

Ultimate Valve



User Manual



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Safety First

Warning: Several safety rules must be followed throughout the operation of FlowMaster. Severe damages will occur to the product or personnel in charge if the safety rules are not strictly obeyed.

Please note:

- UltimateValve have permanent magnetic fields that can be harmful to any medical magnetic induce device, such as pacemakers.
- The UltimateValve is operates under internal pressure system. All connections between UltimateValve and connector can only be connected by qualified personnel.
- Power **OFF** the UltimateValve before connecting or disconnecting the UltimateValve and also calibrate the UltimateValve according to the calibration period required.

Safety precautions must be followed and adhered at all times. There are more safety rules will be listed in next few pages in the manual.

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1.0 PRODUCT DESCRIPTION

The UltimateValve is a precision control valve that regulates the flow of ferrous shot peening media in blasting and peening machines. The valve has a built-in flow sensor that is able to provide closed loop feedback to the shot flow processor. The UltimateValve are used in gravity fed, direct pressure and suction pressure air blast machines.

The equipment can be controlled by two main modes, which are auto and manual mode. Auto mode allows sensor to regulate the flow automatically. Manual mode allows users to control the valve with constant percentage opening of valve.

The UltimateValve complies with SAE AMS 2430, AMS 2432 and other commercial requirements. It only needs a 24V DC power supply to operate. When connected to the FM-15 FlowMaster (sold separately), the configuration of the UltimateValve can be retrieved and manipulated by the user for their desired applications. UltimateValve consisted different flow rate model, please check the website for latest update.

Note: The UltimateValve is factory able to calibrate up to 4 types of media, size and flow rate as specified on the purchase order.



Front View



Side View



Top View

1.1 PRINCIPLE OF OPERATION

The UltimateValve had a rare earth permanent magnet for normally closed operation when no power applied to the valve. The magnetic field is neutralized by electromagnet to allow media flow through. If the power interrupted for any reason, all flow will be stop by the permanent magnet.

2.0 FLOWRATE CALIBRATION ADJUSTMENTS

UltimateValve is calibrated as requested by customer stated in purchase order. The valve are able to calibrate up to 4 type of media within one valve. After calibration, the valve should not need any adjustments unless different media will be used. Refer to valve info page in FlowMaster to see which type of media available in valve.

If different media used, customer can send back to manufacturer or did the calibration in-factory themselves. There are two types of calibration available in UltimateValve:

- 1) Hardware Gain Calibration Adjustments
- 2) Software Calibration Adjustments

Note: Any in-house hardware or software calibration done by customer will void the calibration done by the manufacturer.

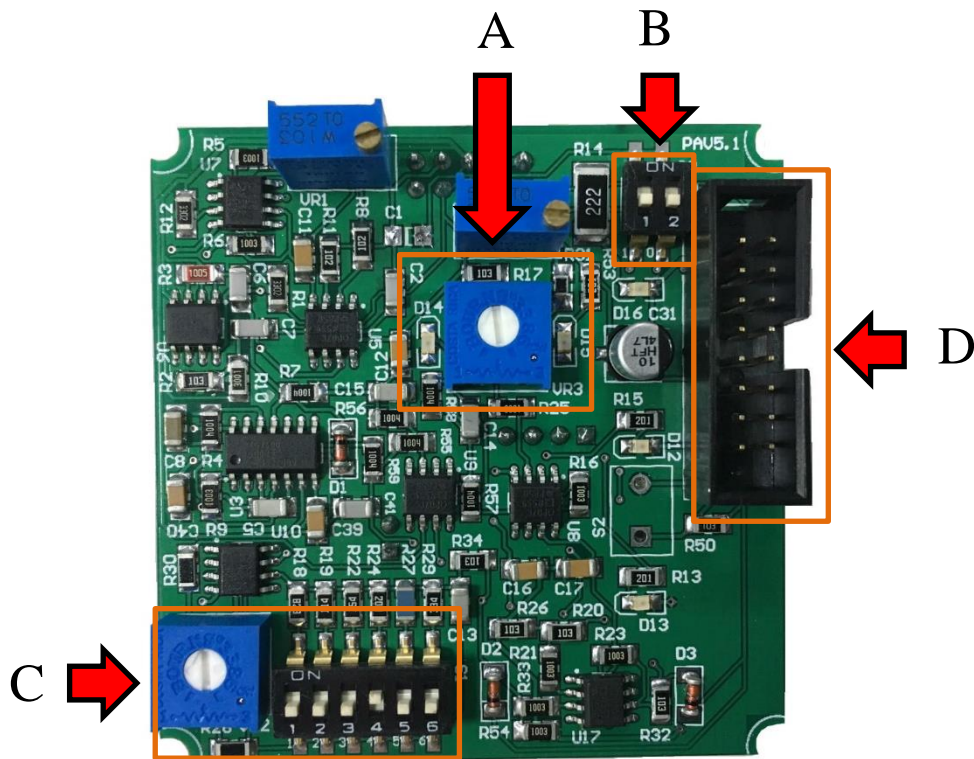
2.1 HARDWARE GAIN CALIBRATION ADJUSTMENTS

