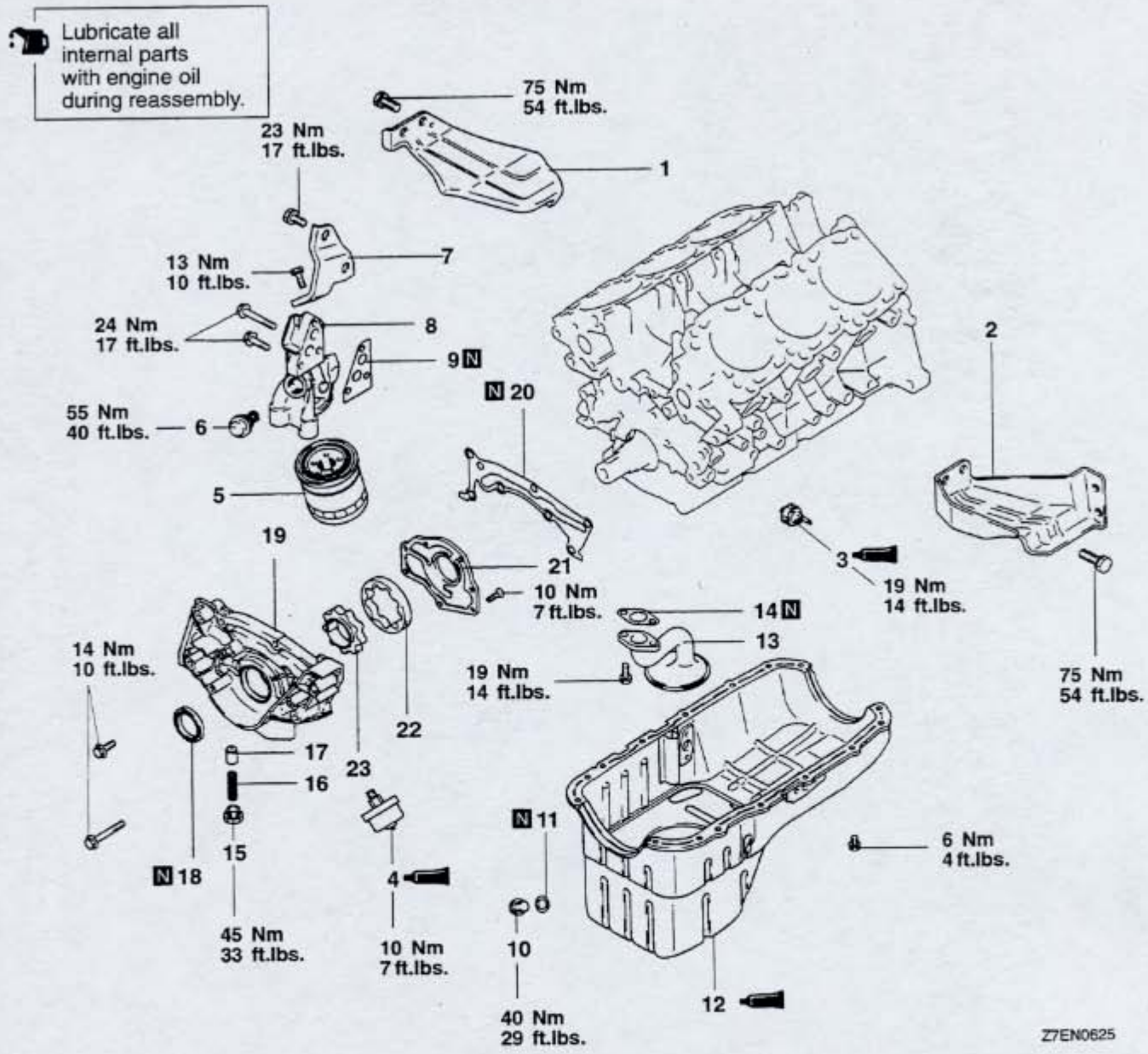
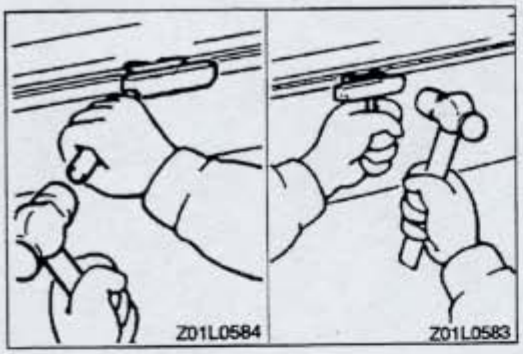
REMOVAL AND INSTALLATION <3000GT>



Removal steps

1. Transmission stay, right
2. Transmission stay, left
3. ▶J◀ Oil pressure switch
4. ▶I◀ Oil pressure gauge unit
5. ▶H◀ Oil filter
6. Oil cooler by-pass valve <Turbo>
7. Oil filter bracket stay <Turbo>
8. Oil filter bracket
9. Oil filter bracket gasket
10. Drain plug
11. ▶G◀ Drain plug gasket
12. ◀A▶ ▶D◀ Oil pan
13. Oil screen
14. Oil screen gasket
15. Plug
16. Relief spring
17. Relief plunger
18. ▶C◀ Crankshaft oil seal
19. Oil pump case
20. Oil pump gasket
21. Oil pump cover
22. ◀D▶ ▶A◀ Oil pump outer rotor
23. ◀D▶ ▶A◀ Oil pump inner rotor

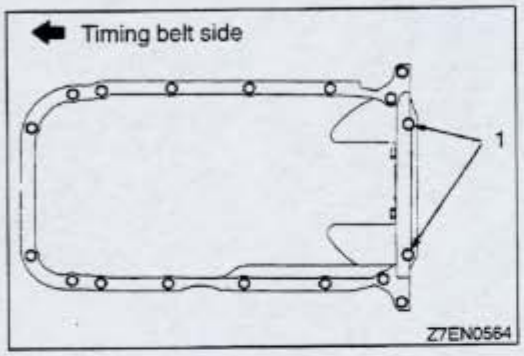
TSB Revision



REMOVAL SERVICE POINTS

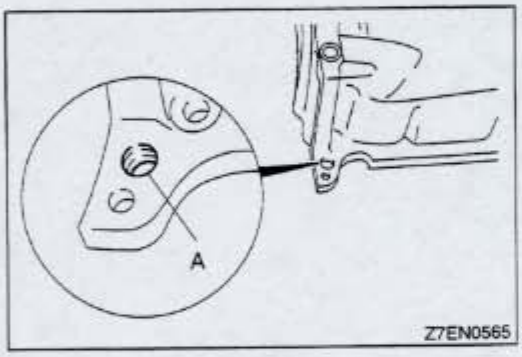
◀A▶ OIL PAN REMOVAL

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



◀B▶ UPPER OIL PAN REMOVAL

(1) Remove the bolts 1 shown in the illustration.
(2) Remove all other bolts.

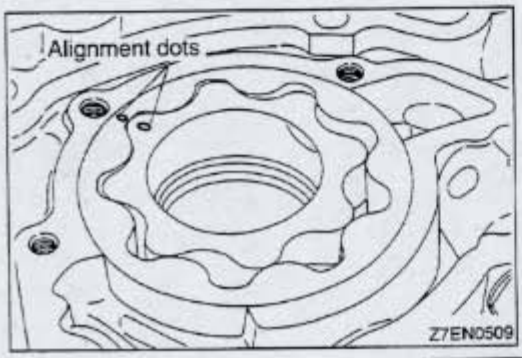


(3) Thread the bolt into the illustrated bolt hole A (at each end) to float and remove the oil pan.

Caution
Do not use a scraper or special tool to remove the oil pan.

◀C▶ LOWER OIL PAN REMOVAL

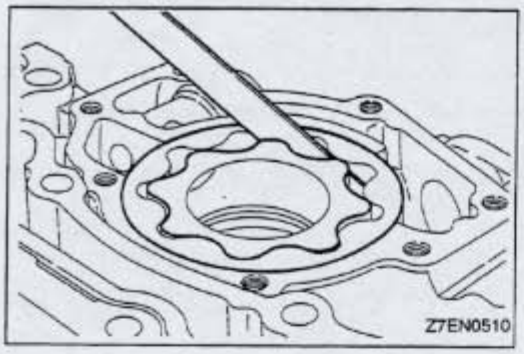
Caution
Do not use a scraper or special tool to remove the oil pan.



◀D▶ OUTER ROTOR / INNER ROTOR REMOVAL

(1) Make alignment dots on the outer and inner rotors for reference in reassembly.

TSB Revision

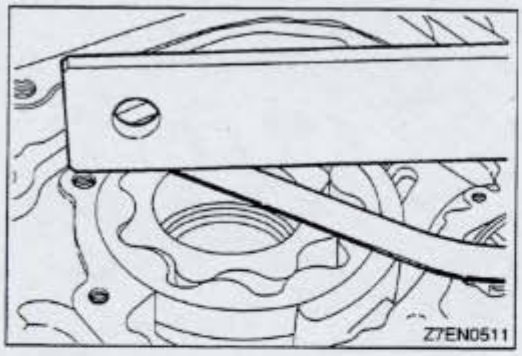


INSPECTION

OIL PUMP

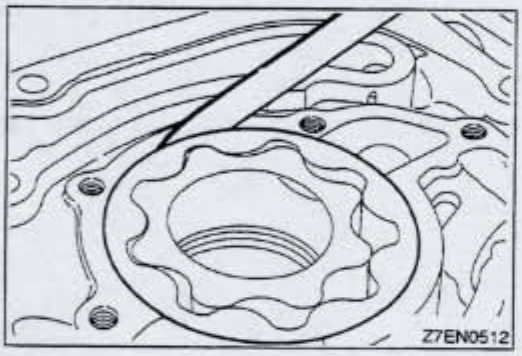
(1) Check the tip clearance.

Standard value: 0.06–0.18 mm (.0024–.0071 in.)



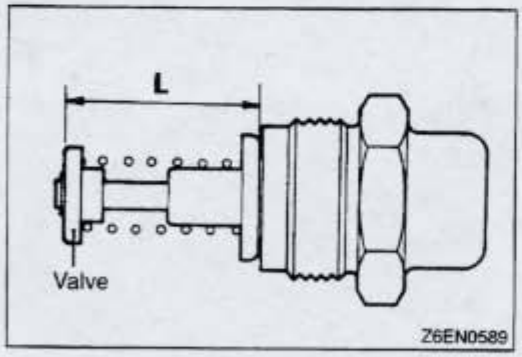
(2) Check the side clearance.

Standard value: 0.04–0.10 mm (.0016–.0039 in.)



(3) Check the body clearance.

Standard value: 0.10–0.18 mm (.0040–.0070 in.)
Limit: 0.35 mm (.0138 in.)



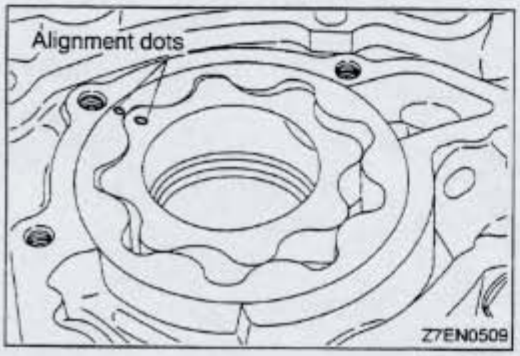
OIL COOLER BYPASS VALVE

(1) Make sure that the valve moves smoothly.
(2) Ensure that the dimension L measures the standard value under normal temperature and humidity.

