

# PNT-202 Instruction Bulletin

## Pickup-Powered, 2-Setpoint Speed Switch

Signal and power obtained from two Dynalco magnetic pickups. No external ac or dc power required.

---

### OVERVIEW

- When the preset overspeed setpoint is reached, the PNT-202™ trips the SPV-200™ Solenoid Pneumatic Valve, the valve opens, latches, bleeds to the atmosphere, and shuts down the engine if it is connected to the engine pneumatic control system.
- The PNT-202 also effects shutdown when one of the pickup signals disappears or when an attempt is made to start with only one operational pickup.
- The second available setpoint can trip the same valve or a separate valve.

By jumpering terminals K and N, the second setpoint can be a crank disconnect or another overspeed setpoint.

Setpoint outputs can trip two separate SPV-200 Solenoid Valves, or a single valve connected to M and N if terminals L and M are jumpered.

- When set for underspeed, no inhibit is necessary on start-up as this setpoint becomes enabled only when the speed first exceeds the setpoint. (Class C logic: active once normal.)

### FEATURES

- ◆ **Auxiliary output drive** provided for Dynalco signal-powered digital tachometers such as the SPD-100 and SPD-700.
- ◆ **Totally floating and isolated** input terminals are free of grounds.
- ◆ **Insensitive to line noise, spikes, grounding, etc.** since there is no ac or dc connection. Use in remote locations where no external power is available.
- ◆ **Rugged, reliable, highly accurate.** Senses pulse rate *only*; insensitive to signal amplitude variations. Stability of  $\pm 1\%$  under all environmental conditions.
- ◆ **Multiturn setpoint potentiometer** permits large speed range adjustment. Field-programmable for input range of either 0-1000 Hz or 0-5000 Hz.
- ◆ **Foolproof; no panel controls.** A single tell-tale reset button pops out from the SPV-200 Solenoid Pneumatic Valve when tripped. Button is pushed back in to reset. Pneumatic reset is available.

### SPECIFICATIONS

**Trip Points Adjustment Range:** 10% to 100% of input range. Input range is either 0-5000 Hz or, with terminals H and J jumpered, 0-1000 Hz. Range should be restricted to 20-100% of full-scale for 1% accuracy, or 10-100% of full-scale for 2% accuracy. Adjustment via high-resolution 25-turn potentiometers accessible through covered holes.

**Required Magnetic Pickups:** Dynalco M203 or M204 pickups sensing from a ring gear or other gear with a diametral pitch of 10 or coarser.

Best performance at low speeds and best start-up response time is obtained with the narrowest possible pickup-to-gear gap.

Operation with two pickups provides missing signal protection, i.e. engine shutdown when one of the signals is missing.

- *Do not operate with one pickup.*
- *Single pickup operation is not reliable.*

**Response Time:** 150 milliseconds under running conditions. On start-up from zero speed, trip response may take up to one second depending on engine ramp speed and/or pickup-to-gear spacing.

**Input Signal Voltage:** Minimum pickup signal amplitude required is 3.5 Vrms (10 volts peak-to-peak). Any test signal used to replace a pickup should be current-limited to 30 mA, maximum.

**Isolated Circuit:** All circuitry is totally floating: totally isolated and insulated from the case and from ground.

**Flashing LED:** An integral LED flashes every two seconds when there is enough energy stored in the internal dc supply capacitors to trip the solenoid valve connected to the PNT-202.

Since the pickups feed the supply, the flashing LED indicates that there is sufficient signal amplitude to operate either unit.

The flashing LED also denotes a ready or armed condition, and it can also be used to determine the lowest speed at which the system becomes armed.

The LED does *not* flash with sustained overspeed or missing signal since the internal supply capacitors are discharged and charged repetitively (repetitive pulsing to the solenoid valve) under such conditions.

**SPV-200 Pneumatic Valve Ratings:** Input pressure of 40-100 psig, 20 cfm at 100 psig. Dry, clean instrument air filtered to 40 microns is required.

**Output Drive to Digital Tachs:** Conditioned square wave output at terminals E and F to drive Dynalco self-powered digital tachometers, e.g. SPD-100 and SPD-700. This output is inhibited when there is insufficient pickup signal amplitude, i.e. less than 3.5 Vrms.

**Breaker Drive Capability:** The SPV-200 Solenoid Pneumatic Valve can be replaced with a magnetic circuit breaker to achieve shutdown by grounding the ignition or by letting auxiliary breaker contacts drive a shutdown solenoid.

Terminals N(+) and M(-) or N(+) and L(-) will trip a 200 mA breaker (not supplied by Azonix-Dynalco) with a coil resistance of 15 ohms or less.

When breaker contacts are used for shorting the ignition, 50  $\Omega$  series limiting resistors should be used to limit inrush currents.

