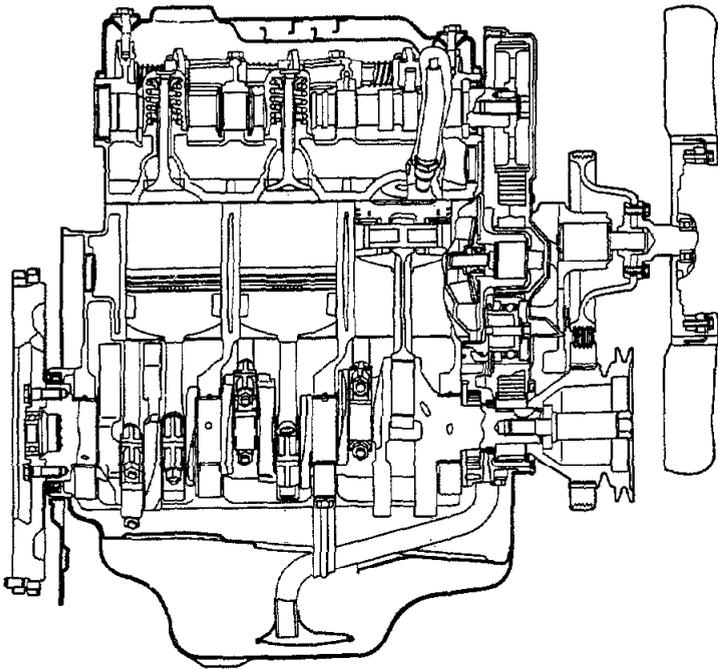


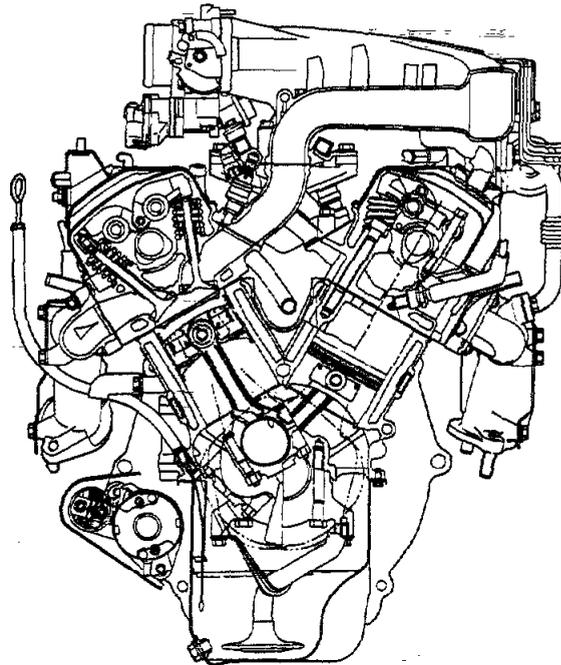
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N098A-B

GENERAL INFORMATION SECTIONAL VIEW

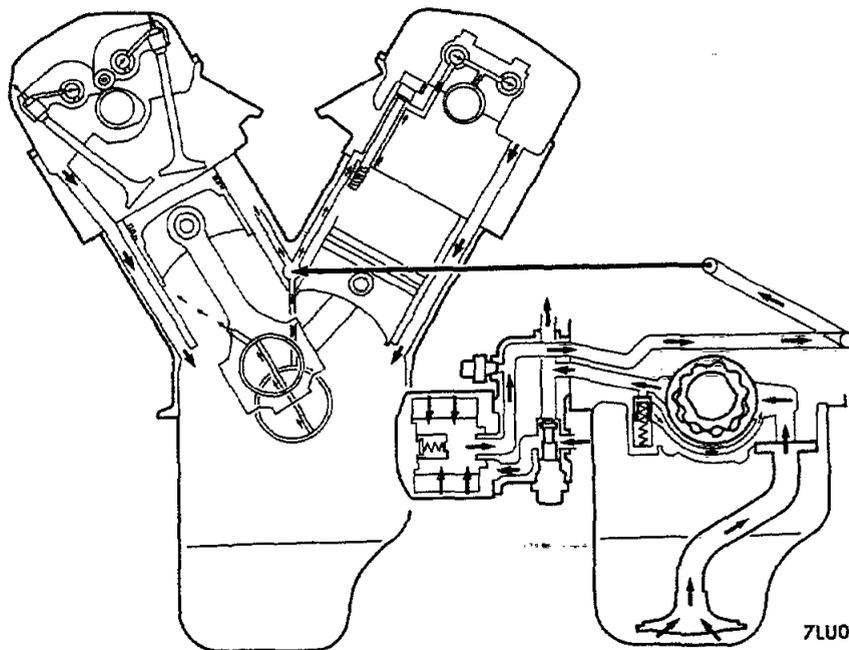


7EN0135



7EN0120

LUBRICATION DIAGRAM



7LU0014

SPECIFICATIONS**GENERAL SPECIFICATIONS**

N09CA-B

Items	Specifications
Type	V-type, OHC
Number of cylinders	6
Bore mm (in.)	91.1 (3.587)
Stroke mm (in.)	76.0 (2.992)
Piston displacement cc (cu.in.)	2,972 (181.4)
Compression ratio	8.9
Firing order	1-2-3-4-5-6
Valve timing	
Intake valve	Opens (BTDC) 19°
	Closes (ABDC) 59°
Exhaust valve	Opens (BBDC) 59°
	Closes (ATDC) 19°
Valve overlap	38°
Intake valve duration	258°
Exhaust valve duration	258°

SERVICE SPECIFICATIONS

N09CB-B

Items	Standard value	Limit
General		
Compression pressure kPa (psi)/rpm		840 (119)
Pressure difference of all cylinder kPa (psi)		100 (14)
Manifold vacuum kPa (in.Hg)	69 (20)	
Cylinder head		
Overall height mm (in.)	84 (3.31)	* -0.2 (-.008)
Flatness of gasket surface mm (in.)	Less than 0.05 (.0019)	0.2 (.008)
Flatness of manifold mounting surface mm (in.)		
Intake side	Less than 0.10 (.0039)	0.2 (.008)
Exhaust side	Less than 0.15 (.0059)	0.3 (.012)
Oversize rework dimension of valve seat hole mm (in.)		
Intake	0.3 (.012) O.S.	44.300-44.325 (1.7440-1.7451)
	0.6 (.024) O.S.	44.600-44.625 (1.7559-1.7569)
Exhaust	0.3 (.012) O.S.	38.300-38.325 (1.5079-1.5089)
	0.6 (.024) O.S.	38.600-38.625 (1.5197-1.5207)

NOTE

*Limit must be -0.2 (-.008) combined with amount of grinding of cylinder block gasket surface.

Items	Standard value	Limit
Oversize rework dimension of valve seat height mm (in.)		
Intake 0.3 (.012)	7.9-8.1 (.311-.319)	
0.6 (.024)	8.2-8.4 (.323-.331)	
Exhaust 0.3 (.012)	7.9-8.1 (.311-.319)	
0.6 (.024)	8.2-8.4 (.323-.331)	
Oversize rework of valve guide hole (both intake and exhaust) mm (in.)		
0.05 (.002) O.S.	13.050-13.068 (.5138-.5145)	
0.25 (.010) O.S.	13.250-13.268 (.5217-.5224)	
0.50 (.020) O.S.	13.500-13.518 (.5315-.5322)	
Camshaft		
Cam height mm (in.)		
Intake	41.25 (1.6240)	40.75 (1.6043)
Exhaust	41.25 (1.6240)	40.75 (1.6043)
Journal O.D. mm (in.)	34 (1.34)	
Bearing oil clearance mm (in.)	0.05-0.09 (.0020-.0035)	
Rocker arm		
I.D. mm (in.)	19 (.75)	
Clearance (Rocker arm to shaft) mm (in.)	0.01-0.04 (.0004-.0016)	0.10 (.0039)
Rocker arm shaft		
O.D. mm (in.)	18.9 (.744)	
Rocker arm shaft spring		
Free length mm (in.)		
Intake	55.2 (2.173)	
Exhaust	55.2 (2.173)	
Valve		
Valve length mm (in.)		
Intake	103.0 (4.055)	
Exhaust	102.7 (4.043)	
Stem O.D. mm (in.)		
Intake	7.960-7.975 (.3134-.3140)	
Exhaust	7.930-7.950 (.3122-.3130)	
Face angle	45°-45.5°	
Thickness of valve head (Margin) mm (in.)		
Intake	1.2 (.047)	0.7 (.028)
Exhaust	2.0 (.079)	1.5 (.059)
Valve stem to valve guide clearance mm (in.)		
Intake	0.03-0.06 (.0012-.0024)	0.10 (.0039)
Exhaust	0.05-0.09 (.0020-.0035)	0.15 (.0059)

Items	Standard value	Limit
Valve guide Length mm (in.) Intake Exhaust Service size mm (in.)	44 (1.73) 48 (1.89) 0.05 (.002), 0.25 (.010), 0.50 (.020) Oversize	
Valve seat Width of seat contact mm (in.) Seat angle	0.9–1.3 (.035–.051) 44°–44.5°	
Valve spring Free length mm (in.) Load N (lbs.) Installed height mm (in.) Out of squarness	50.5 (1.988) 329 (74) at installed height 40.4 (1.591) Less than 2°	49.5 (1.949) 41.4 (1.630) 4°
Cylinder block Cylinder bore mm (in.) Out-of-roundness and taper of cylinder bore mm (in.) Flatness of gasket surface mm (in.)	91.1 (3.587) Less than 0.02 (.0008) Less than 0.05 (.0020)	0.10 (.0039)
Piston O.D. mm (in.) Clearance (Piston to cylinder) mm (in.) Ring groove width mm (in.) No. 1 No. 2 Oil Service size mm (in.)	91.1 (3.587) 0.02–0.04 (.0008–.0016) 1.51–1.53 (.0594–.0602) 1.51–1.53 (.0594–.0602) 4.010–4.035 (.1579–.1589) 0.25 (.010), 0.50 (.020), 0.75 (.030), 1.00 (.039) Oversize	
Piston ring Side clearance mm (in.) No. 1 No. 2 End gap mm (in.) No. 1 No. 2 Oil ring side rail mm (in.) Service size mm (in.)	0.03–0.09 (.0012–.0035) 0.02–0.06 (.0008–.0024) 0.30–0.45 (.0118–.0177) 0.25–0.40 (.0098–.0157) 0.20–0.70 (.0079–.0276) 0.25 (.010), 0.50 (.020), 0.75 (.030), 1.00 (.039) Oversize	0.1 (.004) 0.1 (.004) 0.8 (.031) 0.8 (.031) 1.0 (.039)
Connecting rod Bend mm (in.) Twist mm (in.) Connecting rod big end to crankshaft side clearance mm (in.) Piston pin press-in load N (lbs.)	0.05 (.0020) or less 0.1 (.004) or less 0.10–0.25 (.0039–.0098) 7,500–17,500 (1,686–3,934)	0.4 (.016)

Items	Standard value	Limit
Connecting rod bearing Oil clearance mm (in.) Service size mm (in.)	0.016-0.046 (.0006-.0018) 0.25 (.010), 0.50 (.020), 0.75 (.030) Undersize	0.1 (.004)
Crankshaft main bearing Oil clearance mm (in.) Service size mm (in.)	0.02-0.048 (.0008-.0019) 0.25 (.010), 0.50 (.020), 0.75 (.030) Undersize	0.1 (.004)
Crankshaft Pin O.D. mm (in.) Journal O.D. mm (in.) Out-of-roundness of journal and pin mm (in.) Taper of journal and pin mm (in.) End play mm (in.) Undersize rework dimension of pin mm (in.) 0.25 (.010) U.S. 0.50 (.020) U.S. 0.75 (.030) U.S. Undersize rework dimension of journal mm (in.) 0.25 (.010) U.S. 0.50 (.020) U.S. 0.75 (.030) U.S.	50 (1.97) 60 (2.36) Less than 0.03 (.0012) Less than 0.005 (.0002) 0.05-0.25 (.0020-.0098) 49.735-49.750 (1.9581-1.9587) 49.485-49.500 (1.9482-1.9488) 49.235-49.250 (1.9384-1.9390) 59.735-59.750 (2.3518-2.3524) 59.485-59.500 (2.3419-2.3425) 59.235-59.250 (2.3321-2.3327)	0.3 (.012)
Flywheel Runout mm (in.)		Less than 0.13 (.0051)
Oil pressure at curb idle speed kPa (psi) [Conditions: oil temperature is 75 to 90°C (167 to 194°F)]	80 (11.4) or more	
Oil pump Side clearance mm (in.) Body clearance Side clearance	0.100-0.181 (.0039-.0071) 0.040-0.095 (.0016-.0037)	
Relief spring Free length mm (in.) Load [37N (8.3 lbs.)] mm (in.)	43.8 (1.724) 40.1 (1.579)	

TORQUE SPECIFICATIONS

N09CC-B

Items	Nm	ft.lbs.
Timing belt cover bolt	10-12	7-9
Timing belt tensioner bolt	22-30	16-21
Camshaft sprocket bolt	80-100	58-72
Timing belt rear upper cover, left bolt	10-12	7-9
Alternator stay bolt	20-30	15-21
Alternator bracket bolt	20-30	15-21
Rocker cover bolt	8-10	6-7
Camshaft bearing cap bolt	19-21	14-15
Distributor adaptor bolt	12-15	9-10
Cylinder head bolt - Cold engine	90-100	65-72
- Hot engine	100-110	73-79
Oil pressure switch	8-12	6-9
Oil filter bracket bolt	12-15	9-10
Drain plug	35-45	26-32
Oil pan bolt	5-7	4-5
Oil screen bolt	15-22	11-15
Oil relief valve plug	40-50	29-36
Oil pump case bolt	12-15	9-10
Oil pump cover screw	8-12	6-9
Connecting rod cap nut	50-53	37-38
Flywheel bolt	73-77	53-55
Drive plate bolt	73-77	53-55
Transmission mounting plate bolt	10-12	7-9
Rear plate bolt	8-10	6-7
Oil seal case bolt	10-12	7-9
Bearing cap bolt	75-85	55-61
Engine support bracket, right		
[10 x 22 mm (.39 x .87 in.)]	33-50	24-36
[12 x 22 mm, 12 x 32 mm (.47 x .87 in., .47 x 1.26 in.)]	65-85	47-61
Engine support bracket, left	20-30	15-21
Front insulator stopper to frame	30-40	22-29
Engine to engine mounting front insulator	13-20	9-15
No. 2 crossmember to frame	55-75	40-54
Plate to frame	18-25	13-18
Plate to transfer mounting insulator	18-25	13-18
Transfer mounting bracket to transfer	30-40	22-29
Support plate to No. 2 crossmember <M/T>	18-25	13-18
Engine mounting rear insulator to engine <M/T>	18-25	13-18
Engine support rear bracket to engine <A/T>	18-25	13-18

Items	Nm	ft.lbs.
Engine mounting rear insulator to engine support rear bracket <A/T>	18-25	13-18
Rear engine support member to No. 2 crossmember <A/T>	18-25	13-18
Heat protector	6-10	4-7
Rear engine support member to frame	10-13	7-9
Oil cooler hose	40-45	29-32
Power steering oil pump	35-45	25-33
Fuel high pressure hose	10-13	7-9
Front suspension crossmember to front differential	80-100	58-72
Front suspension crossmember to frame	100-120	72-87
Alternator brace bolt	12-15	8-11
Alternator support nut	20-25	14-18
EGR pipe	15-20	11-14
Heat protector to exhaust manifold	12-15	9-11
Alternator stay to alternator bracket	20-30	14-21
Air intake plenum stay (front)	15-20	11-14
Bracket to exhaust manifold	15-20	11-14
Engine hanger to exhaust manifold	15-22	11-16
Alternator stay to exhaust manifold	15-22	11-16
Exhaust manifold to engine	15-22	11-16
Oil level gauge guide to engine	19-29	14-21
Bolt	12-15	9-11
Air intake plenum stay (rear)	15-20	11-14
Radiator upper shroud to radiator lower shroud	8-11	6-8
Radiator upper shroud to radiator	3-7	2-5
Cooling fan to cooling fan bracket assembly	10-12	7-9
Oil pump bracket	35-45	25-33
Oil pump mounting bracket	35-45	25-33
Crankshaft pulley	150-160	108-116
Rocker arm and shaft assembly	9-12	14-15
Engine oil feed hose assembly to engine oil cooler	30-35	22-25
Engine oil return hose assembly to engine oil cooler	30-35	22-25

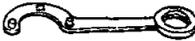
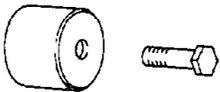
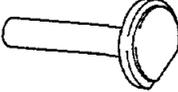
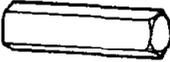
SEALANTS AND ADHESIVES

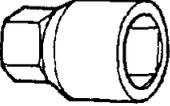
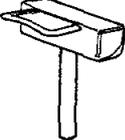
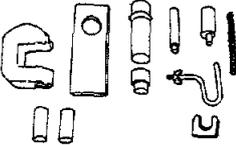
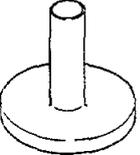
N09CE-B

Items	Specified sealant	Quantity
Rocker arm shaft assembly	3M NUT Locking No. 4171 or equivalent	As required
Semi-circular packing	Three Bond No. 1212D or equivalent	As required
Oil pan	MITSUBISHI GENUINE PART MZ100168 or equivalent	As required
Oil pressure switch	3M Part No. 8660 or equivalent	As required
Oil seal case	3M Part No. 8660 or equivalent	As required
Rocker cover	Three-Bond No. 1212D or equivalent	As required
Timing belt gasket	3M adhesive EC 870 or equivalent	As required
Cylinder head cam journal	3M NUT Locking No. 4171	As required

SPECIAL TOOLS

N09DA-B

Tool	Number	Name	Use
	MB990775-01	Special spanner	Removal and installation of camshaft sprocket
	MD998443-01	Auto-lash adjuster holder	Supporting of auto-lash adjuster to prevent it from falling when rocker shaft assembly is removed or installed
	MD998713-01	Camshaft oil seal installer	Press fitting camshaft oil seal
	MD998714	Circular packing installer	Press fitting circular packing
	MD998051-01	Cylinder head bolt wrench	Loosening and tightening of cylinder head bolt
	MD998747	Crank pulley holder	Removal and installation of crankshaft pulley

Tool	Number	Name	Use
	MD998377-01	Valve stem seal installer	Installation of valve stem seal
	MD998054-01	Oil pressure switch wrench	Removal and installation of oil pressure switch
	MD998717	Crankshaft front oil seal installer	Press fitting crankshaft front oil seal
	MD998727	Oil pan remover	Removal of oil pan
	MD998184-01	Piston pin setting tool (Use with push rod and guide set)	Removal and installation of piston and connecting rod
	MD998718	Crankshaft rear oil seal installer	Press fitting crankshaft rear oil seal
	MD998716-01	Crankshaft wrench	Used if the crankshaft needs to be rotated to attach the timing belt, etc. when the piston and connecting rod assembly is assembled.

ENGINE ADJUSTMENT

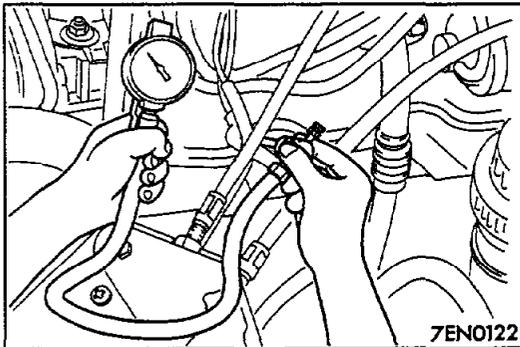
COMPRESSION PRESSURE CHECK

N09FFAF

- (1) Before checking compression, ensure that engine oil, the starter motor, and battery are all in normal operating condition.
- (2) Start the engine and wait until engine coolant temperature has risen to 85–95°C (185–205°F).
- (3) Stop the engine and pull the spark plug cables.
- (4) Remove the spark plugs.
- (5) Crank the engine to remove any foreign objects in the cylinders.

Caution

Cover the spark plug holes with shop towel, etc., in order to keep expelled foreign objects from flying out, and keep away from the holes. When measuring compression with water, oil, or fuel having entered the cylinder through a crack, etc., these will come flying out of the spark plug hole hot and fast, so be sure to take the proper precautions.



- (6) Set the compression gauge to the spark plug hole.
- (7) Holding the throttle valve full open, crank the engine and measure compression.

Limit: 840 kPa (119 psi)

- (8) Perform (6) and (7) above for all the cylinders, ensuring that compression pressure differential for each of the cylinders is within the specified limit.

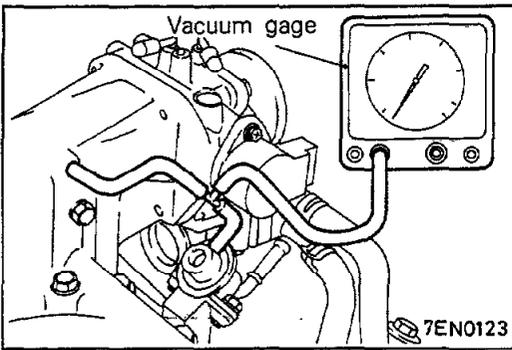
Limit : Less than 100 kPa (14 psi)

- (9) If a cylinder's compression or pressure differential exceeds the limit, add a small amount of oil through the spark plug hole and repeat steps (6)–(8).
 - ① If the addition of oil brings compression up, it is possible that there is harmful friction between the piston ring and cylinder wall.
 - ② If not compression up, valve seizure, poor valve seating, or a compression leak from the gasket are all possible.

MANIFOLD VACUUM INSPECTION

N09FNAL

- (1) Before inspection put the vehicle into the following state.
 - Engine coolant temperature : 85–95°C (185–205°F)
 - Lights, motor cooling fan, and accessories : OFF
 - Transmission : N or P range on vehicles with an automatic transmission)
 - Steering wheel : Straight forward position

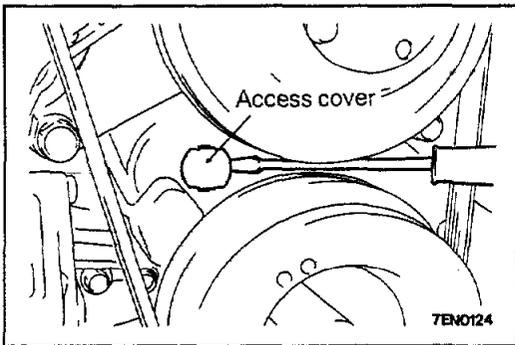


- (2) Connect a tachometer
- (3) Connect a three-way joint to the vacuum hose between the air intake plenum and the fuel-pressure regulator, and then connect a vacuum gauge.
- (4) Start the engine and check that idle speed is within the standard value range.
Read off the vacuum gauge.

Standard value: 69 kPa (20 in.Hg)

- (5) If not at standard value, refer to following chart for cause and repair.

