



Model E-217 Speed Switch

from
Precision Governors, Inc.

Electronic speed-actuated switch designed for diesel, gas and gasoline engine use

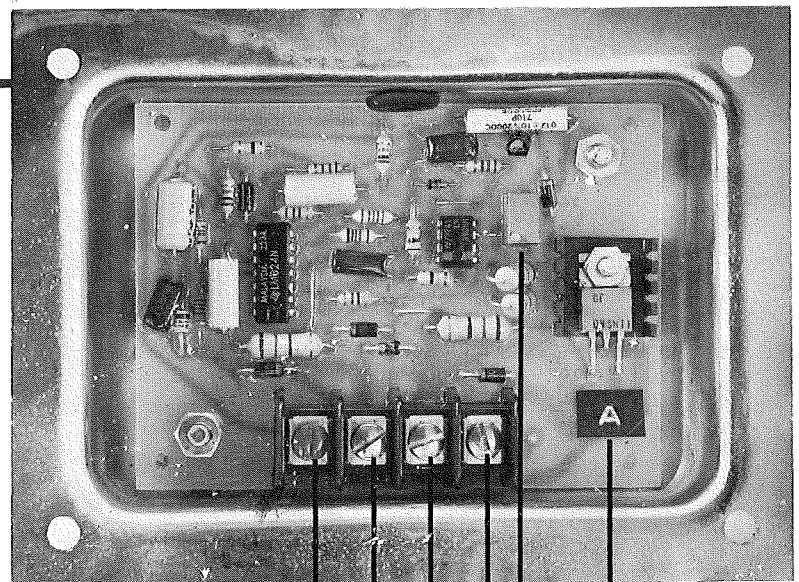
The E-217 Speed Switch controls a 12/24 VDC electrical tap which is switched off when the engine reaches a pre-determined speed. The most common uses are engine overspeed protection and starter drop-out.

Two models of the E-217 Speed Switch are available:

the E-217A and E-217B. The E-217A is for low-frequency applications, where the speed signal is taken from ignition pulses, engine alternator, or a generator-set AC frequency. Frequency range is 10-1000 Hz. The E-217B is for high frequency applications where the speed signal is provided by a magnetic pick-up or equivalent. Frequency range is 200-20000 Hz.

Hook-up schematic

View of component side
E-217 Speed Switch

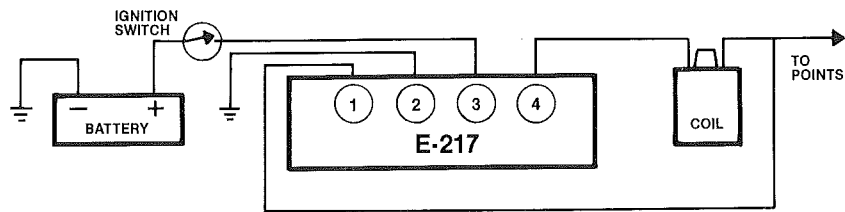


- 1** Speed signal (input) - terminal 1 (Red)
- 2** Ground connection - terminal 2
- 3** 12/24 VDC connection - terminal 3
- 4** Switched 12/24 VDC (output) - terminal 4

Speed adjustment (clockwise to increase)

Frequency range identification: A = low frequency; B = high frequency

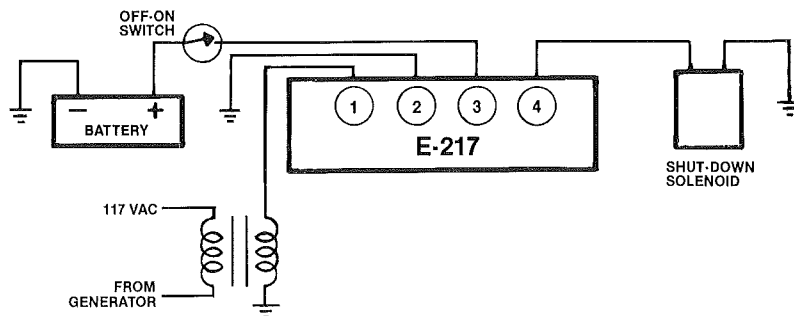
A. Hook-up for spark ignited engines



The E-217 Speed Switch monitors the ignition system's firing rate electronically and computes the engine speed continuously. It compares actual RPM to a pre-set overspeed level. If the engine begins to

overspeed, the E-217 kills electrical power to the ignition system, thus turning the engine off instantly. The engine may be restarted after an overspeed situation by turning the ignition switch to "off" and back to "on", as in re-setting a circuit breaker.

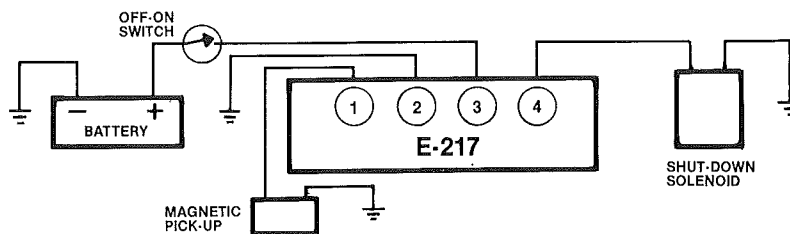
B. Hook-up for diesel engine-generator sets using generator frequency



The E-217 Speed Switch monitors the generated output frequency (nominally 60 cycles/sec.) through an inexpensive transformer. Should this frequency increase past a present overspeed value (for example

65 cycles/sec.), the E-217 kills power to a customer-provided fuel solenoid or other shutdown device which stops the engine. Turning the "off-on" switch to "off" and back to "on" resets the E-217, as in resetting a circuit breaker.

