

# MAC Pulse Valve Series ATEX Electrical Operation



2019-12-10 - MVE-CAT-PV Atex Electrical - REV01

## MAC

### Pulse Valve - ATEX - Electrical Operation

2/2-way pilot operated valve electrical operated – ATEX certification

Available configurations:	Individual base mounted
Port sizes:	3/4", 1", 1 1/2", 2", 2 1/2" ports
Flow:	24 000 NI/min (24 Cv), 53 200 NI/min (53.2 Cv), 100 000 NI/min (100 Cv)
Pressure range:	2.8 to 8 bar
Function:	2/2-way normally closed
Operation:	Electrical



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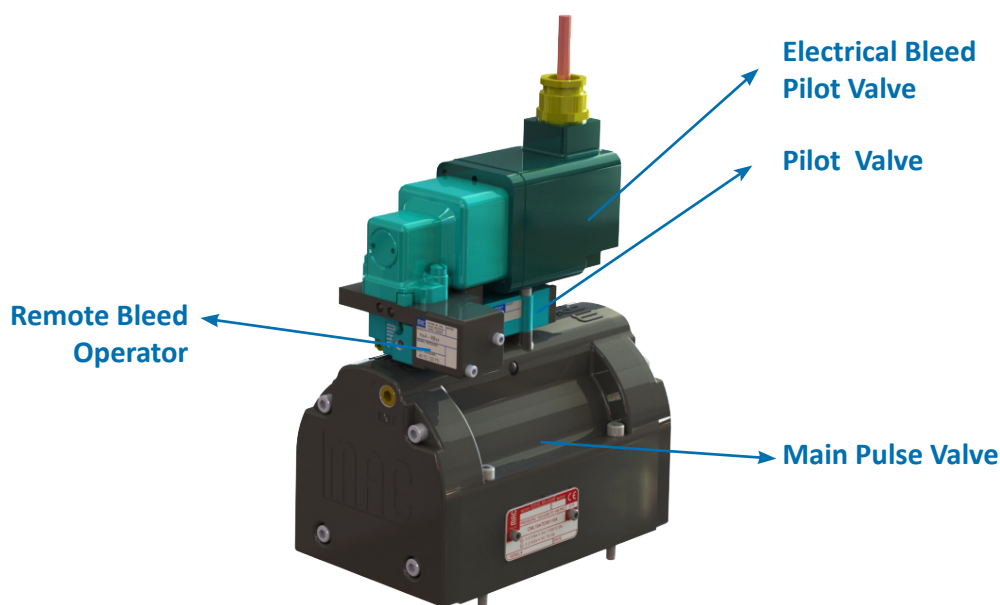
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## Operation



- ✓ The MAC ATEX certified electrical operated Pulse Valves are composed of the following parts:
  - Main pulse valve
  - Pilot valve
  - Remote bleed operator
  - Electrical bleed pilot
- ✓ As the main valve is operated by a pilot, there is a need for pilot air
- ✓ The pilot air can be external or internal depending on the level of the main pressure
- ✓ The remote bleed operation of the pilot valve offers the following benefits :
  - No need for any external remote air signal
  - The electrical pilot connects the remote bleed orifice to the atmosphere
  - The main valve shifts to the open position when the remote bleed orifice exhausts (electrical pilot valve energized)

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## ATEX Marking

The main valve and the pilot are clearly identified by the following plates:

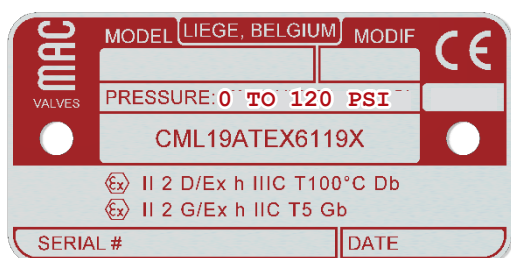
- ✓ ATEX identification plate on the side of the main body
- ✓ ATEX identification plate at the top of the solenoid

### **Main Valve: identification plate on the side of the main body**

The plate at the side of the main body informs the user about the pulse valve and its use in ATEX environment

The following information is reported on the plate:

- ✓ CE marking
- ✓ Manufacturer: MAC VALVES
- ✓ MAC valve type
- ✓ Year of production
- ✓ Serial number
- ✓ Pressure range: 0 to 120 PSI
- ✓ ATEX marking:
  - Dust: II 2 D /Ex h IIC T100°C Db
  - Gas: II 2 G/Ex h IIC T5 Gb
- ✓ Protection Concept: Constructional Safety 'c'
- ✓ ATEX certificate Number: CML19ATEX6119X