The valve is calibrated within the circuit board that located as shown in figure below:-

Remove the 4 screw (M5 Socket Cap Screw) to uninstall the front cover.



Front Panel



A) Sensor Calibration - Use to control the sensor's amplified output voltage to initial condition during no flow. Turn knob until both LEDs which located on the left and right of knob are OFF.

Note: Only perform this calibration when -

- (i) No sands are inside the sensor's coil. Air wash is recommended to perform once before to do the calibration.
- (ii) Restart the power and wait the sensor to be charged up and stable.
- (iii) Adjust before enable or activate the valve after power up.

B) Valve ID - Selector Switch to indicate the valve number.

Valve ID	Left Switch	Right Switch
1	Down	Down
2	Down	Up
3	Up	Down
4	Up	Up

Note: Apply adequate force to flip the button to prevent switch disconnect from the panel.

C) Gain Control - To control amplification of sensor's output voltage. There are two manipulator included in gain control, which are **Coarse** Gain Selector located on the right and **Minor** Gain Adjustor located on the left.

Gain Selector - **Only one switch is flip in up position and others are flip in down position.** Gain 1 – biggest flow; Gain 6 – smallest flow.

Gain Adjustor - Turn clockwise to adjust into less flow and vice versa.

Note: Gain adjustment only can be performed by trained personnel. To perform gain adjustment of UltimateValve, weighing scale are required for the calibration. For more information, please read calibration manual.

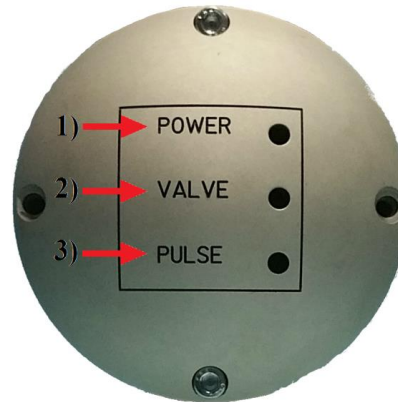
D) Test Connector - Diagnosis port for testing and diagnose purpose that can only performed by Factory or trained personnel.

2.2 SOFTWARE CALIBRATION ADJUSTMENTS

UltimateValve is recommended to do calibration annually. Detailed calibration procedures will be available in UltimateValve Calibration Manual available in manufacturer website.

3.0 LED STATUS INDICATORS

Front Cover



1) **POWER** - Red LED indicates the status of 24V Power Supply

- OFF = No Power Supply
- Red ON = Power Supply is available

2) **VALVE** - Amber LED indicates the operating status of Ultimate Valve.

- OFF = Valve is OFF and no flow going through
- ON = Valve is ON and flow is regulated