**Operating Environment Temperature:** -20°F to +160°F (-29°C to +71°C).

**Trip Point Stability:**  $\pm 0.01\%/^{\circ}\text{F}/^{\circ}\text{C}$  typical; no change with signal amplitude for signal levels above 2.5 Vrms.

**Weight:** PNT-202 1.4 lbs (0.64 kg)

SPV-200 1.8 lbs (0.82 kg)

#### BUILT-IN TEST CIRCUIT

(1) Removing the jumper from the two Verify terminals (N and P) lowers the overspeed trip point 10%, permitting shutdown testing without overspeeding.

(2) This feature can also be used to set the trip point to *just trip* at normal operating speed with the jumper disconnected. When the jumper is reinstalled, the overspeed trip is now set 10% *higher* than normal operating speed.

#### NOTE

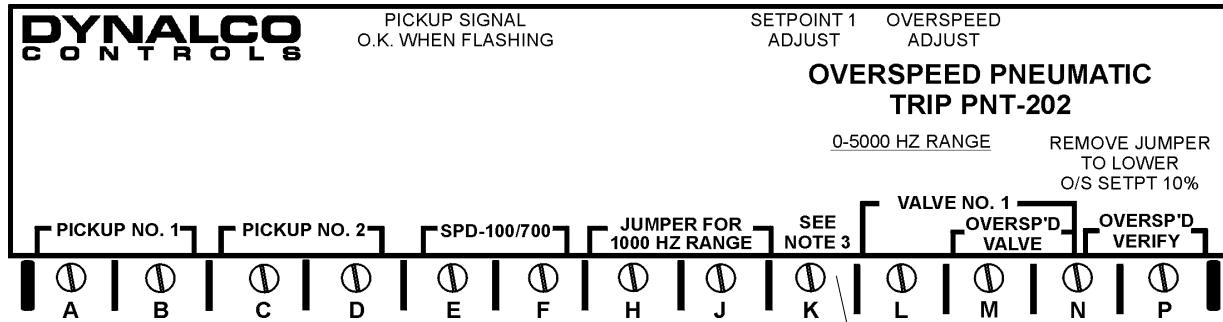
**As with any primary shutdown device, the PNT-202 should be tested regularly for proper shutdown operation.** Each of the following should be tested as follows:

1) Test for actual overspeed shutdown. Using a signal generator (e.g., Dynalco F-16) with an amplitude of 3.5 Vrms or greater, or any other suitable means, ensure that the PNT-202 does cause a shutdown during an overspeed condition.

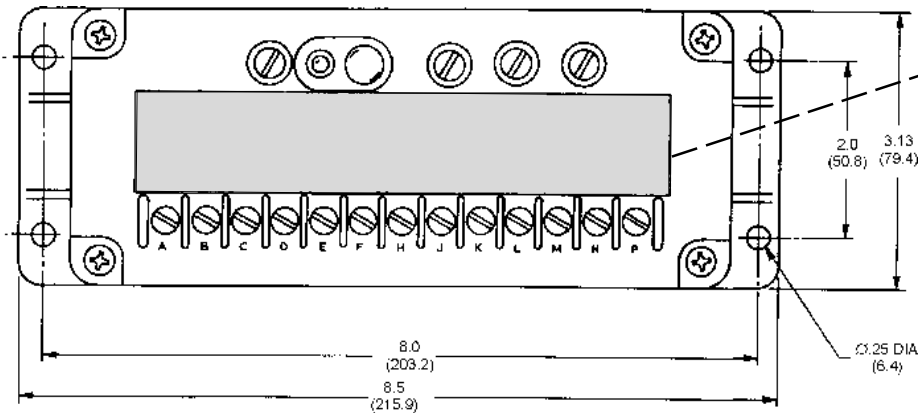
2.a.) Disconnect one lead from one magnetic pickup and ensure that the PNT-202 causes a shutdown.

2.b.) Do the same with the other pickup.

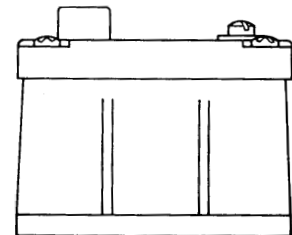
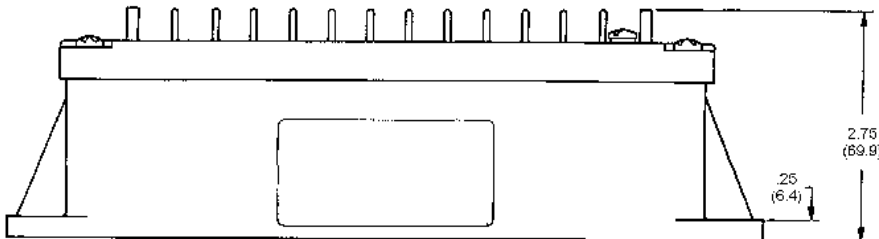
# ELECTRICAL CONNECTION AND OUTLINE DRAWING



Note 3 is referenced below.



