

# MARTEK

## Products, Inc.

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# MARTEK 1000Y

## High Performance Electronic Ignition

For  
**YAMAHA RD400**

4979

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**1** Make sure the ignition (key/switch) is in the "off" position. Remove the four 4 mm screws from the kit and apply Vibratite according to the Vibratite instructions.

Remove the fuel tank taking care to not allow fuel to escape from tank. Follow tank removal instructions in the motorcycle owners manual.

Remove points from points plates. Leave points plates on engine.

**NOTE:** On some bikes the points pivot posts must

be removed from the points plates. Removal can be easily accomplished by taking off plates and partially drilling pivot post from back side of point plate, after drilling punch out pivot post. Reinstall plates.

Remove condenser.

Mount Martek black box under seat behind oil filler cap. Black box can be attached to fender by putting four holes in fender and running cable ties through holes in fender and box. Black box can also be mounted to frame tube by using cable ties and feet which fit into holes in black box.

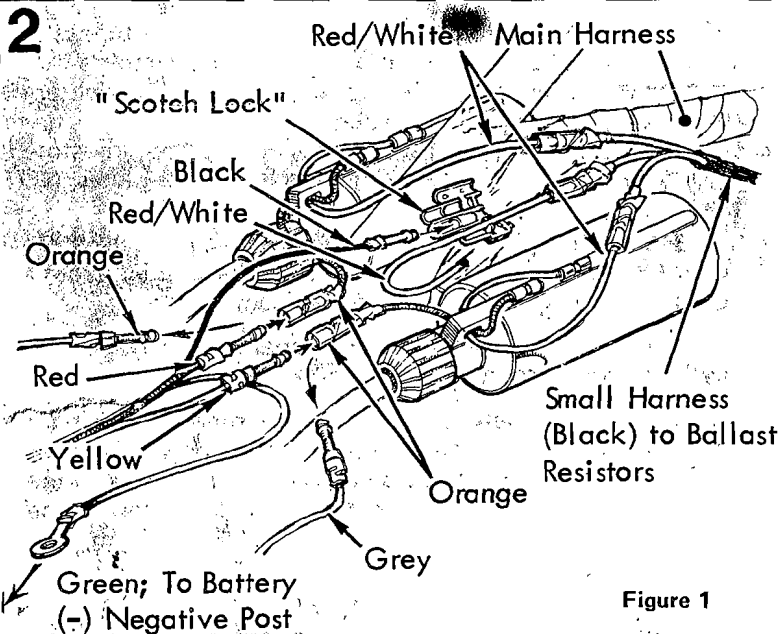


Figure 1

Route the Martek power harness (wires with plug-in connectors) forward along frame. Disconnect Yamaha orange wire from left coil and Yamaha gray wire from right coil.

**NOTE:** On the RD 400 both coils have short orange leads, the orange and gray wires are plugged into these. (See Figure 1.)

Plug Martek RED lead into LEFT coil and Martek YELLOW lead into RIGHT coil. Connect Martek BLACK lead into Yamaha RED/WHITE wire shown (to ballast resistor) using Scotchlock connector, as follows: Plug Martek black lead into Scotchlock connector, lay metal slot over red/white lead, close and squeeze with pliers to lock.

Route Martek GREEN lead back to battery negative (-) terminal and attach to battery terminal.

Be sure Martek leads clear gas tank and seat and tie leads to frame tubes with cable ties.

Double check ELECTRICAL CONNECTIONS.

| MARTEK | to | YAMAHA                          |
|--------|----|---------------------------------|
| black  | to | red/white (to ballast resistor) |
| green  | to | battery (-)                     |
| red    | to | orange (left coil)              |
| yellow | to | orange (right coil)             |

