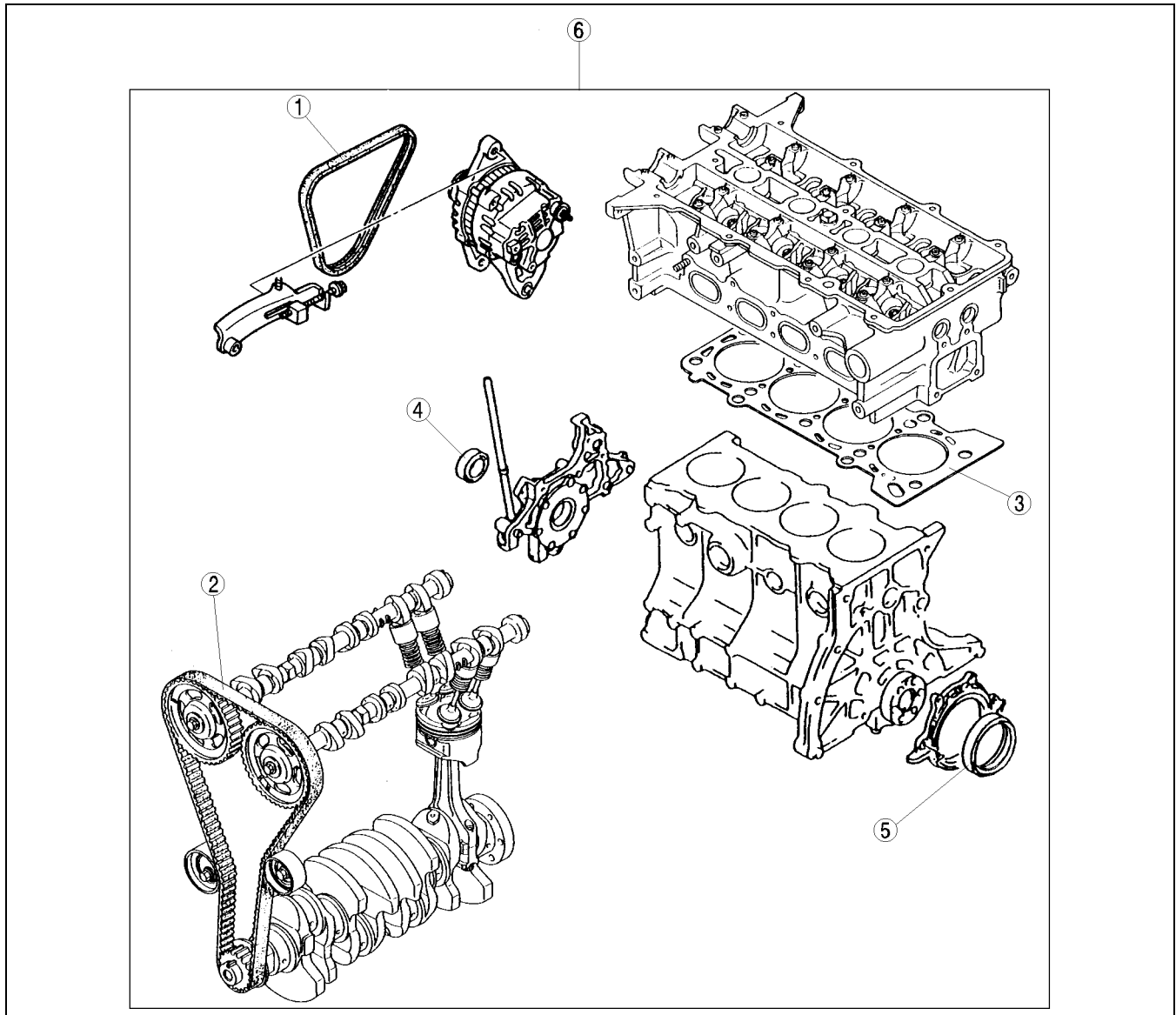


**01-10A MECHANICAL [ZM]**

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01-10A



Z3U0110W101

1	Drive belt (See 01-10A-3 DRIVE BELT INSPECTION [ZM]) (See 01-10A-4 DRIVE BELT ADJUSTMENT [ZM])
2	Timing belt (See 01-10A-9 TIMING BELT REMOVAL/ INSTALLATION [ZM])
3	Cylinder head gasket (See 01-10A-13 CYLINDER HEAD GASKET REPLACEMENT [ZM])

4	Front oil seal (See 01-10A-18 FRONT OIL SEAL REPLACEMENT [ZM])
5	Rear oil seal (See 01-10A-19 REAR OIL SEAL REPLACEMENT [ZM])
6	Engine (See 01-10A-20 ENGINE REMOVAL/ INSTALLATION [ZM]) (See 01-10A-24 ENGINE DISASSEMBLY/ ASSEMBLY [ZM])

## DRIVE BELT INSPECTION [ZM]

A3U011015800W03

### Drive Belt Deflection Inspection

#### Note

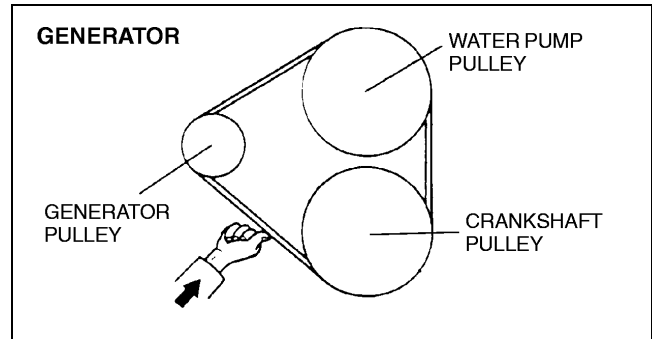
- Inspect the drive belt deflection when the engine is cold, or **at least 30 min** after the engine has been stopped.

- Apply moderate pressure **98 N {10 kgf, 22 lbf}** midway between the specified pulleys.
  - If the deflection exceeds the limit, adjust it. (See 01-10A-4 DRIVE BELT ADJUSTMENT [ZM].)

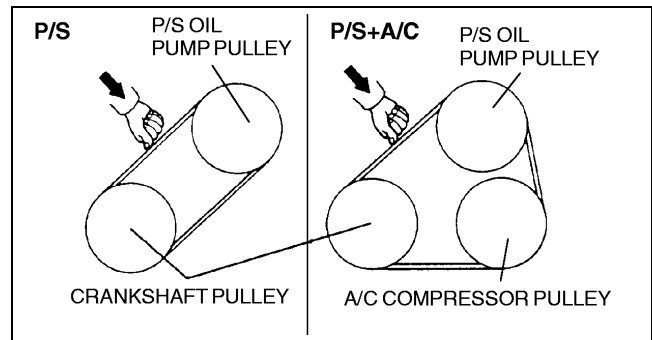
#### Deflection

mm {in}

Drive belt	Limit
Generator	8.0 {0.31}
P/S, P/S+A/C	11.5 {0.45}



X3U110WA0



X3U110WA1

### Drive Belt Tension Inspection

#### Note

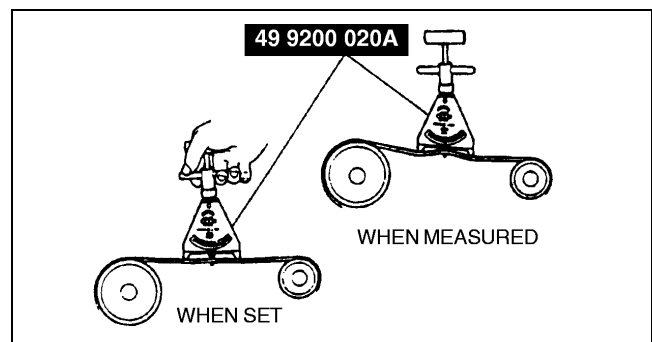
- Belt tension can be inspected in place of belt deflection. Inspect the drive belt tension when the engine is cold, or **at least 30 min** after the engine has been stopped.

- Using the **SST**, inspect the belt tension between any two pulleys.
  - If the tension exceeds the limit, adjust it. (See 01-10A-4 DRIVE BELT ADJUSTMENT [ZM].)

#### Tension

N {kgf, lbf}

Drive belt	Limit
Generator	340 {35, 77}
P/S, P/S+A/C	250 {25, 55}

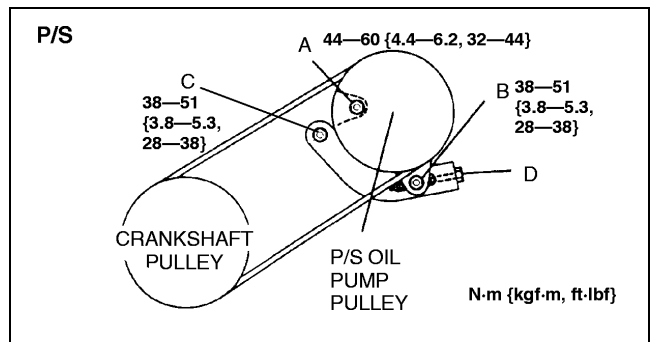
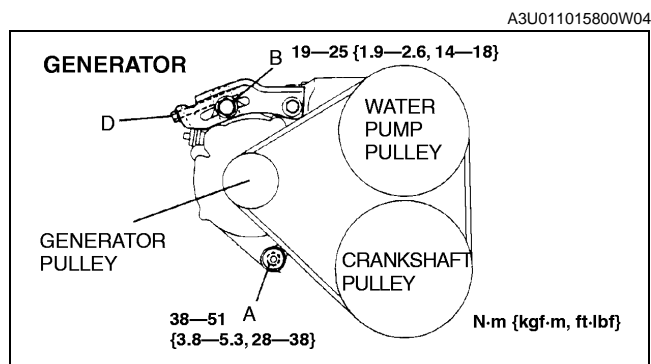


X3U110WA2

01-10A

## DRIVE BELT ADJUSTMENT [ZM]

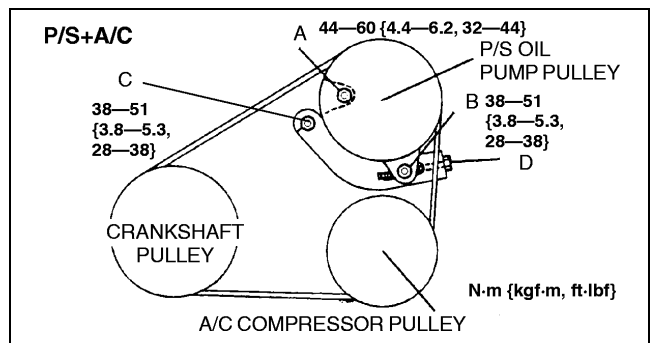
1. Loosen mounting bolt A, B, and C.



2. Adjust the belt deflection or tension by turning the adjusting bolt D.

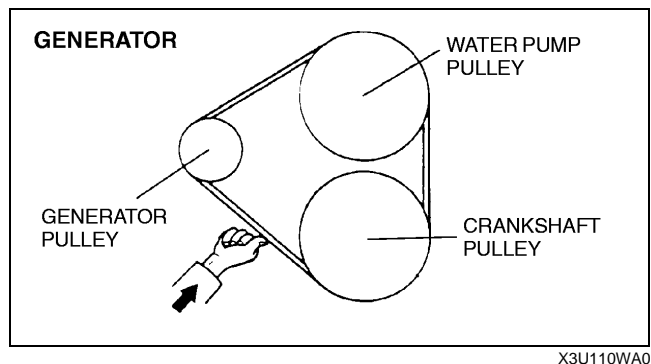
### Caution

- If the belt is replaced with a new one or the belt has been on a running engine for less than 5 minutes, adjust deflection or tension to “New” specification. Then warm up the engine, allow it to cool, and adjust deflection or tension to “Used” specification.
- If the belt has been on a running engine for more than 5 minutes, adjust deflection or tension to “Used” specification.



