



WM 3000-24 MagnaValve® Instruction Manual



56790 Magnetic Drive, Mishawaka, Indiana 46545 USA • 1-800-832-5653 or (574)256-5001 • www.electronics-inc.com

Table of Contents

Product Overview and Principle of Operation.....	3
Installation	4
Adjustments	4
Operation - MagnaValve	4
Operation - Remote Valve Driver	5
Specifications	6
Dimensions	7
Remote Valve Driver Cable Connection.....	8
AC-24 Controller Cable Connection	8
Troubleshooting	9
Maintenance.....	10
Spare Parts List.....	10
Warranty	10
Contacting Electronics Inc.....	10

Read this manual completely before installing the MagnaValve.

WARNING!

The MagnaValve emits magnetic fields and can be harmful to pacemaker wearers.

Product Overview and Principle of Operation

MagnaValve® Description

The MagnaValve® WM 3000-24 is a normally closed valve that regulates the flow of steel shot or grit in wheel-blast machines for blast cleaning applications. It is a powerful valve with a flow rate capacity of up to 3,000 lb/min (1,361 kg/min) for wheels up to 125 hp. The Remote Valve Driver for the MagnaValve comes with a 6-ft cable for installation in the customer's electrical panel, making it an ideal valve for blast machines in high-temperature environments.

The MagnaValve reduces media usage, energy costs, machine downtime, and wear and tear on equipment.

How It Works

The MagnaValve's maintenance-free construction includes a rare earth permanent magnet for normally closed operation and an electromagnet for controlling shot flow rates. With power applied, the magnetic field is neutralized and shot is allowed to flow through the valve. When no power is applied to the MagnaValve, the permanent magnet stops all flow. If the power is interrupted for any reason, the permanent magnet securely holds the shot.

The MagnaValve is factory tested and results are supplied upon request.

MagnaValve Controllers for Closed-Loop Operation

For an "automatic" closed-loop operation, an Electronics Inc. **AC-24 Controller** will detect the current load on the wheel motor and regulate the flow of media to the WM 3000-24. The WM 3000-24 MagnaValve, with the AC-24 Controller, provides reliable, repetitive, and consistent media flow rates for blast cleaning applications. The MagnaValve system makes it easy to document flow rates and establish or repeat a good set-up.

[AC-24 Controller Data Sheet](http://www.electronics-inc.com/uploads/AC-24Controller(1).pdf)

[http://www.electronics-inc.com/uploads/AC-24Controller\(1\).pdf](http://www.electronics-inc.com/uploads/AC-24Controller(1).pdf)

[AC-24 Controller Instruction Manual](http://www.electronics-inc.com/data_sheets_and_instruction_manuals_for_wheel_blast_machine_products2.html)

http://www.electronics-inc.com/data_sheets_and_instruction_manuals_for_wheel_blast_machine_products2.html

Installation

MagnaValve

The MagnaValve must be mounted in a vertical position with an adequate supply of media above it.

Remote Valve Driver

The Remote Valve Driver should be mounted in an electrical panel that conforms to the temperature range of 50°- 120° F (10°- 49° C).

Adjustments

MagnaValve

No adjustments are required or recommended. The valve has been tested at the factory prior to shipment.

Remote Valve Driver

Adjustments to the Remote Valve Driver can be made from the front of the driver; however, the factory settings should not be changed. The output signal is 10Vdc. See page 5 for additional information on the Remote Valve Driver.

Operation

MagnaValve

Signals used to operate the MagnaValve originate at the AC-24 Controller. There are three conditions necessary for correct operation.

- 1) **Power.** 24 Vdc power must be continuously applied to the valve. The valve requires 2 Amps for operation and a power supply rated at 50 Va. The voltage should be 24 ± 2 Vdc.
- 2) **Enable Signal.** The 24 Vdc Enable Signal is used to activate the valve.
- 3) **Input Signal.** The analog 0-10 Vdc input signal must be above 0.25 Vdc as a minimum flow command signal.

