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Wisconsin Robin™

# Oil Sensor

TELEDYNE
TOTAL POWER™

Robin America Inc.

## SERVICE FACILITIES

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Order parts from the **TELEDYNE TOTAL POWER™** Distributor or Service Center in your locality. Refer to the Yellow Pages of the Telephone Directory under ENGINES, or write to **TELEDYNE TOTAL POWER™** for a free copy of a list of authorized Distributors and Service Centers. Do not order parts from **TELEDYNE TOTAL POWER™.**

The **MODEL, SPECIFICATION** and **SERIAL NUMBER** of your engine must be given when ordering parts. The **MODEL** and **SPECIFICATION** number are on the name plate. The **SERIAL NUMBER** is stamped on the crankcase.

**Copy the MODEL, SPECIFICATION and SERIAL NUMBER in the spaces provided below so that it will be available when ordering parts.**

| MODEL | SPECIFICATION |
| --- | --- |
| | |

| SERIAL NUMBER |
| --- |
| |

**To insure prompt and accurate service, the following information must also be given:**

1. State EXACTLY the quantity of each part and part number.
2. State definitely whether parts are to be shipped by express, freight or parcel post.
3. State exact mailing address.

# CONTENTS

# GENERAL INFORMATION

The oil sensor developed for Wisconsin Robin engines monitors crankcase oil level and automatically stops the engine before an oil related failure can occur. Gasoline engines may also be equipped with a warning light providing a visual display of low oil condition.

Oil sensor is a factory installed option and is unavailable for field installation.

Electrical power for the oil sensor is generated by the engine magneto. The oil sensor consists of a sensor section and a solid state controller. The solid state controller is maintenance free providing accuracy and dependability.

Depending on the engine type the following sensors are used.

**Electro-vibration type oil sensor for gasoline engines: W1-145, W1-185, W1-230, EY25, EY27, W1-280, W1-340, W1-390**

**Pressure switch type oil sensor for diesel engines: WRD1-300, WRD1-350, WRD1-410**

## ENGINE OIL LEVEL

Oil sensor operates when oil level falls into range of 1.7 oz (50 cc) above to .3 oz (10 cc) below minimum.

| | Operating Level | |
|---|---|---|
| **Model** | **Max. Level** | **Min. Level** |
| W1-145 | 20.3 oz (600 cc) | 8.5 oz (250 cc) |
| W1-185<br>W1-230 | 23.7 oz (700 cc) | 10.1 oz (300 cc) |
| EY25<br>EY27<br>W1-280 | 28.7 oz (850 cc) | 16.9 oz (500 cc) |
| W1-340<br>W1-390 | 40.6 oz (1200 cc) | 20.3 oz (600 cc) |
| WRD1-300<br>WRD1-350 | 33.8 oz (1000 cc) | 20.3 oz (600 cc) |
| WRD1-400 | 37.2 oz (1100 cc) | 23.7 oz (700 cc) |

## ENGINE STARTING

If the engine is started while low on oil it will run for a few seconds then automatically stop. If equipped with a warning light, the lamp will flicker indicating low oil level.

Before restarting engine, fill crankcase to maximum level on dipstick with oil specified in operator's manual.

## OPERATION ON UNEVEN SURFACES

When operating on an uneven surface oil level may flow away from sensor probe activating oil sensor and stopping engine. Keep engine as level as possible to prevent unwanted shutdowns.

## OIL SENSOR MOUNTING

Oil sensor for gasoline engines will not function properly if incorrectly positioned in the crankcase. Figure 1-1 shows correct sensor position for each gasoline engine.

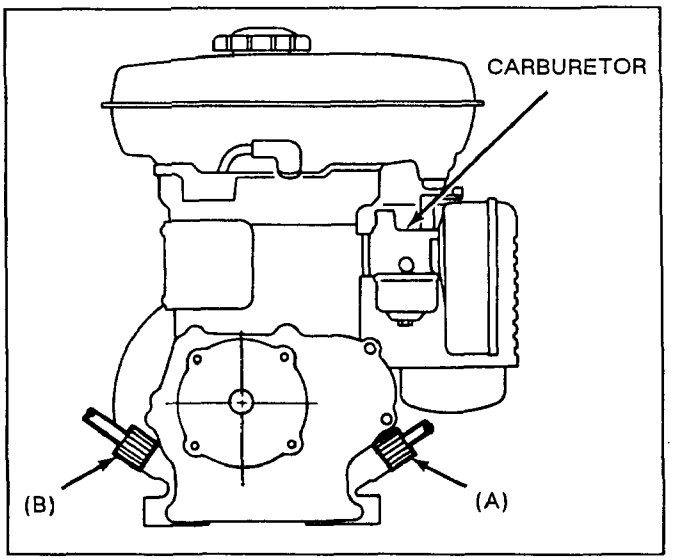



**Figure 1-1. (A) Sensor probe mounted on carburetor side of engine. (B) Sensor probe mounted opposite carburetor side of engine.**

| Model | Oil Sensor Position |
|---|---|
| W1-145 | (B) |
| W1-185 | (B) |
| W1-230 | (B) |
| EY25 | (B) |
| EY27 | (B) |
| W1-280 | (B) |
| W1-340 | (A) or (B) |
| W1-390 | (A) or (B) |

# NOTES

# OPERATION AND TROUBLESHOOTING

## OIL SENSOR FOR GASOLINE ENGINE
### Principle of Operation
### Figure 2-1

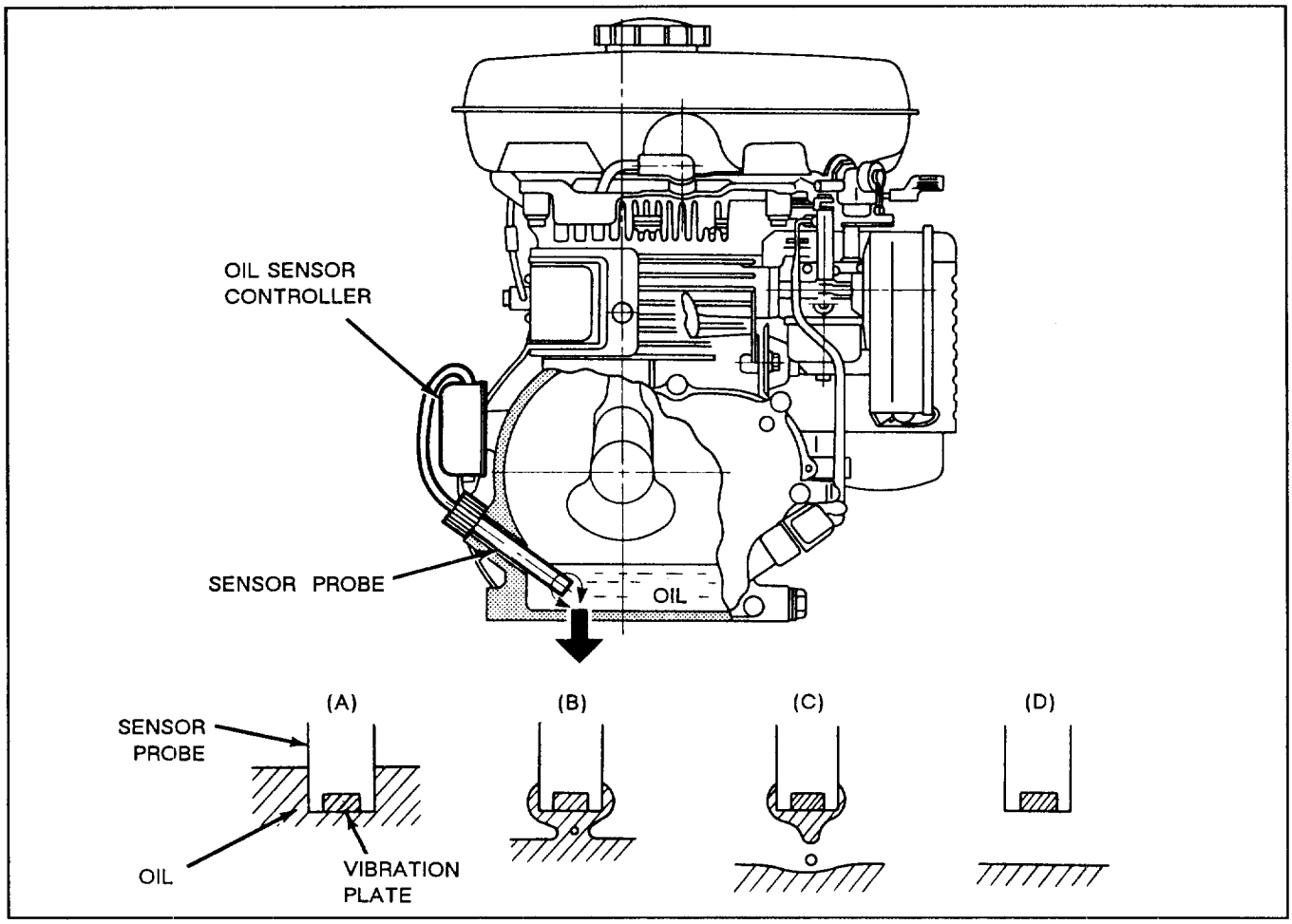



**Figure 2-1.**

The electro-vibration oil sensor for gasoline engines consists of a constant vibration sensor and a delayed reaction controller.

