MSD SMART SWITCH
PN 8966

Parts Included:
1 - Smart Switch
1 - Parts Bag

WARNING: When installing the MSD, disconnect the battery cables. When disconnecting, always remove the negative cable first and install it last.

The Smart Switch will provide a switched output to control a device through the input of nearly any 0 - 5 volt sensor or sender. The Switch must be calibrated to "learn" the minimum and maximum output of the sensor. Once calibrated, the output of the Switch can be adjusted to activate between 10% - 99% of the sensor's voltage range.

The Switch can be connected to most 0 - 5 volt DC sensors such as Throttle Position, Manifold Pressure, Mass Air Flow, Water Temp, Oil, Fuel or Boost Pressure and more.

WIRING	
RED	This is the On/Off wire. Connects to switched 12 volts.
BLACK	Connects to Ground.
SENSOR WIRING	
PINK	Connects to +5 volts supply to sensor.
WHITE	Connects to sensor's input wire, 0-5 volts.
BLACK	Connects to the sensor's ground wire.
SWITCH OUTPUT	
RED/GREEN	Switch output, supplies 12 volts, 2 amps max.
ORANGE	Switch output, supplies ground, 2 amps max.
YELLOW	Optional buffered sensor output voltage wire, to connect to ECU or data acquisition. 100 ohm impedance.

LED
Red: This is the calibration LED. It illuminates while the Switch is being calibrated to the sensor.
Green: This LED will illuminate when the Switch is in the operate mode and will flash when the output turns on.

CALIBRATION

The maximum input voltage range is from 0 to 5 volts DC. The Smart Switch learns the minimum and maximum input voltages during calibration and then stores these values until it is calibrated again. The minimum voltage range required for proper calibration is 0.5 volts DC. If during calibration the input voltage range is less than .5 volts, the last stored calibration voltage captured will remain as the switch range used.

Power the Switch On and turn the knob to the Cal position (the Red LED will light). This will set the minimum input voltage. Next, set the maximum voltage. For example, for a TPS Sensor, you will turn the power on with the throttle at idle position, then move it to Wide Open Throttle and hold for a second. This will give the sensor the max output.

Figure 1 Wiring the Smart Switch.

When using with a MAP or other pressure sensor, the calibration is similar but the maximum and minimum pressures must be input during the calibration mode. As well for temperature senders the minimum and maximum temperatures must be captured during calibration. You can also capture the temperature rating of a sensor by placing it in a cup of boiling water to sweep from a certain lower temperature to boiling for a reference of nearly 212° F.

Calibration can also be done with a potentiometer and voltmeter. Connect the potentiometer (1K-10K ohm) across the three sensor wires. Connect the voltmeter across the ground and input leads and adjust the potentiometer to the lowest desired voltage that represents the sensor minimum output voltage. Turn the 8966 knob to calibrate with power on, than adjust the potentiometer to the highest voltage that is expected from the sensor. Turn the Switch to the desired activation point and the Switch will be ready to go (Figure 2).

It is always best to use the sensor that will be connected to the 8966 for the calibration procedure to insure accurate calibration of the 8966 and the correct minimum and maximum voltage levels are acquired.

