

NEW

PRODUCT DATA SHEET INFORMATION



DM¹ Series C Double Valves

3/2 Double Valve with Dynamic Monitoring

Control Reliable Energy Isolation

Port Size 1/2, 3/4 & 1

- Rapid response time to minimize stopping time
- Status Indicator switch for valve condition (ready to run) feedback
- Self-contained dynamic monitoring system requires no additional valve monitoring controls
- Highly contaminant tolerant poppet construction
- Base mounted

Applications: Air Dump / Release

Dynamic Monitoring: Monitoring and air flow control functions are integrated into two identical valve elements for CAT 4 applications. The valve exhausts downstream air if asynchronous movement of valve elements occurs during actuation or de-actuation, resulting in a residual outlet pressure of less than 1% of supply. If the abnormality clears itself, the valve will return to the ready-to-run state; there is no memory of the abnormal behavior, as in the ROSS DM²® Series E and DM²® Series C products that require an intentional reset following lockout.

Basic 3/2 Normally Closed Valve Function: Dirt tolerant, wear compensating poppet design for quick response and high flow capacity. PTFE back-up rings on pistons to enhance valve endurance – operates with or without inline lubrication.

Ready-to-run: If an abnormality clears itself upon the removal of electricity to both solenoids, it will be ready-to-run again. It does not remember the abnormality and stay in a locked-out state until intentionally reset. Therefore, cumulative abnormalities may go undetected.

Status Indicator: Includes a pressure switch with both normally open (NO) and normally closed (NC) contacts to provide status feedback to the control system indicating whether the valve is in the “ready-to-run” condition or has experienced abnormal function. MUST be integrated into machine controls in order to prevent run signal until fault is cleared in valve. This indicator only reports status, it is not part of a lockout function.

Silencers: All models include high flow, clog resistant silencers.

Mounting: Base mounted – with BSPP or NPT pipe threads. Inlet and outlet ports on both sides provide for flexible piping (plugs for unused ports included). Captive valve-to-base mounting screws.



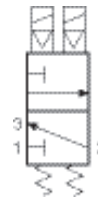
ISO 13849-1:2006
Category 4 PL e
applications



HOW TO ORDER

(Choose your options (in red) to configure your valve model number.)

DM1C	N	A	4	2	A	3	1	
Thread	Revision Level	Body Size	Base Port Size	Automatic Reset Type	Status Indicator	Connection Type		
BSPP D		4 4	4 1/2 inlet – 1/2 outlet 2		Yes 1	DIN 43650 Form A* Blank		
NPT N		8 5	8 3/4 inlet – 3/4 outlet 4		No X	M12 (connector included) 005		
			1 inlet – 1 outlet 5			*See options for connectors or wiring kits.		
			1" exhaust					
				Voltage*				
				24 volts DC A				
				110 volts AC, 50 Hz B				
				120 volts AC, 50/60 Hz B				
				* For other voltages consult ROSS.				



Simplified Schematic

Valve Body Size	C _v		Weight lb (Kg)
	1-2	2-3	
4	3	10	5.9 (2.6)
8	4.4	13	8.4 (3.7)

Explosion proof solenoid pilot available for body size 4 valves, for more information consult ROSS.

This valve is not designed for controlling clutch/brake mechanisms on mechanical power presses, see DM²® series D for mechanical power press applications.

Control Reliable Double Valves with Dynamic Monitoring

DM¹ Series C Valve Technical Data

STANDARD SPECIFICATIONS

Construction: Dual poppet.

Mounting Type: Base mounted.

Pilot Solenoids: According to VDE 0580. Enclosure rating according to DIN 400 50 IP 65. Connector socket according to DIN 43650 Form A. Three solenoids, rated for continuous duty.

Standard Voltages/Pilot Solenoids Power Consumption

(each solenoid):

Body Size 4:

24 volts DC; 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz.

5.8 watts nominal on AC and DC; 6.5 watts maximum on AC and DC.

Body Size 8:

15 watts on DC; 36 VA inrush and 24.6 VA holding on AC.

Enclosure Rating: IP65, IEC 60529.

Electrical Connection: DIN 43650 or M12 Micro-DC.

