



## ROSS CONTROLS *DM*<sup>2</sup>® Safety Valve Frequently Asked Questions

### **What DIN connectors are included?**

The *DM*<sup>2</sup>® valve does not include DIN connectors on the (2) valve solenoids and (1) reset solenoid. The status indicator (pressure) 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 *DM*<sup>2</sup>® valve?**

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. Please see ROSS flyer NPS011 – 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 (2) valve solenoids, (1) reset solenoid and status indicator (pressure) switch providing the N.O. output is not required for the application.

#### 720K77 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 - N.C. contact (N.O. contact held closed with normal operation and inlet pressure within specifications)  
Terminal 3 - N.O. contact (N.C. contact held open with normal operation and inlet pressure within specifications)  
Ground symbol terminal - not used

*NOTE:* 720K77 will properly interface with the fault indication (pressure) switch but utilizes only the common and N.C. contacts. If your designs must incorporate the N.O. contact as well, you will require a 4 conductor cord-set for the fault indication pressure switch. Most applications only require the N.C. contacts to indicate “ready to run” state.



**Additional cord sets:**

**PART NUMBERS of ELECTRICAL CONNECTORS**

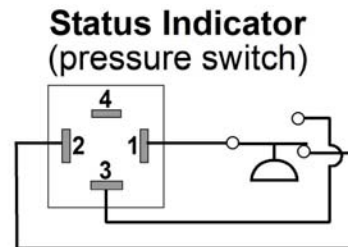
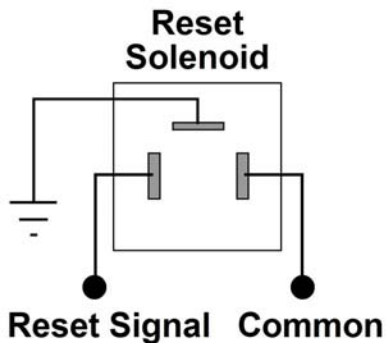
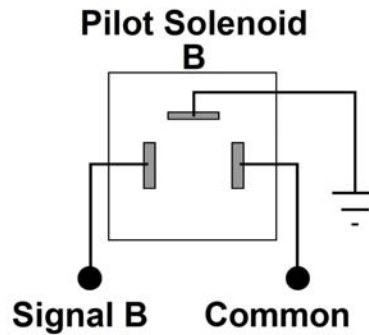
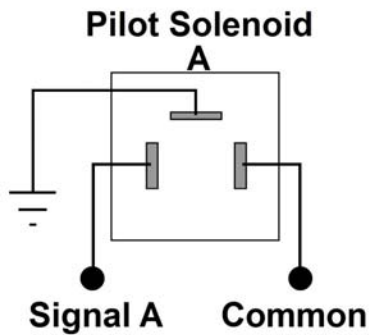
<b>Connector Type</b>	<b>Without Light</b>	<b>With Light*</b>
For use with drop cord (Cord not included)	937K87	936K87
Wired with 6-mm cord	721K77	720K77
Wired with 10-mm cord	371K77	383K77
For use with threaded conduit	723K77	724K77

\* Specify solenoid voltage.

## Wiring Diagram

### Pilot Solenoids

Should be fired simultaneously from separate channels to operate the valve normally



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

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.

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.



### Solenoid and Status Indicator Switch Operation Chart

	Valve Element				Status Indicator	
	Solenoid	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 outlet  
O: Flow to 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



## What are the maximum flow ratings and solenoid ratings?

DM<sup>2</sup>® C and E redundant self-monitored valves with 24 volt dc solenoids, valve status indicator switch, yellow, solenoid reset, sub-plate, and muffler.

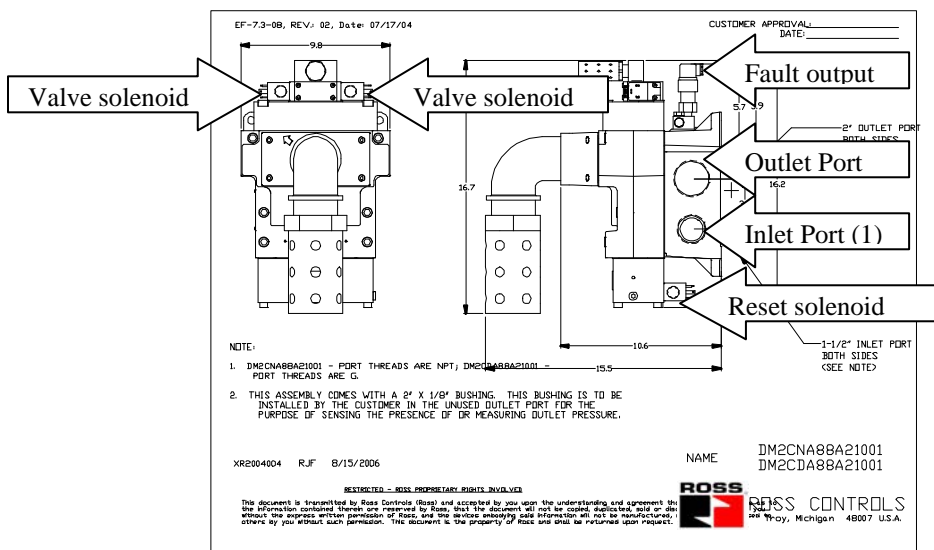
	<b>Reset Solenoid DC rating</b>	<b>Valve solenoid DC rating</b>	<b>Cv In-Out</b>	<b>ROSS Controls Model #</b>
1/4" NPT (size 2)	6.0W	6.0W	1.3	DM2ENA20A21
3/8" NPT size 2)	6.0W	6.0W	1.9	DM2ENA21A21
1/2" NPT (size 4)	5.8W	5.8W	3.2	DM2CNA42A21
3/4" NPT (size 8)	5.8W	15W	4.5	DM2CNA54A21
1" NPT (size 8)	5.8W	15W	4.5	DM2CNA55A21
1" NPT (high flow size 12)	5.8W	5.8W	8.9	DM2CNA66A21
1-1/2" NPT (size 30)	5.8W	5.8W	23	DM2CNA88A21

## What are the mounting restrictions for the DM<sup>2</sup>®?

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.

## 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 valve has an anti-tie-down feature that requires both main valve solenoids to be de-energized while resetting.

### **Why will my valve not reset?**

There are a few common conditions that can prevent reset from occurring.

1. If the main valve solenoids are energized the valve will not reset. This is a safety feature of the *DM<sup>2</sup>*® valve 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.
2. 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.
3. 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.
4. 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?**

The 586A86 pressure switch (not to be confused with the Status Indicator Switch) is recommended for use on the downstream side of the valve (between the valve and the work device) 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).

