

IGNITION SYSTEM

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10-2

IGNITION SYSTEM – Ignition System Circuit

IGNITION SYSTEM CIRCUIT

Fig. 10-1

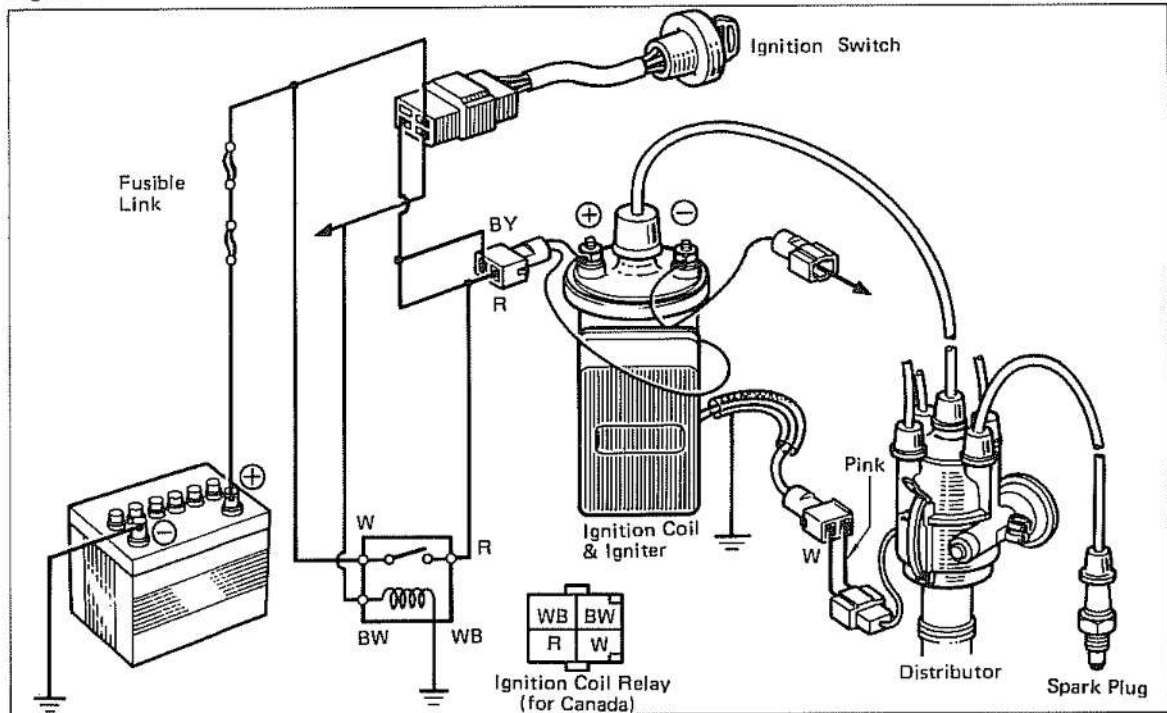


Fig. 10-2

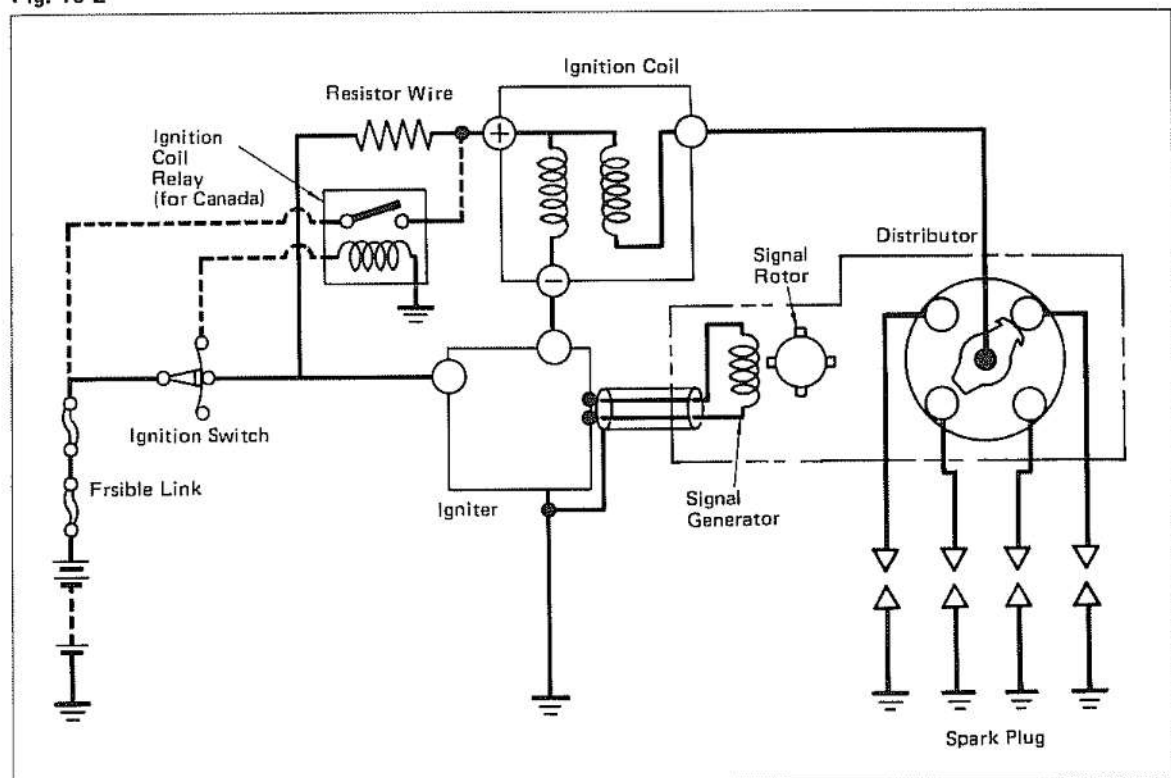


Fig. 10-3

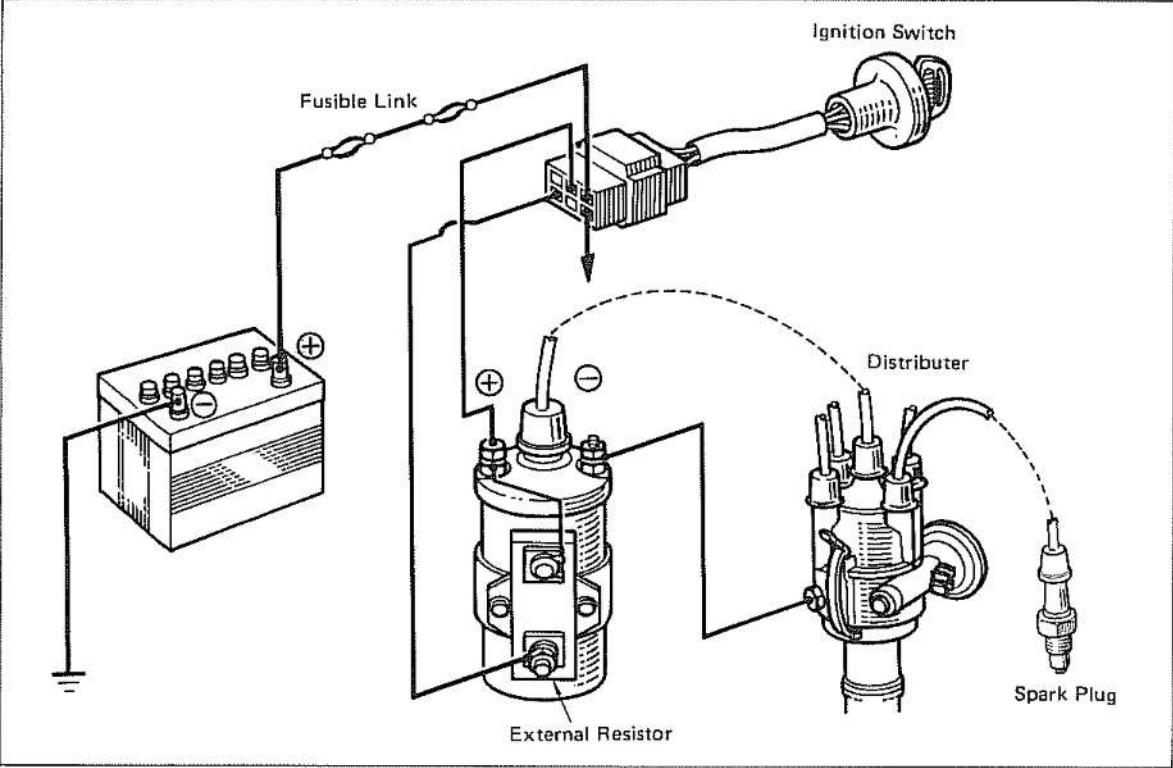
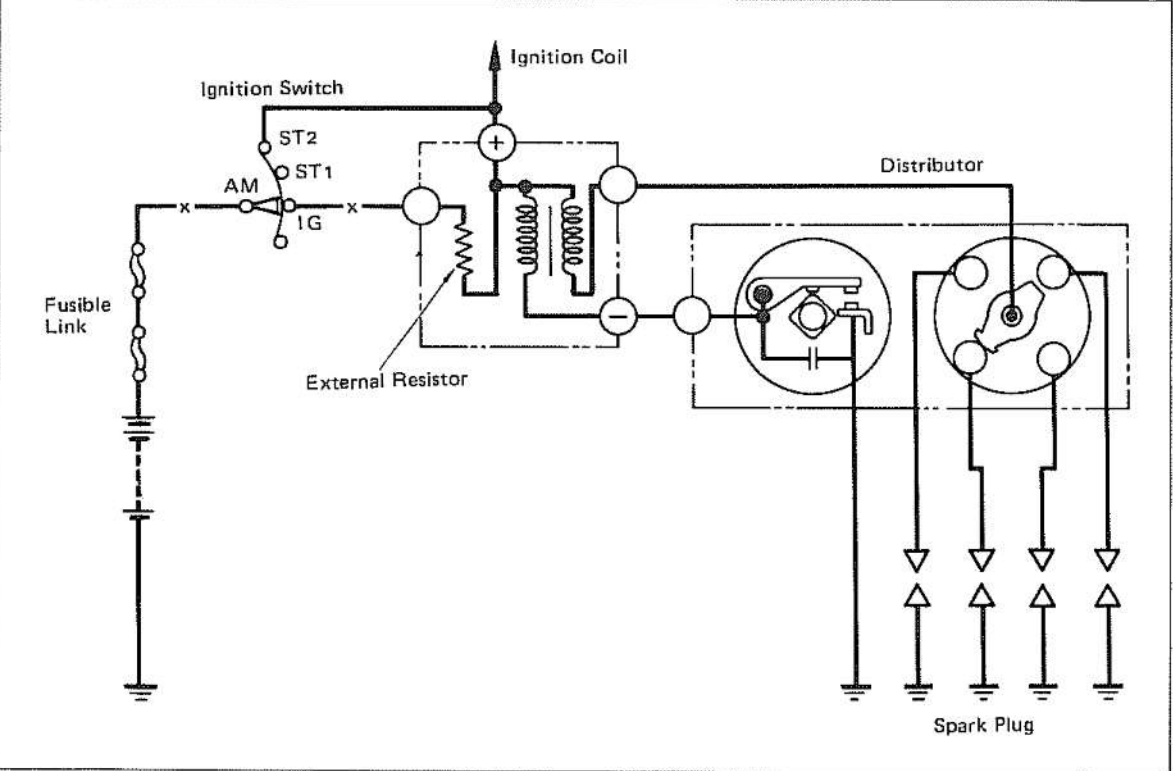
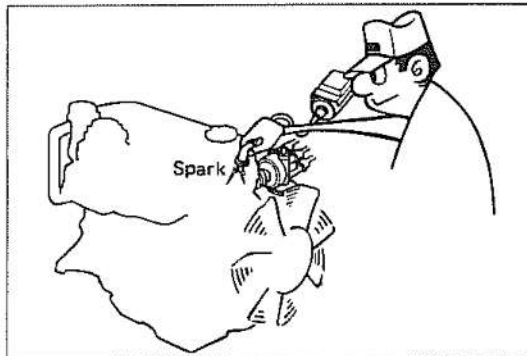


Fig. 10-4



10-4 IGNITION SYSTEM – Ignition System Circuit

Fig. 10-5



ON-VEHICLE INSPECTION

For USA

Spark Test

Pull the ignition coil-to-distributor resistive cord from the distributor and hold its end close to a ground. Then start the engine and check for spark.