Symptom	Cause	Remedy
<ul style="list-style-type: none"> ● The vacuum gage reading is less than standard value, but the needle is stable. 	<ul style="list-style-type: none"> ● Ignition timing is retarded. 	<ul style="list-style-type: none"> ● Adjust the ignition timing.
<ul style="list-style-type: none"> ● The vacuum gage needle swings slowly. 	<ul style="list-style-type: none"> ● The gas mixture is excessively rich. 	<ul style="list-style-type: none"> ● Check ECI-MULTI system.
<ul style="list-style-type: none"> ● The vacuum gage needle drops irregularly. 	<ul style="list-style-type: none"> ● The gas mixture is excessively lean. 	<ul style="list-style-type: none"> ● Check ECI-MULTI system.
<ul style="list-style-type: none"> ● The vacuum gage needle drops intermittently to 4.0 to 21.3 kPa (1.2 to 6.3 in.Hg) 	<ul style="list-style-type: none"> ● Incomplete close contact of intake and exhaust valve seats. 	<ul style="list-style-type: none"> ● Check and repair the valve.
<ul style="list-style-type: none"> ● The vacuum gage needle drops suddenly from the normal reading to 33.3 kPa (9.8 in.Hg), then returns to normal. 	<ul style="list-style-type: none"> ● Malfunction of cylinder head gasket 	<ul style="list-style-type: none"> ● Replace cylinder head gasket.



TIMING BELT TENSION ADJUSTMENT

N09FGDA

NOTE

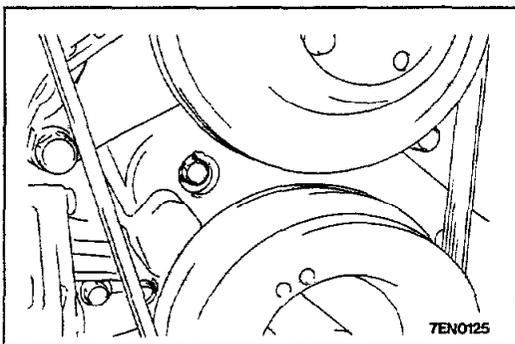
Usually the timing belt tension is not adjusted. However, if irregular noise results from the belt hitting the timing belt cover, tension should be adjusted using the following procedure.

- (1) Remove the access cover.

NOTE

Work will be made easier, if the air conditioner compressor belt is removed.

- (2) Loosen the timing belt tensioner mounting bolt 1 or 2 turns.
- (3) Turn the crankshaft two turns in the normal direction (clockwise).
- (4) Tighten the timing belt tensioner mounting bolt.
- (5) Attach the access cover.



DRIVE BELTS TENSION ADJUSTMENT

N09FMBD1

TENSION ADJUSTMENT OF THE ALTERNATOR DRIVE BELT

Refer to GROUP 0 – Maintenance Service.

DEFLECTION ADJUSTMENT OF POWER STEERING OIL PUMP DRIVE BELT

Refer to GROUP 19 – Service Adjustment Procedures.

TENSION ADJUSTMENT OF THE AIR CONDITIONER COMPRESSOR DRIVE BELT

Refer to GROUP 24 – Service Adjustment Procedures.

IGNITION TIMING INSPECTION AND ADJUSTMENT

N09FLAB1

Refer to GROUP 8 – Ignition system.

LASH ADJUSTER CHECK

N09FEAD

Refer to P.9-13.

ENGINE MOUNTING

N09GA-B

REMOVAL AND INSTALLATION

Pre-removal Operation

- Removal of the Under Skid Plate, Undercover, Snow Protection Undercover and Transfer Case Protector (Refer to GROUP 23 - Under Cover)

Post-installation Operation

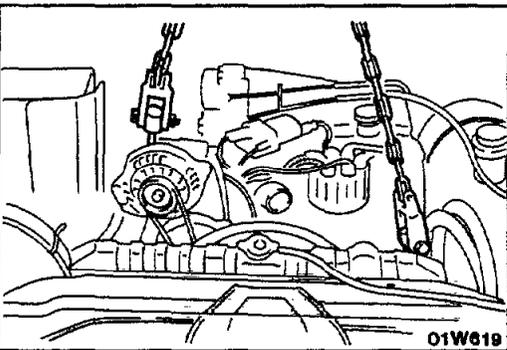
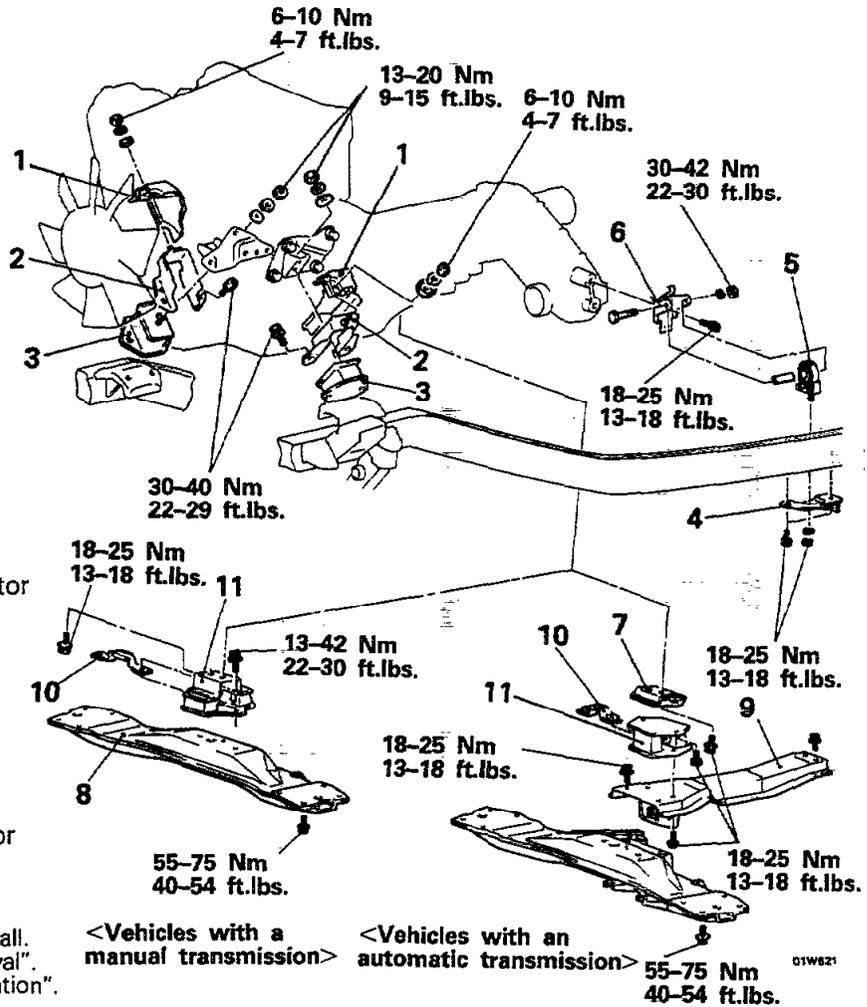
- Installation of the Under Skid Plate, Undercover, Snow Protection Undercover and Transfer Case Protector (Refer to GROUP 23 - Under Cover)

Removal steps

1. Heat protector
2. Front insulator stopper
3. Engine mounting front insulator
4. Plate
5. Transfer mounting insulator
6. Transfer mounting bracket
7. Engine support rear bracket
8. No. 2 crossmember
9. Rear engine support member
10. Support plate
11. Engine mounting rear insulator

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◀▶ : Refer to "Service Points of Removal".
- (3) ▶▶ : Refer to "Service Points of Installation".



SERVICE POINTS OF REMOVAL

N09GBA11

3. REMOVAL OF ENGINE MOUNTING FRONT INSULATOR

- (1) Attach a chain to the engine hangers.
- (2) Using a chain block-and-tackle, hang the engine slightly up so that the insulator is free of engine weight.
- (3) Remove the engine mounting front insulator.

Caution

Avoid applying a strain on the radiator and fuel hoses and cables by raising the engine too high.

INSPECTION

N09GCAI

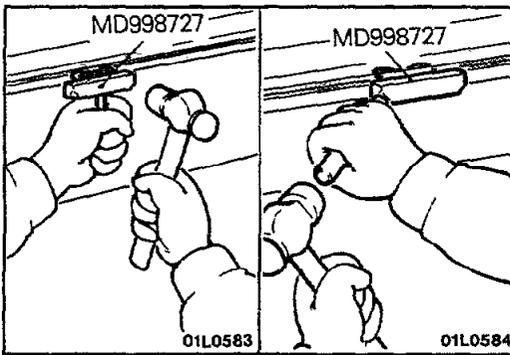
Refer to P.9-15.

SERVICE POINTS OF INSTALLATION

N09GDAS

3. INSTALLATION OF ENGINE MOUNTING FRONT INSULATOR

Refer to P.9-15.

**SERVICE POINTS OF REMOVAL**

N09HBAH

10. REMOVAL OF OIL PAN

- (1) Knock the special tool in deeply between the oil pan and cylinder block.
- (2) Hitting the side of the special tool, slide and remove the oil pan.

- (3) Attach a chain to the engine hangers.
- (4) Raise the engine by using a chain block; then insert a wooden spacer about 20 mm (.79 in.) thick between the engine mounting front insulator and the mount, and lower the engine.

Caution

1. Be careful, when raising the engine, that it does not strike and bend tubes or pipes.
2. After lowering the engine, shake it gently to be sure that it is correctly mounted.

- (5) Raise the vehicle by using a lift, and remove the oil pan from the vehicle's underside.

INSPECTION

N09HCAE

Refer to P.9-16.

SERVICE POINTS OF INSTALLATION

N09HDAQ

10. INSTALLATION OF OIL PAN

- (1) Remove sealant from oil pan and cylinder block mating surfaces.
- (2) Degrease the sealant-coated surface and the engine mating surface.
- (3) Apply the specified sealant around the gasket surface of oil pan as specified in illustration.

**Specified sealant: MITSUBISHI GENUINE PART
MZ100168 or equivalent**

NOTE

The sealant should be applied in a continuous bead approximately 4 mm (.16 in) in diameter.

- (4) Assemble oil pan to cylinder block within 15 minutes after applying the sealant.

Caution

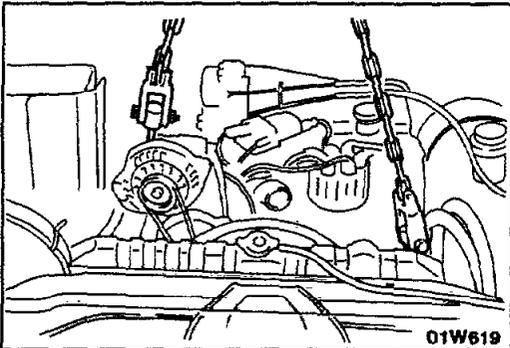
1. Tighten the oil pan mounting bolt in the order illustrated (left).
2. After installing the oil pan, wait at least 30 minutes before starting the engine.

- (5) Lower the vehicle; then attach a chain to the engine hanger, and, using a chain block, raise the engine.

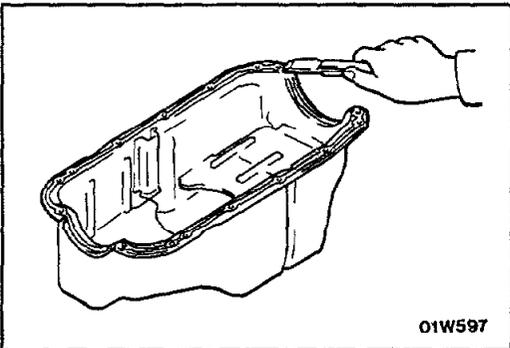
Caution

Be careful, when raising the engine, that it does not strike and bend tubes or pipes.

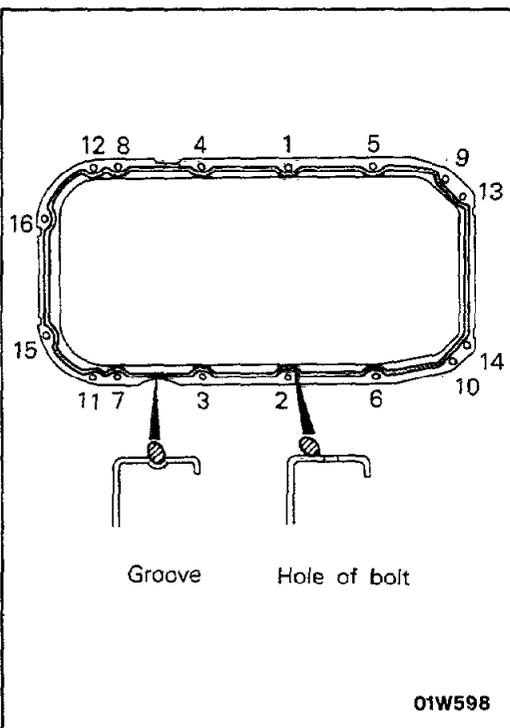
- (6) Remove the spacer between the engine mounting front insulator and the mount, and lower the engine.



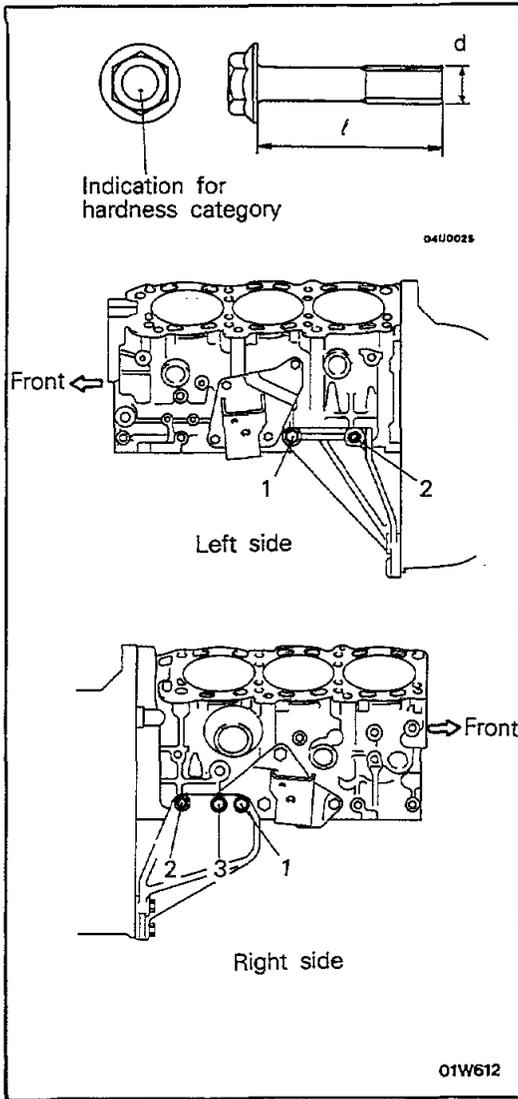
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01W598



**6. INSTALLATION OF TRANSMISSION STAY (L.H.)/
5. TRANSMISSION STAY (R.H.)**

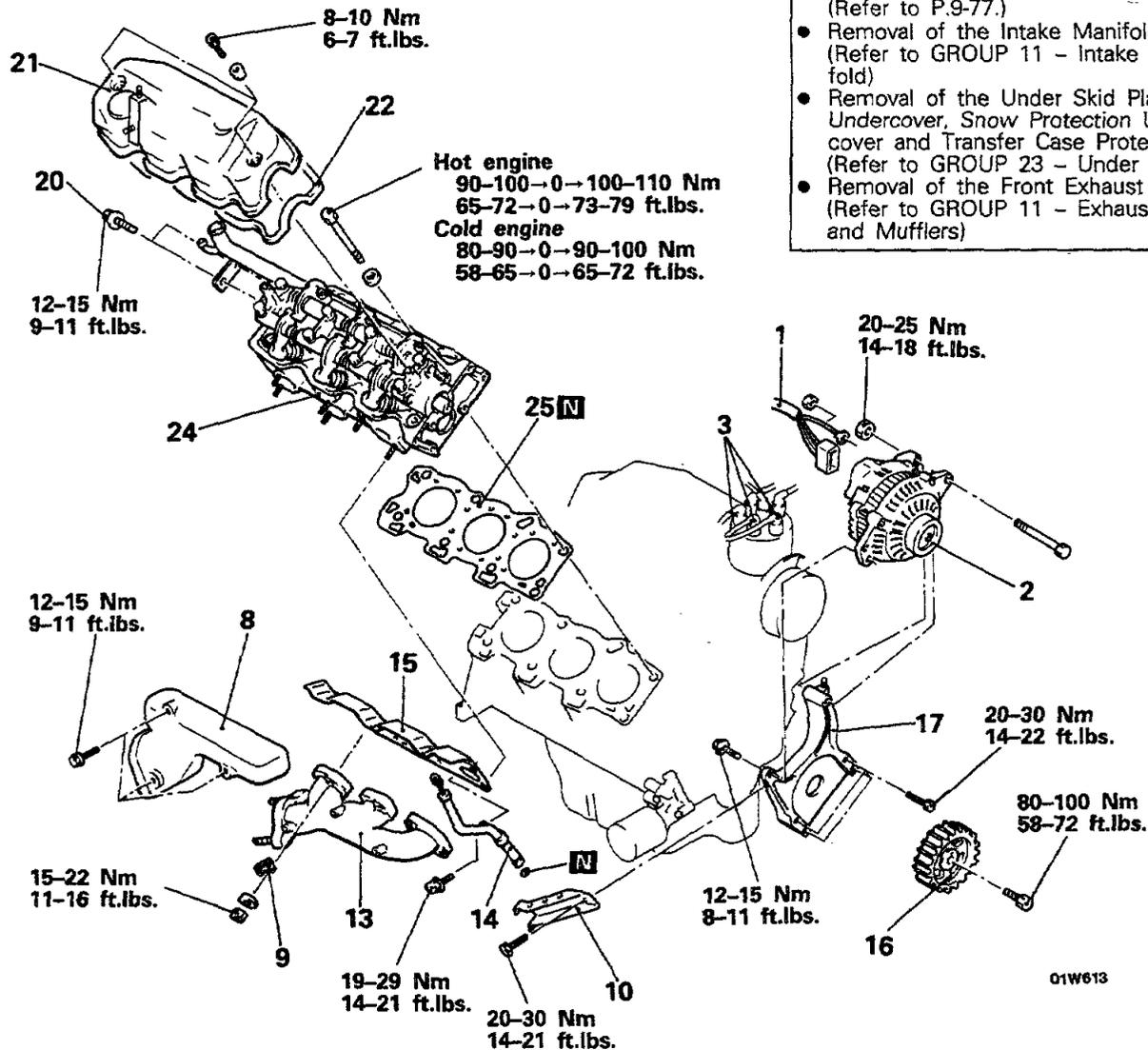
Transmission stay installation bolt size and torque are different and caution must be paid to ensure that they are properly installed.

No.	Hardness category (Head mark)	d x l mm (in.)	Torque Nm (ft.lbs.)
1	7	12 x 35 (.47 x 1.37)	65-85 (47-61)
2	7	10 x 30 (.39 x 1.18)	33-50 (24-36)
3	7	12 x 50 (.47 x 1.96)	65-85 (47-61)

CYLINDER HEAD GASKET REMOVAL AND INSTALLATION

Pre-removal Operation

- Removal of the Timing Belt (Refer to P.9-77.)
- Removal of the Intake Manifold. (Refer to GROUP 11 - Intake Manifold)
- Removal of the Under Skid Plate, Undercover, Snow Protection Undercover and Transfer Case Protector (Refer to GROUP 23 - Under Cover)
- Removal of the Front Exhaust Pipe (Refer to GROUP 11 - Exhaust Pipe and Mufflers)

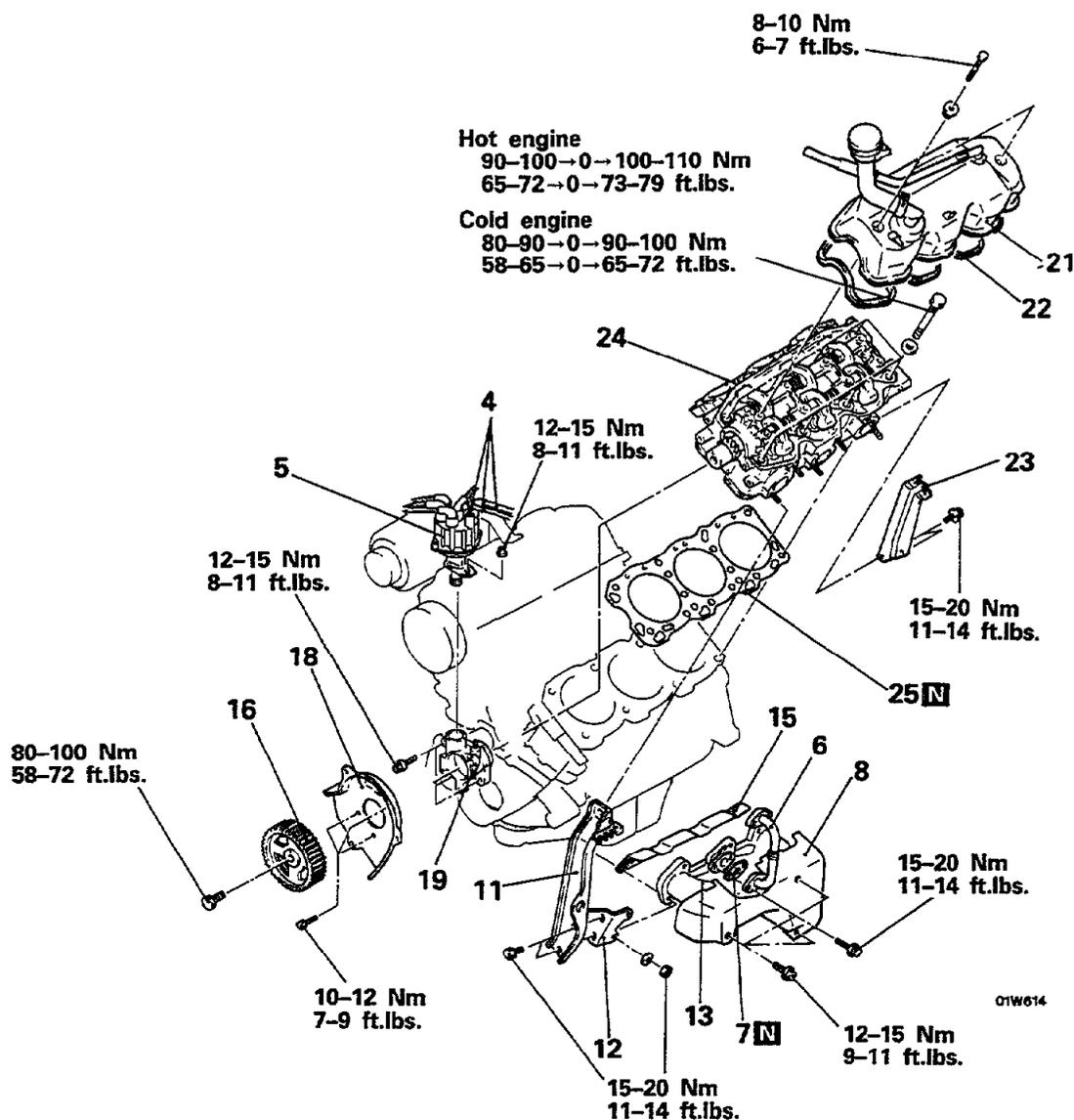


Removal steps

1. Connection for alternator connector
2. Alternator
3. Connection for spark plug cable (No. 1, No. 3 and No. 5)
8. Heat protector
9. Engine hanger
10. Alternator stay
13. Exhaust manifold (R.H.)
- ◆◆ 14. Oil level gauge guide
15. Gasket
- ◆◆◆◆ 16. Camshaft sprocket
- ◆◆◆ 17. Alternator bracket
20. Bolt
- ◆◆◆ 21. Rocker cover
- ◆◆◆ 22. Rocker cover gasket
- ◆◆◆◆ 24. Cylinder head assembly
- ◆◆◆ 25. Cylinder head gasket

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆ : Refer to "Service Points of Removal".
- (3) ◆◆◆ : Refer to "Service Points of Installation".
- (4) N : Non-reusable parts

**Removal steps**

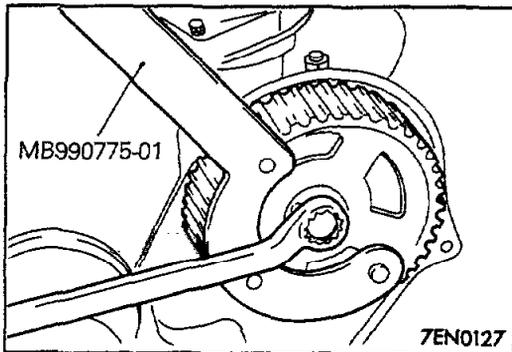
- 4. Connection for spark plug cable (No. 2, No. 3 and No. 6)
- ◆◆ 5. Distributor
- 6. EGR pipe
- 7. EGR Gasket
- 8. Heat protector
- 11. Air intake plenum stay (Front)
- 12. Bracket
- 13. Exhaust manifold (L.H.)
- 15. Gasket
- ◆◆◆◆ 16. Camshaft sprocket
- ◆◆◆◆ 18. Timing belt rear cover
- ◆◆◆◆ 19. Distributor adaptor assembly
- ◆◆◆ 21. Rocker cover
- ◆◆◆ 22. Rocker cover gasket
- ◆◆◆◆ 23. Air intake plenum stay (Rear)
- ◆◆◆◆ 24. Cylinder head assembly
- ◆◆◆ 25. Cylinder head gasket

Post-installation Operation

- Installation of the Front Exhaust pipe (Refer to GROUP 11 - Exhaust pipe and Mufflers)
- Installation of the Under Skid Plate, Undercover, Snow Protection Under cover and Transfer Case Protector (Refer to GROUP 23 - Under Cover)
- Installation of the Intake Manifold (Refer to GROUP 11 - Intake Manifold)
- Installation of the Timing Belt (Refer to P.9-77.)
- Adjustment of the Engine (Refer to P.9-65.)

