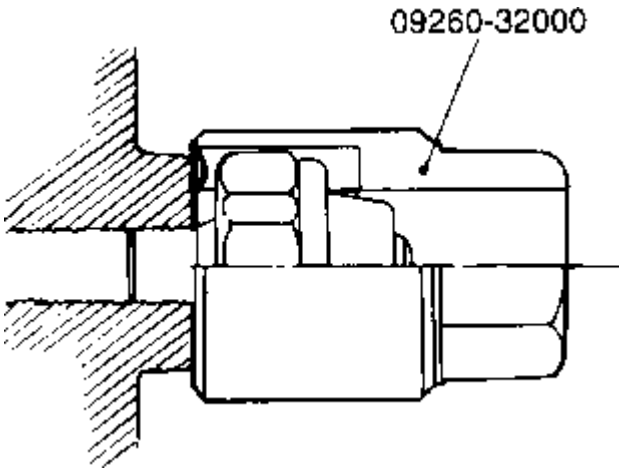
DISASSEMBLY



Remove the cylinder head, timing belt, front case, flywheel, piston and crankshaft.

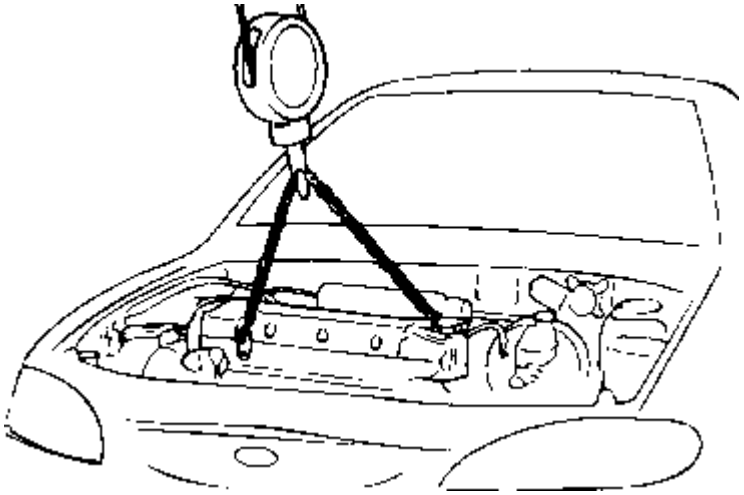
For further details, refer to the respective chapters.

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2000	
GROUP	
Engine Mechanical System	Engine Block

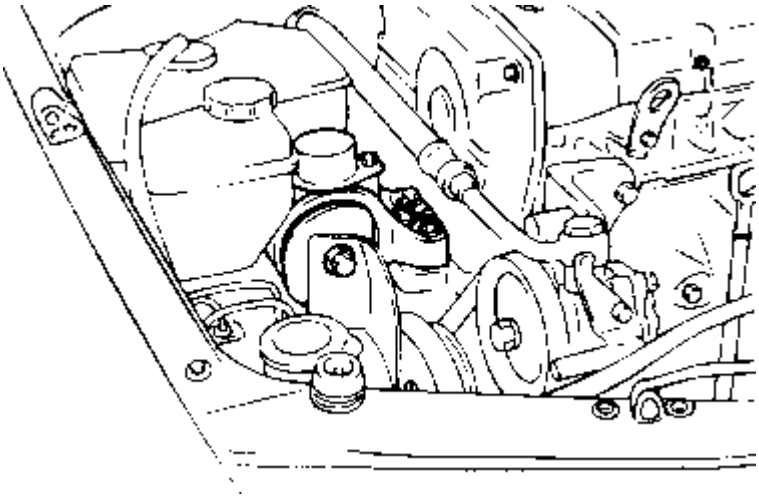
Return to Main Menu(s): Mechanical Manual Electrical Manual

DISASSEMBLY

Attach an engine hoist to the engine hooks, and raise the engine just enough so that there is no pressure on the insulators.