Dimension L: 34.5 mm (1.358 in.)

(3) The dimension must be the standard value when measured after the valve has been dipped in 100°C (212°F) oil.

Dimension L: 40 mm (1.57 in.) or more

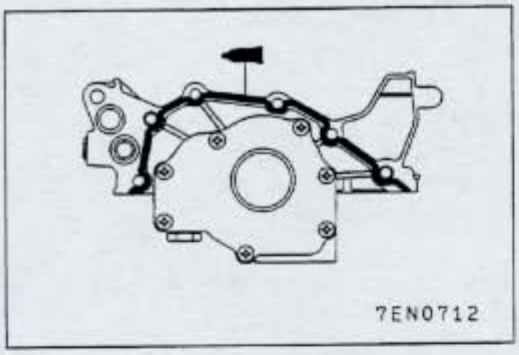


INSTALLATION SERVICE POINTS

▶A◀ INNER ROTOR / OUTER ROTOR INSTALLATION

(1) Apply engine oil to the rotors. Then, install the rotors ensuring that the alignment dots made at disassembly are properly aligned.

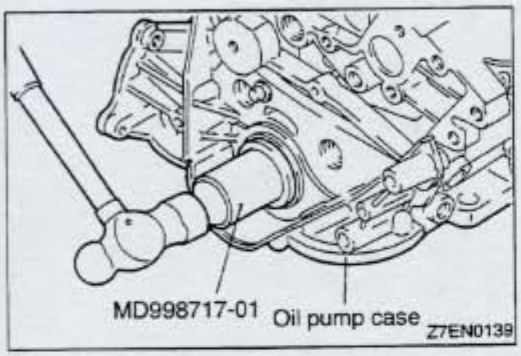
TSB Revision



▶B◀ OIL PUMP CASE INSTALLATION

(1) Remove the sealant from the cylinder block (oil pump mounting plane) and oil pump
(2) Apply a 3 mm (.118 in.) diameter bead of sealant to the oil pump case. Be sure to install the oil pan quickly while the sealant is wet (within 15 minutes).
(3) After installation, keep the sealed area away from the oil and coolant for approx. 1 hour.

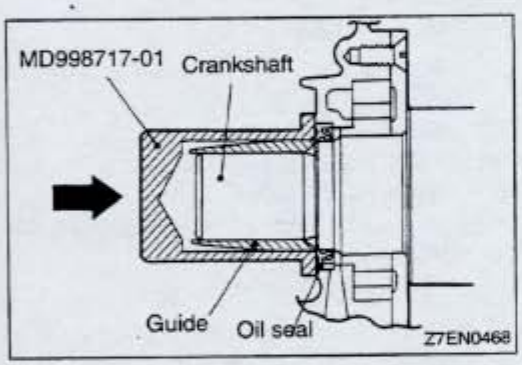
Specified sealant: MITSUBISHI GENUINE Part No. MD970389 or equivalent

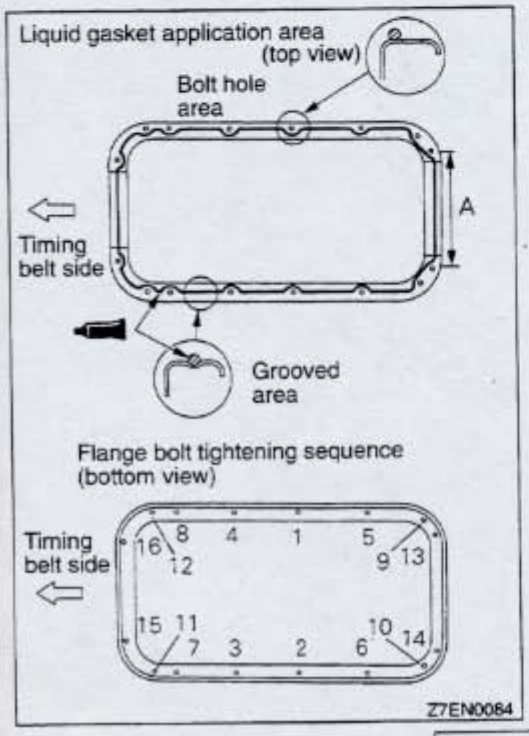


▶C◀ CRANKSHAFT FRONT OIL SEAL INSTALLATION

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

NOTE
Knock it as far as it goes.





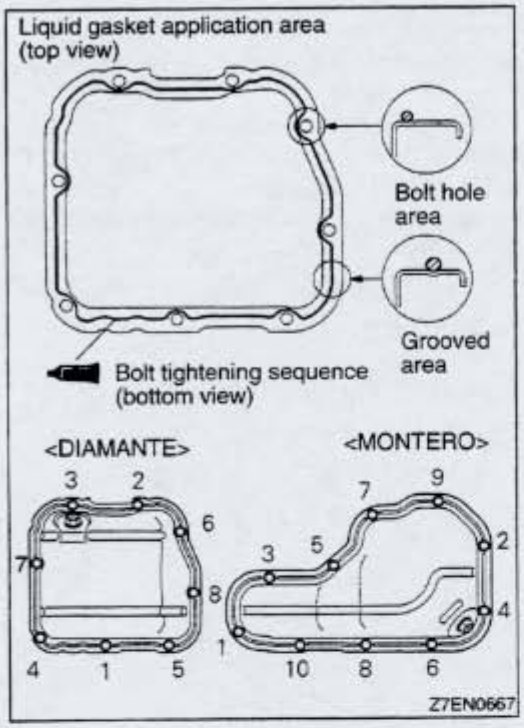
▶D◀ OIL PAN INSTALLATION

(1) Clean the gasket surfaces of the cylinder block and oil pan.
(2) Apply a 4 mm (.157 in.) diameter bead of sealant to the oil pump case. Be sure to install the oil pan quickly while the sealant is wet (within 15 minutes).
(3) After installation, keep the sealed area away from the oil and coolant for approx. 1 hour.

Caution
When installing the oil pan, be sure not to expel the sealant from the oil pan flange at portion A in the illustration.

Liquid gasket
Brand: Mitsubishi Genuine Part No. MD970389 or equivalent

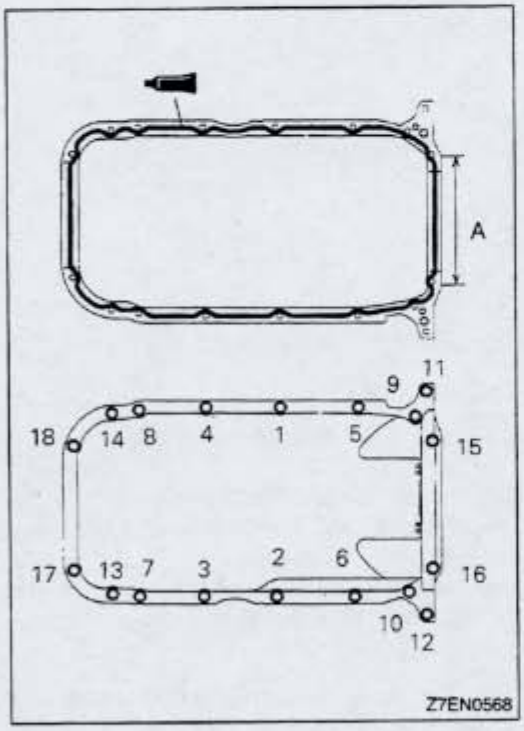
TSB Revision



▶E◀ LOWER OIL PAN INSTALLATION

(1) Clean the gasket surfaces of the upper and lower oil pans.
(2) Apply a 4 mm (.157 in.) diameter bead of sealant to the oil pump case. Be sure to install the oil pan quickly while the sealant is wet (within 15 minutes).
(3) After installation, keep the sealed area away from the oil and coolant for approx. 1 hour.

Liquid gasket
Brand: Mitsubishi Genuine Part No. MD970389 or equivalent

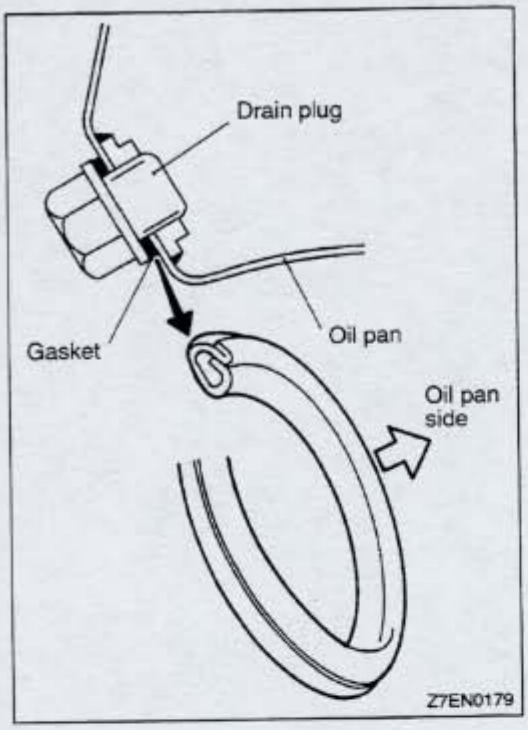


▶F◀ UPPER OIL PAN INSTALLATION

(1) Clean the gasket surfaces of the cylinder block and upper oil pan.
(2) Apply a 4 mm (.157 in.) diameter bead of sealant to the oil pump case. Be sure to install the oil pan quickly while the sealant is wet (within 15 minutes).
(3) After installation, keep the sealed area away from the oil and coolant for approx. 1 hour.

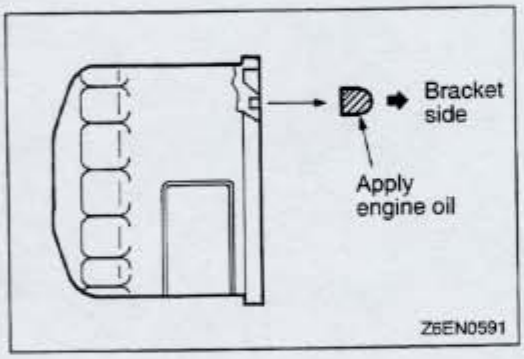
Caution
When installing the upper oil pan, be sure not to expel the sealant from the oil pan flange at portion A in the illustration.

Liquid gasket
Brand: Mitsubishi Genuine Part No. MD970389 or equivalent



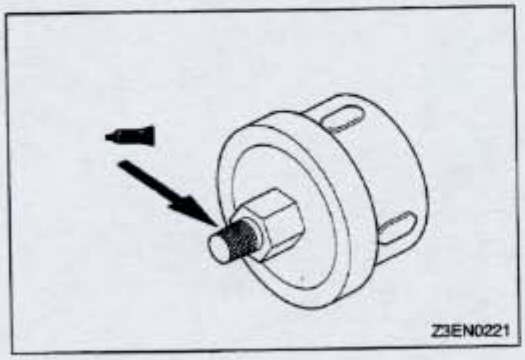
▶G◀ DRAIN PLUG GASKET INSTALLATION

(1) Install the drain plug gasket as illustrated.