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆ : Refer to "Service Points of Removal".
- (3) ◆◆◆ : Refer to "Service Points of Installation".
- (4) [N] : Non-reusable parts

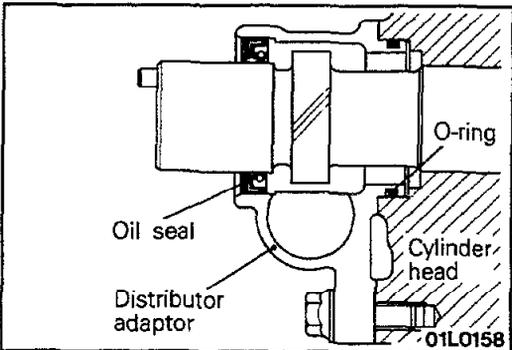


SERVICE POINTS OF REMOVAL

N09JBBB

16. REMOVAL OF CAMSHAFT SPROCKET

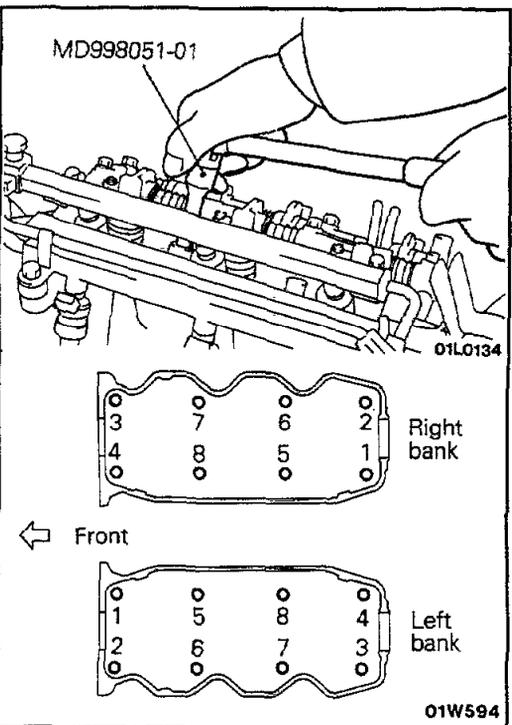
Using special tool, loosen the camshaft sprocket mounting bolt.



19. REMOVAL OF DISTRIBUTOR ADAPTOR ASSEMBLY

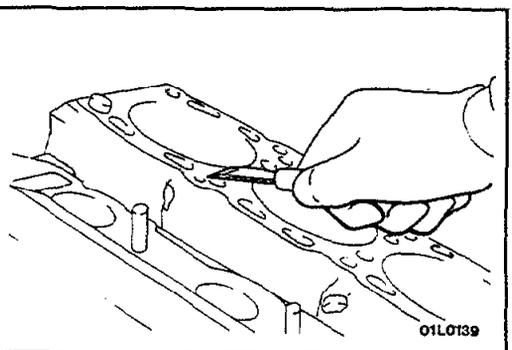
Caution

1. Remove the distributor adaptor with care so as not to damage the O-ring.
2. Replace the O-ring if cracked or deteriorated.



24. REMOVAL OF CYLINDER HEAD ASSEMBLY

Using the special tool, after loosening the bolts in the order shown in the figure (in 2 or 3 cycles), remove, and then remove the cylinder head assembly.



SERVICE POINTS OF INSTALLATION

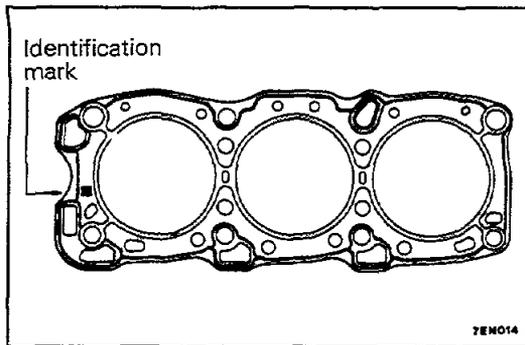
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25. INSTALLATION OF CYLINDER HEAD GASKET

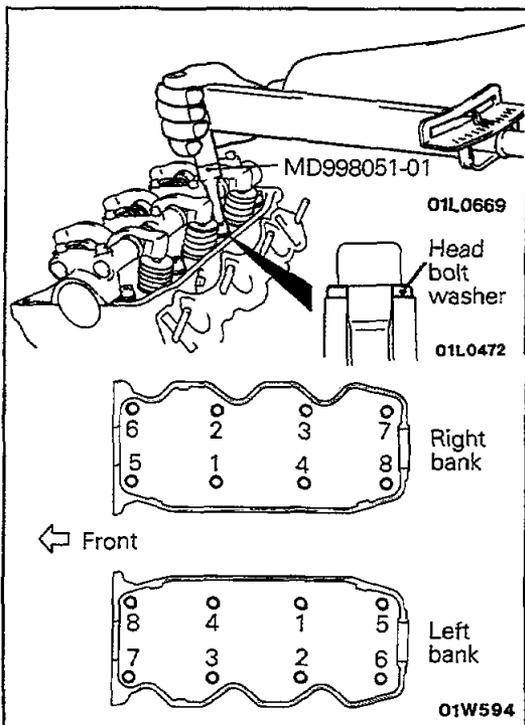
- (1) Use a scraper to remove the cylinder head gasket from the cylinder block.

Caution

Take care that no foreign material gets into the coolant or oil passages.



- (2) Do not confuse cylinder head gaskets of each engine, which have identification marks on them to prevent mistakes.
- (3) Lay the cylinder head gasket on cylinder block with the identification mark at front top.



24. INSTALLATION OF CYLINDER HEAD ASSEMBLY

- (1) Use a scraper to remove the cylinder head gasket from the cylinder head assembly.

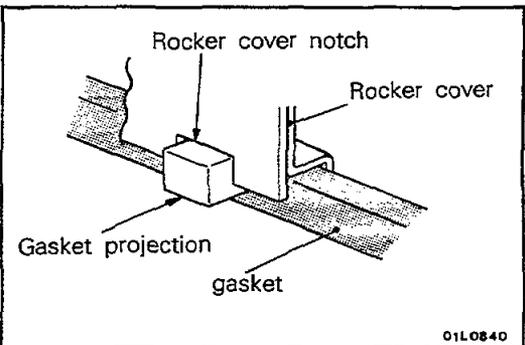
Caution

Take care that no foreign material gets into the cylinder, or into coolant or oil passages.

- (2) Using the special tool, tighten the bolts in the order shown in two or three steps.

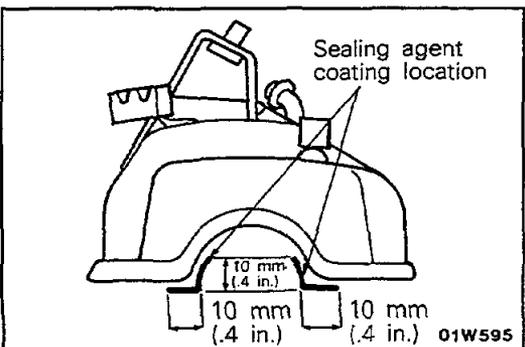
Caution

Attach the head bolt washer in the direction shown in the figure.



22. INSTALLATION OF ROCKER COVER GASKET

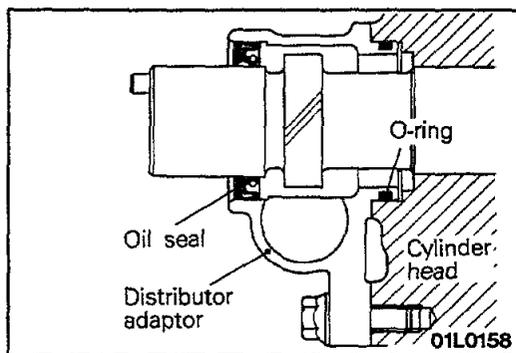
Align the projection of the gasket with the notch at the inner side of the rocker cover, and secure so the gasket won't get out of position.



21. INSTALLATION OF ROCKER COVER

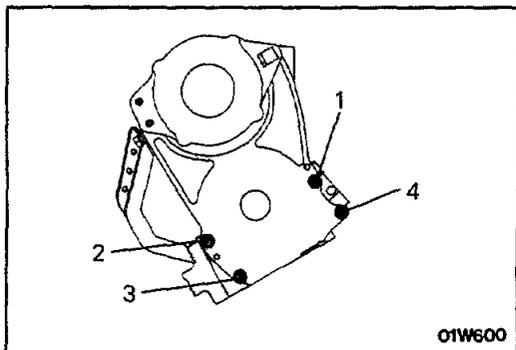
Coat sealing agent on the area specified in the figure.

Specified sealant: Three-Bond No. 1212D or equivalent



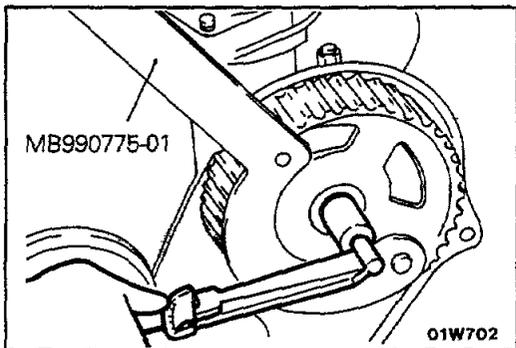
19. INSTALLATION OF DISTRIBUTOR ADAPTOR ASSEMBLY

Coat engine oil on the oil seal lip area, the circumference of the camshaft, the O-ring, and the cylinder head holes, and install the distributor adaptor.



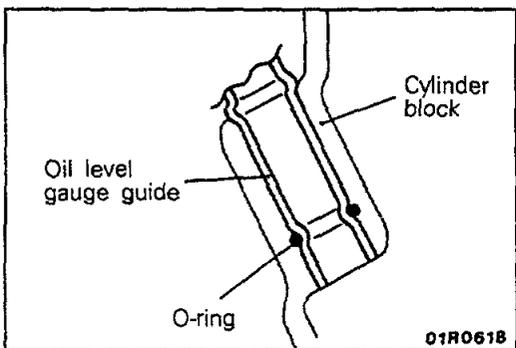
17. INSTALLATION OF ALTERNATOR BRACKET

When installing the alternator bracket, tighten the bolts in the sequence shown in the illustration.



16. INSTALLATION OF CAMSHAFT SPROCKET

Using the special tool, tighten the camshaft sprocket mounting bolt.



14. INSTALLATION OF OIL LEVEL GAUGE GUIDE

Coat engine oil on the O-ring before inserting the O-ring on the oil level gauge guide, or before inserting the O-ring equipped oil level gauge guide into the cylinder block.

Caution

Avoid damaging the O-ring when inserting the oil level gauge guide into the cylinder block.

5. INSTALLATION OF DISTRIBUTOR

Refer to GROUP 8 - Ignition System.

TIMING BELT

REMOVAL AND INSTALLATION

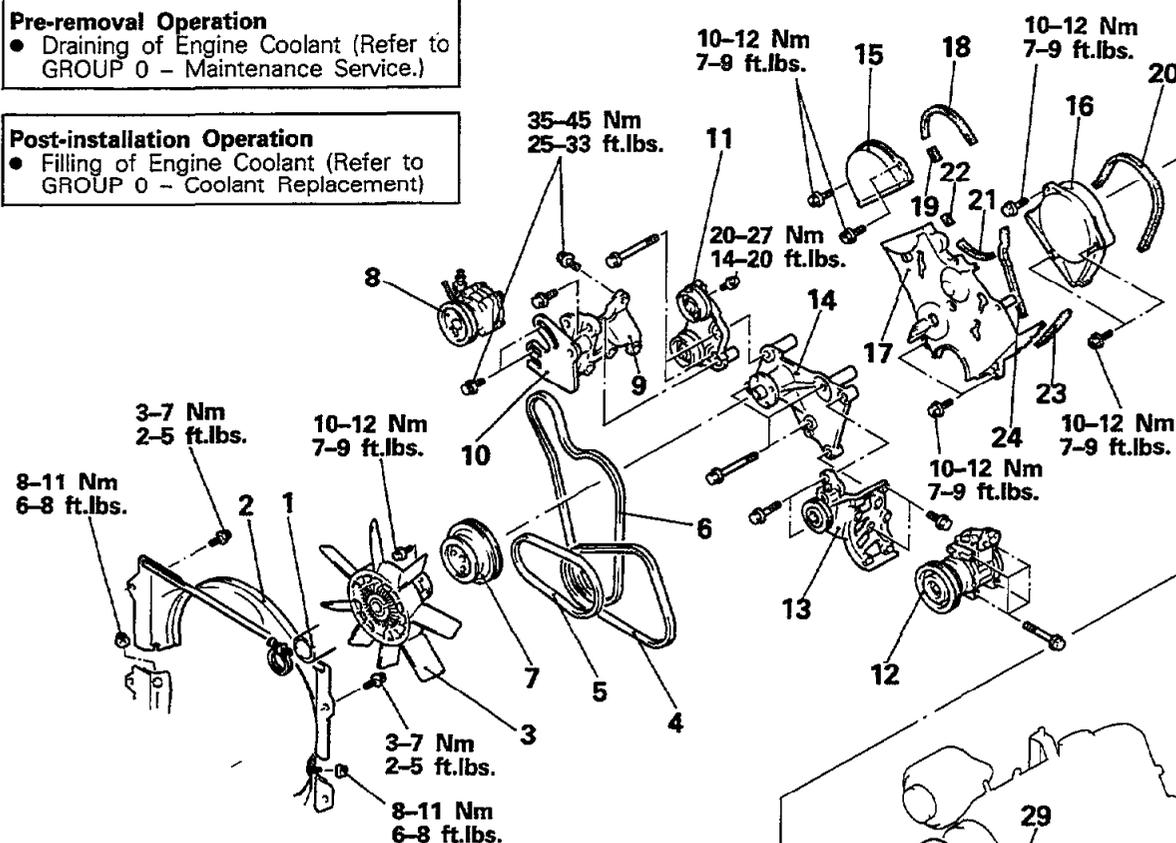
N091A-

Pre-removal Operation

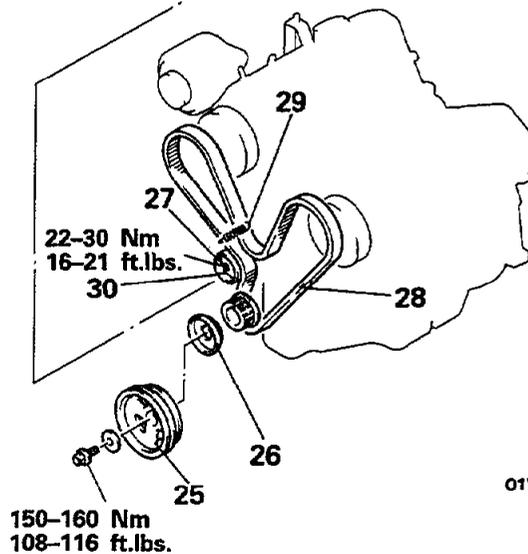
- Draining of Engine Coolant (Refer to GROUP 0 - Maintenance Service.)

Post-installation Operation

- Filling of Engine Coolant (Refer to GROUP 0 - Coolant Replacement)

**Removal steps**

1. Connection for radiator upper hose
2. Radiator upper shroud
3. Cooling fan clutch assembly.
- ◀▶ 4. Drive belt (Air conditioner)
- ◀▶ 5. Drive belt (Power steering)
- ◀▶ 6. Drive belt (Alternator, Water pump)
- ◀▶ 7. Cooling fan pulley
- ◀▶ 8. Power steering oil pump
- ◀▶ 9. Oil pump bracket
- ◀▶ 10. Oil pump mounting bracket
- ◀▶ 11. Tension pulley bracket
- ◀▶ 12. Compressor (Air conditioner)
- ◀▶ 13. Compressor bracket (Air conditioner)
- ◀▶ 14. Cooling fan bracket assembly
- ◀▶ 15. Timing belt upper cover outer (B)
- ◀▶ 16. Timing belt upper cover outer (A)
- ◀▶ 17. Timing belt lower cover outer
- ◀▶ 18. Gasket K
- ◀▶ 19. Gasket J
- ◀▶ 20. Gasket L
- ◀▶ 21. Gasket I
- ◀▶ 22. Gasket J
- ◀▶ 23. Gasket G
- ◀▶ 24. Gasket H
- ◀▶ 25. Crankshaft pulley



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- 26. Front flange
- ◀▶ 27. Timing belt tensioner bolt
- ◀▶ 28. Timing belt
- ◀▶ 29. Tensioner spring
- ◀▶ 30. Timing belt tensioner

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◀▶ : Refer to "Service Points of Removal".
- (3) ◀▶ : Refer to "Service Points of Installation".

SERVICE POINTS OF REMOVAL

NO9KBEB

8. REMOVAL OF POWER STEERING OIL PUMP

Remove the power steering oil pump from the bracket and hook it at the body side.

NOTE

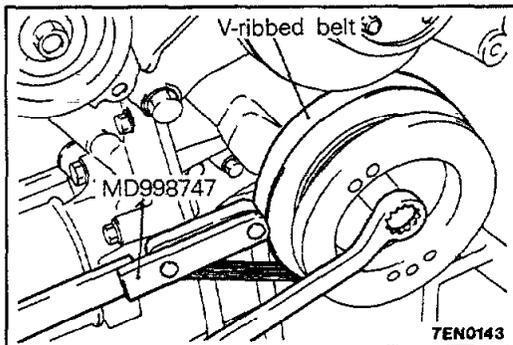
Move the power steering oil pump with the pressure hose and return hose still connected.

12. REMOVAL OF COMPRESSOR (AIR CONDITIONER)

Remove the compressor from the bracket and hook it at the body side.

NOTE

Move the compressor with the high-pressure hose and low-pressure hose still connected.



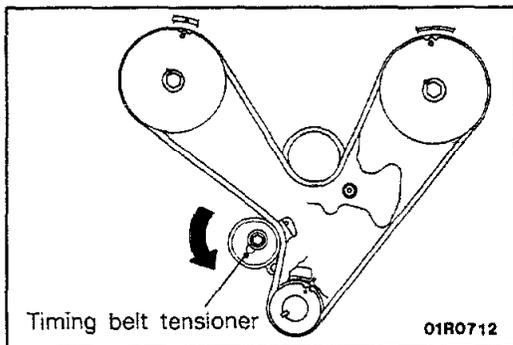
25. REMOVAL OF CRANKSHAFT PULLEY

- (1) Using the special tool and a disused V-ribbed belt, stop the rotation of the crankshaft pulley.

Caution

- 1. This V-ribbed belt will be damaged. Do Not use the engine's V-ribbed belt.
- 2. Never use a damaged V-ribbed belt.

- (2) Remove the crankshaft pulley bolt.



27. LOOSENING TIMING BELT TENSIONER BOLT

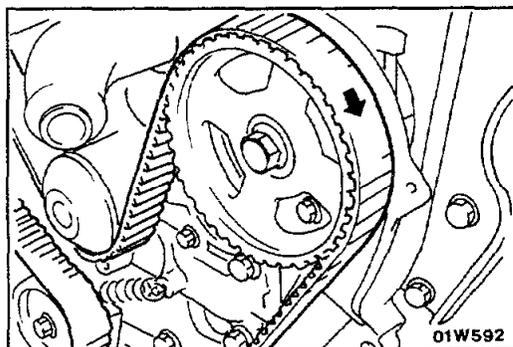
Loosen the timing belt tensioner bolt and turn the timing belt tensioner counterclockwise along the elongated hole.

28. REMOVAL OF TIMING BELT

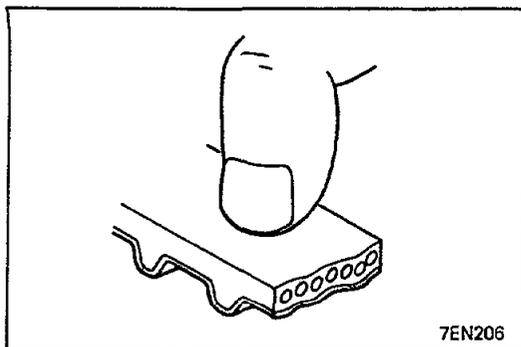
When the timing belt is to be reused, in order to allow reinstallation of the belt so that it travels in the same direction as before it was removed, mark the direction of travel with an arrow before removing it.

Caution

- 1. As water or oil on the belt can seriously reduce its usable life, ensure that the timing belt, sprocket, and tensioner stay clean and dry while removed, and never wash them. Parts that have become too dirty should be replaced.
- 2. When any of the parts are oily, check to see whether there are any oil leaks in any of the oil seals or the cam shaft oil seal on the front of the engine.

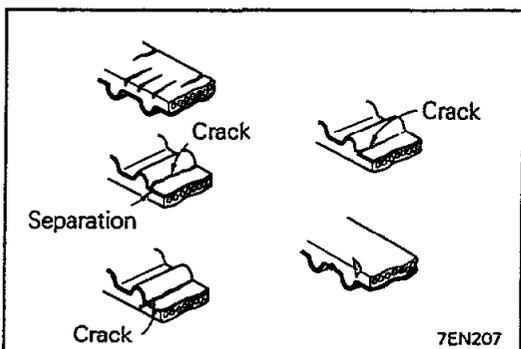


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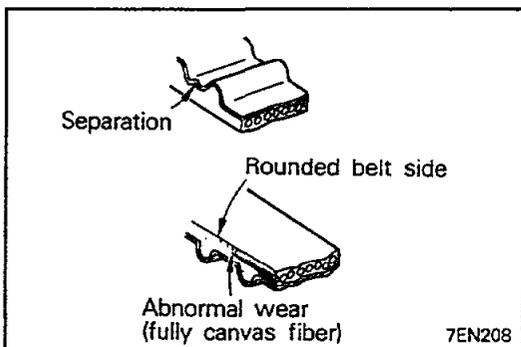
**INSPECTION**● **TIMING BELT**

Check the belt in detail. If the following is evident, replace belt with a new one.