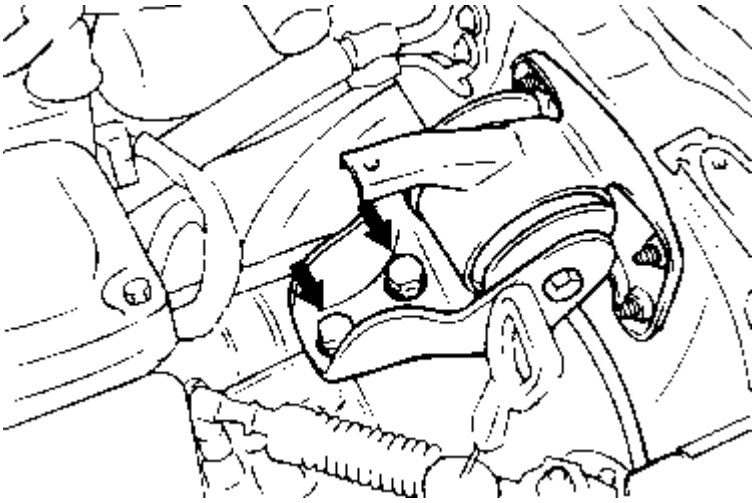
ENGINE MOUNTING



Remove the engine mount insulator bolts.

Remove the engine mount bracket from the engine.

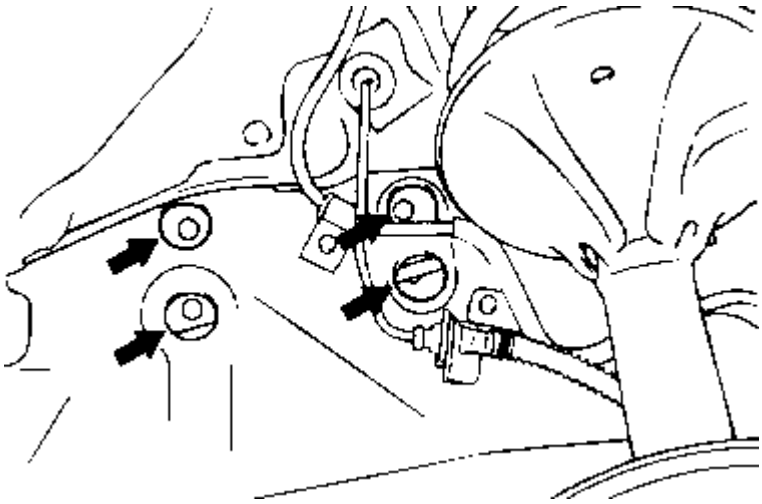
TRANSAXLE



For vehicles with a 5-speed manual transaxle, remove the select control valve.

Remove the transaxle mount bolt.

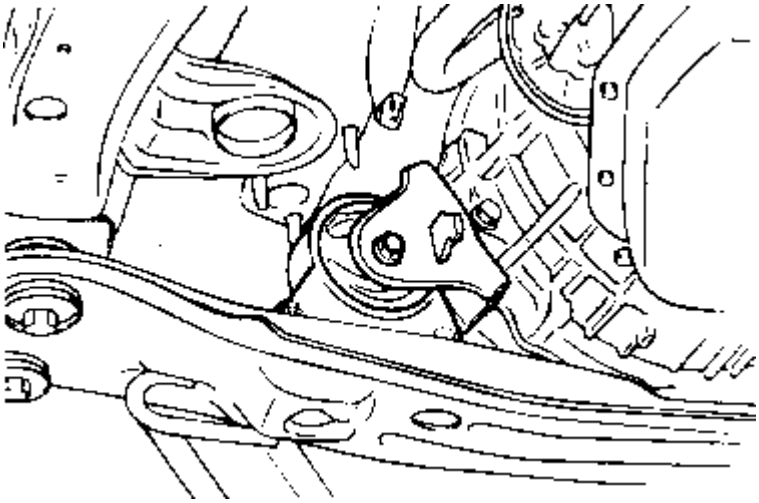
Detach the cap from inside the right fender shield. Remove the transaxle mounting bolts.