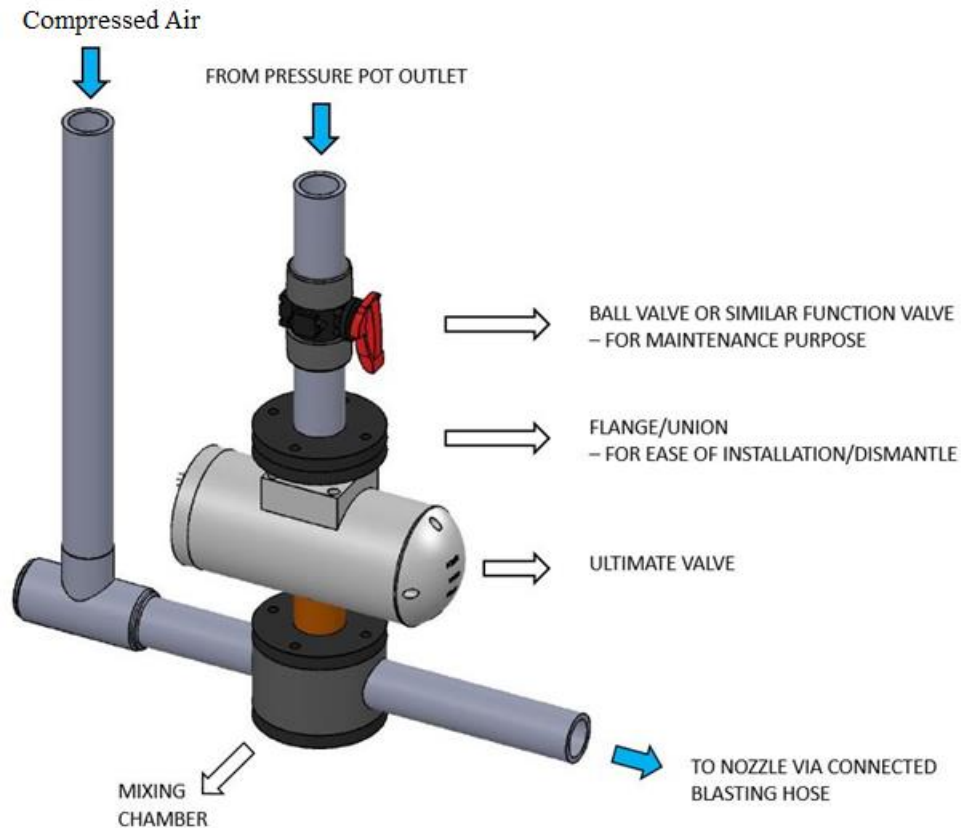
3) **PULSE** - Green LED indicates the flow rate status

- OFF = No flow
- ON = The valve is fully opened and the media is allowed to flow through directly
- Blinking = The valve is ON and OFF to regulate the flow rate as determined by Flow Master.

Note: The 24V power supply must be regulated and able to supply 2 Amps current to each valve.

4.0 PRODUCT SETUP

4.1 Installation of Hardware for Pressure System



The Ultimate Valve is installed vertically underneath the blasting pressure pot in a way that it is connected between the pressure pot outlet and nozzle. A manual control ball valve or any similar function valve is advised to be installed as shown in figure above for maintenance purpose. The manual control valve must not limit the max flow rate of the installed valve. Always install a flange or union between the

UltimateValve and other connector for the ease of installation and dismantling in future.

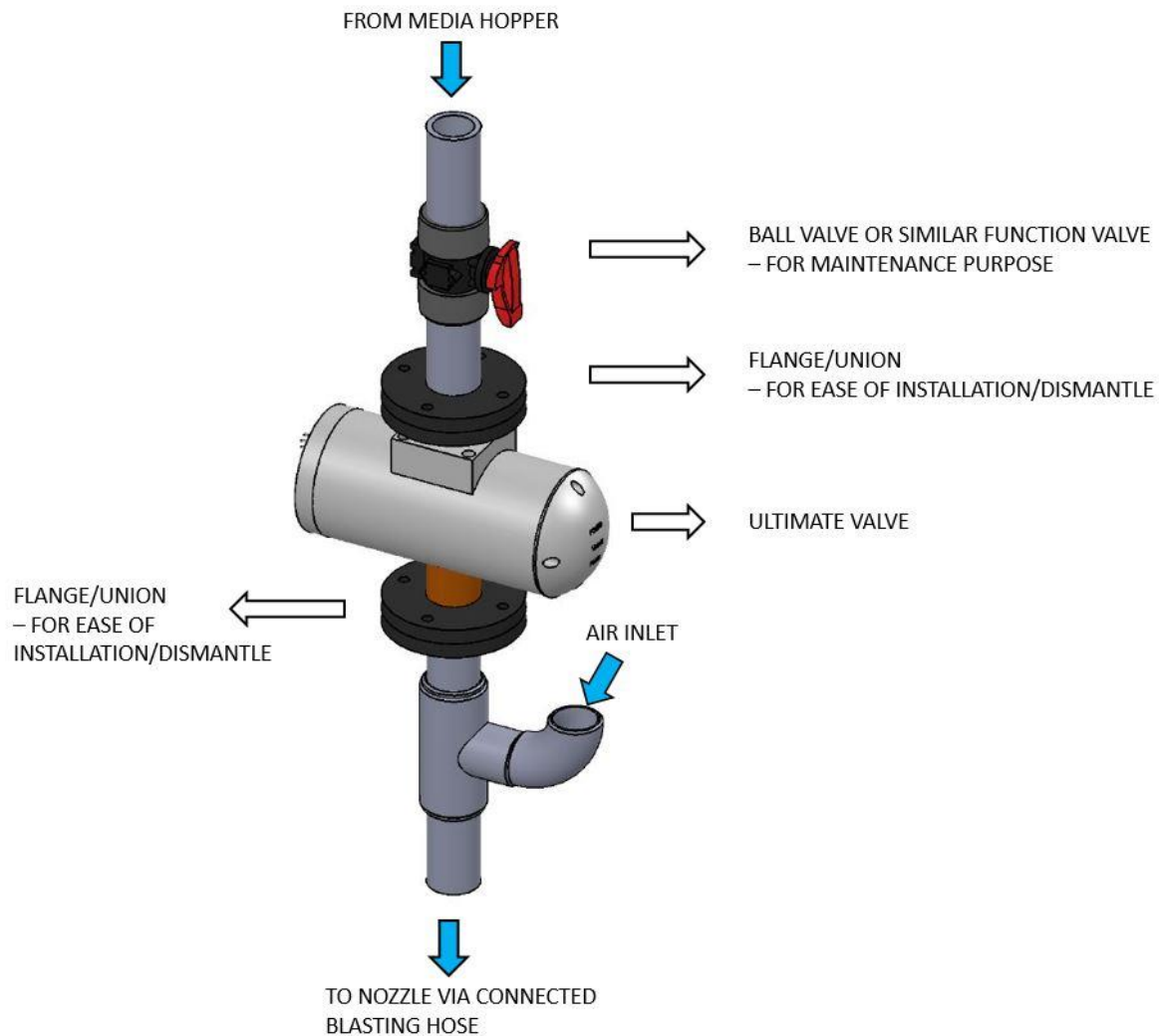
The mixing chamber is a T-junction abrasive distributor. Compressed air from blasting port will enter the T-junction from left and abrasive will drop from the valve. The compressed air will blow the abrasive out from the right of T-junction and go into the nozzle of blasting hose.