— Caution —

The check must be made for as short a time as possible.

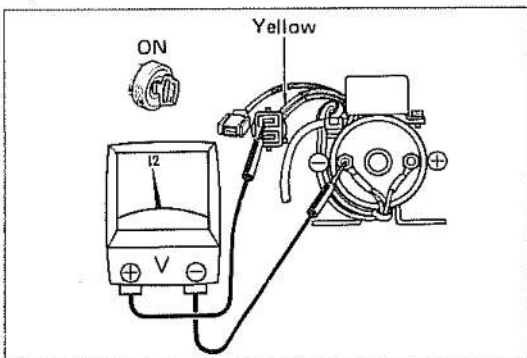
Fig. 10-6



Connector

Check the connector and wiring.

Fig. 10-7

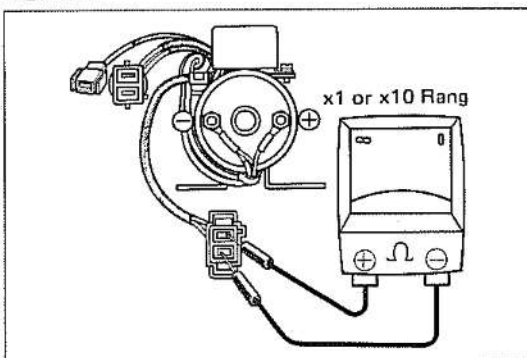


Igniter

1. Check the voltage between the ignition coil (—) terminal and the resistor wire terminal.
 - (1) Turn on the ignition switch. (But, not starting)
 - (2) Check the voltage between the ignition coil (—) terminal and resistor wire terminal using a voltmeter.

Voltage: 12V

Fig. 10-8



2. Check the voltage between the ignition coil (—) terminal and the resistor wire terminal.
 - (1) Disconnect the wiring connector from the distributor.
 - (2) Select the 1Ω or 10Ω range on the ohmmeter.
 - (3) Use the ohmmeter to provide resistance between the two terminals of the igniter as illustrated.

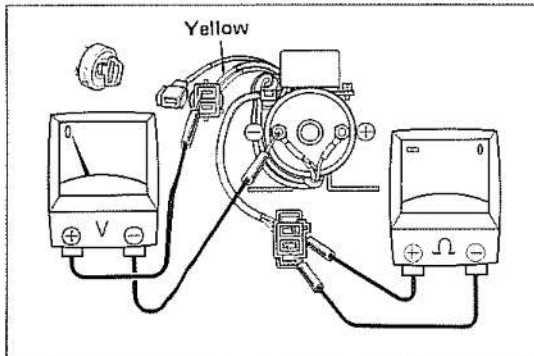
— Caution —

Care must be taken not to intermix the (+) and (—) terminals of the ohmmeter.

IGNITION SYSTEM – Ignition System Circuit

10-5

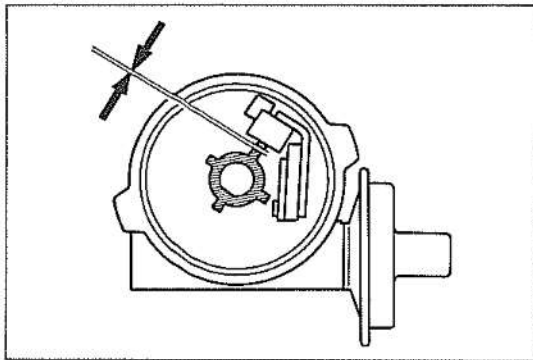
Fig. 10-9



- (4) Turn on the ignition switch.
(But do not start)
- (5) Check the voltage between the ignition coil (—) terminal and resistor terminal with the voltmeter.

Voltage should be nearly zero.

Fig. 10-10

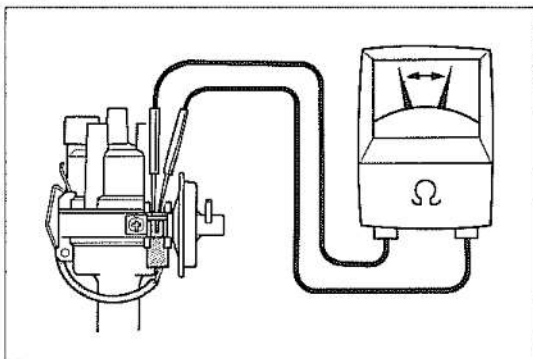


Distributor

1. Check the air gap.
 - Check the air gap between the timing rotor and pick up coil projection by using a feeler gauge.

**Air gap: 0.2 – 0.4 mm
(0.008 – 0.016 in.)**

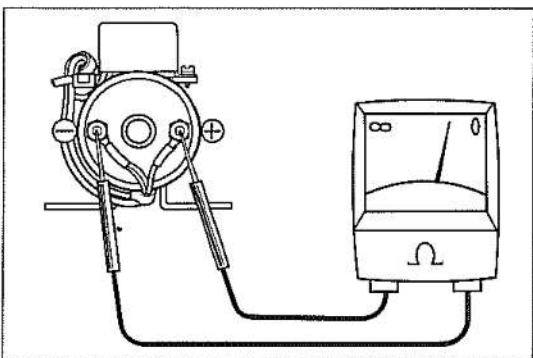
Fig. 10-11



2. Check the signal generator.
 - Check the resistance of the signal generator with an ohmmeter.

Resistance: 130 – 190 Ω

Fig. 10-12



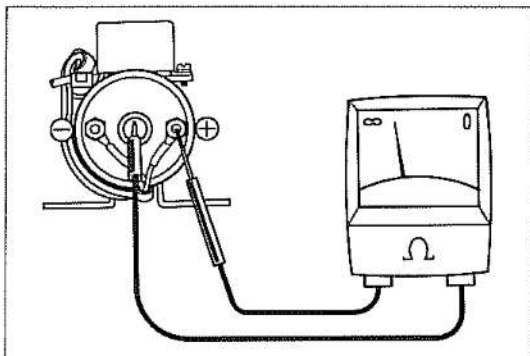
Ignition Coil

1. Check the ignition coil resistances with an ohmmeter.
 - (1) Primary coil resistance: between (+) and (—) terminal.

**Resistance: 1.3 – 1.7 Ω
(at Cold)**

10-6 IGNITION SYSTEM -- Ignition System Circuit

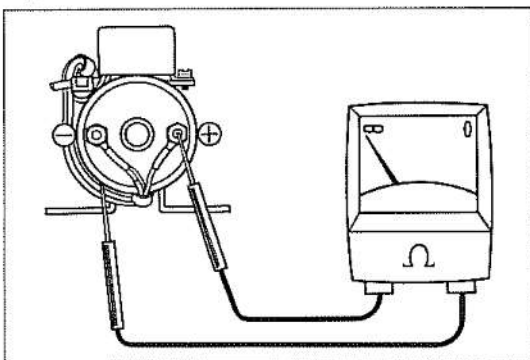
Fig. 10-13



- (2) Secondary coil resistance: between (+) terminal and high tension terminal.

Resistance: 12.0 – 16.0 k Ω (at Cold)

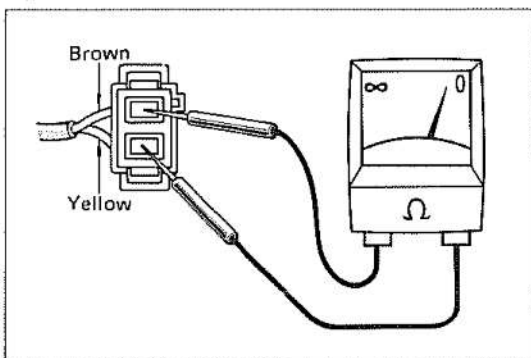
Fig. 10-14



2. Check the insulation resistance between the (+) terminal and coil case with an ohmmeter.

Resistance: Infinity

Fig. 10-15



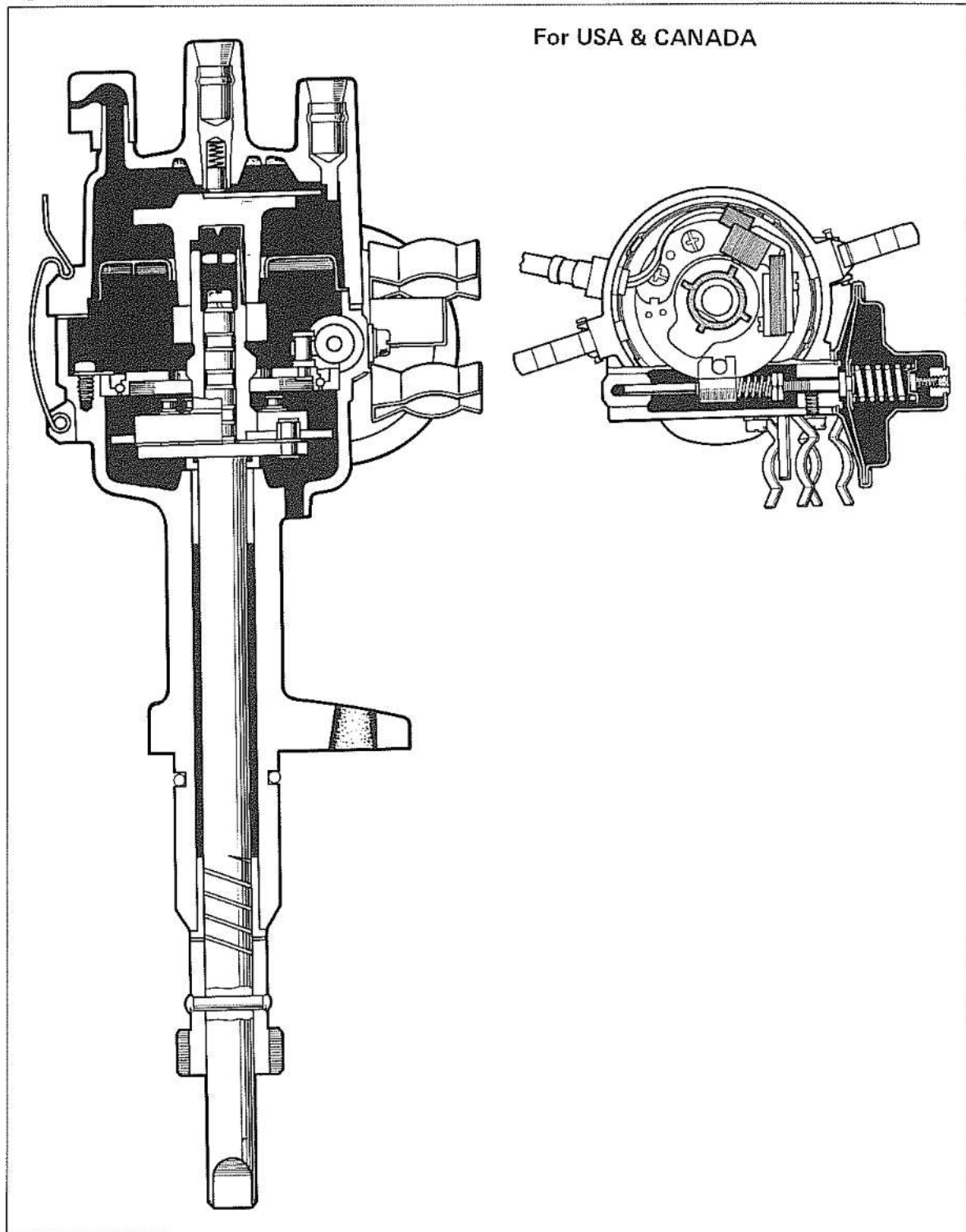
Resistor Wire

1. Check the resistor wire resistance with an ohmmeter.

Resistance: 1.2 Ω (at Cold)