**CAUTION:** Incorrect Electrical Connections will damage Martek Module.

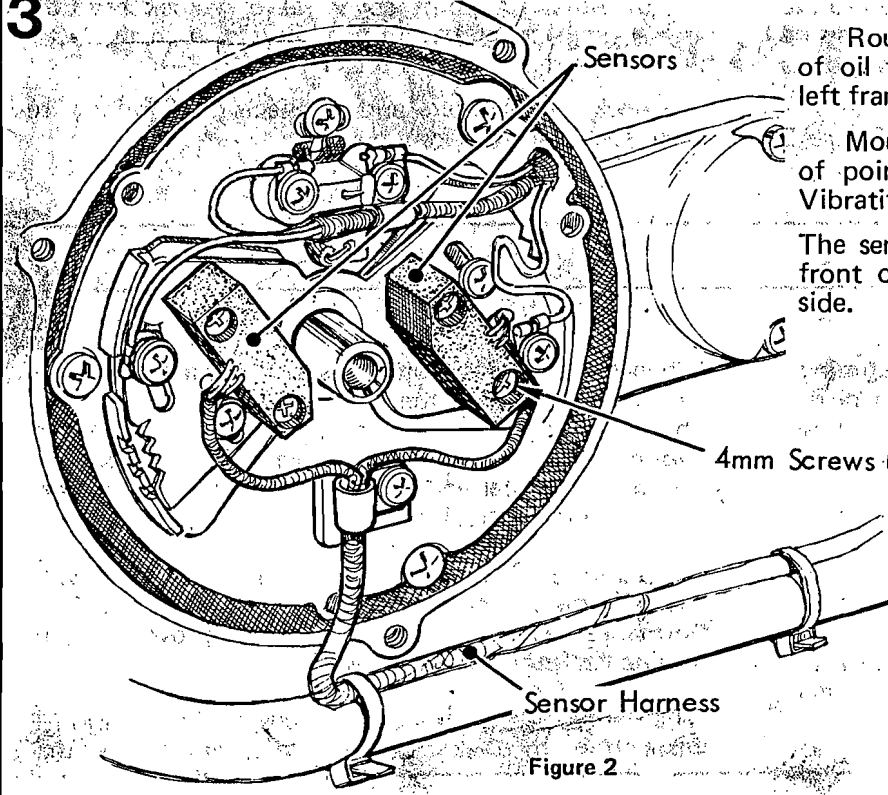


Figure 2

Route Martek sensor harness forward, in front of oil tank, down side of engine and along the lower left frame tube. (See Figure 2.)

Mount Martek sensors onto points plates (in place of points) using the 4 mm screws which have had Vibratite applied.

The sensor with the red wire goes on left side (toward front of bike). Sensor with yellow wire goes to right side.

**NOTE:** Use 1000Y with coils having 3 ohms or more primary resistance. If coils are less than 3 ohms, ballast resistor must be used.

**FOR EXAMPLE:** If using RD400 coils on RD350, the RD400 ballast resistor must be installed also.

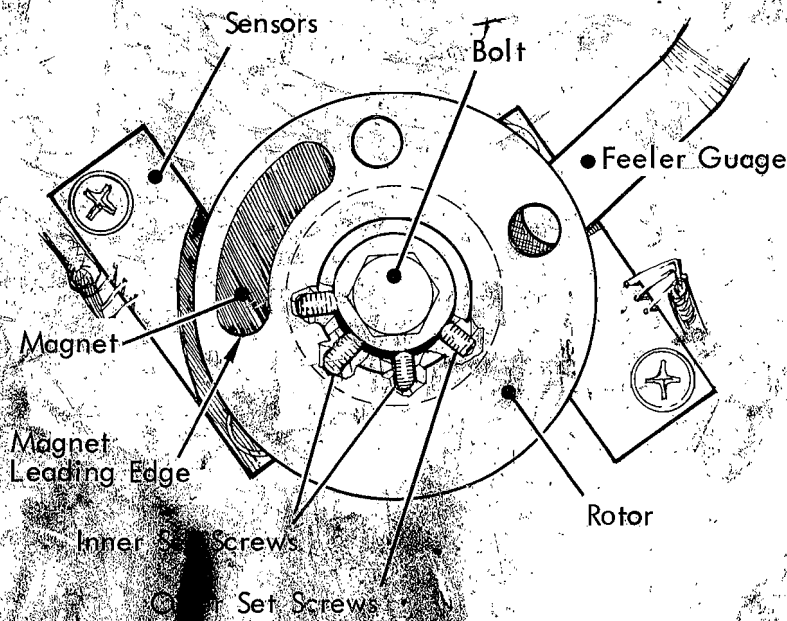
**4**

Figure 3

Using 12 mm wrench remove bolt from points cam. Set aside lockwasher and reinstall bolt. Rotate crankshaft until left piston is at firing position.

Start the four 10-32 set screws into the Martek timing rotor and push rotor onto point cam. Position rotor on points cam approximately as shown in Figure 3.

Using a feeler gauge set the air gap between face of sensor and inner face of rotor to .015 to .030 inch (.35mm to .75mm). Slightly tighten the two inner rotor set screws to hold rotor in place.

Remove point cam bolt, place lockwasher back on bolt and re-install bolt. Tighten bolt to 10-18 Ft. lb. torque.