AC-24 Controller Operation

Please download the [AC-24 Instruction Manual](http://www.electronics-inc.com/data_sheets_and_instruction_manuals_for_wheel_blast_machine_products2.html)

http://www.electronics-inc.com/data_sheets_and_instruction_manuals_for_wheel_blast_machine_products2.html

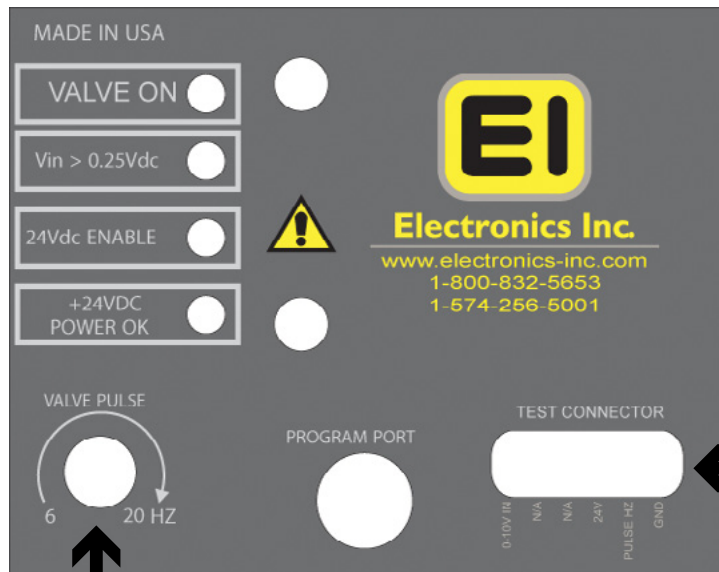
Operation

Remote Valve Driver

Valve Driver Panel (behind the cover plate)

The large knurled screw on the front cover of the Remote Valve Driver can be removed to gain access to the factory adjustments. Please refer all adjustments to qualified personnel.

Diagnostic LEDs* →



Test Connector

Provides access to diagnostic voltages.

- 0 - 10 Vdc input
- 24 Vdc "Enable" input
- 6 - 20 Hertz pulse rate
- 0 Vdc common

Valve Pulse

Rate at which the valve dispenses shot. The Valve Pulse is factory set to match the best flow characteristics of the media (cast steel or cut wire). The typical operation rate is 8 Hertz.

***Diagnostic LEDs**

Valve On. Indicates when power is being sent to the MagnaValve's electromagnet. When the LED is on, the valve is on for full capacity flow rate. When the LED is off, the MagnaValve's permanent magnet has stopped the media flow. When the LED is blinking, the shot flow is being regulated.

Vin > 0.25 Vdc. Indicates that an analog signal input greater than 0.25 Vdc has been received. When this LED is off, no media flow is allowed. The input signal range is 0 - 10 Vdc. At 10 Vdc, the MagnaValve will open to full capacity. The relationship between the 0 - 10 Vdc input signal and actual flow rate is non-linear.

24 Vdc Enable. Indicates that the 24 Vdc Enable Signal has been received. When the LED is off, the MagnaValve is inhibited and no shot will flow. This feature is provided as an on-off action so the 0-10 Vdc input signal does not have to be disabled or removed.

24 Vdc Power. Indicates that 24 Vdc is available to operate the electromagnet for media flow. It should always be available and able to supply 2 Amps.

All four LEDs must be on in order to have media flow.

Specifications

MagnaValve

Power	+24 Vdc @ 2A (50 VA)
Media	Steel Shot and Grit
Weight	32 lb (14.5 kg)
Mode	Normally Closed
Temperature Range	Valve: 50° - 230° F (10° - 110° C)
Signal Input	0 - 10 Vdc
Flow Output	0 - 3,000 lb/min (0 - 1,361 kg/min)*
Display LEDs	Valve On 0 - 10 Vdc Command Input Available 24 V Flow Enable +24 Vdc Power

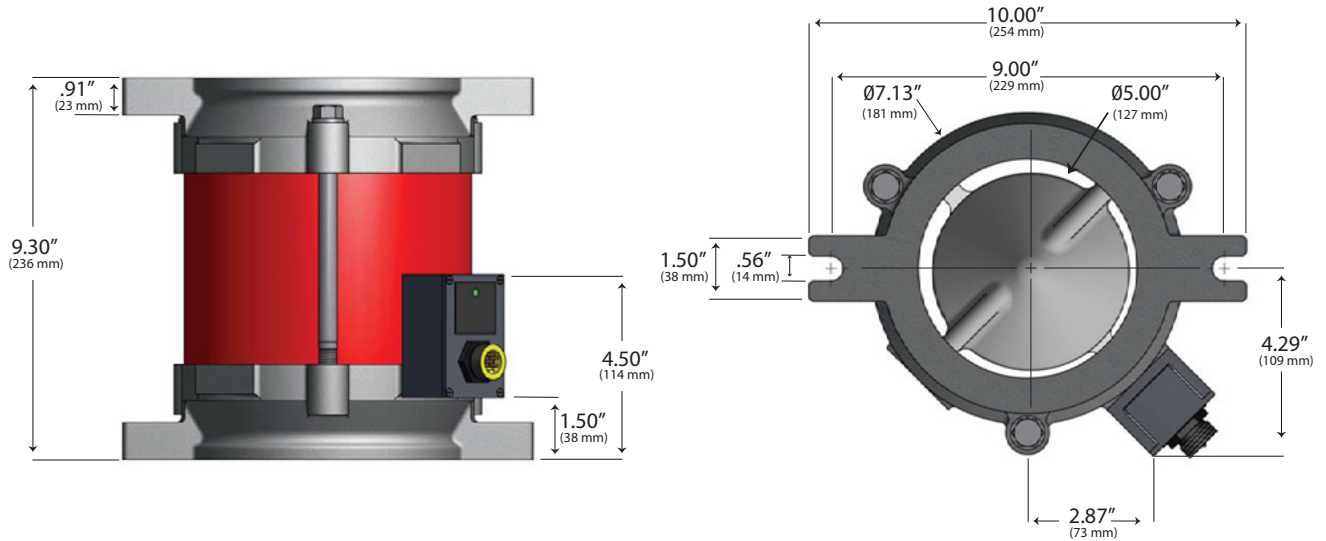
Cable: 2 Conductor shielded 18 AWG or equivalent.
Connect shield at control only.