Remove the transaxle bracket.

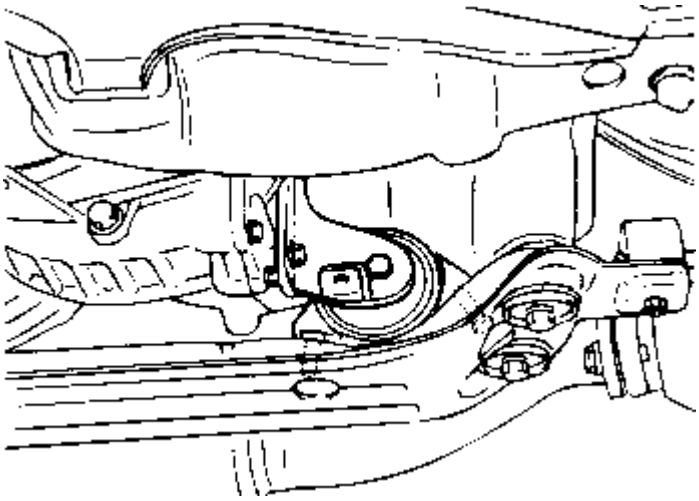
FRONT ROLL STOPPER

Remove the front roll stopper bracket from the center member.



REAR ROLL STOPPER

Remove the rear roll stopper from the center member.



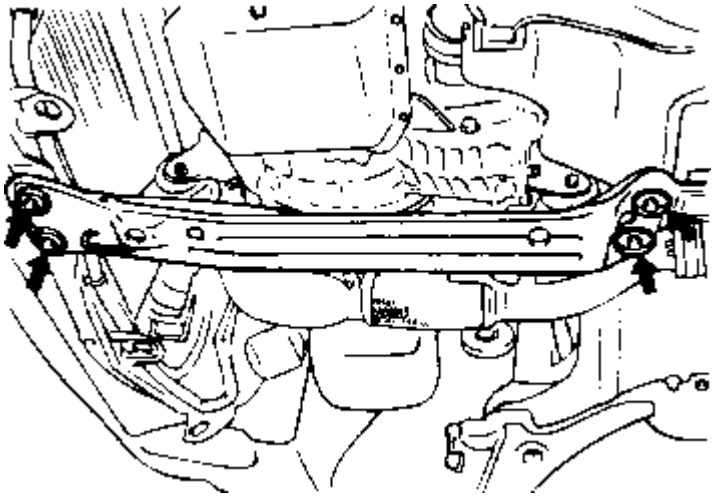
CENTER MEMBER

Remove the under cover (R.H.).

Remove the front roll stopper mounting bolts.

Remove the rear roll stopper mounting bolts.

Remove the center member from the body.



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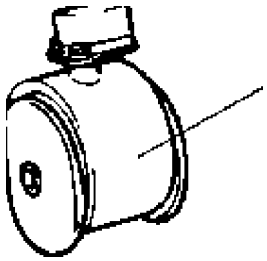
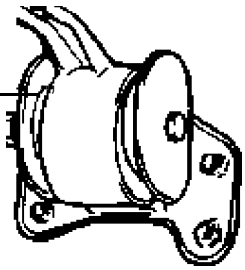
INSPECTION ITEMS