### Deflection

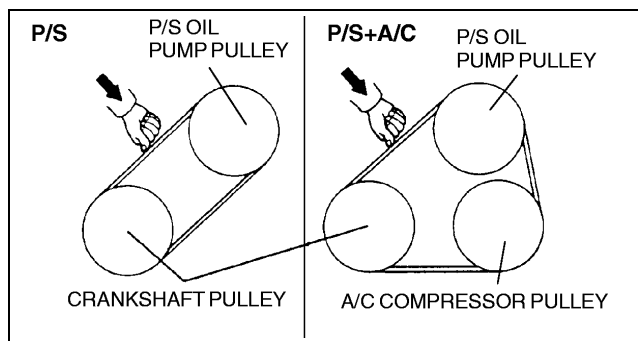
Drive belt	New	mm {in}	
		Used	
Generator	5.5—7.0 {0.22—0.27}	6.0—7.5 {0.24—0.29}	
P/S, P/S+A/C	7.0—8.0 {0.28—0.31}	9.0—10.0 {0.36—0.39}	



# MECHANICAL [ZM]

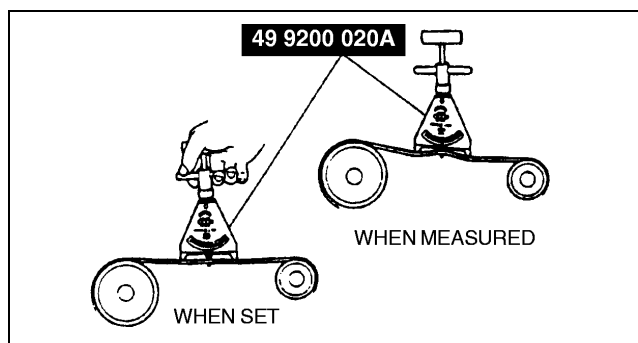
## Tension

Drive belt	N {kgf, lbf}	
	New	Used
Generator	500—740 {50—76, 110—160}	500—700 {50—72, 110—150}
P/S, P/S+A/C	590—680 {60—70, 140—150}	430—490 {43—50, 95—110}



X3U110WA1

3. Tighten mounting bolt A, B, and C.
4. Inspect the belt deflection or tension.
  - If not within “Used” specification, repeat from Step 1.

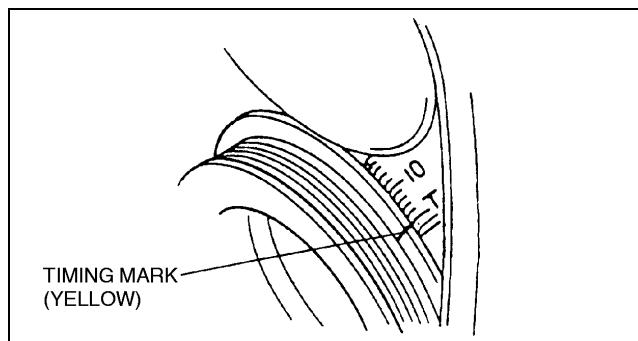


X3U110WA2

## VALVE CLEARANCE INSPECTION [ZM]

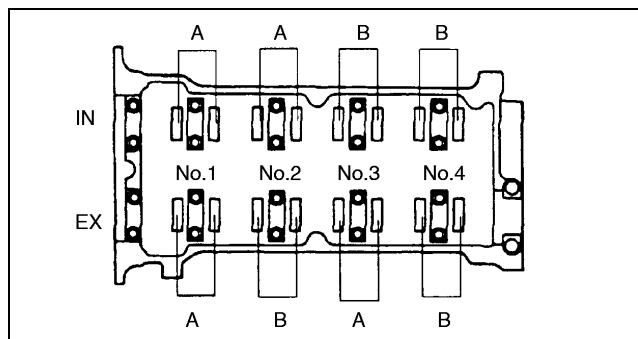
A3U011012010W03

1. Remove the cylinder head cover. (See 01–10A–9 TIMING BELT REMOVAL/INSTALLATION [ZM].)
2. Verify that the engine is cold.
3. Measure the valve clearance.
  - (1) Turn the crankshaft clockwise so that the No.1 piston is at TDC of the compression stroke.



X3U110WA6

- (2) Measure the valve clearance at A in the figure.



X3U110WA7

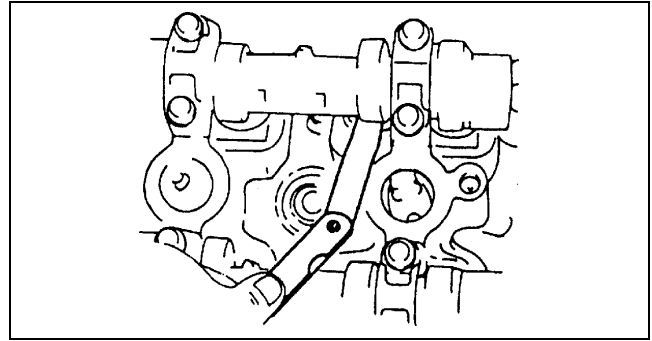
- If the valve clearance exceeds the standard, replace the adjustment shim. (See 01-10A-6 VALVE CLEARANCE ADJUSTMENT [ZM].)

## Standard [Engine cold]

IN: 0.25—0.31 mm {0.010—0.012 in}  
(0.28±0.03 mm {0.011±0.001 in})

EX: 0.25—0.31 mm {0.010—0.012 in}  
(0.28±0.03 mm {0.011±0.001 in})

- (3) Turn the crankshaft **360°** clockwise so that the No.4 piston is at TDC of the compression stroke.
- (4) Measure the valve clearance at B in the figure.
  - If the valve clearance exceeds the standard, replace the adjustment shim. (See 01-10A-6 VALVE CLEARANCE ADJUSTMENT [ZM].)



X3U110WA8

## Standard [Engine cold]

IN: 0.25—0.31 mm {0.010—0.012 in} (0.28±0.03 mm {0.011±0.001 in})

EX: 0.25—0.31 mm {0.010—0.012 in} (0.28±0.03 mm {0.011±0.001 in})

4. Install the cylinder head cover. (See 01-10A-9 TIMING BELT REMOVAL/INSTALLATION [ZM].)

## VALVE CLEARANCE ADJUSTMENT [ZM]

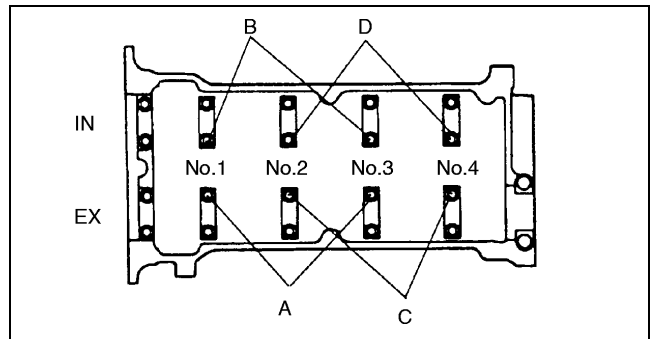
A3U011012010W04

Perform this same procedure for all camshafts requiring valve clearance adjustment.

1. Turn the crankshaft clockwise so that the cams on the camshaft requiring valve clearance adjustment are positioned straight up.
2. Remove the camshaft cap bolts as necessary.

### Note

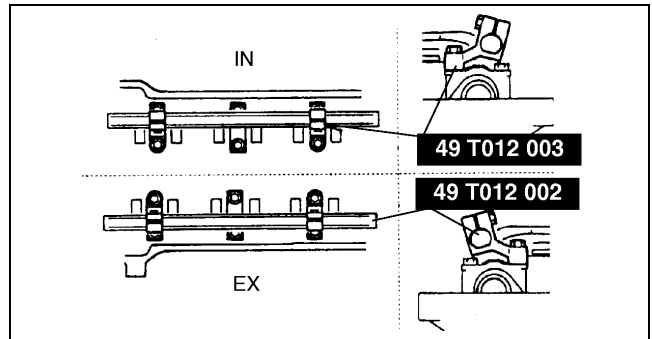
- Remove only one pair of cap bolts at a time.
- Reinstall the cap bolts before removing the next pair.
  - A: For EX side No.1, 2, 3 cylinder adjustment shim removal.
  - B: For IN side No.1, 2, 3 cylinder adjustment shim removal.
  - C: For EX side No.2, 3, 4 cylinder adjustment shim removal.
  - D: For IN side No.2, 3, 4 cylinder adjustment shim removal.



X3U110WA9

- For EX side No.2, 3 cylinder adjustment shim removal, remove either bolt A or C.
- For IN side No.2, 3 cylinder adjustment shim removal, remove either bolt B or D.

3. Install the **SSTs** on the camshaft using the camshaft cap bolt holes.



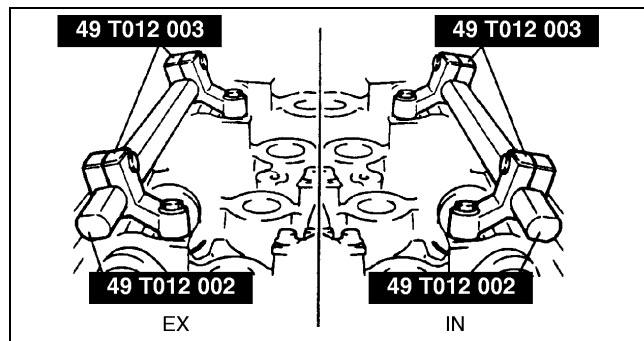
X3U110WAA

## Tightening torque

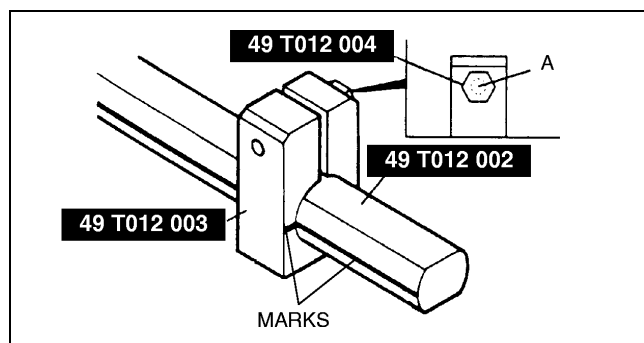
11.3—14.2 N·m {115—145 kgf·cm, 100—125 in·lbf}

01-10A

4. Align the marks on the **SSTs** (shaft and shaft clamp).
5. Tighten bolts A to secure the **SST** (shaft).

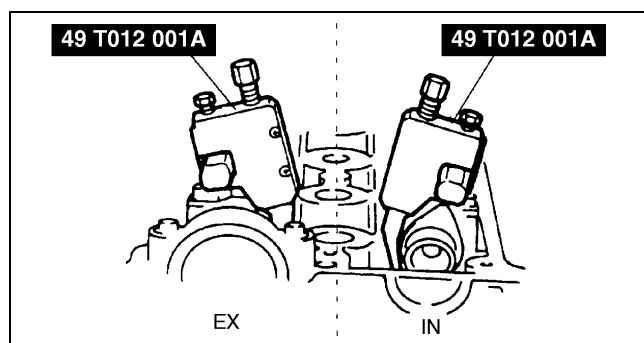


X3U110WAB



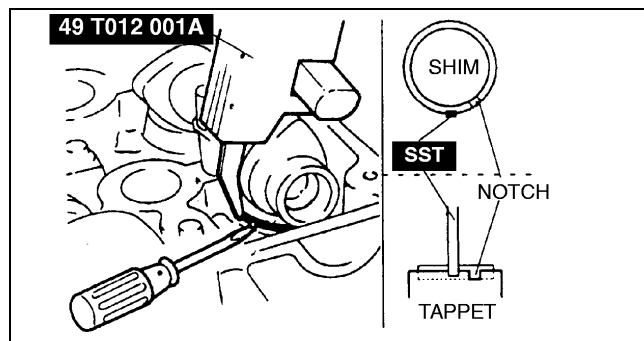
X3U110WAC

6. Face the **SST** (body) toward the center of the cylinder head, and mount it on the **SST** (shaft) at the point of the adjustment shim to be replaced.



X3U110WAD

7. Face the notch of the tappet so that a fine screwdriver can be inserted.
8. Set the **SST** on the tappet by its notch.



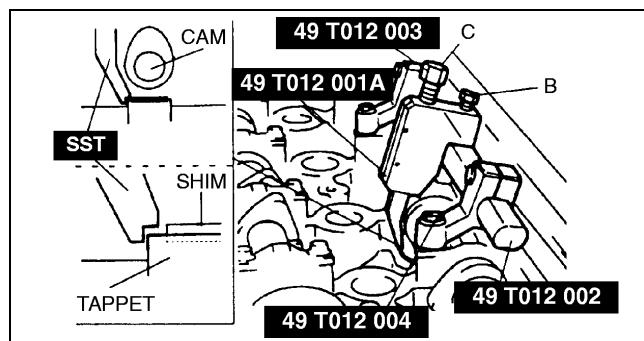
X3U110WAE

9. Tighten bolt B to secure the **SST** (body).

## Caution

- Cylinder head can be damaged when the tappet is pressed down.

10. Tighten bolt C, and press down the tappet.



X3U110WAF

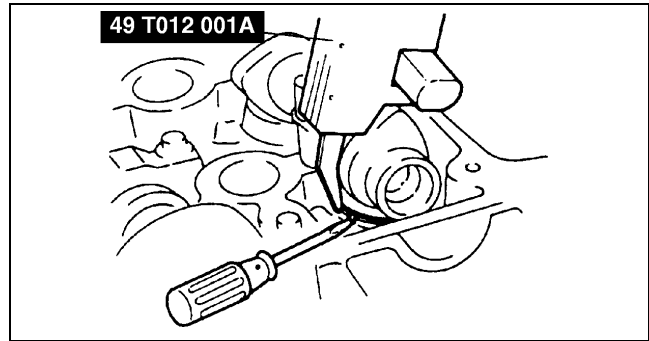
## MECHANICAL [ZM]

11. Using a fine screwdriver, pry up the adjustment shim through the notch on the tappet. Remove the shim using a magnet.
12. Select proper adjustment shim.