- (1) Hardened back surface rubber
Back surface glossy, non-elastic and so hard that even if a finger nail is forced into it, no mark is produced.



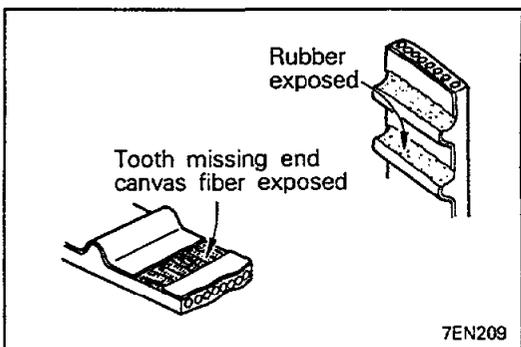
- (2) Cracked back surface rubber
- (3) Cracked or separated canvas
- (4) Cracked tooth bottom
- (5) Cracked side of belt



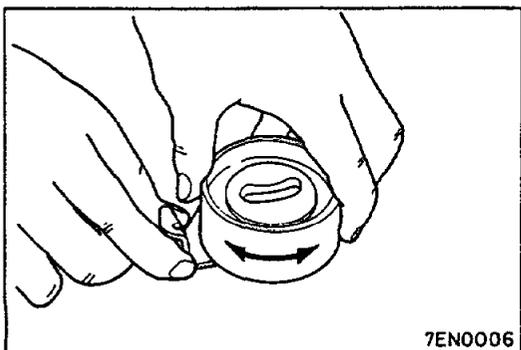
- (6) Side of belt badly worn

NOTE

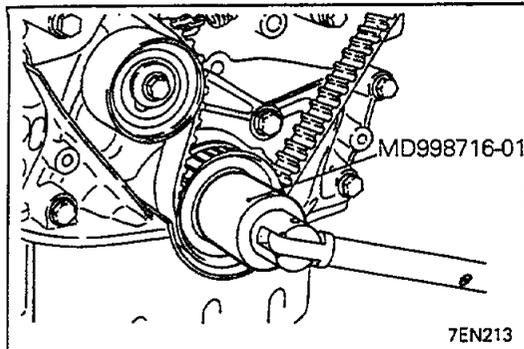
Normal belt should have clear-cut sides as if cut with a sharp knife.



- (7) Badly worn teeth
Initial stage:
Canvas is worn (fluffy canvas fibers are visible, rubber is gone and color has changed to white. Canvas texture is not clear.)
Last stage:
Canvas is worn out and rubber exposed and its width is reduced.
- (8) Missing tooth

● **TIMING BELT TENSIONER**

When rotating the pulley, it does not rotate smoothly. If backlash or irregular noise is observed, replace the timing belt tensioner.



- (5) Attach the flange.
- (6) Back off the fixing bolts of the temporarily tightened tensioner one or two turns and tighten the timing belt with the tensioner spring force.
- (7) Using the special tool, turn the crankshaft two turns in the normal rotating direction (clockwise).

NOTE

Turn smoothly, but not in the opposite direction (counterclockwise).

- (8) Re-align the sprockets timing marks and tighten the tensioner fixing bolts.

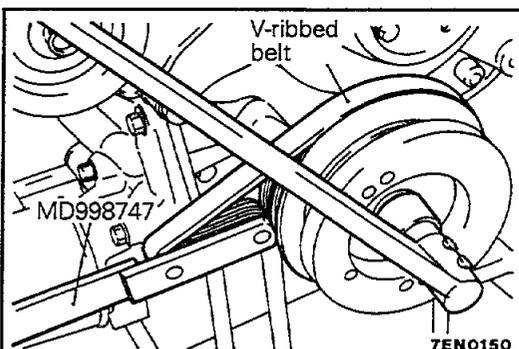
25. INSTALLATION OF CRANKSHAFT PULLEY

- (1) Using the special tool and a disused V-ribbed belt, stop the rotation of the crankshaft pulley.

Caution

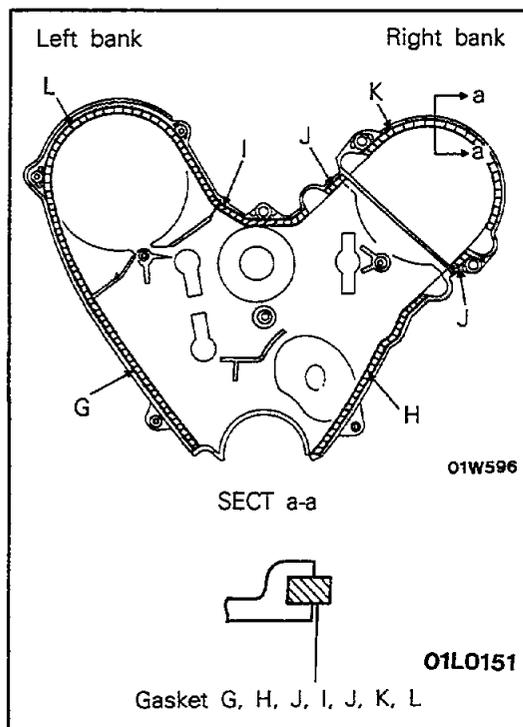
1. This V-ribbed belt will be damaged. Do Not use the engine's V-ribbed belt.
2. Never use a damaged V-ribbed belt.

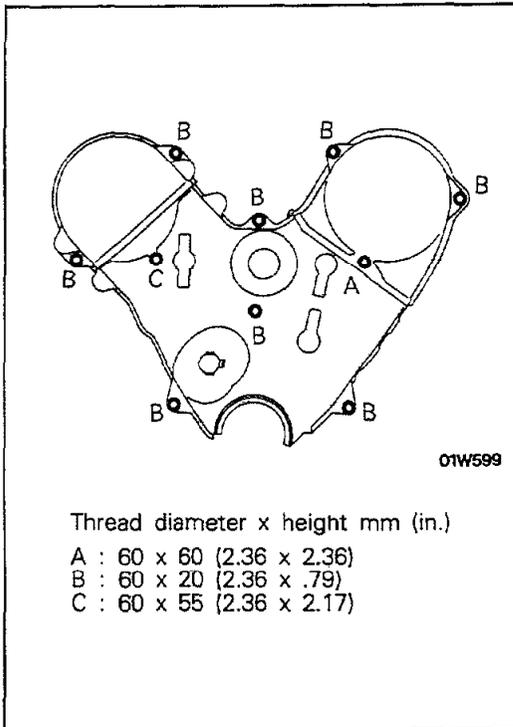
- (2) Tighten the crankshaft pulley bolt to the specification.

**24. ATTACHMENT OF GASKET H/23. GASKET G/22. GASKET J/21. GASKET I/20. GASKET L/19. GASKET J/18. GASKET K**

Replace if there is cracking, peeling and/or deterioration. Apply a coating of the specified adhesive between the timing belt cover (front) and the gasket.

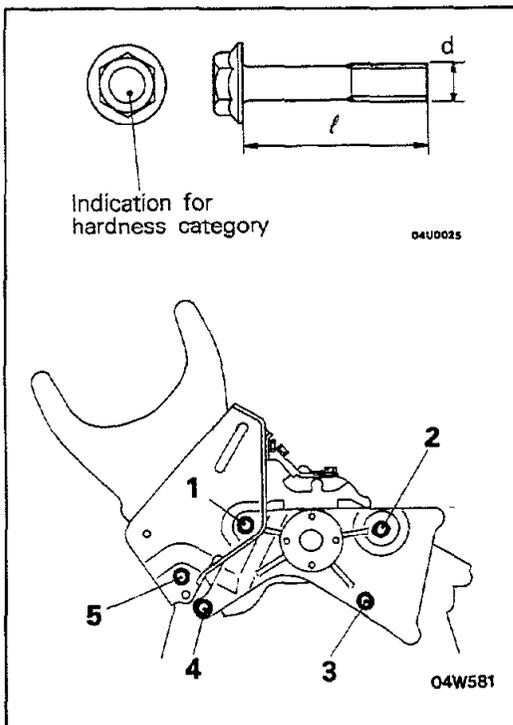
Specified adhesive : 3M adhesive EC870 or equivalent





17. INSTALLATION OF TIMING BELT LOWER COVER OUTER/16. TIMING BELT UPPER COVER OUTER (A)/15. TIMING BELT UPPER COVER OUTER (B)

Since the mounting bolts of timing cover are different in size depending on location, insert them with care.



14. INSTALLATION OF COOLING FAN BRACKET ASSEMBLY/11. TENSION PULLEY BRACKET

Cooling fan bracket and tension pulley bracket installation bolt size and torque are different and caution must be paid to ensure that they are properly installed.

No.	Hardness category (Head mark)	d x l mm (in.)	Torque Nm (ft.lbs.)
1	7	10 x 95 (.39 x 3.74)	33-50 (24-36)
2	7	10 x 95 (.39 x 3.74)	
3	7	10 x 110 (.39 x 4.33)	
4	7	12 x 100 (.47 x 3.93)	65-85 (47-61)
5	7	10 x 85 (.39 x 3.34)	33-50 (24-36)

6. INSTALLATION OF DRIVE BELT (ALTERNATOR WATER PUMP)

Refer to GROUP 0 - Maintenance Service.

5. INSTALLATION OF DRIVE BELT (POWER STEERING)

Refer to GROUP 7 - Service Adjustment Procedures.

4. INSTALLATION OF DRIVE BELT (AIR CONDITIONER)

Refer to GROUP 24 - Service Adjustment Procedures.

ENGINE ASSEMBLY

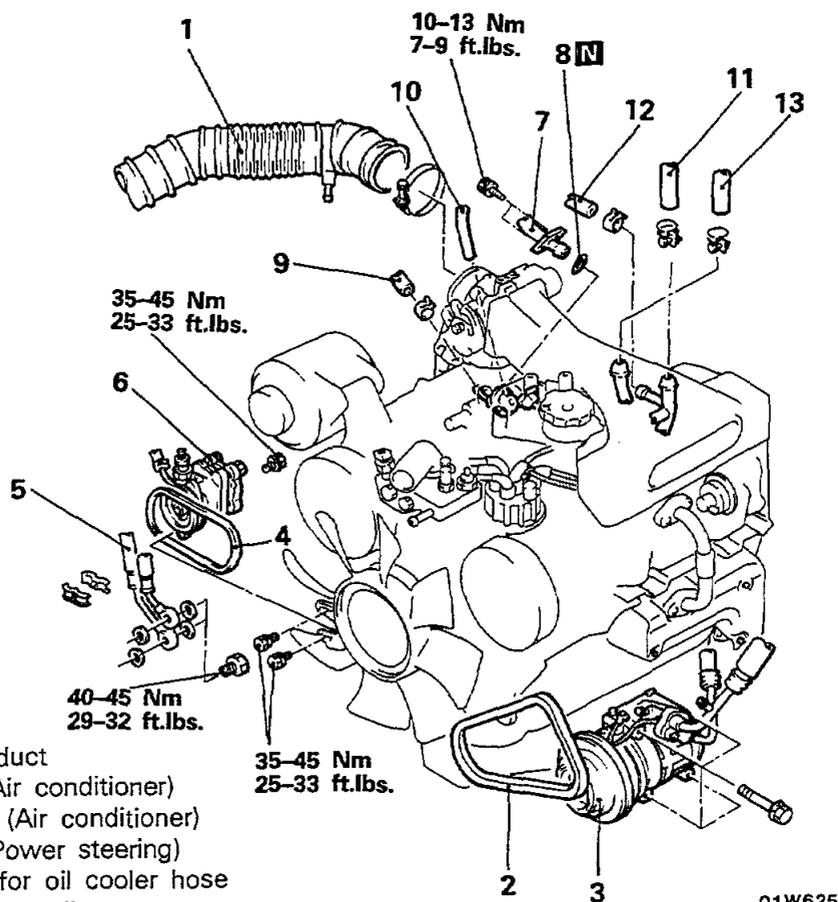
REMOVAL AND INSTALLATION

Pre-removal Operation

- Removal of the Hood (Refer to GROUP 23 - Hood.)
- Removal of the Radiator (Refer to GROUP 7 - Radiator.)
- Removal of the Under Skid Plate, Undercover, Snow Protection Under cover (Refer to GROUP 23 - Under Cover.)
- Removal of the Front Exhaust Pipe (Refer to GROUP 11 - Exhaust Pipe and Mufflers.)
- Removal of the Transmission and Transfer Assembly (Refer to GROUP 21 - Transmission and Transfer Assembly.)
- How to Reduce the Fuel Line Internal Pressure (Refer to GROUP 14 - Service Adjustment Procedures.)

Post-installation Operation

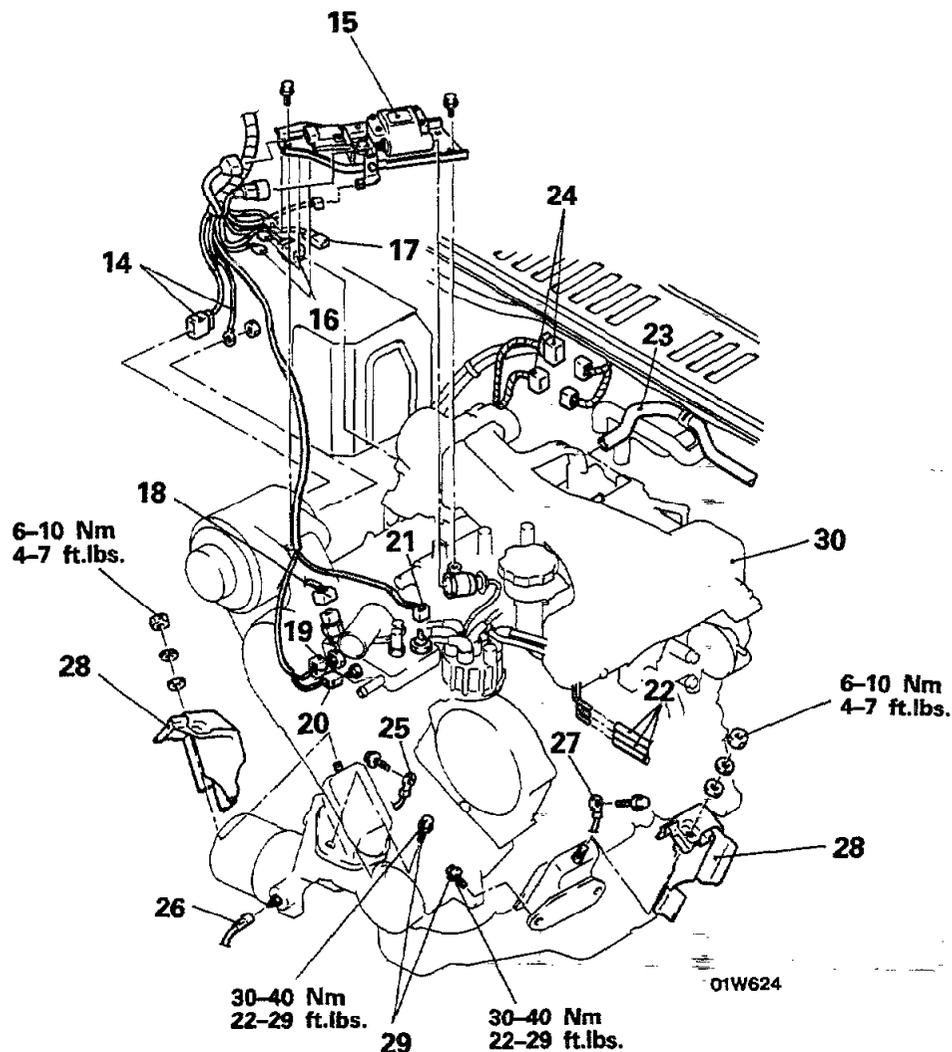
- Installation of the Transmission and Transfer Assembly (Refer to GROUP 21 - Transmission and Transfer Assembly.)
- Installation of the Front Exhaust Pipe (Refer to GROUP 11 - Exhaust Pipe and Mufflers.)
- Installation of the Under Skid Plate, Undercover, Snow Protection Under cover and Transfer Case Protector (Refer to GROUP 23 - Under Cover.)
- Installation of the Radiator (Refer to GROUP 7 - Radiator.)
- Installation of the Hood (Refer to GROUP 23 - Hood.)
- Adjustment of the Engine (Refer to P.9-65.)

**Removal steps**

- 1. Air cleaner duct
- ➡➡ 2. Drive belt (Air conditioner)
- ↔ 3. Compressor (Air conditioner)
- ➡➡ 4. Drive belt (Power steering)
- ↔ 5. Connection for oil cooler hose
- ↔ 6. Power steering oil pump
- ↔ 7. Connection for fuel high pressure hose
- 8. O-ring
- 9. Connection for fuel return hose
- 10. Connection for vacuum hose
- 11. Connection for water hose A
- 12. Connection for water hose C (Vehicles with rear heater)
- 13. Connection for water hose B

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ↔ : Refer to "Service Points of Removal".
- (3) ➡➡ : Refer to "Service Points of Installation".
- (4) N : Non-reusable parts



Removal steps

- | | |
|--|--|
| 14. Connection for alternator connector | 22. Connection for emission control vacuum hose |
| 15. Ignition coil and power transistor assembly | 23. Connection for brake booster vacuum hose |
| 16. Connection for I.S.C. connector | 24. Connection for control wiring harness connectors |
| 17. Connection for throttle position sensor connector | 25. Connection for ground cable |
| 18. Connection for engine coolant temperature switch connector (vehicles with air conditioner) | 26. Connection for oil pressure gauge unit connector |
| 19. Connection for engine coolant temperature sensor connector | 27. Connection for ground cable |
| 20. Connection for thermo switch connector (vehicles with automatic transmission) | 28. Heat protector |
| 21. Connection for engine coolant temperature gauge unit connector | 29. Engine mounting bolt |
| | 30. Engine assembly |

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◀▶ : Refer to "Service Points of Removal".
- (3) ▶▶ : Refer to "Service Points of Installation".

SERVICE POINTS OF REMOVAL

N09SBEC

3. REMOVAL OF COMPRESSOR (AIR CONDITIONER)

Remove the compressor from the bracket and hook it at the body side.

NOTE

Move the compressor with the high-pressure hose and low-pressure hose still connected.

6. REMOVAL OF POWER STEERING OIL PUMP

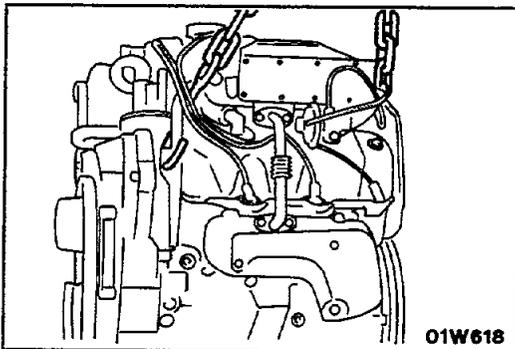
Remove the power steering oil pump from the bracket and hook it at the body side.

NOTE

Move the power steering oil pump with the pressure hose and return hose still connected.

7. DISCONNECTION OF FUEL HIGH PRESSURE HOSE**Caution**

Cover fuel pipe line with rag after relieving pressure as certain pressure may still remain.

**30. REMOVAL OF ENGINE ASSEMBLY**

- (1) Check that the cables, hoses, harness connectors, etc. are all removed from the engine side.
- (2) Slowly remove the engine assembly upwards from the engine compartment with the chain block.

SERVICE POINTS OF INSTALLATION

N09SDAR

30. INSTALLATION OF ENGINE ASSEMBLY

Check that dragging or biting is not occurring around the harnesses, pipes, hoses, etc., install the engine assembly.

4. INSTALLATION OF DRIVE BELT (POWER STEERING)

Refer to GROUP 19 – Service Adjustment Procedures.

2. INSTALLATION OF DRIVE BELT (AIR CONDITIONER)

Refer to GROUP 24 – Service Adjustment Procedures.

DISASSEMBLY AND REASSEMBLY (ROCKER ARMS, ROCKER ARM SHAFTS AND CAMSHAFT)

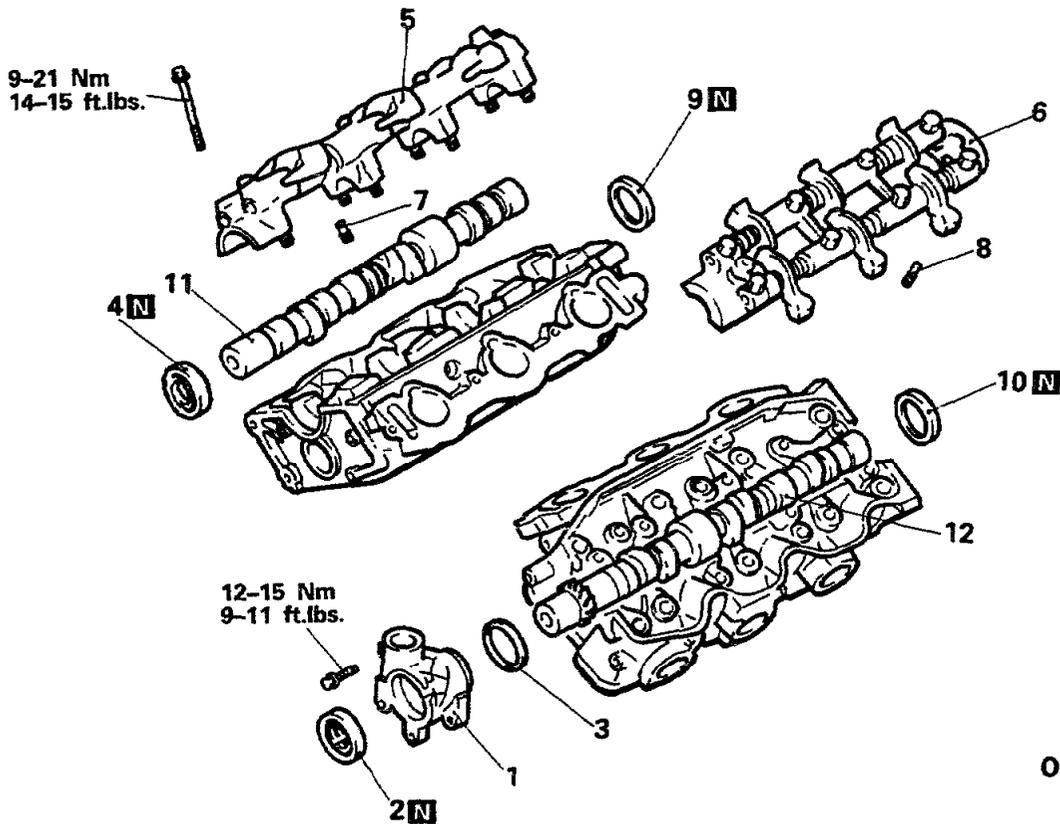
N09LE-8

Pre-removal Operation

- Removal of the Cylinder Head Gasket (Refer to P.9-72.)

Post-installation Operation

- Installation of Cylinder Head Gasket (Refer to P.9-72.)
- Adjustment of the Engine (Refer to P.9-65.)



