

INSTALLATION INSTRUCTIONS

DRAG SPECIALTIES PROGRAMMABLE ELECTRONIC SPEEDO WITH LED INDICATOR LIGHTS PART #s 2210-0416, 0417, 0418, 0419, 0420, 0421, 0422, 0423

ATTENTION INSTALLER (if other than owner): Please forward this Instruction Sheet to the purchaser of this product. These instructions contain valuable information necessary to the end user.

INTRODUCTION: These instructions describe the procedure for properly installing the programmable speedo on 96-03 models.

Review instructions carefully before beginning, as they contain important information. Please retain for future reference.

Particularly important information is distinguished in these instructions by the following notations:

NOTE: A NOTE provides key information to make procedures easier or clearer.

CAUTION: A CAUTION indicates special procedures that must be followed to avoid damage to the motorcycle and/or accessories.

WARNING! A WARNING! Indicates special procedures that must be followed to avoid injury to a motorcycle operator or person inspecting or repairing the motorcycle.

TOOLS REQUIRED:

Soldering iron
Electrical solder
Heat shrink tubing
Wire stripper
Wiring schematic for motorcycle

PROCEDURE:

CAUTION: We recommend that all electrical connections be made with solder and covered with heat shrink tubing for safety and reliability.

NOTE: These instructions are not for one specific model. Your motorcycle may differ slightly from what is described in the instructions, but installation should be similar. You will need a wiring schematic for your motorcycle to wire these lights correctly.

WIRING THE INDICATOR LIGHTS

1. Place the motorcycle on a level and secure area. Disconnect the battery.
2. Refer to the appropriate factory service manual and remove the OEM speedometer and indicator lights. The indicator lights usually unplug either in the rear of the headlight or under the gas tank area.
3. Mount the new speedometer in the desired location.
4. Locate the OEM wire for the high beam indicator light. Connect it with the blue wire from the wire harness on the speedometer. Connect the orange wire from the speedometer to the ground wire for the high beam indicator light, or connect directly to a ground. Polarity is critical, if light does not operate, swap the orange and blue wires around and re-check for proper operation.



5. The back lighting for the new gauge is powered whenever the speedometer is powered, it cannot be switched independently of the speedometer.
6. Locate the OEM wires for the turn signals. Usually they are brown and violet wires.

NOTE: You will notice only one bulb for the turn signals in the gauge and two wires from the bike to the harness. If you connect both of these wires directly to the yellow wire on the speedometer, this will allow feedback and cause all the signals to flash at once. To prevent this, you will need to add a diode between each OEM turn signal wire and the yellow wire coming from the speedometer. We recommend you utilize a Dyna tach adapter, PART #D-101, available separately. This tach adapter includes the diodes necessary to allow the turn signal indicator light to operate correctly. Follow the instructions for each tach adapter, substituting the wires from the original wire harness found in Step 6 for the two ignition terminals shown in the wire schematic. Hook the white wire on the tach adapter to the yellow wire for the turn signal indicator on the speedometer. If you use PART #D-101 adapter, skip Steps 7-9 and go directly to Step 10.

7. Take one of the diodes, making sure to observe the correct polarity, and attach it to the brown turn signal wire on the bike.



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8. Take the remaining diode, again making sure to observe the correct polarity, and attach it to the violet turn signal wire on the bike.
9. Take the remaining wire from both diodes and attach it to the yellow wire on the speedometer.
10. Connect the brown wire on the speedometer to the negative wire for the turn signal indicator or to ground.
11. Using the factory service manual, locate the wire that connected the oil pressure indicator light to the sending unit. Connect this wire to the violet wire on the speedometer.
12. Connect the red wire on the speedometer to the wire originally feeding power to the OEM oil pressure indicator light.
13. Using the factory service manual locate and determine the type of sending unit used on the neutral light.

NOTE: There are two different “styles” of sending units usually used for the neutral indicator light. One style is a “grounding” sending unit that has just one wire running to it and grounds the wire to illuminate the indicator bulb. The other popular style uses two wires and closes a circuit between the two wires to illuminate the indicator bulb. Determining which style is used on your bike will determine how the indicator lights are wired into the bike’s wiring harness. Harley-Davidson® has used both styles in the past.

NOTE: If your bike has the two-wire neutral switch on the transmission, please skip to Step 17. If you have a single-wire neutral switch, continue with Step 14.

