

New Product Introduction

DM²® Series D Double Valve

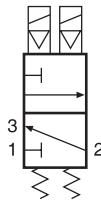
With
Total Dynamic Monitoring &
Complete Memory

Self Monitored - Clutch/Brake Control

Size 2

ROSS® is pleased to introduce a new size in our family of control-reliable, Category 4, DM²® Series D double valve for press clutch and brake applications.

Like the entire line of DM²® Series D double valves, the Size 2 incorporates 100% dynamic monitoring and memory functions, optional status indicator for valve feedback and a variety of fault reset options – including manual reset. The small compact design features a built-in, non-clogging silencer and is available in 1/4" and 3/8" port sizes. Dual porting options in this base mounted valve allow for maximum flexibility during installation and ease of maintenance.



Simplified Schematic



(Certifications approval pending)



FEATURES:

- **Total Dynamic Monitoring With Complete Memory:** Memory, monitoring, and air flow control functions are simply integrated into two identical valve elements. Valves will lock-out in the event of asynchronous movement of valve elements during actuation or de-actuation, resulting in a residual outlet pressure of less than 1% of supply. Overt action is required for reset – cannot be reset by removing and re-applying supply pressure. Reset can only be accomplished by remote air signal, manual reset or by optional integrated electrical (solenoid).
- **Basic 3/2 Normally Closed Valve Function:** Dirt tolerant, wear compensating poppet design for quick response and high flow capacity. Teflon back-up rings on pistons to enhance valve endurance – operates with or without inline lubrication.
- **Status Indicator (Optional):** Includes a pressure switch with both normally open and normally closed contacts to provide status feedback to the press control system indicating whether the valve is in the lockout or ready-to-run condition. The Status Indicator can be ordered installed or purchased separately and added to any DM²® Series base.
- **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.

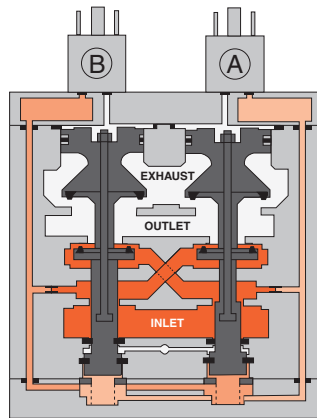
APPLICATIONS:

Small Gap Frame Presses • Cylinder Presses • Small Shears • Any small Control Reliable Pneumatic Applications

Overview of DM²® Series D Double Valve Function

Valve de-actuated:

The flow of inlet air pressure into the crossover passages is restricted by the size of the passage between the stem and the valve body opening. Flow is sufficient to quickly pressurize pilot supply/timing chambers A and B. The inlet poppets prevent air flow from crossover passages into the outlet chamber. Air pressure acting on the inlet poppets and return pistons securely hold the valve elements in the closed position. (Air passages shown out of position and reset adapter omitted for clarity.)

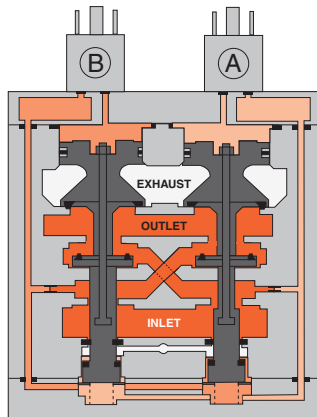


Valve ready-to-run

Valve actuated:

Energizing the pilot valves simultaneously applies pressure to both pistons, forcing the internal parts to move to their actuated (open) position, where inlet air flow to crossover passages is fully open, inlet poppets are fully open and exhaust poppets are fully closed. The outlet is then quickly pressurized, and pressure in the inlet, crossovers, outlet, and timing chambers are quickly equalized.

De-energizing the pilots quickly causes the valve elements to return to the ready-to-run position.

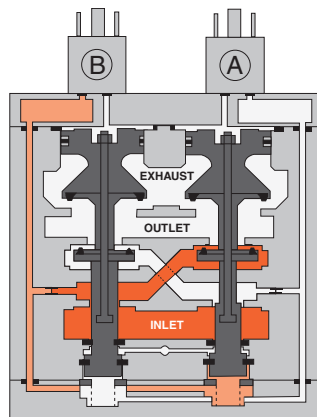


Valve actuated

Valve locked out:

Whenever the valve elements operate in a sufficiently asynchronous manner, either on actuation or de-actuation, the valve will move to a locked-out position. In the locked-out position, one crossover and its related timing chamber will be exhausted, and the other crossover and its related timing chamber will be fully pressurized. The valve element (side B) that is partially actuated has pilot air available to fully actuate it, but no air pressure on the return piston to fully de-actuate the valve element. Air pressure in the crossover acts on the differential of side B stem diameters creating a latching force.

Side A is in a fully closed position, and has no pilot air available to actuate, but has full pressure on the inlet poppet and return piston to hold the element in the fully closed position.



Valve locked out

Inlet air flow on side A into its crossover is restricted, and flows through the open inlet poppet on side B, 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.

