

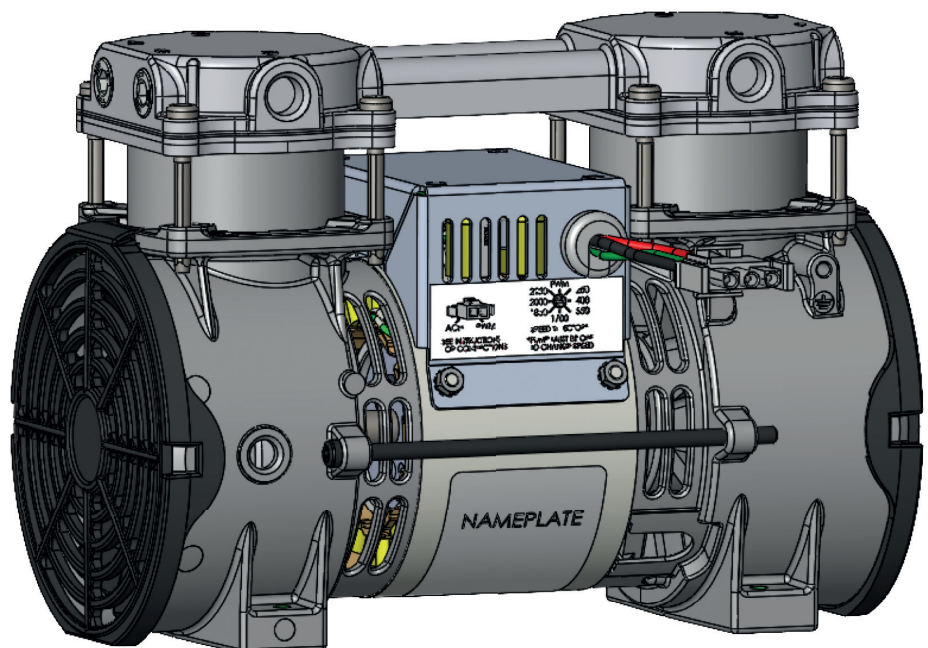
BLDC Pump with Speed Selector

Operating Instructions

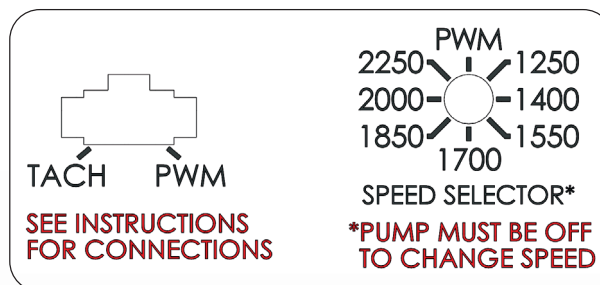
These instructions describe how to use the brushless DC motor controller on Thomas high performance pumps to operate at the ideal pressure and flow output.

The BLDC controller has two methods for motor speed control: 7 fixed speed options can be set using the 8-position selector switch, or an external PWM signal can be supplied for variable speed control.

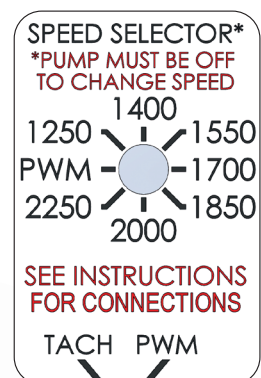
The pump is shipped with the selector switch in the 1700 RPM position for easy plug-n-play initial operation. See the instructions on the next page to change the pump speed as needed.



**Image for illustration purposes only. The BLDC Controller with speed selector switch is available on multiple pump models. The exact configuration and appearance may vary. The selector switch panel may be in a vertical or horizontal orientation.*



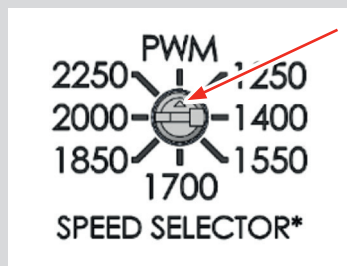
Horizontal Orientation



Vertical Orientation

Speed Selection Instructions

1. LOCATE THE SPEED SELECTION SWITCH ON THE PUMP



There is a small slot in the end of the rotary switch knob that has a small triangle arrow which points to the selected operating speed. In the image to the left the speed selector switch is positioned pointing to the PWM speed control option. To change the speed selection, use a small flat blade screwdriver and carefully rotate the switch either direction (CW or CCW is acceptable).

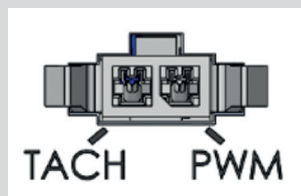
The switch will have a light clicking action as it rotates to the next position.

NOTE: When changing the speed selector switch, the pump must be powered off for the new speed setting to be updated.

2. FIXED SPEED OPERATION

The 7-fixed speed options will provide various flow outputs which increase as the pump speed is increased. To determine the necessary pump speed for the flow at pressure or vacuum requirement, refer to the pump data sheet and/or the performance calculator available for each model that can be found in the Download Center section on the Thomas website (under Technical Documents). Enter the required pressure into the calculator which provides the output flow for each of the selectable seven-pre-selected speed settings (or pump can be operate via PWM).

3. VARIABLE SPEED OPERATION – PWM:



For full variable speed operation, the PWM input signal is available using the 2-pin connector labeled TACH and PWM. To use this variable speed control method, turn the speed selector switch to PWM and connect a PWM generator to the 2-pin connector. The PWM generator common ground must be connected to the common ground of the power supply to complete the circuit. The following PWM input signal requirements are needed for proper operation.

- a. PWM Input Frequency – 100Hz $\pm$ 20Hz
- b. PWM Input Voltage Range – 10 to 48V DC
- c. PWM Run Between Range – 5 to 95%
- d. PWM Halt Percentage – Below 3%, Above 97%
- e. Pump Speed Range – 1250 to 2250 RPM (Reference 50% PWM = approx. 1700 RPM)

4. TACHOMETER OUTPUT SIGNAL:

To use the TACH output signal, connect to the 2-pin connector to a frequency measuring device. As with the PWM generator, the common ground of the frequency measuring device must be connected to the common ground of the power supply to ensure a correct measurement and to complete the circuit. The TACH signal output is a 4-pulse per revolution, square wave with a 3.3 Volt DC amplitude.

5. PWM AND TACH MATING CONNECTOR SPECIFICATIONS:

Molex 043645-0200 Plug & 43030-0001 Terminal (Individual components)

Thomas Plug and Wire Harness Assembly (12 inch / 305 mm length) – P/N 603277-S