When emersed in oil the vibration plate moves slowly against the sensor probe. As oil level falls, less oil cushions the vibration plate allowing it to move faster in the probe. This increased movement generates a signal to the controller indicating low oil level.

The controller is powered by the exciter coil in the magneto. The controller monitors signals from the sensor, and delays engine shutdown until a predetermined number of signals has been exceeded. In this way unwanted shutdowns, such as those generated by operating on an uneven surface, are reduced. When sufficiant signals have been received the controller shorts primary current from the ignition coil to ground stopping the engine.

## Troubleshooting Electro-Vibration Type Sensor

### Oil Sensor Stops Gasoline Engines

**Figures 2-2 and 2-3**

1. Check oil level. Fill crankcase to maximum level on dipstick.
2. Inspect and repair all loose, broken or corroded wires.
3. Check Sensor (Figures 2-2 and 2-3).

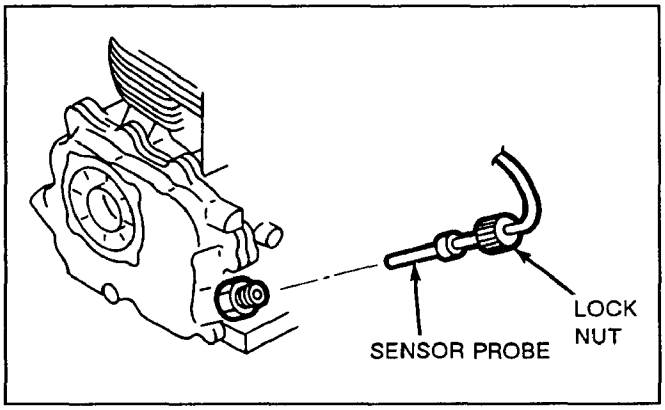



**Figure 2-2.**

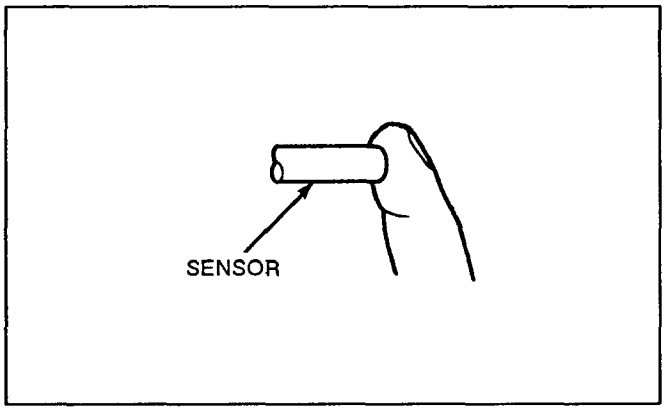



**Figure 2-3.**

Loosen lock nut and carefully remove sensor probe from engine.

Cap opening in crankcase.

Wipe oil from sensor probe.

Hold tip of sensor probe with finger and start engine.

After 10 seconds release tip of sensor probe.

If engine stops sensor is operating properly.

If engine continues to run sensor is malfunctioning and must be replaced.

## OIL SENSOR WARNING LIGHT PART NUMBER EY2277700200

**Figure 2-4**

An optional L.E.D. (Light Emitting Diode) may be installed as an oil level warning light on Wisconsin Robin gasoline engines: W1-145, W1-185, W1-230, EY25, EY27, W1-280, W1-340, W1-390.

As low oil level signal is received by controller primary current is directed from ignition coil, through L.E.D., to ground. Primary current running through the L.E.D. excites diode illuminating light until engine stops.