Engine mounting



Transaxle mounting

Cranckst peeling and damage

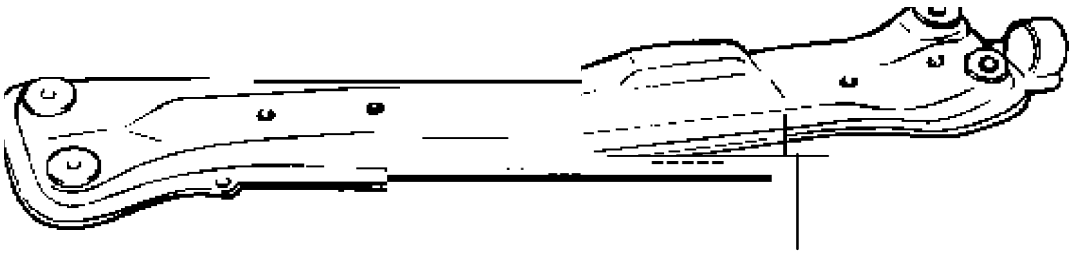


Rear roll stopper

Crancks, peeling and damage

Front roll stopper

Center member



Cracke and damage

SERVICE MANUAL	
Applies to: **Hyundai Coupe/Tiburon** 1998-2000	
GROUP	
Engine Mechanical System	Engine Block

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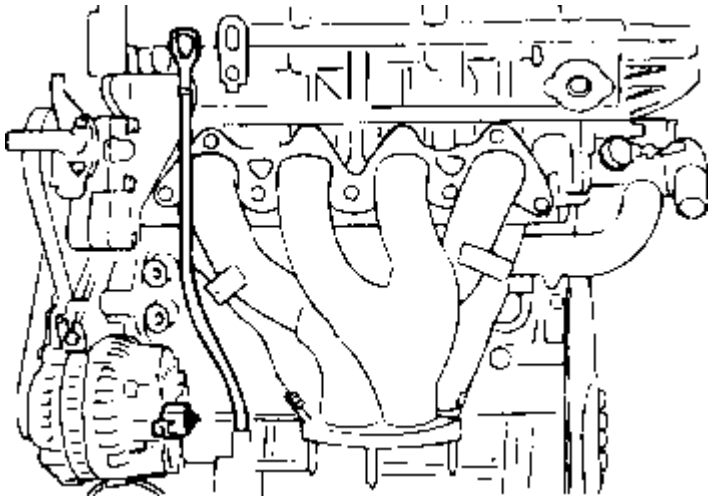
DISASSEMBLY



Remove the battery.

Detach the air cleaner.

Disconnect the connectors for the backup lamp switch and engine harness.

For vehicles with a 5-speed manual transaxles, disconnect the select control valve connector.

Disconnect the connectors for the alternator harness and the oil pressure gauge wiring.

Drain the engine coolant.

For vehicles with automatic transaxle, disconnect the transaxle oil cooler hoses.

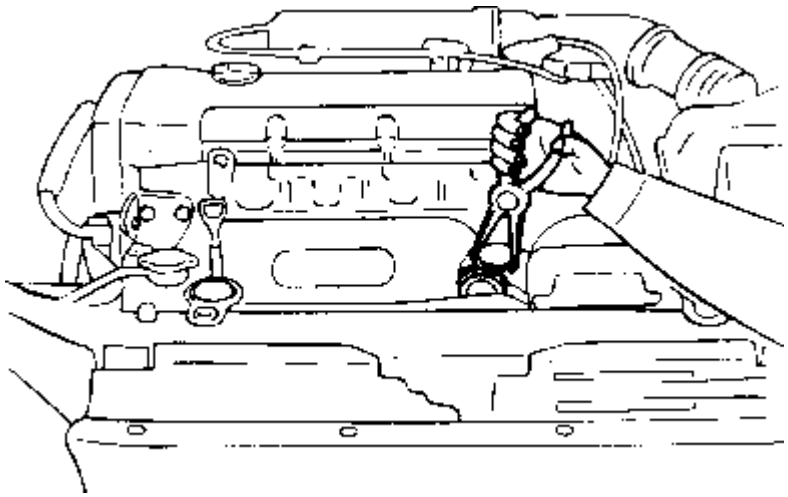
NOTE

When disconnecting the hoses, make identification marks to avoid making mistakes when reconnecting them.

CAUTION

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

Disconnect the radiator upper and lower hoses on the engine side, then remove the radiator assembly.



Disconnect the engine ground.

Disconnect the brake booster vacuum hose.

Remove the main fuel line, and the return and vapor hoses from the engine side.