ACTIVATION PERCENTAGE POINT

The activation of the Switch is adjustable through a percentage of the sensor's voltage sweep. For example, when set at 80%, on a TPS that has the voltage range of 1-volt to 4-volts, the activation voltage will be 3.4 volts. That will be the point that the output circuit activates.
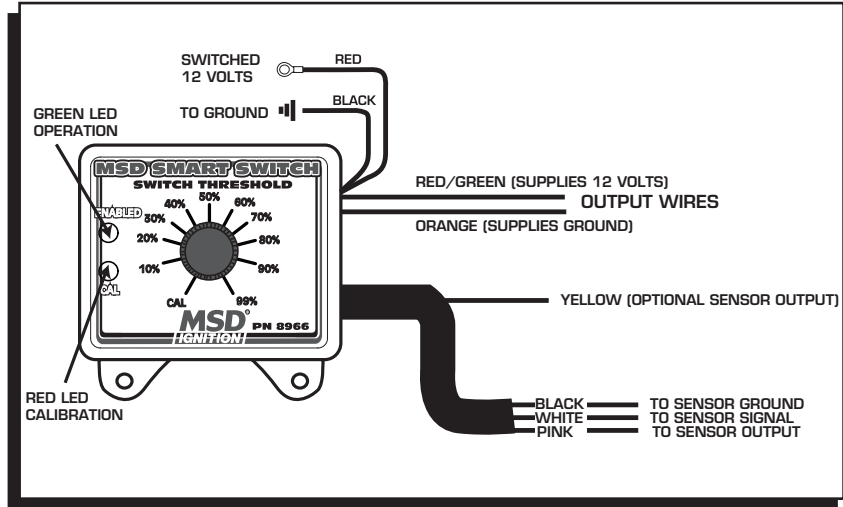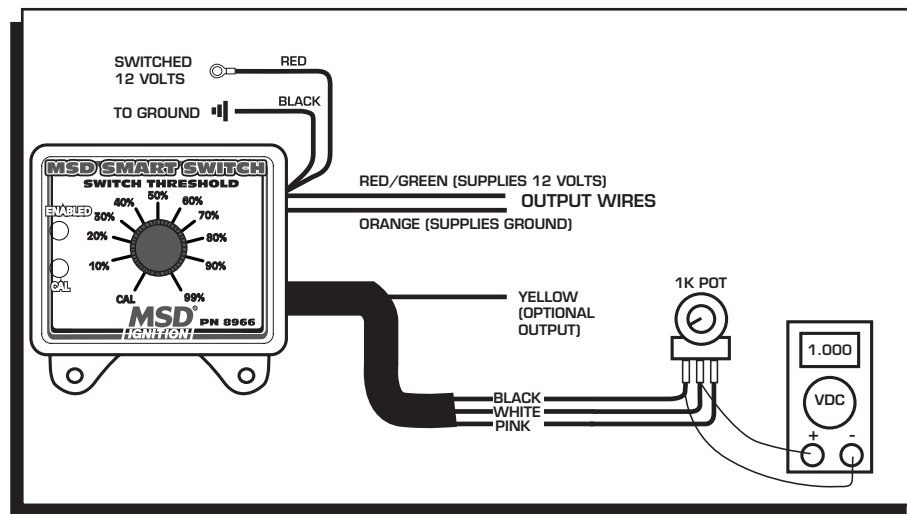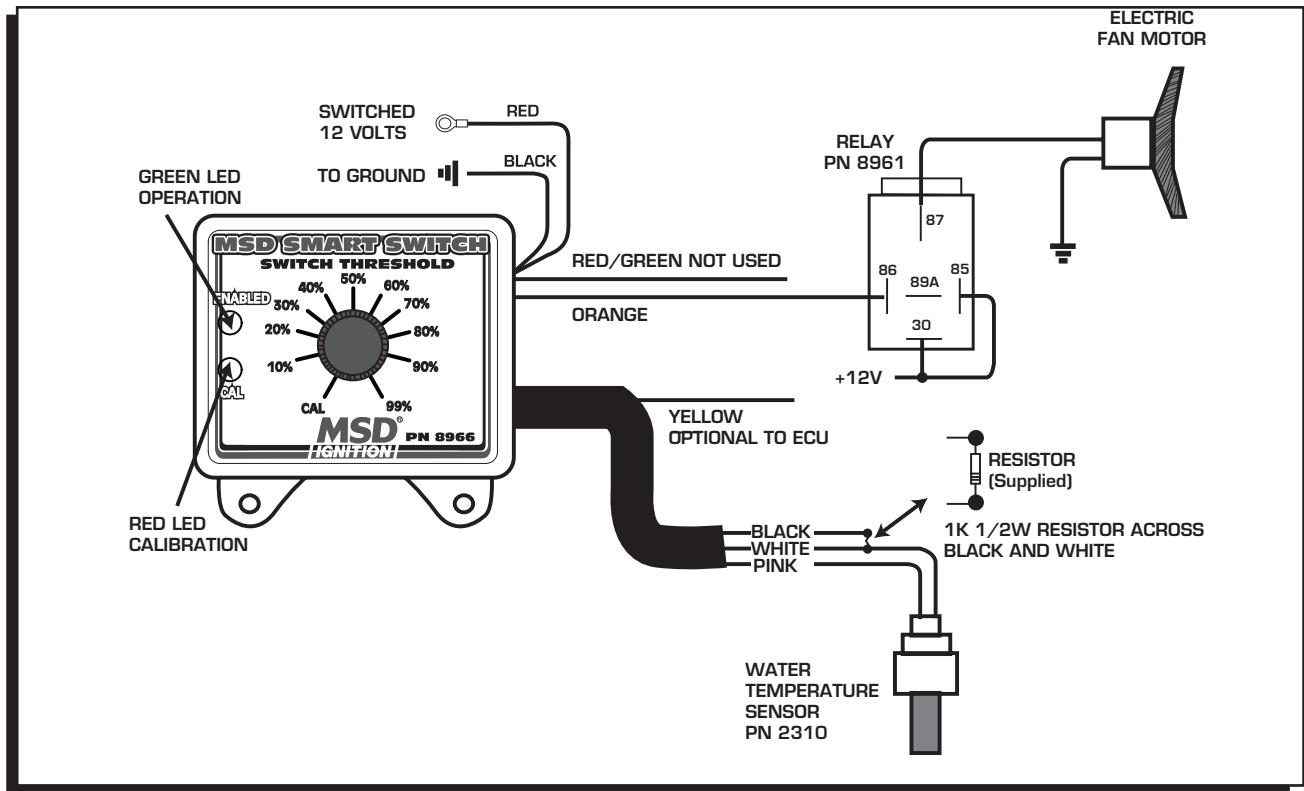