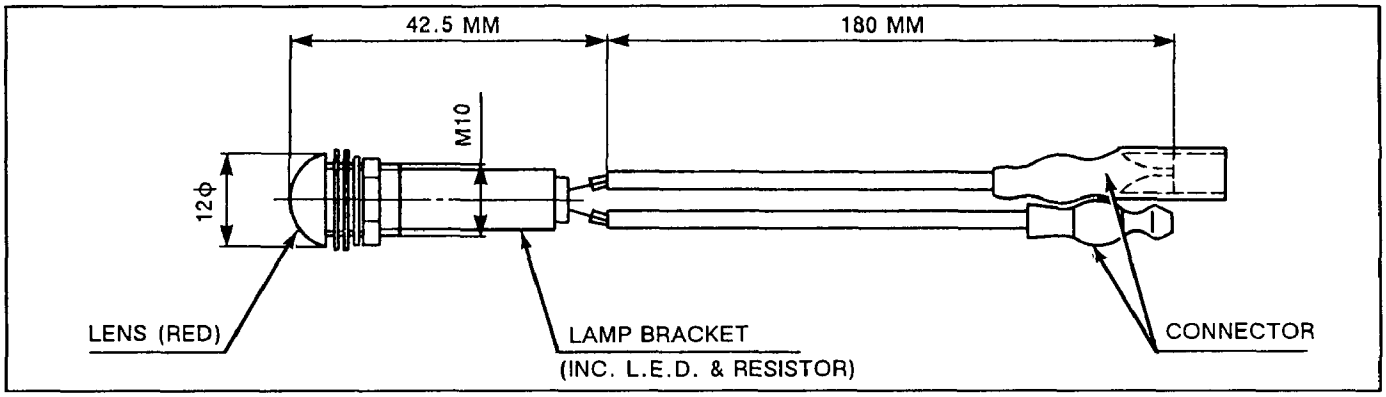



**Figure 2-4.**

## OIL SENSOR FOR DIESEL ENGINE
### Principle of Operation
### Figures 2-5 and 2-6

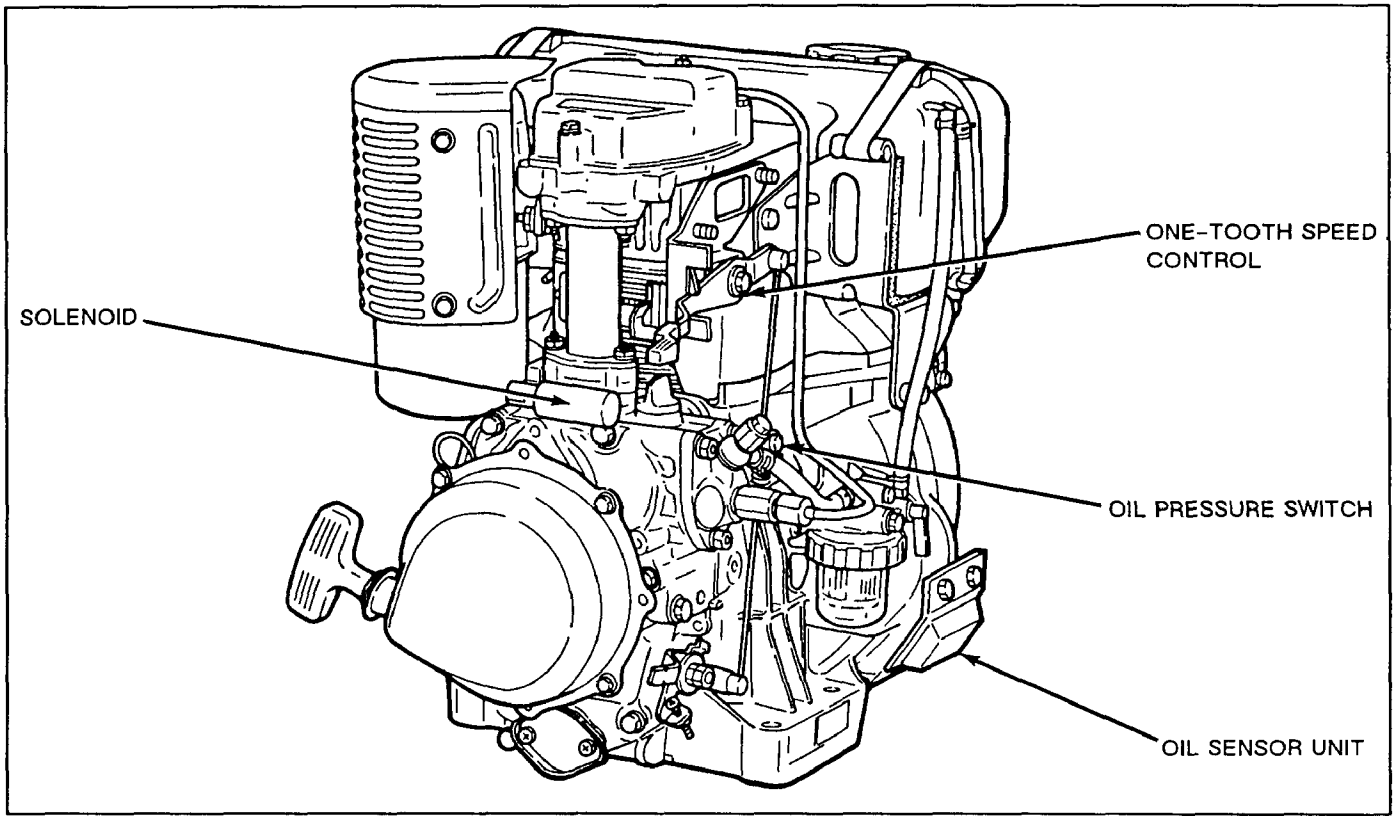



**Figure 2-5.**

The pressure switch oil sensor for diesel engines consists of a normally open pressure switch, delayed reaction controller, solenoid and mechanical linkage.

The pressure switch senses crankcase oil pressure. When pressure falls below 4.3 psi (0.3 kg/cm$^2$) switch contact closes, signaling controller.

The controller is powered by the charge coil in the magneto. When low pressure signal is received, controller delays engine shutdown before energizing solenoid. In this way unwanted shutdowns, such as those generated during a momentary pressure drop, are reduced.

Solenoid releases latch allowing control lever and mechanical linkage to shutdown fuel supply, stopping engine.

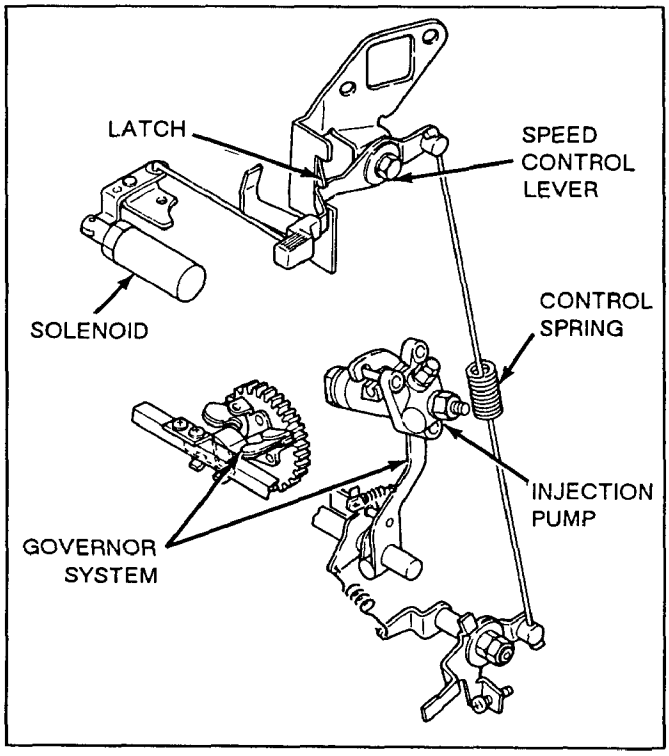



**Figure 2-6.**

## Troubleshooting Pressure Switch Type Sensor

**Oil Sensor Stops Diesel Engine**

***Figure 2-7***

1. Check oil level. Fill crankcase to maximum level on dipstick.
2. Inspect and repair all loose, broken or corroded wires.
3. Check Solenoid (Figure 2-7).

   Measure resistance between leads. Resistance reading should be approximately 235-290Ω. Replace solenoid if reading is not within specification.

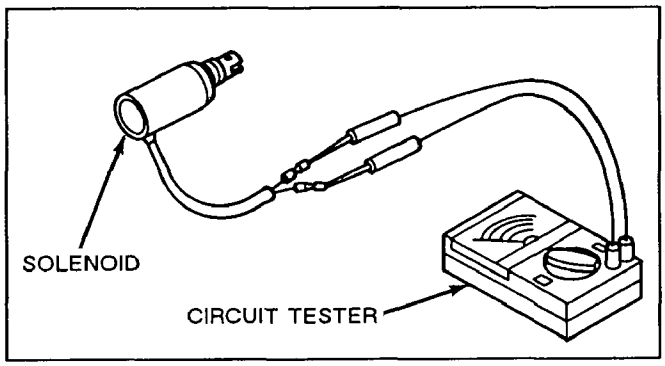



**Figure 2-7.**

4. Check Controller

   Disconnect Black/Yellow lead from controller at pressure switch. Start engine and ground lead to crankcase. If engine stops controller is operating properly. If engine continues to run sensor is malfunctioning and must be replaced.

5. Check Pressure Switch

   Disconnect Black/Yellow lead at controller. With engine stopped measure resistance between lead and ground. Resistance reading should be infinite.Start engine and measure resistance between lead and ground. Resistance reading should be 0. Replace pressure switch if readings are not within specifications.

