

RC-CM26-01
EN

CROSSMIRROR® Double Valves

CM26 Series – Safe Return Valves

Operating Instructions



PRODUCT CREDENTIALS				
Performance Level Per ISO 13849-1:2015 	Safety Integrity Level Per IEC 2061:2001 	DGUV Certification 	Declaration of Conformity   	Certificate of Compliance 

Certificates and Declarations are available for download at www.rosscontrols.com.

PRODUCT LABEL IDENTIFICATION

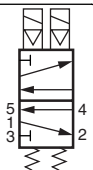
Solenoid Pilot Controlled



CrossMIRROR®
PRESSURE 3 - 10 BAR

VALVE & BASE: CM26PNA01A21
VALVE ONLY: CM26PXA0XA21

www.rosscontrols.com U.S. & WORLDWIDE PATENTS



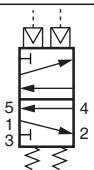
Pressure Controlled



CrossMIRROR®
PRESSURE 3 - 10 BAR

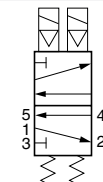
VALVE & BASE: CM26PNA01A21
VALVE ONLY: CM26PXA0XA21

www.rosscontrols.com U.S. & WORLDWIDE PATENTS

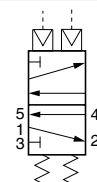


SIMPLIFIED SCHEMATICS

Solenoid Pilot Controlled



Pressure Controlled



PRODUCT KEY IDENTIFICATION

Solenoid Pilot Controlled Valves – Valve and Base Assembly

CM 2 6 P D A 01 A 2 1

Series CM

Monitoring 2

Valve Function 5/2

Return Override Pressure Return

Port Thread

NPT	N
G	D

Revision Level 01

Valve Reset

Remote Air	1
Solenoid	2

Status Indicator

None	X
Mechanical Pressure Switch DIN EN 175301-803 Form A (connector included)	1

Current

DC	24 V	A
AC	110 V, 50 Hz 120 V, 50/60 Hz	B
	230 V, 50/60 Hz **	C

* For other voltages consult ROSS.
** 230 V AC (OSHA regulations limit press control voltage to no more than 120 V AC in the US).

Basic Size

	Port Size		
	Inlet	Outlet	
0	1/4	1/4	00
	3/8	3/8	01
2	1/2	1/2	22

Pressure Controlled Valves – Valve and Base Assembly

CM 2 6 P D A 01 P 2 X

Series CM

Monitoring 2

Valve Function 5/2

Return Override Pressure Return

Port Thread

NPT	N
G	D

Revision Level 01

Valve Reset

Remote Air	
------------	--

Status Indicator

None	X
Mechanical Pressure Switch DIN EN 175301-803 Form A (connector included)	1

Control Type

Pressure Controlled

Basic Size

	Port Size		
	Inlet	Outlet	
0	1/4	1/4	00
	3/8	3/8	01
2	1/2	1/2	22

MANUFACTURING INFORMATION

Manufacturing Site

Site Abbreviation

Valve Printing
(example May 2022)

Date and site of manufacture

See back page for ROSS addresses.

ROSS CONTROLS USA

(L)

(5 22 L)

(FE)

(5 22 FE)

ROSS EUROPA

(G)

(5 22 G)

ROSS UK

(RB)

(5 22 RB)

ROSS ASIA

(J)

(5 22 J)

ROSS SOUTH AMERICA

(B)

(5 22 B)

ROSS CONTROLS CHINA

(C)

(5 22 C)

ROSS CONTROLS INDIA

(RCI)

(5 22 RCI)

Valves, Manifold Bases, and End Stations for Manifold Assemblies

Valve Only	With Status Indicator Switch	Port Sizes		Basic Size	Reset	Solenoid Pilot Controlled			Pressure Controlled
		1	2, 4			Model Number #			Model Number
						24 V DC	110-120 V AC	230 V AC	
		1/4	1/4	0	Remote	CM26PXA0XA11	CM26PXA0XB11	—	CM26PXA0XP11
					Solenoid	CM26PXA0XA21	CM26PXA0XB21	—	—
		3/8	3/8	0	Remote	CM26PXA0XA11	CM26PXA0XB11	—	CM26PXA0XP11
					Solenoid	CM26PXA0XA21	CM26PXA0XB21	—	—
		1/2	1/2	2	Remote	CM26PXA2XA11	CM26PXA2XB11	CM26PXA2XC11	CM26PXA2XP11
					Solenoid	CM26PXA2XA21	CM26PXA2XB21	CM26PXA2XC21	—
	# Valve include DIN EN 175301-803 type connection, for M12 type connection consult ROSS.								
	Without Status Indicator Switch	Port Sizes		Basic Size	Reset	Solenoid Pilot Controlled			Pressure Controlled
		1	2, 4			Model Number #			Model Number
						24 V DC	110-120 V AC	230 V AC	
		1/4	1/4	0	Remote	CM26PXA0XA1X	CM26PXA0XB1X	—	CM26PXA0XP1X
					Solenoid	CM26PXA0XA2X	CM26PXA0XB2X	—	—
		3/8	3/8	0	Remote	CM26PXA0XA1X	CM26PXA0XB1X	—	CM26PXA0XP1X
					Solenoid	CM26PXA0XA2X	CM26PXA0XB2X	—	—
		1/2	1/2	2	Remote	CM26PXA2XA1X	CM26PXA2XB1X	CM26PXA2XC1X	CM26PXA2XP1X
					Solenoid	CM26PXA2XA2X	CM26PXA2XB2X	CM26PXA2XC2X	—