** Flow rate based on S230 cast steel shot*

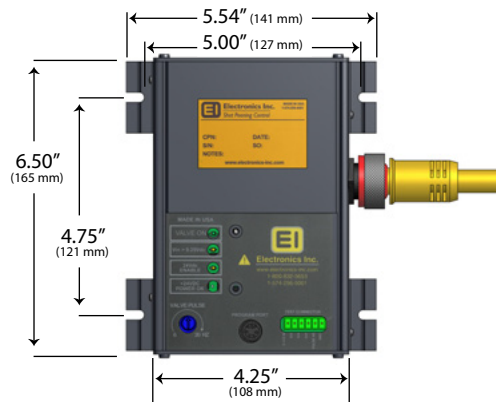
Remote Valve Driver

Temperature Range 50° - 120° F (10° - 49° C)

Dimensions



For stability, the MagnaValve should be located as close as possible (within at least 3 ft / 1 m) to the blast machine wheel.



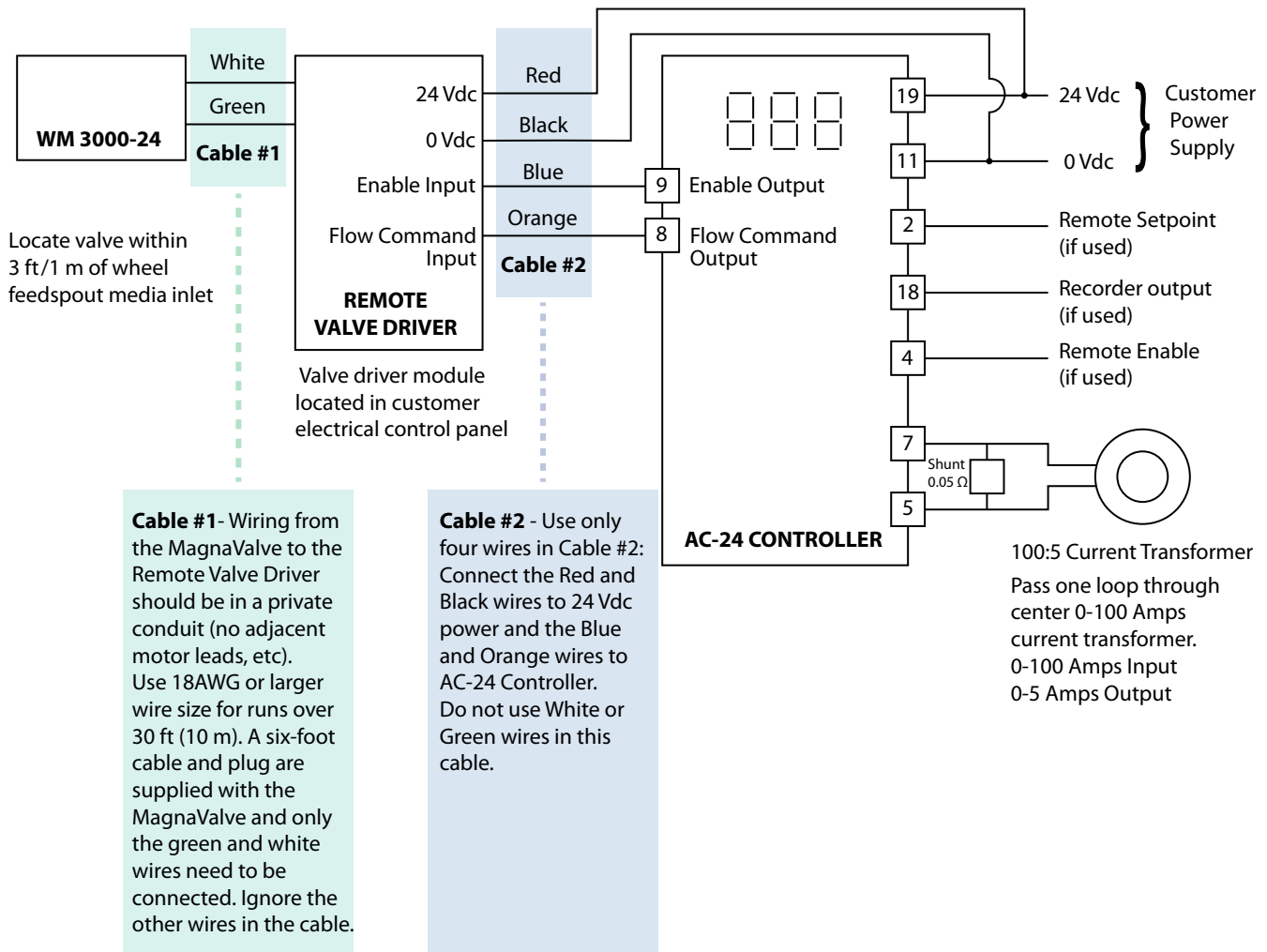
Panel spacing for the Remote Valve Driver: 5" on cable side, 0.5" on top and bottom.