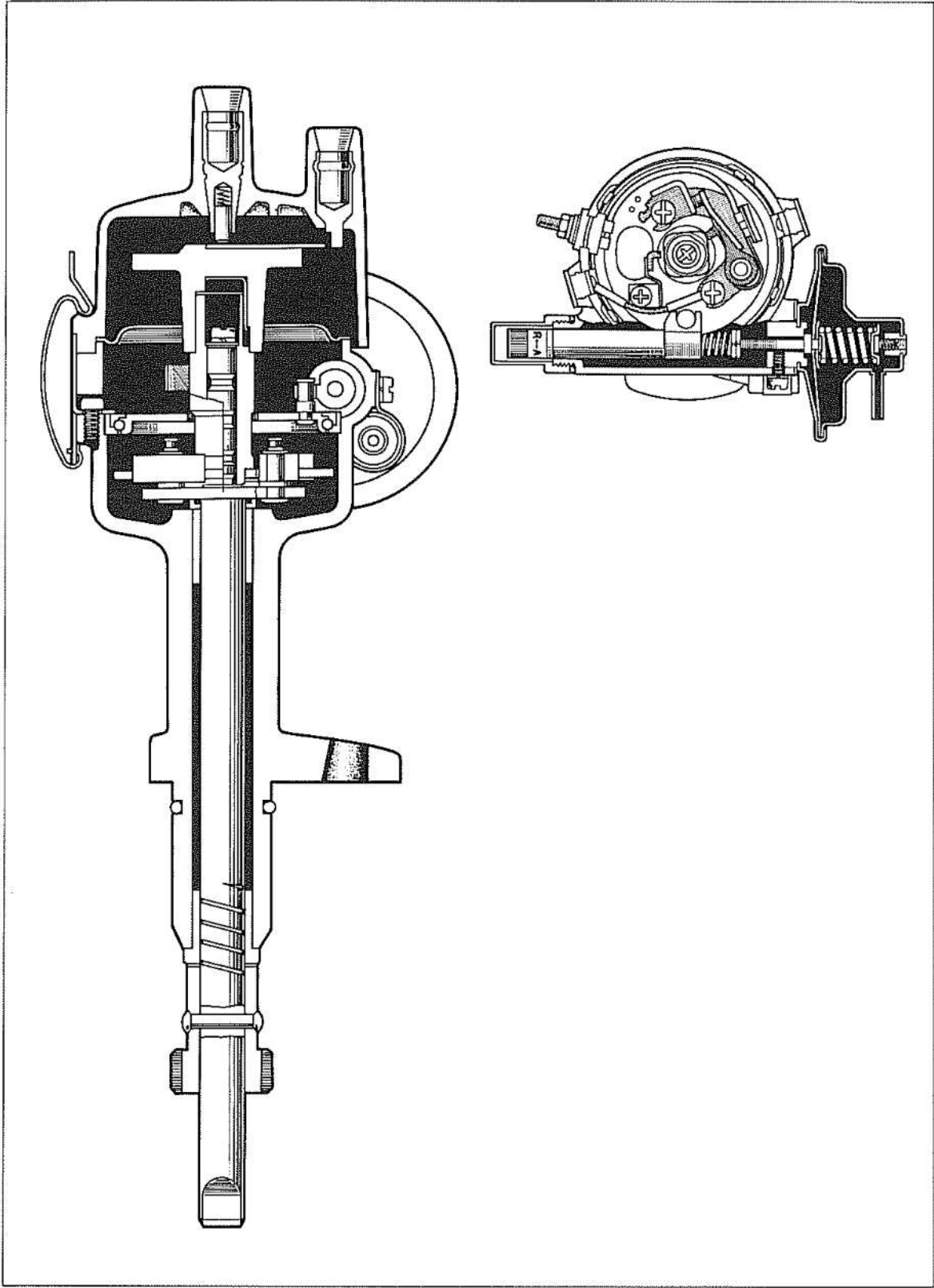
DISTRIBUTOR CUTAWAY VIEW

Fig. 10-16



10-8 **IGNITION SYSTEM – Distributor**

Fig. 10-17



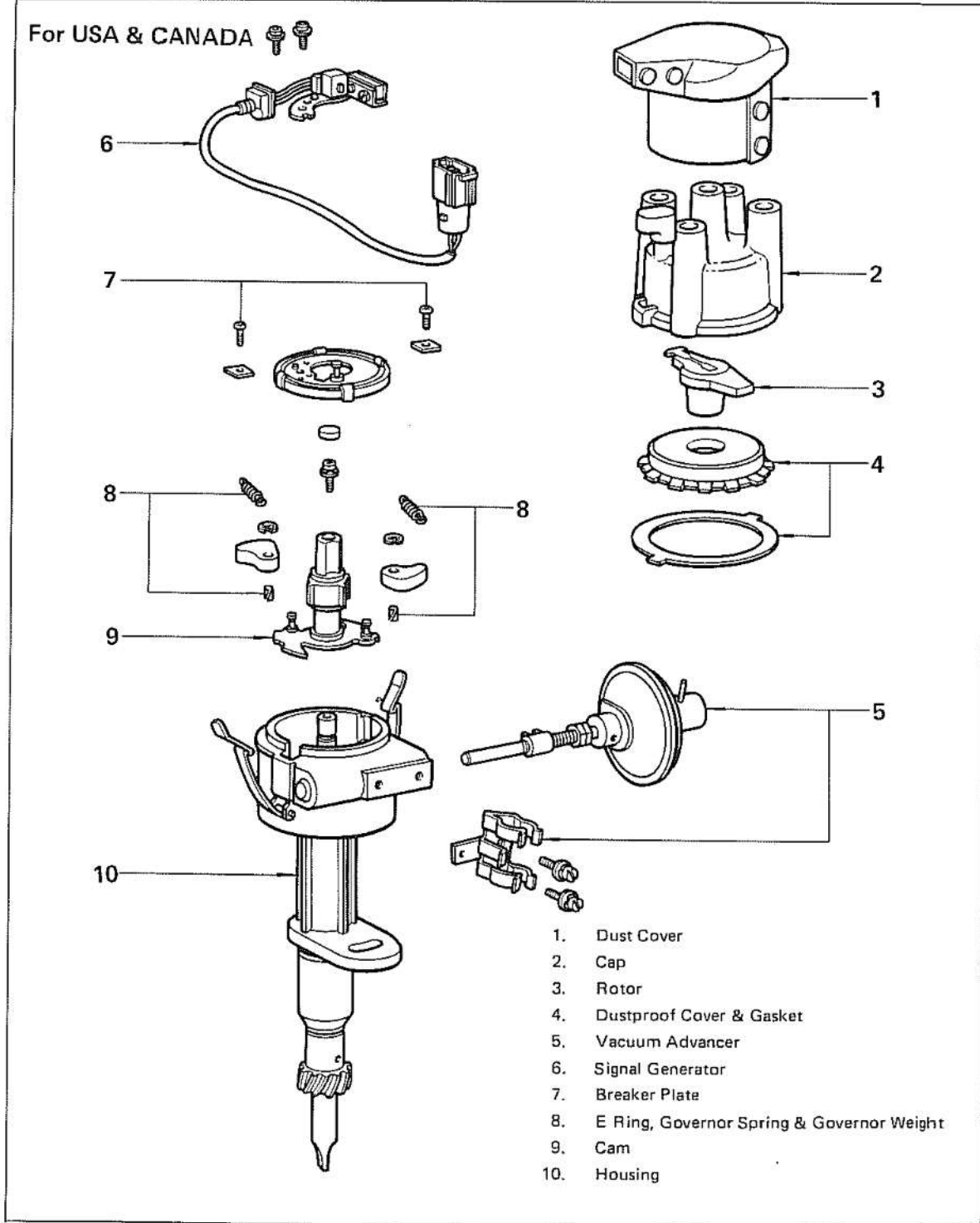
IGNITION SYSTEM— Distributor

10-9

DISASSEMBLY

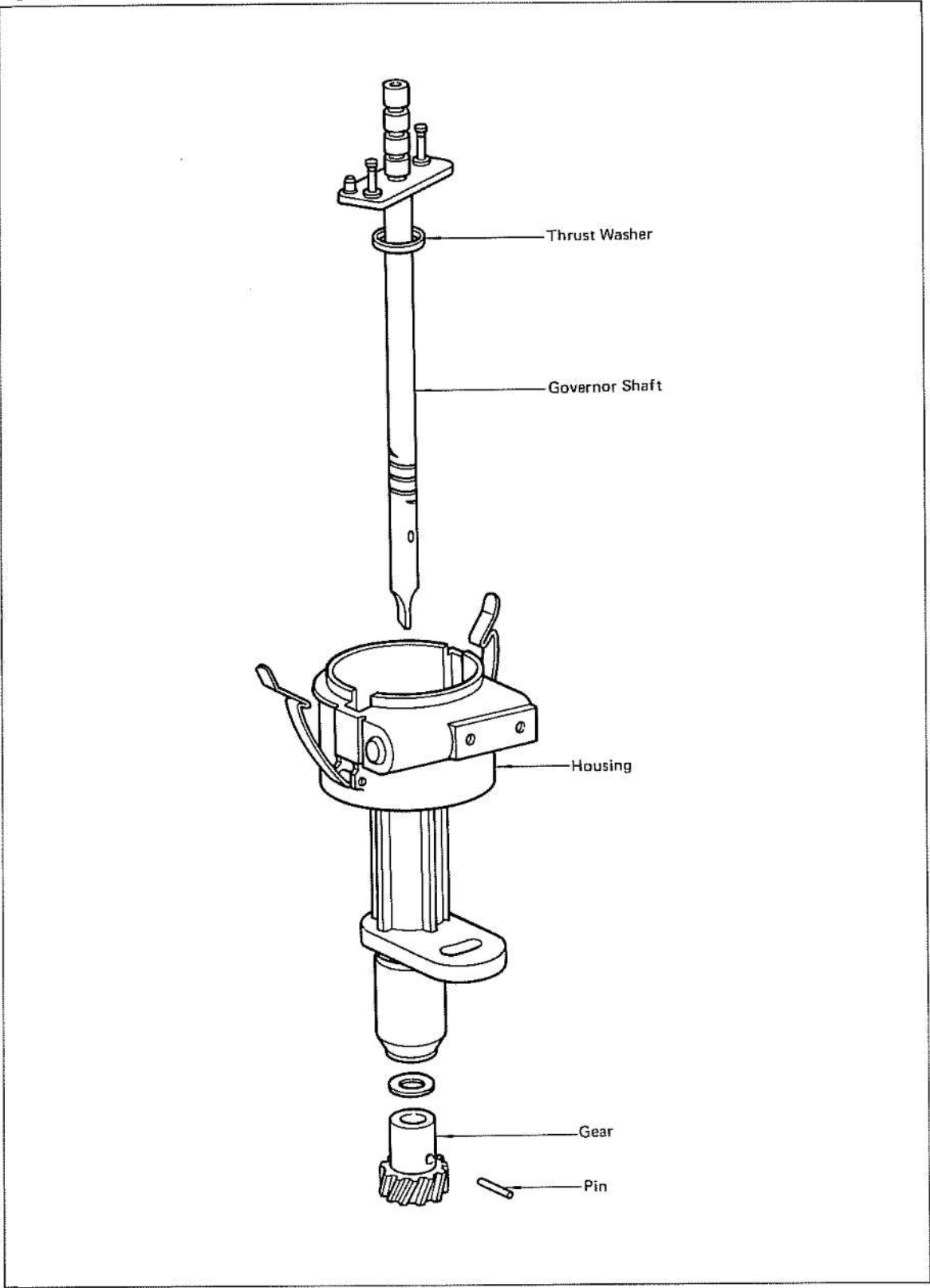
Disassemble the parts in the numerical order shown in the figure.

