

The Warren Rupp Electro-Pneumatic Speed Control System can be used to control SandPiper® Pumps, as well as most other air-operated, double diaphragm pumps on the market. The Warren Rupp Speed Control offers several benefits:

- **Easy to Install and Operate.**
- **Increases Flexibility of Entire System.**
- **Variable Flow Rate Control.**
- **NEMA 4X Rated Controls.**
- **Manual Mode**  
(On-Board, Single-Turn Potentiometer).
- **Or Automatic Mode**  
(Optional 4-20mA Input Terminal).
- **Operates on 110 OR 220 VAC Power.**
- **Rated for maximum inlet pressures of 125 psi.**

**PRINCIPLE OF OPERATION**

The Warren Rupp Electro-Pneumatic Speed Control System is comprised of three components that operate with most diaphragm pumps to optimize operational variable flow rate demands.

The first component is an electronically operated proportional pilot valve that utilizes patented technology to provide extremely accurate pneumatic control in a NEMA 4X rated container. (See Figure 1.)

The second component is a diaphragm, air-piloted pressure regulator that offers higher flow rates that translate into faster responses. (See Figure 2.)

**CAUTION!**  
**Always disconnect**  
**power before working**  
**on units.**



032-022-000 (110V)  
032-023-000 (220V)

For ½ " through 4" Pumps  
Pressure Regulator Port: 1"

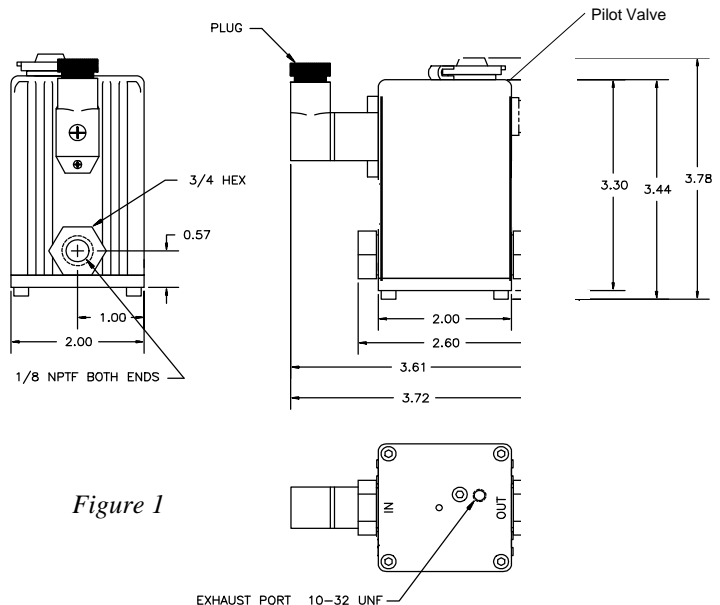


Figure 1

# 1" Port Model

**NOTE!** The plug must be removed from the relief port before operation of the unit.

The third component is the NEMA 4X rated enclosure housing the power supply necessary for the proportional valve as well as a control potentiometer for manual operation. A switch on the enclosure allows the user to select between manual control via the provided potentiometer or a remote control from a user supplied source, such as a process controller supplying a 4-20 mA signal. (See Figure 3.) A 25-foot length of electrical cable to the proportional valve is provided. (See Installation Guide.)

