Distributors & Ignition Systems

HITACHI ELECTRONIC IGNITION — SUBARU

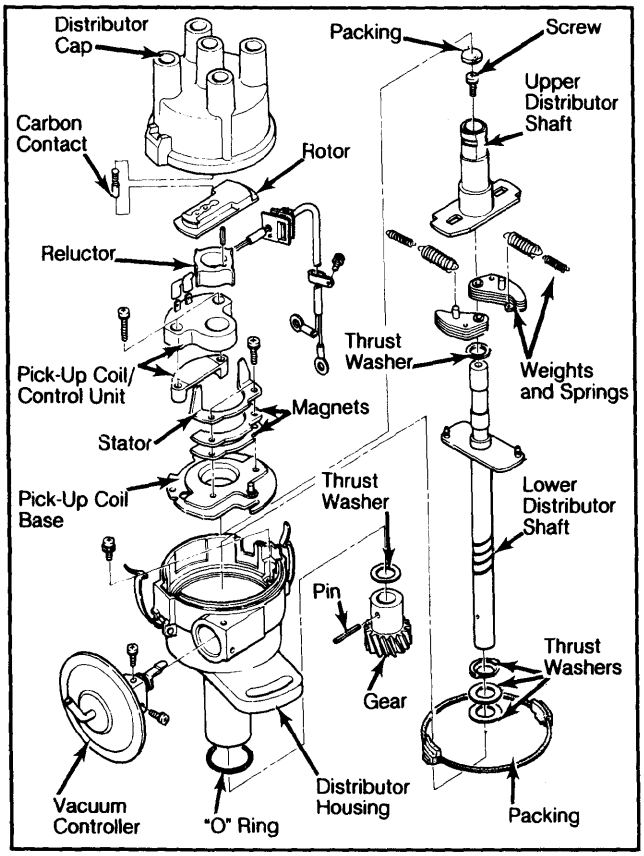
1800 (4-WD Models)

NOTE: Subaru 2-WD models use Nippondenso ignition systems.

DESCRIPTION

The Hitachi electronic distributor consists of a housing, shaft assembly, rotor and distributor cap. *See Fig. 1.* A reluctor, mounted on the upper distributor shaft, combines with the stator and pick-up coil to provide ignition timing.

Fig. 1: Disassembled View of Hitachi Distributor



This distributor is used on Subaru 4-WD vehicles.

With the ignition switch "ON", the distributor reluctor rotates past the stator. As each tooth of the reluctor approaches and passes the stator, a signal is sent to the pick-up coil/control unit. In response to the signal, the control unit then turns the primary circuit in the ignition coil on and off.

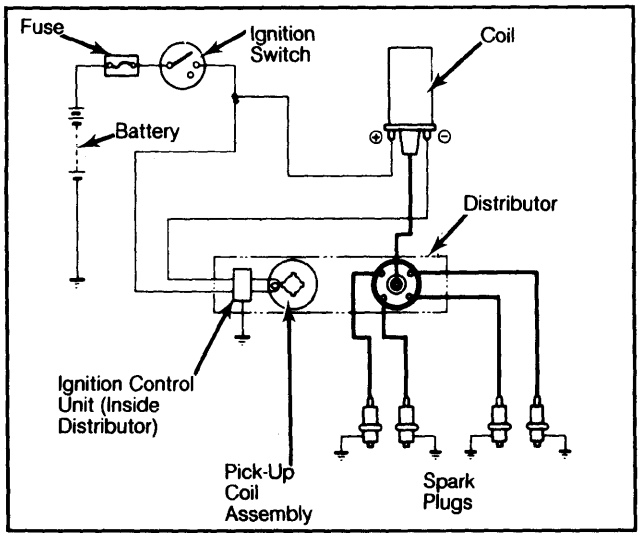
This causes a build-up and collapse of a magnetic field in the coil, resulting in a high voltage surge in the coil's secondary circuit. This fires the spark plugs. *See Fig. 2.*

SPECIFICATIONS

CENTRIFUGAL & VACUUM ADVANCE

See the appropriate Distributor Specifications Table in this section.

Fig. 2: Schematic of Ignition Circuit



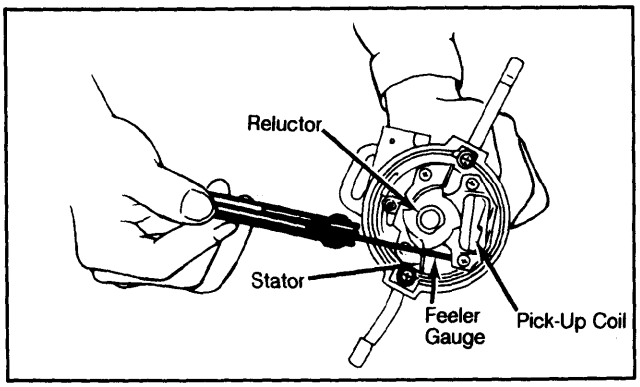
ADJUSTMENTS

AIR GAP

1) Align tooth of reluctor with upright teeth of stator. Measure gap with a feeler gauge. Air gap should be .012-.020" (.3-.5 mm).