Fig. 10-18



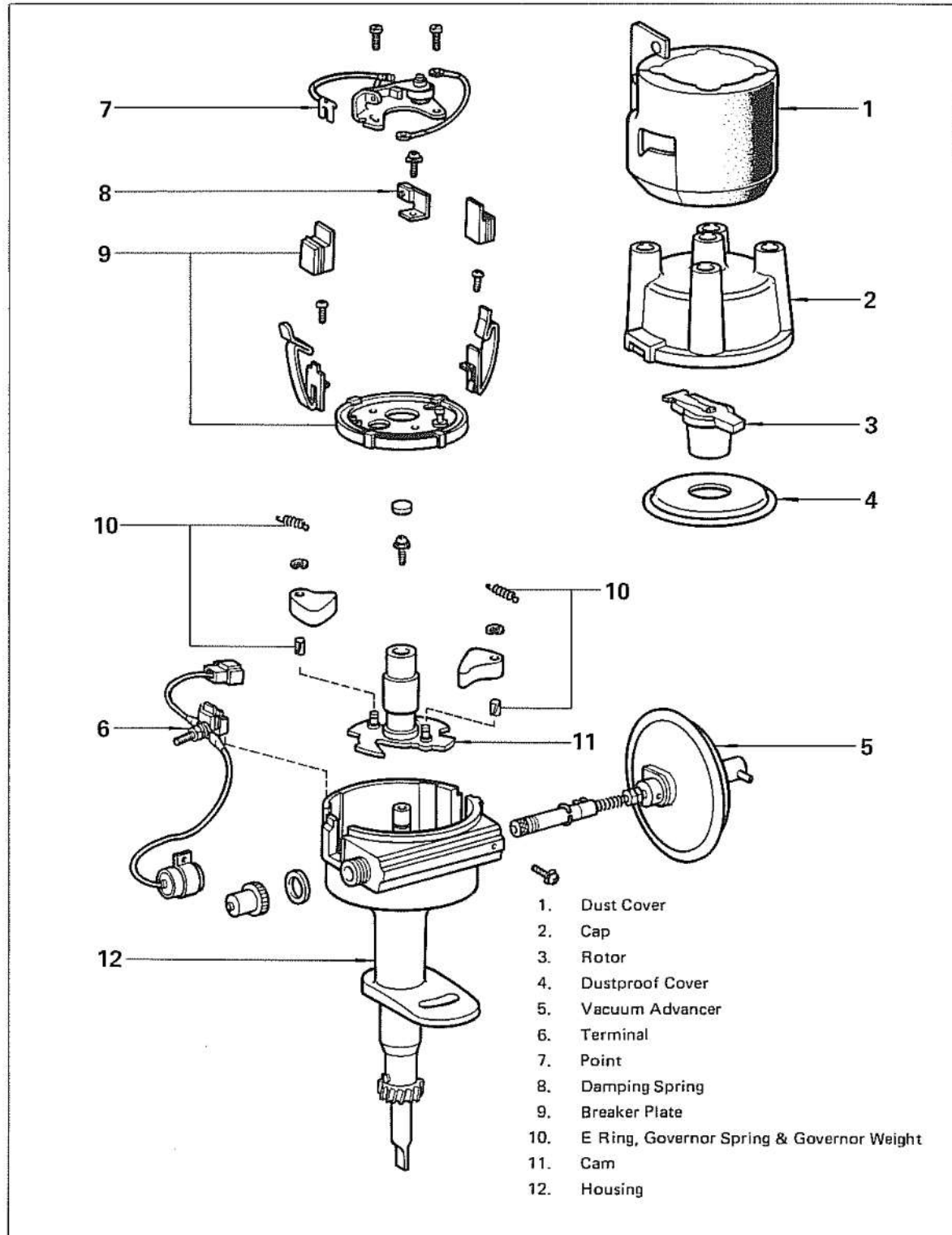
10-10 **IGNITION SYSTEM – Distributor**

Fig. 10-19



IGNITION SYSTEM – Distributor**10-11**

Disassemble the parts in the numerical order shown in the figure.

Fig. 10-20

10-12 **IGNITION SYSTEM – Distributor**

Fig. 10-21

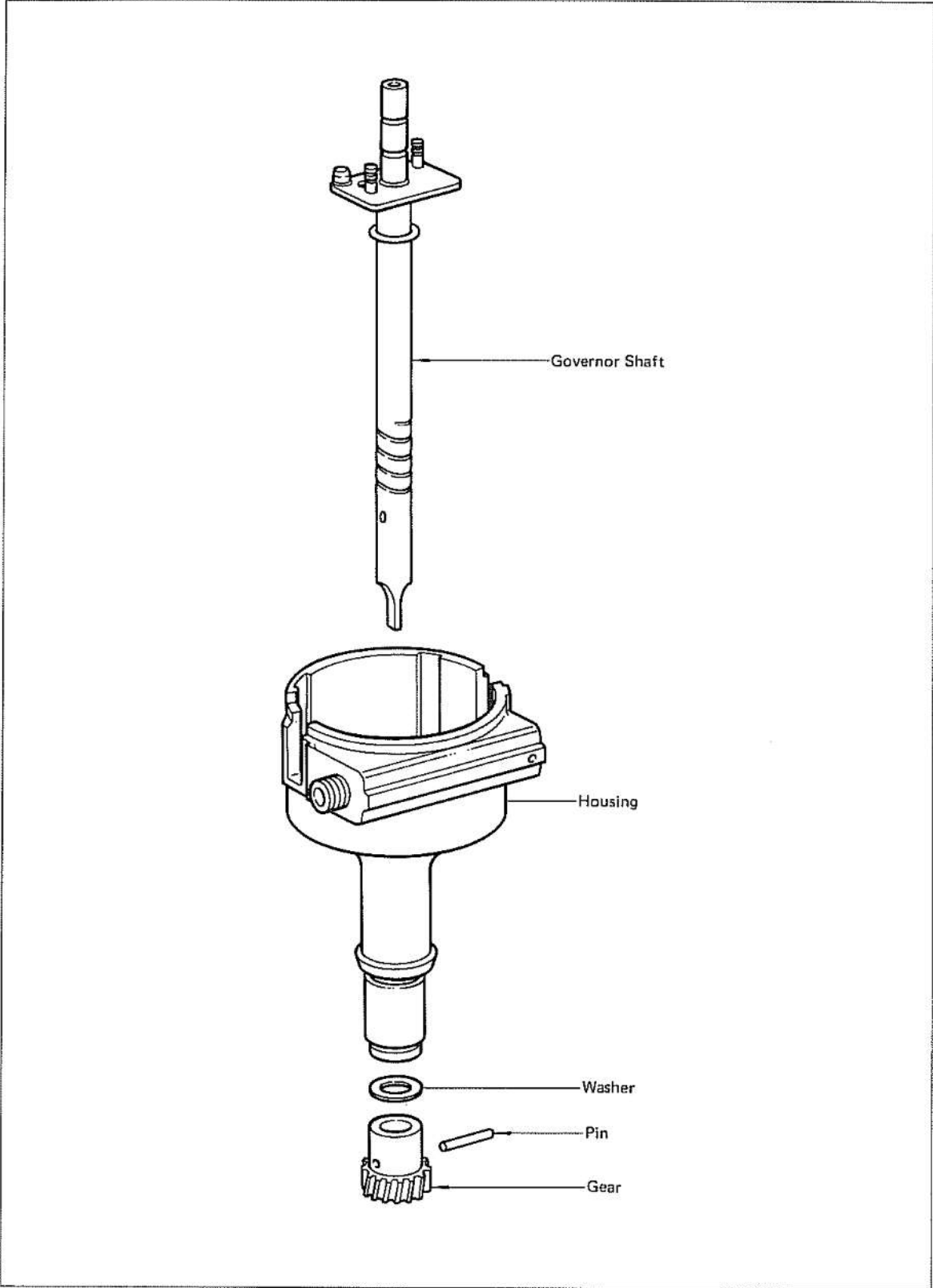
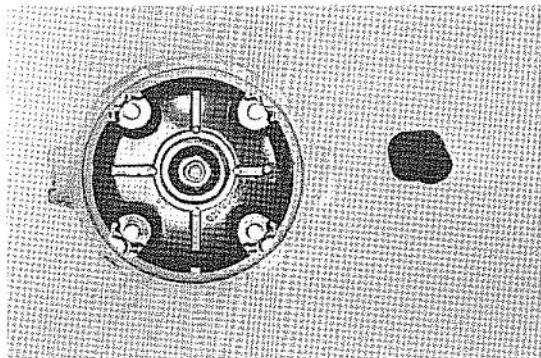
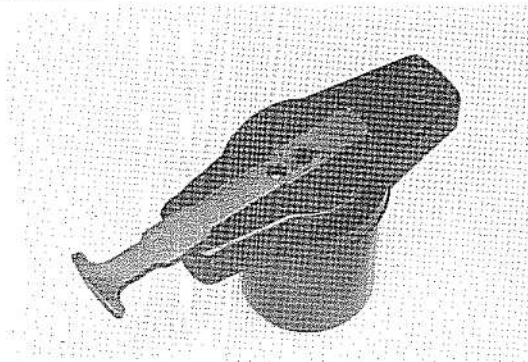


Fig. 10-22

**INSPECTION & REPAIR****Cap**

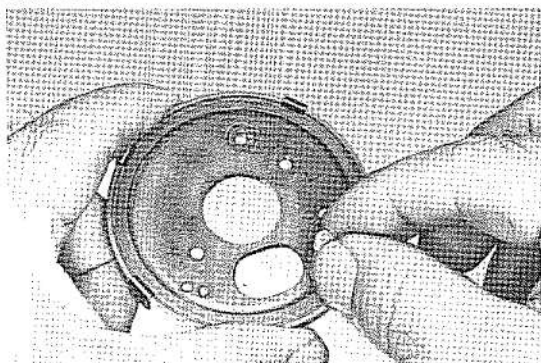
Inspect for cracks, carbon tracks, burnt or corroded terminals, and check the center contact for wear.

Fig. 10-23

**Rotor**

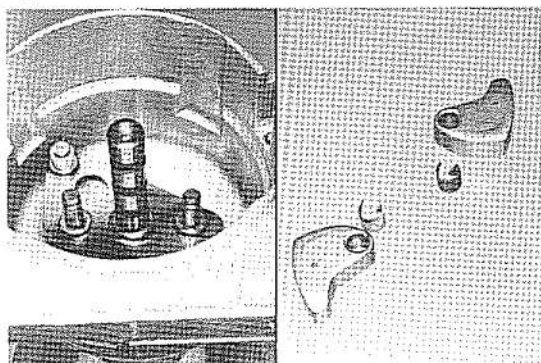
Inspect for cracks, carbon tracks, burnt or corroded terminals.

Fig. 10-24

**Breaker Plate**

Check the breaker plate for smooth rotation.

Fig. 10-25

**Governor Weight & Pin**

Rotate the governor weight to check for binding as shown in the figure.