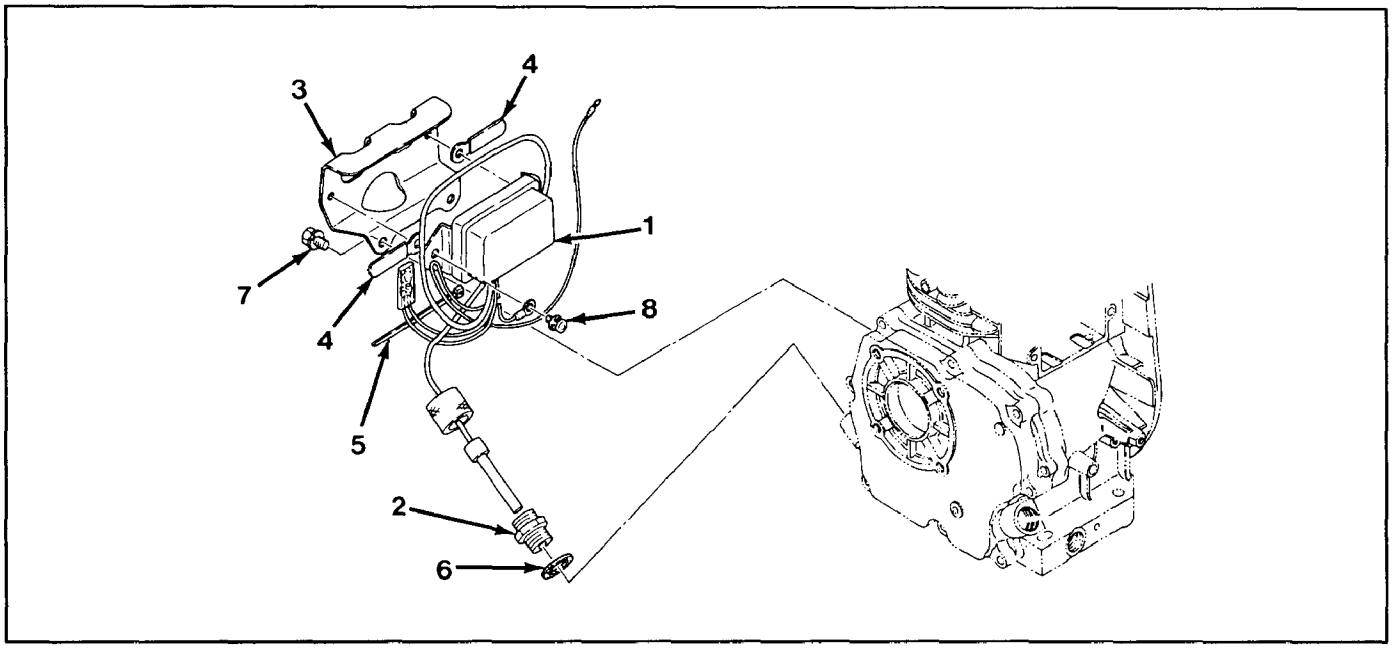
# REPAIR PARTS LISTS

## OIL SENSOR TO ADAPTER CROSS-REFERENCE

| OIL SENSOR | ADAPTER | SPACER (if required) |
|---|---|---|
| EY2137600201 | EY2277620103 | ---------- |
| EY2137600301 | EY2137606103 | EY2137608103 |
| EY2137600401 | EY2137606103 | EY2137608103 |
| EY2137600501 | EY2327620103 | ---------- |
| EY2247620101 | EY2137606103 | EY2137608103 |
| EY2247620111 | EY2247606103 | EY2247608103 |
| EY2247620201 | EY2247606203 | ---------- |
| EY2247620301 | EY2247606303 | EY2247608203 |
| EY2247620401 | EY2247606403 | ---------- |
| EY2277600201 | EY2277600203 | ---------- |
| EY2277600401 | EY2277620103 | ---------- |
| EY2277600501 | EY2277620103 | ---------- |
| EY2277601001 | EY2277621003 | ---------- |
| EY2347600111 | EY2347620103 | ---------- |
| EY2347610201 | EY2347620203 | ---------- |
| EY2347610301 | EY2347620203 | ---------- |

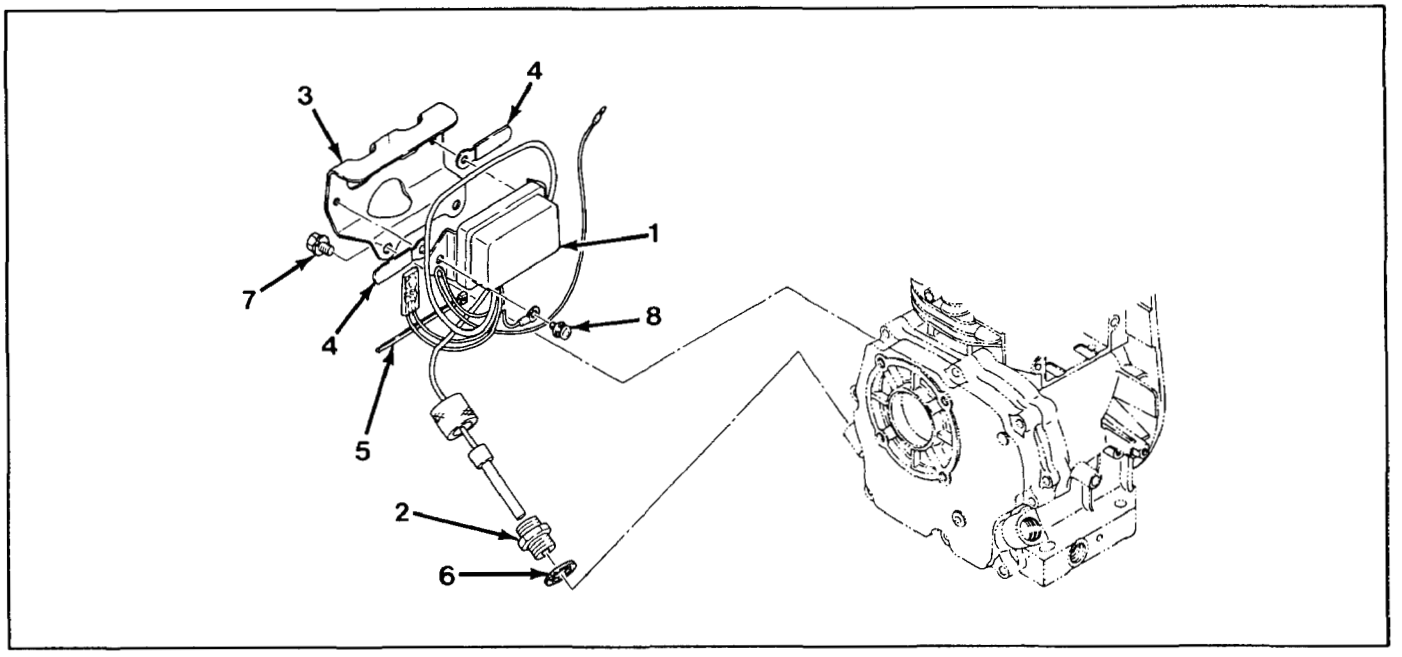
* Oil sensor part numbers are shown for reference only, and are replaced by complete assemblies as identified in the repair parts list. Complete assemblies include new adapter fitting, and spacer if required. When ordering a replacement oil sensor assembly, refer to the correct parts list for latest part numbers.

# MODEL NUMBER W1-145 AND W1-185



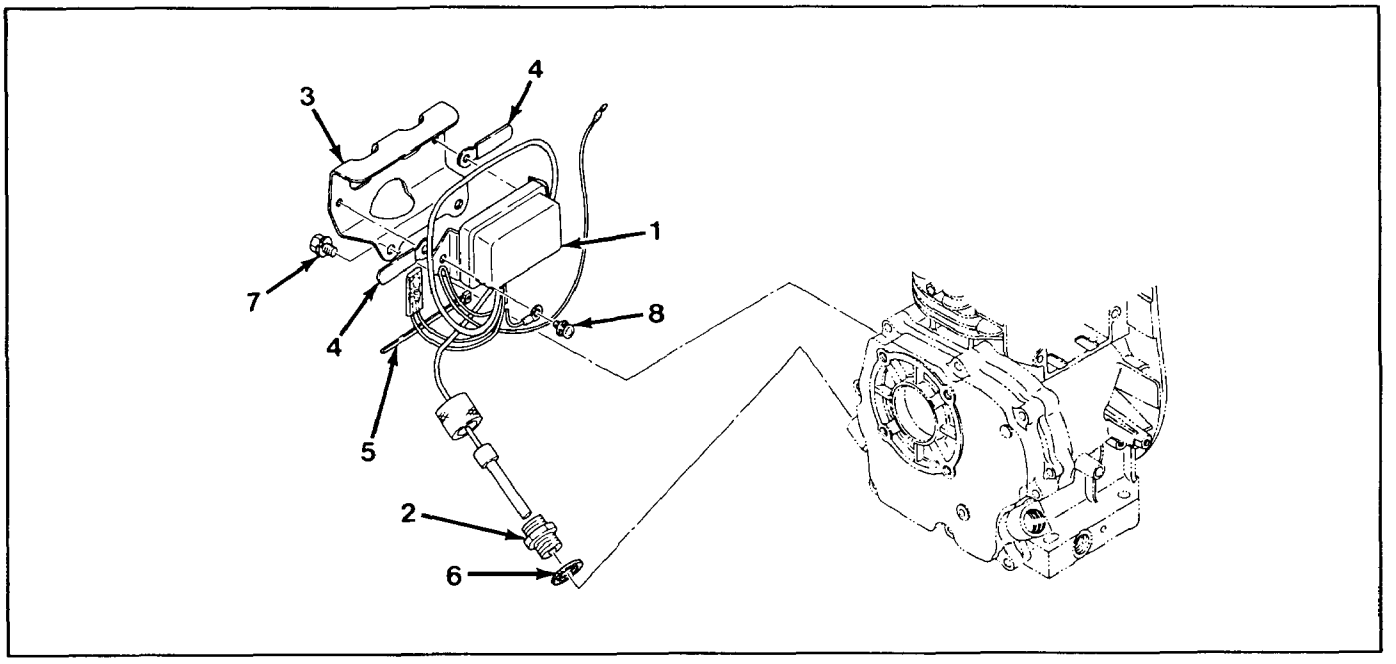

| ITEM NO | PART NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|
| 1 | EY2277601000 | OIL SENSOR ASSY. | 1 | Includes Item 2 |
| 2 | EY2277601003 | ADAPTER | 1 | |
| 3 | EY2277650301 | BRACKET, OIL SENSOR | 1 | |
| 4 | EY2267510103 | CLAMP | 1 | |
| 5 | EY0563000020 | WIRE BAND | 1 | |
| 6 | EY0213160010 | GASKET | 1 | |
| 7 | EY0011008160 | BOLT & WASHER ASSY. | 2 | |
| 8 | EY0043606120 | SCREW & WASHER ASSY. | 2 | |