> **CAUTION**
>
> **To reduce the residual pressure in the hoses, refer to Group Fuel System (FS) "Fuel filter replacement."**

Disconnect the heater hoses (inlet and outlet) on the engine side.

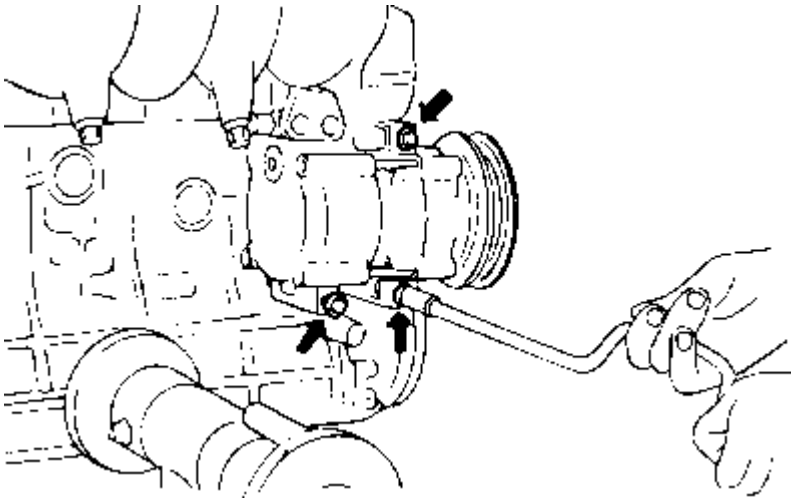
Disconnect the accelerator cable at the engine side.

For vehicles with manual transaxles, remove the clutch cable from the transaxle.

For vehicles with automatic transaxles, remove the control cable from the transaxle.

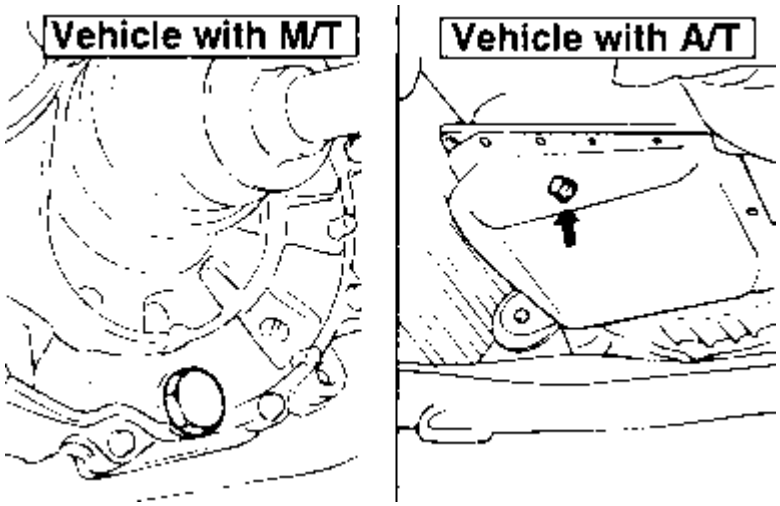
Disconnect the speedometer cable from the transaxle.

Disconnect the air conditioner compressor from the mounting bracket.



Jack up the vehicle.

Drain the transaxle oil (or fluid).



Disconnect the front exhaust pipe from the manifold.

> **NOTE**
>
> **Use wire to suspend the exhaust pipe from the bottom of the vehicle.**