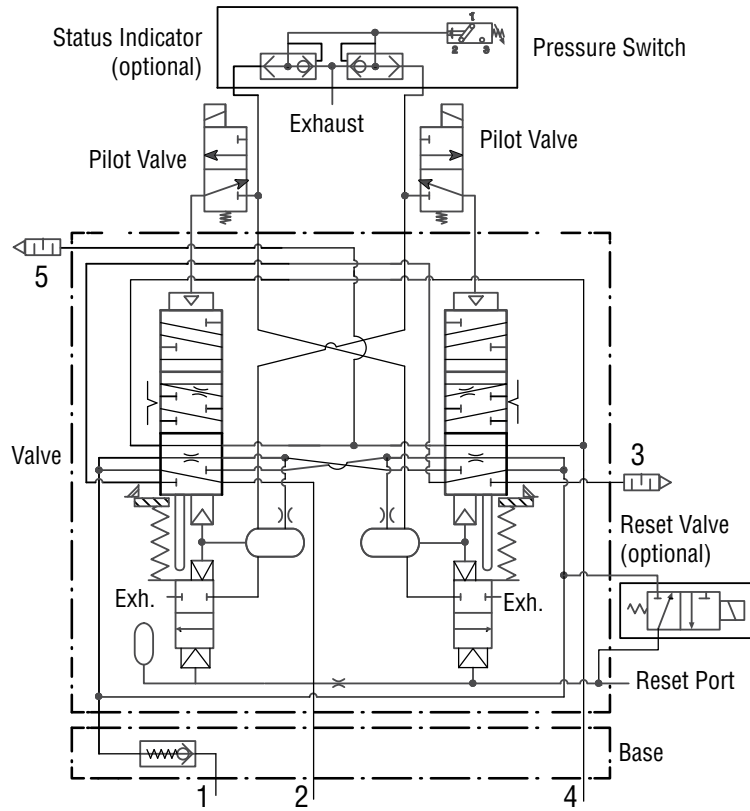
Manifold Bases	Port Sizes		Basic Size	Base Model Number	
	1	2, 4		NPT Thread	G Thread
	1/4	3/8	0	YD1951D91	Y1951D91
	3/8	1/2	0	YD1949D91	Y1949D91
	1/2	3/4	2	YD1955D91	Y1955D91

End Stations	Port Sizes		Basic Size	Manifold End Station with Check Valve		Dual Supply Manifold End Stationwith Check Valves	
				Kit Number		Kit Number	
	1	2, 4		NPT Thread	G Thread	NPT Thread	G Thread
	1/4	3/8	0	D699K86	699K86	D701K86	701K86
	3/8	1/2	0	D698K86	698K86	DS700K86	700K86
	1/2	3/4	2	D702K86	702K86	D704K86	704K86

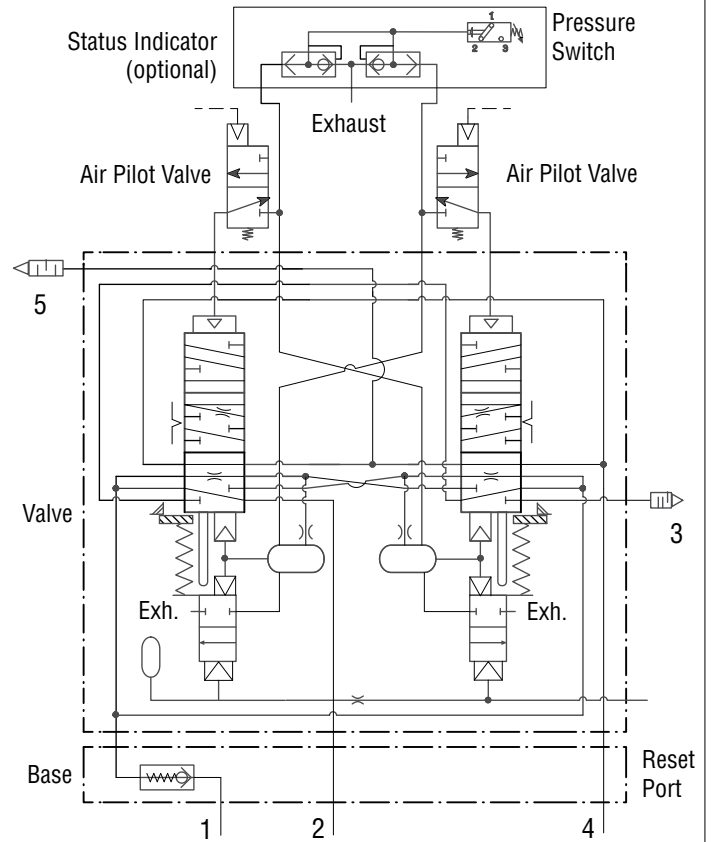
Technical Data								Weight lb (kg)	
Valve	Port Sizes		Basic Size	Flow C _v (NI/min)				Valve and Base Assembly	
	1	2, 4		1-2	1-4	2-3	4-5	Solenoid Pilot Controlled	Pressure Controlled
With Status Indicator Switch	1/4	1/4	0	0.8 (787)	0.6 (590)	0.5 (492)	1.1 (1082)	5.85 (2.7)	6.15 (2.79)
	3/8	3/8	0	0.8 (787)	0.6 (590)	0.5 (492)	1.1 (1082)	5.75 (2.6)	6.05 (2.74)
	1/2	1/2	2	3.0 (2952)	2.5 (2460)	2.0 (1968)	3.9 (3838)	14.45 (6.6)	14.45 (6.56)
Without Status Indicator Switch	1/4	1/4	0	0.8 (787)	0.6 (590)	0.5 (492)	1.1 (1082)	5.30 (2.4)	5.60 (2.54)
	3/8	3/8	0	0.8 (787)	0.6 (590)	0.5 (492)	1.1 (1082)	5.20 (2.4)	5.50 (2.49)
	1/2	1/2	2	3.0 (2952)	2.5 (2460)	2.0 (1968)	3.9 (3838)	13.80 (6.3)	13.80 (6.26)