# MODEL NUMBER W1-230



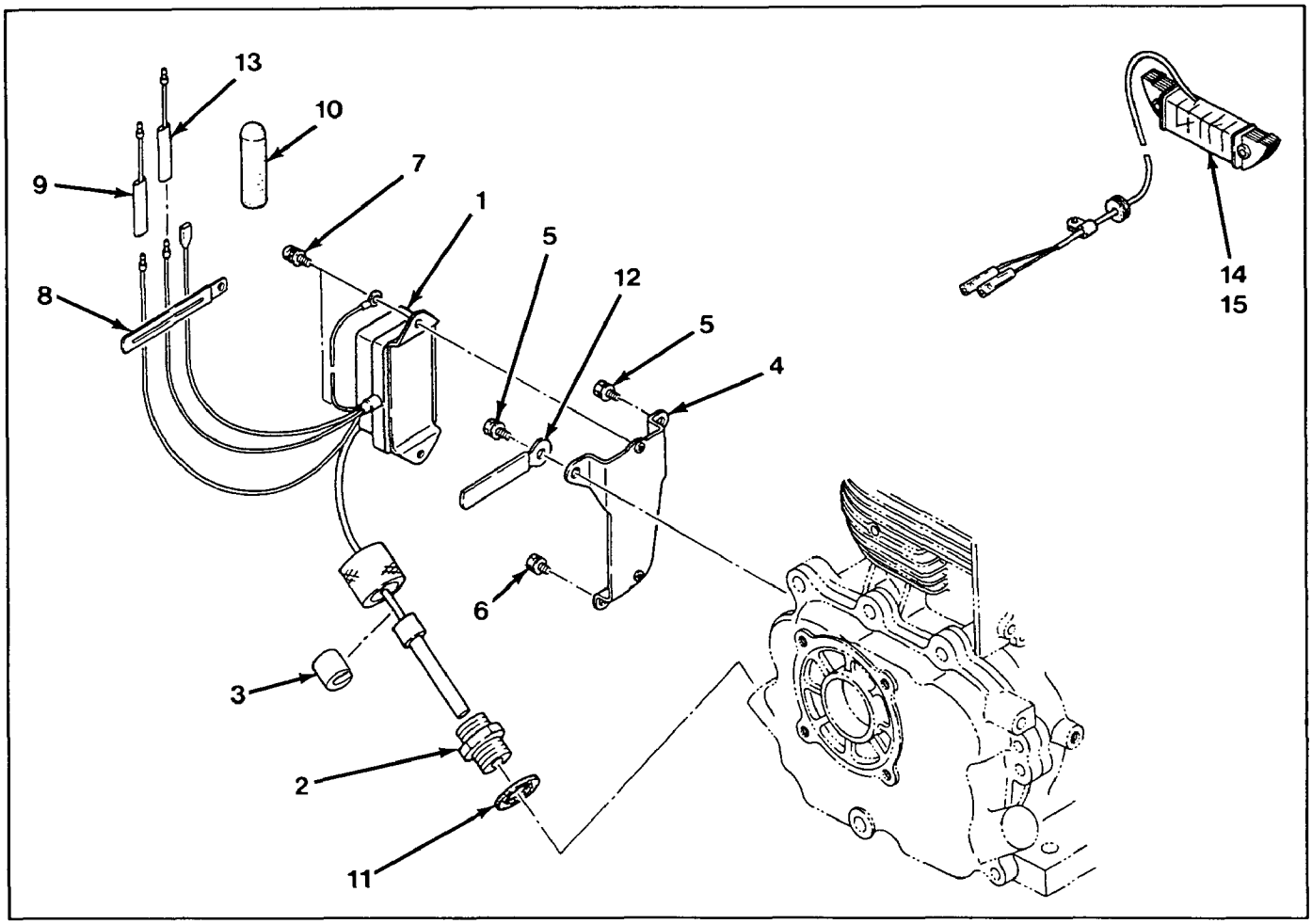

| ITEM NO | PART NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|
| 1 | EY2327601000 | OIL SENSOR ASSY. | 1 | Includes Item 2 |
| 2 | EY2327621003 | ADAPTER | 1 | |
| 3 | EY2277650301 | BRACKET, OIL SENSOR | 1 | |
| 4 | EY2267510103 | CLAMP | 1 | |
| 5 | EY0563000020 | WIRE BAND | 1 | |
| 6 | EY0213160010 | GASKET | 1 | |
| 7 | EY0011008160 | BOLT & WASHER ASSY | 2 | |
| 8 | EY0043606120 | SCREW & WASHER ASSY | 2 | |

# MODEL NUMBER W1-280



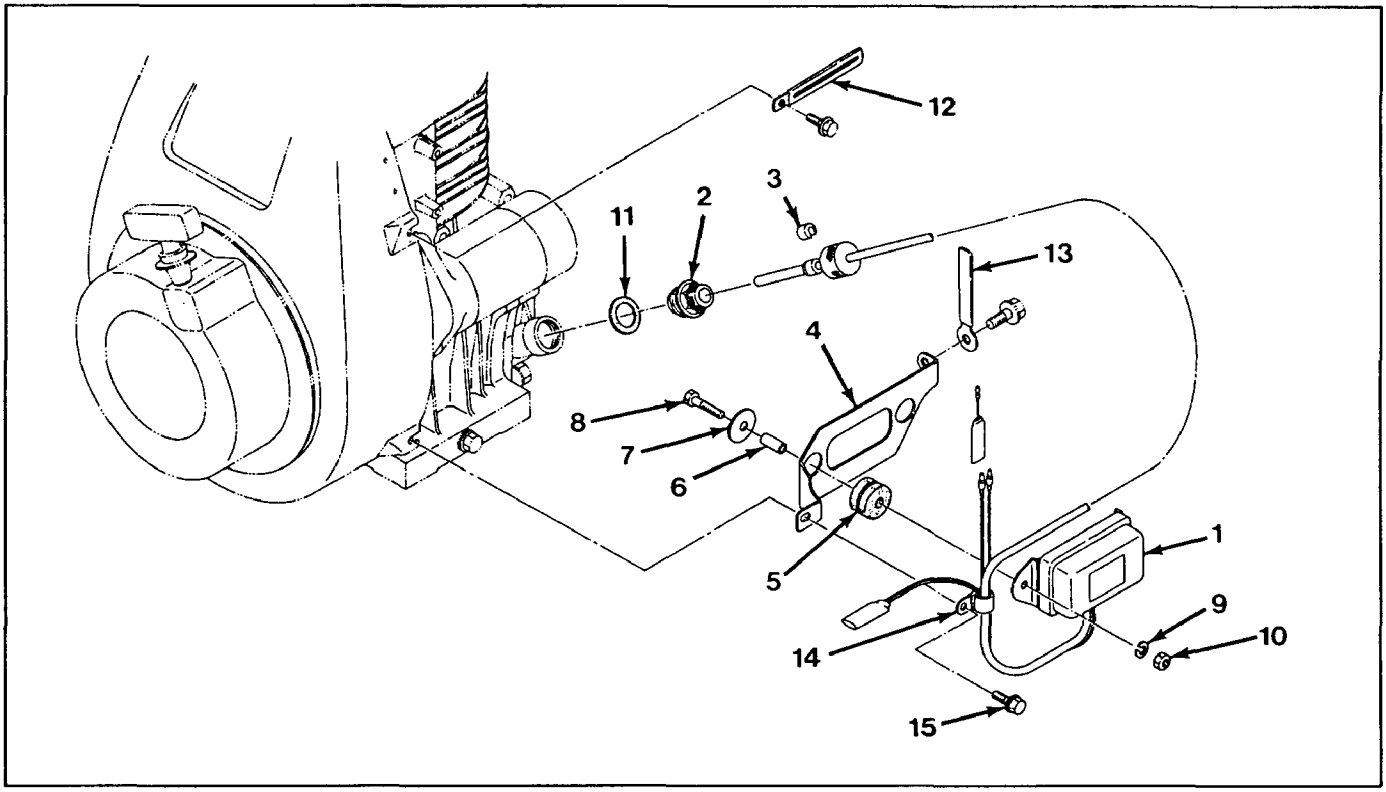

| ITEM NO | PART NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|
| 1 | EY2347600110 | OIL SENSOR ASSY. | 1 | Includes Item 2 |
| 2 | EY2347620103 | ADAPTER | 1 | |
| 3 | EY2277650301 | BRACKET, OIL SENSOR | 1 | |
| 4 | EY2267510103 | CLAMP | 1 | |
| 5 | EY0563000020 | WIRE BAND | 1 | |
| 6 | EY0213160010 | GASKET | 1 | |
| 7 | EY0011008160 | BOLT & WASHER ASSY. | 2 | |
| 8 | EY0043606120 | SCREW & WASHER ASSY. | 2 | |