C. Hook-up for diesel engines using magnetic pick-up



The E-217 Speed Switch monitors the output of the customer-provided mag pick-up and computes engine speed continuously. It compares actual RPM to a pre-set overspeed level. If the engine begins to

overspeed, the E-217 kills electrical power to a customer-provided fuel solenoid or other shut-down device which stops the engine. Turning the "off-on" switch to "off" and then back to "on" resets the E-217, as in re-setting a circuit breaker.

Installation instructions

- 1.** Select schematic which matches your installation.
- 2.** Verify that you have proper version (E-217A or E-217B) for your application.
- 3.** Connect ground connection to terminal 2. Connect 12/24 VDC connection to terminal 3. Run wires into box through grommet. Use a voltmeter to check for 11-14 VDC from terminal 3 to terminal 2 with switch on, and 0 VDC with switch off.
Use a voltmeter to check for 10-14 VDC from terminal 4 to terminal 2 with switch on, and 0 VDC with switch off.
- 4.** Connect output wire to terminal 4. Use voltmeter to check for 4-14 VDC with switch on, and 0 VDC with switch off.
- 5.** Start engine and run at idle. With engine running, connect speed signal wire to terminal 1. If engine dies when wire is touched to terminal 1, turn engine switch to off, turn speed set adjustment screw CW 3 turns, and repeat until engine keeps running. (See information on Speed Set Adjustment, number 7 below.)
- 6.** Increase engine speed to maximum permitted speed. If engine dies while speed is being increased, turn engine switch *off*, turn Speed Set Adjustment Screw CW 3 turns, and repeat. When engine speed is set at maximum, *slowly* turn Speed Set Adjustment Screw CCW until engine dies. Speed Switch is now set.
- 7.** Speed Set Adjustment: This adjustment is made by turning the small (1/8" diameter) brass screwhead clockwise (CW) to increase speed and counterclockwise (CCW) to decrease speed. The adjustment range of the pot is 25 full turns. This pot is protected by a slip clutch at either end, and so will not be harmed by over-adjustment. However, the Speed Switch will not function when this pot is at full travel past either end. If you suspect you may have "over-adjusted" the speedset pot, turn it 25-30 turns CCW, then back 12 turns CW to get back into the "normal" range of adjustment.

General directions and precautions

- 1.** Use #16 wire for hook-up.
- 2.** Mount unit away from hot, dirty areas, and away from exposure to moisture.
- 3.** A Rough Duty model, potted in an epoxy compound, is available for extremely hostile environments.
- 4.** Exercise care in routing of wires to the Speed Switch. System failures may occur due to poorly secured wiring or improper tie-downs.
- 5.** Once the E-217 Speed Switch is tripped, it stays latched until power is removed from the unit by turning the engine switch "off", then back on.

Pre-adjusted trip speeds

Upon request, the E-217 Speed Switch trip point will be factory-set for your application. (Field adjustment will still be possible.) To pre-set unit, we will need the following information:

E-217A

E-217A (Low frequency)

For use with ignition system (Schematic A)

Number of cylinders _____

Trip RPM _____

Trip frequency = $\frac{\text{number of cylinders} \times \text{RPM}}{120}$

For use with Generator Set frequency (Schematic B)

Trip frequency = maximum generator frequency

E-217B

E-217B (high frequency)

For use with magnetic pick-up (Schematic C)

Number of gear teeth _____

Ratio (gear RPM to engine RPM) _____

Trip RPM (engine) _____

$\frac{\text{Number of teeth}}{\text{ratio}} \times \frac{\text{RPM}}{60} = \text{trip frequency}$

Unless otherwise specified:

E-217A will be shipped set at 140 Hz.

E-217B will be shipped set at 8000 Hz.

General information

- Voltage range 10-28 VDC
- Temperature range -40 to 85° C
- Typical response time . . . 30 MSec
- Power consumption 50 MA
- Max current rating 10 Amps
- Repeatability ± 3%
- Dimensions 4¼ " x 5¾ " x 1¼ "
- Weight ½ lb.

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For use with ignition system (Schematic A)

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For use with Generator Set frequency (Schematic B)

Trip frequency = maximum generator frequency

E-217B

E-217B (high frequency)

For use with magnetic pick-up (Schematic C)

Number of gear teeth _____

Ratio (gear RPM to engine RPM) _____

Trip RPM (engine) _____

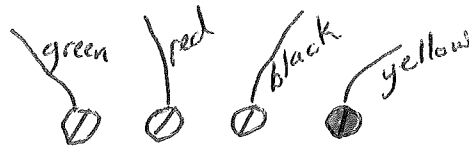
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run 4900
trip 5100



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3/24
5/6
/BKH