VALVE SCHEMATICS

Solenoid Pilot Controlled

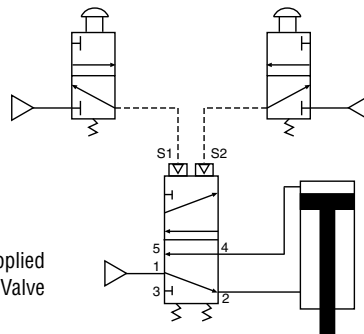


Pressure Controlled



Typical 2-Hand-Anti-Tie-Down Application

CROSSMIRROR® Control Reliable
Pneumatic 5/2 "AND" Gate



CROSSMIRROR® Control Reliable
Pneumatic 5/2 "AND" Gate

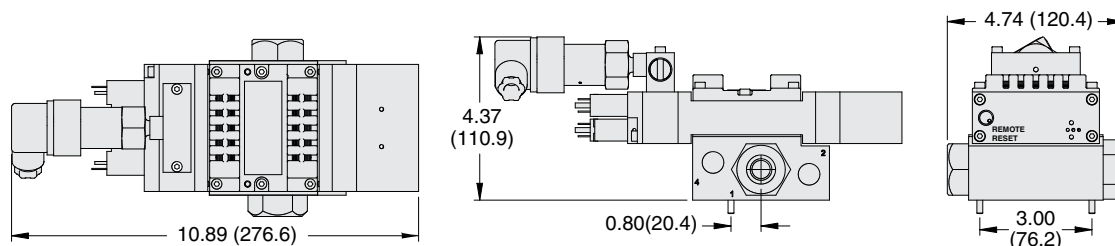
Solenoid Pilot Controlled Valves

DIMENSIONS

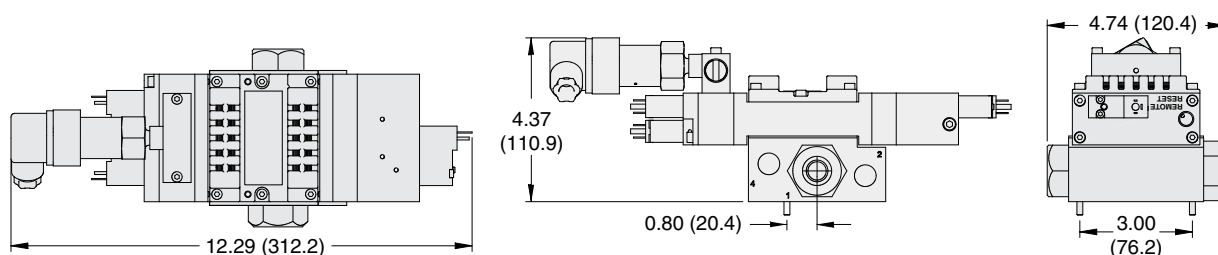
Inches (mm)

Basic Size 0 – Valve and Base assembly

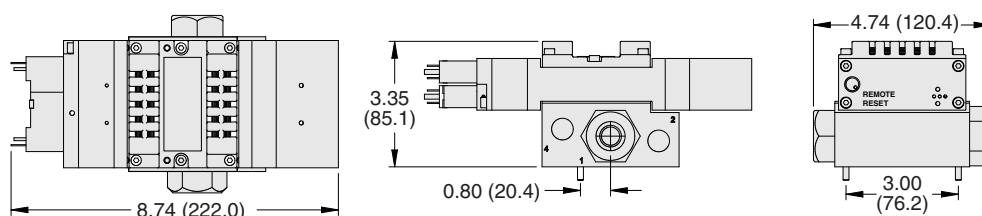
with remote reset and with status indicator switch



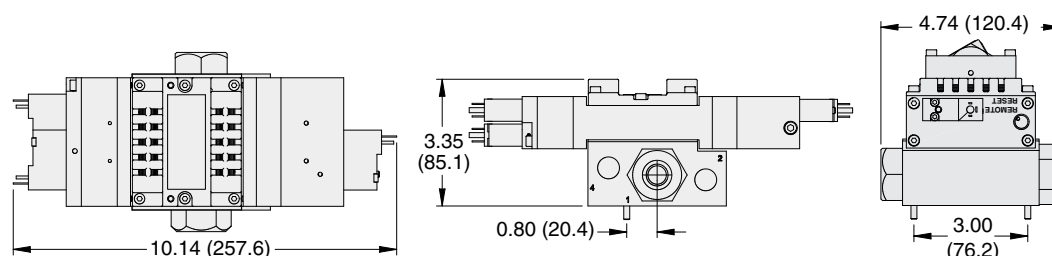
with solenoid reset and with status indicator switch



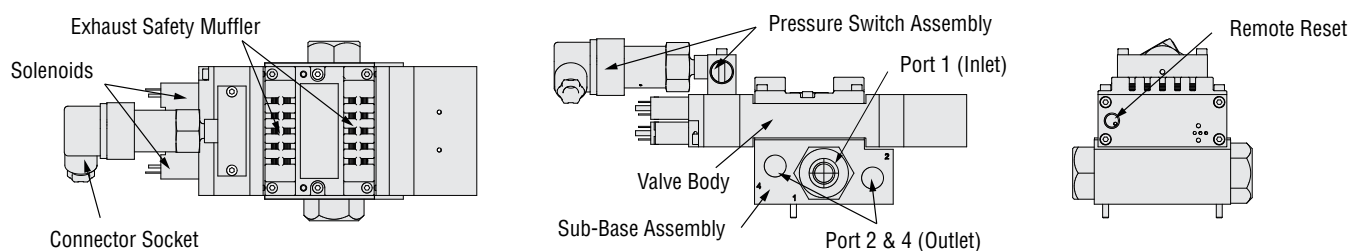
with remote reset and without status indicator switch



with solenoid reset and without status indicator switch



For additional information, and to assist you with piping and connectivity designs, our products are available in downloadable 2D drawings and 3D CAD models in a wide range of options including native formats, visit www.rosscontrols.com.



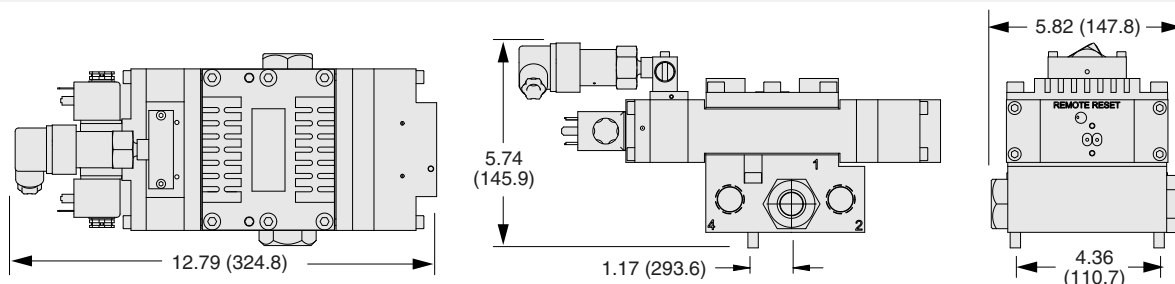
Solenoid Pilot Controlled Valves

DIMENSIONS

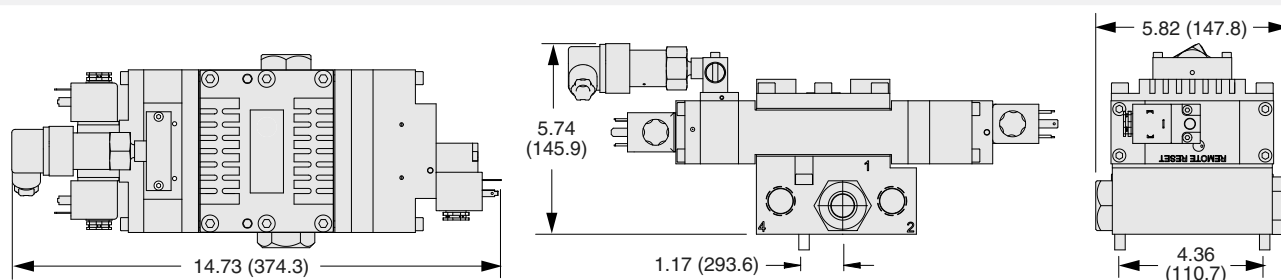
Inches (mm)