### New adjustment shim

$$\text{= Removed shim thickness + Measured valve clearance - Standard valve clearance (0.28 mm \{0.011 in\})}$$

13. Push the selected shim into the tappet.
14. Loosen bolt C to allow the tappet to move up.
15. Loosen bolt B and remove the **SST** (body).
16. Remove the **SSTs** and tighten the camshaft cap bolts.



X3U110WAG

### Tightening torque

11.3—14.2 N·m {115—145 kgf·cm, 100—125 in·lbf}

17. Inspect the valve clearance. (See 01-10A-5 VALVE CLEARANCE INSPECTION [ZM].)

## COMPRESSION INSPECTION [ZM]

A3U011002000W05

### Warning

- When the engine and the oil are hot, they can cause severe burns. Be careful not to burn yourself during removal/installation of each component.

1. Verify that the battery is fully charged.
  - Recharge it if necessary. (See 01-17-1 Battery.)
2. Warm up the engine to the normal operating temperature.
3. Stop the engine and allow it to cool off for **about 10 min.**
4. Perform "Fuel Line Safety Procedure". Leave the fuel pump relay removed. (See 01-14-4 BEFORE REPAIR PROCEDURE.)
5. Remove the ignition coils. (See 01-18-1 IGNITION COIL REMOVAL/INSTALLATION.)
6. Remove the spark plugs.
7. Connect a compression gauge into the No.1 spark plug hole.
8. Fully depress the accelerator pedal and crank the engine.
9. Note the maximum gauge reading.
10. Inspect each cylinder as below.
  - If the compression in one or more cylinders is low or the compression difference between cylinders exceeds the maximum, pour a small amount of clean engine oil into the cylinder and reinspect the compression.
    - If the compression increases, the piston, the piston rings, or cylinder wall may be worn and overhaul is required.
    - If the compression stays low, a valve may be stuck or improperly seated and overhaul is required.
    - If the compression in adjacent cylinders stays low, the cylinder head gasket may be damaged or the cylinder head distorted and overhaul is required.

### Compression

kPa {kgf/cm<sup>2</sup>, psi} [rpm]

Item	Engine type
	ZM
Standard	1,373 {14.0, 199} [300]
Minimum	981 {10.0, 142} [300]
Maximum difference between cylinders	196 {2.0, 28}

1. Disconnect the compression gauge.
2. Install the spark plugs.

### Tightening torque

15—22 N·m {1.5—2.3 kgf·m, 11—16 ft·lbf}

3. Install the ignition coils.
4. Install the fuel pump relay.

## 01-10A-8

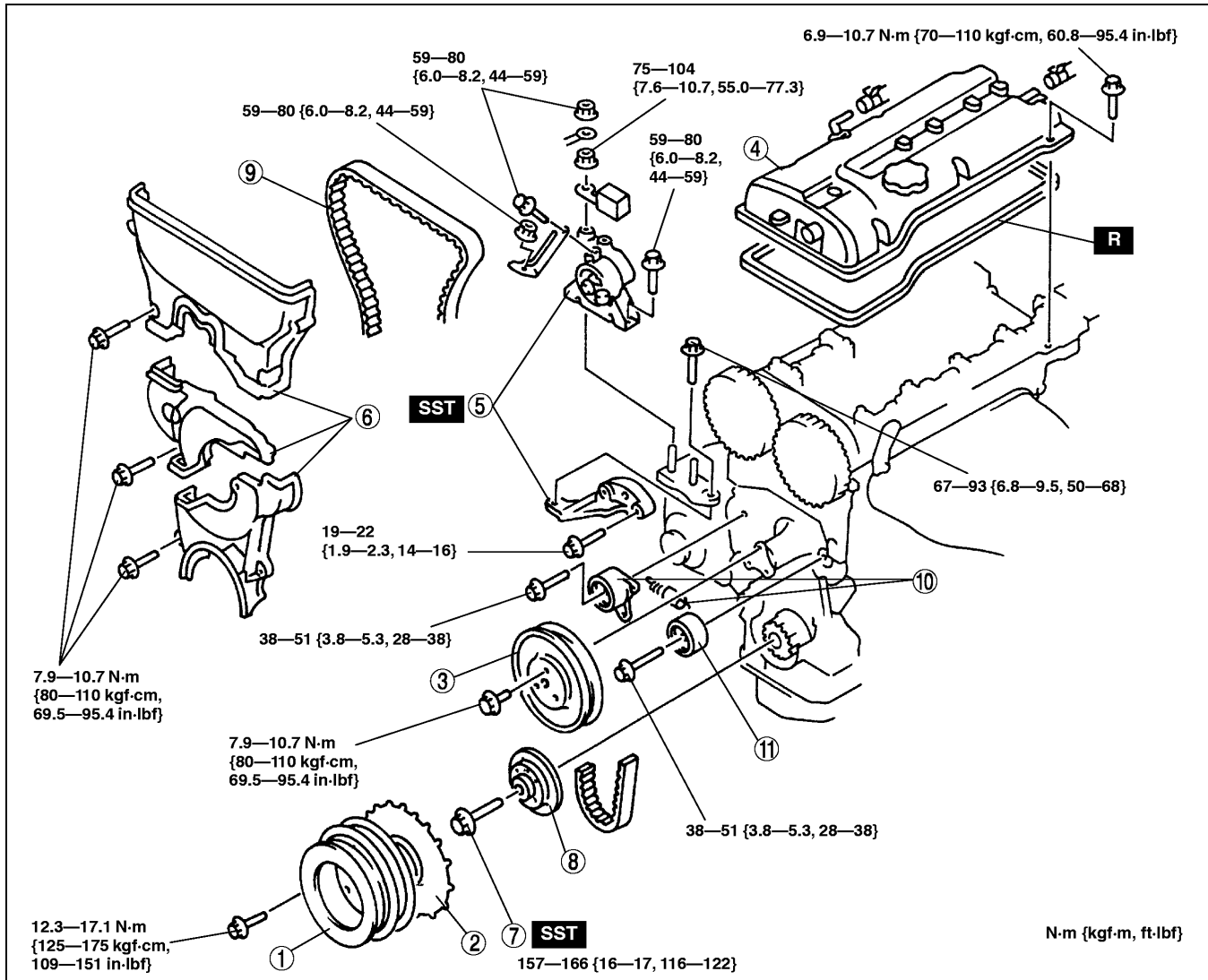


## TIMING BELT REMOVAL/INSTALLATION [ZM]

A3U011012040W02

01-10A

1. Disconnect the negative battery cable.
2. Remove the CMP sensor. (See 01-40A-35 CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [ZM].)
3. Remove the ignition coils. (See 01-18-1 IGNITION COIL REMOVAL/INSTALLATION.)
4. Remove the drive belt. (See 01-10A-4 DRIVE BELT ADJUSTMENT [ZM].)
5. Remove in the order indicated in the table.
6. Install in the reverse order of removal.
7. Inspect the air gap. (See 01-40A-32 Air Gap Inspection.)
8. Adjust the drive belt deflection/tension. (See 01-10A-4 DRIVE BELT ADJUSTMENT [ZM].)
9. Start the engine and:
  - (1) Inspect the pulleys and drive belt for runout and contact.
  - (2) Inspect the ignition timing. (See 01-10A-25 Ignition Timing Inspection.)



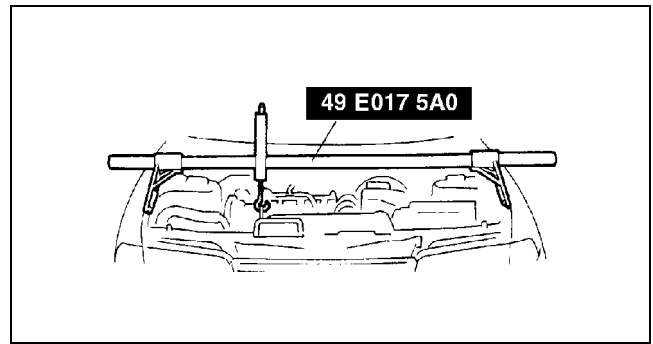
X3U110WAH

1	Crankshaft pulley
2	Plate
3	Water pump pulley
4	Cylinder head cover (See 01-10A-13 Cylinder Head Cover Installation Note)
5	No.3 engine mount (See 01-10A-10 No.3 Engine Mount Removal Note) (See 01-10A-13 No.3 Engine Mount Installation Note)
6	Timing belt cover

7	Pulley lock bolt (See 01-10A-10 Pulley Lock Bolt Removal/Installation Note)
8	Pulley boss
9	Timing belt (See 01-10A-10 Timing Belt Removal Note) (See 01-10A-11 Timing Belt Installation Note)
10	Tensioner, tensioner spring (See 01-10A-11 Tensioner, Tensioner Spring Installation Note)
11	Idler

## No.3 Engine Mount Removal Note

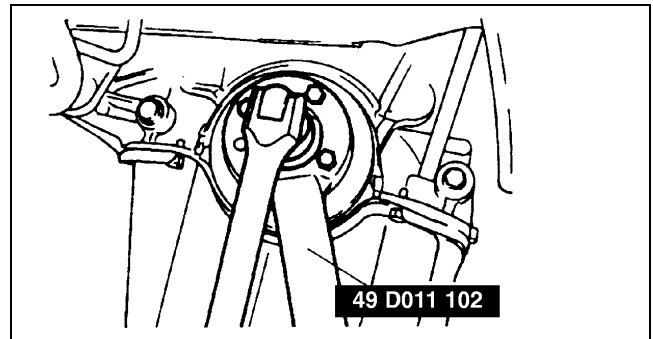
1. Suspend the engine using the **SST**.



Z3U110WAJ

## Pulley Lock Bolt Removal/Installation Note

1. Remove the crankshaft using the **SST**.



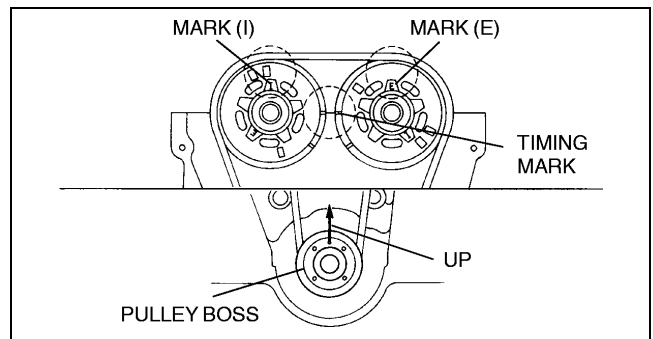
X3U110WAK

## Timing Belt Removal Note

1. Install the pulley boss and pulley lock bolt.
2. Turn the crankshaft clockwise and align the timing marks.

### Note

- Face the marks (I) and (E) of the camshaft pulley straight up, then align the timing marks with the horizontal surface on the cylinder head.
- The pulley boss position pin on the crankshaft should be facing straight up.

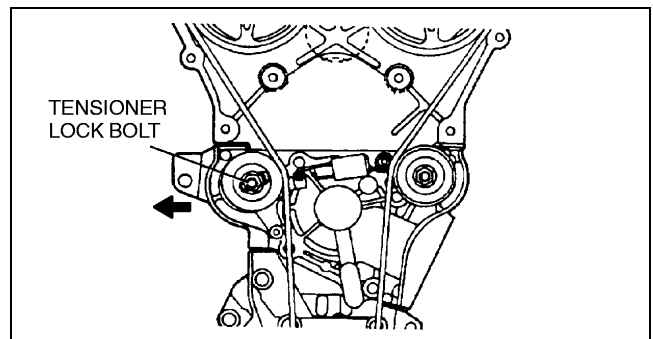


X3U110WAL

3. Loosen the tensioner lock bolt.
4. Push the tensioner in the direction of the arrow and hand-tighten the lock bolt.

### Caution

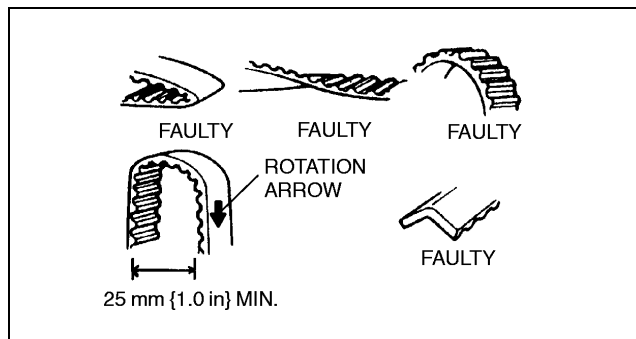
- Forcefully twisting is the timing belt turning it inside out, or allowing oil or grease on it will damage the belt and shorten its life.