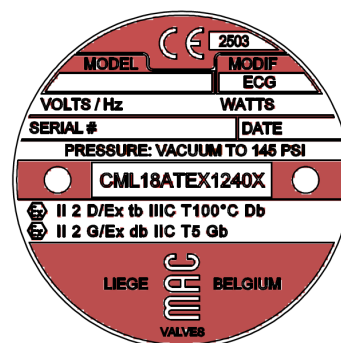


### **Electrical bleed pilot valve: identification plate on top of the solenoid**

The plate at the top of the solenoid informs the user about the valve and its use in ATEX environment.

The following information is reported on the plate:

- ✓ CE marking
- ✓ Manufacturer: MAC VALVES
- ✓ MAC valve type
- ✓ Year of production
- ✓ Serial number
- ✓ Voltage, wattage
- ✓ Pressure range: VAC to 145 PSI
- ✓ ATEX marking:
  - Dust: II 2 D /Ex tb IIC T100°C Db
  - Gas: II 2 G/Ex db IIC T5 Gb
  - Temperature depends on the power of the solenoid



The equipment may be fitted with the electrically operated pneumatic solenoid valves series 200B which are separately certified under CML 18ATEX1240X and called electrical bleed pilot valve.

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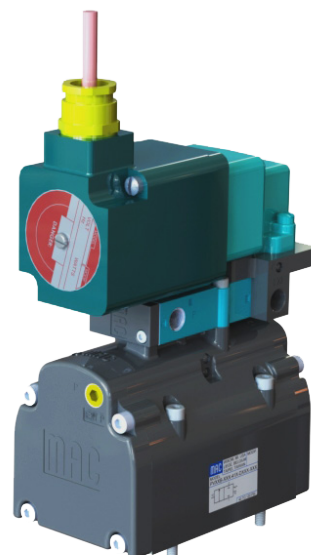
## MAC PV03 Series - Individual base mounted

2-way, 2 position, spool

Flow up to 24 000 NI/min (24 Cv)

### Main Valve

- ◇ 2/2-way NC pilot operated valve
- ◇ Bonded spool with minimum friction, shifting in a glass-like finished bore
- ◇ Wiping effect, valve immune to contamination
- ◇ Long service life

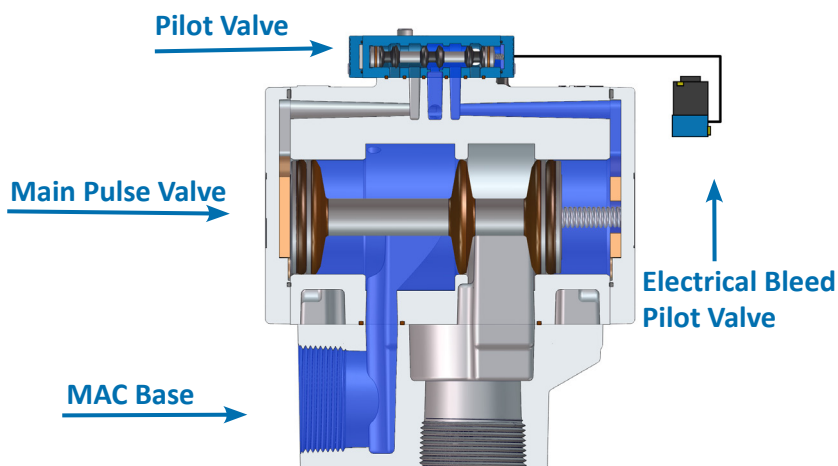


### Pilot Valve

- ◇ 5/2-way pilot operated valve
- ◇ Balanced spool & poppet, immune to pressure variations
- ◇ High energization shifting force
- ◇ High de-energization shifting force

### Electrical Bleed Pilot Valve

- ◇ Solenoid direct operated valve
- ◇ Patented solenoid develops high shifting force
- ◇ Powerful return force
- ◇ Short stroke with high flow
- ◇ Balanced poppet, immune to pressure variations