10-14

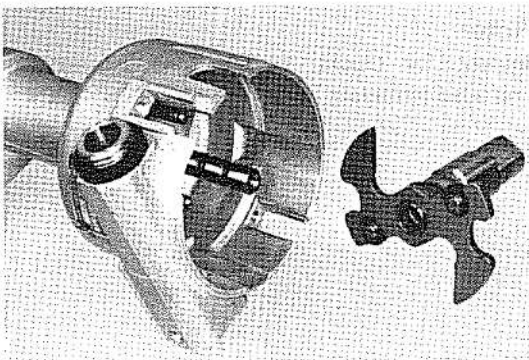
IGNITION SYSTEM – Distributor

Fig. 10-26

**Vacuum Advancer Diaphragm**

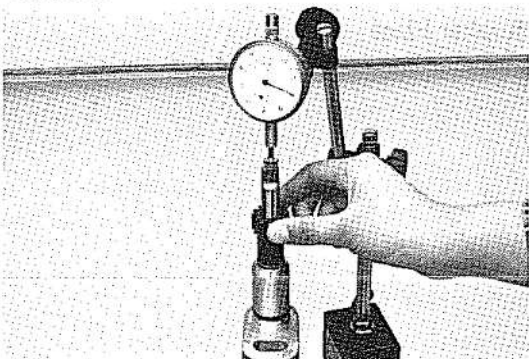
Suck on the tube. The diaphragm should move.

Fig. 10-27

**Cam & Shaft**

Inspect the cam for wear or damage. Check the fit between the cam and shaft.

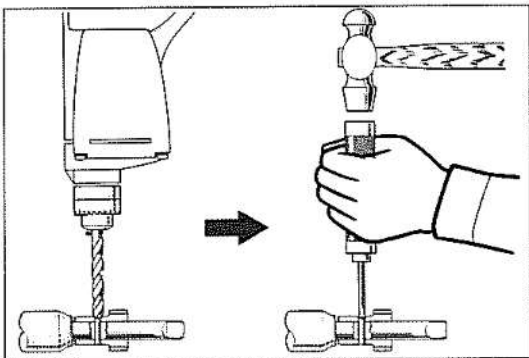
Fig. 10-28

**Governor Shaft & Housing**

1. Check the shaft thrust clearance.

Thrust clearance: 0.15 – 0.50 mm
(0.006 – 0.020 in.)

Fig. 10-29

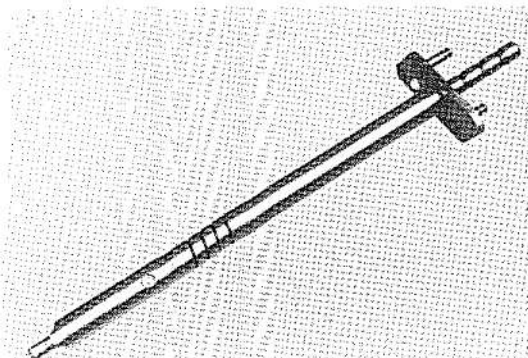


2. Remove the gear and pin. Grind off the pin end and then remove the pin and gear.

IGNITION SYSTEM – Distributor

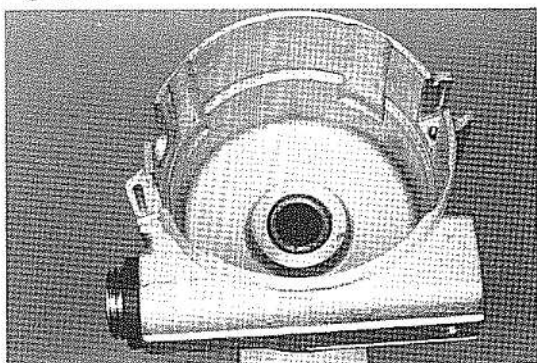
10-15

Fig. 10-30



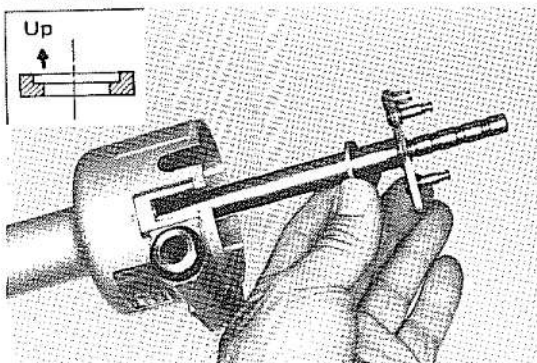
3. Inspect the governor shaft for wear or damage.

Fig. 10-31



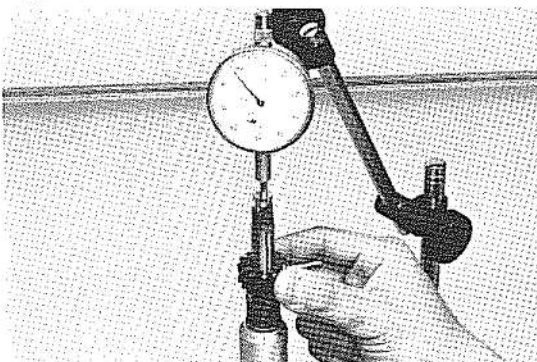
4. Inspect housing bushings and O ring for wear, deformation or damage.

Fig. 10-32



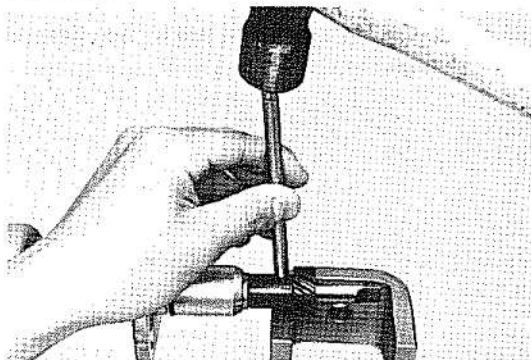
5. Assemble washer as shown in the figure.

Fig. 10-33



6. Before staking the pin, recheck the thrust clearance.

10-16 IGNITION SYSTEM – Distributor

Fig. 10-34

7. Peen both pin ends with a vise.

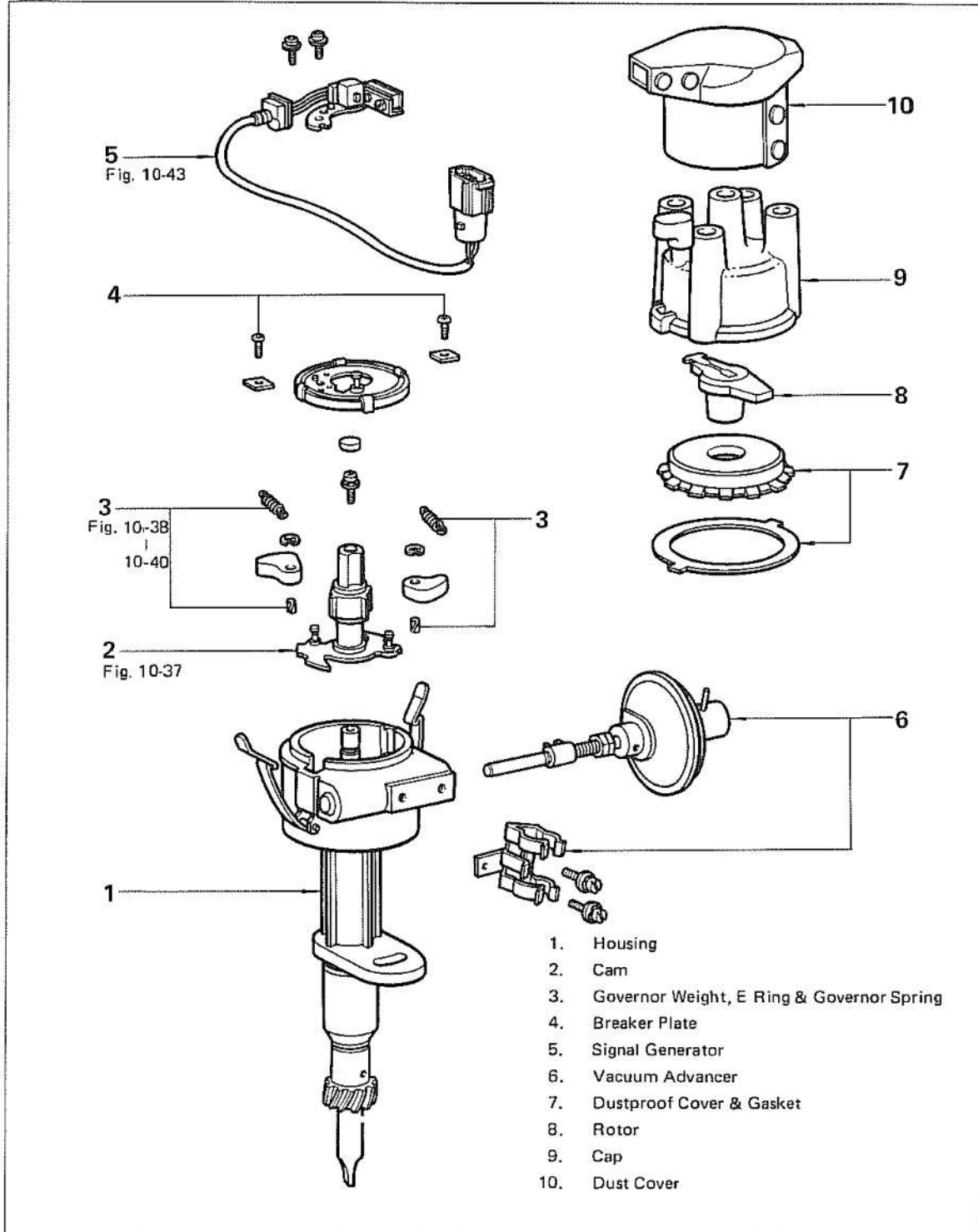
IGNITION SYSTEM – Distributor

10-17

ASSEMBLY

Assemble the parts in the numerical order shown in the figure.

Fig. 10-35



10-18

IGNITION SYSTEM – Distributor

Assemble the parts in the numerical order shown in the figure.