X3U110WAM

## Note

- Mark the timing belt rotation on the belt for proper reinstallation.



X3U110WAN

01-10A

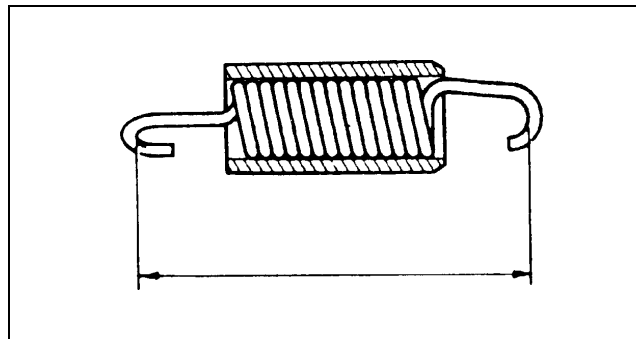
## Tensioner, Tensioner Spring Installation Note

- Measure the tensioner spring free length.
  - If not as specified, replace the tensioner spring.

### Free length

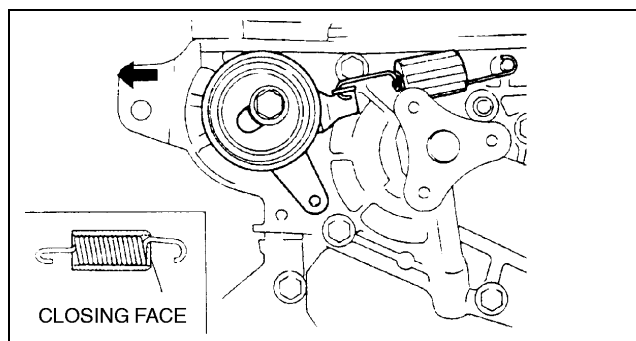
61.8 mm {2.43 in}

- Install the tensioner.



X3U110WAP

- Install the tensioner spring with the damper rubber closing face on the right side.
- Temporarily secure the tensioner with the spring fully extended.



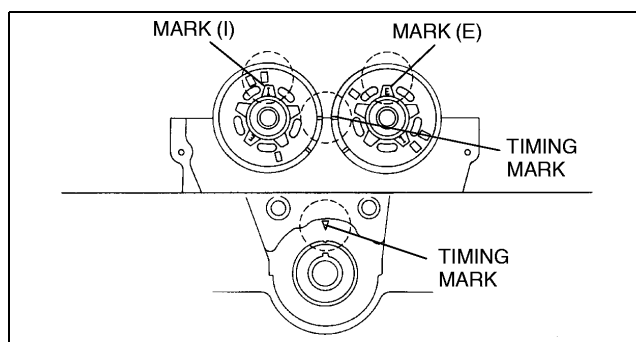
X3U110WAQ

## Timing Belt Installation Note

- Verify that the timing belt pulley mark and camshaft pulley marks are aligned with the timing marks as shown.

## Note

- Face the marks (I) and (E) of the camshaft pulley straight up, then align the timing marks with the horizontal surface on the cylinder head.



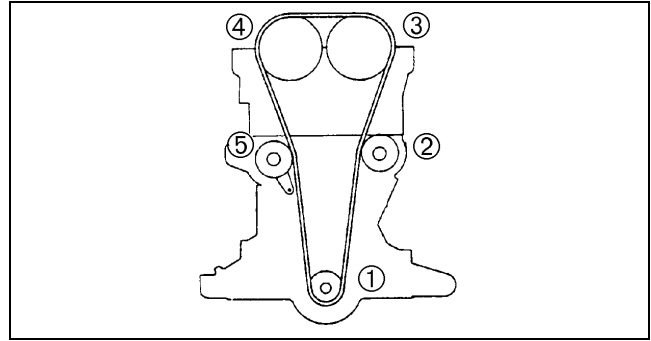
X3U110WAR

2. Install the timing belt in the order shown to prevent looseness.

## Caution

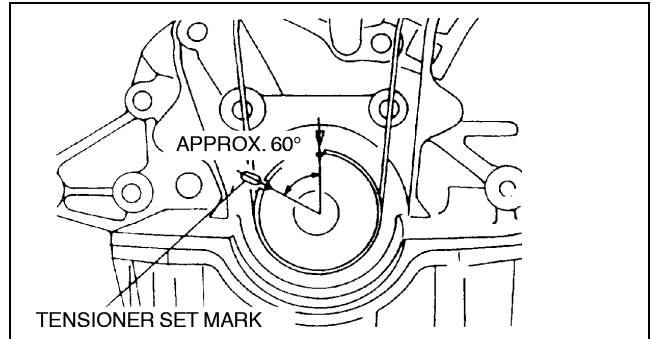
- Be sure not to apply tension other than that of the tensioner spring.

3. Install the pulley boss and pulley lock bolt.
4. Loosen the tensioner lock bolt to apply tension to timing belt.



X3U110WAS

5. Turn the crankshaft clockwise **1 and 5/6 times**, and align the timing belt pulley mark with the tensioner set mark.



X3U110WAT

6. Hold the crankshaft using the **SST**, and remove the pulley lock bolt and the pulley boss.
7. Verify that the timing belt pulley mark is aligned with the tensioner set mark.

## Caution

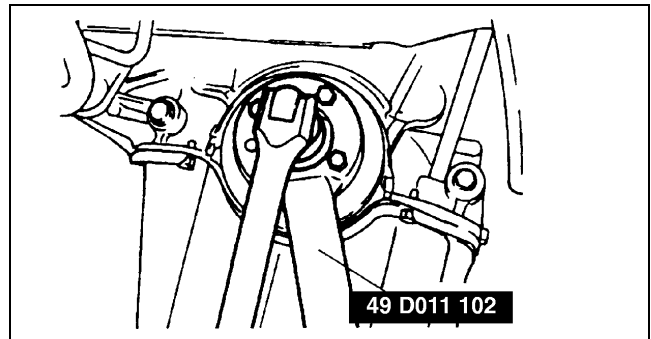
- Prevent the tensioner from moving with the tensioner lock bolt as it is turned.

8. Tighten the tensioner lock bolt.
9. Install the pulley boss and the pulley lock bolt.
10. Turn the crankshaft **2 and 1/6 times**, and face the pin on the pulley boss straight up.
11. Verify that the camshaft pulley marks are aligned with the timing marks as shown.

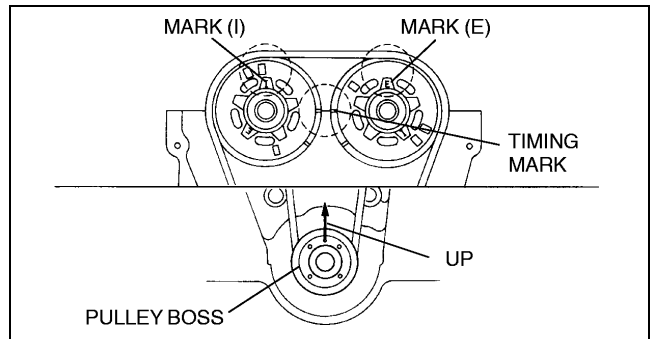
- If not, repeat from **Timing Belt Removal Note** and reinstall the timing belt. (See 01-10A-10 Timing Belt Removal Note.)

## Note

- Timing is normal if: the pulley boss position pin and the camshaft pulley marks (I) and (E) are facing straight up. the timing marks are aligned to the horizontal surface on cylinder head.



X3U110WAU

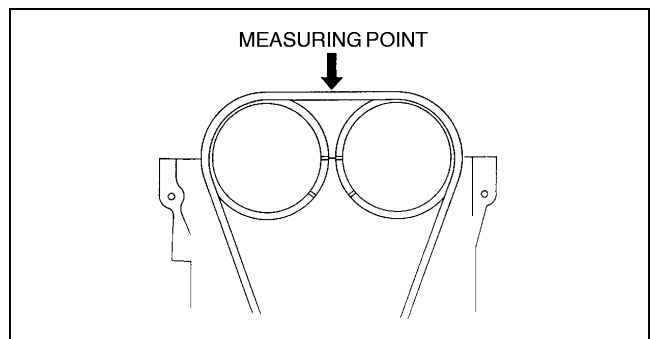


X3U110WAV

12. Inspect the timing belt deflection at the point indicated by applying moderate pressure **98 N {10 kgf, 22 lbf}**.
  - If not as specified, remove the timing belt and repeat from Step 1.

## Timing belt deflection

6.0—7.5 mm {0.24—0.29 in}



X3U110WAW

## No.3 Engine Mount Installation Note

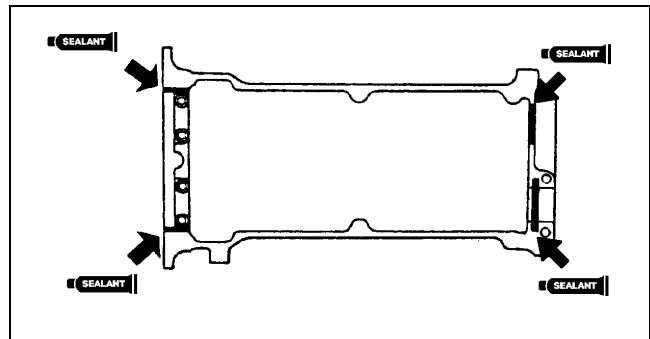
1. Install the No.3 engine mount. (See 01-10A-22 No.3 Engine Mount Installation Note.)
2. Remove the **SST** (engine support).

## Cylinder Head Cover Installation Note

1. Verify that the grooves on the cylinder head cover are free of oil, water and other foreign material.
2. Install the cylinder head cover gasket into the cylinder head cover.
3. Apply silicone sealant to the cylinder head as shown.

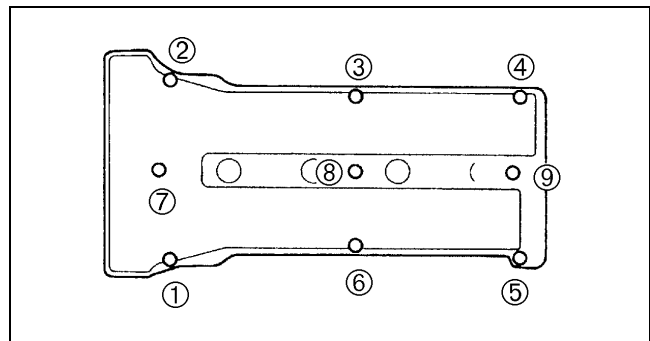
### Thickness

3.0—4.0 mm {0.12—0.15 in}



X3U110WAX

4. Tighten the cylinder head cover bolts a few turns in the order shown.



X3U110WAY

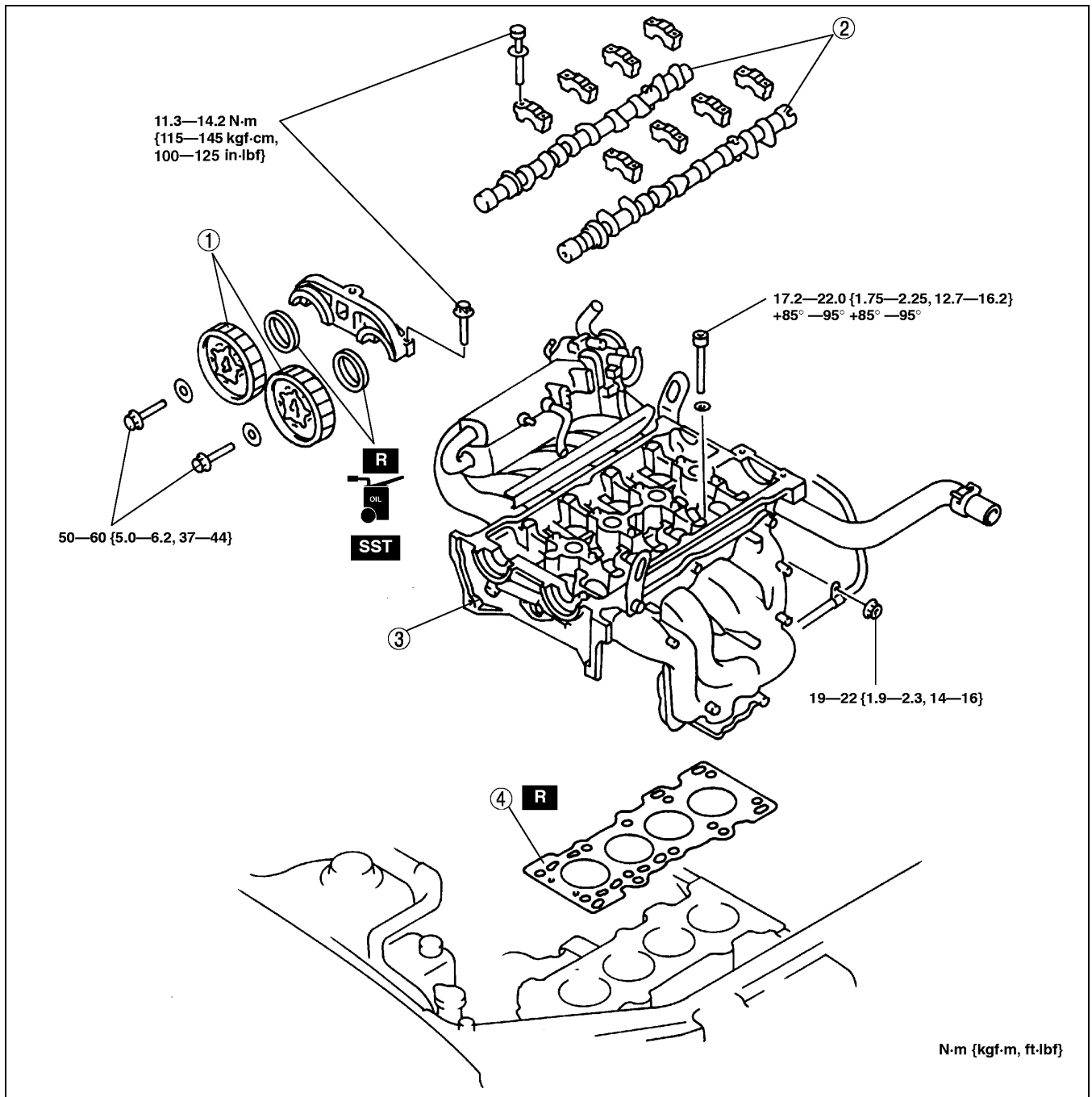
## CYLINDER HEAD GASKET REPLACEMENT [ZM]

A3U011010271W02

### Warning

- Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.
- Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the "Fuel Line Safety Procedure". (See 01-14-4 BEFORE REPAIR PROCEDURE.)