Remote Valve Driver Cable Connection

The Remote Valve Driver should be installed in customer's electrical panel. The 6-pin plug and cable wires connect to customer's wiring per the following:

- Black** Customer Power Supply in control panel - Power bus common 0 Vdc
- Red** Customer Power Supply in control panel - Power bus hot +24 Vdc
- Blue** 24 Vdc Enable Input - connect to AC-24 Controller Screw terminal #9, Enable Output
- Orange** 0-10 Vdc Flow Command Input - connect to AC-24 Controller Screw terminal #8, Flow Command Output
- Green** MagnaValve power signal - connect to valve driver, Green only
- White** MagnaValve power signal - connect to valve driver, White only

AC-24 Controller Cable Connection



Troubleshooting

If all of the LEDs are on but there is no media flow, please check the following:

- 1) Is the mechanical valve above the MagnaValve fully open?
- 2) Is media available from the hopper?
- 3) Is there a blockage above or below the MagnaValve?
- 4) Is the magnetic field completely cancelled when the "Valve On" LED is on? Check this by removing the valve from the machine and applying the proper signals for 100% flow. Did all of the shot fall from the valve?

If the problem can't be identified or if you detect a problem with the magnetic field, contact Electronics Inc. Please have the following information ready.

- 1) Number of valves on the machine _____
- 2) Controller model _____
- 3) Valve model _____
- 4) Media type cast steel cut wire grit other _____
- 5) Media size _____
- 6) Wheel size (hp) _____
- 7) Desired wheel amperage (Amps) _____
- 8) Cycle time _____
- 9) Time between cycles _____
- 10) Where is the shut-off valve? above the MagnaValve below the MagnaValve

Make note of LED indicators on the MagnaValve:

How do the MagnaValve LED indicators react during the blast cycle?

Make note of LED indicators on the AC-24 Controller (if used):

How do the AC-24 Controller LED indicators react during the blast cycle?

Does the AC-24 Controller display read "idle amps" at the end of the blast cycle? yes no

Electronics Inc.

Telephone: (574) 256-5001 or 1-800-832-5653 (USA and Canada)

Fax: (574) 256-5222

Maintenance

The MagnaValve has no moving parts and is thereby maintenance free.

Spare Parts List

The MagnaValve has no moving parts to replace.

Warranty

Two-year warranty

Contacting Electronics Inc.

Electronics Inc.

56790 Magnetic Drive
Mishawaka, Indiana 46545 USA

Telephone: (574) 256-5001 or 1-800-832-5653 (USA and Canada)

Fax: (574) 256-5222

Email: sales@electronics-inc.com

Website: www.electronics-inc.com

Electronics Inc. makes no representations or warranties, either expressed or implied, with respect to the contents of this publication or the products that it describes, and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. Electronics Inc. reserves the right to revise this publication and to make changes and improvements to the products described in this publication without the obligation of Electronics Inc. to notify any person or organization of such revisions, changes or improvements.