

Automation Devices, Inc.

MODEL 6000 SERIES CONTROLLER INSTRUCTIONS

• DESCRIPTION & FEATURES •



The 6000 Series Controller varies the amplitude of the control voltage to vibratory feeders or to similar parts handling devices. The output is selectable between **AC** (full wave unrectified) and **DC** (half wave rectified). The controller can be cycled remotely ON or OFF by use of the CONTROL INPUT terminals.

Switchable OUTPUT MODE – Choose an output mode of AC (7200 Vibrations Per Minute, or VPM) or DC (3600 VPM) by sliding the OUTPUT PULSE switch (SW2) to the appropriate position.

Voltage or Relay Cycling of the Output – Select the type of control input signal you will be using by sliding the INPUT MODE switch (SW3) to one of the following positions:

V_{IN} – The presence of a 3.5 to 125 Volt AC or DC signal turns ON the controller output.

\mathcal{K} – An isolated contact closure turns ON the controller output.

UL Listed – The 6000 Series Enclosed models are now UL Listed  and the Non-Enclosed models (6005 and 6006) are UL Recognized . These UL ratings are valid in both the United States and Canada.

6000 Series Switched Pulse Controllers		
Model Number		Mounting Enclosure
120V	240V	
6000.1	6000.2	General Purpose Nema 1 Enclosure
6005.1	6005.2	Internal Mount for Remote Mounting
6006.1	6006.2	Door Mount for Back of Front Panel

• BASIC SETUP •

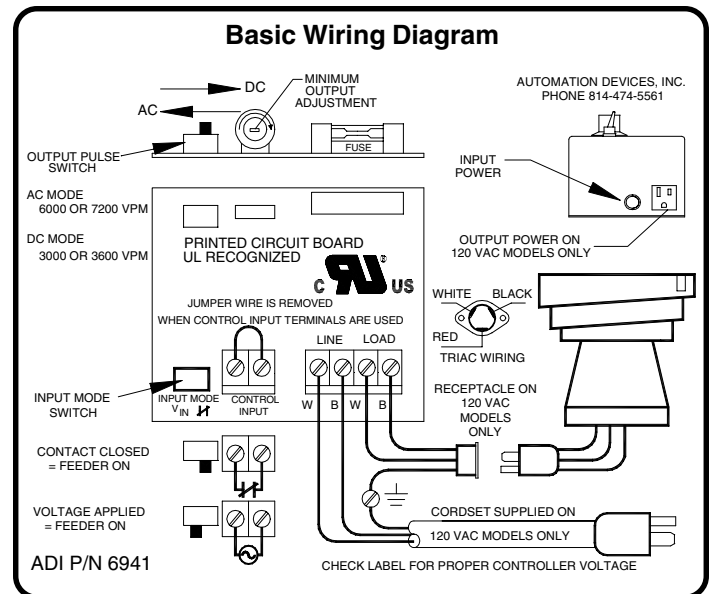
Locate the controller in an area free of excessive heat, vibration, metallic dust and moisture.

1. Connect the input power to the LINE terminals or use the cord, if supplied.
2. Connect the controlled device to the LOAD terminals or to the receptacle, if supplied.
3. Turn the power **ON**, then turn the front panel AMPLITUDE CONTROL potentiometer fully counterclockwise. Use the MINIMUM OUTPUT ADJUSTMENT trimpot (MIN ADJ) to increase or decrease the minimum output available from the controller.

This completes the setup for most applications.

When the CONTROL INPUT terminals are used, also perform the following steps:

4. Remove the input power, then remove the jumper wire from the CONTROL INPUT terminals.
5. Slide the INPUT MODE switch to the required V_{IN} or \mathcal{K} position.
6. Connect the external signaling device to the CONTROL INPUT terminals.
7. Reconnect the input power and turn the controller **ON**. Cycle the external signaling device, checking the response of the controlled device.



Factory Settings

NOTE: All controllers shipped separately have the OUTPUT MODE switch set to DC, the INPUT MODE switch set to \mathcal{K} , and a jumper wire across the CONTROL INPUT terminals.

• OPERATING INSTRUCTIONS •

The following sections assume that the controlled device is a vibratory feeder.

With the controller **ON**, rotate the AMPLITUDE CONTROL potentiometer clockwise and observe the parts movement in the vibratory feeder. If the CONTROL INPUT terminals are being used, temporarily disable the device that sends **OFF** signals to the controller until a preliminary check is made on the parts feed rate of the vibratory feeder and until the MINIMUM OUTPUT ADJUSTMENT procedure is completed.