Moreover, opening sequence and closing sequence can make sure fast and smooth startup time for UltimateValve. Two table below show the correct sequence for opening and closing the UltimateValve. Pressure Supply must be open and stabilize to establish low pressure differential between the hopper and hose. If the UltimateValve is activated to dispense prior pressure open, the media will choke the hose and large amount of media will purge out from hose when pressure come in.

	Turn On Sequence
Step 1	Turn on Pressure
Step 2	Wait for pressure to stabilize
Step 3	Open Media to Valve
Step 4	Turn on UltimateValve

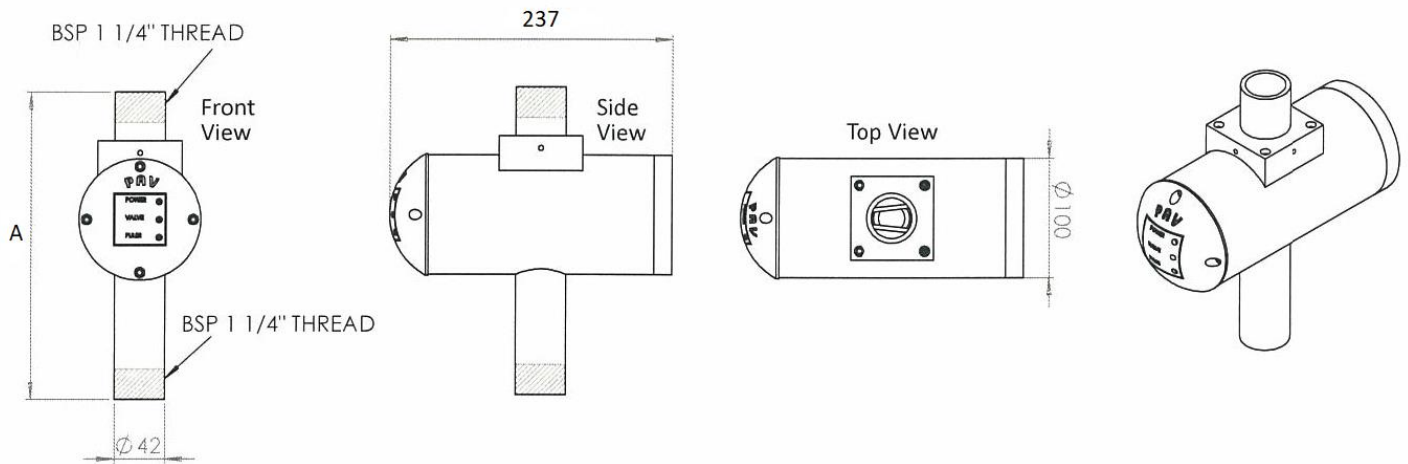
	Turn Off Sequence
Step 1	Turn off UltimateValve
Step 2	Off Media to Valve
Step 3	Wait for media to purge
Step 4	Turn off Pressure