The return springs are limited in travel, and can only return the valve elements to the intermediate (locked-out) position. Sufficient air pressure acting on the return pistons is needed to return the valve elements to a fully closed position.

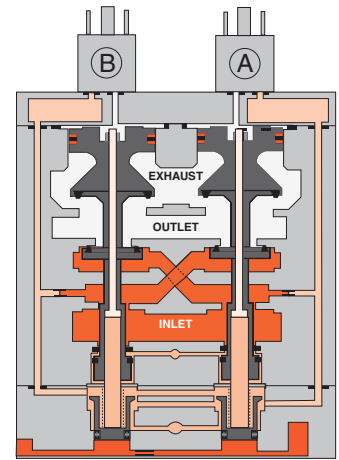
Resetting the valve:

The valve will remain in the locked-out position, even if the inlet air supply is removed and re-applied. A remote reset signal must be applied to reset the valve.

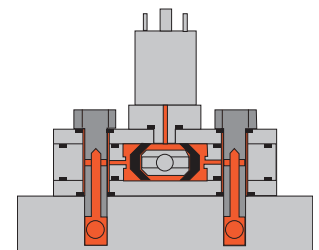
Reset is accomplished by momentarily pressurizing the reset port. Actuation of the reset piston physically pushes the main valve elements to their closed position. Inlet air fully pressurizes the crossovers and holds the inlet poppets on seat. Actuation of the reset piston opens the reset poppet, thereby, immediately exhausting pilot supply air, thus, preventing valve operation during reset. (Reset adapter added to illustration.)

De-actuation of reset pistons causes the reset poppets to close and pilot supply to fully pressurize.

Reset pressure can be applied by a remote 3/2 normally closed valve, or from an optional 3/2 normally closed solenoid mounted on the reset adapter.



Valve being reset

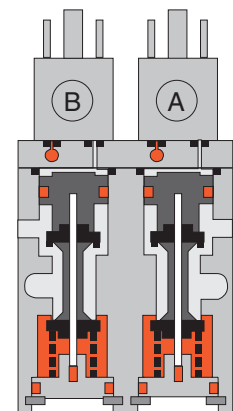


Status indicator (optional) in normal ready-to-run position

Status indicator:

The status indicator pressure switch will actuate when the main valve is operating normally, and will de-actuate when the main valve is in the locked-out position 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.

Size 12 and 30 valves require relatively large pilots to actuate and de-actuate the main valve elements. In order to achieve extremely quick valve response for such large pilots, a 2-stage solenoid pilot system is incorporated into the design. This keeps the required electrical current, to operate the pilots, to a minimum.



Size 12 & 30 pilots

DM²® Series D Double Valve

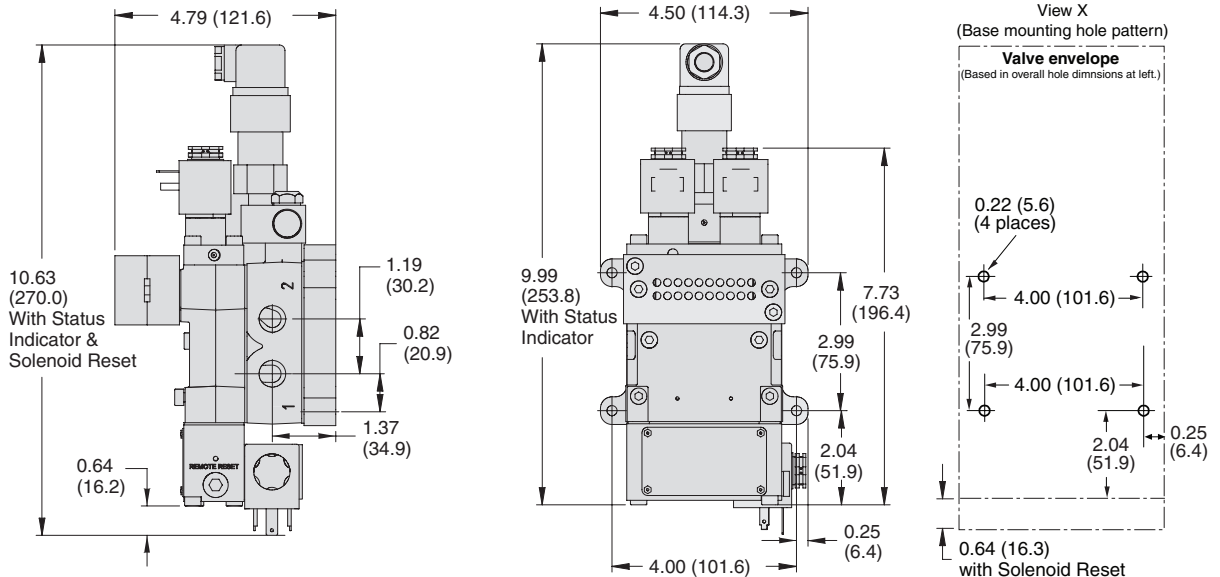
HOW TO ORDER

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

PRODUCT	DM2D	D	A	2	1	A	2	1	STATUS INDICATOR
THREAD									1.....YES
BSPP		D							X.....NO
NPT		N							
N/A (no base)		X							
REVISION LEVEL									RESET TYPE
BASIC SIZE									1.....REMOTE
2.....									2.....SOLENOID
									4.....MANUAL
BASE PORT SIZE									VOLTAGE
1/4 inlet – 1/4 outlet									A.....24 volts DC
3/8 inlet – 3/8 outlet									B.....110 volts AC, 50/60 Hz
Valve only (less base)									C**.....220 volts AC, 50/60 Hz
									** 220 VAC not available in the U.S.
									(OSHA regulations limit press control voltage to no more than 120 volts AC).