Variations in the rate of parts movement should be approximately linear throughout the range of the AMPLITUDE CONTROL. Turn the AMPLITUDE CONTROL potentiometer fully counterclockwise (to the "0" setting) and use the MINIMUM OUTPUT ADJUSTMENT trimpot (see Basic Wiring Diagram) to increase or decrease the minimum parts feed rate available from the controller. The maximum feed rate, or maximum controller output (full clockwise position of the AMPLITUDE CONTROL potentiometer), is not affected by this adjustment.

Voltage or Relay Cycling of the Output – A HIGH/LOW level switch or proximity detector can turn the feeder ON and OFF in response to part demand. Cycling the feeder can extend the life of both the base unit and the bowl.

Locate the INPUT MODE switch and the CONTROL INPUT terminals (see Basic Wiring Diagram). Then remove the factory-installed jumper from the CONTROL INPUT terminals. Using the INPUT MODE switch, select one of the following methods of ON/OFF control:

V_{IN} – Allows the CONTROL INPUT terminals to accept AC or DC voltage sources from 3.5 Volts to 125 Volts to turn the controller **ON**. **The control signal must have a specified output leakage current of 1.0 mA or less.**

χ – Allows the CONTROL INPUT terminals to accept isolated mechanical contacts as the controlling signal. The feeder will be **ON** when the contacts are **closed**, and **OFF** when the contacts are **open**.

• GENERAL PRECAUTIONS •

Fusing – Do not replace the fuse with one of a higher amperage rating. Use only type "ABC."

**Fuse Requirements: 120 Volt - 15 Amps
240 Volt - 10 Amps**

NOTE: The controller fuse will not protect the power source against a short across the LINE input terminals or from the "HOT" side to GROUND.

The **CONTROL INPUT Terminals** cannot be used as spare terminals. If not used, they must have a jumper installed between them and the INPUT MODE switch must be set to the χ position.

Accidental Shorting of one LOAD output terminal to the other, or to GROUND, will cause the fuse to blow. Remove power immediately. Find the cause of the trouble and repair it. *Then* replace the fuse.

GROUND wires from the input power and to the controlled device should be connected to each other and to the enclosure or housing.

CAUTION: Because of inductive loading, never wire the controller LOAD or LINE terminals to a relay or other switching device to cycle a controlled device ON and OFF as part of a demand type system (see Voltage or Relay Cycling of the Output).

▲ WARNINGS ▲

Do NOT connect a voltage source to the CONTROL INPUT terminals while the INPUT MODE switch is set to the CONTACT (χ) position.

Do NOT connect a control signal to more than one controller when the INPUT MODE switch is in the CONTACT (χ) position. If more than one controller will be cycled ON and OFF by a common signal source, the Voltage Input Mode *must* be used.

NOTE: The enclosure may feel quite warm when the load current is in the 12-15 Amp range.