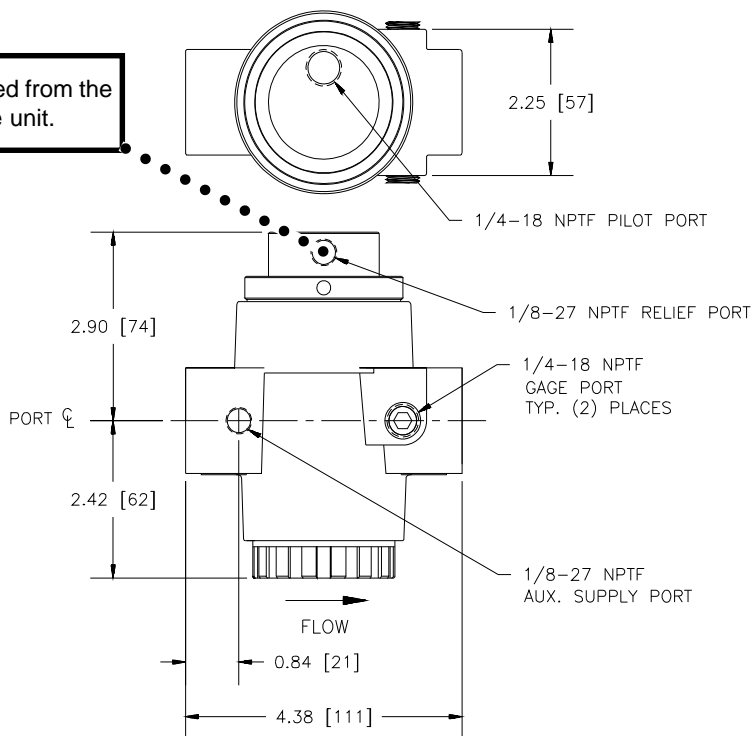


Figure 2

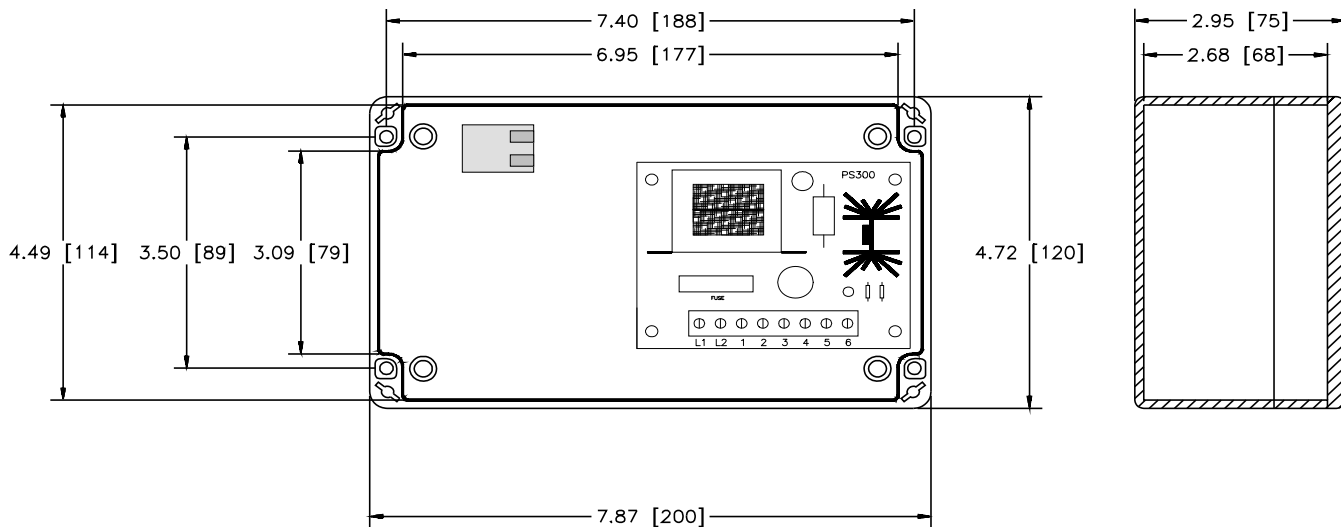


Figure 3

## INSTALLATION & CONNECTION

**Mechanical Connections:** Plumb the outlet of the air piloted regulator (procedure explained earlier) to the inlet of the diaphragm pump. Plumb the inlet of the air piloted regulator to the supply air. Supply air must be clean, dry compressed air, not to exceed 125 psi. Mount the control box in desired location.

**Electrical Connections:** The Warren Rupp Speed Control System 032-022-000 is shipped standard, set up for 110V. Speed Control System 032-023-000 is shipped standard, set up for 220V. The units are marked accordingly on the exterior and interior of the Power Supply Module. **Be certain you have the correct unit before installing.** Connect the AC incoming power to terminal on Power Supply marked L1 and L2.

**DO NOT USE neutral (ground) wire.**

If the Warren Rupp Speed Control is to be used as a stand-alone control device (no remote controller used to provide command signal) the switch on the outside of the control box ("Manual/Automatic") should remain in the Manual position. In this scenario, any desired changes in pressure output of the valve are made by simply adjusting the potentiometer knob on the face of the control panel. Clockwise turning of the potentiometer increases the pressure speed and output. Counter clockwise movement decreases speed and output.