▶H◀ OIL FILTER INSTALLATION

(1) Clean the installation surface of the filter bracket.
(2) Apply engine oil to the O-ring of the oil filter.
(3) Screw the oil filter on until the O-ring contacts the bracket. Then tighten 3/4 turn [14 Nm (10 ft.lbs)].

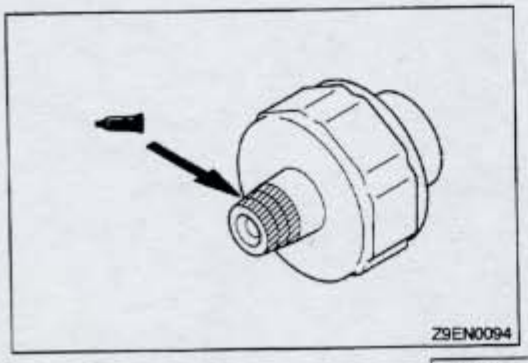


▶I◀ SEALANT APPLICATION TO OIL PRESSURE GAUGE UNIT

(1) Coat the threads of the gauge unit with sealant and install it using the special tool.

Specified sealant:
3M ATD Part No.8660 or equivalent

Caution
1. **Keep the end of threaded portion clear of sealant.**
2. **Avoid an overtightening.**



▶J◀ SEALANT APPLICATION TO OIL PRESSURE SWITCH

(1) Coat the threads of the switch with sealant and install the switch using the special tool.

Specified sealant:
3M ATD Part No.8660 or equivalent

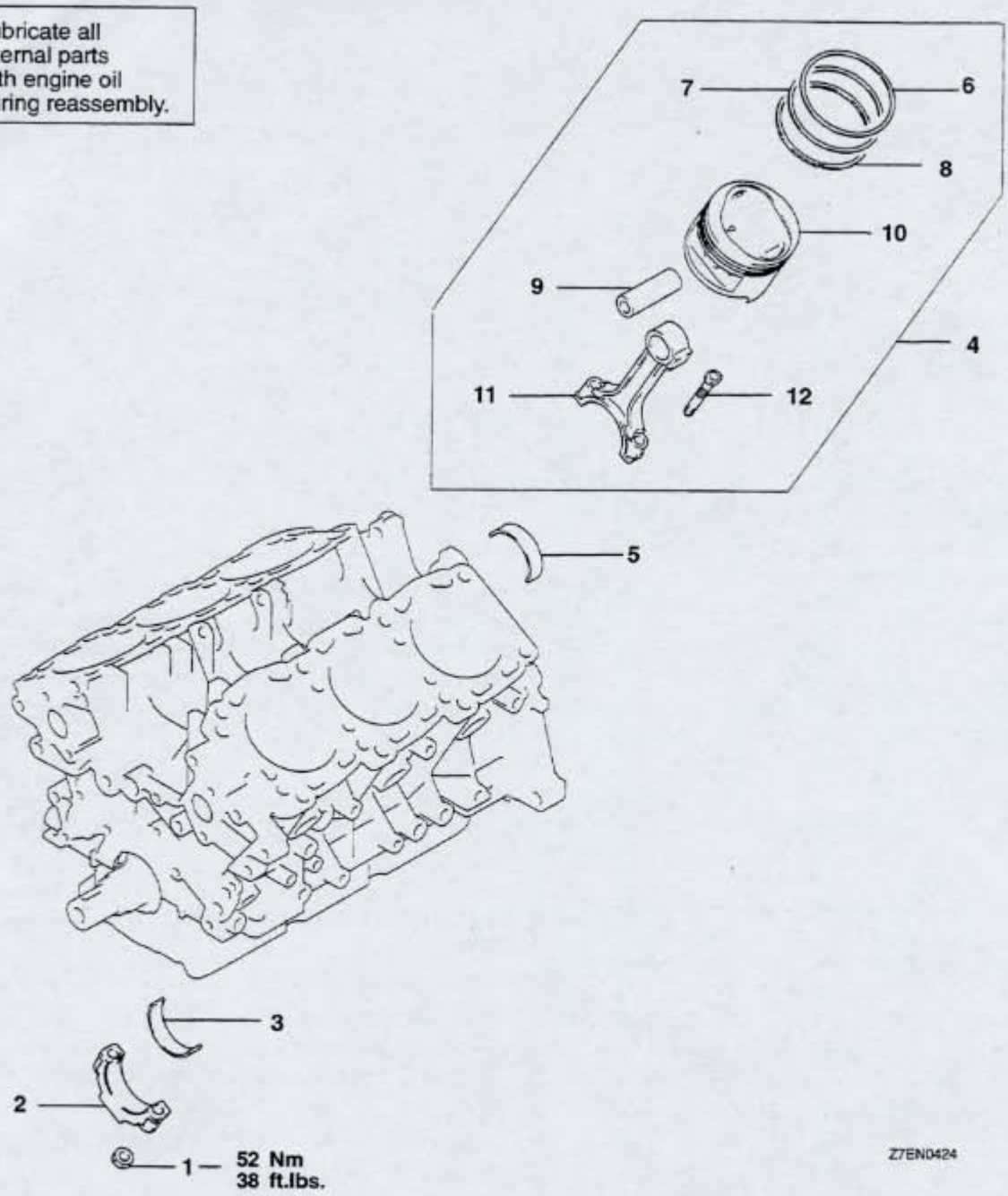
Caution
1. **Keep the end of threaded portion clear of sealant.**
2. **Avoid an overtightening.**

TSB Revision

PISTON AND CONNECTING ROD

REMOVAL AND INSTALLATION <6G72>

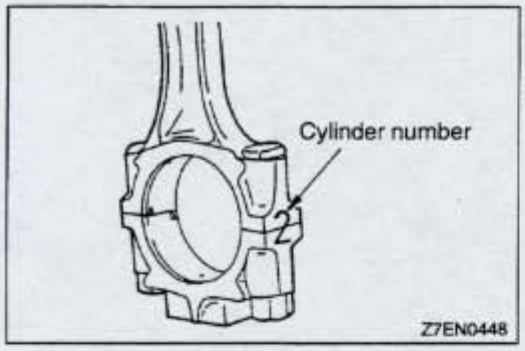
Lubricate all internal parts with engine oil during reassembly.

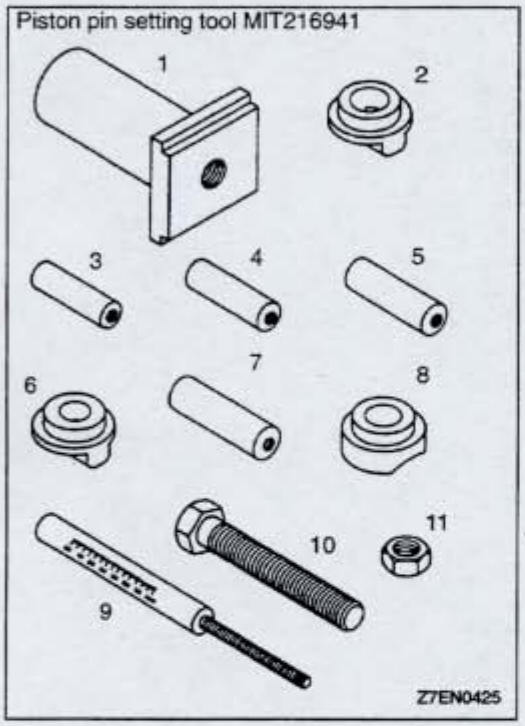


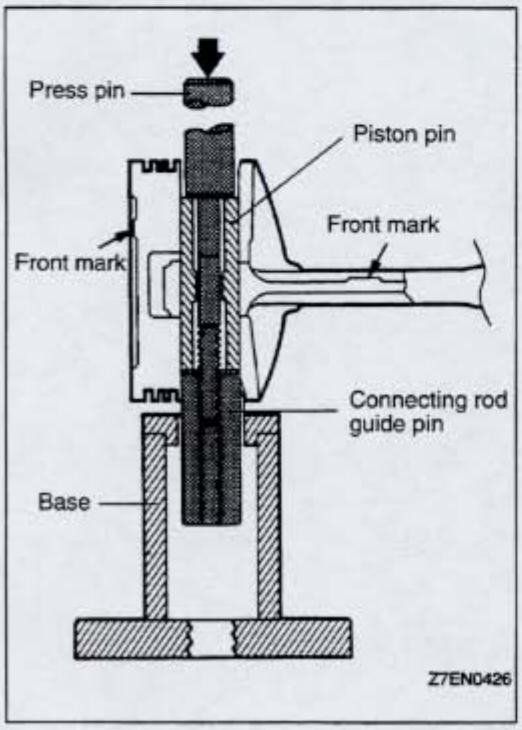
Removal steps

◀A▶ ▶G◀ 1. Nut
2. Connecting rod cap
3. Connecting rod bearing, lower
▶F◀ 4. Piston and connecting rod assembly
5. Connecting rod bearing, upper
▶D◀ 6. Piston ring No.1
▶D◀ 7. Piston ring No.2
▶C◀ 8. Oil ring
◀B▶ ▶A◀ 9. Piston pin
10. Piston
11. Connecting rod
12. Bolt

TSB Revision







REMOVAL SERVICE POINTS

◀A▶ CONNECTING ROD CAP REMOVAL

(1) Mark the cylinder number on the side of the connecting rod big end for correct reassembly.
(2) Keep the removed connecting rods, caps, and bearings in order according to the cylinder number.

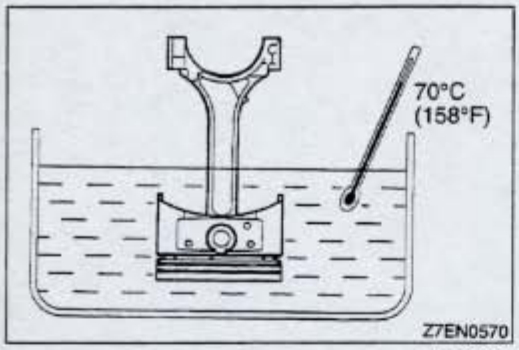
◀B▶ PISTON PIN REMOVAL

Item No.	Part No.	Description
1	MIT310134	Base
2	MIT310136	Piston Support
3	MIT310137	Connecting Rod Guide Pin
4	MIT310138	Connecting Rod Guide Pin
5	MIT310139	Connecting Rod Guide Pin
6	MIT310140	Piston Support
7	MIT310141	Connecting Rod Guide Pin
8	MIT310142	Piston Support
9	MIT48143	Press Pin
10	216943	Stop Screw
11	10396	Nut

(1) Remove the stop screw from the base.
(2) Select the correct piston support for your application. (See above) Fit the piston support onto the base. Place the base on the press support blocks.
(3) Insert the press pin through the piston pin hole. Select the correct connecting rod guide pin. (See above.) Thread the guide pin onto the threaded portion of the press pin.
(4) Position the piston assembly on the piston support in the press. With the press pin up as shown in the illustration, insert the guide pin through the hole in the piston and through the hole in the piston support.
(5) Press the piston pin out of the assembly.

