

ENGINE TUNE-UP [CB-80]**CONNECTING METHOD OF INSTRUMENTS AND HANDLING INSTRUCTIONS**

1. Engine tachometer
 - (1) In the case of a tachometer in which the pick-up is made from the primary circuit and there is no 3-cylinder range, carry out the measurement using the 6-cylinder range. And multiply the reading by 2. This product is the actual revolutionary speed of the 3-cylinder engine.
 - (2) In the case of a tachometer in which the pulses flowing through the resistive cord of the cylinder No.1 are sensed, the reading can be read directly regardless of the number of cylinders.
2. The power supply for the tachometer, timing light and other instruments should be connected to the battery terminal.
3. Never disconnect the battery terminals while the engine is running.
(Failure to observe this caution will cause abnormal pulses to apply to the transistors, even leading to damage of the transistors and other electronic meters, etc.)
4. Care must be exercised to ensure that no water gets to each electric part during the cleaning.
5. Make sure that the CO meter is adjusted and calibrated accurately before it is put into use.
 - (1) Warming-up
 - (2) Zero-point adjustment
 - (3) Span adjustment

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ENGINE TUNE-UP

1. Checking engine oil level

After the engine has warmed up, stop the engine. A few minutes later, check the engine oil level using a level gauge.

Ensure that the oil level is between the full level and the low level.

Engine Oil Capacity:

Full level 2.7

Low level 1.7

NOTE:

When the engine oil level is below the specified level, replenish the specified oil to the full level.

(When the engine oil level is below the specified level, check to see if oil leakage exists.)

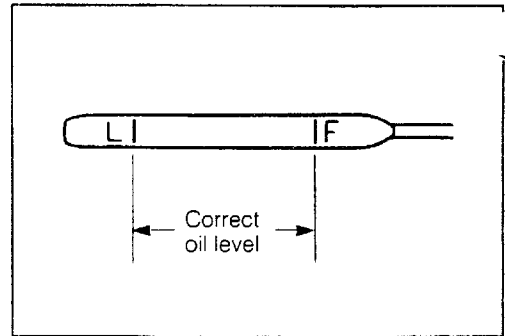


Fig. 3-32

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2. Checking cooling water level

Check the cooling water level at the reserve tank. Ensure that the cooling water level is between the full level and the low level.

NOTE:

When the cooling water level is below the specified level, replenish the reserve tank with water to the full level.

If the cooling water level is below the low level, remove the radiator cap and check the radiator cooling water for correct level.

If the cooling water level is always below the specified level, check the radiator cap and water leakage, using a radiator cap tester.

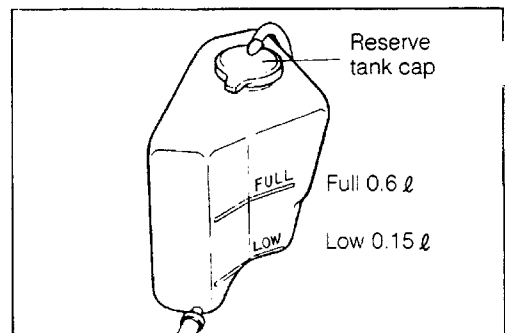


Fig. 3-33

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CAUTION:

Never open the radiator cap when the engine is running or when the cooling water is still hot.

Cooling water capacity: 4.0 l

(Including 0.6 l for reserve tank)

3. Checking air cleaner element

- (1) Visually inspect to see if the air cleaner element is restricted, abnormally dirty or damaged.

NOTE:

Replace the air cleaner element, as required.

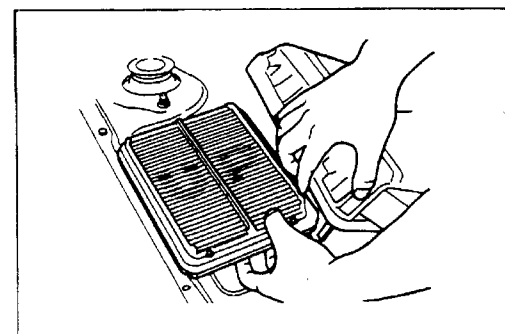


Fig. 3-34

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- (2) Clean the element with compressed air.
Blow compressed air from the upper of the air cleaner element.