# MODEL NUMBER EY25 AND EY27



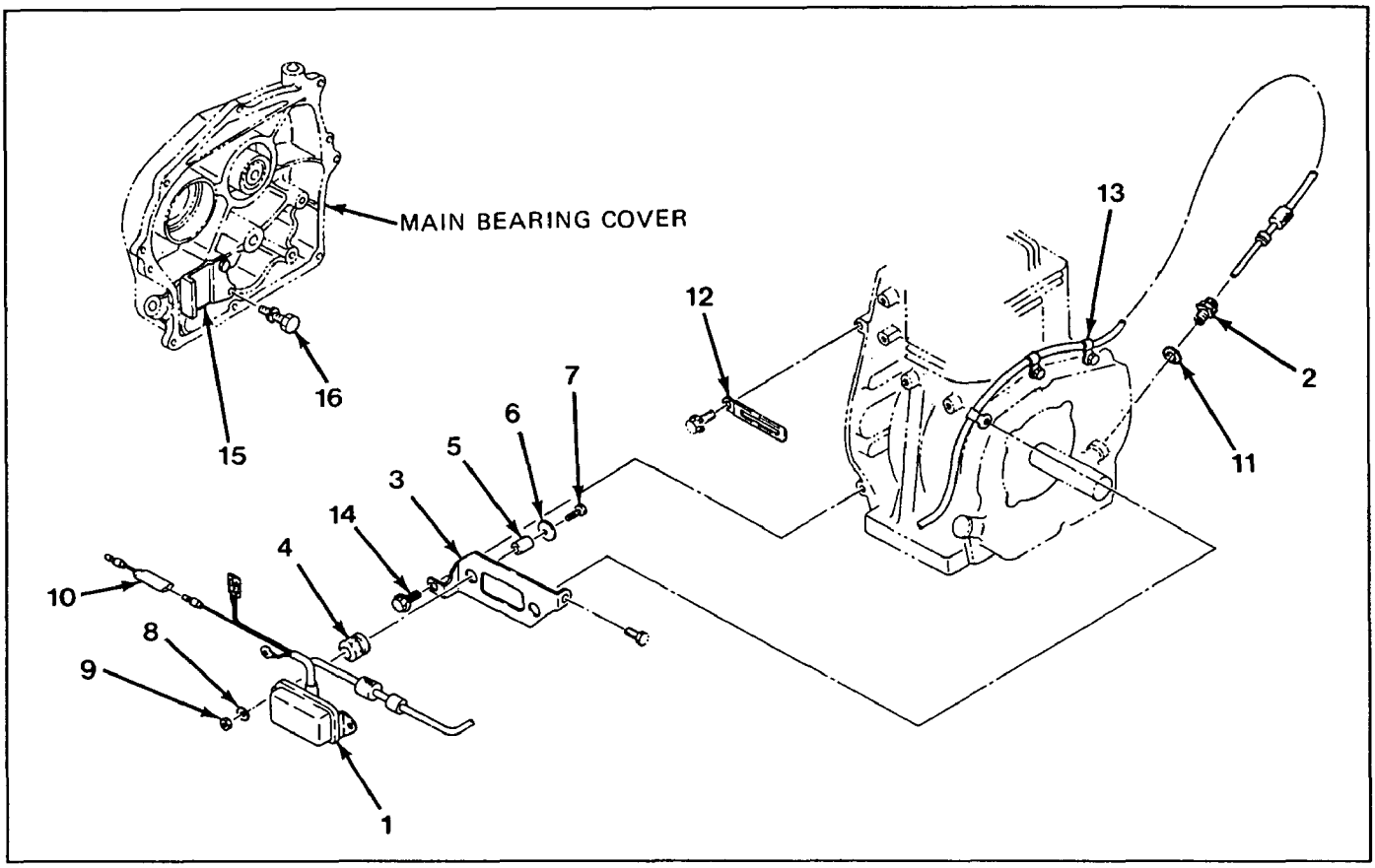

| ITEM NO | PART NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|
| 1 | EY2137600200 | OIL SENSOR ASSY. | 1 | For Point Ignition Includes Items 2 & 3 |
| -- | EY2137600300 | OIL SENSOR ASSY. | 1 | For PIT Ignition Includes Items 2 & 3 |
| -- | EY2137600400 | OIL SENSOR ASSY. | 1 | For CD Ignition Includes Items 2 & 3 |
| 2 | EY2137606103 | ADAPTER | 1 | |
| 3 | EY2137608103 | SPACER | 1 | |
| 4 | EY2077810701 | BRACKET, OIL SENSOR | 1 | |
| 5 | EY0011108160 | BOLT & WASHER ASSY. | 2 | |
| 6 | EY0011106100 | BOLT & WASHER ASSY. | 1 | |
| 7 | EY0043606100 | SCREW & WASHER ASSY. | 1 | |
| 8 | EY0566000250 | CLAMP | 1 | |
| 9 | EY2147312201 | WIRE | 1 | |
| 10 | EY0423210010 | CAP, VINYL | 1 | |
| 11 | EY0213200010 | GASKET | 1 | |
| 12 | EY0566120050 | CLAMP | 1 | |
| 13 | EY2147312201 | WIRE | 1 | For Elec Start Only |
| 14 | EY2137016608 | COIL, CHARGE | 1 | For Elec Start Only |
| 15 | EY2137043608 | COIL, EXCITER | 1 | |

# MODEL NUMBER W1-340 AND W1-390



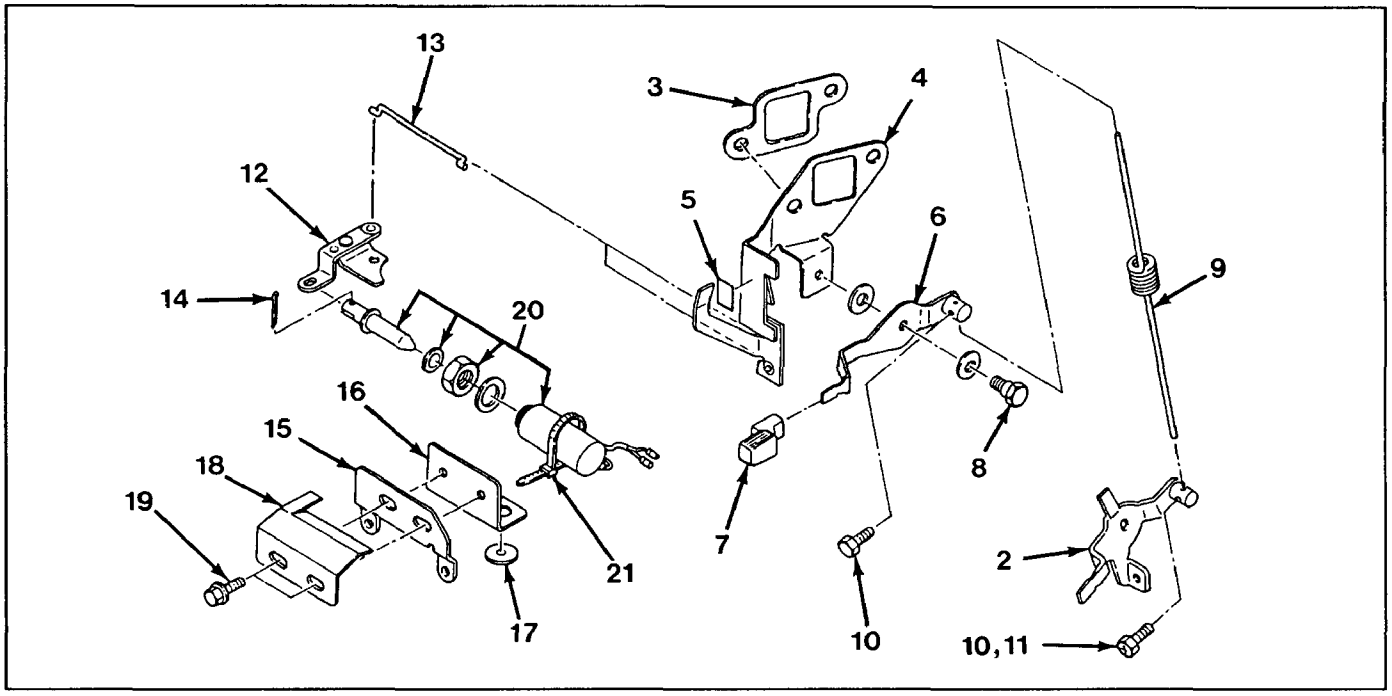

| ITEM NO | PART NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|
| 1 | EY2247620300 | OIL SENSOR ASSY. | 1 | Opposite Carburetor Side Includes Items 2 & 3 |
| 2 | EY2247606303 | ADAPTER | 1 | |
| 3 | EY2247608203 | SPACER | 1 | |
| 4 | EY2247710401 | BRACKET, OIL SENSOR | 1 | |
| 5 | EY9642108020 | GROMMET | 2 | |
| 6 | EY0230060180 | SPACER | 2 | |
| 7 | EY0200080050 | WASHER | 2 | |
| 8 | EY0016506300 | BOLT | 2 | |
| 9 | EY0032006000 | SPRING WASHER | 2 | |
| 10 | EY0021706000 | NUT | 2 | |
| 11 | EY0213200010 | GASKET | 1 | |
| 12 | EY0566000250 | CLAMP | 1 | |
| 13 | EY0566000170 | CLAMP | 1 | |
| 14 | EY0267550101 | CLAMP | 1 | |
| 15 | EY0110060020 | FLANGE BOLT | 1 | |

