

DM²® Series C Double Valves Frequently Asked Questions



What DIN connectors are included?

The DM²® Series C Safety valves do not include DIN connectors on the (2) valve solenoids and (1) reset solenoid. The Status Indicator Switch, however, does include a 4 pin DIN connector (without cable) that can be field wired.

What is the recommended cord-set for interfacing with a DM²® Series C valves?

Wiring kits with complete sets of cords are available from ROSS®. The most common kit would be the 2283H77 with 5 meter cords or 2284H77 with 10 meter cords. These kits include three cables for the solenoids and one cable for the status indicator. These two kits come with DIN type receptacles (43650-A) pre-wired onto the solenoid cables. , M12 Micro-DC connector type also available. Please see Pre-assembled Wiring Kits for more information, and other wiring options. You can also choose from the following individual connector/cord sets.

The part number 720K77 cord-set is a 2 meter, 3 conductor cord with lighted DIN connector that will interface with the valve solenoids (2 required), reset solenoid (1 required) and status indicator switch (1 required), provided that the Normally Open (NO) output on the status indicator is not required for the application.

720K77-W or -Z cord-set wiring designations: Terminal 1 - White Wire Terminal 2 - Black Wire
Ground symbol terminal - Green wire Terminal 3 - not used



The status indicator (pressure) switch terminal designations:

Terminal 1 - common

Terminal 2 - Normally Closed contact (Normally Open contact held closed with normal operation and inlet pressure within specifications)

Terminal 3 - Normally Open contact (Normally Closed contact held open with normal operation and inlet pressure within specifications)

Ground symbol terminal - not used

NOTE: 720K77-W or -Z will properly interface with the status indicator (pressure) switch but utilizes only the common and Normally Closed contacts. If your designs must incorporate the Normally Open contact as well, you will require a 4 conductor cord-set for the fault indicator pressure switch. Most applications only require the Normally Closed contacts to indicate “ready-to-run” state.

Electrical Connectors	Electrical Connector Form	Electrical Connector Type	Cord Length meter (feet)	Cord Diameter	Electrical Connector Model Number		
					Without Light	Lighted Connector	
						24 Volts DC	120 Volts AC
	DIN 43650 Form A	Prewired Connector (18 gauge)	2 (6 1/2)	6-mm	721K77	720K77-W	720K77-Z
	DIN 43650 Form A	Prewired Connector (18 gauge)	2 (6 1/2)	10-mm	371K77	383K77-W	383K77-Z
	DIN 43650 Form A	Connector for threaded conduit (1/2 inch electrical conduit fittings)	-	-	723K77	724K77-W	724K77-Z
	DIN 43650 Form A	Connector Only	-	-	937K87	936K87-W	936K87-Z

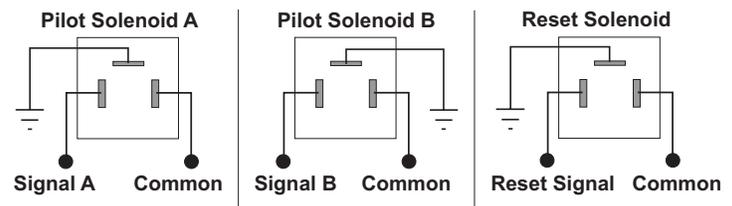
CAUTIONS: Do not use electrical connectors with surge suppressors, as this may increase valve response time when de-actuating the solenoids.

Wiring Diagram:

Pilot Solenoids - Should be fired simultaneously from separate channels to operate the valve normally.

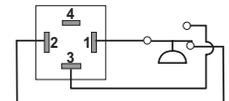
Terminals 1 and 3 are connected when air pressure is present and the valve is “Ready-to-Run.” If a fault has occurred or pressure is removed from the valve inlet, terminals 1 and 2 are connected.

In the event of a fault, remove power from Pilot Solenoids A & B, then momentarily energize the Reset Solenoid to return the valve to the “Ready-to-Run” state. Wait at least 250 ms after removing power from the reset solenoid before trying to re-energize the Pilot Solenoids.



Status Indicator Switch

Pin 1: Common
Pin 2: Normally Closed
Pin 3: Normally Open
Pin 4: Not used



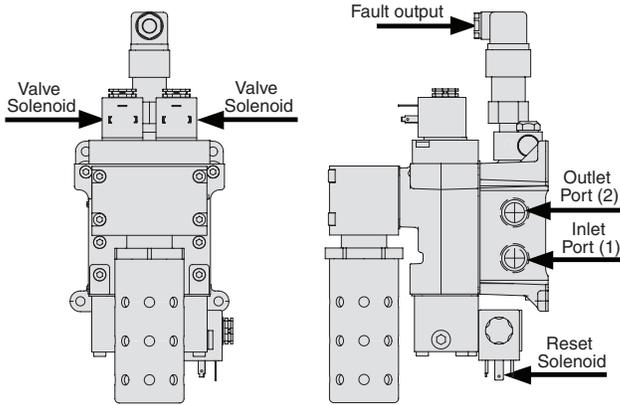
What are the maximum low ratings and solenoid ratings?

DM²® Series C redundant self-monitored valves with 24 volt DC solenoids, valve status indicator switch, solenoid reset, sub-plate, and silencer.

What are the mounting restrictions for the DM²® Series C valves?

There are no mounting restrictions, but it is preferred that the valve be mounted vertically with the valve solenoids up or horizontally with the valve on top of the base. The base provides inlet and outlet ports on both sides for plumbing convenience.