Ambient Temperature: 15° to 122°F (-10° to 50°C).

Media Temperature: 40° to 175°F (4° to 80°C).

Flow Media: Filtered, lubricated or unlubricated (mineral oils according to DIN 51519, viscosity classes 32-46).

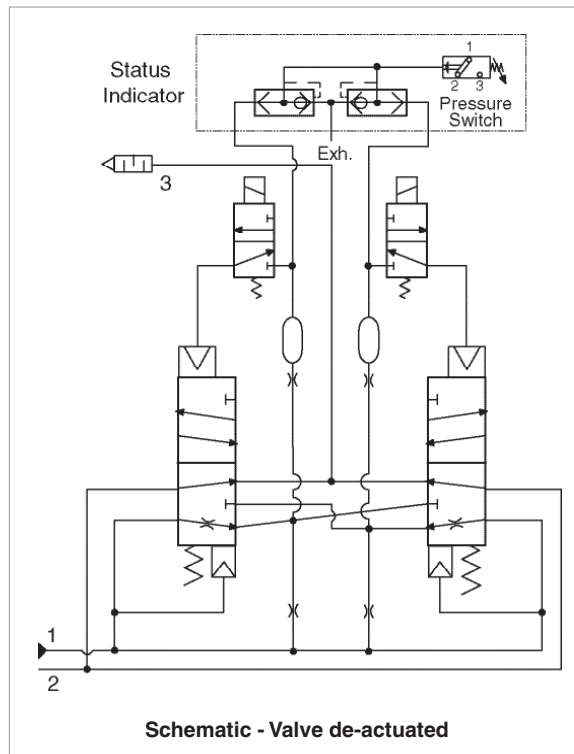
Inlet Pressure: 30 to 120 psig (2 to 8.3 bar).

Pressure Switch (Status Indicator) Rating: Contacts - 5 amps at 250 volts AC, or 5 amps at 30 volts DC.

Monitoring: Dynamically, cyclically, internally during each actuating and de-actuating movement.

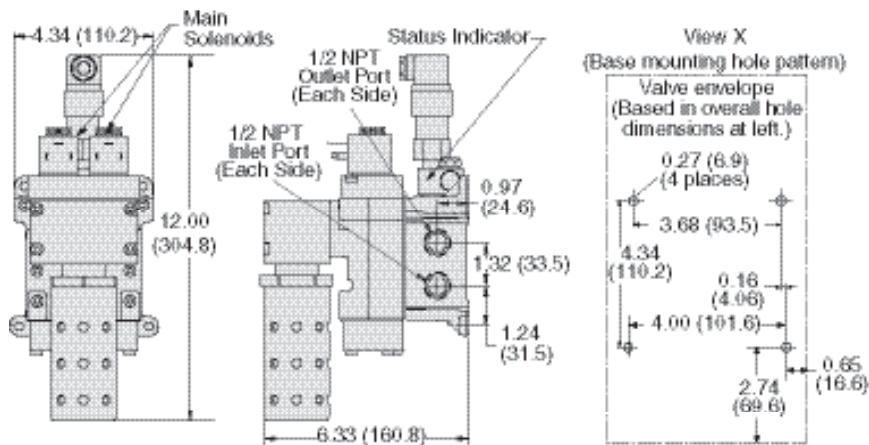
Mounting orientation: Preferably horizontally (valve on top of base) or vertically with pilot solenoids on top.

Product data for Sistema Library users, pending.

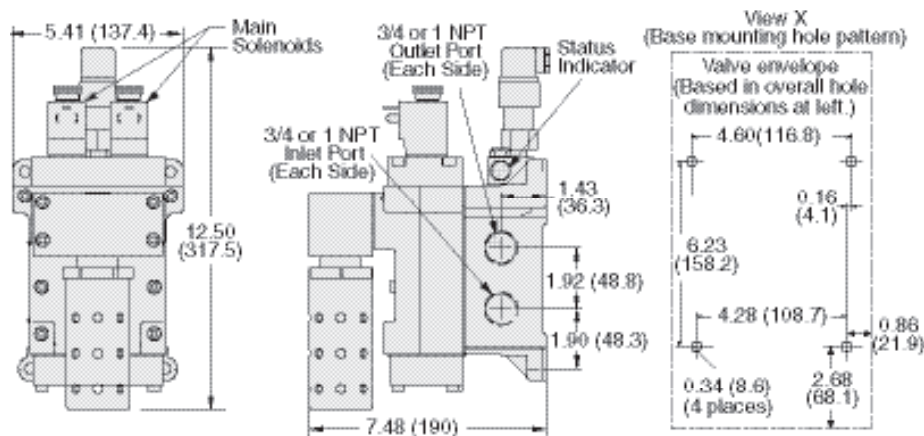


Valve Dimensions – inches (mm)