# MODEL NUMBER WI-340 AND WI-390




| ITEM NO | PART NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|
| 1 | EY2247620400 | OIL SENSOR ASSY. | 1 | Carburetor Side Includes Item 2 |
| 2 | EY2247606403 | ADAPTER | 1 | |
| 3 | EY2247710401 | OIL SENSOR BRACKET | 1 | |
| 4 | EY9642108020 | GROMMET | 2 | |
| 5 | EY0230060180 | SPACER | 2 | |
| 6 | EY0200080050 | WASHER | 2 | |
| 7 | EY0016506300 | BOLT | 2 | |
| 8 | EY0032006000 | SPRING WASHER | 2 | |
| 9 | EY0021706000 | NUT | 2 | |
| 10 | EY2247311301 | WIRE | 1 | |
| 11 | EY0213200010 | GASKET | 1 | |
| 12 | EY0566000250 | CLAMP | 1 | |
| 13 | EY0566000170 | CLAMP | 1 | |
| 14 | EY0110060020 | FLANGE BOLT | 1 | |
| 15 | EY2247630203 | OIL GUIDE PLATE | 1 | |
| 16 | EY0011308160 | BOLT AND WASHER ASSY. | 1 | |

# MODEL NUMBER WRD1-300, WRD1-350, WRD1-410




| ITEM NO | PART NUMBER | DESCRIPTION | QTY | REMARKS |
|---|---|---|---|---|
| 1 | EY9429951300 | OIL PRESSURE SWITCH | 1 | Not Shown |
| 2 | EY2284331111 | SPEED CONTROL | 1 | WRD1-300, WRD1-350 |
| 2 | EY2314331101 | SPEED CONTROL | 1 | WRD1-410 |
| 3 | EY2283500603 | MUFFLER GASKET | 1 | |
| 4 | EY2284015101 | CONTROL PANEL | 1 | |
| 5 | EY2289210903 | OPERATION LABEL | 1 | |
| 6 | EY2284336101 | SPEED CONTROL | 1 | |
| 7 | EY2274360103 | KNOB | 1 | |
| 8 | EY2284530101 | LINK PIVOT | 1 | |
| 9 | EY2284500501 | CONTROL SPRING | 1 | WRD1-300, WRD1-350 |
| 9 | EY2314500501 | CONTROL SPRING | 1 | WRD1-410 |
| 10 | EY0115050010 | BOLT | 2 | WRD1-300, WRD1-350 |
| | | | 1 | WRD1-410 |
| 11 | EY0043105120 | SCREW | 1 | WRD1-410 |
| 12 | EY2284611000 | LINK ASSY. | 1 | WRD1-300, WRD1-350 |
| 12 | EY2314611000 | LINK ASSY. | 1 | WRD1-410 |
| 13 | EY2284501801 | ROD | 1 | |
| 14 | EY0051030150 | COTTER PIN | 1 | |
| 15 | EY2287590101 | BASE BRACKET | 1 | |
| 16 | EY2287580101 | SOLENOID BRACKET | 1 | |
| 17 | EY0241030010 | GROMMET | 1 | |
| 18 | EY2287570101 | SOLENOID COVER | 1 | |
| 19 | EY0110060010 | FLANGE BOLT | 2 | |
| 20 | EY2287500400 | SOLENOID ASSY. | 1 | |
| 21 | EY0563000010 | WIRE BAND | 1 | |
| 22 | EY2287314301 | WIRE | 1 | Not Shown |
| 23 | EY2287600101 | OIL SENSOR ASSY. | 1 | Not Shown |
| 24 | EY2287200201 | REGULATOR BRACKET | 1 | Not Shown |
| 25 | EY2287040208 | STATOR | 1 | Not Shown |