Fig. 10-36

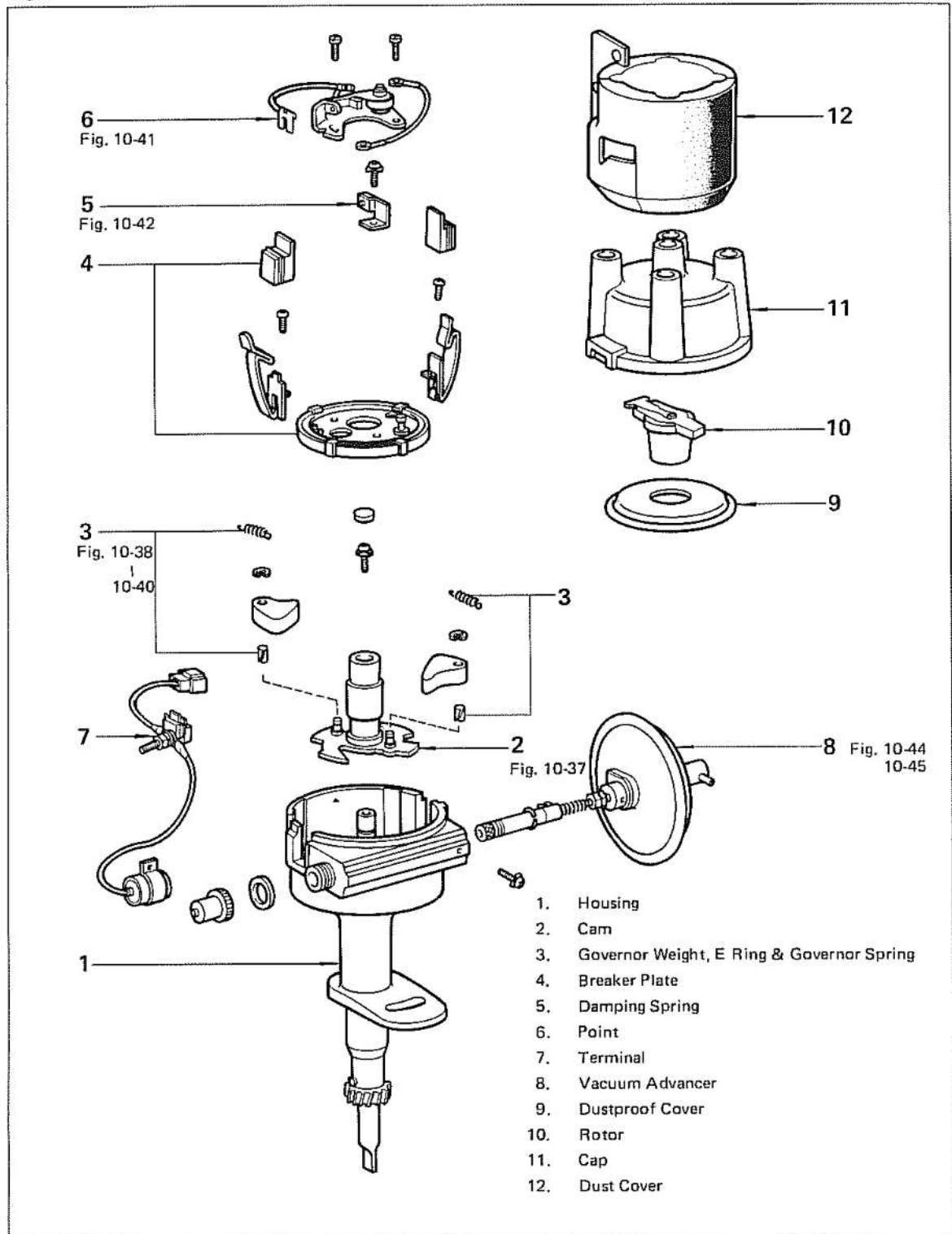
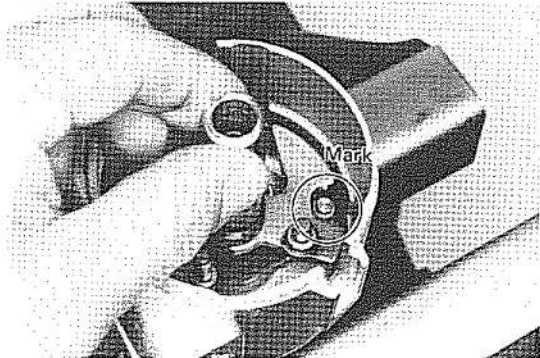
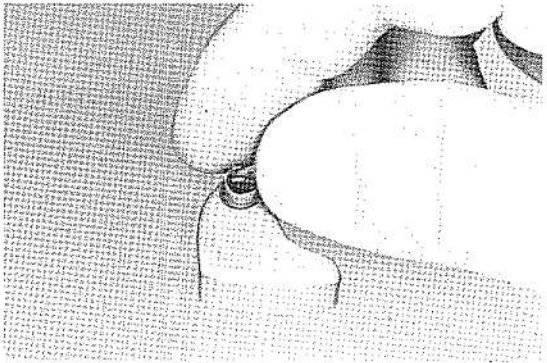


Fig. 10-37



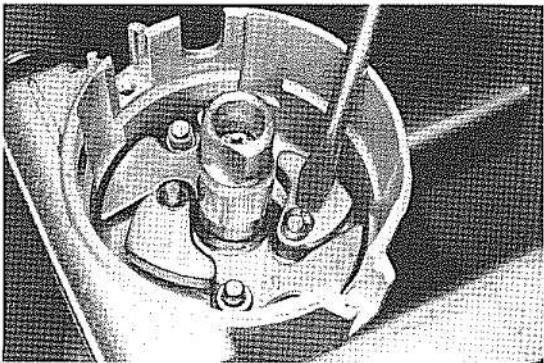
Match the 13.5 mark with the stopper, fit on the cam.

Fig. 10-38



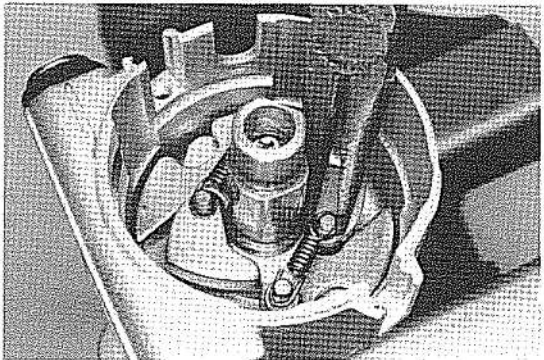
Install the bearing into the pin hole.

Fig. 10-39



Insure that the E ring is installed in the groove.

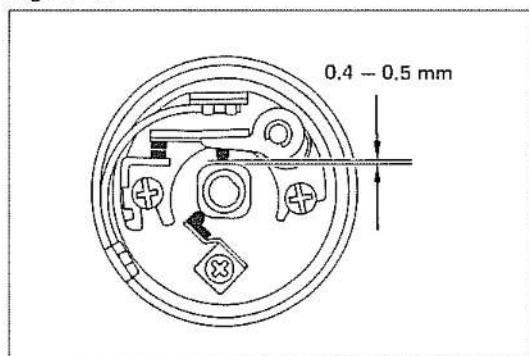
Fig. 10-40



Insure that the governor spring is installed.

10-20 IGNITION SYSTEM – Distributor

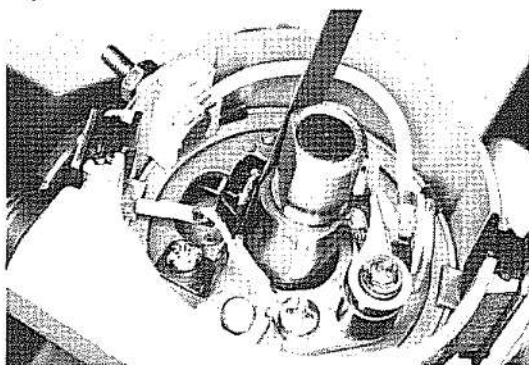
Fig. 10-41

**ADJUSTMENT**

Adjust the gap.

Rubbing block gap: 0.4 – 0.5 mm
(0.016 – 0.020 in.)

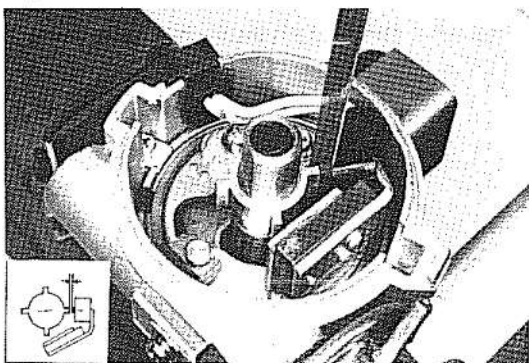
Fig. 10-42



Install the damping spring and adjust it.

Damping spring gap: 0.1 – 0.4 mm
(0.004 – 0.016 in.)

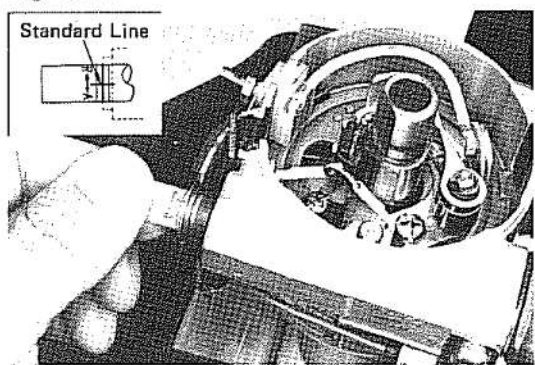
Fig. 10-43



Adjust the air gap. (For USA & Canada)

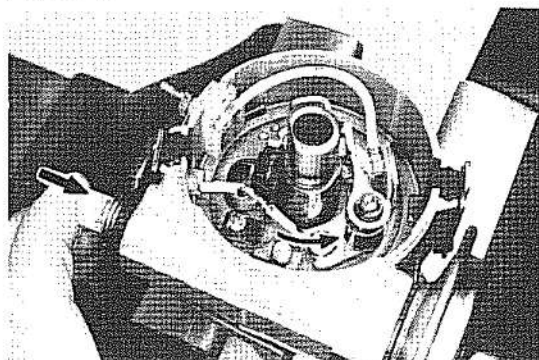
Air gap: 0.2 – 0.4 mm
(0.008 – 0.016 in.)

Fig. 10-44



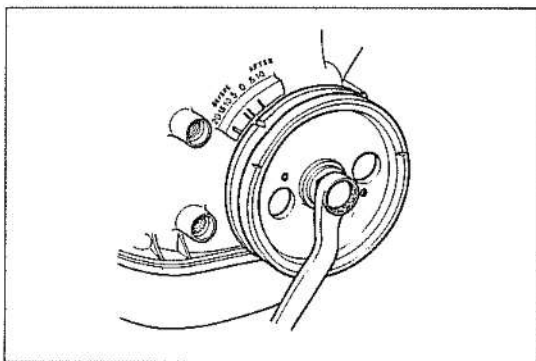
Set the octane selector at the standard line.

Fig. 10-45



Check the breaker plate for smooth rotation.

Fig. 10-46



INSTALLATION



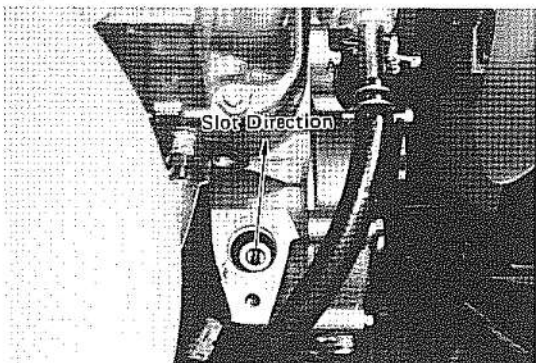
1. Set the No.1 cylinder to 10° BTDC/compression. Align the timing mark with the pointer.

At this time, rocker arms on the No.1 cylinder should be loose and the rockers on No.4 should be tight.

[For Iraq, Chile and Peru]

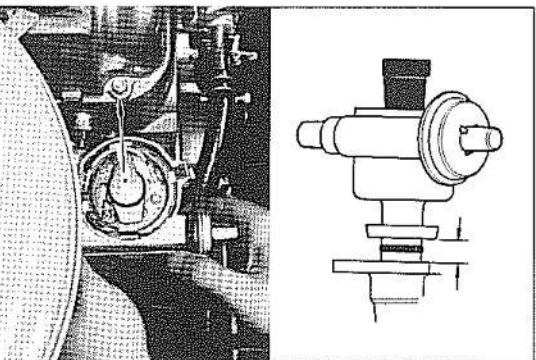
Set the No.1 cylinder to 3.5° BTDC/compression.

Fig. 10-47



2. Set the oil pump shaft slot in the direction shown in the figure.

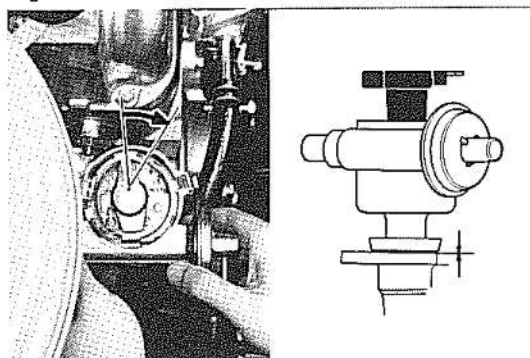
Fig. 10-48



3. Before inserting the distributor, position the rotor and diaphragm as shown in the figure.

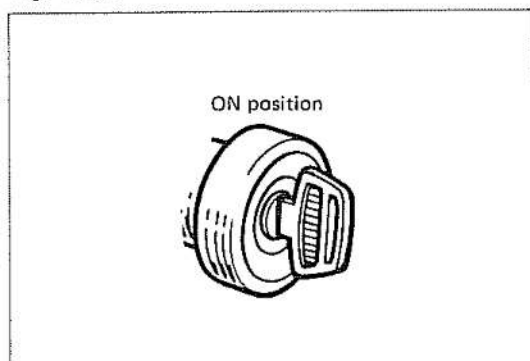
10-22 IGNITION SYSTEM – Distributor

Fig. 10-49



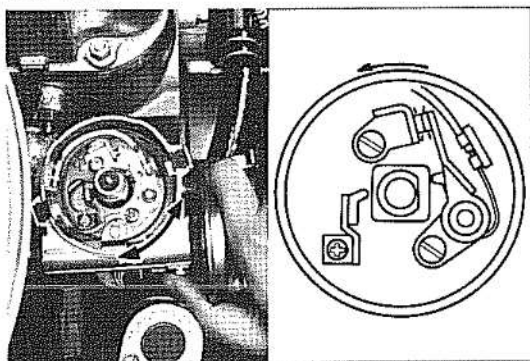
4. When fully installed, rotor should point in the direction shown in the figure.