IMPORTANT: To avoid piston damage,
- **The piston support must seat squarely against the piston.**
- **Verify that the piston pin will slide through the hole in the piston support.**

(6) Remove the piston pin from the piston.



◀C▶ PISTON PIN REMOVAL

(1) Remove the snap rings.
(2) Heat the piston to approximately 70°C (158°F) and pull out the piston pin.

Caution
The clearance between the piston and the piston pin is an almost tight fit at normal temperature. Therefore, be sure to heat the piston before pulling out the piston pin. In addition, note that the piston is hot after heating.

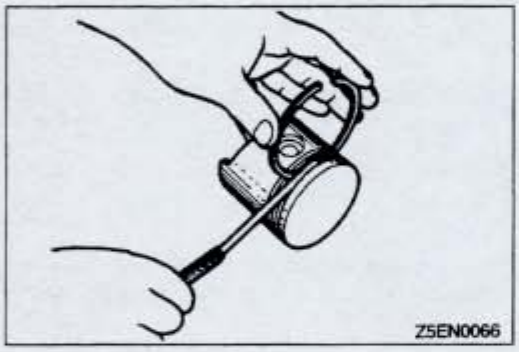
INSPECTION

PISTON

(1) Replace the piston if scratches or seizure is evident on its surfaces (especially the thrust surface). Replace the piston if it is cracked.

PISTON PIN

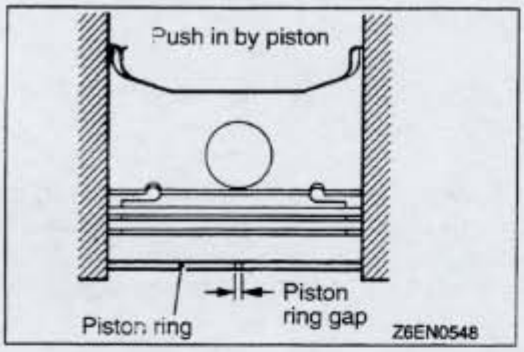
(1) Insert the piston pin into the piston pin hole with a thumb. You should feel a slight resistance. Replace the piston pin if it can be easily inserted or there is an excessive play.
(2) The piston and piston pin must be replaced as an assembly.



PISTON RING

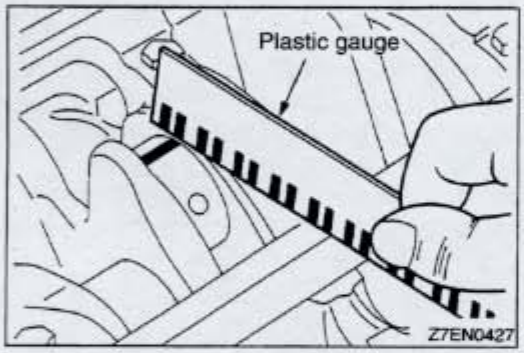
(1) Check the piston ring for damage, excessive wear, and breakage and replace if defects are evident. If the piston has been replaced with a new one, the piston rings must also be replaced with new ones.
(2) Check for clearance between the piston ring and ring groove. If the limit is exceeded, replace the ring or piston, or both.

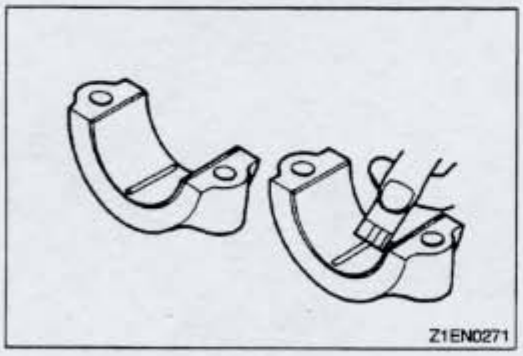
Standard value:
No. 1
0.03–0.07 mm (.0012–.0028 in.)
No. 2
0.02–0.06 mm (.0008–.0024 in.)
Limit: 0.1 mm (.004 in.)



(3) Insert the piston ring into the cylinder bore. Force the ring down with a piston, the piston crown being in contact with the ring, to correctly position it at right angles to the cylinder wall. Then, measure the end gap with a feeler gauge. If the ring gap is excessive, replace the piston ring.

Standard value:
No. 1
0.30–0.45 mm (.0118–.0177 in.)
No. 2
0.45–0.60 mm (.0177–.0236 in.)
Oil
0.20–0.60 mm (.0079–.0236 in.) <6G72>
0.10–0.35 mm (.0039–.0138 in.) <6G74>
Limit:
No. 1, No. 2 0.8 mm (.031 in.)
Oil 1.0 mm (.039 in.)



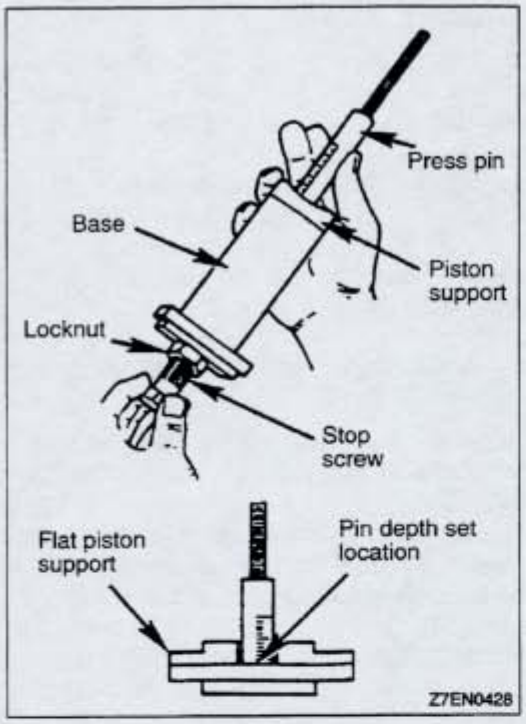


CRANKSHAFT PIN OIL CLEARANCE (PLASTIC GAUGE METHOD)

The crankshaft oil clearance can be measured easily by using a plastic gauge as follows:

(1) Remove oil and grease and any other foreign matters from the crankshaft pin and the bearing inner surface.
(2) Install the crankshaft.
(3) Cut the plastic gauge to the same length as the width of the bearing and place it on the pin in parallel with its axis.
(4) Gently place the crankshaft bearing cap over it and tighten the bolts to the specified torque.
(5) Remove the bolts and gently remove the crankshaft bearing cap.
(6) Measure the width of the smashed plastic gauge at its widest section by using a scale printed on the plastic gauge bag.

Standard value:
0.02–0.05 mm (.0008–.0020 in.) <6G72>
0.03–0.05 mm (.0012–.0020 in.) <6G74>
Limit: 0.1 mm (.004 in.)



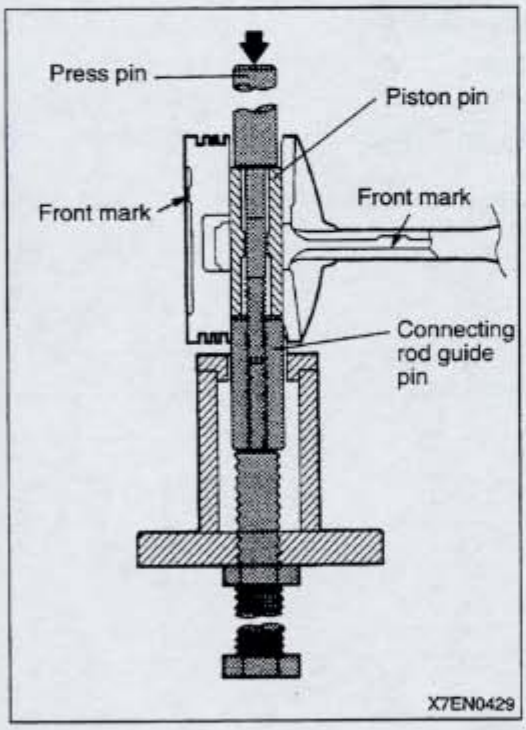
INSTALLATION SERVICE POINTS

▶A◀ PISTON PIN INSTALLATION

(1) Thread the stop screw and lock nut assembly into the base. Fit the correct piston support on the top of the base. Insert the press pin, threaded end up, into the hole in the piston support until the press pin touches the stop screw.

(2) Using the graduations on the press pin, adjust the stop screw to the depth.

Depth:
60 mm <SOHC for MONTERO and TRUCK>
62 mm <DIAMANTE, 3000GT>



(3) Place the base on the press support blocks.

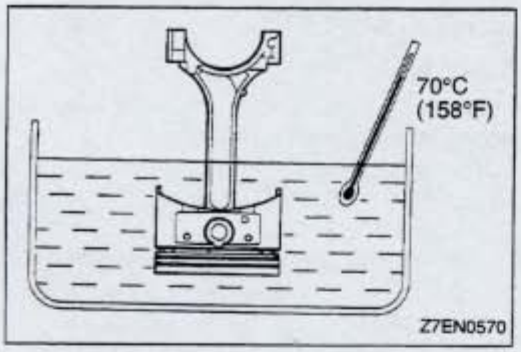
(4) Slide the piston pin over the threaded end of the press pin, and thread the correct guide pin up against it.

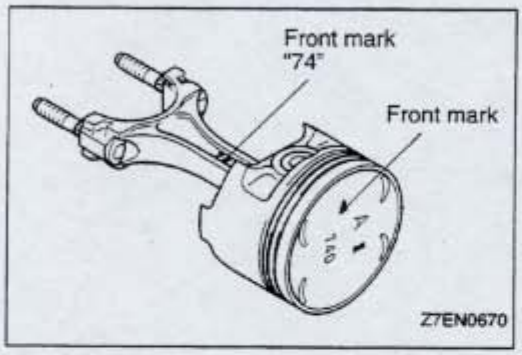
(5) Coat the piston pin with oil, and with the connecting rod held in position, slide the guide pin through the piston and connecting rod.

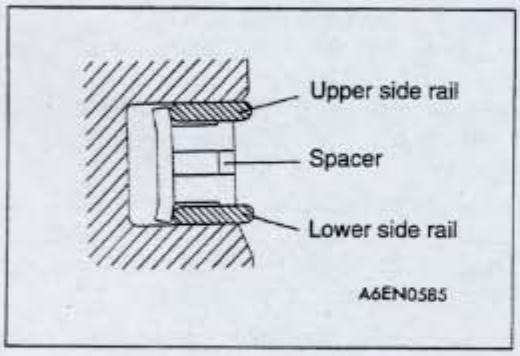
(6) Press the piston pin through the connecting rod until the guide pin contacts the stop screw.

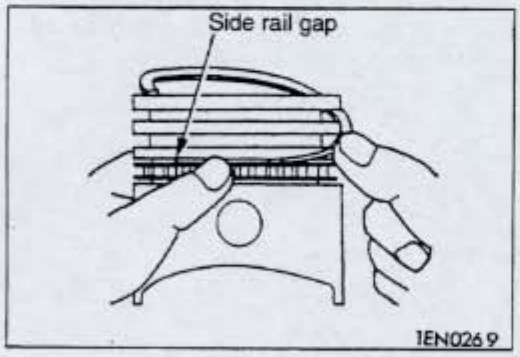
(7) Remove the piston assembly from the base. Remove the guide pin and press pin from the assembly.