# WIRING DIAGRAMS

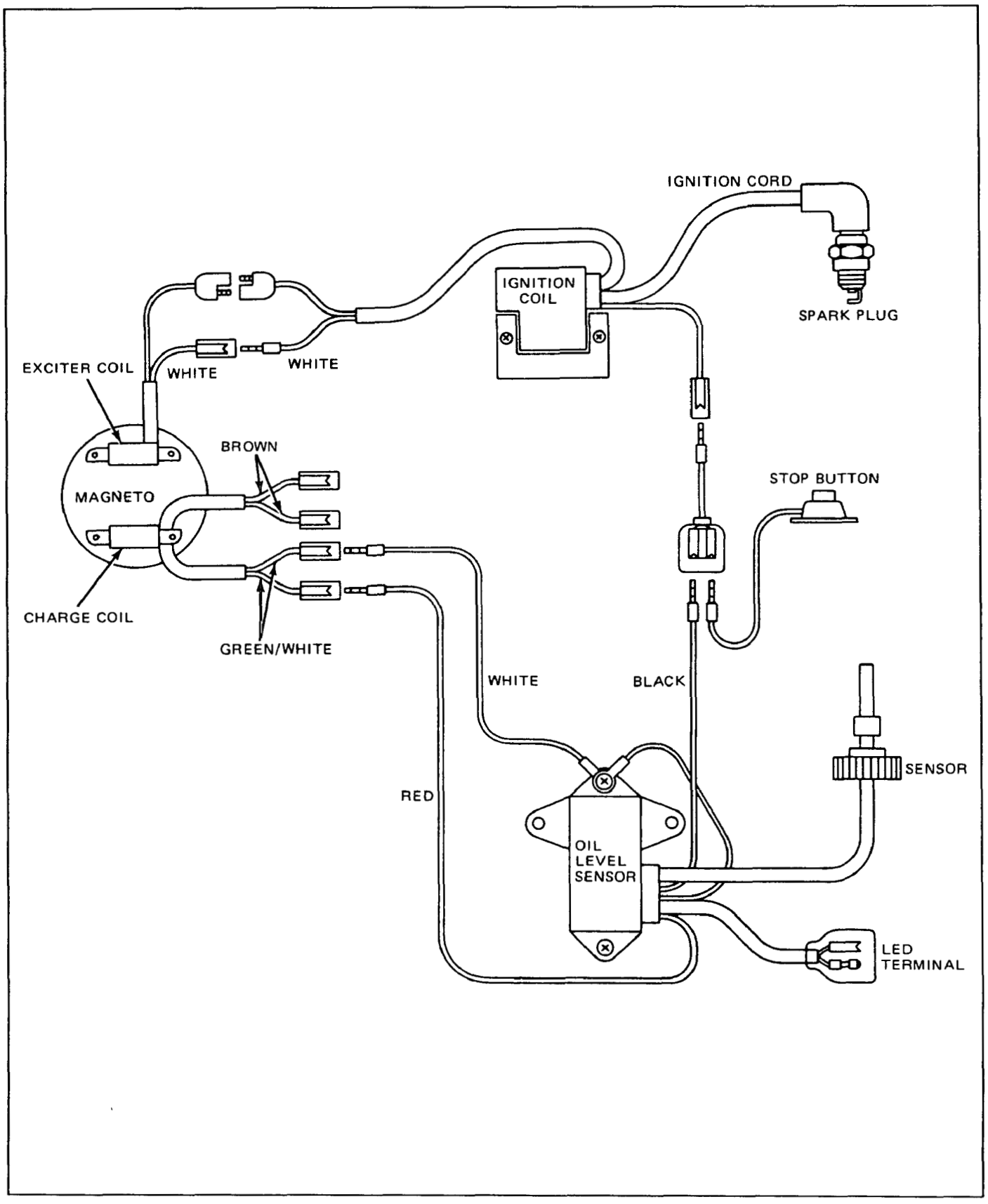



Figure 4-1. Wiring of EY25 and EY27 Oil Sensor

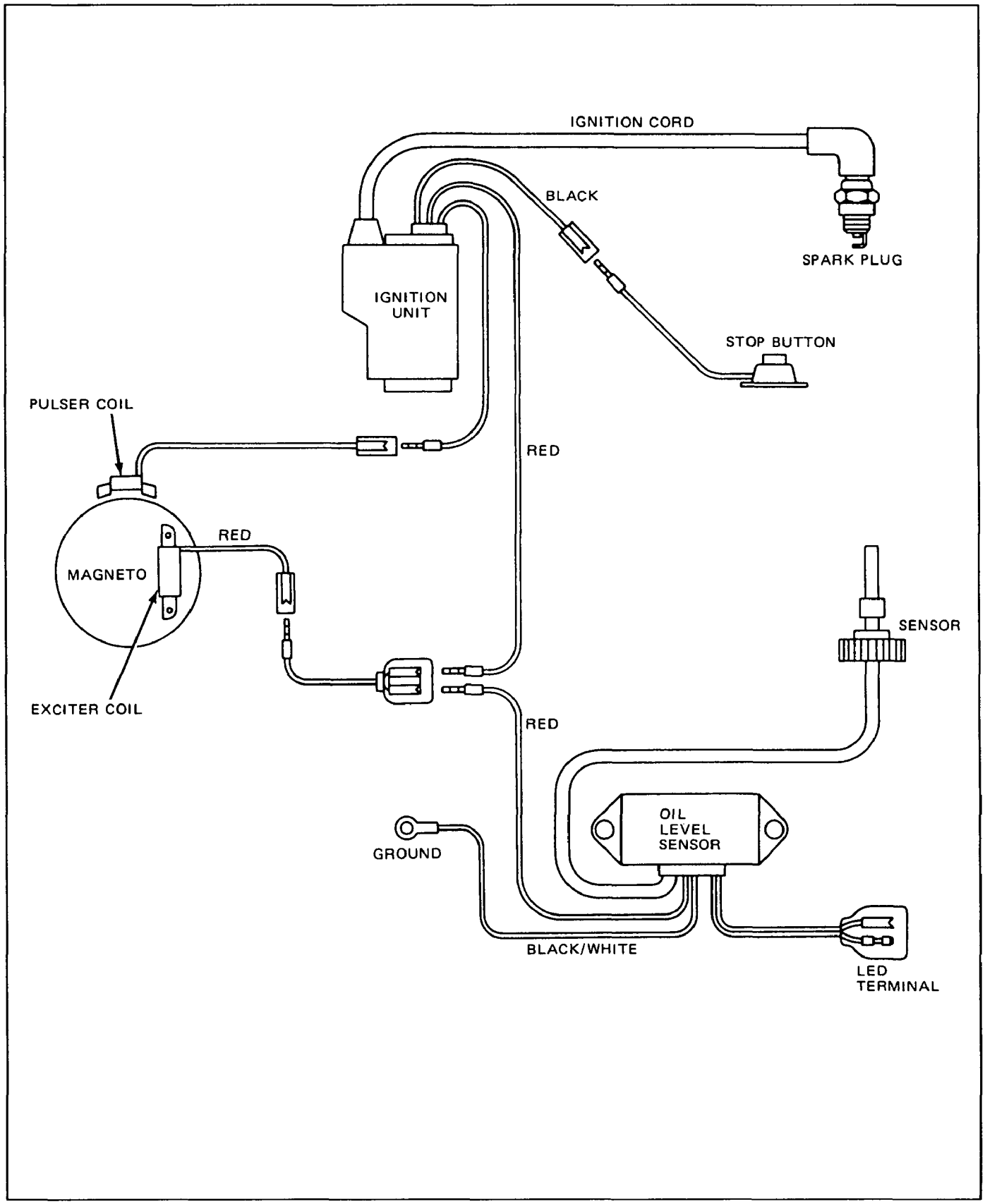



Figure 4-2. Wiring of W1-340 and W1-390 Oil Sensor

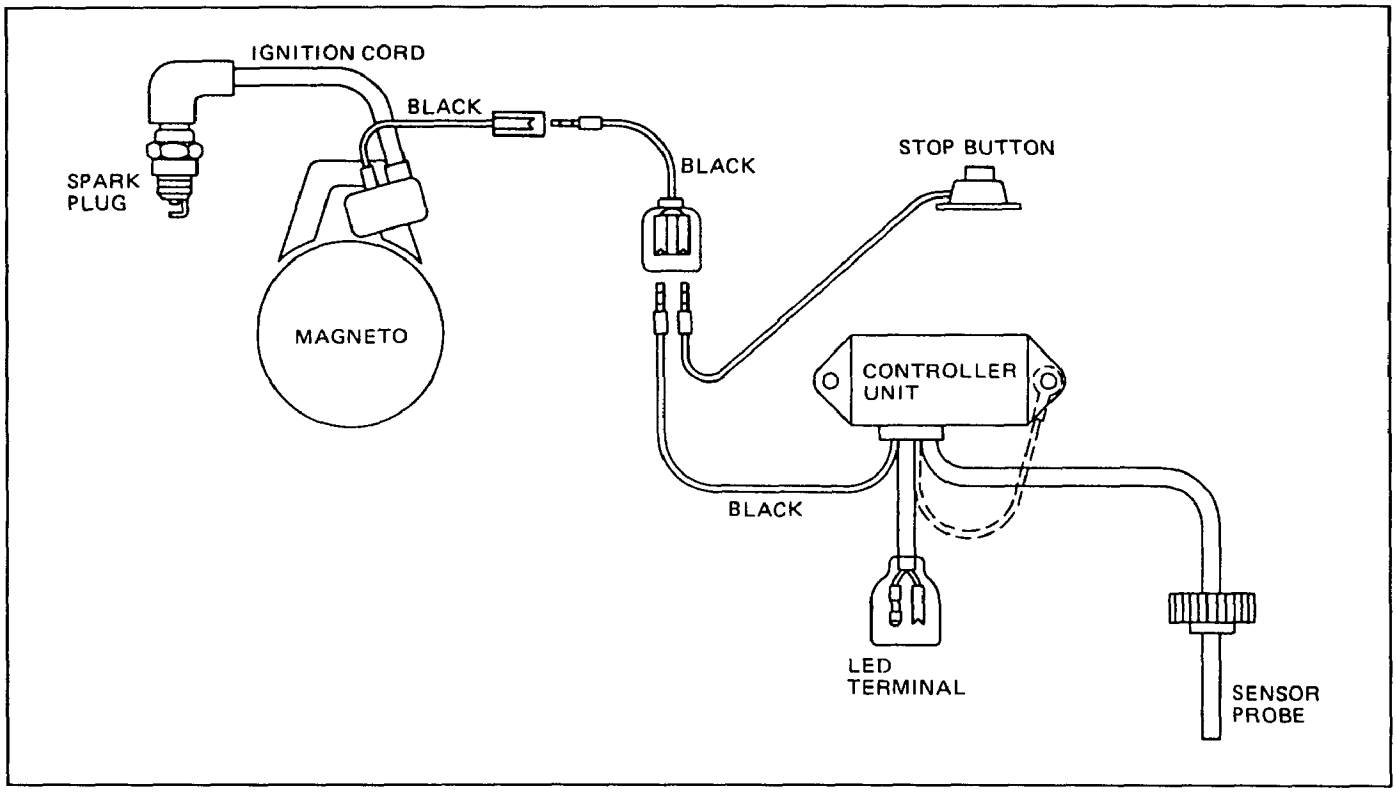



**Figure 4-3. Wiring of W1-145, W1-185, W1-230 and W1-280 Oil Sensor**

# NOTES

HEADQUARTERS:
3409 Democrat Road
P.O. Box 181160
Memphis, Tennessee 38181
Phone: (901) 365-3600
TELEX: 462-1058 (itt)
TOLL FREE: 1-800-932-2858

EUROPEAN:
Rue Joseph Deflandre, 13
B-4920 Chaudfontaine (Liege)
Belgium
Phone: (32) (41) 675320
TELEX: 42631 TDY TP B

November/1987
TTP30046