• TROUBLESHOOTING •

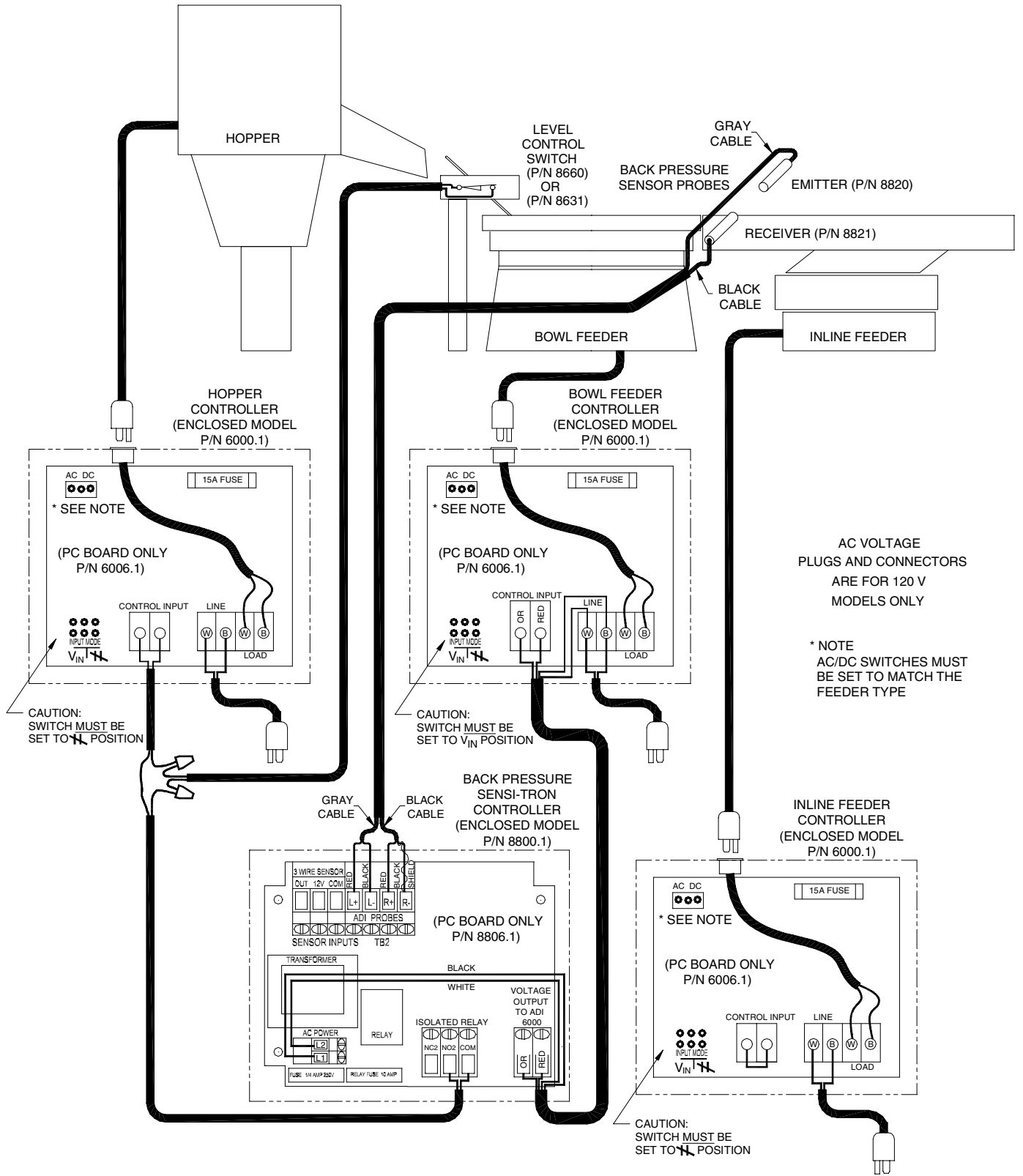
Basic Procedure – To ascertain whether the problem lies in the controller, take the following steps:

1. Check that the fuse is good.
2. Make sure that the proper input power is present.
3. Connect a voltmeter across the LOAD terminals and vary the AMPLITUDE CONTROL potentiometer from minimum to maximum. The output should vary from approximately 30% to 98% of the input voltage depending on the setting of the MINIMUM OUTPUT ADJUSTMENT trimpot.

When neither a humming sound nor any vibration can be detected in the vibratory feeder, the problem may be in the controller.

TIP: When controlling a vibratory feeder, excessive amplitude causes parts to bounce in the bowl rather than move forward. Lower settings may produce more efficient parts movement, improved orientation, reduced feeder bowl wear and reduced noise levels.