IMPORTANT: Due to production tolerance variations, it is necessary to visually inspect the piston pin depth after installation to verify that the piston pin is centered. Adjust if necessary.









▶B◀ PISTON PIN INSTALLATION

(1) Heat the piston pin to approximately 70°C (158°F) and set the snap ring on one side first. Be sure to install the snap ring with the shear droop directed toward the inside.
(2) Make sure that the identification marks of the piston, piston pin and connecting rod small end are of the appropriate class.
(3) With the front mark of the connecting rod and that of the piston located on the same side, insert the piston pin.
(4) After insertion of the piston pin, set the other snap ring.

Caution
(1) Apply ample coat of engine oil to the periphery of the piston pin and the hole of the connecting rod small end.
(2) The clearance between the piston and the piston pin is an almost tight fit at normal temperature. Therefore, be sure to heat the piston before inserting the piston pin.
(3) In addition, note that the piston is hot after heating.

▶C◀ OIL RING INSTALLATION

(1) Fit the oil ring spacer into the piston ring groove.

NOTE
1. The side rails and spacer may be installed in either direction.
2. New spacers and side rails are colored for identification of their sizes.

Up to 1993 models

Size	Identification
Standard	None
0.25 mm oversize	White
0.50 mm oversize	Blue
0.75 mm oversize	Black
1.00 mm oversize	Yellow

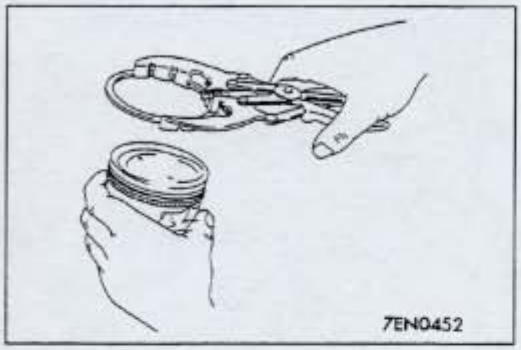
From 1994 models

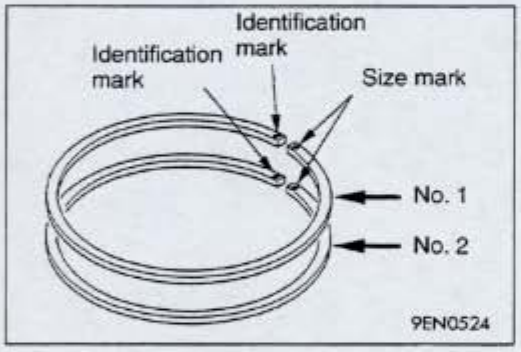
Size	Identification
Standard	None
0.50 mm oversize	Blue
1.00 mm oversize	Yellow

(2) Install the upper side rail.
To install the side rail, first fit one end of the rail into the piston groove, then press the remaining portion into position by finger.
Use of ring expander to expand the side rail end gap can break the side rail, unlike other piston rings.

Caution
Do not use piston ring expander when installing side rail.

(3) Install the lower side rail in the same procedure as described in step (2).
(4) Make sure that the side rails move smoothly in either direction.





▶D◀ PISTON RING NO. 2 / PISTON RING NO. 1 INSTALLATION

(1) Using piston ring expander, fit No. 2 and then No. 1 piston ring into position.

NOTE
(1) The ring end is provided with the identification mark.

			Identification mark
No. 1 ring	SOHC	SOHC–12 Valve for MONTERO, TRUCK	1R
		DIAMANTE, SOHC–24 Valve for MONTERO	T
	DOHC	DIAMANTE, 3000GT	T
		MONTERO	1T
No. 2 ring	SOHC	SOHC–12 Valve for MONTERO, TRUCK	2R
		DIAMANTE, SOHC–24 Valve for MONTERO	T2
	DOHC	DIAMANTE, 3000GT	T2
		MONTERO	2T

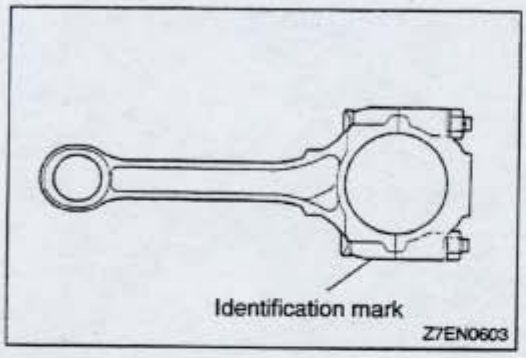
(2) Install piston rings with identification mark facing up, to the piston crown side.
(3) Piston rings have one of the following size marks stamped according to their size.

Up to 1993 models

Size	Size mark
Standard	None
0.25 mm oversize	25
0.50 mm oversize	50
0.75 mm oversize	75
1.00 mm oversize	100

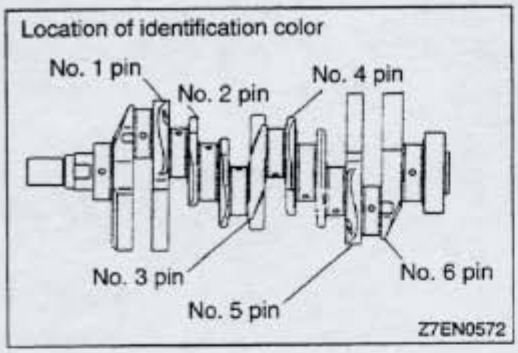
From 1994 models

Size	Size mark
Standard	None
0.50 mm oversize	50
1.00 mm oversize	100



▶E◀ CONNECTING ROD BEARING INSTALLATION

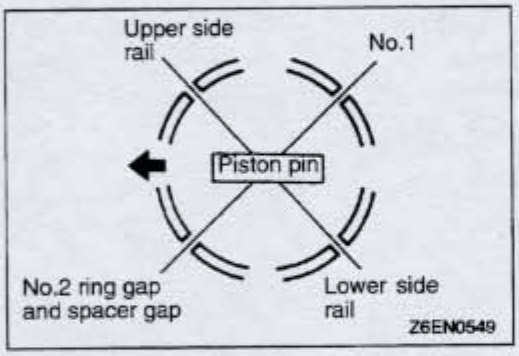
(1) When replacing the bearing, select the proper bearing according to the crankshaft identification color and the connecting rod identification mark and install it.



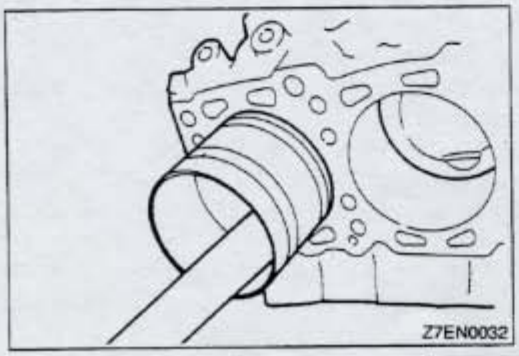
Crankshaft			Connecting rod		Connecting rod bearing	
Identification mark (production part)	Identification color (service part)	Pin outer diameter mm (in.)	Identification mark	Big end inner diameter mm (in.)	Identification color	Thickness mm (in.)
None	Yellow	54.994 – 55.000 (2.1651 – 2.1654)	0	58.000 – 58.006 (2.2835 – 2.2837)	Pink	1.460 – 1.486 (.0575 – .0585)
			1	58.006 – 58.012 (2.2837 – 2.2839)	Red	1.486 – 1.489 (.0585 – .0586)
			2	58.012 – 58.018 (2.2839 – 2.2842)	Green	1.489 – 1.492 (.0586 – .0587)
None	None	54.988 – 54.994 (2.1649 – 2.1651)	0	58.000 – 58.006 (2.2835 – 2.2837)	Red	1.486 – 1.489 (.0585 – .0586)
			1	58.006 – 58.012 (2.2837 – 2.2839)	Green	1.489 – 1.492 (.0586 – .0587)
			2	58.012 – 58.018 (2.2839 – 2.2842)	Black	1.492 – 1.495 (.0587 – .0589)
None	White	54.982 – 54.988 (2.1646 – 2.1649)	0	58.000 – 58.006 (2.2835 – 2.2837)	Green	1.489 – 1.492 (.0586 – .0587)
			1	58.006 – 58.012 (2.2837 – 2.2839)	Black	1.492 – 1.495 (.0587 – .0589)
			2	58.012 – 58.018 (2.2839 – 2.2842)	Brown	1.495 – 1.498 (.0589 – .0590)

▶F◀ PISTON AND CONNECTING ROD INSTALLATION

(1) Liberally coat the circumference of the piston, piston ring, and oil ring with engine oil.
(2) Arrange the piston ring and oil ring gaps (side rail and spacer) as shown in the illustration.
(3) Rotate the crankshaft so that the crank pin is on the center of the cylinder bore.



Item		Identification mark
SOHC	MONTERO, TRUCK	72
	DIAMANTE	72H
DOHC	DIAMANTE, 3000GT Non-turbo	72N
	3000GT – Turbo	72T
	MONTERO	72D



(4) Use suitable thread protectors on the connecting rod bolts before inserting the piston and connecting rod assembly into the cylinder block.
Care must be taken not to nick the crank pin.
(5) Using a suitable piston ring compressor tool, install the piston and connecting rod assembly into the cylinder block.

Caution
Install the piston with the front mark (arrow mark) on the top of the piston directed towards the engine front (timing belt side).

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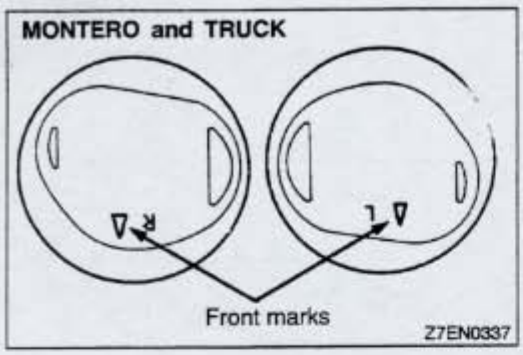
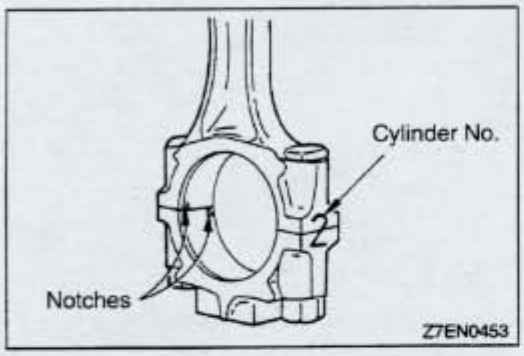
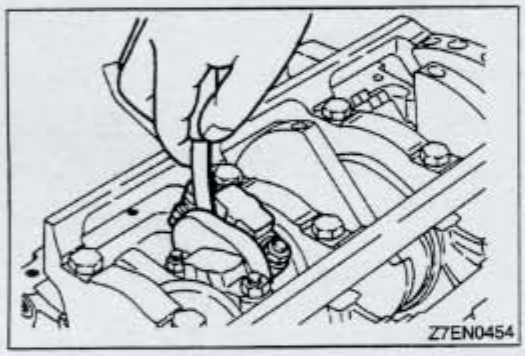


NOTE
For MONTERO and TRUCK, two types of pistons, one for cylinders 1, 3 and 5 and the other for cylinders 2, 4 and 6, are used.
Piston with R: For cylinders 1, 3 and 5
Piston with L: For cylinders 2, 4 and 6



▶G◀CONNECTING ROD CAP INSTALLATION

(1) Mate the correct bearing cap with the correct connecting rod by checking with the alignment marks marked during disassembly. If a new connecting rod is used which has no alignment mark, position the notches for locking the bearing on the same side.