01W615

Disassembly steps

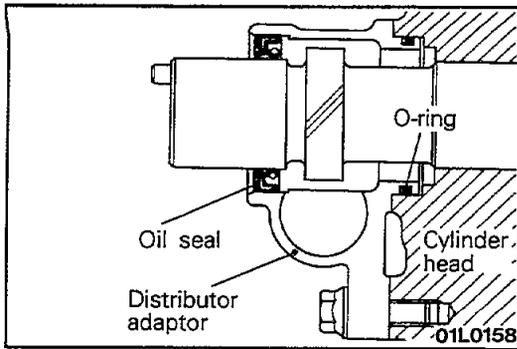
- ◆◆ 1. Distributor adaptor
- ◆◆ 2. Camshaft oil seal
- ◆◆ 3. O-ring
- ◆◆ 4. Camshaft oil seal
- ◆◆ 5. Rocker arm and shaft assembly (B)
- ◆◆ 6. Rocker arm and shaft assembly (A)
- ◆◆ 7. Auto-lash adjuster (B)
- ◆◆ 8. Auto-lash adjuster (A)
- ◆◆ 9. Circular packing
- ◆◆ 10. Circular packing
- ◆◆ 11. Camshaft (B)
- ◆◆ 12. Camshaft (A)

Reassembly steps

- ◆◆ 12. Camshaft (A)
- ◆◆ 11. Camshaft (B)
- ◆◆ 8. Auto-lash adjuster (A)
- ◆◆ 7. Auto-lash adjuster (B)
- ◆◆ 6. Rocker arm and shaft assembly (A)
- ◆◆ 5. Rocker arm and shaft assembly (B)
- ◆◆ 10. Circular packing
- ◆◆ 9. Circular packing
- ◆◆ 4. Camshaft oil seal
- ◆◆ 3. O-ring
- ◆◆ 2. Camshaft oil seal
- ◆◆ 1. Distributor adaptor

NOTE

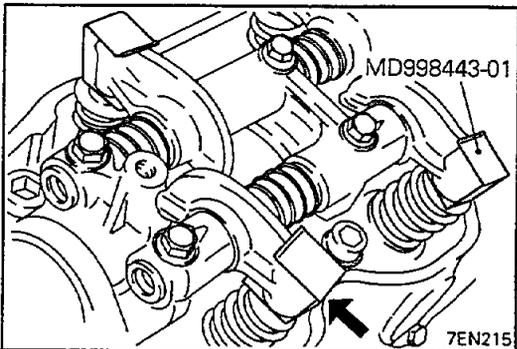
- (1) ◆◆ : Refer to "Service Points of Disassembly".
- (2) ◆◆ : Refer to "Service Points of Reassembly".
- (3) N : Non-reusable parts

**SERVICE POINTS OF DISASSEMBLY**

N09LFDA

1. REMOVAL OF DISTRIBUTOR ADAPTOR ASSEMBLY**Caution**

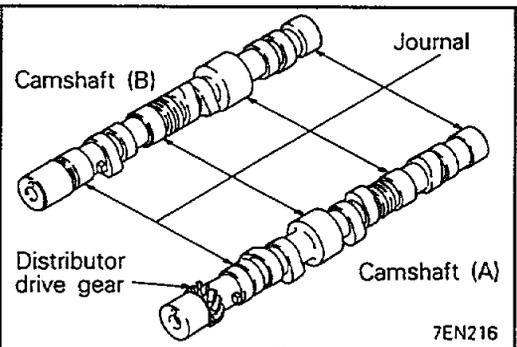
- (1) Remove the distributor adaptor with care so as not to damage the O-ring.
- (2) Replace the O-ring if cracked or deteriorated.

**5./6. REMOVAL OF ROCKER ARM AND SHAFT ASSEMBLY**

Before removing the rocker arm and shaft assembly, use the special tool to ensure that the auto-lash adjuster doesn't fall out.

Caution

Put the rocker arm and auto-lash adjusters in order in cylinder No. separated places with clear distinction between the intake and exhaust ones to prevent confusion.

**INSPECTION**

N09LHAB

- **CAMSHAFT**

- (1) Visually check the outer circumference of the camshaft journal diameter. If damage, wear, or heat seizure is observed, replace the camshaft. If the camshaft journal is heat seized, check the cylinder head for damage. Further, check the cylinder head oil holes and the bearing cap for clogging.
- (2) Check the tooth surfaces of the camshaft (A) distributor drive gear, and replace it if irregular wear is observed.
- (3) Check the cam surface for irregular wear or damage. If observed, replace the camshaft. Further, measure cam height (longer diameter of the cam). If it exceeds the limit, replace the camshaft.

Standard value:

Intake side 41.25 mm (1.6240 in.)

Exhaust side 41.25 mm (1.6240 in.)

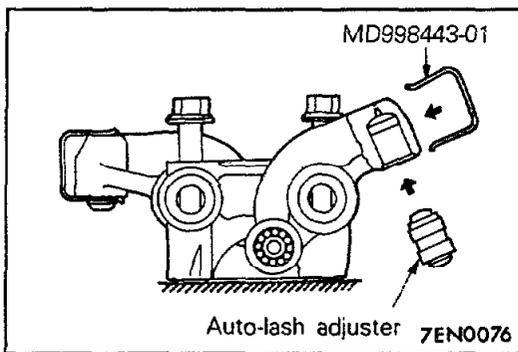
Limit : 40.75 mm (1.6043 in.)

SERVICE POINTS OF REASSEMBLY

N09LGDB

12./11. INSTALLATION OF CAMSHAFT

Install in the cylinder head after applying a coat of engine oil to the camshaft journal and cams.



8./7. INSTALLATION OF AUTO-LASH ADJUSTER/6./5. ROCKER ARM AND SHAFT ASSEMBLY

- (1) Insert the auto-lash adjuster from below as illustrated, being careful not to spill the diesel oil inside it. Then use the special tool to prevent adjuster from falling while installing it.

- (2) Apply a minimum amount of sealing agent on the four places (shown in the figure).

NOTE

Be sure the sealing agent does not swell out onto the cam journal surface of the cylinder head. If it swells out, immediately wipe it off before it can dry.

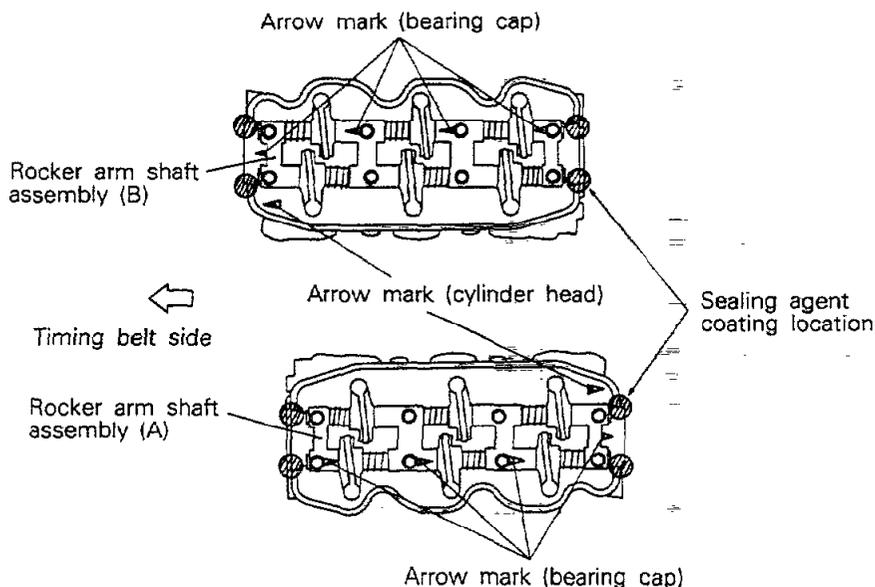
Specified sealant: 3M NUT Locking No. 4171

- (3) Attach the rocker arm shaft assemblies (A) and (B) such that the arrow mark on the bearing cap faces in the same direction as the arrow mark on the cylinder head.

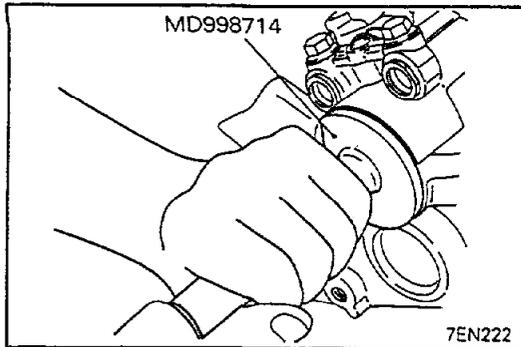
NOTE

The arrow marks face each other on rocker arm shaft assemblies (A) and (B).

- (4) Tighten the bearing cap bolt to the specified torque.
- (5) Remove the special tool that was attached in Step (1).



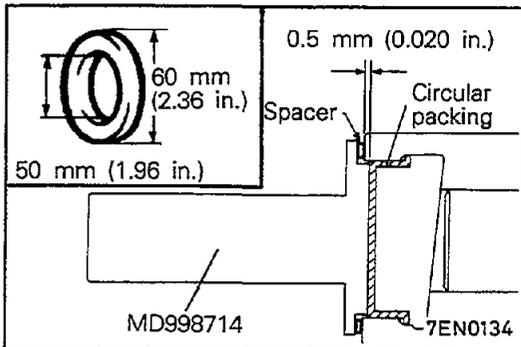
7EN085

**10./9. INSTALLATION OF CIRCULAR PACKING**

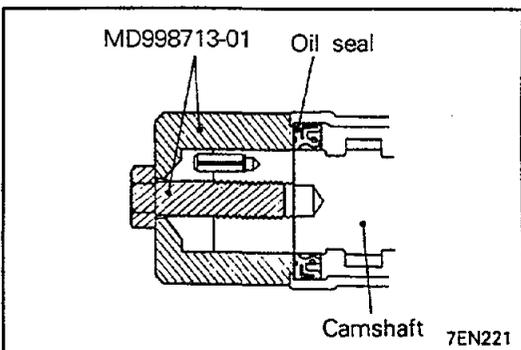
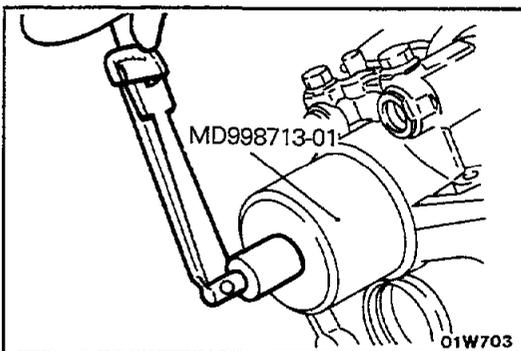
Attach to the special tool a spacer with 1.3 to 1.5 mm (0.052 to 0.059 in.) thickness, and press in the circular packing.

Caution

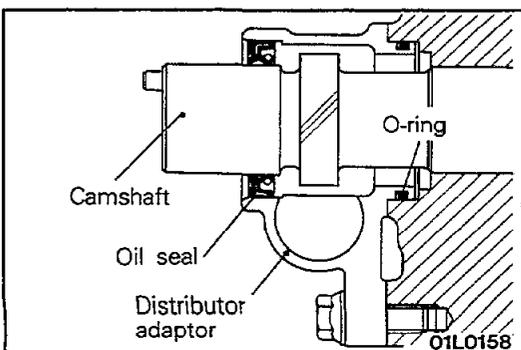
Pressing in the packing without attaching the spacer will result in over-insertion.

**4. INSTALLATION OF CAMSHAFT OIL SEAL**

- (1) Apply a slight amount of engine oil all over the circumference of the camshaft oil seal lip section.
- (2) Using the special tool, insert the oil seal.

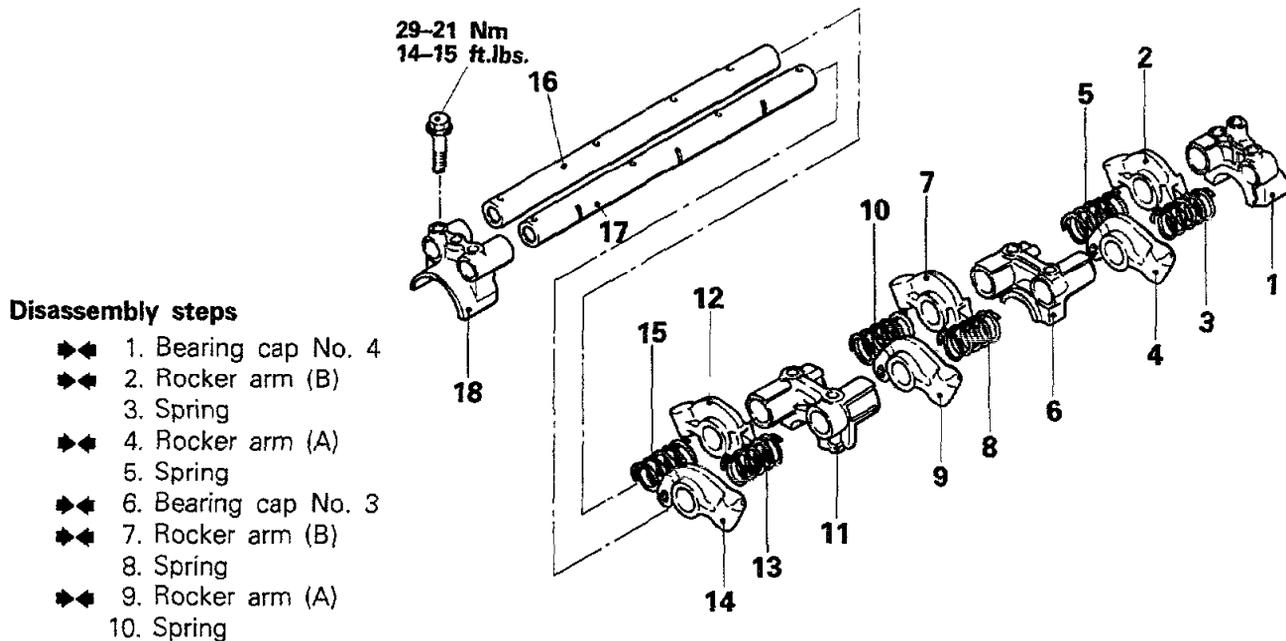
**3. INSTALLATION OF O-RING/2. CAMSHAFT OIL SEAL /1. DISTRIBUTOR ADAPTOR**

- (1) Apply a coating of engine oil around the circumference of the distributor adaptor and to the camshaft oil seal lip, and press in to the distributor adaptor.
- (2) Replace the O-ring if there is cracking or deterioration.
- (3) After installing the O-ring to the groove in the distributor adaptor, apply a coating of engine oil to the O-ring and to the cylinder head hole.
- (4) Apply a coating of engine oil all around the circumference of the camshaft, and install the distributor adaptor to the cylinder head so that the O-ring is not twisted.



DISASSEMBLY AND REASSEMBLY (ROCKER ARM AND SHAFT ASSEMBLY)

N09NE-B



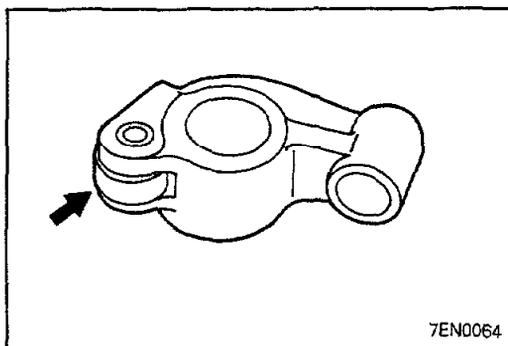
Disassembly steps

- ◆◆ 1. Bearing cap No. 4
- ◆◆ 2. Rocker arm (B)
- ◆◆ 3. Spring
- ◆◆ 4. Rocker arm (A)
- ◆◆ 5. Spring
- ◆◆ 6. Bearing cap No. 3
- ◆◆ 7. Rocker arm (B)
- ◆◆ 8. Spring
- ◆◆ 9. Rocker arm (A)
- ◆◆ 10. Spring
- ◆◆ 11. Bearing cap No. 2
- ◆◆ 12. Rocker arm (B)
- ◆◆ 13. Spring
- ◆◆ 14. Rocker arm (A)
- ◆◆ 15. Spring
- ◆◆ 16. Rocker arm shaft (B)
- ◆◆ 17. Rocker arm shaft (A)
- ◆◆ 18. Bearing cap No. 1

NOTE

- (1) Reverse the disassembly procedures to reassemble.
- (2) ◆◆ : Refer to "Service Points of Reassembly".

7EN0078



7EN0064

INSPECTION

N09NGAE

● ROCKER ARM

- (1) Check the roller surface and replace the rocker arm if recesses, damage or heat seizure is observed.
- (2) Check roller rotation and replace the rocker arm if uneven rotation or roller backlash is observed.
- (3) Check the inside diameter and replace the rocker arm if damage or seizure is observed.

● ROCKER ARM SHAFT

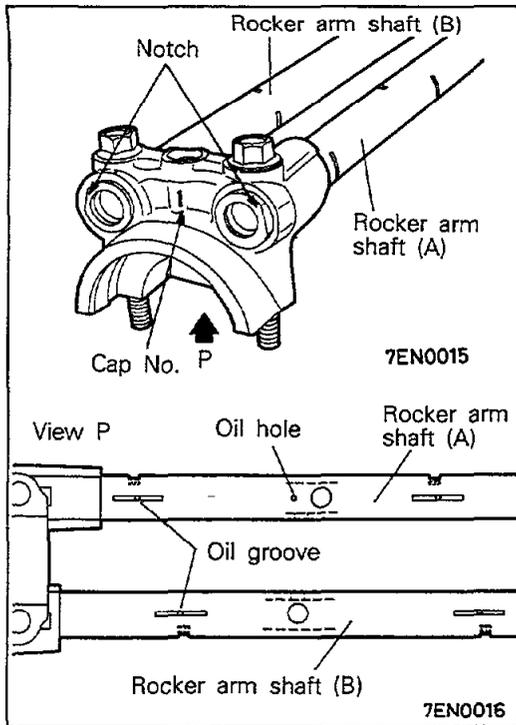
- (1) Check rocker arm mounting portions of rocker arm shaft for wear or damage. Replace as necessary.
- (2) Check to ensure that oil holes are clear.

SERVICE POINTS OF REASSEMBLY

N09NHEA

18. INSTALLATION OF BEARING CAP No. 1

Since bearing caps No. 1 and No. 4 look alike, check the stamped cap No.



17. INSTALLATION OF ROCKER ARM SHAFT (A)/16. ROCKER ARM SHAFT (B)

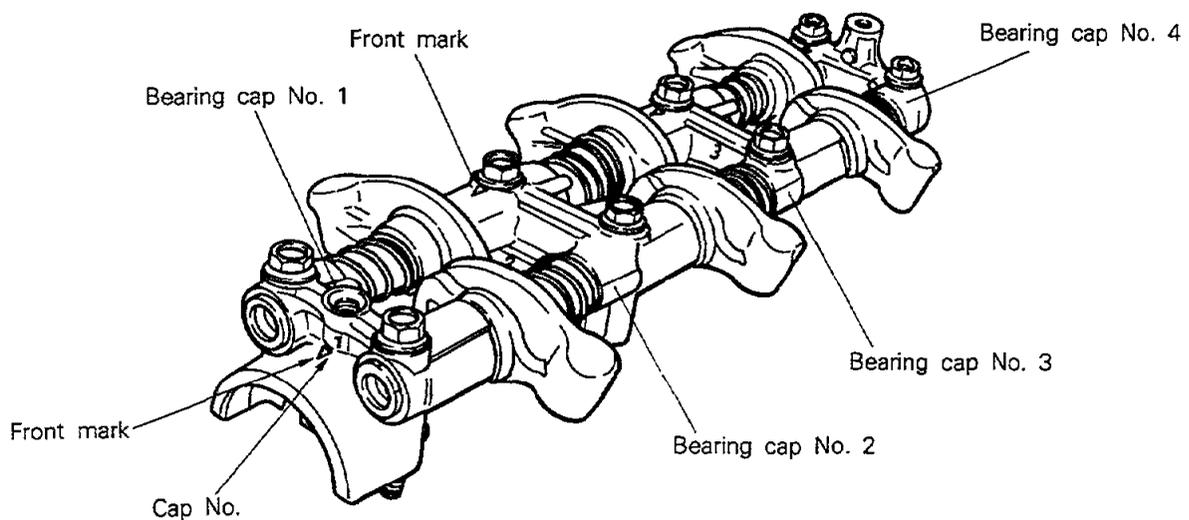
Insert bearing cap No. 1 so that the notch on the end of the shaft faces in the direction shown in the figure and insert the mounting bolt.

NOTE

Check that the oil groove faces downward as shown in the figure and the oil port is located on the rocker shaft (A) side.

14./12./9./7./4./2. INSTALLATION OF ROCKER ARM/ 11./6./1. BEARING CAP

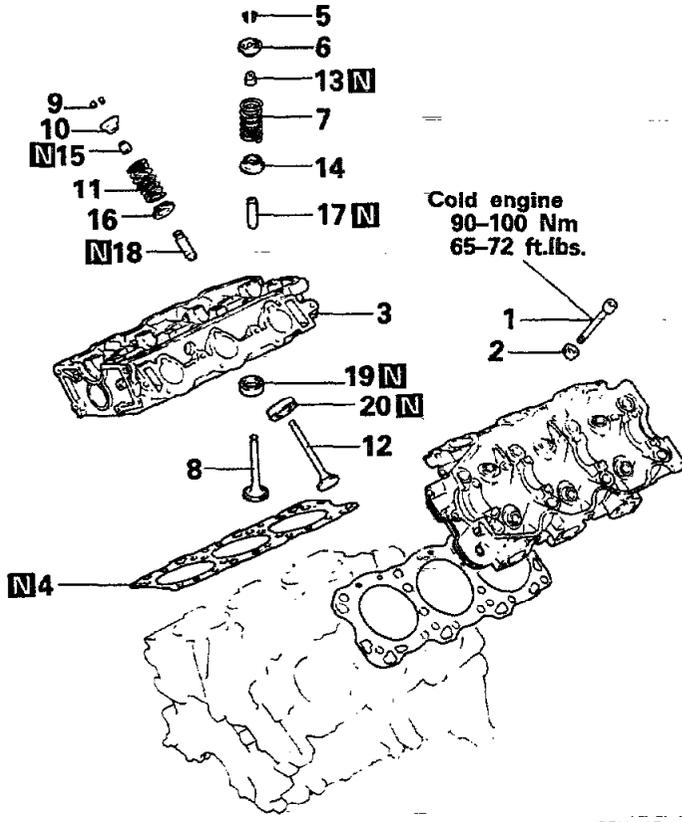
- (1) Since bearing caps No. 2 and No. 3 look alike, check the stamped cap No. Then attach the caps.
- (2) Coat engine oil on the inside diameter area of the rocker arm and attach the rocker shaft.



7EN0079

DISASSEMBLY AND REASSEMBLY (CYLINDER HEAD AND VALVE)

N09PE-



Cold engine
90-100 Nm
65-72 ft.lbs.