14. Connect the green wire from the speedometer with a 12V switched power source. (You can use the same source as used in Step 12.)
15. Locate the wire connected to the neutral switch and connect it to the white wire on the speedometer.
16. Go to Step 19.
17. Connect the green wire from the speedometer with the wire connected to the neutral switch.
18. Connect the violet wire on the speedometer to ground.
19. Check all items to make sure they are correctly tightened. Route all wires away from moving and hot items to prevent short circuits.
20. Reconnect the battery.
21. Turn on the ignition; check operation of neutral, oil, high beam, turn signals and the backlight. You will observe the speedometer needle do a sweep across the gauge when first powered up, this is a normal operation upon power up.
22. To operate the mode reset switch: A brief momentary push on the red button will cycle the odometer between the two trip meters and the standard odometer. If the red button is held in while the trip meter is showing, either of the trip meters can be reset to zero. The standard odometer cannot be reset to zero.

NOTE: If you push and hold the red button for two seconds or longer while the odometer is showing, you will enter the programming mode. If this happens, first press and release the red button and then repeatedly press and hold the red button, going through the manual programming steps with no changes until the odometer reappears. If you make any changes, the speedometer will have to be re-programmed.

PROGRAMMING THE ELECTRONIC SPEEDOMETER

1. There are two different ways to program the speedometer. The first, and also the simplest, is “Automatic Calibration by driving a known distance”. The second is Manual Calibration by determining the correct number of electronic pulses per mile/kilometer. The speedometer is capable of being calibrated between 3,000 & 90,000 pulses per mile/kilometer.
2. The speedometer is calibrated by using the red push button for the odometer.

CALIBRATING BY DRIVING A KNOWN DISTANCE:

NOTE: There are two different methods of switching modes used with the mode reset switch. The first is “press and release”, which is a momentary push and then release of the red button. The second is “press and hold”, which is a push and hold in of the red button for 2 seconds.

3. With the odometer reading the total distance, press and hold the red button until an “A” appears in the odometer window.
4. To start the known distance, press and hold the red button again until 00000 appears. Put the motorcycle in gear and ride it exactly one mile/kilometer, speed is not critical. The window should record the number of pulses it recorded in the one mile/kilometer distance. Using two consecutive mile marker posts or other known distance is considered the best practice.
5. Press and hold the red button again until the total distance on the odometer again shows. Calibration should be complete.
6. To test, ride the motorcycle one mile/kilometer at 60 MPH/KPH, which should take 60 seconds.

CALIBRATING BY THE MANUAL METHOD:

7. Place the motorcycle on a stand so that the wheel that generates the pulses is off the ground.
8. Place the speedometer in calibration mode by completing step # 3 above.
9. Carefully rotate the wheel 10 complete revolutions to get the pulse/10 revolutions amount.

NOTE: Read the number of pulses per 10 revolutions on the odometer of the speedometer. Divide this number by 10 to get the number of pulses per tire revolution.