1. Disconnect the negative battery cable.
2. Drain the engine coolant. (See 01-12-2 COOLING SYSTEM SERVICE WARNINGS.) (See 01-12-3 ENGINE COOLANT REPLACEMENT.)
3. Remove the timing belt. (See 01-10A-9 TIMING BELT REMOVAL/INSTALLATION [ZM].)
4. Remove the front pipe, exhaust manifold insulator, and EGR pipe. (See 01-15-1 EXHAUST SYSTEM REMOVAL/INSTALLATION.)
5. Remove the air cleaner, and fresh-air duct.
6. Disconnect the accelerator cable, and bracket.
7. Disconnect the vacuum hose, and engine harness connector.
8. Disconnect the plastic fuel hoses. (See 01-14-11 Plastic Fuel Hose Removal Note.) (See 01-14-12 Plastic Fuel Hose Installation Note.)
9. Remove the intake manifold bracket.
10. Remove the heater hoses.
11. Remove in the order indicated in the table.
12. Install in the reverse order of removal.
13. Inspect for fuel leakage.
14. Inspect the compression. (See 01-10A-8 COMPRESSION INSPECTION [ZM].)
15. Start the engine and
  - (1) Inspect the pulleys and drive belt for runout and contact.
  - (2) Inspect the ignition timing. (See 01-10A-25 Ignition Timing Inspection.)
  - (3) Inspect the idle speed. (See 01-10A-26 Idle Speed Adjustment.)



Y3U110WA0

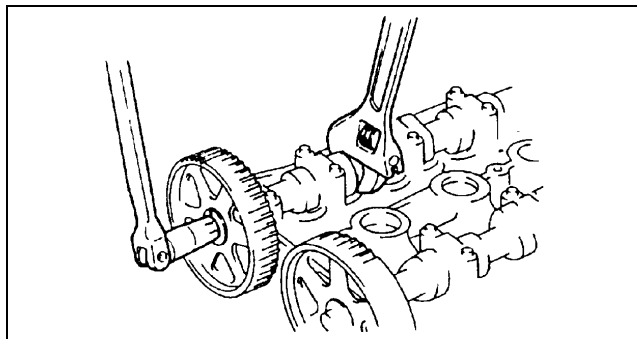
1	Camshaft pulley (See 01-10A-14 Camshaft Pulley Removal Note) (See 01-10A-17 Camshaft Pulley Installation Note)
2	Camshaft (See 01-10A-15 Camshaft Removal Note) (See 01-10A-16 Camshaft Installation Note)

3	Cylinder head (See 01-10A-15 Cylinder Head Removal Note) (See 01-10A-15 Cylinder Head Installation Note)
4	Cylinder head gasket

## Camshaft Pulley Removal Note

1. Temporarily install the No.3 engine mount.
2. Remove the **SST** (engine support).

3. Hold the camshaft using a wrench on the cast hexagon as shown.

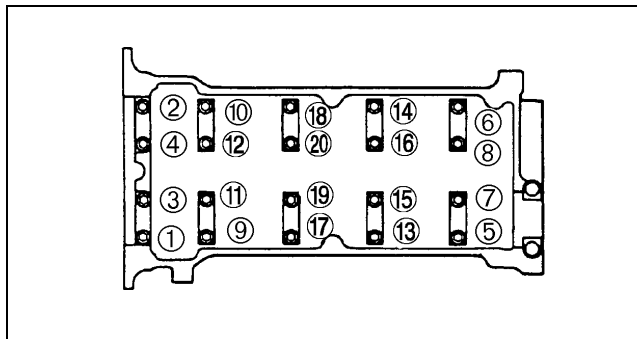


X3U110WB0

01-10A

## Camshaft Removal Note

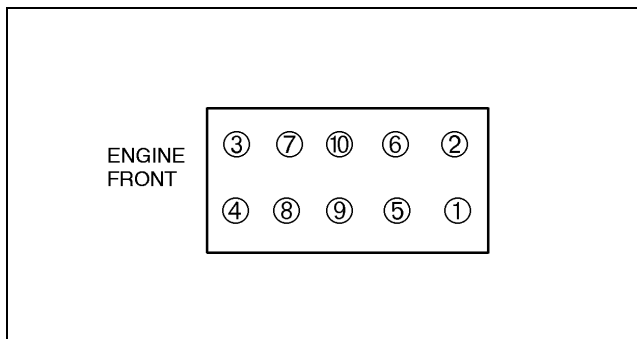
1. Loosen the camshaft cap bolts a few turns in the order shown.
2. Remove the camshaft cap.



X3U110WB1

## Cylinder Head Removal Note

1. Loosen the cylinder head bolts a few turns in the order shown.



X3U110WB2

## Cylinder Head Installation Note

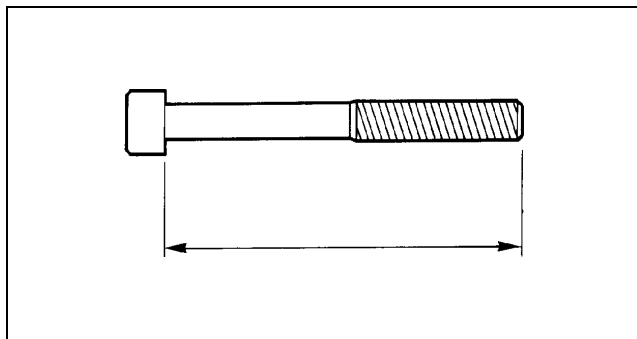
1. Measure the length of each bolt.
  - Replace any that exceed the maximum length.

### Standard length

99.2—99.8 mm {3.91—3.92 in}

### Maximum length

100.5 mm {3.956 in}

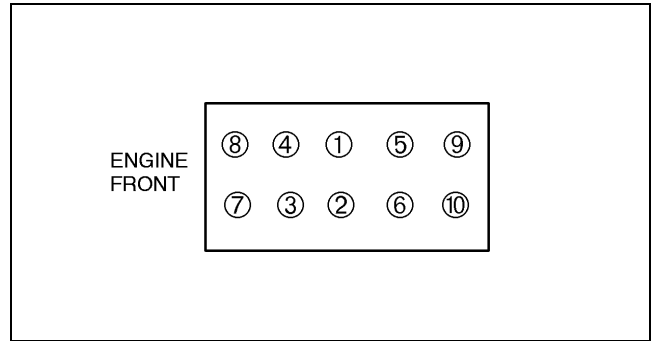


X3U110WB3

2. Tighten the cylinder head bolts a few turns in the order shown.

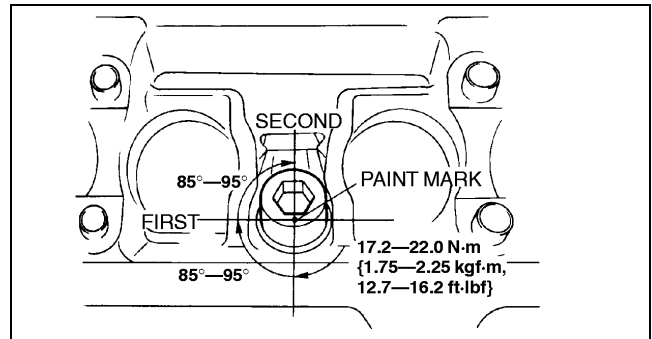
## Tightening torque

17.2—22.0 N·m {1.75—2.25 kgf·m, 12.7—16.2 ft·lbf}



X3U110WB4

3. Put a paint mark on each bolt head.
4. Using the marks as a reference, tighten the bolts by turning each **85°—95°** in the sequence shown.
5. Further tighten each bolt by turning another **85°—95°** in the sequence shown.



X3U110WB5

## Camshaft Installation Note

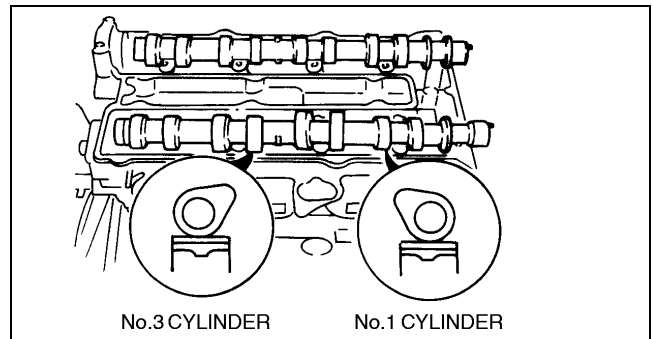
### Caution

- Because there is little camshaft thrust clearance, the camshaft must be held horizontally while it is installed. Otherwise, excessive force will be applied to the thrust area, causing a burr on the thrust receiving area of the cylinder head journal. To avoid this, the following procedure must be observed.

1. Assemble camshaft onto the cylinder head, facing the cam noses at No.1 and No.3 cylinders as shown.

### Note

- Keep the camshaft sliding surface free of sealant to prevent engine damage.



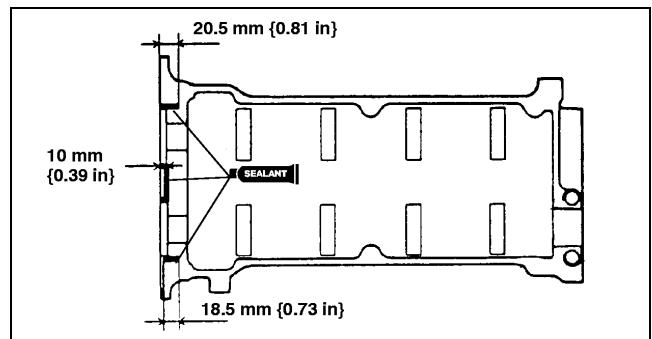
X3U110WB6

2. Apply silicone sealant to the areas shown.

## Thickness

1.0 mm {0.04 in}

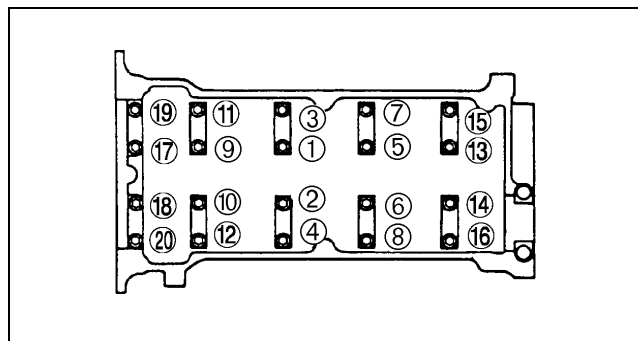
3. Apply engine oil to the camshaft and the cylinder head journals.
4. Install the camshaft caps to the positions from which they were removed.