**NOTE: Each input volt equals 12.5 psi output pressure. For example, at 65 psi input, the potentiometer would operate between minimum and half-way to maximum on the dial to achieve maximum performance of this unit. (See Fig. 6).**

If a remote controller is used to provide a 4-20 mA command signal, locate the small circuit board on the inside of the face plate of the control box. Connect 4-20 + to terminal marked S+. Connect 4-20 - to terminal marked S-. (See Figure 5.) In this scenario, when the switch on the outside of the control box marked Manual/Automatic is in the Manual position, the command signal is from the potentiometer on the face of the control panel. When the switch is in the Automatic position, the command signal comes from the 4-20 mA control signal supplied by the remote controller.

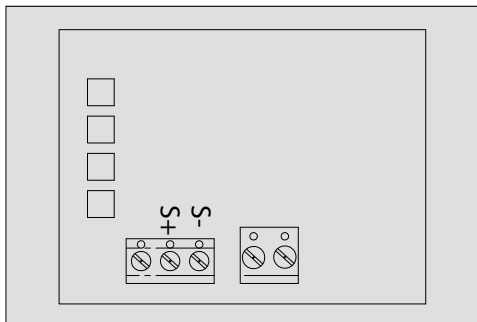
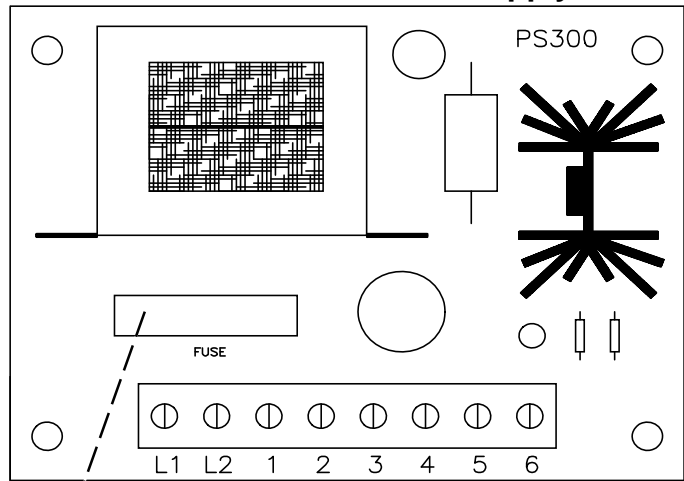


Figure 5

### Front View of Power Supply Module



3 amp Fuse: Replacement Part 358-001-000

### Rear View of Power Supply Module

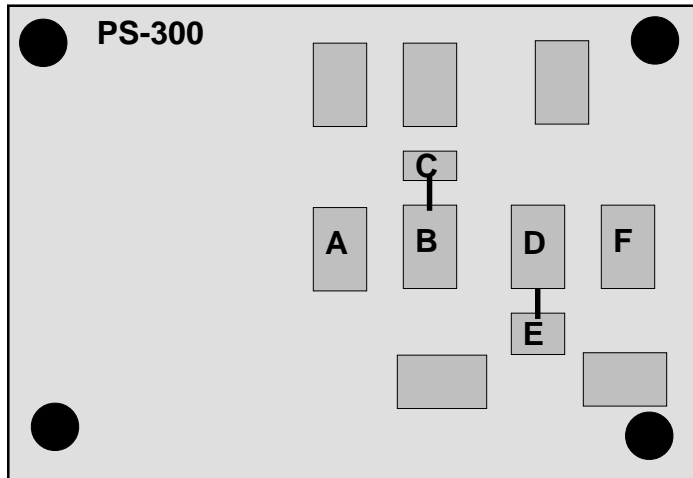


Figure 4

### POTENTIOMETER MANUAL CONTROL KNOB

Do not exceed 125 psi input pressure.

This setting represents maximum performance at approximately 65 psi input pressure.

Operating range of this unit at 65 psi input pressure.

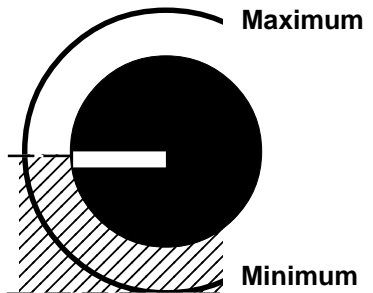


Figure 6

## AUTOMATIC OPERATION

This unit can be set up in the Automatic Mode for process control (see Fig.7). In the Automatic Mode, the speed controller will accept 4-20mA input signal to adjust the speed to meet the application requirements.