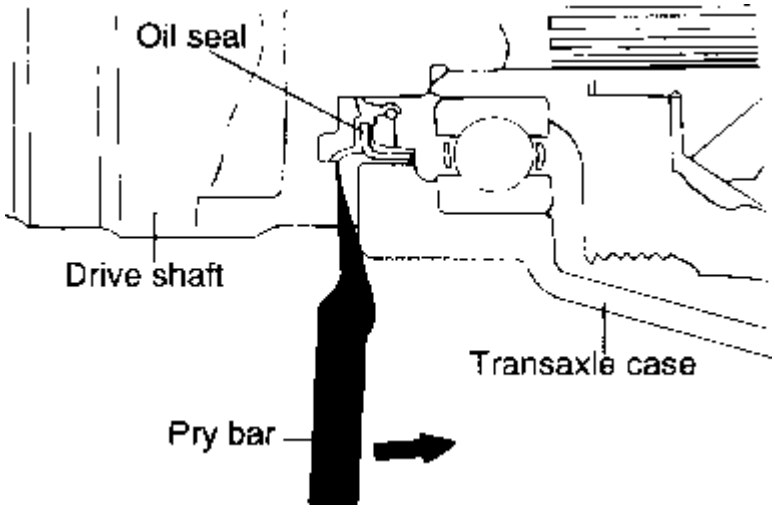
For vehicles with manual transaxles, remove the shift control rod and extension rod.

Remove the lower arm ball joint bolts and the stabilizer bar at the point where it is mounted to the lower arm.

Remove the drive shafts from the transaxle case.

> **CAUTION**
>
> - **Plug the axle holes of the transaxle case to prevent entry of foreign material.**
> - **Install new circlips on the drive shafts when reassembling.**

Hang the lower arm and drive shaft from the body.



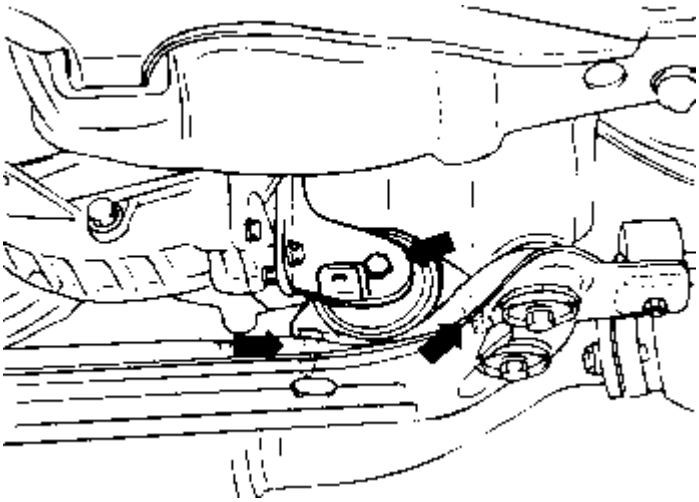
Attach a cable to the engine, and use a chain hoist to lift the engine only enough to pull the cable tight.

Remove the front roll stopper.

Separate the rear roll stopper.

For vehicle with a manual transaxle, remove the roll rod.

Remove the engine mounting insulator bolts.

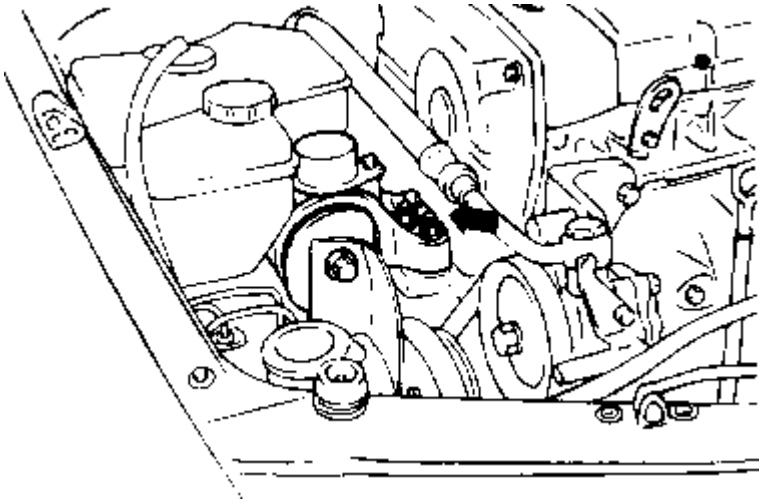


Remove the engine mounting bracket from the engine.

Slowly raise the engine (to the extent that the engine and transaxle weights are not applied to the mounting portions) and temporarily hold it in the raised position.