Basic Size 2 – Valve and Base assembly

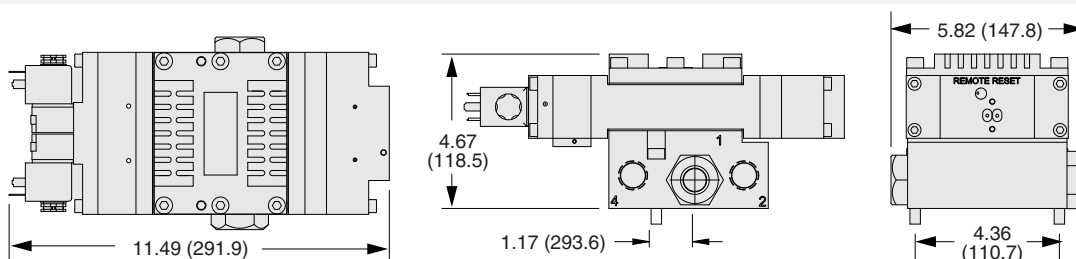
with remote reset and with status indicator switch



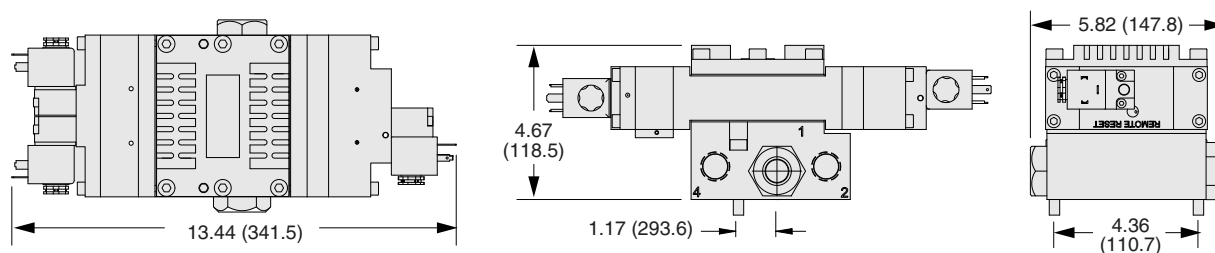
with solenoid reset and with status indicator switch



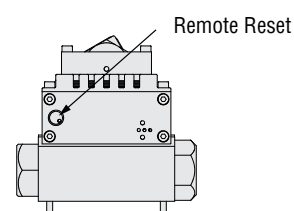
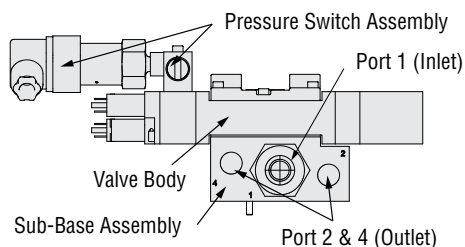
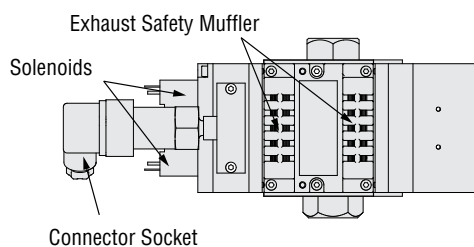
with remote reset and without status indicator switch



with solenoid reset and without status indicator switch



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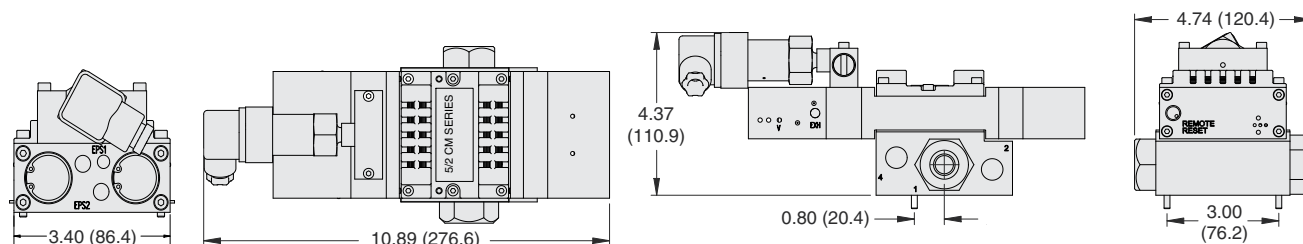
Pressure Controlled Valves

DIMENSIONS

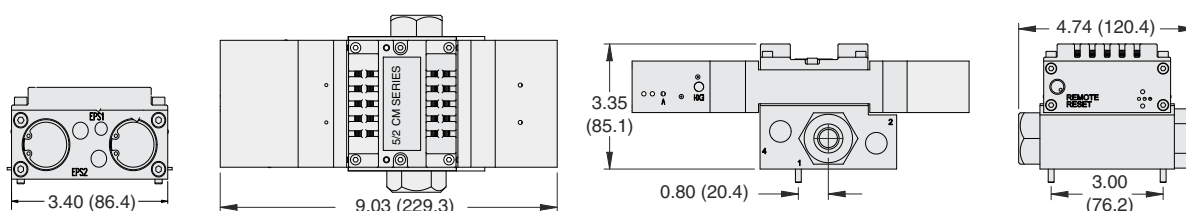
Inches (mm)