4.2 Installation of Hardware for Suction/Gravity System



It is basically similar concept with installation of hardware for pressure system. The Ultimate Valve is installed vertically underneath the media vessel in a way that it is connected between the vessel outlet and nozzle. A manual control ball valve or any similar function valve is advised to be installed as shown in figure above for maintenance purpose. Always install a flange or union between the Ultimate Valve and other connector for the ease of installation and dismantling in future. A Tee is also required to receive the air from air inlet in order to convey the media towards nozzle. Moreover, too much suction will pull the media through the Ultimate Valve.

4.3 Dimension of Valve



Model	A(mm)
PA-05	187
PA-15	187
PA-45	200

5.0 WIRING DIAGRAMS

For UltimateValve, just need to plug and play the wire from UltimateValve to FlowMaster Controller will do. If two or more valves control under one FlowMaster Unit, more wire connection is need from upper connector of 1st UltimateValve to lower connector of 2nd UltimateValve, and so on for third and fourth valve. Maximum four valves able to be control under one FlowMaster.

Figure 5.1: Connection from FlowMaster to UltimateValve

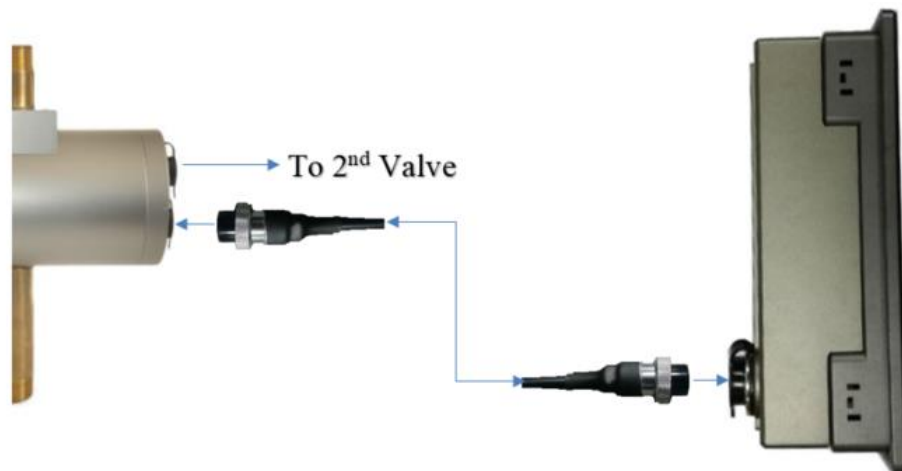


Figure 5.2: Connection from UltimateValve to UltimateValve

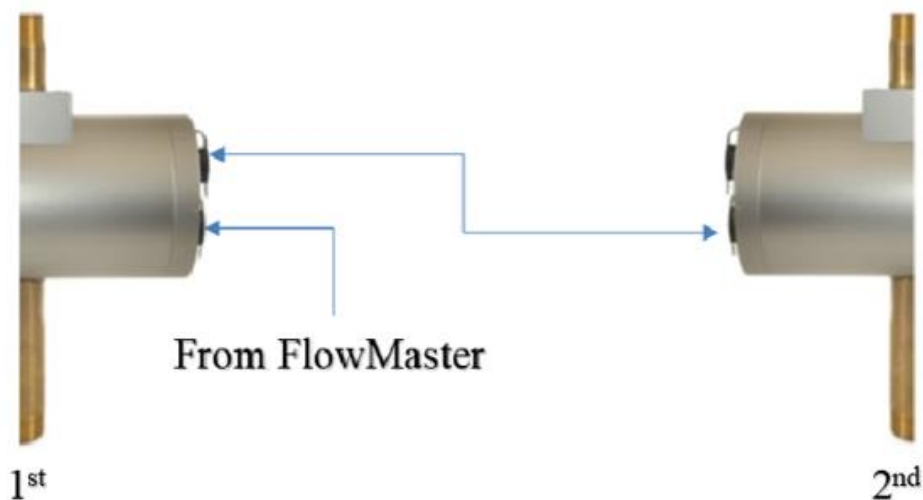


Figure 5.1 and **5.2** shows the connection from UltimateValve to FlowMaster and UltimateValve to UltimateValve.