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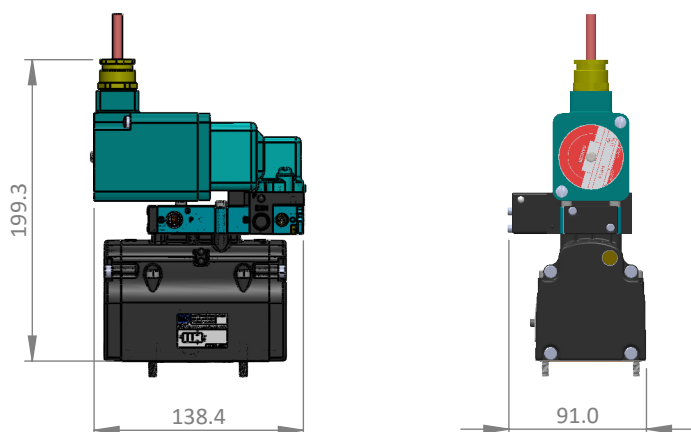
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## MAC PV03 Series - Individual base mounted

### Technical data

Fluid:	Compressed air
Main pressure range:	0 to 8 bar
Pilot pressure range:	2.8 to 8 bar
Lubrication:	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration:	40 µm
Temperature range:	0°C to 40°C
Flow (at 6 bar, $\Delta P=1\text{bar}$ ):	24 000 NI/min (24 Cv)
Coil:	Epoxy encapsulated - Class F wires
Voltage range:	-15% to +10% of nominal voltage

### Dimensions



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## MAC PV03 Series - ATEX - Electrical Operation - How to order

### PV03 Body & base options

PV03B - A X X - 41X - RB-XX 0 EE - XX = EX50			
SPOOL TYPE	PORT SIZE & THREAD TYPE	INTERNAL / EXTERNAL PILOT	PILOT OPTIONS (see below)
<b>A</b> N.C. main with memory spring - Viton® seals	<b>0</b> Basic valve no base <b>A</b> 3/4" NPTF MAC base <b>B</b> 1" NPTF MAC base <b>C</b> 3/4" BSPPL MAC base <b>D</b> 1" BSPPL MAC base	<b>A</b> Internal pilot (NPTF threads) <b>B</b> External pilot (NPTF threads) <b>C</b> External pilot (BSPPL threads) <b>E</b> Internal pilot (BSPPL threads)	

### PV03 Bleed pilot options

41X - RB - XX 0 EE - XX = EX50		
PILOT EXHAUST	VOLTAGE	LEAD WIRE LENGTH
<b>M</b> Muffled exhaust <b>P</b> Piped exhaust	<b>DC Voltages</b> <b>50</b> 24 VDC (6.0 W) <b>60</b> 12 VDC (9.5 W) <b>51</b> 24VDC (4.5 W) <b>61</b> 24 VDC (8.5 W) <b>76</b> 100 VDC (9.0 W)	<b>EH</b> 1.1 m <b>EF</b> 2.0 m <b>ET</b> 5.0 m

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## MAC PV06 Series - Individual base mounted

2-way, 2 position, spool

Flow up to 53 200 NI/min (53.2 Cv)

### Main Valve

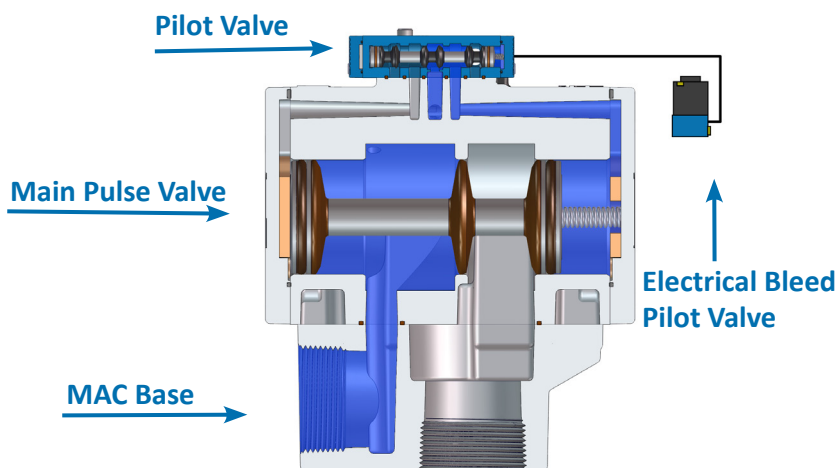
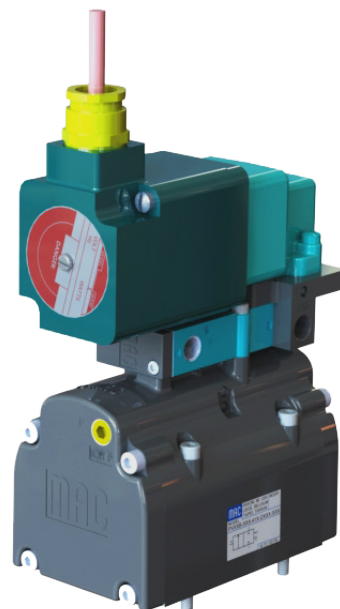
- ◇ 2/2-way NC pilot operated valve
- ◇ Bonded spool with minimum friction, shifting in a glass-like finished bore
- ◇ Wiping effect, valve immune to contamination
- ◇ Long service life