Basic Size 0 – Valve and Base assembly

with remote reset and with status indicator switch

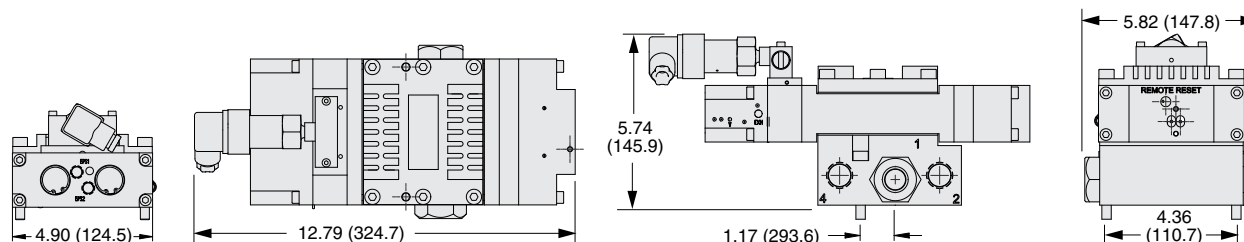


with remote reset and without status indicator switch

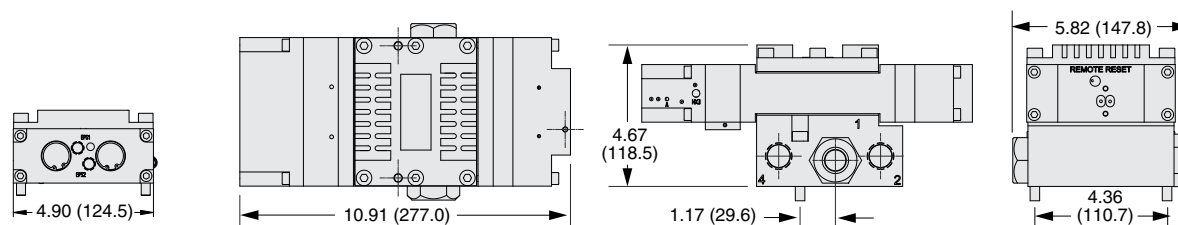


Basic Size 2 – Valve and Base assembly

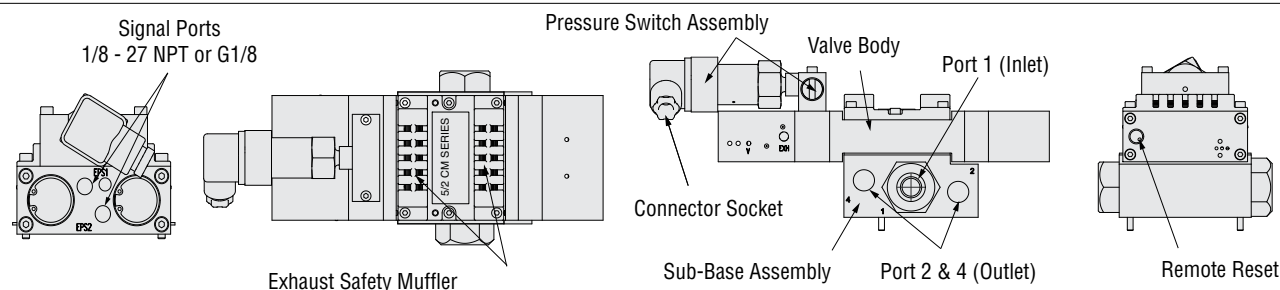
with remote reset and with status indicator switch



with remote reset and without status indicator switch



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Manifold Bases and End Stations

DIMENSIONS		Inches (mm)
Manifold Base for Basic Size 0		
Technical drawings of the Manifold Base for Basic Size 0. The front view shows a square base with a width of 3.66 (93.0) and a height of 3.60 (91.4). The side view shows a height of 1.70 (43.2) and a width of 3.60 (91.4). The top view shows a width of 3.66 (93.0) and a height of 3.00 (76.2). The bottom view shows a width of 3.66 (93.0) and a height of 3.00 (76.2). The side view also shows a width of 1.05 (26.7) and a height of 0.70 (17.8). The top view also shows a width of 1.83 (46.5) and a height of 0.80 (20.4).		
Manifold Base for Basic Size 0		
Technical drawings of the Manifold Base for Basic Size 0. The front view shows a square base with a width of 4.82 (122.4) and a height of 5.02 (127.5). The side view shows a height of 2.36 (59.7) and a width of 4.82 (122.4). The top view shows a width of 4.82 (122.4) and a height of 4.36 (110.7). The bottom view shows a width of 4.82 (122.4) and a height of 4.36 (110.7). The side view also shows a width of 1.10 (28.1) and a height of 1.58 (40.0). The top view also shows a width of 0.98 (24.8) and a height of 2.41 (61.2).		
End Station		
For Basic Size 0	For Basic Size 2	
Technical drawings of the End Station for Basic Size 0. The front view shows a square base with a width of 1.90 (48.3) and a height of 3.66 (93.0). The side view shows a height of 1.70 (43.2) and a width of 1.90 (48.3). The top view shows a width of 1.90 (48.3) and a height of 1.70 (43.2).	Technical drawings of the End Station for Basic Size 2. The front view shows a square base with a width of 3.24 (82.3) and a height of 4.82 (122.4). The side view shows a height of 1.30 (33.0) and a width of 3.24 (82.3). The top view shows a width of 4.82 (122.4) and a height of 2.35 (59.7).	
End Station with Check Valve		
For Basic Size 0	For Basic Size 2	
Technical drawings of the End Station with Check Valve for Basic Size 0. The front view shows a square base with a width of 2.47 (62.7) and a height of 3.66 (93.0). The side view shows a height of 0.57 (14.5) and a width of 1.90 (48.3). The top view shows a width of 1.90 (48.3) and a height of 1.70 (43.2).	Technical drawings of the End Station with Check Valve for Basic Size 2. The front view shows a square base with a width of 2.88 (73.0) and a height of 3.24 (82.3). The side view shows a height of 0.50 (12.7) and a width of 2.38 (60.3). The top view shows a width of 4.82 (122.4) and a height of 2.35 (59.7).	
For additional information, and to assist you with piping and connectivity designs, our products are available in downloadable 2D drawings and 3D CAD models in a wide range of options including native formats, visit www.rosscontrols.com .		

EU declaration of conformity

(Original Version)

This declaration of conformity is issued under the sole responsibility of the manufacturer

ROSS® double valve series **CM26** is in full accordance with the following Directives:

Machinery Directive 2006/42/EC

Applied harmonized standards:

EN ISO 13849-1: 2015: Safety of Machinery- Safety related parts of a control system -Part 1
 EN ISO 13849-2: 2012: Safety of Machinery- Safety related parts of a control system -Part 2
 DIN EN 62061: 2021: Safety of machinery – Functional safety of safety-related electrical, electronic, and programmable electronic control systems (as applicable)
 EN ISO 16092-1:2018 Machine tools safety - Presses - Part 1: General safety requirements
 ISO 16092-4:2019-11 Machine tools safety - Presses - Part 4: Safety requirements for pneumatic presses
 EN 60204-1: 2018: Safety of Machinery- Electrical equipment of machines -Part 1
 EN ISO 4414: 2010-11: Pneumatic Fluid Power
 General Rules and Safety Requirements for Pneumatic Systems and their Components

Tested in accordance to: GS-IFA-M07:2021-03 (as applicable)

Authorized person for the compilation of technical documentation:

Dietrich Warmbier, ROSS EUROPA GmbH, Robert-Bosch-Straße 2, 63225 Langen / Germany

Certification Body for Type Testing:

DGUV Test Prüf- und Zertifizierungsstelle Hebezeuge, Sicherheitskomponenten und Maschinen Fachbereich Holz und Metall
 Arcadiastraße, 8, 40472 Düsseldorf, Tel.: 0211 8224-16910, E-Mail: ge-hsm.fzhm@bghm.de
 Notified Body within the European Union, ID-No.: 0393

Certificate number: HSM 15026

Ferndale, MI, 2022-10-25

Signed for and on behalf of ROSS®



Dietrich Warmbier
Global Safety Product Manager

subject to change, actual version on request

www.rosscontrols.com

ROSS CONTROLS®

950 Woodward Heights, Ferndale, MI 48220
 Telephone: 248-764-1800

UKCA declaration of conformity

(Original Version)

This declaration of conformity is issued under the sole responsibility of the manufacturer

ROSS® double valve series **CM26** is in full accordance with the following Directives:

SI 2008 No. 1597

Supply of Machinery (Safety) Regulations 2008

Applied harmonized standards:

BS EN ISO 13849-1: 2015: Safety of Machinery- Safety related parts of a control system -Part 1
 BS EN ISO 13849-2: 2012: Safety of Machinery- Safety related parts of a control system -Part 2
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Authorized person for the compilation of technical documentation:

David, Wright, ROSS Pneumatrol Limited, West End Business Park, Blackburn Road, Oswaldtwistle, Accrington, BB5 4WZ U.K.

Ferndale, MI, 2022-10-25

Signed for and on behalf of ROSS®



Dietrich Warmbier
Global Safety Product Manager

subject to change, actual version on request

www.rosscontrols.com

ROSS CONTROLS®

950 Woodward Heights, Ferndale, MI 48220
 Telephone: 248-764-1800

Package Contents

- Items included:
- CM26 Series valve
 - Operating instructions

1. About this Documentation

These instructions contain important information for the safe and appropriate assembly and commissioning of the product.

- ▶ Read these instructions all the way through, particularly section 2. "Notes on Safety", before working with the product.
- ▶ Make these operating instructions available to the engineer and assembly technician of the machine/system in which the product will be used.
- ▶ Keep these operating instructions for the entire product life cycle.

Additional documentation:

- SISTEMA libraries
- DGUV certificate: German Social Accident Insurance
- Product catalog and other technical documents

For more information visit www.rosscontrols.com.

- ▶ In addition, observe all applicable local and national regulations on accident prevention and on environmental protection.

1.1. Warning Notices in these Operating Instructions

In these operating instructions, warning notices precede sections with handling requirements which incur risks of personal injury or material damage.

Warnings are structured as follows:



SIGNAL WORD

Type or source of hazard!

Consequences

- ▶ Measures to avert danger

- **Warning triangle:** Indicates a risk of fatal or severe injuries.
- **Signal word:** Indicates the severity of the danger.
- **Type or source of hazard:** States the type of danger or the source of the hazard.
- **Consequences:** Describes possible consequences of ignoring the warning.
- **Measures to avert danger:** Indicates how to avoid the danger. It is essential that the measures to avert danger are complied with.

DANGER	Indicates an imminent and serious danger that will result in severe or even fatal injury if you fail to avoid it.
WARNING	Indicates a possible danger that could result in severe or even fatal injury if you fail to avoid it.
CAUTION	Indicates a danger that may result in minor to moderate injuries if you fail to avoid it.
ATTENTION	Indicates potential property damage that may be incurred by the product or its surroundings if you fail to avoid it.

2. Notes on Safety

The product has been manufactured according to the accepted rules of current technology.

There is risk of injury or damage if the following safety instructions and warnings given in this instruction manual are not observed.

2.1. Intended Use

The CM26 Series of double valves are safety components designed and manufactured in accordance with Machinery Directive 2006/42/EC and bear the CE and UKCA mark. The CM26 Series line of double valves are redundant 5/2 valves that are designed to meet the needs and requirements of Safe Return

Cylinder/Actuator (5/2 valves) applications for machinery with pneumatic controls. Typically, these valves are implemented to meet the Category 4 and/or Performance Level e requirements of a machine's (or system's) safety circuit as determined by a risk assessment of the hazards and tasks required of employees that interact with the machine/system.

- ▶ See section 3 "Technical Data" for the standards and test values complied with and adhered to by the product. See the declaration of conformity for product-relevant directives. The 5/2 CM26 Series valves are designed to control the direction of

air flow into and out of a double-acting cylinder or other pneumatic actuator in order to drive the cylinder forward or backward to suit the requirements of the machine operation. However, the CM26 Series does this with the same level of control expected of the machine's system's safety circuit. The safety function of the CM26 Series valve is to return the cylinder/actuator to its home "safe" position whenever a fault occurs within the valve.

NOTE: Maintenance tasks require following full lock-out/tag-out procedures to relieve hazardous energy and prevent unexpected startup.

2.1.1. Safety Function According to ISO 13849

The CM26 Series valves are designed in accordance with the requirements listed in ISO 13849-1 and -2. Their "fail-to-safe" safety function is ensured even in case of a fault within the valve (e.g., caused by wear, contamination, or similar situations).

The safety function of the 5/2 CM26 Series valve is to drive a double-acting cylinder or other pneumatic actuator forward when the two valve elements are actuated simultaneously, but to drive the cylinder or other actuator back to its home "safe" position when both valve elements are shut off or if only one of the two valves is actuated. A fault in the system where only one valve actuates when switching on or only one de-actuates when shutting off causes the CM26 Series valve to supply air to port 2 of the valve and to simultaneously open port 4 to exhaust (port 5). This, in turn, causes the cylinder or other actuator to return to its home "safe" position.

In the event of loss of air pressure at the inlet port a check valve (may be removed on customer request) is installed to trap the downstream air, a small bleed orifice slowly relieves the trapped air

Attention: There may be some movement because of gravity or pressure balance, while the air will be vented via the bleed orifice

The CM26 Series valves feature additional Memory (fault memory) and reset functions.

The CM26 valves are self-testing, redundant systems in accordance with the requirements listed in ISO 13849-1 and -2.

The control outputs of the safety system must be designed and constructed to meet the Category and/or Performance Level requirements of the safety system, as determined by the risk assessment of the machine. Normally, the outputs to the solenoids are dual-channel outputs from a safety relay or safety PLC.

2.1.2. Common Cause Failure – CCF

The product has been engineered and manufactured according to the fundamental and proven safety principles of ISO 13849-1 and -2.