Body Size 4



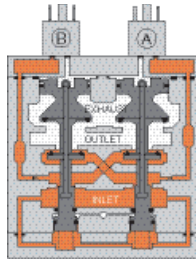
Body Size 8



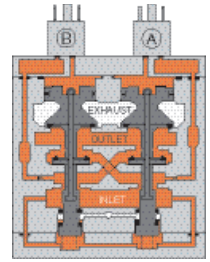
Control Reliable Double Valves with Dynamic Monitoring

DM¹ Series C Valve Operation & Options

Valve de-actuated (ready-to-run): The flow of inlet air pressure into the crossover passages from the inlet chamber is restricted by orifices that allow air pressure to bypass the lower inlet poppets. Flow is sufficient to quickly pressurize the pilot supply/timing chambers on both sides A and B. The upper inlet poppets prevent air flow from the crossover passages into the outlet chamber. Air pressure acting on the inlet poppets and return pistons securely hold the valve elements in the de-actuated position. (Internal air passages shown out of the valve body for clarity.)



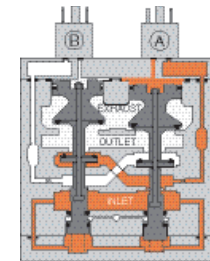
Valve actuated: Energizing the pilot solenoids simultaneously applies pressure to both pistons, forcing the internal parts to move to their actuated position, where inlet air flow to outlet is open and both exhaust poppets are closed. The outlet is then quickly pressurized, and pressure in the inlet, crossovers, outlet, and timing chambers are quickly equalized. De-energizing the main solenoids causes the valve elements to return to the ready-to-run (de-actuated) position.



Asynchronous Operation: If the valve elements operate in a sufficiently asynchronous manner on ACTUATION, the valve will shift into a position where one crossover and its related timing chambers will be exhausted, and the other crossover and its related timing chambers will be pressurized.

In the illustration, side B is in the de-actuated position, but has no pilot air available to actuate with and has full pressure on its upper inlet poppet and return piston to hold it in place.

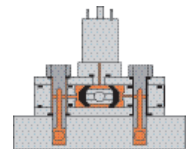
Inlet air flow on side B into its crossover is restricted and flows through the open upper inlet poppet on side A, through the outlet into the exhaust port, and from the exhaust port to atmosphere. Residual pressure in the outlet is less than 1% of inlet pressure. Once the main solenoids are de-energized, actuating pressure is removed from the top of the main pistons and then the lower inlet poppet return spring along with inlet air pressure acting on the side A return piston will push side A back into the de-actuated position. Inlet air pressurizes the crossovers and volume chambers. Pressure in the crossovers helps hold the upper inlet poppets on seat. The valve will then be in the ready-to-run position. On the next attempt to actuate normally, if side B is still unable to actuate synchronously with side A, the same sequence of events described above will occur again.



WARNING: If asynchronous operation occurs while DE-ACTUATING, the pilot supply/timing chambers on one side will still be exhausted as described above. However, this could be a temporary situation because the cause of the asynchronous operation may be able to correct itself allowing the stuck or slow acting side of the valve to eventually move back into the de-actuated position. Once the slow or stuck side has de-actuated, the pilot supply/timing chambers that were exhausted will then repressurize. If an external monitoring system is only checking the status indicator periodically this fault signal could be missed. The machine's safety system must be designed to ensure that this does not cause a hazardous situation.

Status Indicator:

The status indicator pressure switch will actuate when the main valve is operating normally, and will de-actuate when the main valve operation is sufficiently asynchronous or inlet pressure is removed. This device is not part of the valve lockout function, but, rather, only reports the status of the main valve.