Figure 2 Potentiometer Calibration

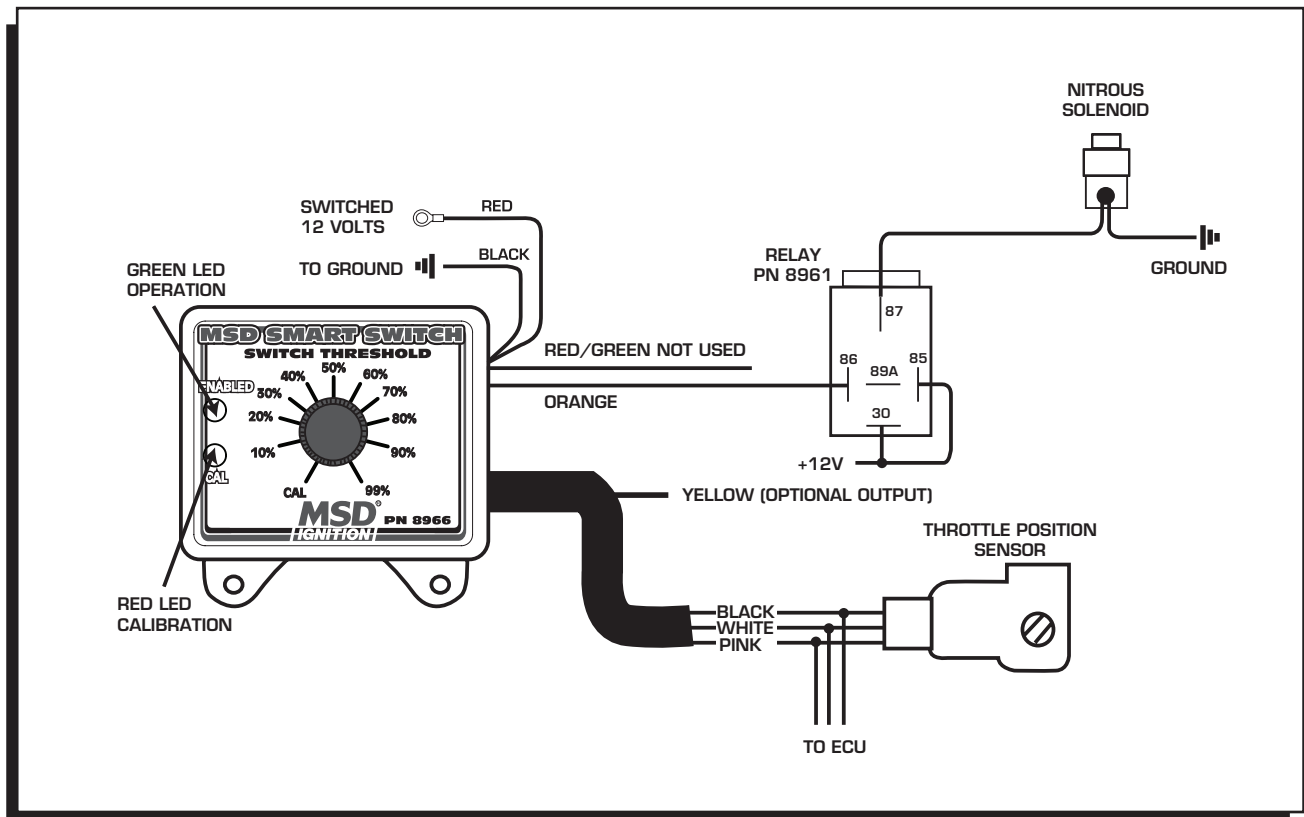**Figure 3 Wiring to Activate a Cooling Fan.**