X3U110WB7

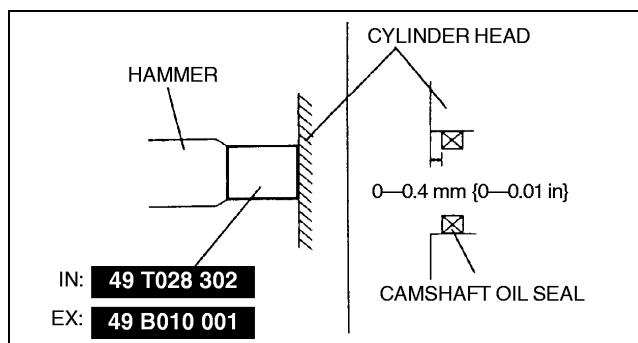


5. Hand tighten the camshaft cap bolts marked 5, 7, 2, and 4.
6. Tighten the camshaft cap bolts a few turns in the order shown.
7. Verify that the camshaft settles horizontally when 2 bearing cap bolts at No.3 journal are tightened.
8. Apply clean engine oil to the camshaft oil seal.
9. Push the oil seal slightly in by hand.



X3U110WB8

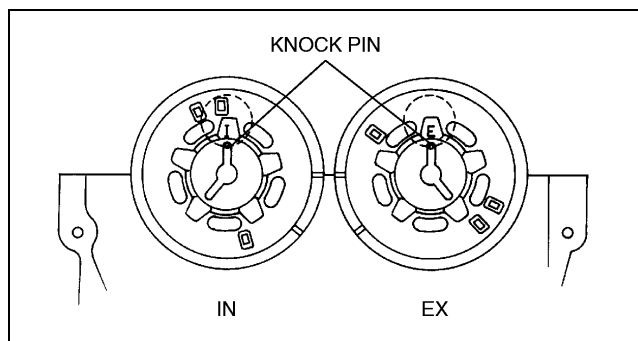
10. Tap the oil seals in evenly using the **SST** and a hammer.



Y3U110WA1

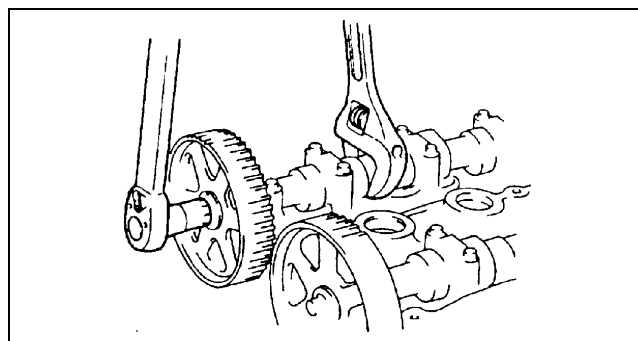
## Camshaft Pulley Installation Note

1. Install the camshaft pulleys with the "I" mark (intake side) or "E" mark (exhaust side) straight up.



X3U110WBA

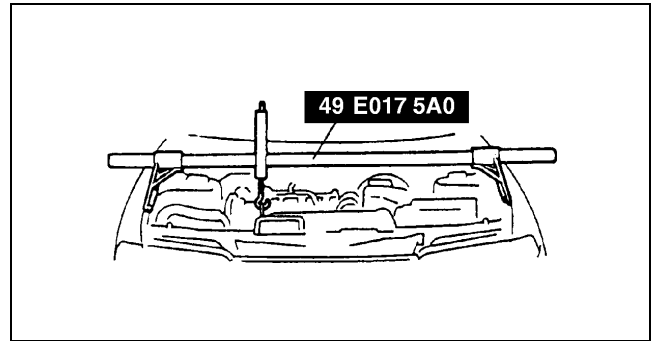
2. Hold the camshaft using a wrench on the cast hexagon as shown.



X3U110WBB

## MECHANICAL [ZM]

3. Suspend the engine using the **SST**.
4. Remove the No.3 engine mount.

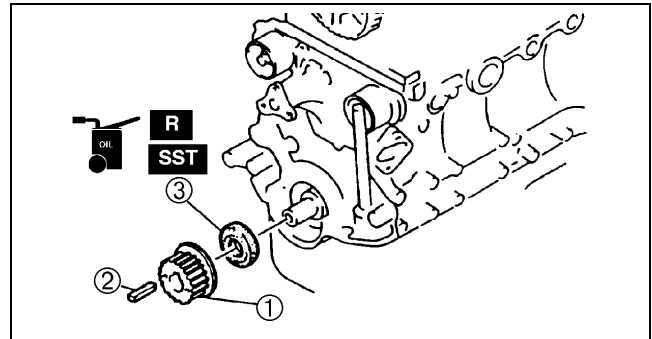


Z3U110WBC

### FRONT OIL SEAL REPLACEMENT [ZM]

A3U011010602W02

1. Disconnect the negative battery cable.
2. Remove the timing belt. (See 01-10A-9 TIMING BELT REMOVAL/INSTALLATION [ZM].)
3. Remove in the order indicated in the table.



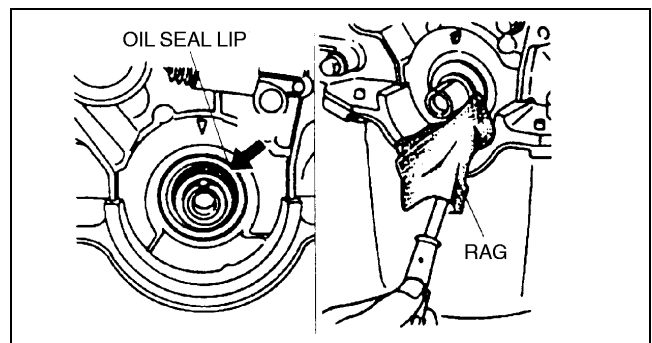
X3U110WBD

1	Timing belt pulley
2	Key
3	Front oil seal (See 01-10A-18 Front Oil Seal Removal Note) (See 01-10A-18 Front Oil Seal Installation Note)

4. Install in the reverse order of removal.

#### Front Oil Seal Removal Note

1. Cut the oil seal lip using a razor.
2. Remove the oil seal using a screwdriver protected with a rag.

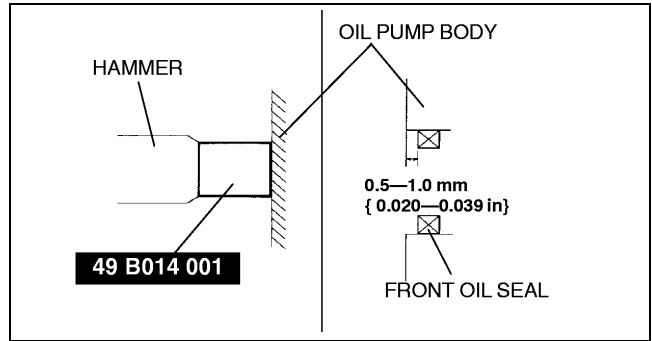


X3U110WBE

#### Front Oil Seal Installation Note

1. Apply clean engine oil to the oil seal lip.
2. Push the oil seal slightly in by hand.

3. Tap the oil seal in evenly using the **SST** and a hammer.



X3U110WBF

01–10A

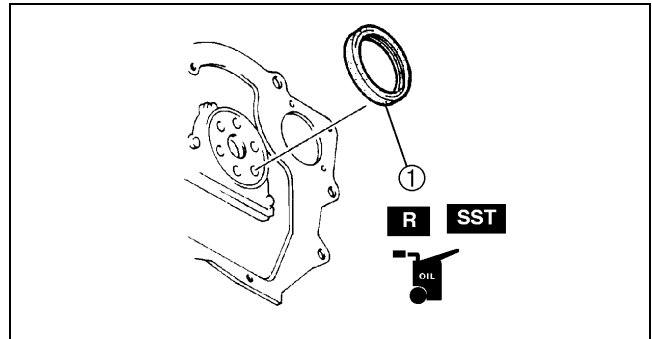
## REAR OIL SEAL REPLACEMENT [ZM]

A3U011011399W02

1. Remove the flywheel. (MTX) (See 05–10–11 CLUTCH UNIT REMOVAL/INSTALLATION.)
2. Remove the drive plate. (ATX) (See 05–17–46 DRIVE PLATE REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.

1	Rear oil seal (See 01–10A–19 Rear Oil Seal Removal Note) (See 01–10A–19 Rear Oil Seal Installation Note)
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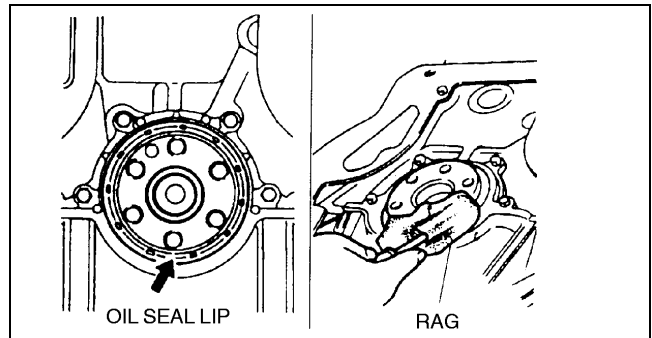
4. Install in the reverse order of removal.



X3U110WBG

## Rear Oil Seal Removal Note

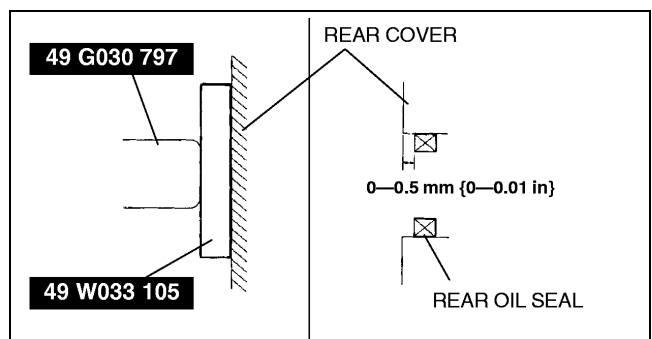
1. Cut the oil seal lip using a razor.
2. Remove the oil seal using a screwdriver protected with a rag.



X3U110WBH

## Rear Oil Seal Installation Note

1. Apply clean engine oil to the new oil seal lip.
2. Push the oil seal slightly in by hand.
3. Tap the oil seal in evenly using the **SSTs**.

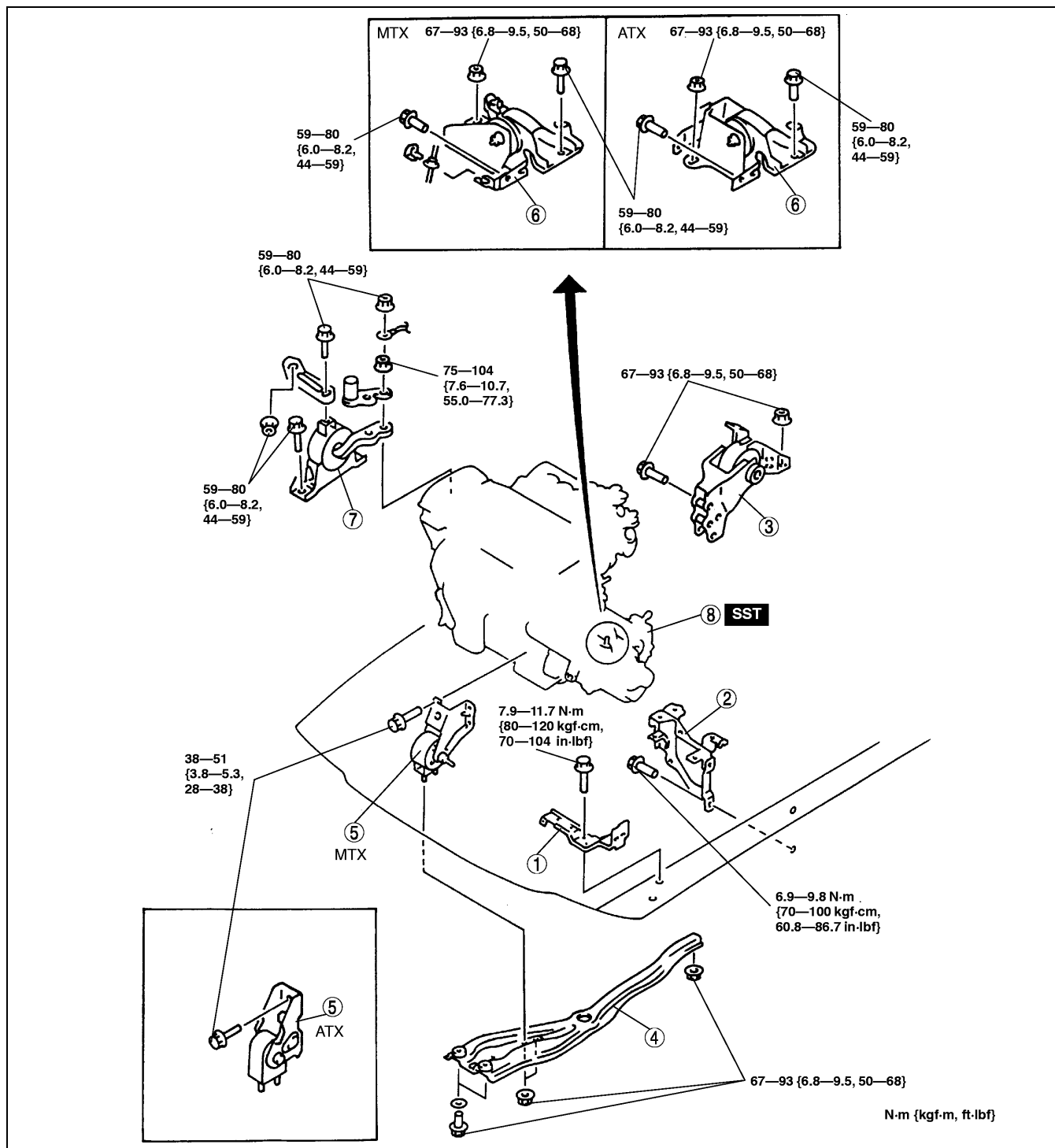


Y3U110WA2

### Warning

- **Fuel vapor is hazardous. It can very easily ignite, causing serious injury and damage. Always keep sparks and flames away from fuel.**
- **Fuel line spills and leakage are dangerous. Fuel can ignite and cause serious injuries or death and damage. Fuel can also irritate skin and eyes. To prevent this, always complete the “Fuel Line Safety Procedure”. (See 01–14–4 BEFORE REPAIR PROCEDURE.)**