Status indicator in normal ready-to-run position

OPTIONS

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	Connector Only	—	—	937K87	936K87-W	936K87-Z
	DIN 43650 Form A	Connector for threaded conduit (1/2 inch electrical conduit fittings)	—	—	723K77	724K77-W	724K77-Z
	DIN 43650 Form A	Prewired Connector (18 gauge)	2 (6½)	10-mm	371K77	383K77-W	383K77-Z
	DIN 43650 Form A	Prewired Connector (18 gauge)	2 (6½)	6-mm	721K77	720K77-W	720K77-Z

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

Downstream Pressure Monitoring

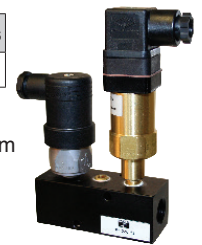
Pressure Switches		
Connection Type	Model Number	Port Threads
DIN 43650 Form A	586A86	1/8 NPT
M12 Micro-DC	1153A30	1/8 NPT



Redundant Downstream Feedback Switch

Model Number	Port Threads
RC26-13	3/8 NPT

- May be installed downstream on all double valves
- Provides a redundant means to verify the release of downstream pressure to next obstruction
- Factory preset, 5 psi (0.3 bar) - falling

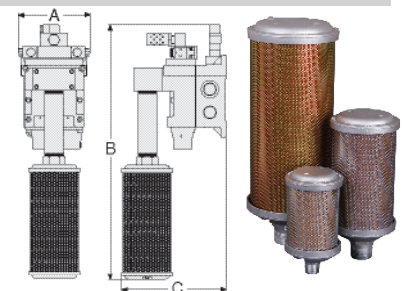


High-Flow, High Reduction Silencer Kits

Port Size	Kit Number*		Avg. C _v	Dimensions inches (mm)			
	NPT threads	BSPP threads		A	B (NPT)	B (BSPT)	C
4	2324H77	2329H77	800 (378)	4.34 (110.2)	19.06 (484.1)	21.40 (543.6)	7.27 (184.7)
8	2325H77	2330H77	800 (378)	5.41 (137.4)	21.18 (538.0)	23.52 (597.4)	8.41 (213.6)

* Kits include all plumbing required for installation. **Pressure Range:** 125 psig (8.6 bar) maximum.

Designed to improve equipment performance and reduce the Exponentially Perceived Noise (EPNdB) in the 35–40 dB range.



Control Reliable Double Valves with Dynamic Monitoring

DM¹ Series C Preassembled Wiring Kits

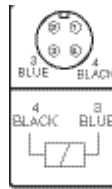
These kits include 2 cables with either DIN or M12 connectors for the solenoids. All cables include cord grips.

Kit Number	Solenoid Connector Type	Length meters (feet)
2243H77	DIN 43650 Form A	5 (16.4)
2244H77	DIN 43650 Form A	10 (32.8)
2245H77	M12 Micro-DC	5 (16.4)
2246H77	M12 Micro-DC	10 (32.8)

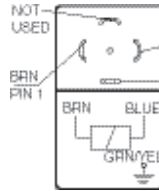
Status Indicator kit ordered separately.

Status Indicator Kits	Kit Number	Length meters (feet)
	2247H77	5 (16.4)
	2248H77	10 (32.8)

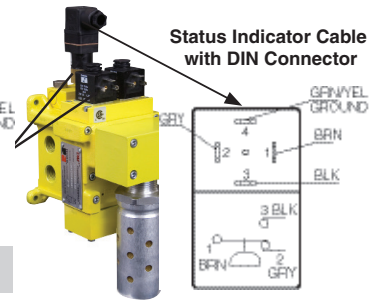
Solenoid Cables with M12 Connector



Solenoid Cables with DIN Connector



Status Indicator Cable with DIN Connector

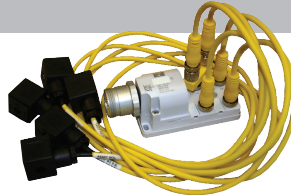


Status Indicator kits include one cable with DIN connector and a cord grip.