Disassembly steps

- ↔↔↔ 1. Cylinder head bolt
- ↔↔ 2. Washer
- ↔↔ 3. Cylinder head
- ↔↔↔ 4. Cylinder head gasket
- ↔↔↔ 5. Retainer lock
- ↔↔↔ 6. Valve spring retainer
- ↔↔↔ 7. Valve spring
- ↔↔↔ 8. Inlet valve
- ↔↔↔ 9. Retainer lock
- ↔↔↔ 10. Valve spring retainer
- ↔↔↔ 11. Valve spring
- ↔↔↔ 12. Exhaust valve
- ↔↔↔ 13. Valve stem seal
- ↔↔↔ 14. Valve spring sheet
- ↔↔↔ 15. Valve stem seal
- ↔↔↔ 16. Valve spring sheet
- ↔↔↔ 17. Inlet valve guide
- ↔↔↔ 18. Exhaust valve guide
- ↔↔↔ 19. Inlet valve sheet
- ↔↔↔ 20. Exhaust valve sheet

NOTE

- (1) Reverse the disassembly procedures to reassemble.
- (2) ↔↔ : Refer to "Service Points of Disassembly".
- (3) ↔↔↔ : Refer to "Service Points of Reassembly".
- (4) [N] : Non-reusable parts

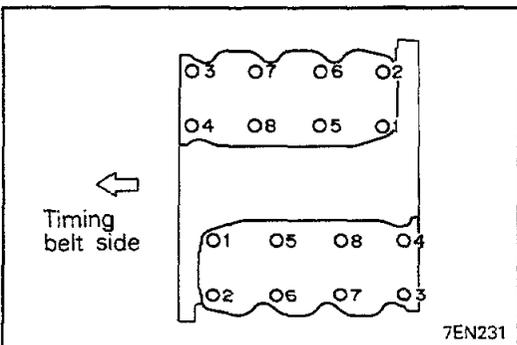
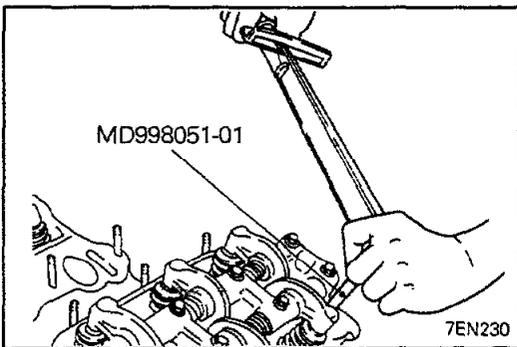
7EN015

SERVICE POINTS OF DISASSEMBLY

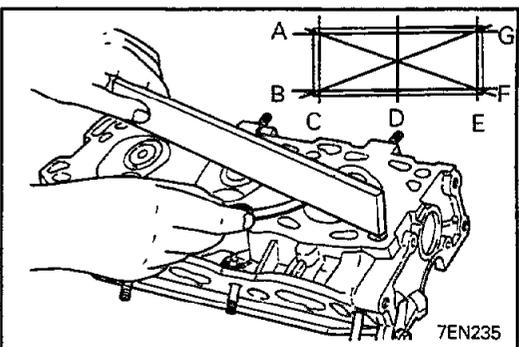
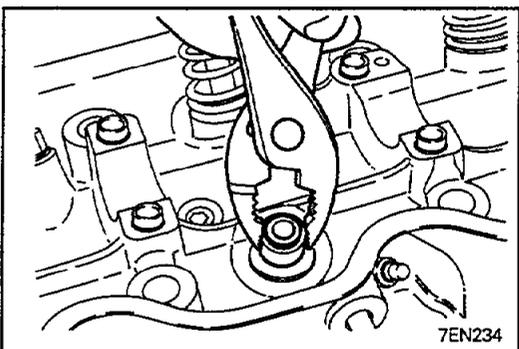
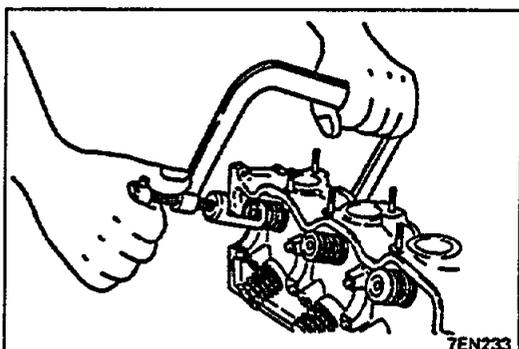
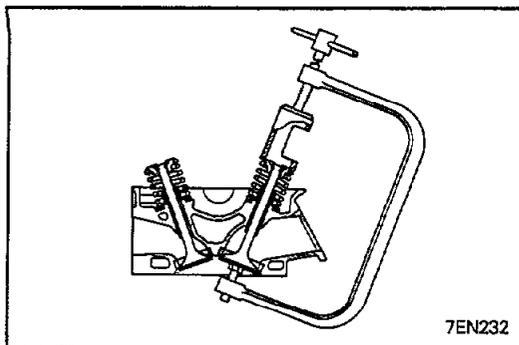
N09PFAF

1. REMOVAL OF CYLINDER HEAD BOLT

(1) Using the special tool, loosen the cylinder head bolts.



(2) Loosen the cylinder head bolts slowly and gradually in the sequence shown in the figure.



5./9. REMOVAL OF RETAINER LOCK

- (1) Using the valve spring compressor, remove the retainers lock.
- (2) Keep these parts in order so that they can be reinstalled in their original positions.

13./15. REMOVAL OF VALVE STEM SEAL

Remove the valve stem seals with pliers and discard them.

INSPECTION

N090CAJ

● CYLINDER HEAD

- (1) Before washing, check the cylinder head for water or gas leakage, damage or cracks.
- (2) Completely remove oil, deposits, sealing agent, carbon, etc. After washing the oil passages, blow air through them to check that they are not clogged.
- (3) Using a straight edge and feeler gauge, measure the warpage on the A thru G areas as shown in the figure.

Standard value : 0.05 mm (.0020 in.) or less

Limit : 0.2 mm (.008 in.)

- (4) If the measured flatness exceeds the limit, grind and repair the surface to gain the flatness of standard value or less.

Grinding limit : 0.2 mm (.008 in.)

Overall height : 84 mm (3.31 in.)

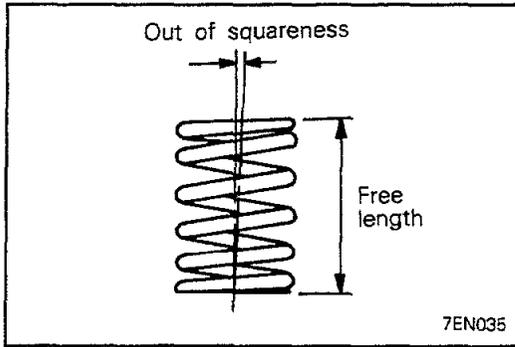
Caution

The cylinder head gasket surface should be ground to within 0.2 mm (.008 in.) even with the grind of the cylinder block gasket surface.

● VALVES

N09PGAG

Refer to P.9-33.



● **VALVE SPRINGS**

N09PGBE

- (1) Check free length of each valve spring and replace if necessary.
- (2) Using a square, test squareness of each valve spring. If spring is excessively out of square, replace it.

Standard value

Free length: 50.5 mm (1.988 in.)
Out of squareness: Less than 2°

Limit

Free length: 49.5 mm (1.949 in.)
Out of squareness: 4°

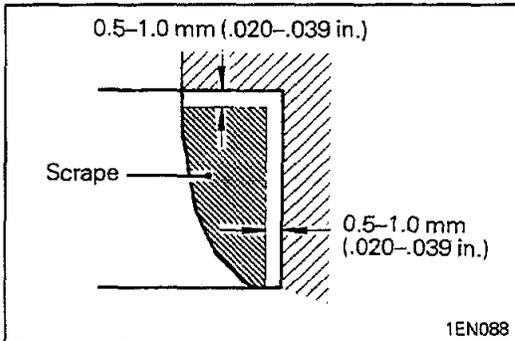
● **VALVE GUIDES**

N09PGCE

Refer to P.9-34.

VALVE SEAT RECONDITIONING PROCEDURE

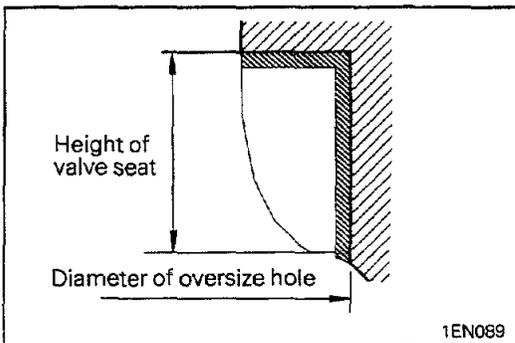
Refer to P.9-34.



VALVE SEAT INSERT REPLACEMENT PROCEDURES

N09PIAD

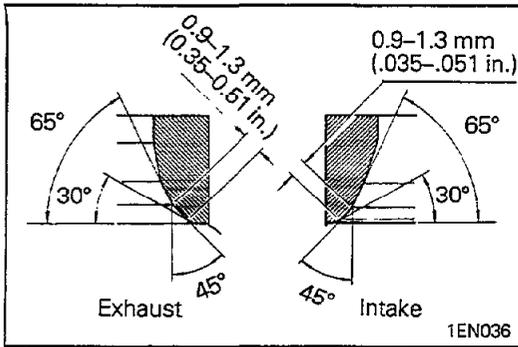
- (1) To replace: Scrape the inner face of the valve seat to reduce the wall thickness, and remove.



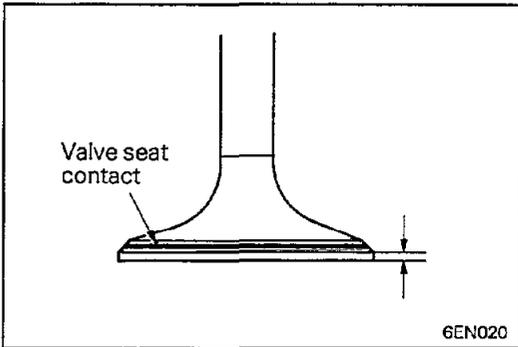
- (2) Adjust the press fit diameter of the valve seat on the cylinder head side so that it matches the diameter of the oversized valve seat.

Valve Seat Insert Oversizes

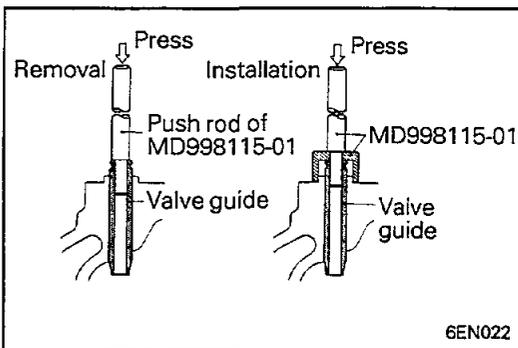
Description	Size mm (in.)	Size mark	Seat insert height H mm (in.)	Cylinder head I.D. mm (in.)
Intake valve seat insert	0.3 (.012) O.S.	30	7.9-8.1 (.311-.319)	44.300-44.325 (1.7440-1.7451)
	0.6 (.024) O.S.	60	8.2-8.4 (.323-.331)	44.600-44.625 (1.7559-1.7569)
Exhaust valve seat insert	0.3 (.012) O.S.	30	7.9-8.1 (.311-.319)	38.300-38.325 (1.5079-1.5089)
	0.6 (.024) O.S.	60	8.2-8.4 (.323-.331)	38.600-38.625 (1.5197-1.5207)



- (6) Heat the cylinder head to about 250°C (480°F) and press in an oversize seat insert fit to the insert bore in the cylinder head at normal temperature.
- (7) Treat the valve seat in the way shown in the illustration.
- (8) Use the lapping compound, and lap the valve.



- (9) Ensure that the seat is properly centered on the valve face.



VALVE GUIDE REPLACEMENT PROCEDURES N09PHAE

- (1) Recondition the valve guide hole so that it matches the newly press-fit oversize valve guide.

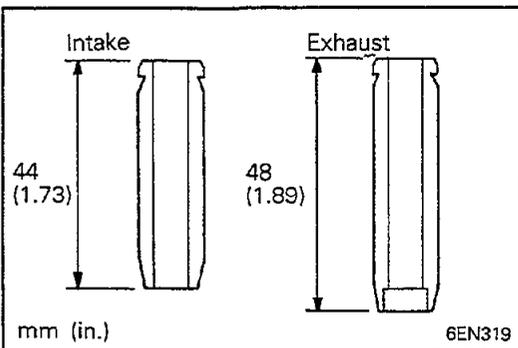
Valve Guide Insert Oversizes

Size mm (in.)	Size mark	Cylinder head hole size mm (in.)
0.05 (.002) O.S.	5	13.050–13.068 (.5138–.5145)
0.25 (.010) O.S.	25	13.250–13.268 (.5217–.5224)
0.50 (.020) O.S.	50	13.500–13.518 (.5315–.5322)

NOTE

Do not reinsert a valve guide of the same size.

- (2) The valve guide must be press-fit from the upper side of the cylinder head. Keep in mind that the valve guides are of different length [Intake side: 44 mm (1.73 in.), Exhaust side: 48 mm (1.89 in.)].
- (3) After the valve guide is press-fit, insert a new valve and check for smooth sliding.
- (4) After the valve guide is replaced, check the fit between the valve and the valve seat.



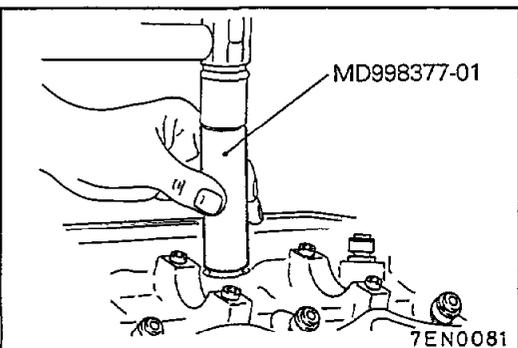
SERVICE POINTS OF REASSEMBLY N09PKEB

16./14. INSTALLATION OF VALVE SPRING SEAT/15./13. VALVE STEM SEAL

Install the spring seat, then using special tool, install the stem seal by lightly tapping the tool. Seal is installed in specified position, using the special tool.

Caution

1. **Incorrect installation of the seal without using special tool will result in poor sealing and cause oil leakage down valve guide.**
2. **Do not reuse stem seal.**

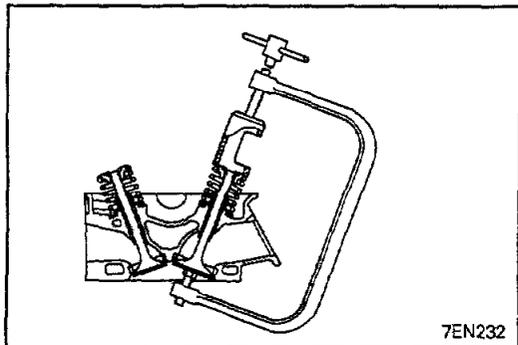


12. INSTALLATION OF EXHAUST VALVE/8. INLET VALVE

Apply engine oil to each valve, insert valves into the valve guides. Avoid inserting the valve into the seal with force. After insertion, check to see if the valve moves smoothly.

11./7. INSTALLATION OF VALVE SPRING

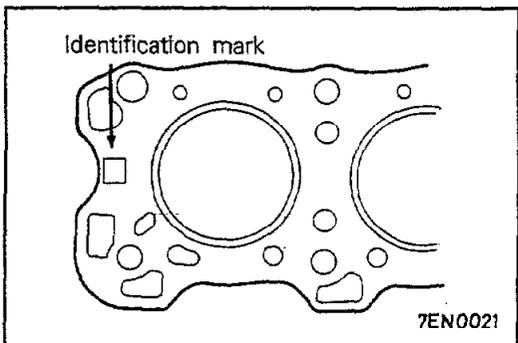
Refer to P.9-36.



7EN232

9./5. INSTALLATION OF RETAINER LOCK

Refer to P.9-36.



7EN0021

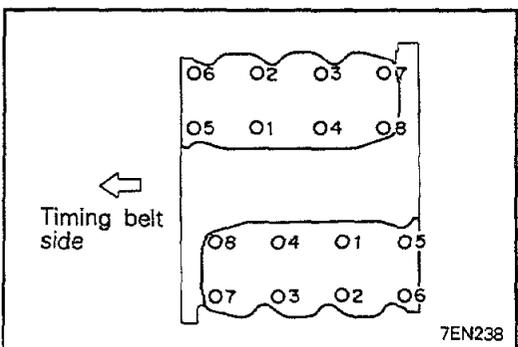
4. INSTALLATION OF CYLINDER HEAD GASKET

- (1) Clean the gasket mounting surface of the cylinder block and the cylinder head of remaining gasket oil, and other debris.
- (2) When installing, face the identification mark upward.

Identification mark...R

NOTE

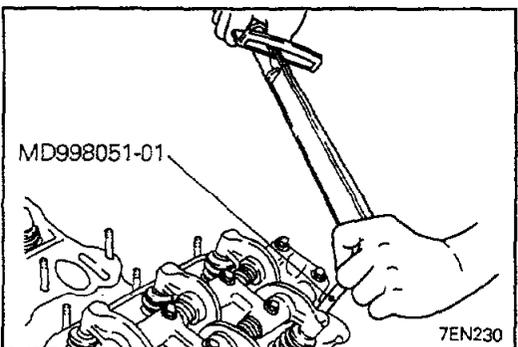
Do not apply sealant to the cylinder head gasket.



7EN238

1. INSTALLATION OF CYLINDER HEAD BOLT

- (1) Using the sequence shown in the figure to tighten the bolts with the special tool and a torque wrench.

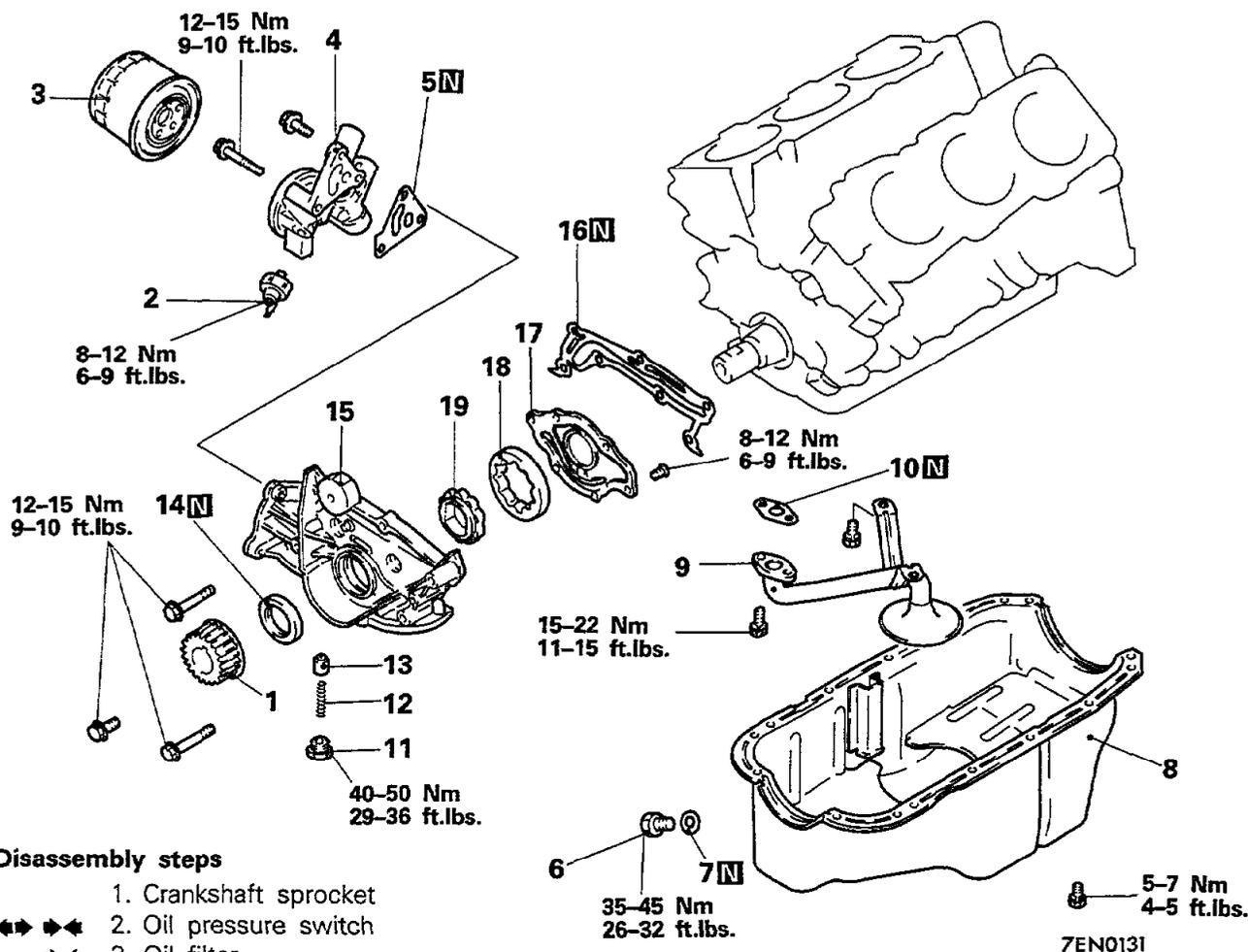


7EN230

- (2) When tightening the cylinder head bolts, repeat the sequence 2 or 3 times to gradually tighten them. Finally tighten the bolt to the specified torque.

DISASSEMBLY AND REASSEMBLY (OIL PAN AND OIL PUMP)

N09R1-



Disassembly steps

- 1. Crankshaft sprocket
- ◄◄ 2. Oil pressure switch
- ◄ 3. Oil filter
- 4. Oil filter bracket
- 5. Oil filter bracket gasket
- 6. Drain plug
- 7. Drain plug gasket
- ◄◄ 8. Oil pan
- 9. Oil screen
- 10. Oil screen gasket
- 11. Plug
- 12. Relief spring
- 13. Relief plunger

- ◄◄ 14. Crankshaft front oil seal
- ◄◄ 15. Oil pump case
- 16. Oil pump gasket
- 17. Oil pump cover
- 18. Oil pump outer rotor
- 19. Oil pump inner rotor

NOTE

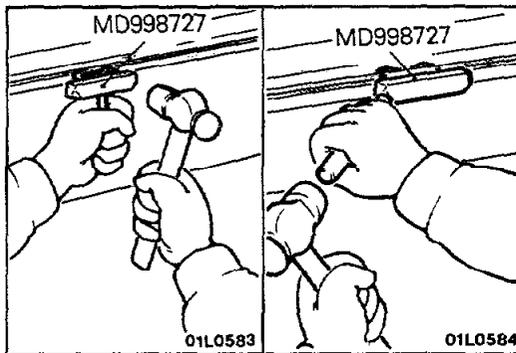
- (1) Reverse the disassembly procedures to reassemble.
- (2) ◄◄ : Refer to "Service Points of Disassembly".
- (3) ◄ : Refer to "Service Points of Reassembly".
- (4) N : Non-reusable parts

7EN0131

SERVICE POINTS OF DISASSEMBLY
2. REMOVAL OF OIL PRESSURE SWITCH

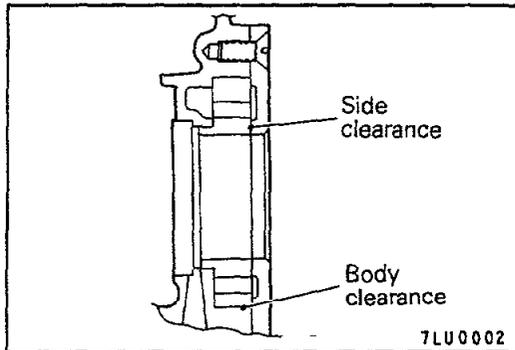
Refer to P.9-53.