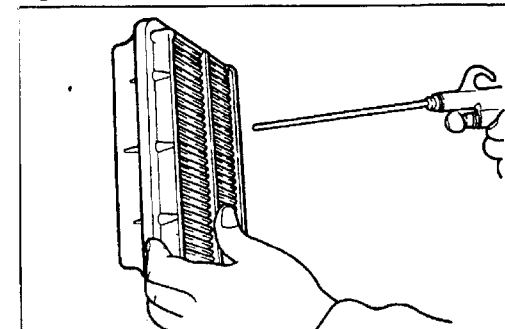


Fig. 3-35

WM-03055

Checking spark plugs

- (1) Visually inspect the spark plugs for damage or cracks.

NOTE:

Replace the spark plug, as required.

- (2) Clean the spark plugs.
- (3) Check and adjustment of the spark plug gaps.

Specified Spark Plug Gap:

0.9 - 1.0 mm (0.035 - 0.039 inch)

- (4) If the spark plug is burnt excessively, replace it with a replacement plug.

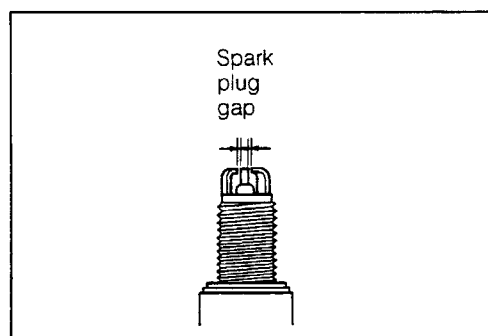


Fig. 3-36

WM-03056

Manufacturer	DENSO	
ECE & EEC specifications	W22ETR-L	W20ETR-L
Except ECE & EEC specifications	W22ET-L	W20ET-L

WM-03057

5. Checking V-belt

- (1) Visually inspect to see if the V-belt exhibits damage, cracks or wear.

NOTE:

Replace the V-belt, as required.

- (2) Measure the amount of belt deflection.

Specified Deflection of V-Belt

7.5 - 8.5 (0.3 - 0.35 inch)

[With a force of 8 kg (18 lb) Applied]

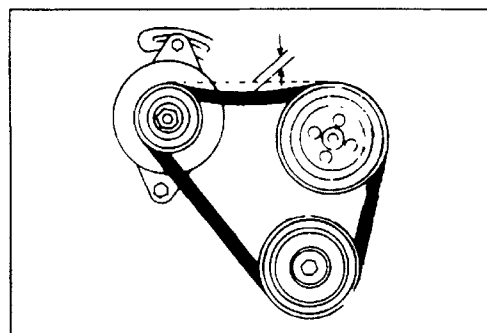


Fig. 3-37

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6. Checking valve clearances

- (1) Warm up the engine.

Cooling water temperature: 75 - 85°C (167 - 185°F)

- (2) Check the valve clearances.

Specified Valve Clearance:

Intake valve:

0.27 ± 0.05 mm (0.0106 ± 0.002 inch)

Exhaust valve:

0.32 ± 0.05 mm (0.0126 ± 0.002 inch)

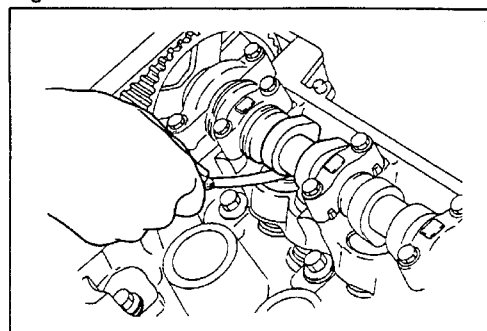


Fig. 3-38

WM-03059

Carry out the checking of valve clearances, with the piston of the No.1 cylinder set to the end of the compression stroke or to the tops of the intake and exhaust strokes, respectively. See the table at the right for the adjustable valves for the respective positions of the No.1 piston.

Crank angle	Cylinder		
	1	2	3
When No.1 piston is set to end of compression stroke	IN ○		○
	EX ○	○	
When No.1 piston is set to tops of intake and exhaust strokes, respectively	IN	○	
	EX		○

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- (3) If the valve clearances do not conform to the specified values, replace the adjusting shims, following the procedure given below.