### Pilot Valve

- ◇ 5/2-way pilot operated valve
- ◇ Balanced spool & poppet, immune to pressure variations
- ◇ High energization shifting force
- ◇ High de-energization shifting force

### Electrical Bleed Pilot Valve

- ◇ Solenoid direct operated valve
- ◇ Patented solenoid develops high shifting force
- ◇ Powerful return force
- ◇ Short stroke with high flow
- ◇ Balanced poppet, immune to pressure variations



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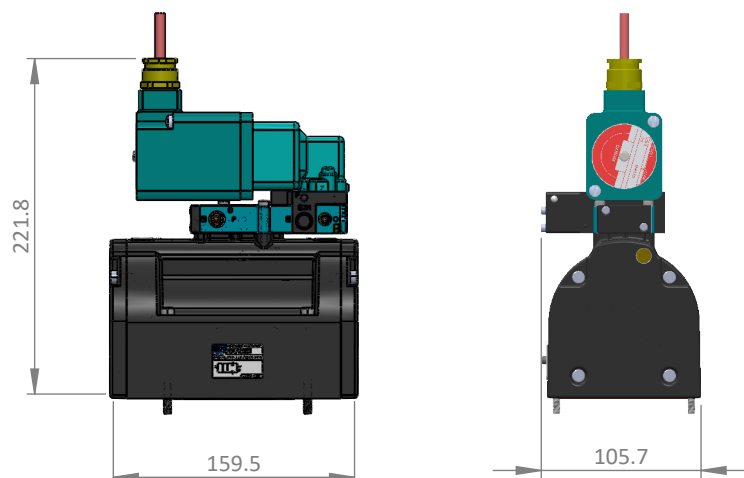


## MAC PV06 Series - Individual base mounted

### Technical data

Fluid:	Compressed air
Main pressure range:	0 to 8 bar
Pilot pressure range:	2.8 to 8 bar
Lubrication:	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration:	40 µm
Temperature range:	0°C to 40°C
Flow (at 6 bar, $\Delta P=1\text{bar}$ ):	53 200 NI/min (53.2 Cv)
Coil:	Epoxy encapsulated - Class F wires
Voltage range:	-15% to +10% of nominal voltage

### Dimensions



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## MAC PV06 Series - ATEX - Electrical Operation - How to order

### PV06 Body & base options

PV06B - X X X - 41X - RB-XX 0 EE - XX = EX50			
SPOOL TYPE	PORT SIZE & THREAD TYPE	INTERNAL / EXTERNAL PILOT	PILOT OPTIONS (see below)
<b>A</b> N.C. main with memory spring - Viton® seals	<b>0</b> Basic valve no base <b>A</b> 1 1/2" NPTF MAC base <b>C</b> 1 1/2" BSPPL MAC base	<b>A</b> Internal pilot (NPTF threads) <b>B</b> External pilot (NPTF threads) <b>C</b> External pilot (BSPPL threads) <b>E</b> Internal pilot (BSPPL threads)	

### PV06 Bleed pilot options

41X - RB - XX 0 EE - XX = EX50		
PILOT EXHAUST	VOLTAGE	LEAD WIRE LENGTH
<b>M</b> Muffled exhaust <b>P</b> Piped exhaust	<b>DC Voltages</b> <b>50</b> 24 VDC (6.0 W) <b>60</b> 12 VDC (9.5 W) <b>51</b> 24VDC (4.5 W) <b>61</b> 24 VDC (8.5 W) <b>76</b> 100 VDC (9.0 W)	<b>EH</b> 1.1 m <b>EF</b> 2.0 m <b>ET</b> 5.0 m

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## MAC PV09 Series - Individual base mounted

2-way, 2 position, spool

Flow up to 100 000 NI/min (100 Cv)