N09RJAA



8. REMOVAL OF OIL PAN

- (1) Knock the special tool deeply between the oil pan and the cylinder block.
- (2) Hitting the side of the special tool, slide the oil pan to remove it.



INSPECTION

N09RCAA

● OIL PUMP

- (1) Check the parts of the oil pump case for damage and cracks.
- (2) Assemble the rotor on the oil pump and check the clearance with a thickness gauge.

Standard value :

Body clearance : 0.100–0.181 mm
(.0039–.0071 in.)

Side clearance : 0.040–0.095 mm
(.0016–.0037 in.)

● OIL FILTER BRACKET

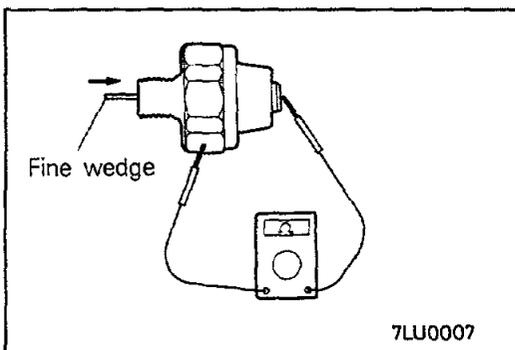
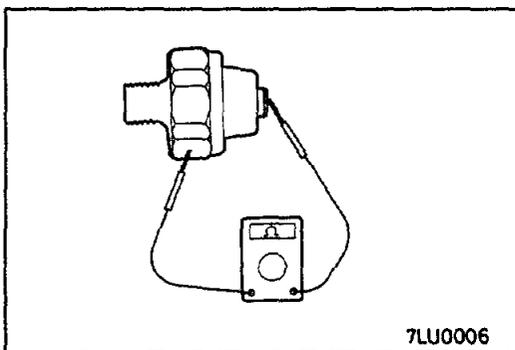
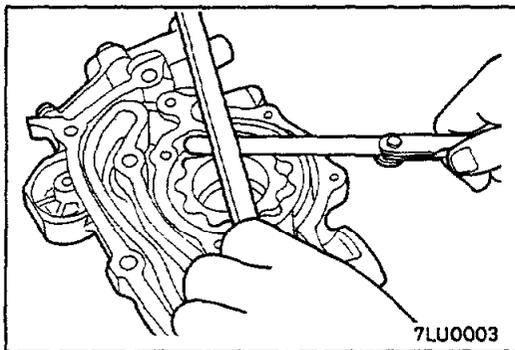
- (1) Ensure that there is no damage on the oil filter installation surface.
- (2) Check for cracks or oil leaks.

● RELIEF PLUNGER AND SPRING

- (1) Insert the relief plunger in the oil pump body and check to see if it operates smoothly.
- (2) Check the relief spring for breakage or sagging.

● OIL PRESSURE SWITCH

- (1) Connect a tester (ohm range) between the terminal and the body and check for conductivity. If there is no conductivity, replace the switch.



- (2) Next insert a very fine wedge through the oil hole, pushing it slightly. There should be no conductivity (resistance should be infinite). If there is conductivity even when wedge is pushed, replace the switch.

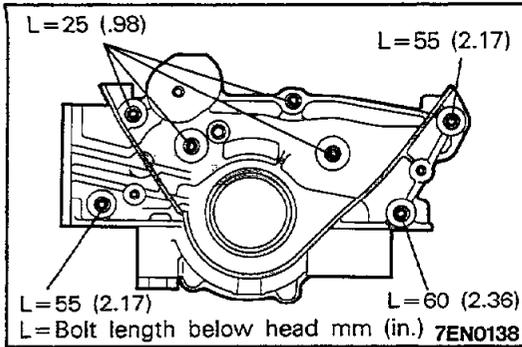
- (3) Or, if there is no conductivity when a 50 kPa (71 psi) pressure is placed through the oil hole, the switch is operating properly. Check at this time to see that there is no air pressure leakage. If there is air pressure leakage, the diaphragm is broken, and the switch should be replaced.

N09RLAB

SERVICE POINTS OF REASSEMBLY

15. INSTALLATION OF OIL PUMP CASE

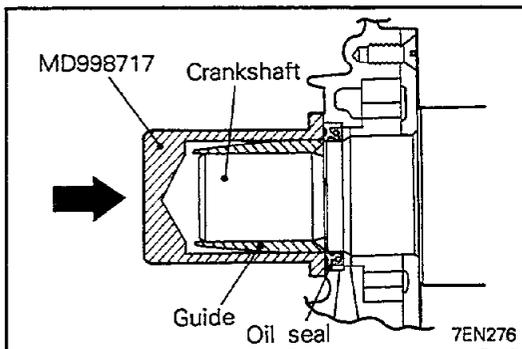
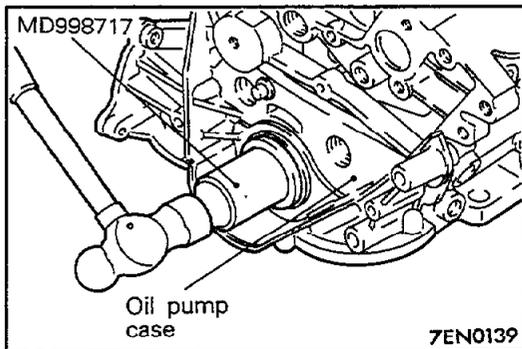
Attach the oil pump case with the gasket in between.



14. INSTALLATION OF CRANKSHAFT FRONT OIL SEAL

Using the special tool, knock the oil seal into the oil pump case.

NOTE
Knock it as far as the surface.



8. APPLICATION OF SEALANT TO OIL PAN

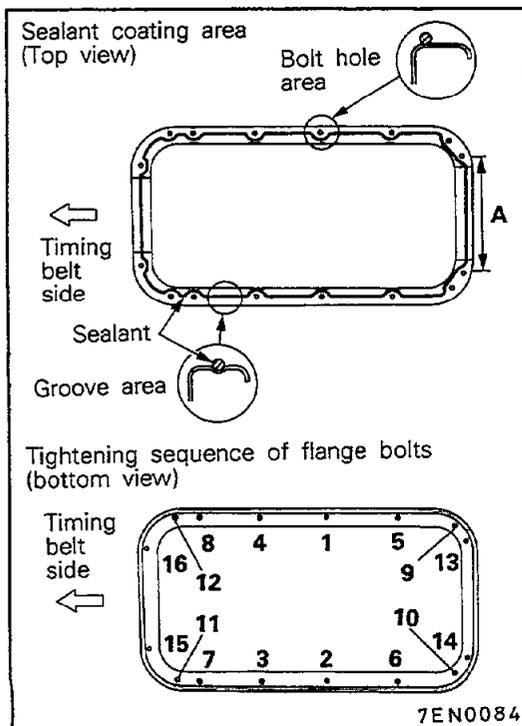
- (1) Clean the cylinder block and oil pan gasket surfaces.
- (2) Apply specified sealant all around the oil pan flange to a diameter of 4 mm (.16 in.).

Caution

Do not let the sealant ooze into the range (A) shown in the figure on the oil pan flange.

**Specified sealant : MITSUBISHI GENUINE PART
MZ100168 or equivalent**

- (3) Install the oil pan within 15 mins. after applying the liquid gasket.
- (4) Tighten the flange bolts in the sequence shown in the figure.



SERVICE POINTS OF DISASSEMBLY

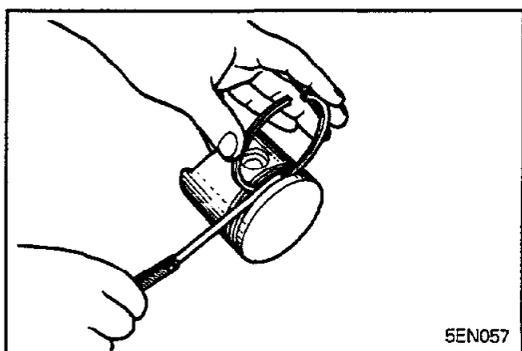
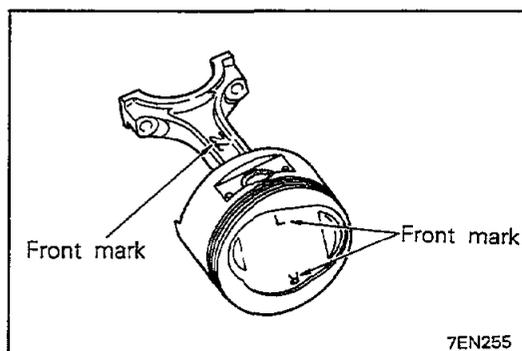
N09TFDB

2. REMOVAL OF CONNECTING ROD CAP

Refer to P.9-43.

6. REMOVAL OF NO. 1 PISTON RING/7. NO. 2 PISTON RING

Refer to P.9-43.

**9. REMOVAL OF PISTON PIN**

Refer to P.9-44.

NOTE

For the piston and connecting rod front mark, refer to the illustration at the left.

INSPECTION

N09THAB

● **PISTON**

Refer to P.9-44.

● **PISTON PIN**

Refer to P.9-44.

● **PISTON RING**

N09TCBC

- (1) Check for piston ring damage, wear, and bends. Replace the rings if anything unusual is noted. Also be sure to change the piston rings when a new piston is installed.
- (2) Check the clearance between the piston ring and the ring groove. When it exceeds the limit, replace the rings, the piston, or both.

Piston ring side clearance**Standard value :**

No. 1	0.03–0.09 mm (.0012–.0035 in.)
No. 2	0.02–0.06 mm (.0008–.0024 in.)

Limit :

No. 1	0.1 mm (.004 in.)
No. 2	0.1 mm (.004 in.)

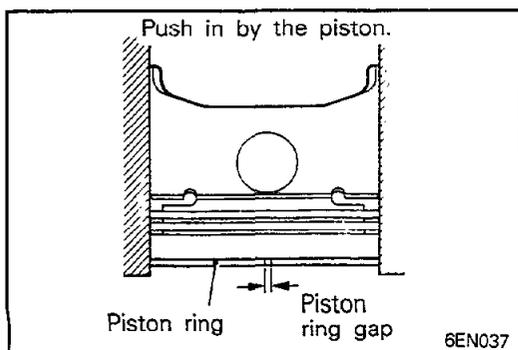
- (3) Insert the piston ring into the cylinder bore putting it against the top of the piston head and pressing it in. When it makes a right angle, measure the piston ring gap with a feeler gage. When the gap is too large, replace the piston ring.

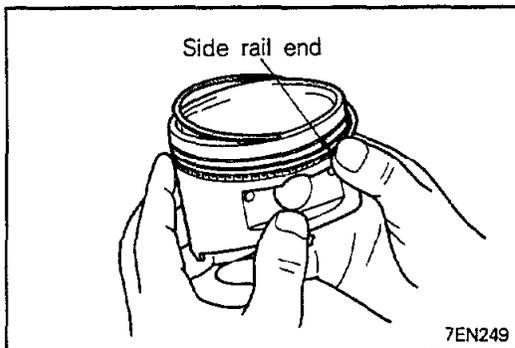
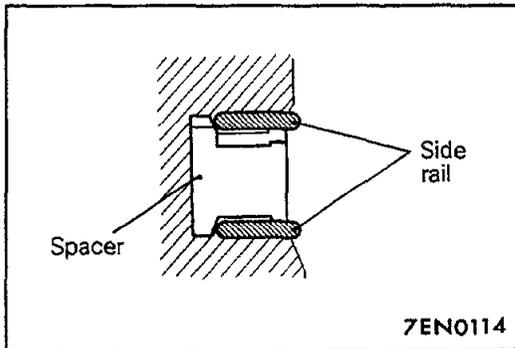
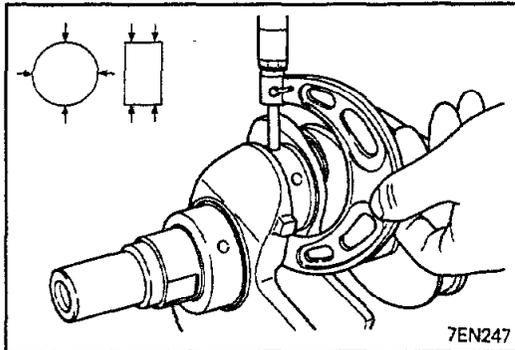
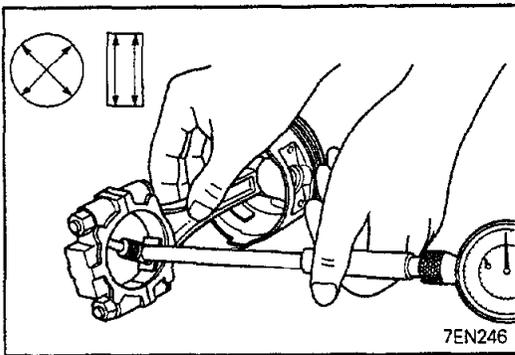
Piston ring end gap**Standard value :**

No. 1	0.30–0.45 mm (.0118–.0177 in.)
No. 2	0.25–0.40 mm (.0098–.0157 in.)
Oil ring side rail	0.20–0.70 mm (.0079–.0276 in.)

Limit :

No. 1	0.8 mm (.031 in.)
No. 2	0.8 mm (.031 in.)
Oil ring side rail	1.0 mm (.039 in.)





● BEARING

N09TCDB

- (1) Visually check the surface of the bearing. Replace those which are lopsided, streaked, damaged, or show signs of seizure. When streaks or seizure are excessive, check the crankshaft. If damage is discovered on the crankshaft, either replace it or reuse it after undersize machining.
- (2) Measure the inner diameter of the connecting rod bearing and the outer diameter of the crankshaft pin. If the gap (oil clearance) exceeds the limit, replace the bearing, and if necessary, the crankshaft, or, undersize machine the crankshaft and replace the bearings with an appropriate undersized type.

Standard value : 0.016–0.046 mm
(.0006–.0018 in.)

Limit : 0.1 mm (.004 in.)

NOTE

For the method by which the oil clearance is measured using a plastigage, refer to the item on the crankshaft.

SERVICE POINTS OF REASSEMBLY

N09TGDB

9. INSTALLATION OF PISTON PIN

Refer to P.9-46.

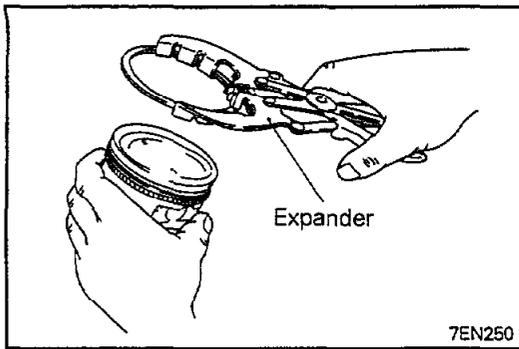
8. INSTALLATION OF OIL RING

- (1) Assemble the oil ring spacer into the piston ring groove. Then, after assembling the upper side rail, assemble the lower side rail. There is no difference between the upper and lower side rails or spacers.

- (2) The side rail may be easily installed by pushing it in with your finger after fitting the end over the piston groove.

Caution

Do not use piston ring expander when installing side rail.



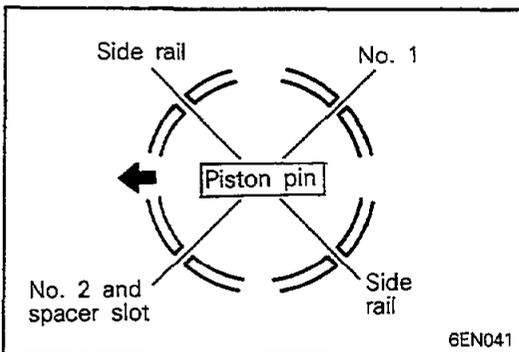
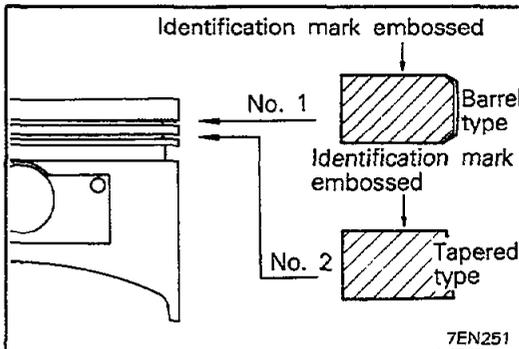
7. INSTALLATION OF PISTON RING NO. 2/6. PISTON RING NO. 1

- (1) Using a piston ring expander, position the No. 2 and No. 1 piston rings.

**Identification mark : No. 1 ... T1
No. 2 ... 2R**

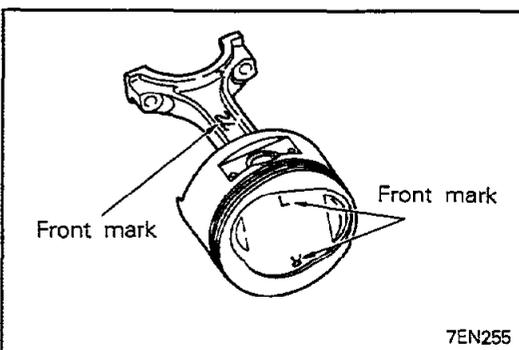
NOTE

1. Keep in mind that Nos. 1 and 2 are different in shape.
2. Assemble the Nos. 1 and 2 piston rings with the manufacturer and size marks stamped on the side facing upward (toward the piston top).



4. INSTALLATION OF PISTON, CONNECTING ROD ASSEMBLY

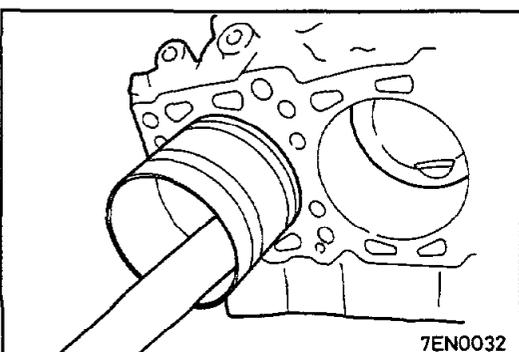
- (1) Liberally coat engine oil on the circumference of the piston, piston ring, and oil ring.
- (2) Arrange the piston ring and oil ring gaps (side rail and spacer) as shown in the figure.



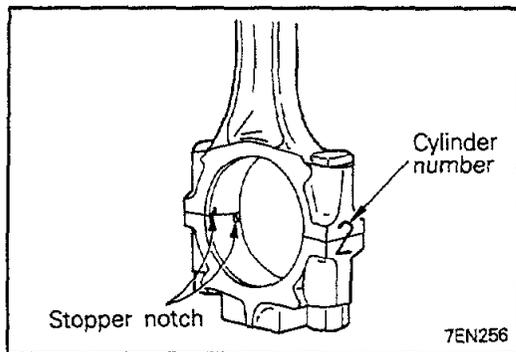
- (3) Insert the piston connecting rod assembly from the upper surface of the cylinder block.

Caution

1. The front marks on the pistons should be oriented as follows:
"R" on the No. 1, 3 and 5 cylinders and "L" on the No. 2, 4 and 6 toward the timing belt.
2. Insert the connecting rod with the front mark directed toward the timing belt side.

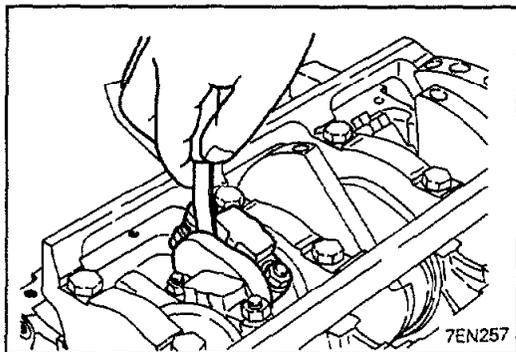


- (4) Securely pressing the piston ring with the ring band, insert the piston connecting rod assembly into the cylinder. Keep in mind that the piston ring or the crank pin may be broken or damaged if hit strongly.



2. INSTALLATION OF CONNECTING ROD CAP

- (1) Install the connecting rod, aligning it with the mark made on the connecting rod cap during disassembly. When the connecting rod being installed is new and has no alignment mark, install it so that the notches in the connecting rod and cap are on the same side, as illustrated.



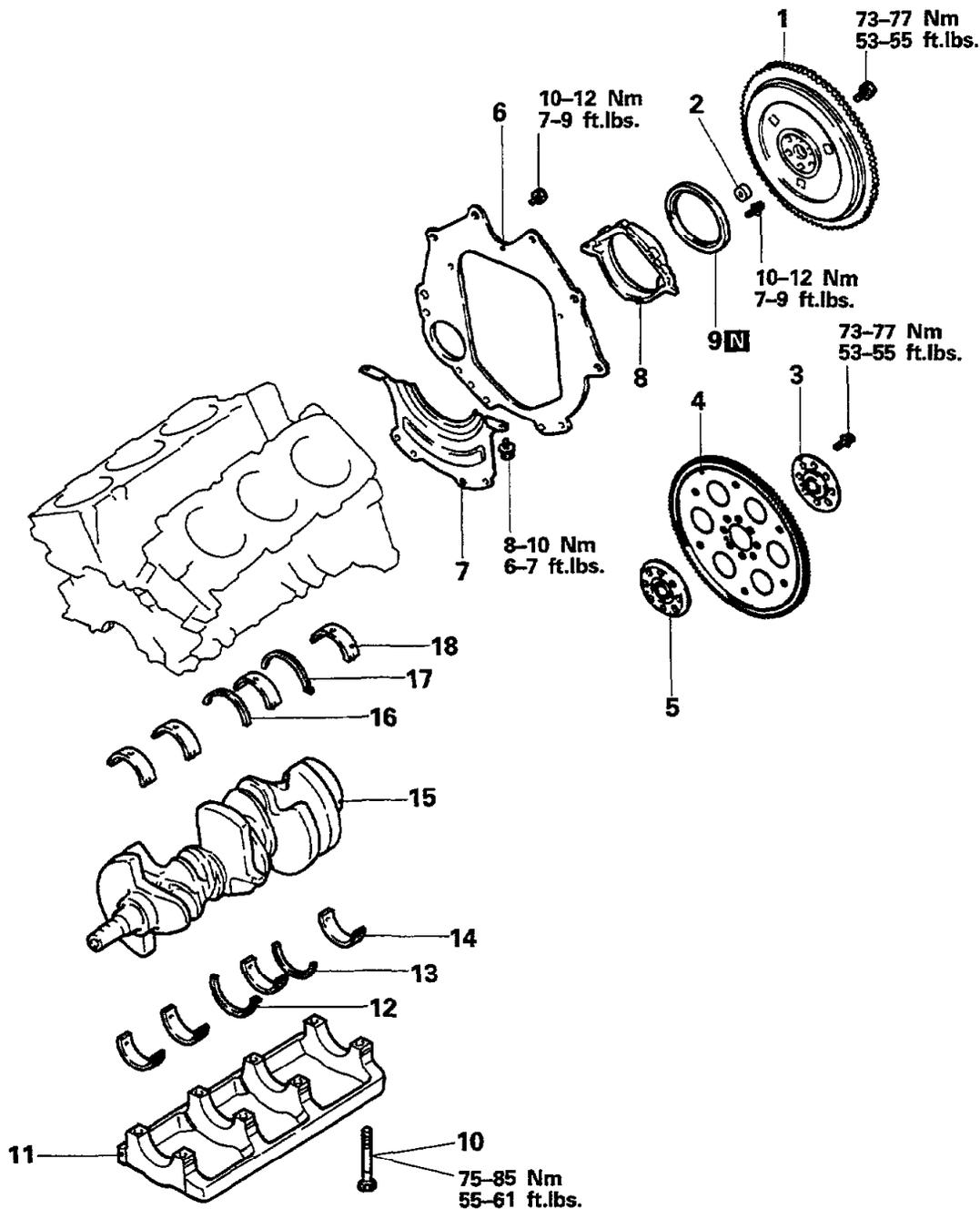
- (2) Check the connecting rod big end side clearance.