- ① Turn the crankshaft so that the cam lobe of the cylinder to be adjusted assumes nearly the upright position of the valve.

NOTE:

When the valve clearances are adjusted, make sure that the piston of the cylinder to be adjusted is not at its top dead center.

(If the SST is used when the piston is at its top dead center, the valves may interfere with the piston, thus damaging the valves and piston.)

- ② Set the cut-out section of each lifter to a position indicated in the figure.

SST: 09248-87703-000

- ③ Insert the SST into between the camshaft and the valve lifter, as shown in the figure.
In this way, push down the two lifters.

- ④ Using a mini-sized nose plier or the like, raise the adjusting shim through the cut-out section of the lifter.

- ⑤ Select a suitable shim.

Thickness of shim to be selected =

Thickness of removed shim + measured valve clearance – specified valve clearance

[Reference]

Adjusting shim is available in 41 different kinds within range from 2.500 to 3.300 mm in increments of 0.02 mm

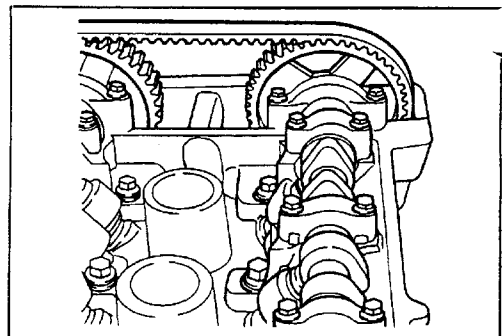


Fig. 3-39

WM-03061

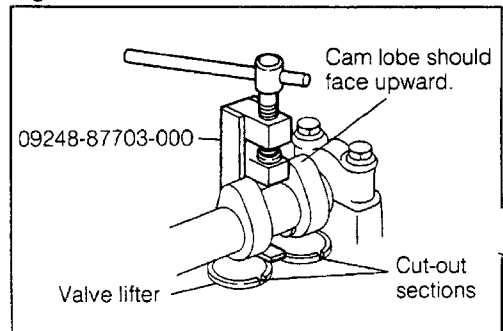


Fig. 3-40

WM-03062

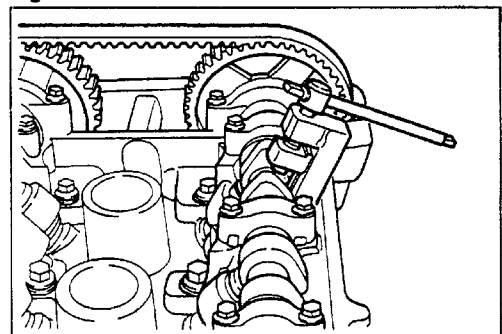


Fig. 3-41

WM-03063

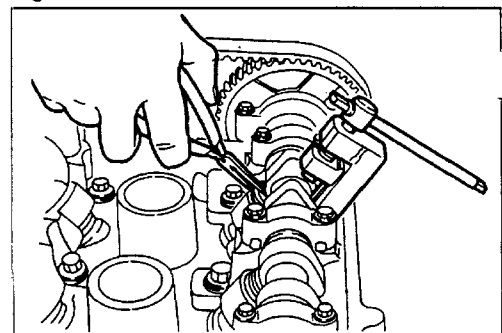


Fig. 3-42

WM-03064

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- ⑥ Place the selected shim in the lifter. The shim should be placed in such a direction that the surface marked by inerasable ink faces toward the lifter side.

- ⑦ Remove the SST.
- ⑧ Ensure that the valve clearances have been adjusted within the specifications.

NOTE:

See the section under "Checking valve clearances."

- ⑨ Install the cylinder head cover.

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7. Checking ignition timing

- (1) Warm up the engine.
- (2) Short the terminal T.
Read the outputted diagnosis code. If any abnormality is detected, perform the trouble shooting. (See the "Trouble Shooting for Type CB-80 Engine Control System.")

- (3) Adjust the idle speed to 950 ± 50 rpm by means of the idle adjusting screw of the throttle body.