1. Remove the battery.
2. Drain the engine coolant. (See 01–12–2 COOLING SYSTEM SERVICE WARNINGS.) (See 01–12–3 ENGINE COOLANT REPLACEMENT.)
3. Remove the air cleaner, air hose, and resonance chamber.
4. Remove the front pipe.
5. Disconnect the accelerator cable, bracket, heater hoses, vacuum hoses.
6. Remove the radiator. (See 01–12–4 RADIATOR REMOVAL/INSTALLATION.)
7. Remove the drive belt. (See 01–10A–4 DRIVE BELT ADJUSTMENT [ZM].)
8. Disconnect the plastic fuel hoses. (See 01–14–11 Plastic Fuel Hose Removal Note.) (See 01–14–12 Plastic Fuel Hose Installation Note.)
9. Disconnect the rods, cables, and clutch release cylinder related to the manual transaxle. (MTX) (See 05–15A–4 MANUAL TRANSAXLE (MTX) REMOVAL/INSTALLATION [F25M-R].)
10. Disconnect the rods, cables, and oil pipe related to the automatic transaxle. (ATX) (See 05–17–31 AUTOMATIC TRANSAXLE (ATX) REMOVAL/INSTALLATION.)
11. Remove the drive shaft. (See 03–13–9 DRIVE SHAFT REMOVAL/INSTALLATION.)
12. Remove the P/S oil pump with the oil hose still connected. Position the P/S oil pump so that it is out of the way.
13. Remove the A/C compressor with the pipe still connected. Position the A/C compressor so that it is out of the way.
14. Remove in the order indicated in the table.
15. Install in the reverse order of removal.
16. Adjust the drive belt deflection/tension. (See 01–10A–4 DRIVE BELT ADJUSTMENT [ZM].)
17. Start the engine and:
  - (1) Inspect for the engine oil, engine coolant, transaxle oil, ATF and fuel leakage.
  - (2) Verify the ignition timing, idle speed and idle mixture. (See 01–10A–25 ENGINE TUNE-UP [ZM].)
18. Perform a road test.



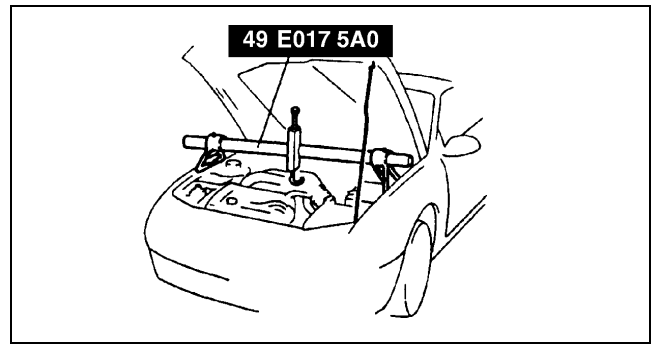
Y3U110WA3

1	Air cleaner bracket
2	Battery carrier bracket
3	No.1 engine mount (See 01-10A-22 No.1 Engine Mount Removal Note) (See 01-10A-23 No.1 Engine Mount Installation Note)
4	Engine mount member (See 01-10A-22 Engine Mount Member Removal Note) (See 01-10A-23 Engine Mount Member Installation Note)

5	No.2 engine mount (See 01-10A-23 No.2 Engine Mount Installation Note)
6	No.4 engine mount (See 01-10A-22 No.4 Engine Mount Removal Note) (See 01-10A-22 No.4 Engine Mount Installation Note)
7	No.3 engine mount (See 01-10A-22 No.3 Engine Mount Installation Note)
8	Engine, transaxle

## No.1 Engine Mount Removal Note

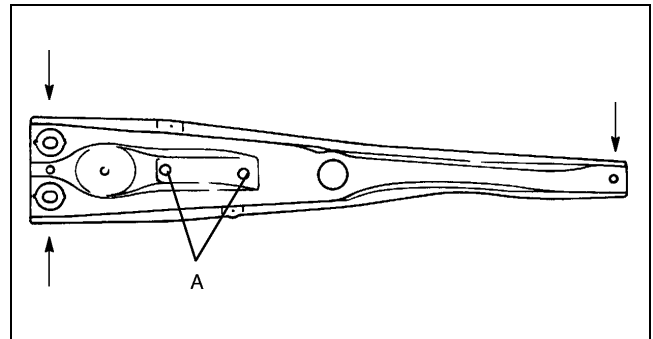
1. Suspend the engine using the **SST**.



Z3U110WBL

## Engine Mount Member Removal Note

1. Remove the No.2 engine mount nut A.
2. Remove the engine mount member bolt and nut.



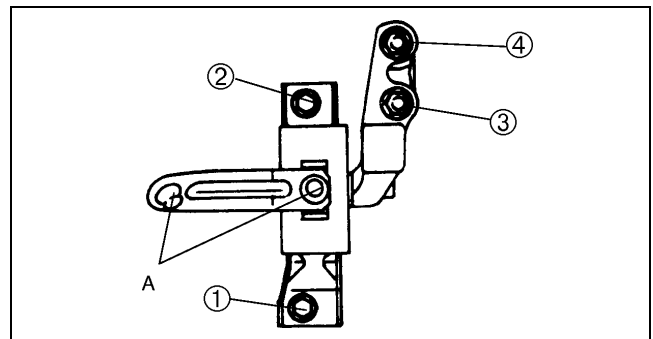
X3U110WBM

## No.4 Engine Mount Removal Note

1. Remove the **SST** (engine support) and securely support it with the chain block.

## No.3 Engine Mount Installation Note

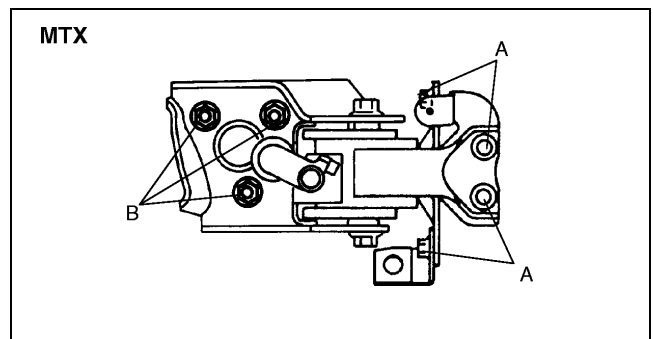
1. Tighten the No.3 engine mount bolt and nut in the order shown.
2. Tighten the No.3 engine mount stay bolt and nut A.



X3U110WBN

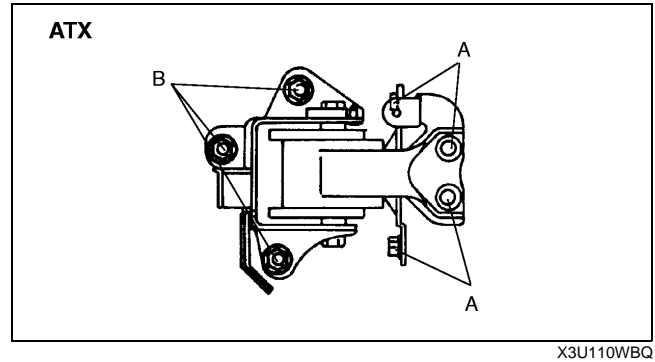
## No.4 Engine Mount Installation Note

1. Tighten the No.4 engine mount bolt A.



X3U110WBP

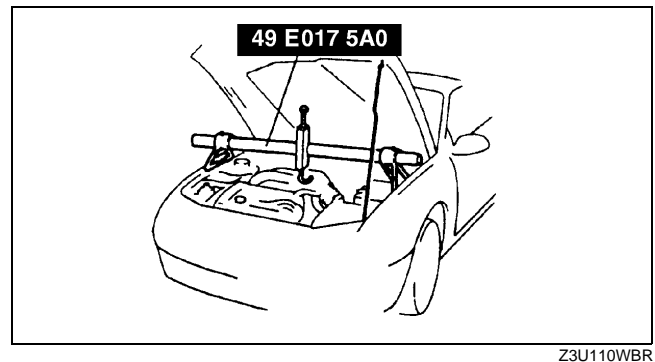
2. Tighten the No.4 engine mount nut B.



01-10A

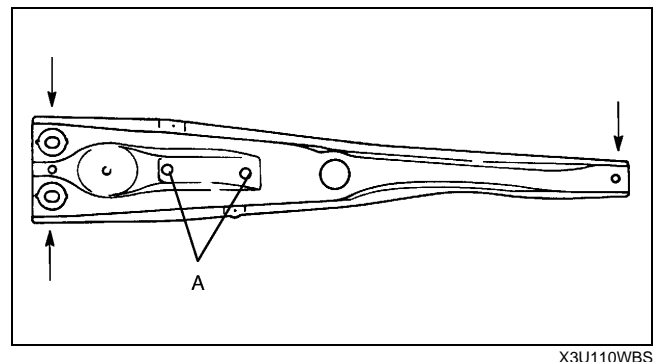
## No.2 Engine Mount Installation Note

1. Remove the chain block.
2. Suspend the engine using the **SST**.



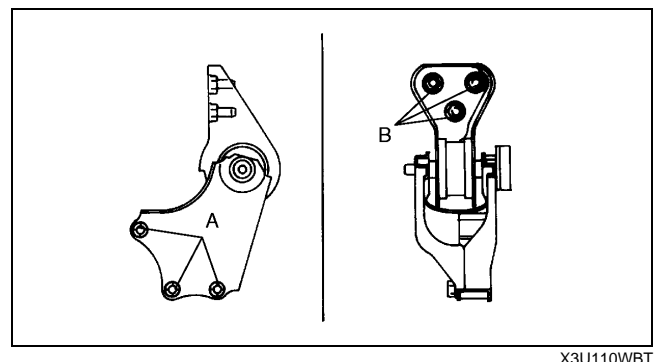
## Engine Mount Member Installation Note

1. Tighten the No.2 engine mount nut A.
2. Tighten the engine mount member bolt and nut.



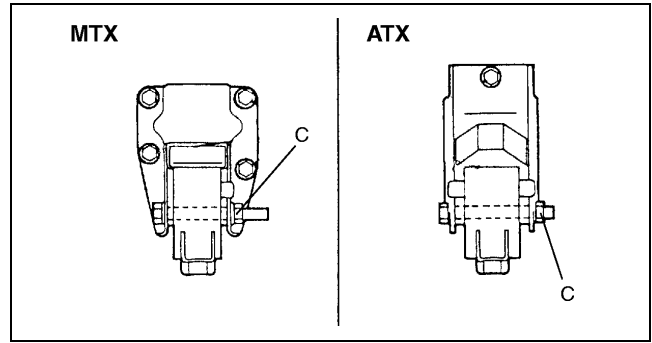
## No.1 Engine Mount Installation Note

1. Tighten the No.1 engine mount bolt A.
2. Tighten the No.1 engine mount nut B.



## MECHANICAL [ZM]

- Loosen the No.2 engine mount bolt C.
- Retighten the No.2 engine mount nut C.