Port Size	Valve Basic Size	Reset Solenoid DC Rating	Valve Solenoid DC Rating	Cv In-Out
1/4	2	5.8 watts	5.8 watts	1.34
3/8	2	5.8 watts	5.8 watts	1.92
1/2	4	5.8 watts	5.8 watts	3.2
3/4	8	6.0 watts	15.0 watts	4.4
1	8	6.0 watts	15.0 watts	4.4
1	12	5.8 watts	5.8 watts	8.5
1½	30	5.8 watts	5.8 watts	22



What are the locations of the connectors and ports?

There are inlet (1) and outlet (2) ports on both the left and right sides of the base for plumbing and mounting convenience. Plugs are supplied with the valve, but both outlet ports can be used or one port can be used to mount a pressure switch or other minimum pressure indicator device used for normal operations.

When and why does the valve require a reset signal?

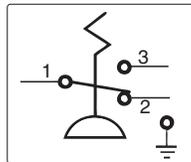
The valve will only require a reset when the valve has detected asynchronous movement of the two independent internal elements. This condition will be indicated by a fault signal from the pressure switch feedback device and an audible leak from the silencer. Reset is accomplished by applying a momentary signal to the reset solenoid. The DM² Series C valves have an anti-tie-down feature that requires both main valve solenoids to be de-energized while resetting.

Why will my valve not reset?

1. There are a few common conditions that can prevent reset from occurring.
2. If the main valve solenoids are energized the valve will not reset. This is a safety feature of the DM² Series C valves that prevents unintended pressure output from occurring upon valve reset. There should be at least a 200 ms delay between removing power from the reset solenoid and applying power to the main valve solenoids.
3. If the pneumatic supply to port 1 is not sufficient the valve will not reset. This is not unusual for initial testing and startup if full plant pressure and volume is not applied and quick connects or small hoses are used.
4. If the supply pressure was removed before de-energizing the valve it is possible that both valve elements are in the faulted condition. This condition results in a greater leakage rate to the exhaust port when the supply is reapplied, and increases the insufficient supply issue mentioned in item #2.
5. The reset solenoid may be mounted backwards. In this case energizing the reset solenoid will result in the release of air through the reset solenoid's exhaust port (through the nut mounted on the stem of the solenoid) and no reset action can occur.

What is the recommended pressure switch for detecting zero energy state?

6. The 586A86 Pressure Switch (not to be confused with the Status Indicator Switch) is recommended for use on the outlet or downstream side of the valve to assist with verification of pressure release before allowing entrance into a potentially hazardous area per ANSI B11.Z244. Please be aware of any potential trapped energy due to closed center valves, etc. The set-point of the 586A86 pressure switch is 5 psi (falling).



Solenoid and Status Indicator Switch Operation Chart

	Solenoids	Valve Element		Status Indicator		
		A	B	P	Terminal 1-2	Terminal 1-3
Normal Operation	OFF	X	X	Pressure	X	O
	ON	O	O	Pressure	X	O
Fault	OFF	X	X	No Pressure	O	X
	ON	X	X	No Pressure	O	X
No inlet air pressure	OFF	X	X	No Pressure	O	X
	ON	X	X	No Pressure	O	X

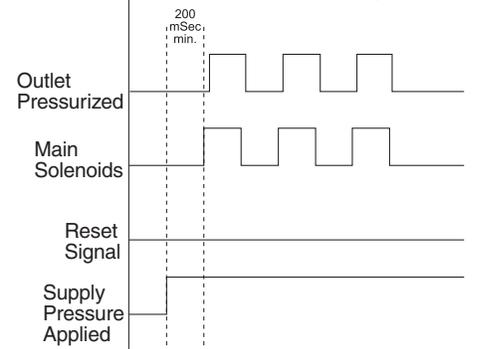
X: No flow to valve outlet
O: Flow to valve outlet

X: non passing
O: passing

Switch shown with no pressure

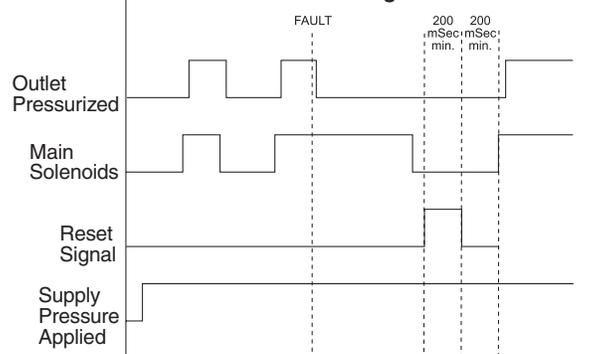
OFF Check ---
If inlet air is OFF pressure switch contacts 1 and 2 are passing
If inlet air is ON pressure switch contacts 1 and 3 are passing

DM² Operation Timing Chart



1. Operating signal to main solenoids should be dual channel, concurrent operation. Discordance of signals should be less than 25 msec.
2. Turning off supply pressure while valve is energized will result in a fault and then valve must be reset.
3. Fault detection is constant.

DM² Reset Timing Chart



1. Reset anti-tie-down feature requires main solenoids to be off during reset.
2. Reset duration is momentary - 200 msec. min. recommended.
3. At end of reset signal, time is required for pilot chambers to refill before operation - 200 msec. recommended.
4. Fault detection is constant.
5. Turning off supply pressure while valve is energized will result in a fault and then valve must be reset.



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