- (4) While the engine is idling, check the ignition timing, using a timing light. Ensure that the ignition timing is correct, using the ignition timing mark on the flywheel and the indicator.

Reference

Ignition timing: $10^\circ \pm 2^\circ$ BTDC/ 950 ± 50 rpm

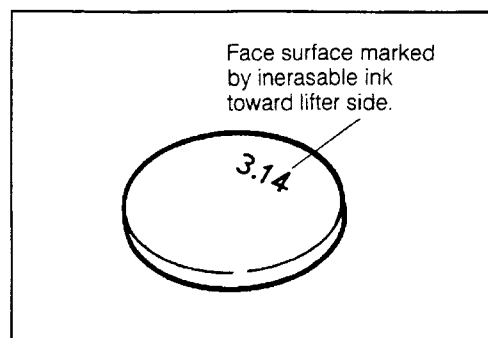


Fig. 3-43

WM-03066

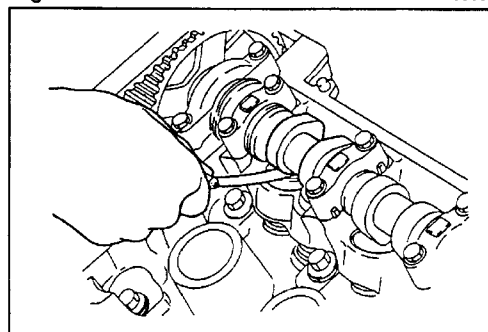


Fig. 3-44

WM-03067

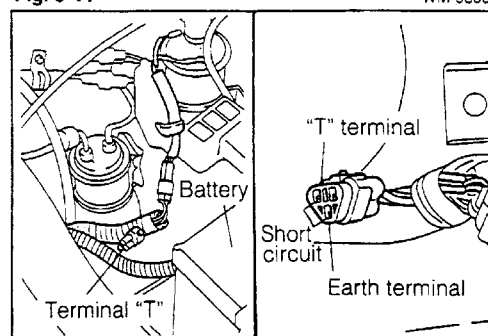


Fig. 3-45

WM-03069

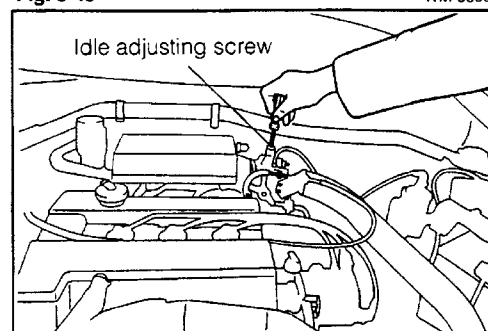


Fig. 3-46

WM-03070

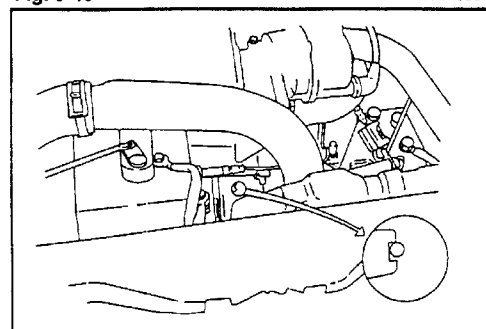


Fig. 3-47

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(5) Adjustment

If the ignition mark fails to align with the indicator, slacken the attaching bolts of the distributor. Adjust the ignition timing by turning the distributor body.

NOTE:

When the distributor body is turned counterclockwise, the ignition timing is advanced. Conversely, when the distributor body is turned clockwise, the ignition timing is retarded.

(6) Securely tighten the attaching bolts of the distributor.

NOTE:

Care must be exercised to ensure that the distributor body will not turn during this tightening operation.

Tightening Torque: 1.5 - 2.2 kg-m (11 - 16 ft-lb)

(7) Detach the short pin at the terminal T.