Critical failure modes and causes:

- Failure of the safety function - caused by simultaneous incomplete return of both solenoid valves (A and B).
- Common Cause Failures (CCF) are failures of different components, resulting from a single event. CCF are not to be confused with cascading faults or common mode faults. Common cause failures can cause loss of the safety function, especially in dual channel circuits where both channels could fail simultaneously due to a single event.
- Maintain compressed air quality, i.e., filtration, pressure regulation,.
- Avoid oils that can cause valve seals to swell, soften, or otherwise deteriorate.
- Operating outside of prescribed temperature limits.
- Install the valve such that the normal stroke travel of the valve elements are perpendicular to the main direction of machine vibration and/or mechanical shock.
- Do not use a test pulse longer than allowed by the Technical Specifications.
- Avoid external magnetic fields.
- Do not plug the valve exhaust port.
- Use only high-flow, non-clogging silencers, with similar or higher specifications as ROSS® silencers.

2.1.3. Diagnostic Coverage

A diagnostic coverage of 99% is achievable through appropriate integration of the CM26 Series valve into the safety control system.

WARNING: In the event of loss of pressure during a fault could cause unexpected movement of a cylinder that is being controlled by the valve.

2.1.4. Foreseeable Misuse



WARNING

Risk of Injury!

Misuse may result in injury or damage.

- ▶ The product must be used exclusively as intended.

The product must be used exclusively as intended.

Foreseeable misuse includes:

- Use outdoors
- Bypassing the safety function or diagnostics
- Operation in low-demand mode per IEC 61508
- Operating at pressures below minimum operating pressure or above maximum operating pressure.

ROSS CONTROLS is not liable for any damages resulting from improper use.

The user alone bears the risks of improper use of the product.

2.2. Responsibilities of the System Owner

- Observe the information on assembly and operating conditions listed in the operating instructions, or the data sheet.
- Comply with the further requirements of ISO 13849 (e. g., CCF, DC, PLr, software) if you intend to use the product in higher categories (2 to 4).
- Make sure that the maximum number of switching cycles (B_{10D}) within the service life TM is not exceeded. If the expected number of switching cycles for a component exceeds the B_{10D} value during its period of use, suitable replacement intervals have to be specified.
- Switch the valve at least once a month to ensure its proper operation.
- Make sure that the fundamental and proven safety principles in accordance with ISO 13849 for implementation and operation of the component are complied with.
- Make sure that the permissible switch-on and switch-off pulses for feedback-free operation of the pneumatic devices are observed.
- If you operate the CM26 Series valve together with an electric two-hand control, it must comply with the ISO 13851 standard. Selection and installation of this two-hand control must take place in accordance with the manufacturer's specifications.

2.3. Safety Instructions

- When implementing surge suppression measures, be sure to check whether or not this extends the valve shut off response time which could extend the machine stopping time.
- In case of high levels of machine vibration, use appropriate vibration-reducing elements when installing the valve.
- Supply the proper voltage - under-/ overvoltage situations can result in solenoid burnout or failure.
- Make sure that the silencer's flow capacity is not restricted as this could affect system performance.
- If required, replace the silencer with a model equivalent or higher in specifications as ROSS® silencers.

3. Technical Specifications

Function		5/2 Normally Closed Valve	
Construction Design		Dual Spool	
Actuation	Electrical	Solenoid pilot operated with spring and air return. One solenoid per valve element – both to be operated synchronously.	
	Pneumatic	Air actuated pilots operated with spring and air return. One air-pilot per valve element – both to be operated synchronously.	
Mounting	Type	Base; Manifold	
	Orientation	Any, preferably vertical	
Connection		Threaded; NPT, G	
Monitoring		Dynamic, cyclic, internal – with any change in switching state and in any switching state.	
Temperature		Ambient	40° to 175°F (4° to 80°C)
		Media	
Flow Media		Compressed (neutral gases) air according to ISO 8573-1 Class 7:4:4.	
Operating Pressure		Solenoid Pilot	40 to 150 psig (2.7 to 10 bar)
		Pressure Controlled	
		NOTE: Main solenoids must be off when performing reset procedure	

Solenoids Electrical Data		Operating Voltage	Valve Basic Size	Power Consumption (each solenoid)
		24 volts DC	0	1.5 watts
			2	5.8 watts nominal, 6.5 watts maximum
		110-120 volts AC, 60 Hz	0	1.7 watts
		110-120 volts AC, 50/60 Hz	2	5.8 watts nominal, 6.5 watts maximum
		230 volts AC 50 Hz, 240 volts AC, 60Hz	0	5.0 VA
			2	5.8 watts nominal, 6.5 watts maximum
Rated for continuous duty				
Supply Voltage		For CSA/UL compliance, in DC applications the valve must be connected to a NEC Class 2 power supply.		
Enclosure Rating		IP65, IEC 60529		
Electrical Connection		Valve Basic Size	DIN EN 175301-803	
		0	Form C	
		2	Form A	
		Receptacles on the valve		
Pressure Switch Current/Voltage		Solenoid Pilot Controlled	5 amps at 30 volts DC	
			5 amps at 250 volts AC	
		Pressure Controlled	0.1 A, 125/250 volts AC; 0.1 A, 30 volts DC; 0.3 A, 60 volts DC	
			Pressure Switch signal indicates when the input signals or parts movement is asynchronous.	
Pressure Switch Rating		Rated in excess of 15 million cycles; electrical life of switch varies with conditions and voltage		
Safety Classification	Directives	2006/42/EC (Machinery Directive) 2004/108/EC (EMC directive)		
	Standards	ISO 13849-1, IEC61508/IEC62061, DIN EN 61326-3-1		
	Category	Max. 4, PL e, SIL 3.		
Vibration resistance (DIN EN 60068-2-6)		0.35 mm ± 0.05 mm displacement at 10 Hz–55 Hz		
Shock Test (based on DIN EN 60068-2-27)		Acceleration		30 G
		Shock Duration		18 ms
		Shock Waveform		1/2-sine
B _{10D} Valve		According to ISO 13849-1 and -2: 20 million cycles		
Maximum Cycle Rate		2 Hz		
Common Cause Failure (CCF)		> 65		
Diagnostic Coverage (DC)		99%		
Sound Pressure Level [dB(A)]		The sound pressure level is influenced by the individual systems used for reduction of noise emissions. Use only silencers with exhaust flow capability greater than the exhaust capability of the CM26 Series valve, e.g., do not restrict the valve exhaust. Use of the product without the silencer is not recommended. Flow Rates: See page 3.		
Minimum Operation Frequency		Once per month, to ensure proper function.		