### Main Valve

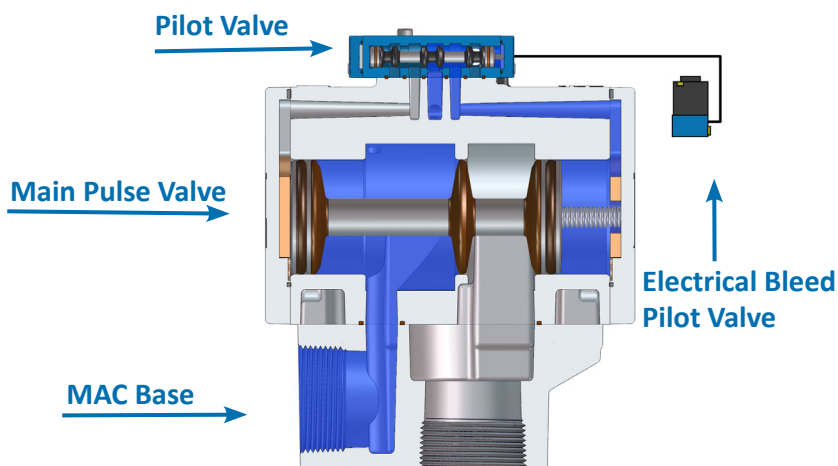
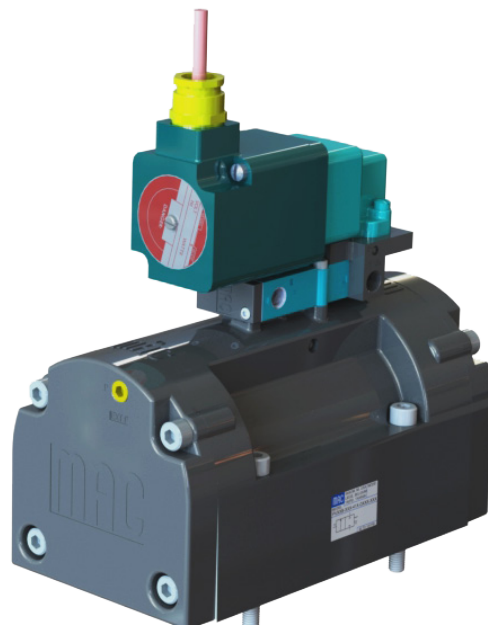
- ◇ 2/2-way NC pilot operated valve
- ◇ Bonded spool with minimum friction, shifting in a glass-like finished bore
- ◇ Wiping effect, valve immune to contamination
- ◇ Long service life

### Pilot Valve

- ◇ 5/2-way pilot operated valve
- ◇ Balanced spool & poppet, immune to pressure variations
- ◇ High energization shifting force
- ◇ High de-energization shifting force

### Electrical Bleed Pilot Valve

- ◇ Solenoid direct operated valve
- ◇ Patented solenoid develops high shifting force
- ◇ Powerful return force
- ◇ Short stroke with high flow
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## MAC PV09 Series - Individual base mounted

### Technical data

Fluid:	Compressed air
Main pressure range:	0 to 8 bar
Pilot pressure range:	2.8 to 8 bar
Lubrication:	Not required, if used select a medium aniline point lubricant (between 80°C and 100°C)
Filtration:	40 µm
Temperature range:	0°C to 40°C
Flow (at 6 bar, $\Delta P=1\text{bar}$ ):	100 000 NI/min (100 Cv)
Coil:	Epoxy encapsulated - Class F wires
Voltage range:	-15% to +10% of nominal voltage

### Dimensions



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## MAC PV09 Series - ATEX - Electrical Operation - How to order

### PV09 Body & base options

PV09B - X X X - 41X - RB-XX 0 EE - XX = EX50			
SPOOL TYPE	PORT SIZE & THREAD TYPE	INTERNAL / EXTERNAL PILOT	PILOT OPTIONS (see below)
<b>A</b> N.C. main with memory spring - Viton® seals	<b>0</b> Basic valve no base	<b>A</b> Internal pilot (NPTF threads)	
	<b>A</b> 2" NPTF MAC base	<b>B</b> External pilot (NPTF threads)	
	<b>B</b> 2 1/2" NPTF MAC base	<b>C</b> External pilot (BSPPL threads)	
	<b>C</b> 2" BSPPL MAC base	<b>E</b> Internal pilot (BSPPL threads)	
	<b>D</b> 2 1/2" BSPPL MAC base		