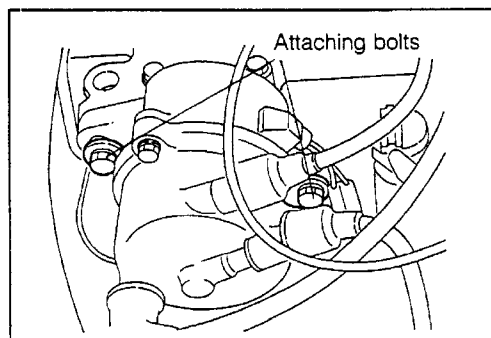


Fig. 3-48

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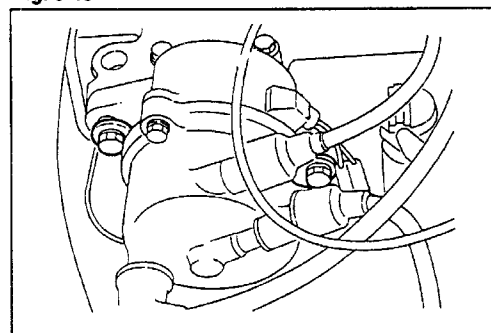


Fig. 3-49

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8. Checking idle speed

NOTE:

The following notes must be observed before or during the idle speed adjustment.

- ① Warm up the engine thoroughly. (Warm up the engine for about another 15 minutes after the cooling fan has started its operation.)
- ② Do not perform the engine idle speed adjustment while the fan motor is functioning.
- ③ Never apply extra loads such as the headlamps or the like during the adjustment of the engine idle speed. (As for the day-light-equipped vehicles, disconnect the day-light relay connector.)
- ④ Be sure to install the air cleaner element in place.
- ⑤ Ensure that the exhaust system exhibits no gas leakage.
- ⑥ Ensure that the intake system exhibits no air leakage.

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(1) Check and adjustment of idle speed

- ① Install a tachometer and a CO meter.
- ② Turn the bypass screw of the throttle body so that the engine idle speed becomes 950 ± 50 rpm. (When the bypass screw is turned clockwise, the idle speed drops. Conversely, when the bypass screw is turned counterclockwise, the idle speed rises.)

Specified Idle Speed: 950 ± 50 rpm

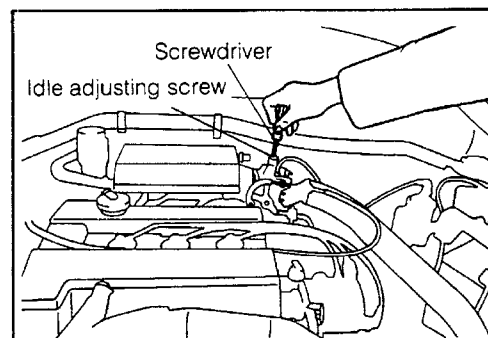


Fig. 3-50

WM-03075

- ③ Measure the CO concentration, as follows:
Adjust the A/F adjuster screw so that the CO concentration becomes $1 \pm 0.5\%$.
Specified CO Concentration: 0.5 - 1.5 %

After completion of the adjustment, check to see if the engine idle speed conforms to the specifications. If the idle speed fails to conform to the specifications, repeat the operations ② and ③.

NOTE:

Under no circumstances should the adjustment of the A/F adjuster be performed without a CO meter.

(This engine is equipped with the diagnosis function. Therefore, if the A/F adjuster should be adjusted without a CO meter, it may cause an erroneous diagnosis code.)

9. Checking dashpot

- (1) Checking of touch revolution speed

- ① Warm up the engine.
- ② Disconnect the vacuum hose from the diaphragm pipe.
- ③ Raise the engine revolution speed to about 2500 rpm. Plug the disconnected diaphragm pipe by your finger.

- ④ Release the throttle valve. Measure the engine revolution speed at a time when the throttle touch arm begins to contact the diaphragm shaft.

Specified Touch Revolution Speed:

1600 ± 100 rpm

If this engine speed drops within the following duration of time, it indicates that the system is functioning properly.

Specified Time: 0.5 - 5 Seconds

- (2) Adjustment of touch revolution speed

- ① Stop the engine. Slacken the lock nut of the dashpot adjusting screw.
- ② Start the engine.
- ③ Keep the engine revolution speed at about 2500 rpm. Plug the diaphragm pipe of the dashpot by finger.
- ④ Release the throttle valve. Adjust the dashpot adjusting screw so that the touch revolution speed may become the specified value.