4. Prerequisites for Use of the Product

Make these operating instructions available to the engineer and assembly technician of the machine/system in which the product will be used.

Keep these operating instructions for the entire product life cycle.

ATTENTION

Qualified Personnel – Assembly, installation, commissioning, maintenance, and decommissioning should only be carried out by qualified personnel that have the required knowledge of and experience in dealing with electrical and pneumatic control technology.

5. Assembly and Installation**CAUTIONS****Risk of injury due to installation while pressurized or with live parts!**

Installation while pressurized or with electrical power switched on can result in injuries due to sudden pressure build-up or electric shock.

- De-energize and de-pressurize the relevant system parts before installing the valves.
- Secure the system to prevent it being switched back on again.

ATTENTION**Destruction of components!**

Chemical substances can damage the surface, the markings and the seals of the device.

- Install the valve such that it is protected against the effects of chemicals.

Damage to the device through storage at incorrect temperatures!

The ambient temperature represents the permissible storage temperature and depends on the type of valve in question.

- Observe the temperature information in chapter 3 "Technical Specifications."

5.1. Mechanical Installation

Secure the valve using the through holes in the valve base. Refer to pattern for the required dimensions, see dimensional drawings on page 4 through 8.

5.2. Pneumatic Installation**5.2.1. Electrically-actuated**

CM26 Series Valve for Safe Return Cylinder/Actuator – Connect the compressed air supply to port 1, connect ports 2 & 4 to the pneumatic actuator, port 3 and 5 are the exhaust ports.

5.2.2. Pneumatically-actuated

CM26 Series Valve for Safe Return Cylinder/Actuator – Connect the pneumatic pilot signals to the signal ports, the compressed air supply to port 1, connect ports 2 & 4 to the pneumatic actuator, port 3 and 5 are the exhaust ports. Signal ports 1 & 2 needs to be connected to the outputs of the two-hand control or the outputs of other valves used to control the CM26. The control valves shall be 3/2 NC valves.

Reset Port (RESET)

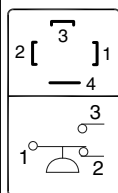
If your valve is not equipped with a reset solenoid on the valve, then the RESET port should be supplied, externally, from a 3/2 normally closed valve. Reset signals must be momentary.

5.3. Electrical Connections

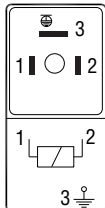
Valve Basic Size 0: Electrical connections to the solenoids are made with EN 175301-803 Form C receptacles on the valve.

Valve Basic Size 2: Electrical connections to the solenoids are made with EN 175301-803 Form A receptacles on the valve.

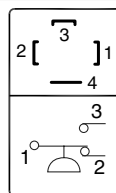
The cables and cable connections as well as the electrical control for the double valves must comply with the applicable safety regulations.

Solenoid Pinouts**DIN EN 175301-803 Form A**

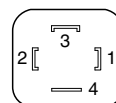
- 1 - Positive
- 2 - Negative
- 3 - Ground

DIN EN 175301-803 Form C

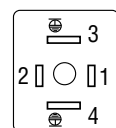
- 1 - Positive
- 2 - Negative
- 3 - Ground

Pressure Switch Pinout**DIN EN 175301-803 Form A**

- 1 - Common
- 2 - Normally Closed
- 3 - Normally Open
- 4 - Ground (Not Used)

Connector Pinouts**DIN EN 175301-803 Form A**

- 1 - Black
- 2 - Black
- 4 - Green/Yellow (Ground)

DIN EN 175301-803 Form C

- 1 - Brown
- 2 - Blue
- 3 - Green/Yellow (Ground)
- 4 - Green/Yellow (Ground)

6. Commissioning and Operation**CAUTIONS****Damage to health due to loud noise!**

Levels above 70 dB(A) may lead to damage to health!

- Always wear ear protectors when working on the product.

Before commissioning, the installation has to be carefully inspected by a qualified, trained professional.

Make sure that the technical specifications matches the operating criteria of the machine and/or the pneumatic system.

Always set the compressed air supply to a level that ensures that the minimum operating pressure is adhered to (see chapter 3 "Technical Specifications").

6.1. Test Procedure

For pneumatically actuated version: Solenoid = Signal Port

6.1.2. CM26 Valves for Safe Return Cylinder/Actuator Application

1. Solenoid A energized – Valve is faulted, port 2 is pressurized, port 4 is exhausted through the built-in silencer. Status-indicator feedback has to change
2. Reset valve by de-energizing both solenoids and energizing the reset solenoid – Valve is off, port 2 is pressurized, port 4 is exhausted Status-indicator feedback has to change
3. Solenoid B energized – Valve is faulted, port 2 is pressurized, port 4 is exhausted through the built-in silencer. Status-indicator feedback has to change
4. Reset valve by de-energizing both solenoids and energizing the reset solenoid – Valve is off, port 2 is pressurized, port 4 is exhausted . Status-indicator feedback has to change
5. Solenoids A & B energized – Valve is on, port 4 is pressurized, port 2 is exhausted through port 3. Status-indicator feedback is not changing
6. Solenoids A & B de-energized – Valve is off, port 2 is pressurized, port 4 is exhausted. Status-indicator feedback is not changing

Failure of the valve to shift not synchronously leads to a fault in the CM26 Series valve.

This could happen for a variety of reasons, such as:

- Defective piston seals,
- Main valve elements experiencing a switching delay due to dirt or resinous oil,
- Insufficient electrical signals to valve solenoids; suitable voltage not available,
- Receipt of signals at solenoids not synchronous,
- Pilot valves experiencing a switching delay due to damaged components, dirt, or resinous oil,
- Excessive water build-up in the valve.

7. Maintenance

- ▶ If used properly, the CM26 valves will not require maintenance. Unless otherwise required, ROSS® recommends performing a functional test at least once a month.

8. Service & Repair

- ▶ In case of technical problems or a required repair, please contact your local ROSS representative. If used properly, the CM26 Series valves will not require maintenance.

9. Disconnecting and Removal



CAUTIONS

Risk of injury due to disconnecting while pressurized or with live parts!

Disconnecting while pressurized or with electrical power switched on can result in injuries or death due to sudden pressure release, unexpected movement, or electric shock.

- ▶ De-energize and de-pressurize the relevant system parts before disconnecting the valve.
- ▶ Isolate and lock out the system to prevent it from being switched back on again before disconnecting the valve.

10. Disposal

Dispose of the valve in accordance with the applicable statutory regulations in your country.



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