> **CAUTION**
>
> **Check that all cables, hoses, harnesses, connectors etc. are disconnected from the engine.**

Remove the caps from inside of the right fender shield and remove the transaxle mount bracket bolts.



Remove the engine mount insulator bolt.

While directing the transaxle side downward, lift the engine and transaxle assembly up and out of the vehicles.

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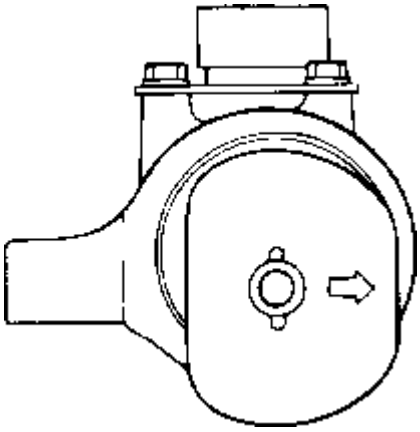
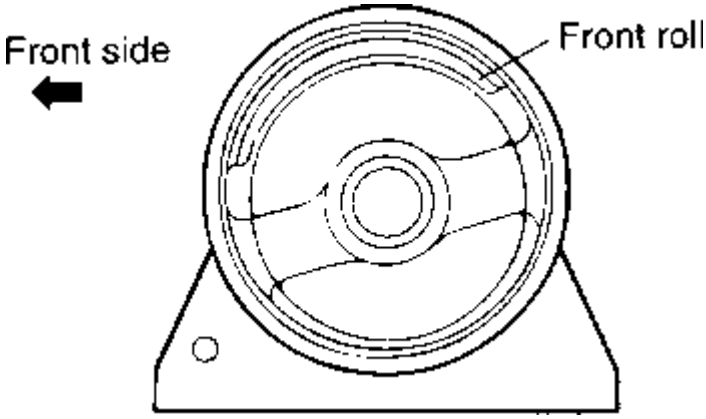
INSTALLATION

After checking the connections of the harnesses, pipes, hoses, etc., and making sure that none of them are being caught, damaged, etc., install the engine and transaxle assembly.

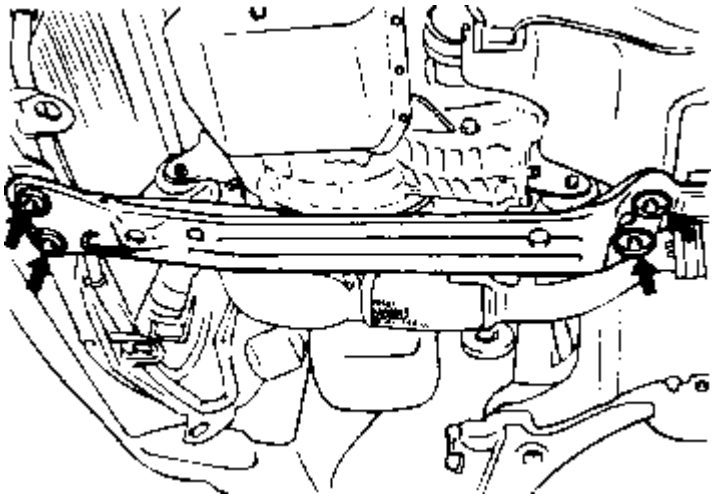
Install the mounting stoppers with the arrows on them pointing in the direction as shown.



When the engine and transaxle assembly is installed, temporarily tighten the front roll stopper.



The front and rear center member rubber bushings and collars are different.



After the weight of the engine and transaxle assembly has been put on each insulator, tighten to specified torque.

Reassemble all of the components removed during disassembly. Be especially careful to properly secure all components, including fuel, electrical and fluid pipe connections.

Refill the coolant and check for leaks.

Refill the transaxle fluid, test its operation, and check for leaks.

Check the operation of the transaxle control cable and accelerator cable. Adjust as necessary.

Check for proper operation of each of the various gauges.