(2) Check if the thrust clearance in the connecting rod big end is correct.

Standard value: 0.10–0.25 mm (.0039–.0098 in.)
Limit: 0.4 mm (.016 in.)

▶H◀NUT INSTALLATION

NOTE
Installation of the connecting rod nut should be performed with the cylinder head or the spark plug removed

(1) Since the connecting rod bolts and nuts are torqued using the plastic area tightening method, the bolts should be examined BEFORE reuse. If the bolt threads are "necked down", the bolt should be replaced. Necking can be checked by running a nut with fingers to the full length of the bolt threads. If the nut does not run down smoothly, the bolt should be replaced.
(2) Before installation of each nut, apply engine oil to the threaded portion and bearing surface of the nut
(3) Loosely tighten each nut to the bolt.
(4) Then tighten the nuts alternately to a torque of 34 Nm (25 ft.lbs.) to install the cap properly.
(5) Make a paint mark on the head of each nut.
(6) Make a paint mark on the bolt end at the position 90° to 100° from the paint mark made on the nut in the direction of tightening the nut.
(7) Give a 90° to 100° turn to the nut and make sure that the paint mark on the nut and that on the bolt are in alignment.

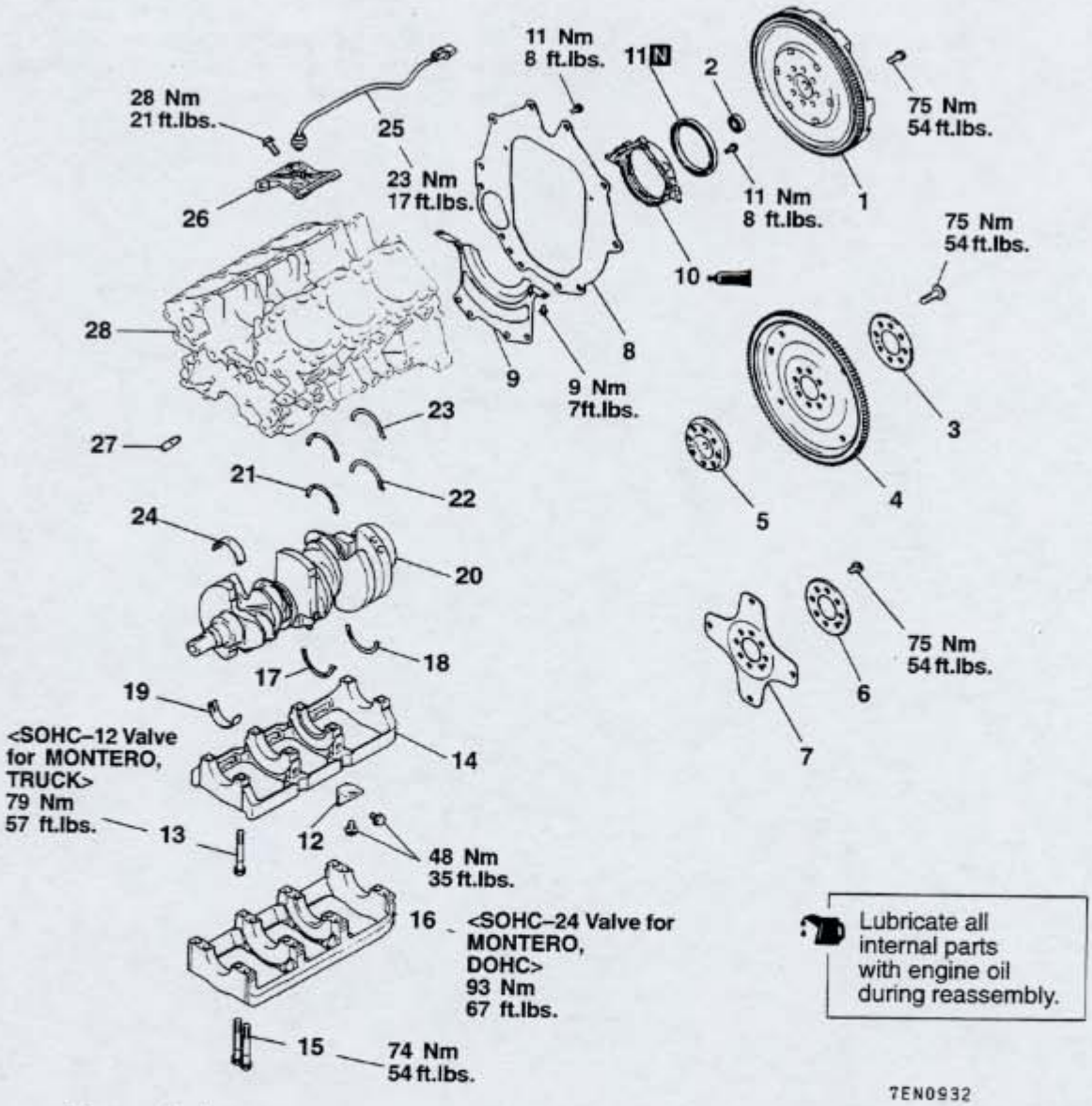
Caution

(1) If the nut is turned less than 90°, proper fastening performance may not be expected. When tightening the nut, therefore, be careful to give a sufficient turn to it.

(2) If the nut is overtightened (exceeding 100°), loosen the nut completely and then retighten it by repeating the tightening procedure from step (1).

CRANKSHAFT, FLYWHEEL AND DRIVE PLATE

REMOVAL AND INSTALLATION



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Removal steps

1. Flywheel <For M/T>
2. Ball bearing <For M/T>
3. Adaptor plate <For 4WD A/T>
4. Drive plate <For 4WD A/T>
5. Crankshaft adaptor <For 4WD A/T>
6. Adaptor plate <For FWD A/T>
7. Drive plate <For FWD A/T>
8. Rear plate
9. Bell housing cover <1994 model except DOHC for DIAMANTE, DOHC for MONTERO, 24 Valve SOHC ENGINE>
- ▶E◀ 10. Oil seal case
- ▶E◀ 11. Crankshaft rear oil seal
- ▶D◀ 12. Bearing cap stay <Up to 1992 model (Turbo)>
- ▶C◀ 13. Bearing cap bolt
- ▶C◀ 14. Bearing cap
- ▶C◀ 14. Bearing cap
- ▶C◀ 15. Bearing cap bolt <From 1993 model (Turbo) DOHC for MONTERO>
- ▶C◀ 16. Bearing cap <From 1993 model (Turbo) DOHC for MONTERO>
- ▶B◀ 17. Thrust bearing A <6G72>
- ▶B◀ 18. Thrust bearing B <6G72>
- ▶B◀ 19. Crankshaft bearing, lower
20. Crankshaft
- ▶B◀ 21. Thrust bearing B <6G72>
- ▶B◀ 22. Thrust bearing A <6G72>
- ▶B◀ 23. Thrust bearing <6G74>
- ▶B◀ 24. Crankshaft bearing, upper
25. Knock sensor <Except for MONTERO, TRUCK>
- ▶A◀ 26. Knock sensor bracket <Except for MONTERO, TRUCK>
28. Oil jet <Turbo>
27. Cylinder block

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INSPECTION

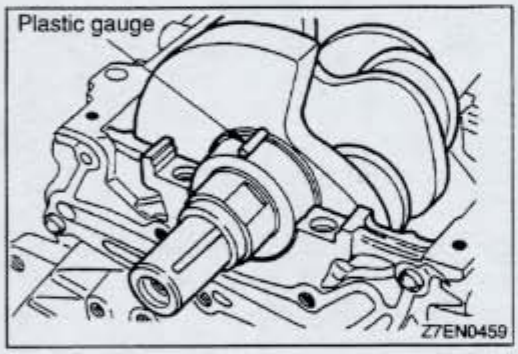
CRANKSHAFT

If the oil clearance exceeds the limit, replace the bearing, and crankshaft if necessary.

(1) Measure the outside diameter of the journals and the inside diameter of the crankshaft bearings. If the difference between them (oil clearance) exceeds the limit, replace the crankshaft bearing and, if necessary, crankshaft.

Standard value: 0.02–0.04 mm (.0008–.0020 in.)
Limit: 0.1 mm (.004 in.)

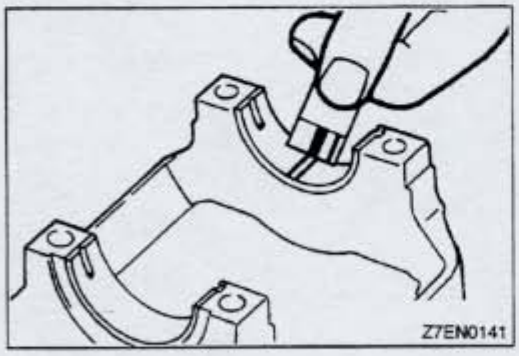
Caution
Do not attempt an undersize machining of the crankshaft with special surface treatment. This crankshaft can be identified by its dull gray appearance.



CRANKSHAFT JOURNAL OIL CLEARANCE <PLASTIC GAUGE METHOD>

The crankshaft oil clearance can be measured easily by using a plastic gauge, as follows:

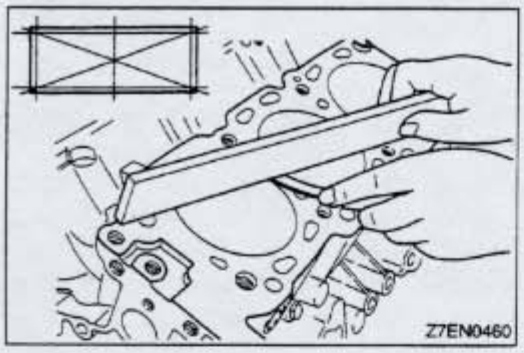
(1) Remove oil and grease and any other foreign matters from the crankshaft journal and bearing inner surface.
(2) Install the crankshaft.
(3) Cut the plastic gauge to the same length as the width of the bearing and place it on the journal in parallel with its axis.



(4) Gently place the crankshaft bearing cap over it and tighten the bolts to the specified torque.
(5) Remove the bolts and gently remove the crankshaft bearing cap.
(6) Measure the width of the smashed plastic gauge at its widest section by using a scale printed on the plastic gauge bag.

CRANKSHAFT REAR OIL SEAL

(1) Check the oil seal lip for wear and damage.
(2) Check rubber for deterioration or hardening.
(3) Check the oil seal case for cracks and damage.