Wiring Kits with J-Box

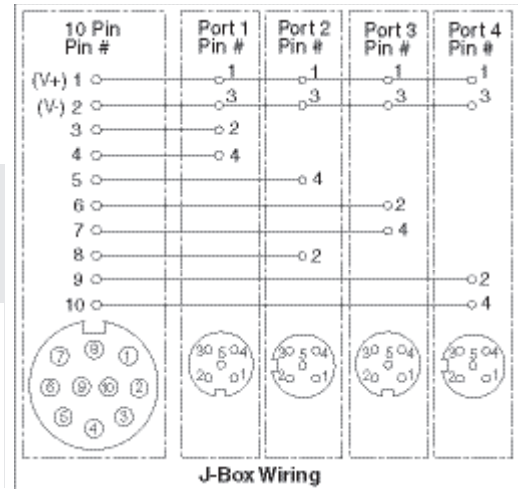
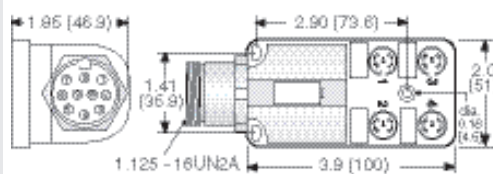
Kit Number*	Connector Types	Length meters (feet)
2249H77	M12 - DIN	1 (3.3)
2250H77	M12 - M12	1 (3.3)

*24 volts DC only.



A J-Box is a junction box with a 10-pin MINI connector for connecting to the user's control system and (4) 5-pin M12 ports for connecting up to 3 solenoids and the status indicator on the DM Series valve. The J-Box kits include the J-Box as described above and (4) 1-meter cables for connecting to the valve. These cables have a connector on each end. The status indicator cable and the (3) solenoid cables have an M12 connector on one end and a DIN connector on the other end (M12-DIN).

Standard valves come with DIN type solenoid connections, but could be bought with M12 type connections as well. Therefore we also offer a kit that provides solenoid cables with an M12 connector on each end (M12-M12).

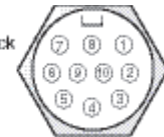


10 PIN MINI Cable

Kit Number	Length meters (feet)
2253H77	3.66 (12)
2254H77	6.1 (20)
2255H77	9.1 (30)
2256H77	15.2 (50)

These cables have a 10-pin MINI connector for connecting the J-Box kits above to the user's control system. Kits include one cable with connector and cord grip. Cable conductors are 18-gauge wire.

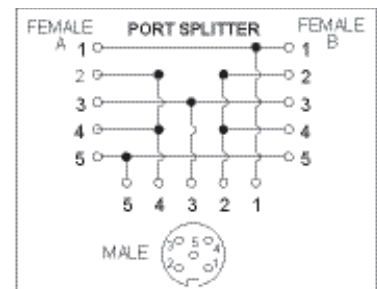
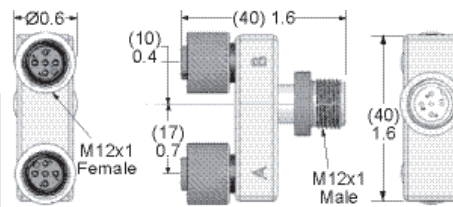
PIN #	PIN #	Wire Colors:	Wire Colors:
1 +24 volts DC	6 -	Orange	Orange w/Black
2 Common volts DC	7 Remote Reset	Blue	Red
3 -	8 -	White w/Black	Green/Yellow
4 Solenoid A	9 Remote Valve Fault Light	Red w/Black	Black
5 Solenoid B	10 Remote System OK Light	Green w/Black	White



Outlet Port Pressure Monitoring Wiring Kit

Kit Number	Length meters (feet)
2251H77	1 (3.3)

Some customers prefer to monitor downstream pressure in addition to using the DM² or DM¹ Series valve. A convenient way to do this is to install a pressure switch in the extra outlet port that is provided on the valve. The Outlet Port Pressure Monitoring kit can be used with one of the J-Box kits above to split one of the M12 ports on the J-Box so that a pressure switch can be wired in as well. These kits consist of one port splitter (a Tee with three M12 connectors) and one M12-DIN cable (1 meter).



Pressure switch available separately, see valve options.



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