Grounding of Ultimate have done within the wire connection, as long as the FlowMaster is grounded, UltimateValve will be grounded. For higher electrical noise immunity, all the wire must have shielding inside or run in a metal conduit with no other wires. A 5m long shielded conductor cable with two 7 pins plug is supplied with each UltimateValve. If additional shielded wire length is needed, the wire should be a minimum of 20 AWG. Contact manufacturer for alternate lengths.

6.0 SPECIFICATIONS

Power	+24Vdc @ 2A(50VA)
Maximum Pressure	100 PSI
Maximum Detailed Pressure	10 PSI
Mode	Normally Closed
Media	Ferrous Steel Shot
Temperature Range	3°C – 45°C (37.4-113 °F)

7.0 ULTIMATE VAVLE WARRANTY

The warranty of this product is follow the terms and conditions below:

Warranty Period

One year from shipping date of the product.

Scope of Warranty

Labor and parts costs.

Limitations and Exclusions

- The product serial number or warranty seal has been removed, erased, defaced, altered, tampered or is illegible; or The product shows evidence of commercial use; impact, shock; accident; fire, flood, earthquake, lightning or other acts of nature; sand, liquid or food damage; exposure to extreme thermal or environment conditions beyond product specifications or a rapid change in such conditions; electrostatic discharge; batter or chemical corrosion; abuse, mishandling, improper installation, operation or maintenance, use of wrong electrical supply or voltage; damage during shipment to/from manufacturer authorized service center; improper alteration, modification, adjustment, tampering; replacement of parts with parts not provided or approved by manufacturer; or dismantling, opening, service or repair performed other than by manufacturer authorized center; or any other use contrary to the product manual. Missing accessories or external parts of the Product, unless is made within 7 days from the date of origin retail purchase;
- Cosmetic damage to outer surface/finishing and external parts of Product, including without limitation cracks, dents or scratches on the exterior casing;
- Deterioration of the Product due to normal wear and tear, including without limitation rust or stains;
- General maintenance, password reset assistance, routine servicing and cleaning, updating/upgrading of software, installation of software or applications, product demonstration, or any other service other than repair;
- To the fullest extent permitted by law, manufacturer shall not be in any way liable for any consequential, incidental, indirect, special or similar damages whatsoever arising from or in connection with the use, inability to use or performance of the Product, including without limitation loss of revenue, loss of profits, loss of opportunity, loss of business, loss of goodwill, loss of reputation, failure to realize savings or other benefits, loss of use of the Product or any associated equipment, loss of damage to other property due to the malfunction of the Product, costs of substitute equipment, loss due to downtime cost, costs of recovering, reprogramming or reproducing any program or data stored in or used with a system containing the Product, or loss, damage, corruption or compromise of data, whether due to breach of warranty, strict liability, product liability, the negligence of manufacturer, or otherwise, even if manufacturer is aware of the possibility of such damages. Manufacturer does not exclude or limit liability for personal injury or death resulting from manufacturer's negligence.
- In no event shall any recovery against manufacturer exceed the actual price paid for the purchase of the Product.
- Without limiting the generality of the foregoing, you assume all risk and liability for loss, damage or injury to you and your property and to any third parties and their property arising out of the use, misuse or inability to use the Product not caused directly by the negligence of manufacturer.
- You agree and acknowledge that manufacturer's limitations and exclusions of liability are reasonable in the circumstances.

Obtaining Warranty Service

Prior to making a claim under this warranty, please contact the manufacturer by email or telephone with the following information:

- Name of contact person
- Company name
- Return shipping location
- Product model

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- Product serial number
- Retails Purchasing Date

If a valid claim is made on a valid warranty during the Warranty Period, manufacturer will repair any defective parts free of charges within a reasonable period of time, and restore the product to its proper condition. If the defective product cannot be repaired, it will be replaced with a new unit and the original warranty date will be continue from previous product. The product should be properly packed to prevent damage in return transit. Manufacturer will not responsible for any risk of loss or damage during return shipment.

If the product is out of its warranty period, customer need to issue purchase order to manufacturer prior to repair. If the product cannot be repaired, customer can purchase new unit of valve or refurbished unit at a discount price with six (6) month warranty.

Manufacturer reserved the right to vary the warranty of this Products from state to state.