Fig. 10-50



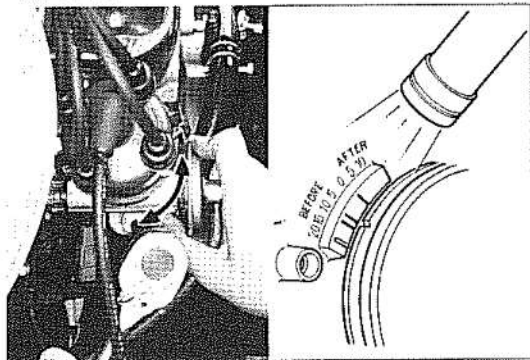
5. Turn ignition switch to the ON position. Do not turn the starter motor.

Fig. 10-51



6. Rotate the distributor body counterclockwise to just where there is a spark between the points, and tighten the calmp bolt in that position.

Fig. 10-52



7. Check the ignition timing at idle.

Ignition timing:

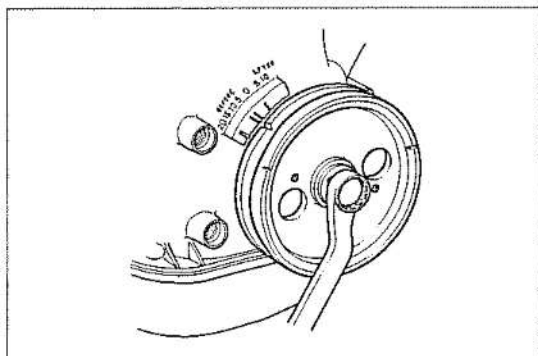
10° BTDC/idle speed

[For Iraq, Chile and Peru]

3.5° BTDC/idle speed

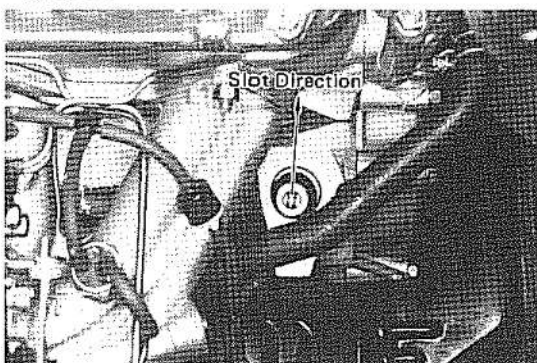
If necessary, align the timing marks by turning the distributor body.

Fig. 10-53

**INSTALLATION****For USA**

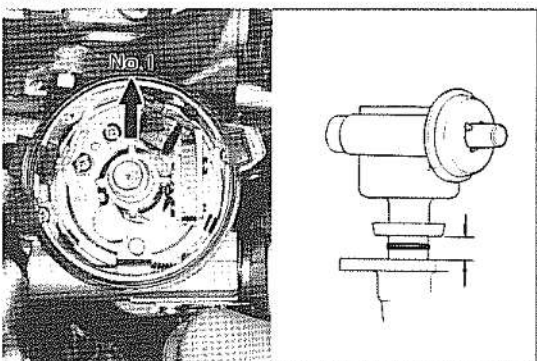
1. Set the No.1 cylinder to 10° BTDC/compression. Align the timing mark with the pointer.
At this time, the rocker arms on No.1 cylinder should be loose and rockers on No.4 should be tight.

Fig. 10-54



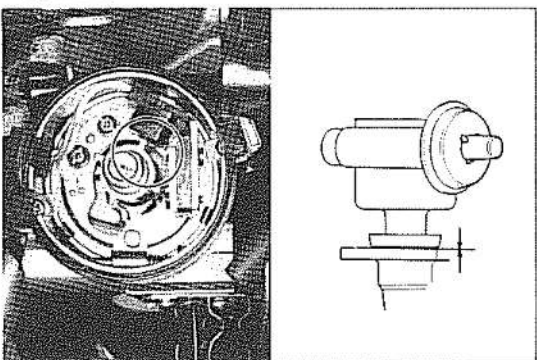
2. Set the oil pump shaft slot in the direction shown in the figure.

Fig. 10-55



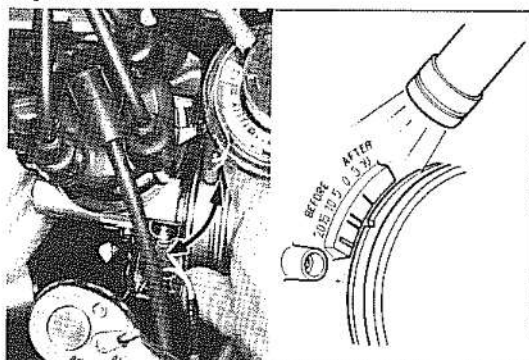
3. Before inserting the distributor, position the rotor and diaphragm as shown in the figure.

Fig. 10-56



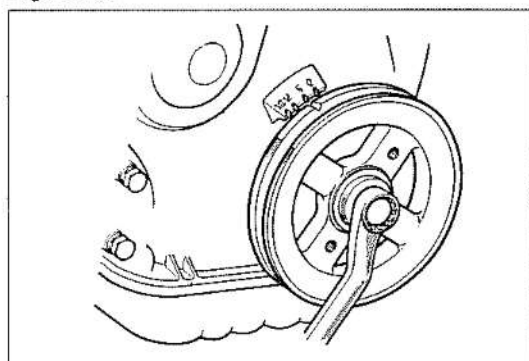
4. When fully installed, the rotor should point in the direction shown in the figure.
5. Adjust the housing by moving it so that the signal rotor will just begin to cut the lines of flux and tighten the set bolt.

10-24

IGNITION SYSTEM – Distributor**Fig. 10-57**

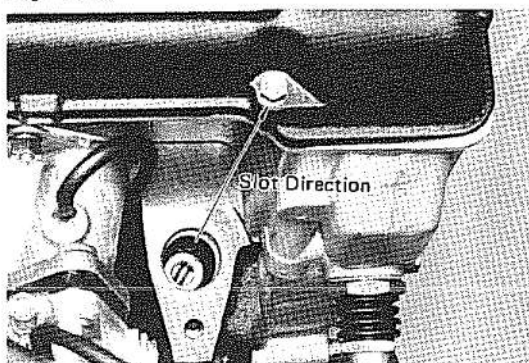
6. Inspect ignition timing at idle speed using a timing light, and adjust it so that the timing pointer aligns with the 10° mark on the crankshaft pulley.

**Ignition timing: 10° BTDC/900 rpm
Max.**

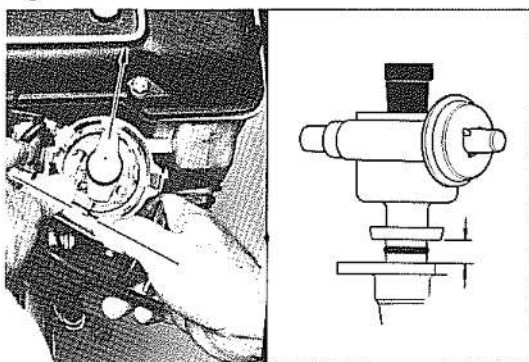
Fig. 10-58**INSTALLATION****For 2T-G Engine**

1. Set the No.1 cylinder to 12° BTDC/compression. Align the timing mark with the pointer.

At this time the rocker arms on No.1 cylinder should be loose and rockers on No.4 should be tight.

Fig. 10-59

2. Set the oil pump shaft slot in the direction shown in the figure.

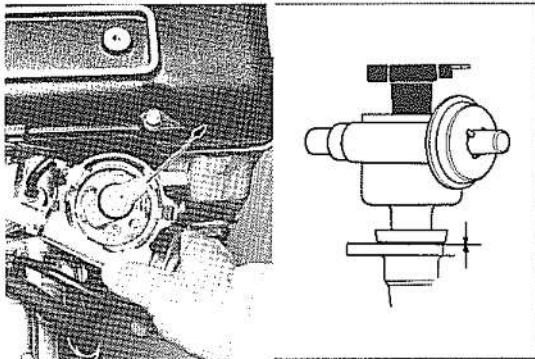
Fig. 10-60

3. Before inserting the distributor, position the rotor and diaphragm as shown in the figure.

IGNITION SYSTEM – Distributor

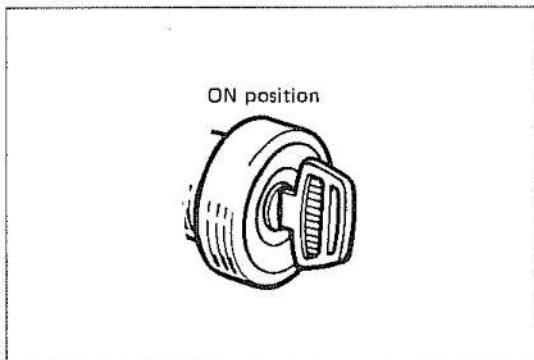
10-25

Fig. 10-61



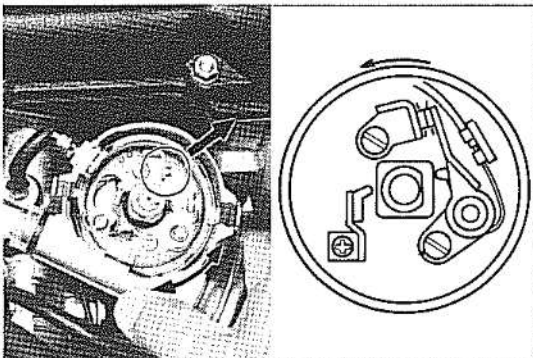
4. When fully installed, rotor should point toward as shown in the figure.

Fig. 10-62



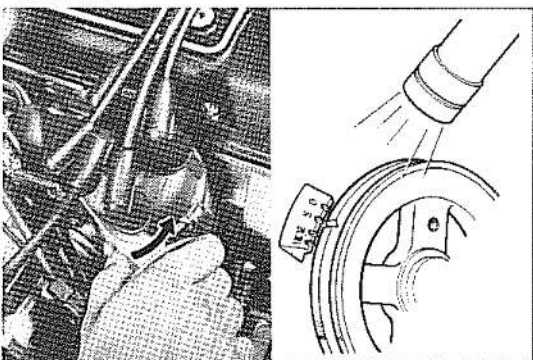
5. Turn ignition switch to ON position.
Do not turn the starter motor.

Fig. 10-63



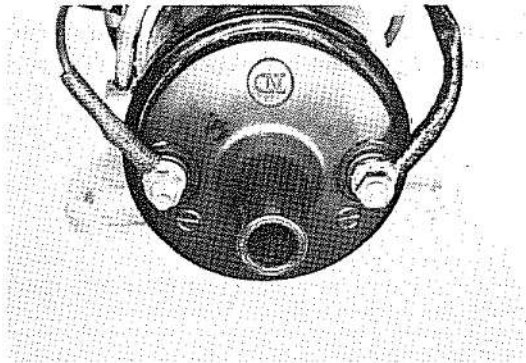
6. Rotate the distributor body counterclockwise until a spark jumps between the points and tighten the clamp bolt in that position.