**NOTE:** To tighten the point cam bolt you must prevent the crankshaft turning. One way to do this is to put the engine in high gear and have a helper press on the rear brake pedal while you are tightening the bolt. After tightening bolt, return transmission to neutral.

**5 TIMING**

Make sure the left piston is at the correct firing position and that the left points plate is at about the middle of its travel at the adjustment slots.

Turn on ignition.

Loosen timing rotor set screws and slowly turn the rotor counter clockwise. When magnet leading edge passes over left detector plug will spark.

If plug doesn't spark turn rotor clockwise and repeat previous step. Make sure plug is grounded.

At moment plug sparks stop turning rotor.

Turn off ignition.

Make sure rotor-to-sensor air gap is .015 to .030 inch (.35mm to .75mm) and tighten the accessible rotor set screw.

Rotate crankshaft so right piston is at correct firing position. Put spark plug in right lead and ground plug.

Loosen screws on right point plate and move plate up (counter clockwise) as far as it will go.

Turn on ignition.

Slowly move point plate down until plug sparks. At moment plug sparks stop moving point plate.

Tighten point plate screws.

Tighten the two inner, then the two outer set screws in timing rotor. Really 'Bear Down' when tightening (neither set screws or wrench will break), screws should be tightened to approx., 40 inch lbs of torque.

After fully tightening set screws, any further adjustment of timing should be made by moving the points plates, NOT the rotor.

Double check ignition timing by turning crankshaft counter-clockwise with ignition on. Check the dummy plug first in one lead then in other lead.

For each cylinder, plug must spark when respective cylinder is at correct firing position.

**NOTE:** The Yamaha shop manual recommends using a dial gauge in the spark plug hole to adjust breaker points. A dial gauge can also be used when installing the Martek system. The ignition timing specification in the RD400 C and D shop manual is  $2.3 \pm 0.15\text{mm}$  (.09  $\pm$  .006 in.) BTDC.

Once timing is set turn off ignition.

**6**

Double check tightness of all fasteners in points plates, detector holders, rotor set screws and point cam bolt.

The orange and gray leads which were connected to the points no longer serve any purpose. These wires can be cut off or the terminals can be secured under the points plate screws as shown in Figure 2.

Position the Martek harness as shown in Figure 2 and attach clamp on the condenser mounting screw and washer.

Neatly secure Martek harness to frame tubes and clutch cable using cable ties provided. Fold excess lead length under seat and tie down.

Put notch in point cover (at 6 o'clock position) large enough to clear Martek harness. A small Rattail file can be used to make notch.

Check all fasteners and connectors. Carefully re-install fuel tank and point cover.

Make sure the left piston is at the correct firing position and that the left points plate is at about the middle of its travel at the adjustment slots.

Turn on ignition.

Loosen timing rotor set screws and slowly turn the rotor counter-clockwise. When magnet leading edge passes over left detector plug will spark.

If plug doesn't spark turn rotor clockwise and repeat previous step. Make sure plug is grounded.

At moment plug sparks stop turning rotor.

Turn off ignition.

Make sure rotor-to-sensor air gap is .015 to .030 inch (.35mm to .75mm) and tighten the accessible rotor set screw.

Rotate crankshaft so right piston is at correct firing position. Put spark plug in right lead and ground plug.

Loosen screws on right point plate and move plate up (counter clockwise) as far as it will go.

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Neatly secure Martek harness to frame tubes and clutch cable using cable ties provided. Fold excess lead length under seat and tie down.

Put notch in point cover (at 6 o'clock position) large enough to clear Martek harness. A small Rattail file can be used to make notch.

Check all fasteners and connectors. Carefully re-install fuel tank and point cover.

## NOTES OF INFORMATION

There are four magnets in the Martek timing rotor. Ignition timing is controlled by magnet no.1, which is the first magnet to pass over a sensor when crankshaft is rotating counter-clockwise.

The magnets are arranged to prevent the engine running backwards when starting engine. Because two stroke engines have symmetrical port timing they can run in either direction, depending upon ignition timing adjustment. When timing is properly set it is unlikely that engine will run backwards. When starting engine use a good follow through kick on the kickstarter.

When the engine is running a small amount of wobble will be observed in the timing rotor. This is due to the fact that the rotor, though perfectly round, is mounted on the point cam which is not round. This wobble is normal and will not cause any malfunction in the ignition performance.

Once correctly installed the Martek ignition will provide thousands of miles of superb ignition performance with a corresponding improvement in engine performance and power.

The only service recommended is an occasional inspection to make sure all fasteners are secure.