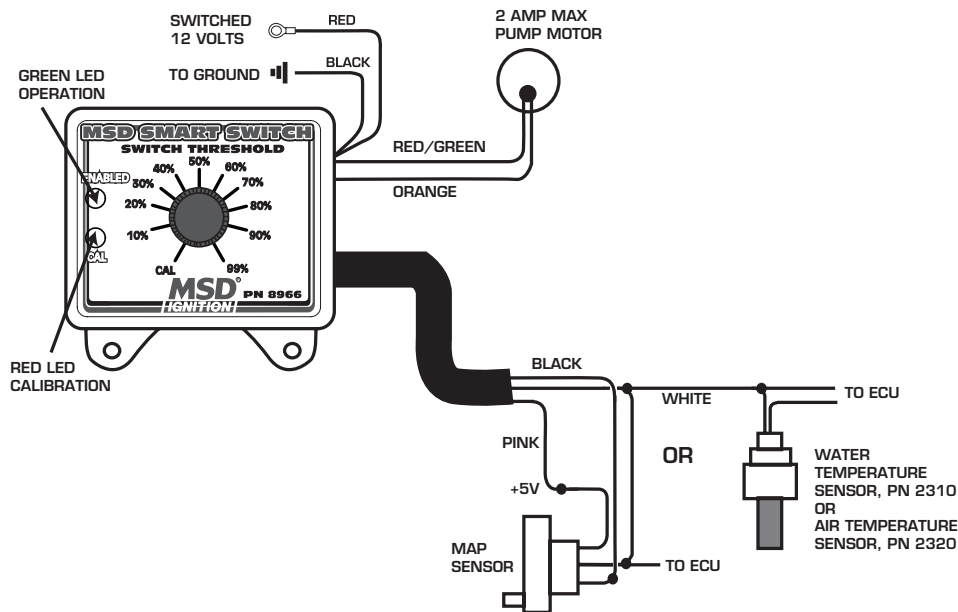**Figure 4 Wiring from a TPS to Activate Nitrous.**

Figure 5 Wiring to Inject Alcohol with a Turbo or Blower Through Temperature or Boost.

Service

In case of malfunction, this MSD component will be repaired free of charge according to the terms of the warranty. When returning MSD components for service, Proof of Purchase must be supplied for warranty verification. After the warranty period has expired, repair service is charged based on a minimum and maximum charge.

All returns must have a Return Material Authorization (RMA) number issued to them before being returned. To obtain an RMA number please contact MSD Customer Service at (915) 855-7123 or fax a request to (915) 857-3344. Send the unit prepaid with proof of purchase to the attention of: **MSD Ignition, Customer Service - RMA #, 12120 Esther Lama, Dock 5, El Paso, Texas 79936**.

When returning the unit for repair, leave all wires at the length in which you have them installed. Be sure to include a detailed account of any problems experienced, and what components and accessories are installed on the vehicle.

The repaired unit will be returned as soon as possible after receipt, COD for any charges. (Ground shipping is covered by warranty). All units are returned regular UPS unless otherwise noted. For more information, call the MSD Customer Service Line (915) 855-7123. MSD technicians are available from 7:00 a.m. to 6:00 p.m. Monday - Friday (mountain time).

Limited Warranty

MSD IGNITION warrants MSD Ignition products to be free from defects in material and workmanship under normal use and if properly installed for a period of one year from date of purchase. If found to be defective as mentioned above, it will be replaced or repaired if returned prepaid along with proof of date of purchase. This shall constitute the sole remedy of the purchaser and the sole liability of MSD Ignition. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall MSD Ignition be liable for special or consequential damages.