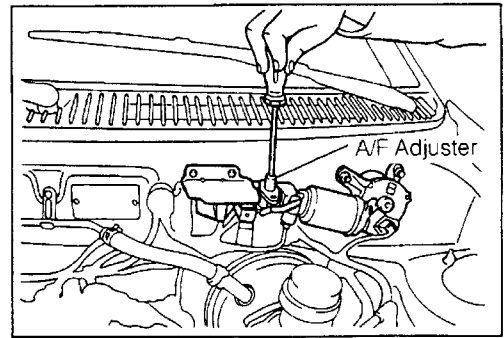


Fig. 3-51

WM-03076

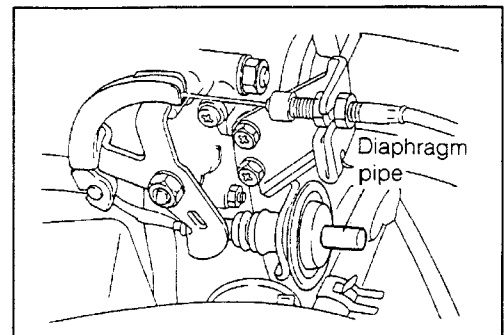


Fig. 3-52

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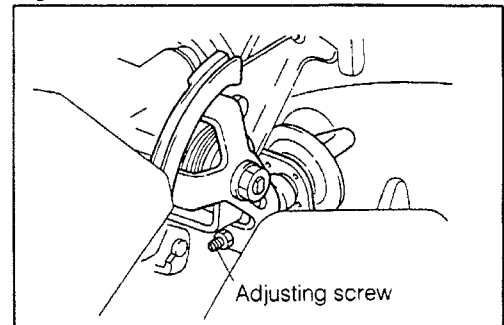


Fig. 3-53

WM-03078

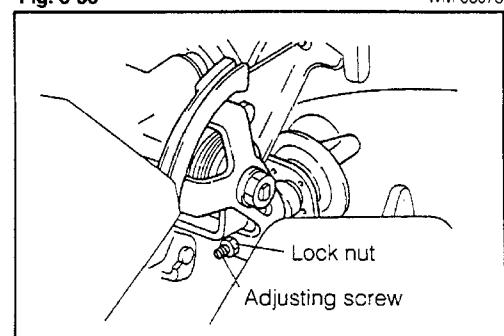


Fig. 3-54

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- ⑤ Stop the engine. Tighten the lock nut of the adjusting screw.
- ⑥ Start the engine. Check the dashpot touch revolution speed.
- ⑦ If the touch revolution speed fails to conform to the specifications, repeat the adjusting procedure above.
- ⑧ Connect the hose.

(3) Dashpot function check

- ① Keep the engine revolution speed at 3000 rpm for a short period of time. Then, release the throttle valve.
- ② Measure the time required for the engine to drop its engine revolution speed from the touch revolution speed to the idle revolution speed.

Specified Time Required: 0.5 - 5.0 seconds

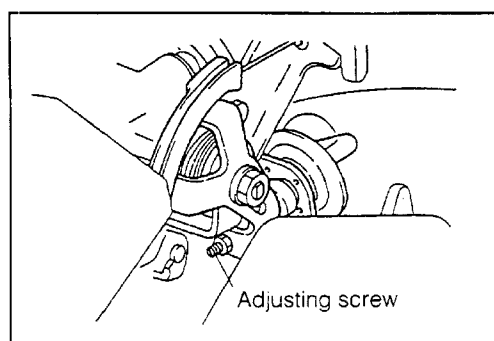


Fig. 3-55

WM-03080

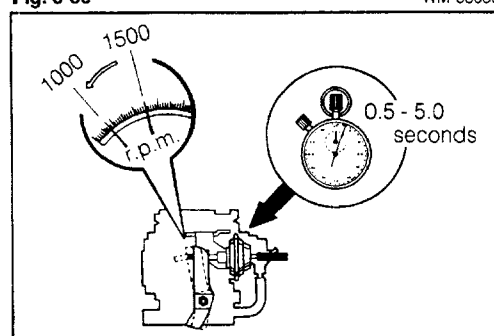


Fig. 3-56

WM-03081