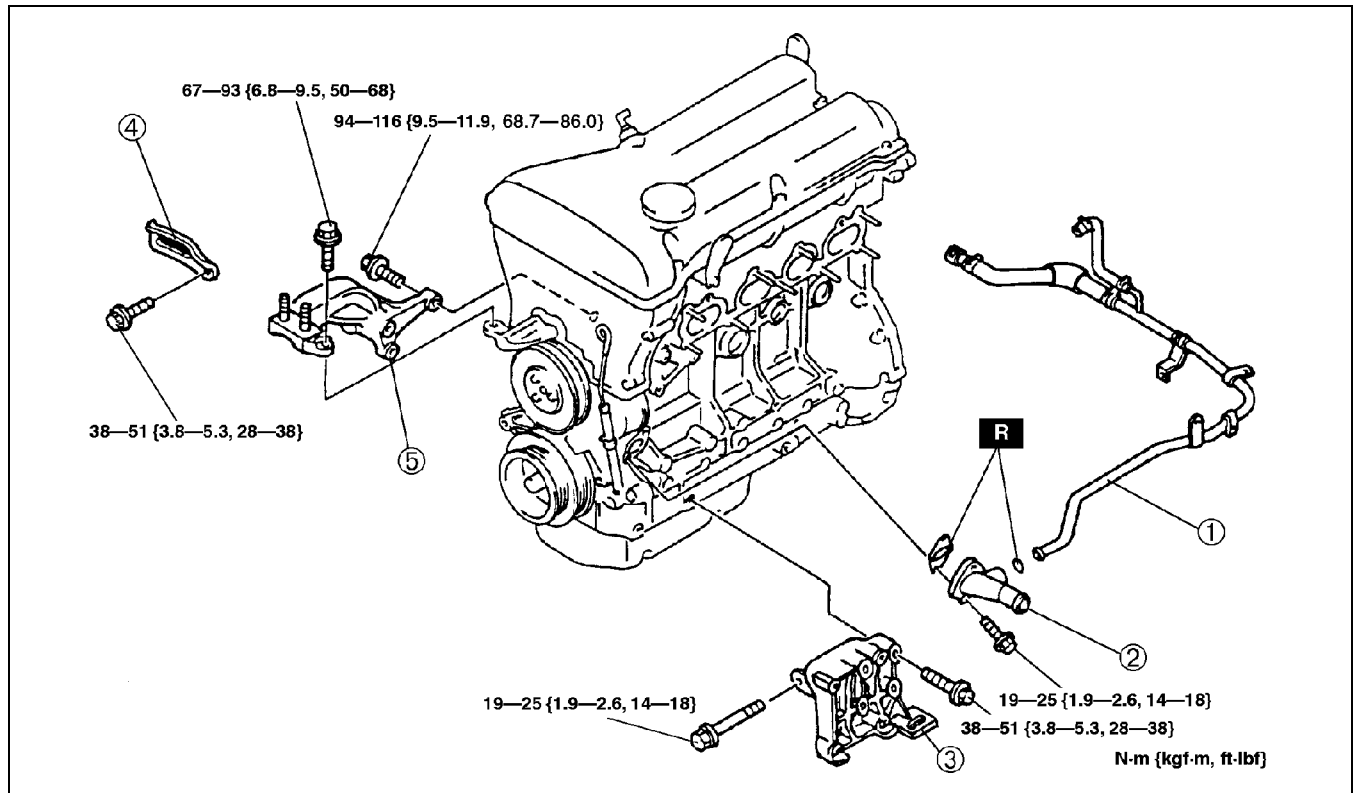


X3U110WBu

### ENGINE DISASSEMBLY/ASSEMBLY [ZM]

A3U011002000W07

- Disconnect the engine and transaxle. (See 05-15A-4 MANUAL TRANSAXLE (MTX) REMOVAL/INSTALLATION [F25M-R].) (See 05-15A-4 MANUAL TRANSAXLE (MTX) REMOVAL/INSTALLATION [F25M-R].)
- Remove the integrated stiffener. (See 01-11-8 Integrated Stiffener Installation Note.)
- Remove the CKP sensor. (See 01-40A-34 CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [ZM].)
- Remove the oil pressure switch. (See 01-11-2 OIL PRESSURE INSPECTION.)
- Remove the intake-air system. (See 01-13A-5 INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [ZM].)
- Remove the exhaust system. (See 01-15-1 EXHAUST SYSTEM REMOVAL/INSTALLATION.)
- Remove the oil filter. (See 01-11-3 OIL FILTER REPLACEMENT.)
- Remove the ignition coils.
- Remove the generator.
- Disassemble in the order indicated in the table.
- Assemble in the reverse order of disassembly.
- Inspect the air gap. (See 01-40A-32 Air Gap Inspection.)



Y3U110WA4

1	Water bypass pipe
2	Water inlet pipe
3	A/C compressor bracket (with A/C compressor)

4	Generator strap
5	No.3 engine bracket

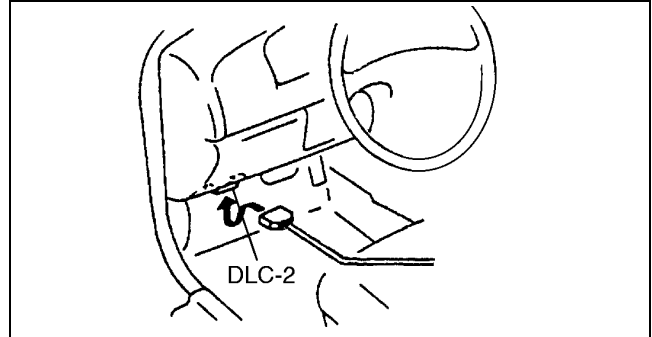


## ENGINE TUNE-UP [ZM]

A3U011002000W08

### Engine Tune-up Preparation

1. Warm up the engine to normal operating temperature.
2. Shift the transaxle into neutral.
3. Turn off all electrical loads.
  - Headlight switch
  - Fan switch
  - Rear window defroster switch
  - A/C switch
4. Verify that the steering wheel is at straight ahead position.
5. Connect the **SSTs** (WDS or equivalent) to the DLC-2.
6. Access RPM PID.
7. Wait until the electrical fan stops.



Z3U110WA5

01-10A

### Ignition Timing Inspection

1. Perform "Engine Tune-up Preparation".
2. Verify that the RPM PID is within the specification.
  - If not as specified, adjust the idle speed. (See 01-10A-26 Idle Speed Adjustment.)

### Specification

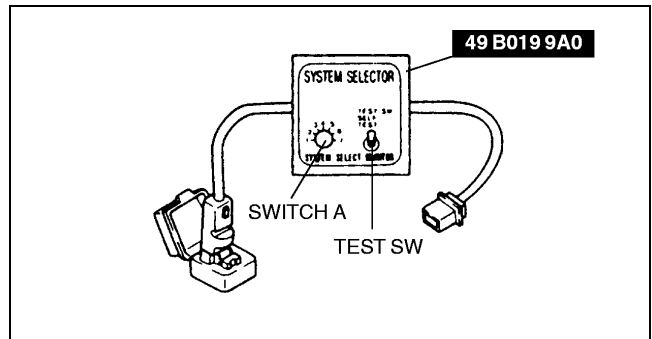
**650—750 (700±50) rpm**

3. Connect the timing light to the high-tension lead of the No.1 cylinder.
4. Verify that the timing mark (yellow) on the crankshaft pulley is within the specification.
  - If not as specified, inspect the following.
    - CMP sensor
    - CKP sensor
    - TP sensor
    - ECT sensor
    - Neutral switch (MTX)
    - Clutch switch (MTX)
    - TR switch (ATX)
  - If the devices are normal, replace the PCM. (See 01-40A-7 PCM REMOVAL/INSTALLATION [ZM].)

### Ignition timing

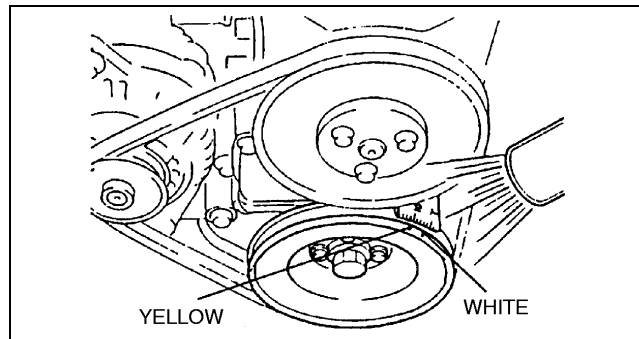
**BTDC 9°—11° (10°±1°) (TIMING MARK [YELLOW])**

5. Connect the **SST** (System selector) to the DLC.
6. Set switch A to position 1.
7. Set the test switch to SELF TEST.



X3U110WC0

8. Verify that the timing mark (yellow) on the crankshaft pulley is within the specification.
  - If not as specified, inspect the following.
    - CMP sensor
    - CKP sensor
    - TP sensor
    - ECT sensor
    - Neutral switch (MTX)
    - Clutch switch (MTX)
    - TR switch (ATX)
  - If the devices are normal, replace the PCM. (See 01-40A-7 PCM REMOVAL/INSTALLATION [ZM].)



X3U110WB1

**Specification**  
BTDC 6°—18°

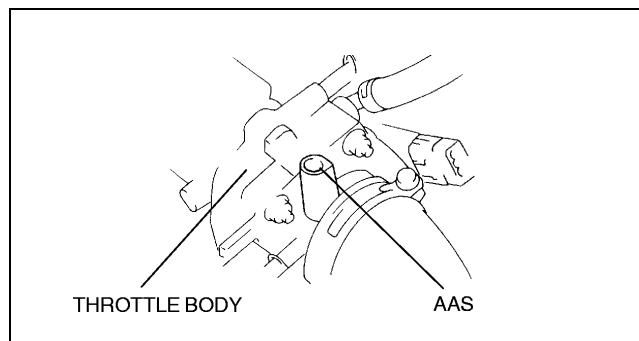
## Idle Speed Adjustment

1. Perform "Engine Tune-up Preparation".
2. Verify that the RPM PID is within the specification.
  - If not as specified, adjust the idle speed by turning the AAS.

**Specification**  
650—750 (700±50) rpm

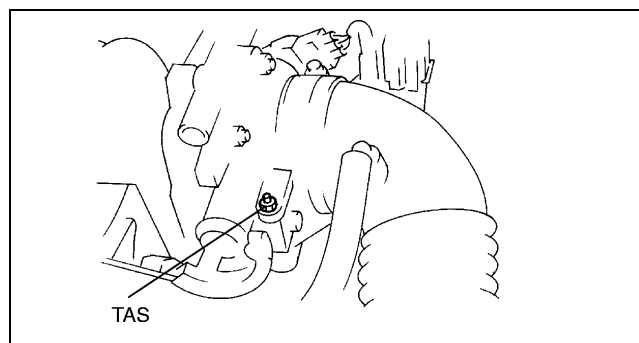
### Caution

- The TAS is set at the factory and must not be adjusted. Any adjustment will negatively effect the engine performance.



X3U110WBZ

3. Connect the **SST** (System selector) to the DLC.
4. Set switch A to position 1.
5. Set the test switch to SELF TEST.
6. Press **CLEAR** to clear previously selected items.
7. Disconnect the **SSTs**.



X3U110WC1

## Idle-up Speed Inspection

1. Perform "Engine Tune-up Preparation".
2. Connect the **SST** (System selector) to the DLC.
3. Set switch A to position 1.
4. Set the test switch to SELF TEST.
5. Verify that the idle speed is normal. (See 01-10A-26 Idle Speed Adjustment.)
6. Verify that the RPM PID is within the specification.
  - If not as specified with all load conditions, inspect the IAC valve.
  - If not as specified with some load condition, inspect the related input switches, harnesses, and connectors.

### Specification

Load condition	Idle-up speed (rpm)*1
E/L ON*2	650—750
P/S operating*3	700—800
A/C ON*4	700—800

\*1 : Excludes temporary idle speed drop just after the electrical loads (E/L) are turned on.

- \*2 : Headlight is on, Fan switch is above 1st, Cooling fan is operating, Rear window defroster is on.
- \*3 : Steering wheel is fully turned.
- \*4 : A/C switch and fan switch are on.

### Idle Mixture Inspection

1. Perform "Engine Tune-up Preparation".
2. Verify that the idle speed and ignition timing are within the specification. (See 01-10A-25 Ignition Timing Inspection.)(See 01-10A-26 Idle Speed Adjustment.)
3. Turn the test mode to OFF.
4. Warm up the engine by holding the engine speed at **2,500—3,000 rpm** for **approx. 3 min.**
5. Insert an exhaust gas analyzer to the tailpipe.
6. Verify that the CO and HC concentrations are within the regulation.
  - If not within the regulation, inspect the following:
    - On-board diagnostic system (See 01-02A-15 DTC TABLE [ZM].)
    - HO2S (See 01-40A-36 HEATED OXYGEN SENSOR (HO2S) INSPECTION [ZM].)
    - Intake manifold vacuum (See 01-03A-57 Intake Manifold Vacuum Inspection.)
    - Fuel line pressure (See 01-14-6 FUEL PRESSURE INSPECTION.)
    - Ignition timing control
      - If the systems and devices are normal, replace the TWC. (See 01-15-1 EXHAUST SYSTEM REMOVAL/INSTALLATION.)