DIMENSIONS

– inches (mm)



Average C_v:

- 1 to 2: 2.01
- 2 to 3: 3.31

STANDARD SPECIFICATIONS

Solenoids: According to VDE 0580. Enclosure rating according to DIN 40050, IEC 60529 IP65.

Two solenoids, rated for continuous duty (additional solenoid on optional reset). Order connectors separately.

Standard Voltages: 110 volts, 50/60 Hz; 220** volts, 50/60 Hz; 24 volts DC. For other voltages, consult ROSS.

** 220 volts AC not available in the U.S. (OSHA regulations limit press control voltage to no more than 120 volts AC. Specify voltage and frequency on order.

Solenoid Power Consumption (each solenoid):

For primary and reset solenoids:

6.0 watts on DC, 15.8 VA inrush and 10.4 VA holding on AC.

Electrical connection: DIN 43650, Form A. Order connectors separately.

Ambient Temperature: 15° to 120°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); 5 micron recommended.

Inlet Pressure: 45 to 150 psig (3 to 10 bar).

Reset Pressure: For remote reset option – equal to inlet pressure.

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. Monitoring function has memory and requires an overt act to reset unit after lockout.

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

Weight:

Valve and base assembly with status indicator and solenoid reset: 5.0 lb (2.3 kg).

DM²® Series D Double Valve

BASE MODEL NUMBERS and BASE SPECIFIC INFORMATION

Port Size		Base	Status	Weight
Inlet	Outlet	Model Number*	Indicator	lb (kg)
1/4	1/4	1872C91	No	1.7 (0.8)
1/4	1/4	1873C91	Yes	2.1 (1.0)
3/8	3/8	1874C91	No	1.7 (0.8)
3/8	3/8	1875C91	Yes	2.1 (1.0)

*NPT port threads. For BSPP threads add a "D" prefix to the model number, e.g., D1872C91.

ACCESSORIES

Form A Electrical Connectors



Electrical connectors are required to connect the valve solenoids to the drop cords supplying electrical power. Each connector can be positioned so that the cord exits upward or to the side. Cords of 6 mm to 10 mm diameter can be used. Connectors with a light in a translucent housing are also available to serve as indicator lights. Order connectors by the part numbers given in the chart below.

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

Part Numbers of Form A Electrical Connectors

Connector Type	Without Light	With Light*
For use with dropcord (Cord not included)	937K77	936K77*

*Specify solenoid voltage when ordering.

Status Indicator

The Status Indicator pressure switch actuates when the valve is in a ready-to-run condition and de-actuates when the valve is in a lockout condition or when the inlet air pressure has been removed. Although, the valves can be purchased with this option already installed, the Status Indicator can be purchased separately by ordering part number: **670B94**



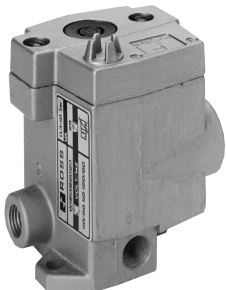
RESET VALVES for MODELS with REMOTE RESET

On valve models with solenoid reset, a solenoid on the valve is actuated to perform the reset function. Models for remote reset, however, require a small reset valve and the installation of a 1/8 line from the reset valve to the reset port on the double valve. ROSS offers 3/2 normally closed valves with either manual or electric control that are suitable for this purpose. The valves, pictured below, are suggested.

Model Numbers of Reset Valves

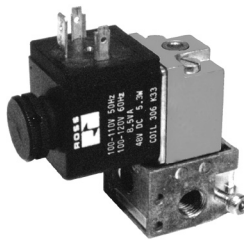
Description	Valve Model Numbers
Pushbutton: Green	1223A1005
Direct Solenoid Control for line mounting	1613B1020*
Direct Solenoid Control for base mounting	W1413A1409* (Base: 516B91)

Port threads: NPT standard. For BSPP threads, add a "D" prefix to the model number, e.g. D1223A1005. In the case of the W1413A1409, the prefix should be added to the base model instead of the valve.



Direct Solenoid Model for Line Mounting: 1613B1020*

* Specify solenoid voltage and Hz when ordering.



Direct Solenoid Model for Base Mounting Valve: W1413A1409* Sub-Base: 516B91



Pushbutton Models Green button: 1223A1005



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WARRANTY and CAUTIONS

Standard ROSS warranty and cautions apply, available upon request or at www.rosscontrols.com.