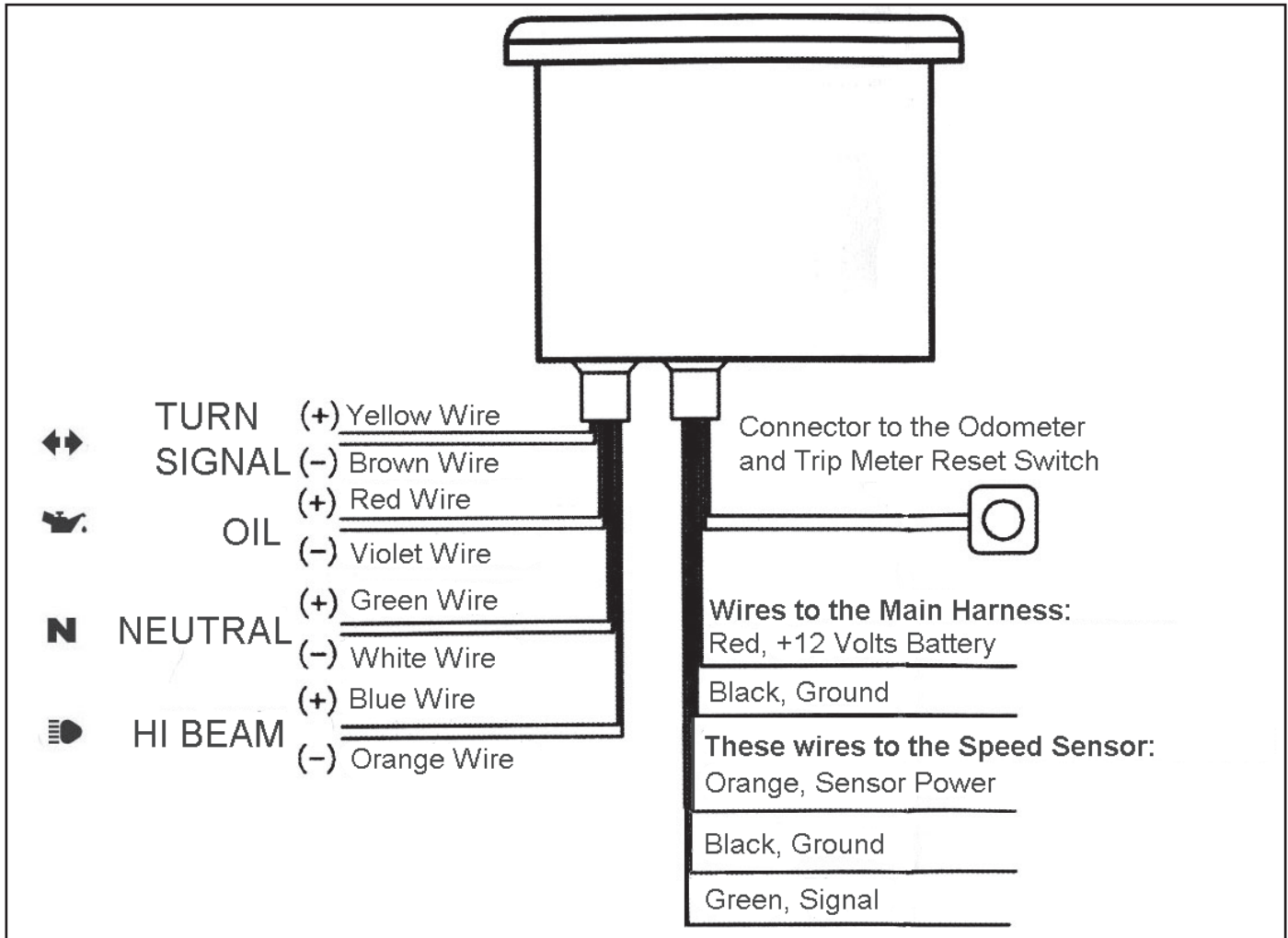
10. Determine the circumference of the tire/wheel combination.

NOTE: Simplest method to determine circumference is to carefully measure around the tire at its largest diameter. Optional method is to determine circumference by using the following formula: Tire Diameter x 3.14159 = Circumference



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11. To determine the number of electronic pulses per mile/kilometer, use the following formula:

$$\frac{63360 \times \# \text{ OF PULSES PER TIRE RPM}}{\text{CIRCUMFERENCE}} = \frac{\text{PULSES PER MILE/KILOMETER}}{\text{MILE/KILOMETER}}$$

12. We now need to enter the new pulse/distance ratio into the speedometer.

NOTE: The total number of pulses per mile/kilometer must range between 3,000 and 90,000. If you do not fall within this range, you must use a different method of generating the electronic pulses. Generally this is a minimum of 5 pulses per tire revolution, but this can vary depending on tire diameter.

13. Place the speedometer back into calibration mode by completing step #1.

14. Press and release the red button; a "P" should show in the odometer window.

15. Press and hold the red button until the current pulse ratio appears in the odometer window. The first digit should be flashing.

16. Repeatedly press and release the red button until the correct digit appears flashing in the window.

NOTE: If the pulse/distance ratio that you are entering has only 4 digits, you must enter a "0" as the first digit, such as "04572".

17. Next to move to the second digit, press and hold the red button until the second digit starts flashing.

18. Press and release the red button until the correct second digit appears.

19. Press and hold the red button to move to the third digit.

20. Repeat steps 16 through 19 until all digits have been programmed. After the last digit has been programmed, press and hold the red button to return to the normal odometer setting.

21. Programming should now be complete.

22. To test, ride the motorcycle one mile/kilometer at 60 MPH/KPH, which should take 60 seconds.

WARNING! Before operating motorcycle, be sure all hardware is tight.