Dimensions in inches (mm)

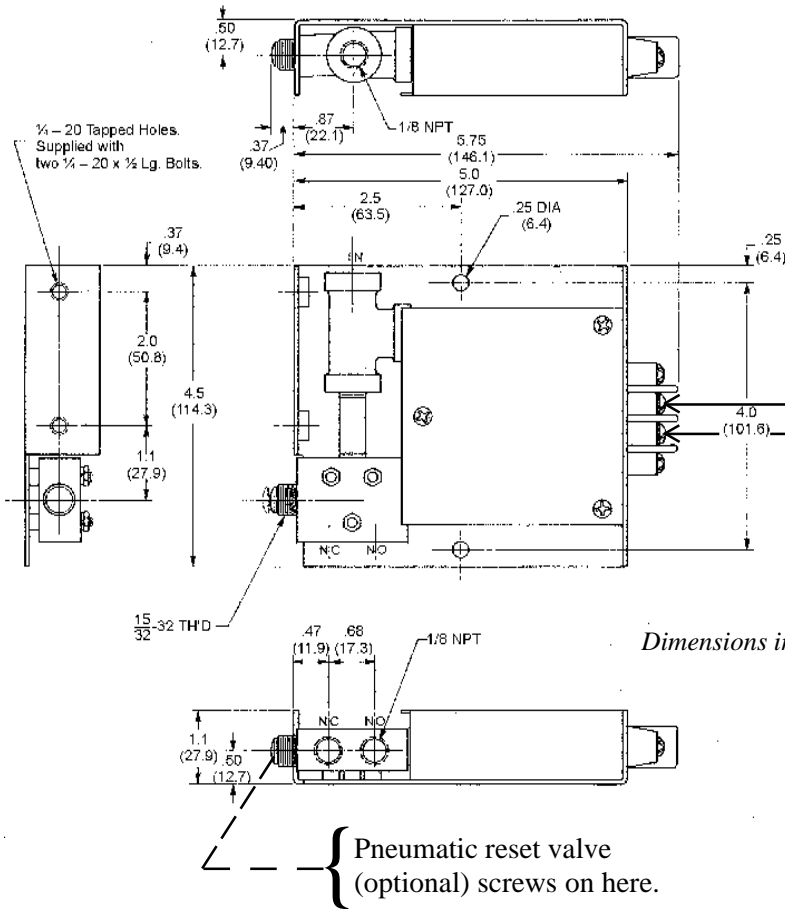
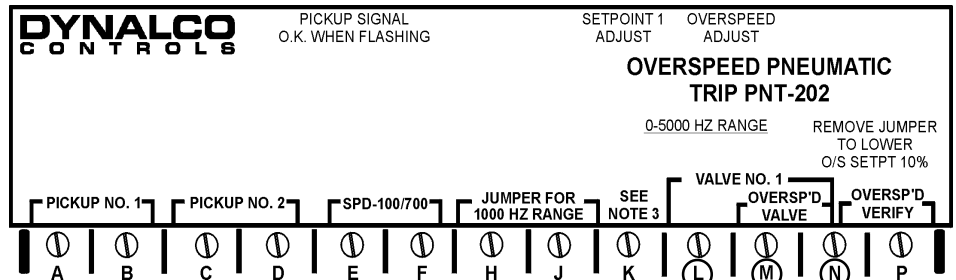


## PNT-202 Overspeed Shutdown Trip

### ELECTRICAL CONNECTION NOTES

1. Use minimum gap on pickups; gap both equally.
2. Connect signal cable shields to ground.
3. Setpoint 1 modes: jumper K to N to trip *above* the setpoint.  
Use no jumper to trip *below* setpoint.
4. To drive a single valve from *both* setpoints, jumper L & M.

# ELECTRICAL CONNECTION AND OUTLINE DRAWING



Input from PNT-202  
(no polarity)



If only one SPV-200 is used, jumper L & M.

Dimensions in inches (mm)

Pneumatic reset valve (optional) screws on here.

## SPV-200 Solenoid Shutdown Valve (showing input from PNT-202)



PNT-202 and SPV-200 are trademarks of Dynalco Controls. DYNALCO CONTROLS RESERVES THE RIGHT TO CHANGE THESE SPECIFICATIONS WITHOUT NOTICE. FOR COMPLETE SPECIFICATION INFORMATION CONTACT A DYNALCO REPRESENTATIVE.