The box is punched and plugged with contacts provided, to accept 20-24AWG, 2-conductor cord. The input signal to the speed control is usually generated from a programmable or process controller which manages the overall application. There can be numerous sensing devices used to control application requirements, feeding signals to the programmable or process controller. This controller then provides a 4-20mA signal to the Warren Rupp Speed Controller, increasing or decreasing the speed to meet demands of the application.

The sensing devices might include any of the following:

1. Pump shaft proximity switch for sensing pump speed.
2. Pressure transmitter for sensing system pressure, suction pressure, or discharge pressure.
3. Timer.
4. Level control sensing device.
5. Flow sensing device.
6. Temperature probe.
7. Ph sensor.
8. Weight scale.

This is a partial list of possible devices.

## AUTOMATIC INSTALLATION POSSIBILITIES

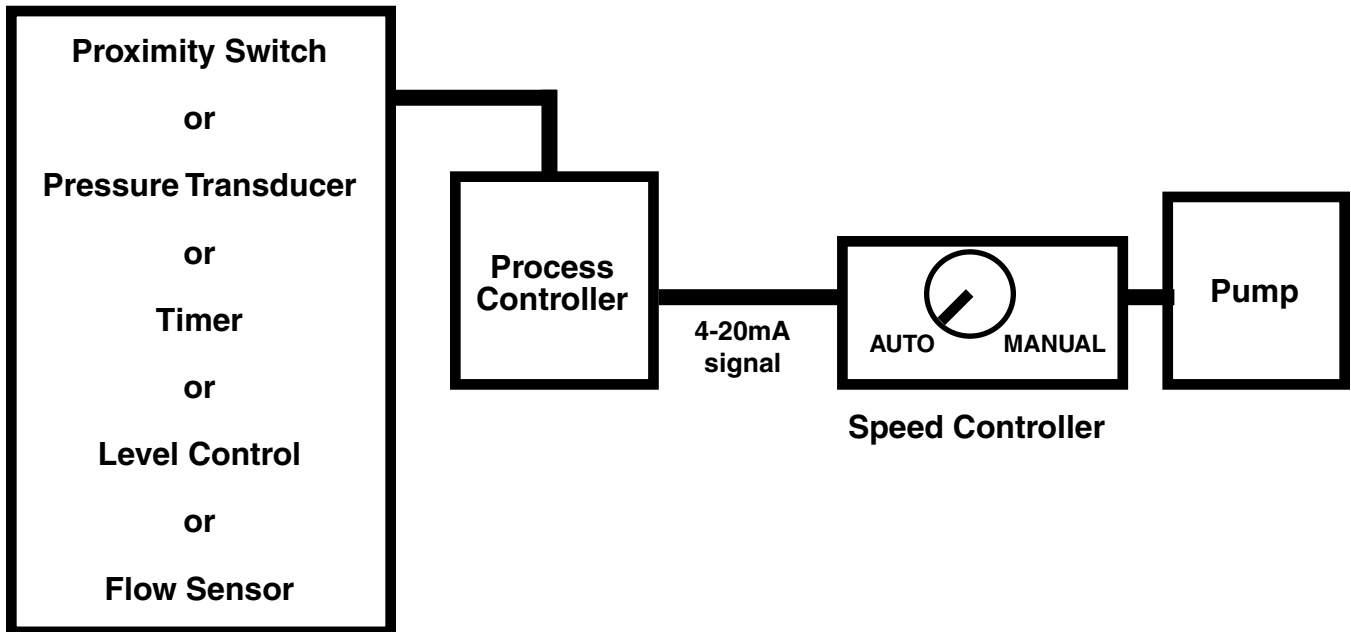
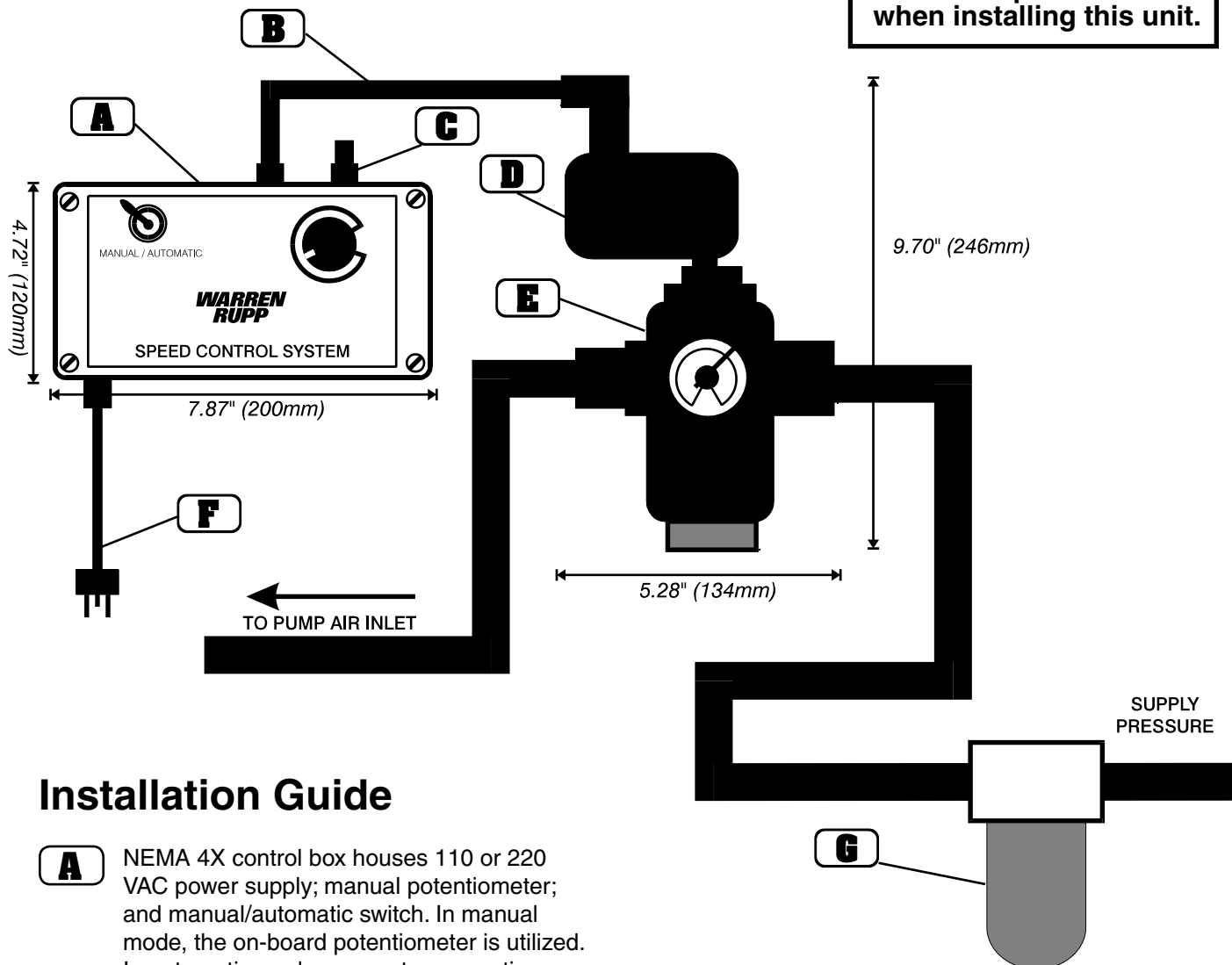


Figure 7

**⚠ IMPORTANT ⚠**  
**Consult and follow**  
**all local codes**  
**and requirements**  
**when installing this unit.**



## Installation Guide

**A** NEMA 4X control box houses 110 or 220 VAC power supply; manual potentiometer; and manual/automatic switch. In manual mode, the on-board potentiometer is utilized. In automatic mode, a remote connection must be in place.

Part No. 032.022.000 - 110V

Part No. 032.023.000 - 220V

**B** Power cord from control box to Electro-pneumatic controller is supplied by the manufacturer in 25' (7.62m) length. Cord is 22 AWG, 6 conductor.

**C** For automatic mode, an optional 4-20mA input signal connects here. Hole is punched and drilled. The end-user provides remote controller and 20-24 AWG, 2 conductor cord.

**D** Electro-pneumatic control unit. Output pressure is proportional to incoming command signal. Maximum input pressure is 125 psi.

**E** Diaphragm type, air-piloted pressure regulator, with 1" (25.4mm) port.

**F** Power source. 110 or 220 VAC. End-user supplies 16-18 AWG, 2 conductor power cord.

**G** 40 micron filtration is recommended.