### PV09 Bleed pilot options

41X - RB - XX 0 EE - XX = EX50		
PILOT EXHAUST	VOLTAGE	LEAD WIRE LENGTH
<b>M</b> Muffled exhaust	<b>DC Voltages</b>	<b>EH</b> 1.1 m
<b>P</b> Piped exhaust	<b>50</b> 24 VDC (6.0 W)	<b>EF</b> 2.0 m
	<b>60</b> 12 VDC (9.5 W)	<b>ET</b> 5.0 m
	<b>51</b> 24VDC (4.5 W)	
	<b>61</b> 24 VDC (8.5 W)	
	<b>76</b> 100 VDC (9.0 W)	

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## MAC Pulse Valve Series - Warranty

### MAC VALVES WARRANTY, WARRANTY LIMITATIONS, FLAT RATE REBUILD PROGRAM

The MAC Valves organization has established a reputation over many years for fulfilling the needs and requirements of the users of its products. All MAC Valves are quality products specifically designed and built for long and rugged service. For this reason, MAC Valves is able to provide the Buyer a limited warranty.

**WARRANTY:** MAC Valves, Inc. hereby warrants to Buyer that, for a period of 18 months from the original date of shipment of each valve from our factory ("Warranty Period"), such valve will be free from significant defects in material and workmanship and will conform to all specifications agreed to by MAC Valves, Inc.. In addition, MAC Valves, Inc. warrants that the electrical coils on such valves will be free from significant defects in material and workmanship for their normal useful life. EXCEPT FOR THESE LIMITED WARRANTIES, MAC VALVES, INC. EXPRESSLY DISCLAIMS ALL REPRESENTATIONS AND WARRANTIES OF ANY KIND (WHETHER EXPRESS, IMPLIED OR ARISING BY OPERATION OF LAW) WITH RESPECT TO THE VALVES, INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OR REPRESENTATIONS AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER MATTER. THIS SECTION SURVIVES THE EXPIRATION, TERMINATION OR CANCELLATION OF ANY AGREEMENTS BETWEEN THE PARTIES RELATING TO THE PURCHASE OF THE VALVES.

**WARRANTY LIMITATIONS:** This Warranty does not apply where the valves have been (i) subjected to abuse, misuse, damage, neglect, negligence, accident, improper testing, improper installation, improper storage, improper handling, abnormal physical stress, abnormal environmental condition, or use contrary to any instructions issued by MAC Valves, Inc.; (ii) modified, reconstructed, repaired, or altered by persons other than MAC Valves, Inc. or its authorized representative; or (iii) used with any third-party product, hardware, software or other product that has not been previously approved in writing by MAC Valves, Inc. Additionally, this Warranty does not cover claims for labor, material, time or transportation, and does not apply to loss or damage caused by fire, theft, riot, explosion, labor dispute, act of God, or other causes beyond the control of MAC Valves, Inc.

**EXCLUSIVE REMEDY:** The Buyer's sole remedy under this Warranty is limited to the replacement or rebuilding of any valve which does not conform to the warranties provided herein or, in MAC Valves, Inc.'s sole discretion, refund of the purchase price for the non-conforming valve. Buyer's remedy is conditioned on Buyer's compliance with its obligations under this Warranty. Valves that Buyer believes do not conform to this Warranty must be returned (with or without bases) transportation prepaid and received at our factory within the Warranty Period. If MAC Valves, Inc. determines that the valve is non-conforming and is otherwise covered by this Warranty, the rebuilt or replaced valve will be returned to the customer at the expense of MAC Valves, Inc., and will carry the same warranties as provided under the Flat Rate Rebuild Program described below. MAC VALVES, INC. WILL NOT BE RESPONSIBLE FOR ANY INCIDENTAL, SPECIAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION DIRECT AND INDIRECT LOST PROFITS, REGARDLESS OF WHETHER THOSE DAMAGES WERE FORESEEABLE.

**The Flat Rate Rebuild Program:** Valves no longer covered by the MAC Warranty may be eligible for a one-time rebuild under the MAC Valves, Inc. Flat Rate Rebuild Program. Our constant research and testing program is dedicated to extending the life of our valves and maximizing their reliability under the most adverse conditions. Valves returned under this limited program are completely disassembled, inspected, rebuilt to current operating standards whenever possible, tested and returned within a few weeks for a nominal flat rate charge. All rebuilt valves carry the same warranty described (in our MAC Warranty) for new valves for a warranty period of 90 days from the date of shipment from our factory.



Valves that have gone through the one-time rebuild will have been marked with a letter "R" as part of the date (This is an example of a rebuild date stamp from this month E(May)17(Year)Tester Symbol R(Indicates Rebuild)).

Please note that any valves sent back for subsequent rebuild that have already been through the program previously (indicated by the "R") will not be eligible for additional rebuild.

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