2) If adjustment is necessary, loosen stator mounting screws. Insert a .016" (.4 mm) feeler gauge between reluctor and stator teeth. Move stator against gauge and tighten mounting screws. Recheck air gap at each reluctor tooth. *See Fig. 3.*

Fig. 3: Adjusting Reluctor-to-Stator Air Gap



Gap should be .012-.020" (.3-.5 mm).

TESTING

1) Turn ignition switch "ON". Connect negative lead of voltmeter to ground and positive lead to negative terminal of ignition coil. Voltage should be within 1 volt of battery voltage. If not, proceed to step **5)**.

2) If reading was within 1 volt of battery voltage, turn ignition switch "OFF" and check distributor air gap. Adjust if necessary. See Adjustments.

3) Disconnect wires from primary terminals of ignition coil. Set ohmmeter on the x100 scale. Check coil

HITACHI ELECTRONIC IGNITION — SUBARU (Cont.)

primary resistance by attaching ohmmeter leads to positive and negative terminals. Reading should be 1.04-1.27 ohms. If not, replace ignition coil.

4) Next, check coil secondary resistance. Set ohmmeter on x1000 scale. Attach ohmmeter leads to coil negative terminal and coil tower (wire removed). Reading should be 7,360-11,040 ohms. If not, replace ignition coil.

5) If the reading in step **1)** was not within 1 volt of battery voltage, turn ignition switch "ON". Check voltage at positive terminal of ignition coil. Connect voltmeter negative lead to ground and positive lead to coil positive terminal.

6) If reading is not equal to battery voltage, check wiring between ignition switch and positive terminal of ignition coil. Repair or replace as necessary. If OK, check connector, switch, fuse and wiring back to the battery.

7) If reading at coil positive terminal was within 1 volt of battery voltage, disconnect the lead at ignition coil negative terminal (coming from ignition control unit). Turn ignition switch "ON". Voltage at negative terminal should be within 1 volt of battery voltage.

8) If voltage is within 1 volt of battery voltage, but engine will not start, replace pick-up coil/ignition control unit or wiring. If not within 1 volt, remove lead from tachometer (if equipped) at ignition coil. Turn ignition switch "ON", and again check voltage at negative terminal of coil.

9) If reading is now correct, but engine will not start, check for a short in the wiring harness from negative terminal of coil to tachometer. If in step **8)**, reading was still not within 1 volt of battery voltage, replace ignition coil.

OVERHAUL

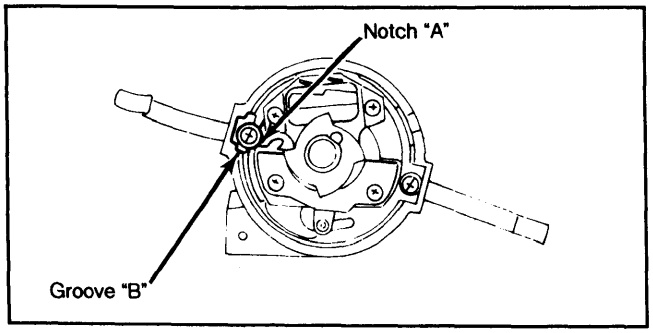
DISASSEMBLY

1) Remove distributor cap and rotor. Remove vacuum controller by loosening screws, and pulling vacuum controller out of distributor housing. Disconnect electrical wires from pick-up coil/control unit. Remove unit, wires and rubber seal from distributor housing.

2) Remove gear from distributor shaft by driving out pin. Remove thrust washers with gear. Remove screws attaching pick-up coil base to distributor housing. Pull pick-up coil base, distributor shaft, and governor assembly from housing.

3) Remove dust-proof packing from top of distributor shaft. Remove screw from top of shaft. Separate upper and lower distributor shaft assemblies. Remove centrifugal weights and springs from lower distributor shaft.

Fig. 4: Installing Distributor Rotor Assembly



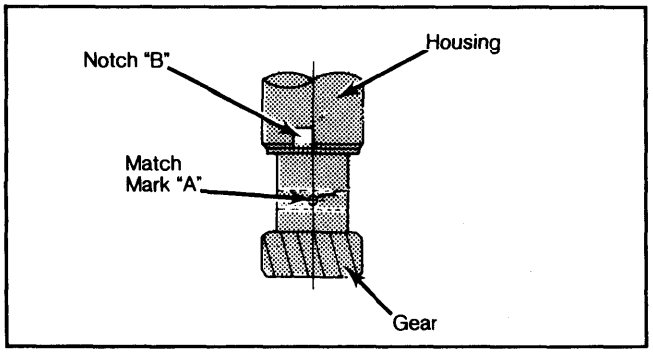
Match notch in base and housing groove.

REASSEMBLY

Reassemble in reverse order of disassembly, noting the following:

- When installing rotor assembly, match notch in pick-up coil base with groove end of housing. *See Fig. 4.*
- When installing vacuum controller, tighten only the screw holding the controller to the housing. Tighten screw between lever and pick-up coil base when installing pick-up coil.
- When installing pick-up coil, adjust air gap to specifications.
- Align match mark "A" on pinion gear with right side of notch "B" on lower end of housing. *See Fig. 5.*
- After assembly, check centrifugal advance by using a distributor tester.

Fig. 5: Aligning Pinion Gear With Housing



Mark "A" should align with right side of notch "B".