CYLINDER BLOCK

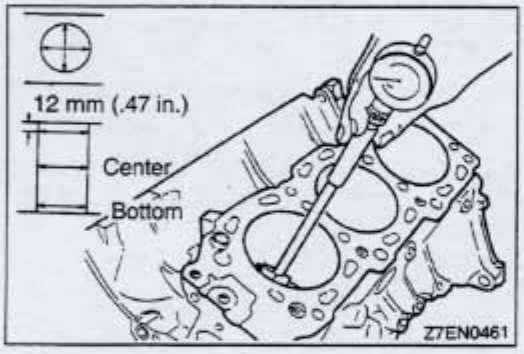
(1) Visually check for scratches, rust, and corrosion. Use also a flaw detecting agent for the check. If defects are evident, correct, or replace.

(2) Using a straightedge and feeler gauge, check the block top surface for warpage. Make sure that the surface is free from gasket chips and other foreign matter.

Standard value: 0.05 mm (.002 in.)
Limit: 0.1 mm (.004 in.)

(3) If the distortion is excessive, correct within the allowable limit or replace.

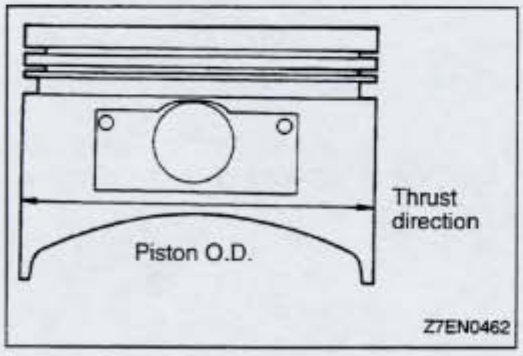
Grinding limit: 0.2 mm (.008 in.)
***Includes/combined with cylinder head grinding.**
Cylinder block height (when new):
210.4–210.6 mm (8.283–8.291 in.) <6G72>
227.9–228.1 mm (8.972–8.980 in.) <6G74>



(4) Check the cylinder walls for scratches and seizure. If defects are evident, correct (rebore to an oversize) or replace.

(5) Using a cylinder gauge, measure the cylinder bore and cylindricity. If worn badly, correct by boring the cylinders to an oversize and replace pistons and piston rings. Measure at the points shown in the illustration.

Standard value:
Cylinder I.D.: 91.1 mm (3.59 in.) <6G72>
93.0 mm (3.66 in.) <6G74>
Cylindricity: 0.01 (.0004 in.)



BORING CYLINDER

(1) Oversize pistons to be used should be determined on the basis of the largest bore cylinder.

Piston size identification

Up to 1993 models

Size	Identification mark
0.25 mm O.S.	0.25
0.50 mm O.S.	0.50
0.75 mm O.S.	0.75
1.00 mm O.S.	1.00

From 1994 models

Size	Identification mark
0.50 mm O.S.	0.50
1.00 mm O.S.	1.00

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NOTE
Size mark is stamped on the piston top.

(2) Measure the outside diameter of the piston to be used. Measure it in the thrust direction as shown.
(3) Based on the measured piston O.D., calculate the boring finish dimension.

Boring finish dimension = Piston O.D. + (clearance between piston O.D. and cylinder) – 0.02 mm (.0008 in.) (honing margin)

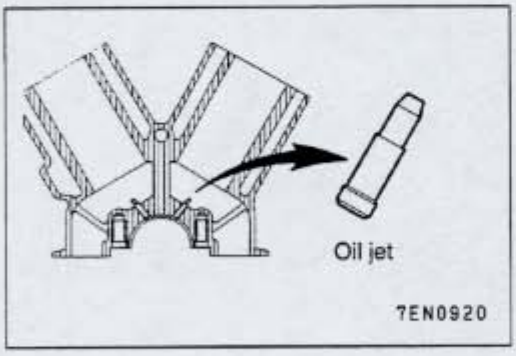
(4) Bore all cylinders to the calculated boring finish dimension.

Caution
To prevent distortion that may result from temperature rise during honing, bore cylinders in the order of No.2, No.4, No.6, No.1, No.3 and No.5.

(5) Hone to the final finish dimension (piston O.D. + clearance between piston O.D. and cylinder).
(6) Check the clearance between the piston and cylinder.

Clearance between piston and cylinder:
0.02–0.04 mm (.0008–.0016 in.) <6G72>
0.03–0.05 mm (.0012–.0020 in.) <6G74>

NOTE
When boring cylinders, finish all of six cylinders to the same oversize. Do not bore only one cylinder to an oversize.

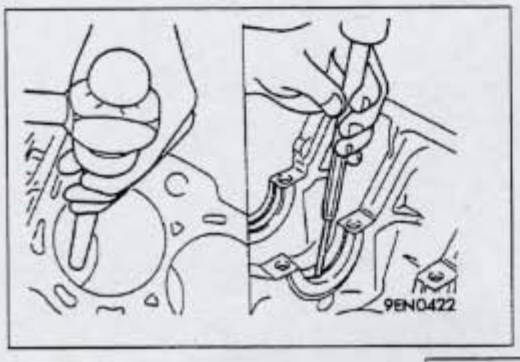


OIL JET REPLACEMENT PROCEDURE

(1) Drive out the oil jets using a metal rod of a suitable length.

Caution
(1) Use special care not to damage the cylinder wall.
(2) Never reuse removed oil jets.

(2) Using a pin punch having a diameter of 4 to 5 mm, drive in new oil jets from the crankshaft bearing section until they bottom.



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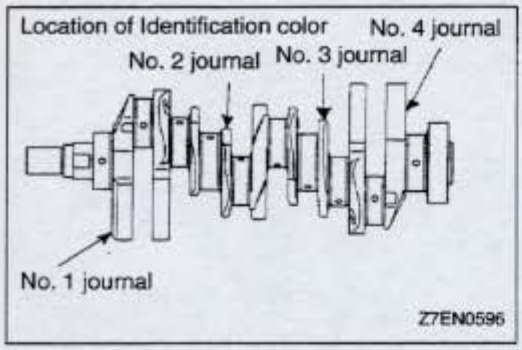
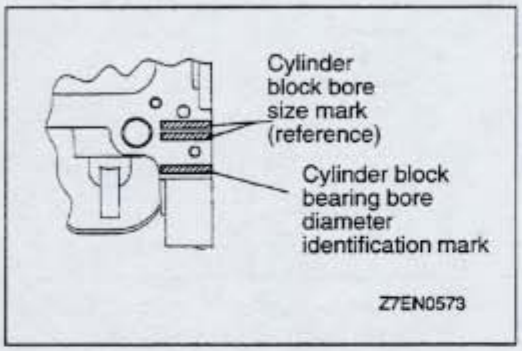
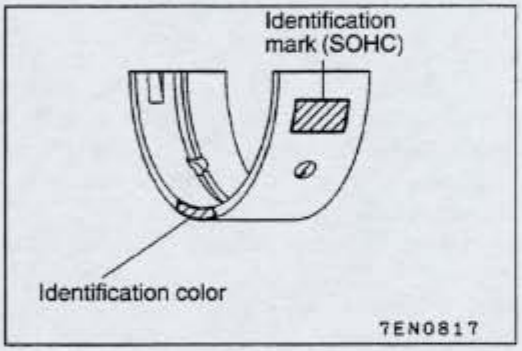
INSTALLATION SERVICE POINTS

▶A◀ KNOCK SENSOR BRACKET INSTALLATION

(1) Check that the bracket is in intimate contact with the cylinder block boss and tighten to specified torque in the order shown.







▶B◀ CRANKSHAFT BEARING INSTALLATION

When the bearing needs replacing, select and install a proper bearing by the following procedure.

(1) Measure the crankshaft journal diameter and confirm its classification from the following table. In the case of a bearing supplied as a service part, its identification color is painted at the position shown in the illustration.

(2) The cylinder block bearing bore diameter identification marks are stamped at the position shown in the illustration from the front of the engine, beginning at No 1.

<SOHC>

Crankshaft journal				Cylinder block bearing bore diameter	Crankshaft bearing
Classification	Identification mark (production part)	Identification color (service part)	Outer diameter mm (in.)	Identification mark	Identification color or Identification mark (service part)
1	None	Yellow	59.994–60.000 (2.3620–2.3622)	I	Pink, 1
				II	Red, 2
				III	Green, 3
2	None	None	59.988–59.994 (2.3617–2.3620)	I	Red, 2
				II	Green, 3
				III	Black, 4
3	None	White	59.982–59.988 (2.3614–2.3617)	I	Green, 3
				II	Black, 4
				III	Brown, 5

<6G72 DOHC>

Crankshaft journal				Cylinder block bearing bore diameter	Crankshaft bearing
Classification	Identification mark (production part)	Identification color (service part)	Outer diameter mm (in.)	Identification mark	Identification color (service part)
1	None	Yellow	59.990–59.996 (2.3618–2.3620)	I	Pink
				II	Red
				III	Green
2	None	None	59.984–59.990 (2.3616–2.3618)	I	Red
				II	Green
				III	Black
3	None	White	59.978–59.984 (2.3613–2.3616)	I	Green
				II	Black
				III	Brown

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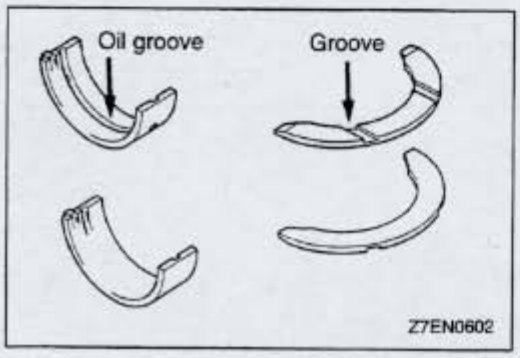
<6G74 DOHC>

Crankshaft journal				Cylinder block bearing bore diameter	Crankshaft bearing
Classification	Identification mark (production part)	Identification color (service part)	Outer diameter mm (in.)	Identification mark	Identification color (service part)
1	None	Yellow	63.994–64.000 (2.5194–2.5197)	I	Pink
				II	Red
				III	Green
2	None	None	63.988–63.994 (2.5192–2.5194)	I	Red
				II	Green
				III	Black
3	None	White	63.982–63.988 (2.5190–2.5192)	I	Green
				II	Black
				III	Brown