Fig. 10-64

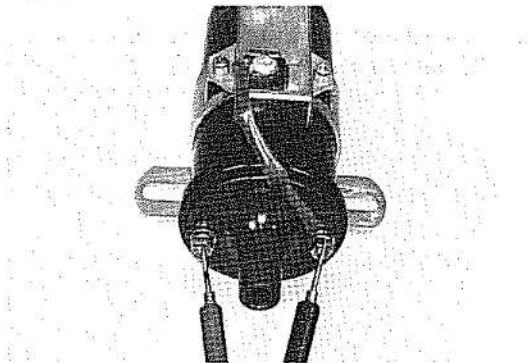


7. Check ignition timing in idling condition.
Ignition timing: 12° BTDC/idle speed
If necessary, align the timing marks by turning distributor body.

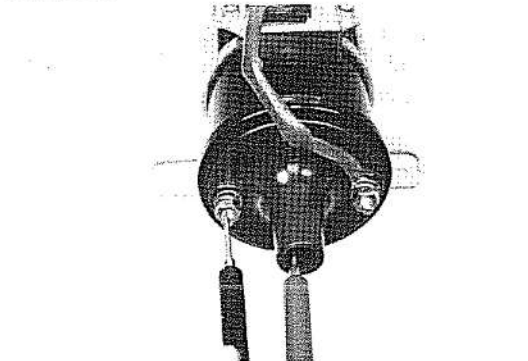
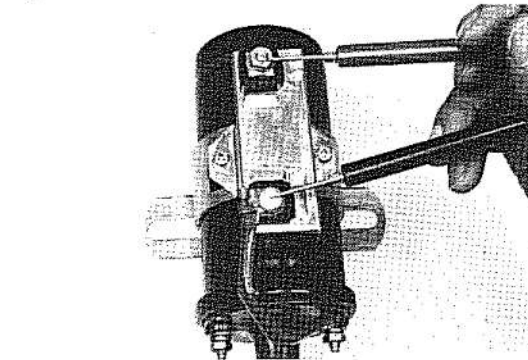
10-26

IGNITION SYSTEM — Ignition Coil**Fig. 10-65****IGNITION COIL****INSPECTION**

1. Clean the coil and inspect it for carbon paths around the terminals and check the outside body for cracks.
2. Inspect the high tension cord insertion hole for carbon deposit or corrosion.

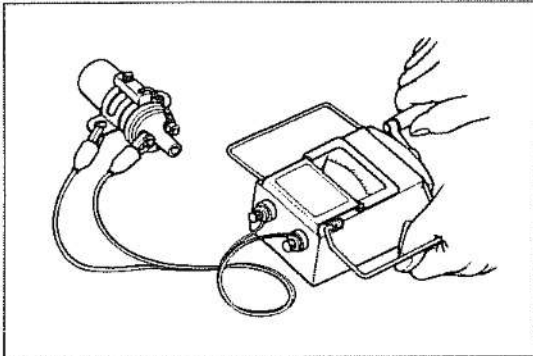
Fig. 10-66

3. Measure the following resistances. If the reading is not within the specified resistance, replace the coil.

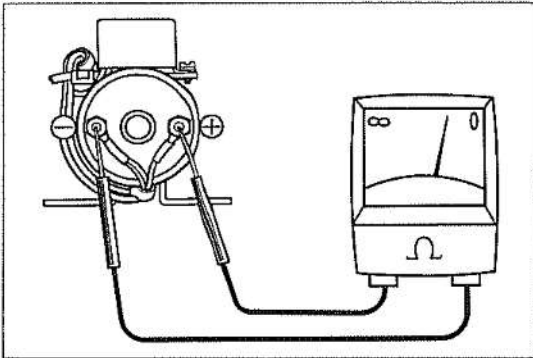
Primary coil resistance**(Reference only): 1.3 – 1.6 Ω** **Fig. 10-67****Secondary coil resistance****(Reference only): 9.5 – 14.5 k Ω** **Fig. 10-68****External resistor resistance****(Reference only): 1.3 – 1.7 Ω**

IGNITION SYSTEM – Ignition Coil

10–27

Fig. 10-69

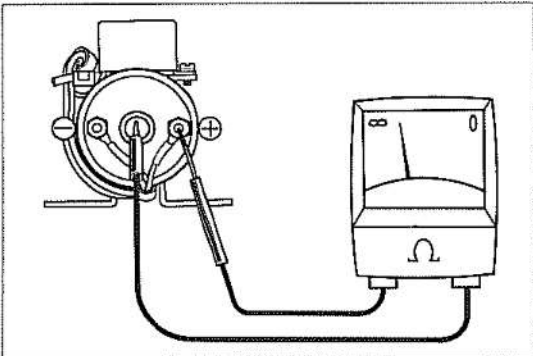
Insulation resistance:
Over 10 MΩ at 500V

Fig. 10-70

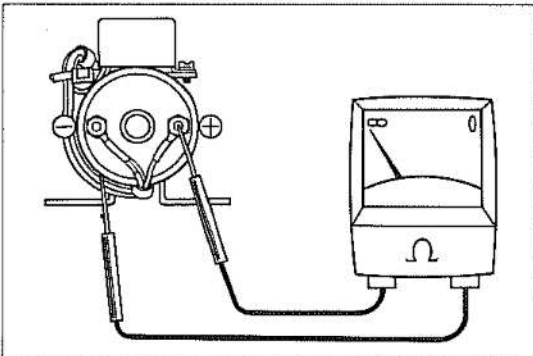
[For USA & CANADA]

4. Measure the following resistances. If the reading is not within the specified resistance, replace the coil.

Primary coil resistance
(Reference only): 1.3 – 1.6 Ω

Fig. 10-71

Secondary coil resistance
(Reference only): 9.5 – 14.5 kΩ

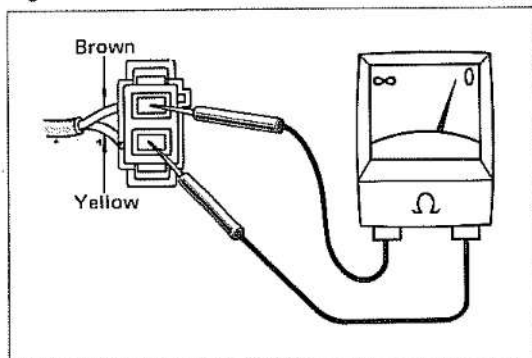
Fig. 10-72

Insulation resistance:
Over 10 MΩ at 500V

10-28

IGNITION SYSTEM – Ignition Coil, High Tension Cord

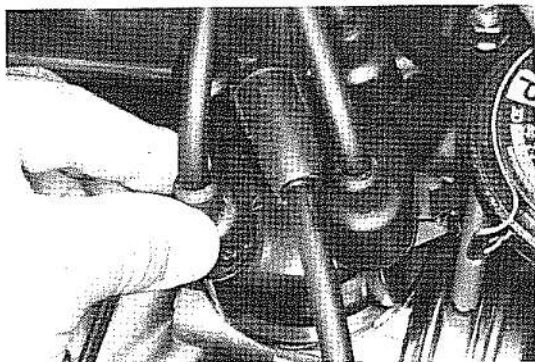
Fig. 10-73

Wire resistance: 1.2 Ω (at Cold)

— Note —

Check the resistor wire resistance using an ohmmeter.

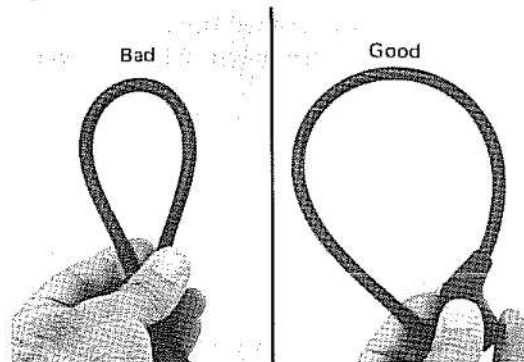
Fig. 10-74

**HIGH TENSION CORD**

— Caution —

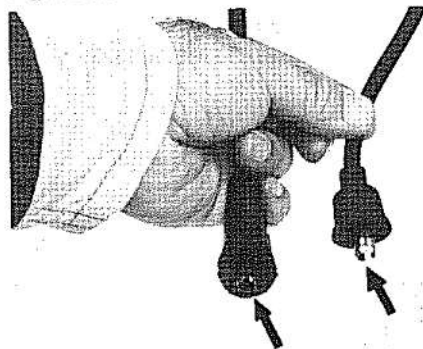
1. Carefully remove high tension cords by pulling on the rubber boots.

Fig. 10-75



2. Do not bend the cords as the conductors will break.

Fig. 10-76

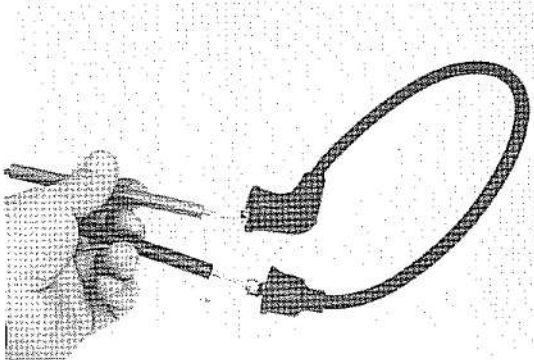
**INSPECTION**

1. Check the condition of the cord terminal. If any terminal is corroded, clean it. If it is broken or distorted, replace the cord.

IGNITION SYSTEM – High Tension Cord, Spark Plug

10-29

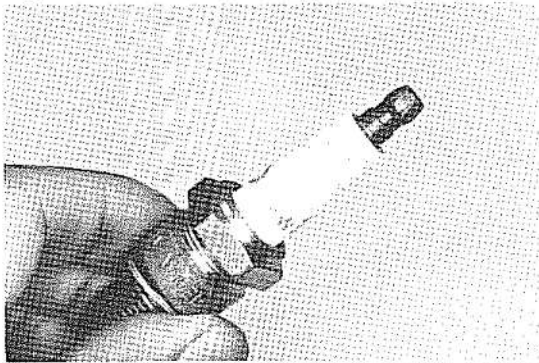
Fig. 10-77



2. Check the resistance of each cord between both ends. If the reading exceeds the limit, replace the cord.

Resistance: Less than 25 k Ω

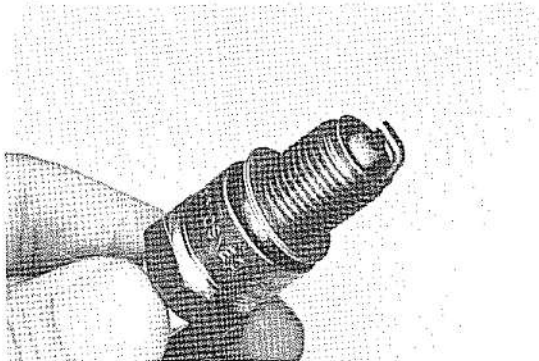
Fig. 10-78

**SPARK PLUG****INSPECTION**

Inspect for the following items. Clean or replace the plugs if necessary.

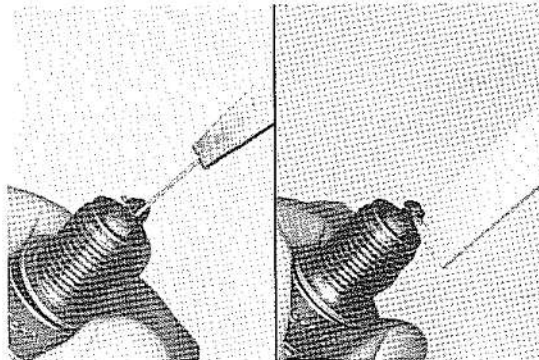
1. Cracks or damages in the threads or insulator.
2. Damaged or deteriorated gaskets.

Fig. 10-79



3. Wear on the electrodes.
4. Burnt condition of electrode and the amount of carbon deposit.

Fig. 10-80

**GAP ADJUSTMENT**

Check the plug gap with plug gap gauge. If not to specified value, adjust by bending the ground (outer) electrode.

Spark plug gap:

0.7 – 0.8 mm

(0.028 – 0.031 in.)

MEMO