Standard value : 0.10–0.25 mm (.0039–.0098 in.)

Limit : 0.4 mm (.016 in.)

(DISASSEMBLY AND REASSEMBLY (CRANKSHAFT, FLYWHEEL AND DRIVE PLATE))

N09UE-B



Disassembly steps

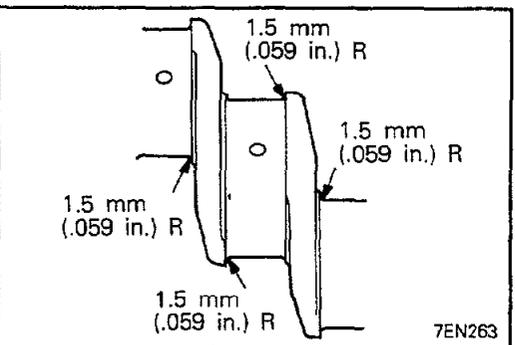
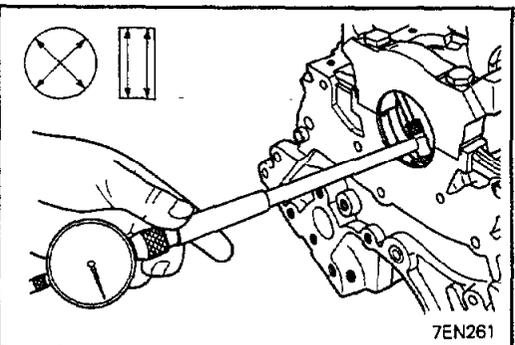
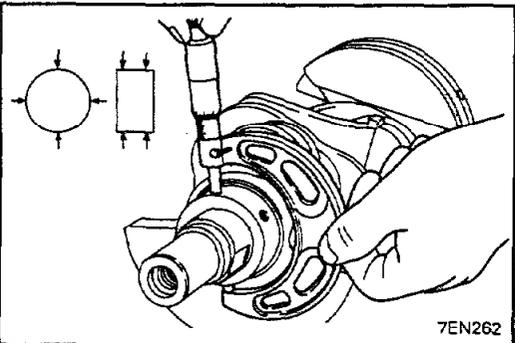
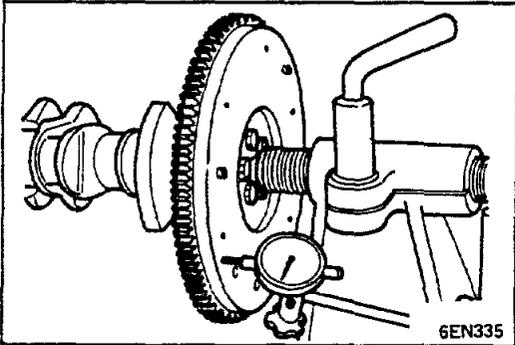
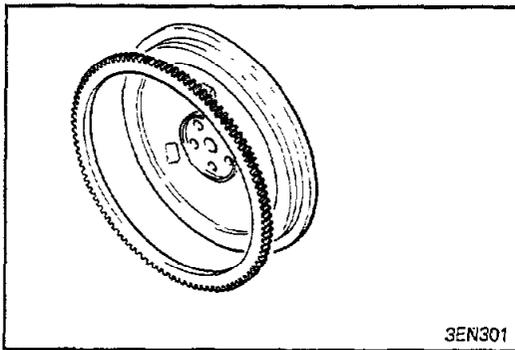
- 1. Flywheel assembly } Vehicles with a
- 2. Ball bearing } manual transmission
- 3. Adaptor plate } Vehicles with an
- 4. Drive plate } automatic transmission
- 5. Crankshaft bush }
- 6. Transmission mounting plate
- 7. Rear plate
- 8. Oil seal case
- 9. Crankshaft rear oil seal
- 10. Bearing cap bolt
- 11. Bearing cap
- 12. Thrust bearing A

- 13. Thrust bearing B
- 14. Crankshaft bearing (lower)
- 15. Crankshaft
- 16. Thrust bearing B
- 17. Thrust bearing A
- 18. Crankshaft bearing (upper)

NOTE

- (1) Reverse the disassembly procedures to reassemble
- (2) : Refer to "Service Points of Reassembly".
- (3) : Non-reusable parts

7EN0132



INSPECTION

N09UHAB

● RING GEAR (vehicles with a manual transmission)

When there is wear, cracks, or other damage to the ring gear teeth, replace the ring gear by the following procedure. Check the starter motor pinion.

Ring gear replacement procedure :

- (1) Tap around the ring gear to loosen and remove it from the flywheel.

Caution

The ring gear cannot be removed while it is hot.

- (2) Heat the ring gear to 300°C (572°F) and install it into the flywheel.

● FLYWHEEL (vehicles with a manual transmission)

- (1) Make a visual inspection of the clutch disc. If stepped wear, streaking, or seizure are apparent, replace it.
- (2) If flywheel run out exceeds the limit, replace it.

Limit : 0.13 mm (.0051 in.)

● DRIVE PLATE (vehicles with an automatic transmission)

Replace deformed, damaged, or cracked drive plates.

● CRANKSHAFT

- (1) Check the crankshaft journals and pins for damage, uneven wear and cracks. Also check oil holes for clogging. Correct or replace any defective part.
- (2) Inspect out-of-roundness and taper of crankshaft journal and pin.

Standard value

Crankshaft journal O.D. : 60 mm (2.36 in.)

Crank pin O.D. : 50 mm (1.97 in.)

Limit

Out-of-roundness of journal and pin :
0.03 mm (.0012 in.)

Taper of journal and pin : 0.05 mm (.0002 in.)

- (3) To check the oil clearance, measure the outside diameter of the crankshaft journal and the inside diameter of the bearing. The clearance can be obtained by calculating the difference between the measured outside and inside diameters.

Standard value

Crankshaft main bearing : 0.020–0.048 mm
(.0008–.0019 in.)

Connecting rod bearing : 0.016–0.046 mm
(.0006–.0018 in.)

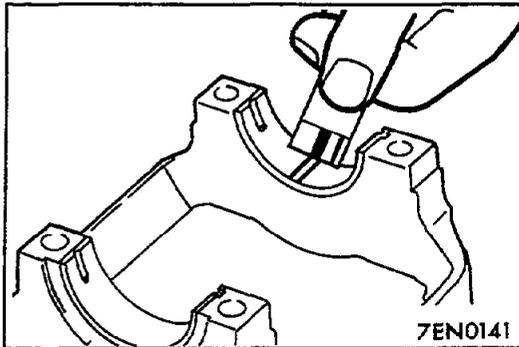
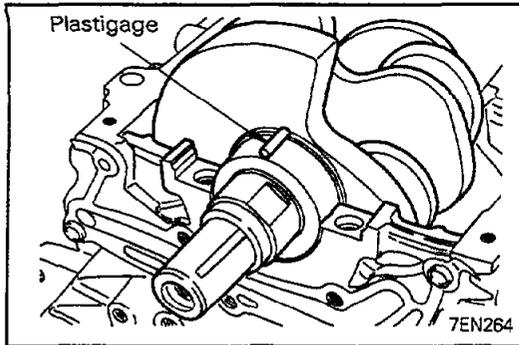
Limit

Crankshaft main bearing : 0.1 mm (.004 in.)

Connecting rod bearing : 0.1 mm (.004 in.)

- (4) If the oil clearance exceeds the limit, replace the main bearing (and also the crankshaft if necessary). Or in addition to undersizing the crankshaft, replace the main bearing with an undersized one.

- (5) When grinding the crankshaft to under-size, take note of the R dimensions of the fillets of the journal and pin area.



- **MAIN BEARINGS AND CONNECTING ROD BEARINGS**

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

- **PLASTIGAGE METHOD**

Plastigage may be used to measure the clearance.

- (1) Remove oil and grease and any other dirt from bearings and journals.
- (2) Cut plastigage to the same length as the width of the bearing and place it in parallel with the journal, off oil holes.
- (3) Install the crankshaft, bearings and caps and tighten them to the specified torques. During this operation, do NOT turn the crankshaft. Remove the caps. Measure the width of the plastigage at the widest part by using a scale printed on the plastigage sleeve. If the clearance exceeds the repair limit, the bearing should be replaced or an undersize bearing 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 undersize and a bearing of the same size should be installed.

SERVICE POINTS OF REASSEMBLY

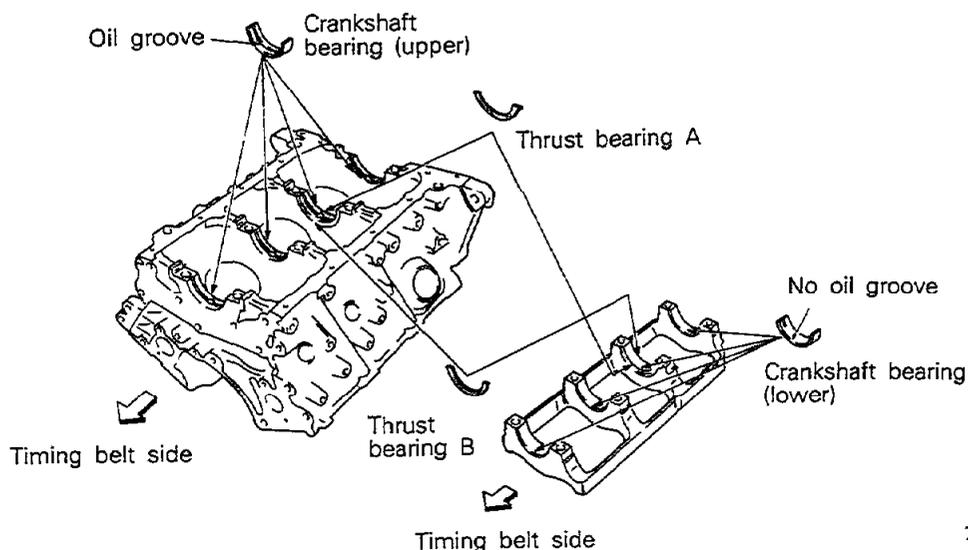
N09UGAF

18. INSTALLATION OF CRANKSHAFT BEARING (UPPER)/17./12. THRUST BEARING A/16./13. THRUST BEARING B/14. CRANKSHAFT BEARING (LOWER)

- (1) Classify the crankshaft bearings (upper and lower) by whether there is an oil groove or not. Then, assemble as shown in the figure.
- (2) Assemble the thrust bearings (A and B) on the No. 3 journal area as shown in the figure.

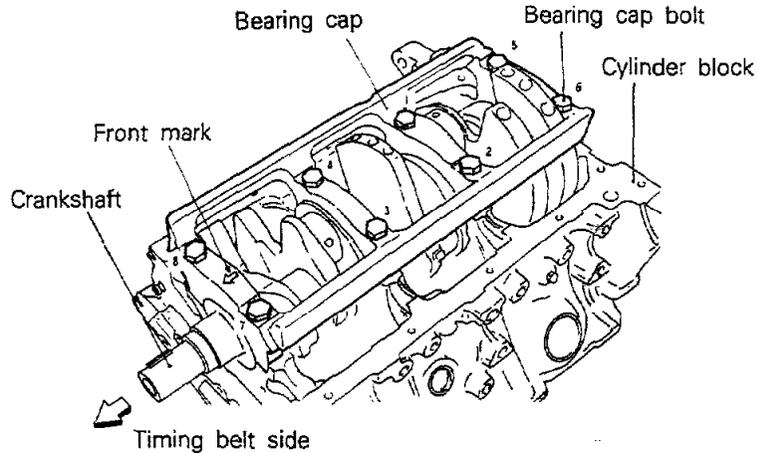
Caution

Install them with the groove side facing outward.



11. INSTALLATION OF BEARING CAP/10. BEARING CAP BOLT

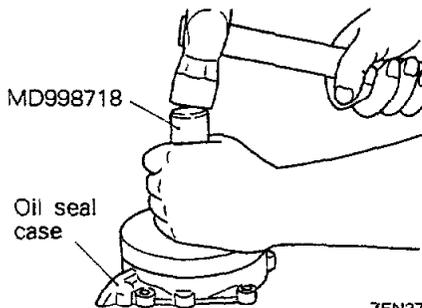
- (1) Attach the bearing cap on the cylinder block as shown in the figure.
- (2) Tighten the bearing cap bolts to the specified torque in the sequence shown in the figure.
- (3) Check that the crankshaft rotates smoothly.



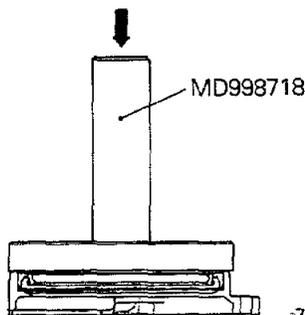
7EN270

9. INSTALLATION OF CRANKSHAFT REAR OIL SEAL

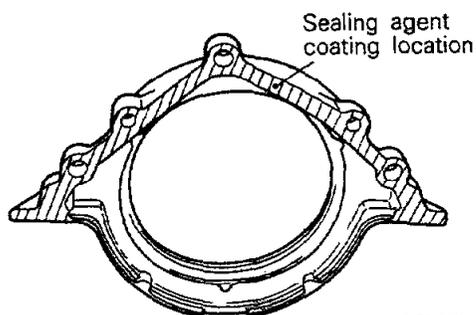
Using the special tool, press-fit a new crankshaft rear oil seal into the oil seal case.



7EN271



7EN272



7EN273

8. INSTALLATION OF OIL SEAL CASE

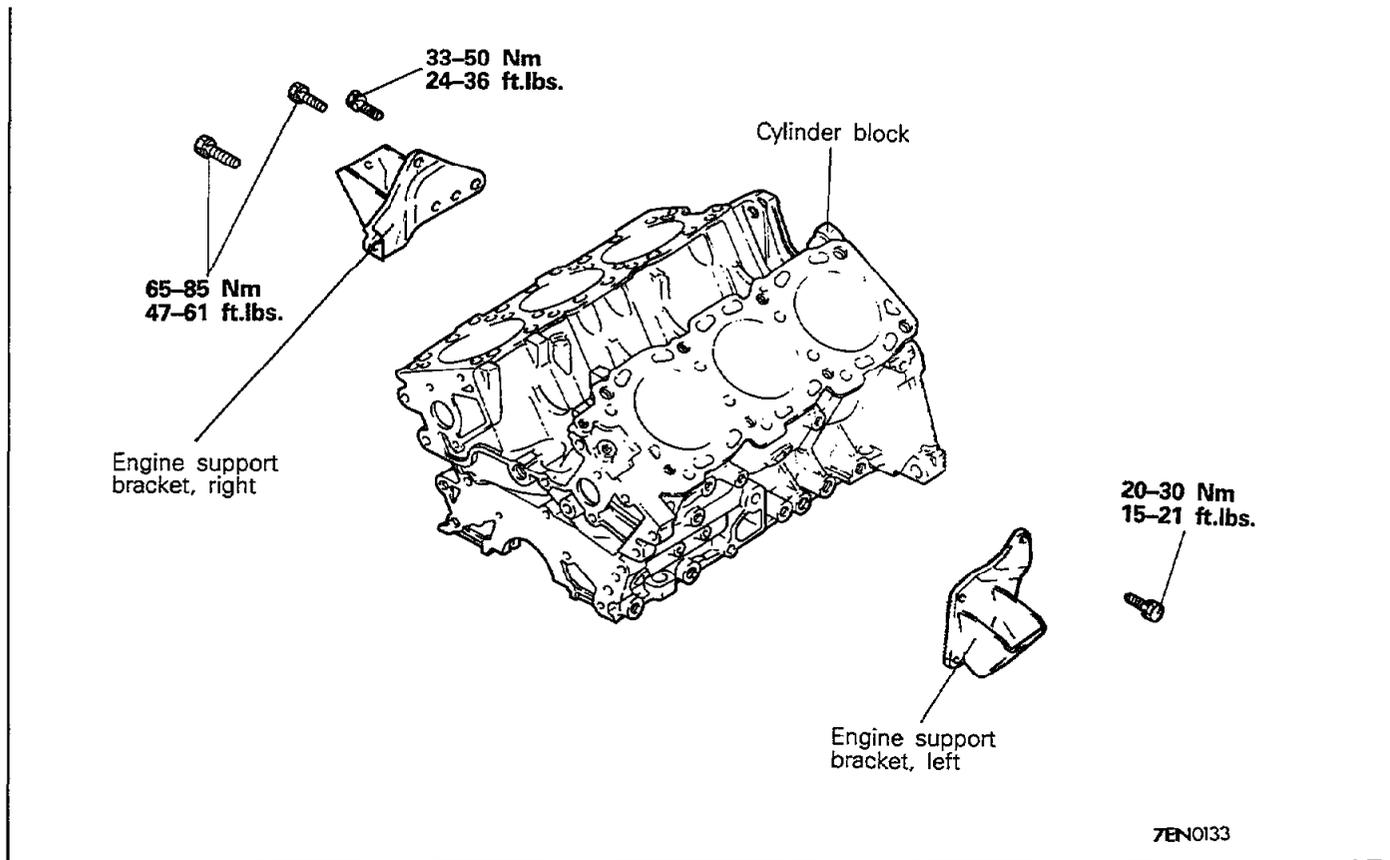
- (1) Apply specified sealant to the area shown in the figure.

**Specified sealant : 3M ART Part No. 8660
or equivalent**

- (2) Apply a small amount of engine oil to the entire circumference of the oil seal lip section, and place the oil seal on the cylinder block.

DISASSEMBLY AND REASSEMBLY (CYLINDER BLOCK)

N09VF-B



INSPECTION

N09VHAB

● CYLINDER BLOCK

- (1) Visually check for scoring, rust, and corrosion. Use a flaw detecting agent for inspection. Repair or replace damaged or flawed parts.
- (2) Using a straight edge and thickness gage, measure the flatness of the upper surface of the cylinder block. Be sure that gasket chips do not remain on the upper surface of the cylinder block during measurement.

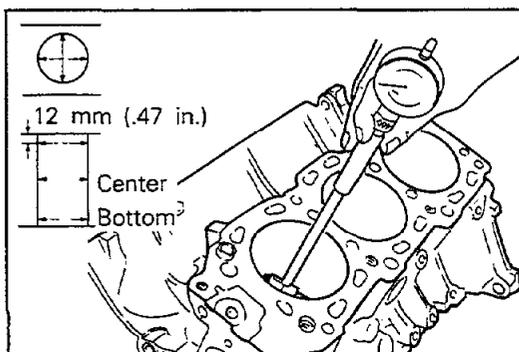
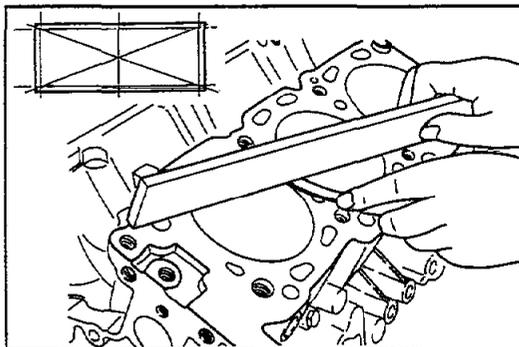
Standard value : 0.05 mm (.0020 in.)

Limit : 0.1 mm (.004 in.)

Grindable limit : 0.2 mm (.008 in.)

Caution

When the cylinder head is assembled, 0.2 mm (.008 in.) or less of grinding is permissible.



- (3) Check the cylinder wall for scoring and seizure. Repair (over size) or replace it improper.
- (4) Using a cylinder gauge, measure the inside diameter and roundness of the cylinder. If excessively worn, repair (over size) the cylinder and replace the piston and piston rings. The measurement points are shown in the figure.

BORING THE CYLINDER

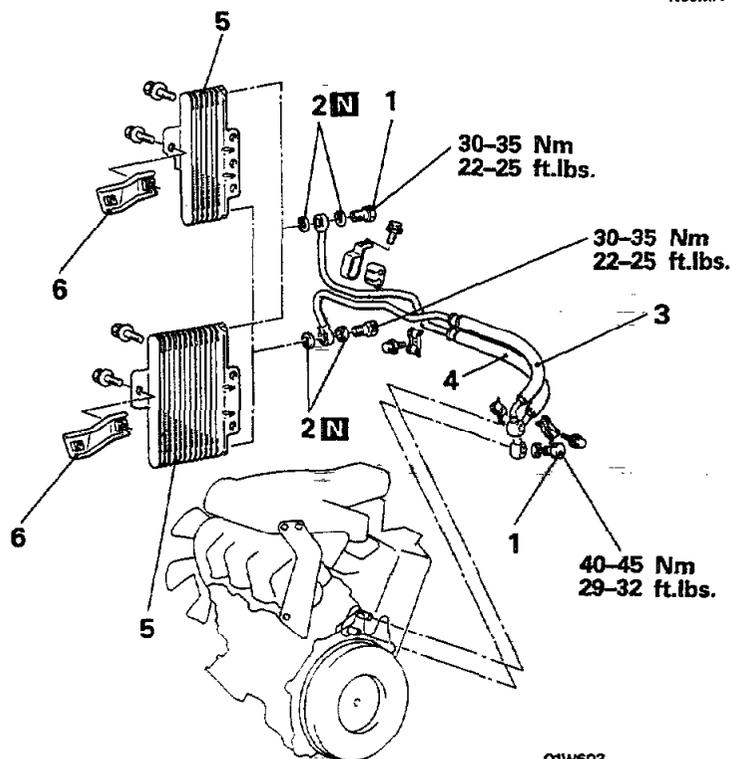
Refer to P.9-54.

ENGINE OIL COOLER REMOVAL AND INSTALLATION

N09MA-

<2-door vehicles>

<4-door vehicles>



01W603

Removal steps



1. Eye bolt
2. Gasket
3. Engine oil feed hose assembly
4. Engine oil return hose assembly
5. Engine oil cooler
6. Bracket

Pre-removal Operation

- Removal of the Under Skid Plate, Undercover, Snow Protection Undercover and Transfer Case Protector (Refer to GROUP 23 - Under Cover.)
- Removal of the Radiator Grille (Refer to GROUP 23 - Grille, Garnish.)
- Draining Engine Oil (Refer to GROUP 0 - Maintenance Service.)

Post-installation Operation

- Installation of the Radiator Grille. (Refer to GROUP 23 - Radiator grille.)
- Installation of the Under Skid Plate, Undercover, Snow Protection Undercover and Transfer Case Protector (Refer to GROUP 23 - Under Cover.)
- Supplying of Engine Oil (Refer to GROUP 0 - Maintenance Service.)

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) : Refer to "Service Points of Removal".
- (3) : Non-reusable parts

SERVICE POINT OF REMOVAL

N09MBA8

1. EYE BOLT

Caution

Be sure to hold the weld nut of the oil cooler while loosening the eye bolt.

INSPECTION

N09MCAB

- Check the engine oil cooler fins for bends, breaks or plugs.
- Check the engine oil cooler hoses for cracks, damage, clogging or deterioration.
- Check the gaskets for damage or deformation.
- Check the eye bolts for clogging or deformation.