• **TYPICAL SYSTEM WIRING DIAGRAM** •



AC VOLTAGE
PLUGS AND CONNECTORS
ARE FOR 120 V
MODELS ONLY

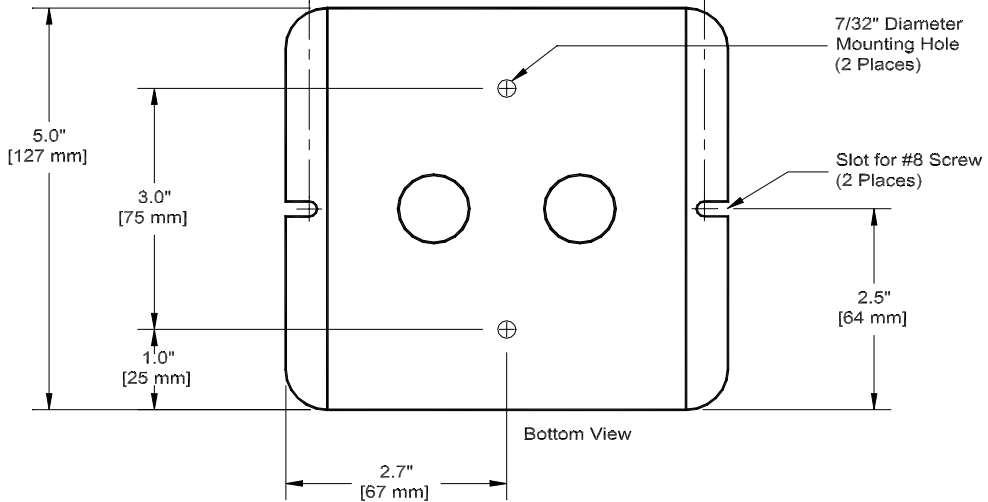
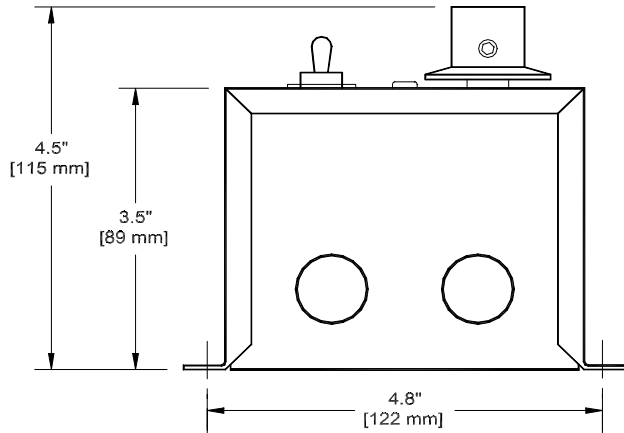
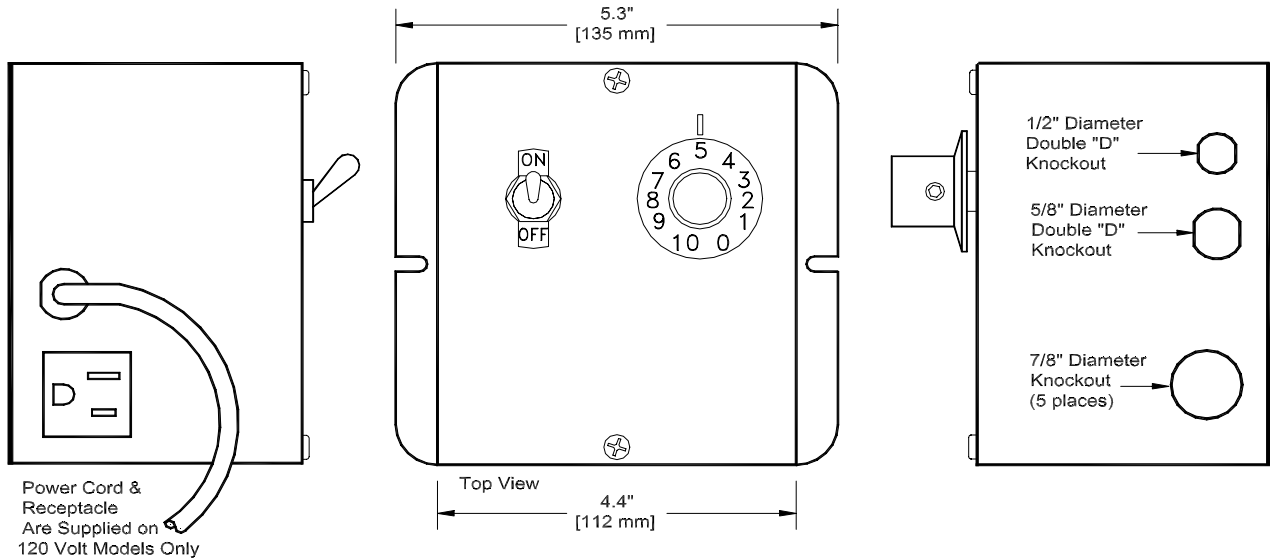
* NOTE
AC/DC SWITCHES MUST
BE SET TO MATCH THE
FEEDER TYPE

CAUTION:
SWITCH MUST BE
SET TO V_{IN} POSITION

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• ENCLOSURE DIMENSIONS & SPECIFICATIONS •



6000 Series Enclosure

- Type: NEMA 1
- Material: Aluminum Top, Steel Base
- Finish: Gray Powder Coated
- Double "D" Knockouts for Nylon Connectors (2 places)
- 7/8" Knockouts for Standard 1/2" fittings (5 places)

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