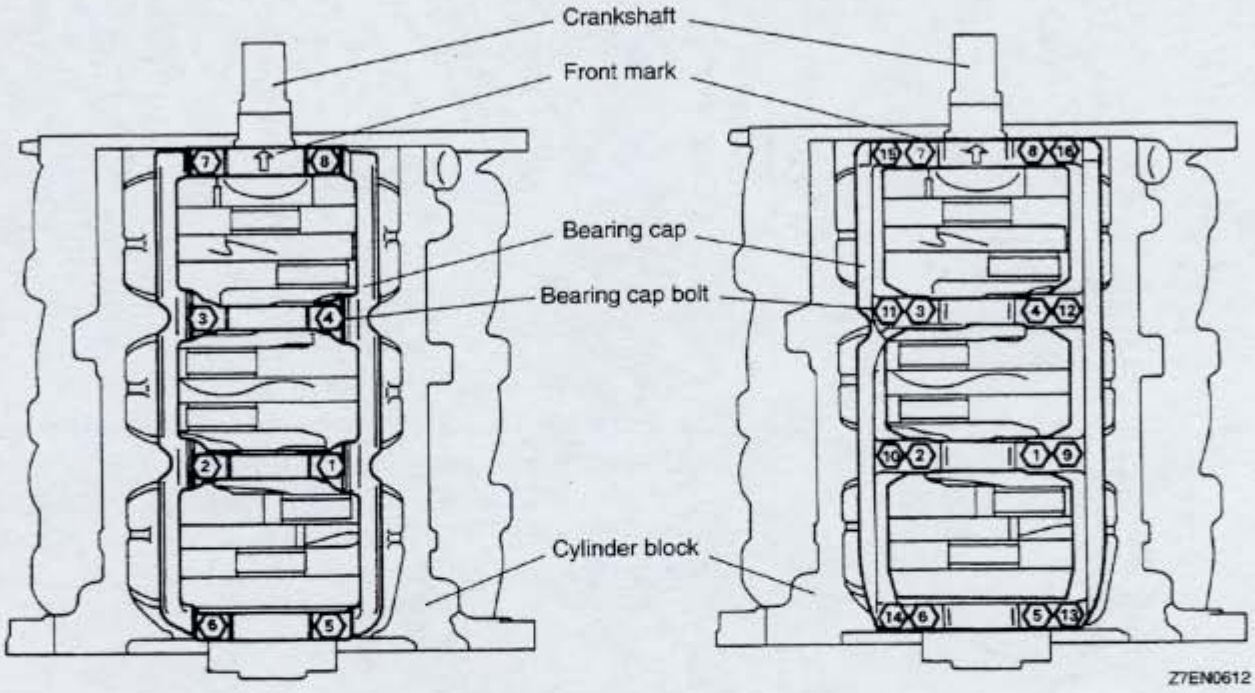
(3) Select a proper bearing from the above table on the basis of the identification data confirmed under Items (1) and (2).
[Example]
1) If the measured value of a crankshaft journal outer diameter is 59.996 mm, the journal is classified as "1" in the table. (In case the crankshaft is also replaced by a spare part, check the identification color painted on the new crankshaft. If it is yellow, for example, the journal is classified as "1".
2) Next, check the cylinder block bearing hole identification mark stamped on the cylinder block. If it is "I" , read the "Identification color for the spare bearing" column to find the identification color of the bearing to be used. In this case, it is "pink".

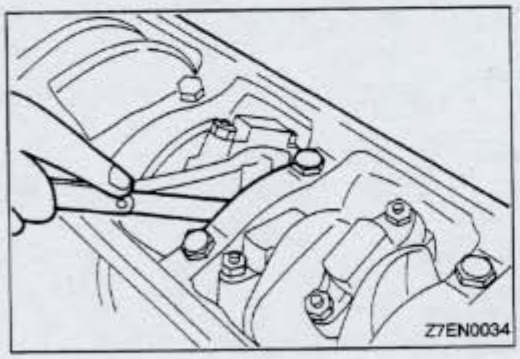


(4) Install the bearing halves with oil groove in the cylinder block side.
(5) Install the bearing halves without oil groove on the bearing cap side.
(6) Install the thrust bearings on both sides of the No.3 bearing with the grooves facing outward.

▶C◀ BEARING CAP / BEARING BOLT INSTALLATION

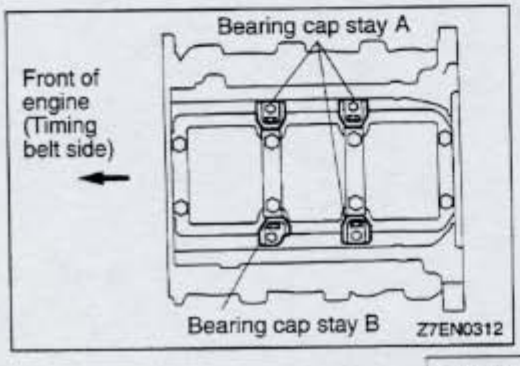
(1) Attach the bearing cap on the cylinder block as shown in the illustration.
(2) Tighten the bearing cap bolts to the specified torque in the sequence shown in the illustration.
(3) Check that the crankshaft rotates smoothly.





(4) Check the end play. If it exceeds the limit value, replace the thrust bearing.

Standard value : 0.05–0.25 mm (.0020–.0098 in.)
Limit: 0.3 mm (.012 in.)

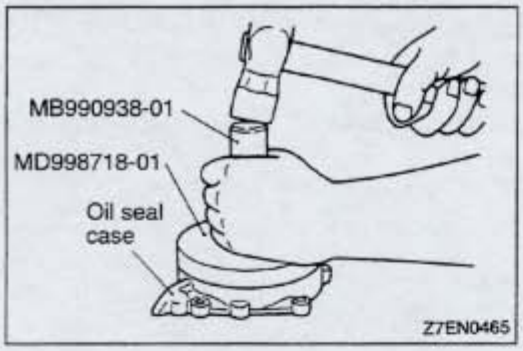


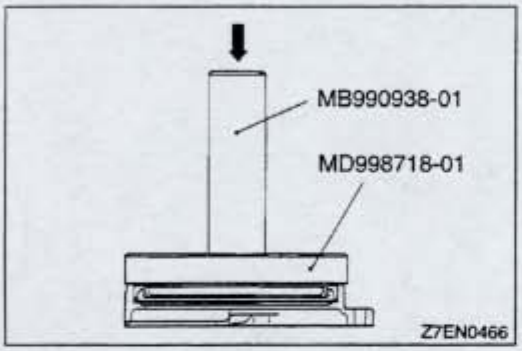
▶D◀ BEARING CAP STAY INSTALLATION <DOHC for TURBO>

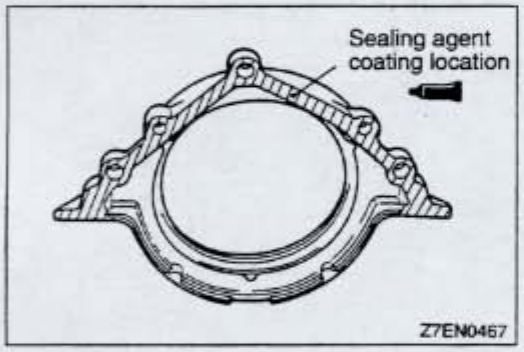
(1) Apply engine oil to the thread and bearing surface of each bolt.
(2) Temporarily tighten the bolts on the cylinder block side.
(3) Tighten the bolts on the bearing cap side to the specified torque.
(4) Finally, tighten the bolts on the cylinder block side to the specified torque.

NOTE
The bearing cap stays A and B differ in shape. Install correct ones on correct sides.

TSB Revision







▶E◀ CRANKSHAFT REAR OIL SEAL INSTALLATION

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

▶F◀ OIL SEAL CASE INSTALLATION

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

Specified sealant:
MITSUBISHI GENUINE Part No. MD970389 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.

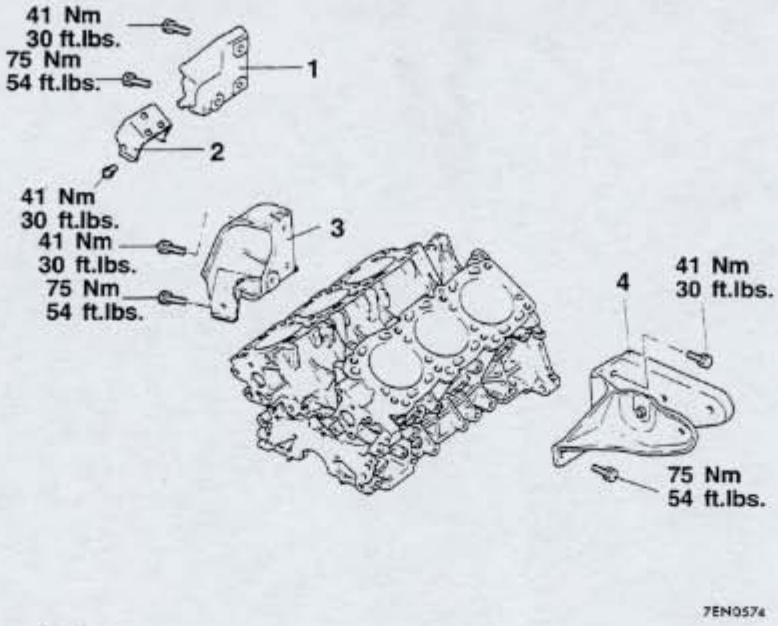
▶D◀ OIL SEAL CASE INSTALLATION

NOTE

(1) Install the oil seal case within 15 minutes after applying liquid gasket.
(2) Then wait at least one hour. Never start the engine or let engine oil or coolant touch the adhesion surface during that time.

BRACKET

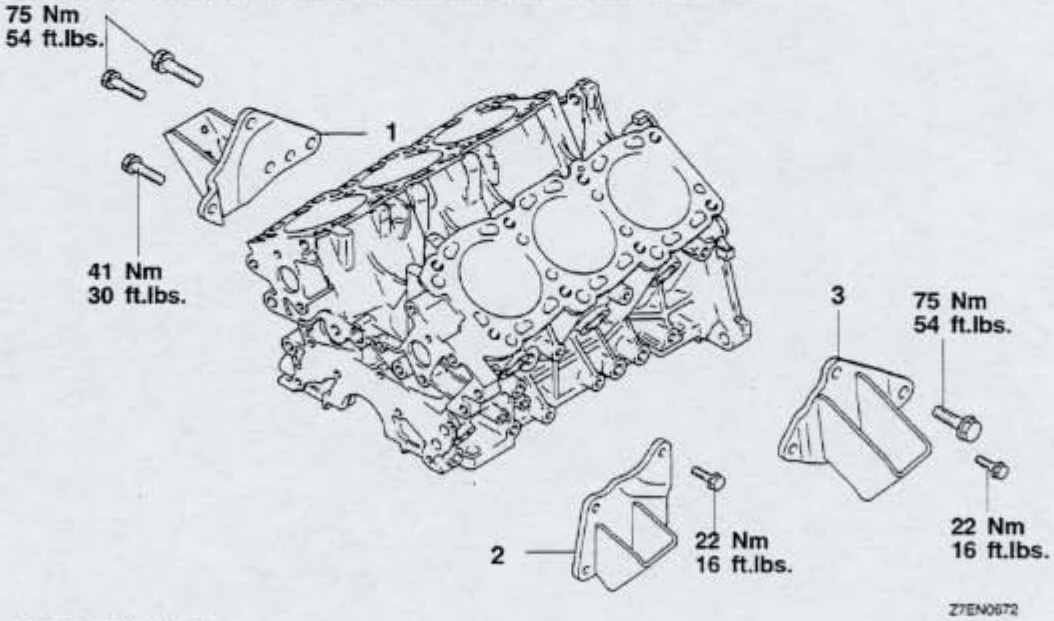
REMOVAL AND INSTALLATION <DIAMANTE and 3000GT>



Removal steps

1. Roll stopper bracket, front "B" <TURBO>
1. Roll stopper bracket, front "A" <TURBO>
3. Roll stopper bracket, front
4. Roll stopper bracket, rear

REMOVAL AND INSTALLATION <MONTERO and TRUCK>



Removal steps

1. Engine support bracket, right
2. Engine support bracket, left <SOHC–12 Valve for MONTERO and TRUCK >
2. Engine support bracket, left <SOHC–24 Valve for MONTERO and DOHC for MONTERO>

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