New Product Introduction

DM²® Series E
Category 4
(DIN EN ISO 13849-1)
Double Valve with Dynamic Monitoring & Memory

Size 2

FEATURES:

- **Dynamic Monitoring with Memory**: Memory, monitoring, and air flow control functions are integrated into two identical valve elements for CAT 4 applications, except control of the clutch/brake mechanism on mechanical power press. Valves lockout if asynchronous movement of valve elements occurs during actuation or de-actuation, resulting in a residual outlet pressure of less than 1% of supply.

- **An action is required for reset**: cannot be reset by removing and re-applying supply pressure or electrical power. Reset can only be accomplished by the integrated electrical (solenoid) reset.

- **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**: Includes a pressure switch with both NO & NC contacts to provide status feedback to the control system indicating whether the valve is in the lockout or ready-to-run condition.

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

- **Mounting**: Inline mounted – with BSPP or NPT pipe threads. Inlet and outlet ports on both sides provide for flexible piping (plugs for unused ports included).

APPLICATIONS:

Category 4 applications - e.g. Air Dump/Release.

<table>
<thead>
<tr>
<th>Model Number*</th>
<th>Port Size</th>
<th>k_v</th>
<th>Weight kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM2EDA20**21</td>
<td>G 1/4</td>
<td>1,17</td>
<td>2,43</td>
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<tr>
<td>DM2EDA21**21</td>
<td>G 3/8</td>
<td>1,70</td>
<td>2,43</td>
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</tbody>
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* BSPP port threads. For NPT threads replace “D” in the model number with a “N”.


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Overview of DM2® Series E Double Valve Function

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. (Air passages shown out of position 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.

Valve locked-out:
Whenever the valve elements operate in a sufficiently asynchronous manner, either on actuation or de-actuation, the valve will shift into a locked-out position. In the locked-out position, one crossover and its related timing chambers will be exhausted, and the other crossover and its related timing chambers will be pressurized. The valve element (side A) that is partially actuated has pilot air available to actuate it, but there is no air pressure on the return piston to de-actuate that valve element. Air pressure in the crossover acts on the differential of side A stem diameters creating a latching force. Side B is in the de-actuated position, but has no pilot air available to actuate with and has full pressure on its upper and lower inlet poppets 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. Also, the return springs can only return the valve elements to the intermediate (locked-out) position. Therefore, the valve will remain in the locked-out position even if the inlet air supply is removed and re-applied. A reset signal must be applied intentionally in order to reset the valve.

Resetting the valve:
Reset is accomplished by momentarily energizing the reset solenoid. Actuation of the reset solenoid provides inlet air pressure to the reset pistons which physically push the main valve elements to their de-actuated position. Inlet air pressurizes the crossovers and volume chambers, thereby applying air to the return pistons which then hold the upper inlet poppets on seat. De-actuation of the reset solenoid removes pressure from the lower side of the reset pistons, thus allowing them to return to their de-actuated position.

Reset anti-tie-down feature:
Attempting to energize the valve’s main solenoids while the reset solenoid is energized will cause side B to shift (overcoming the pressure on the small reset piston), but side A will not move due to the pressure on the larger reset piston on that side. This will cause the valve to go into and remain in the locked-out position until a reset signal is applied while the main solenoids are de-energized.

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 when inlet pressure is removed. This device is not part of the valve lockout function, but, rather, only reports the status of the main valve.
Pilot Solenoid Power Consumption (each solenoid): 6 watts on DC; 13,6 VA inrush and 8,5 VA holding on AC.

Solenoids: According to VDE 0580. Enclosure rating according to DIN 400 50 IP 65. Connector socket according to DIN 43650 Form A. Rated for continuous duty.

Standard Voltages: 110 volts AC, 50/60 Hz; 24 volts DC.

Reset solenoid Power Consumption: 6 watts on DC; 13,6 VA inrush and 8,5 VA holding on AC.

Temperature Range: Ambient: 4° to 50°C. Media: 4° to 80°C.

Flow Media: Compressed air, filtered acc. to ISO 8573-1 (Class 7 / 40 µm, Class 6 / 5 µm recommended), lube or non-lube (mineral oils acc. to DIN 51519/ISO-VG, viscosity class 32).

Inlet Pressure: 2 to 8 bar.

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

ELECTRICAL CONNECTION

DIMENSIONS – mm

Max. torque for mounting screws M 5. Quality 8.8 = 4.2 Nm. Thread to DIN 13. part 13 for screws to DIN EN ISO 4762.

Pressure Switch (optional)
Since 1921 ROSS CONTROLS® has been manufacturing the highest quality pneumatic valves. Founded by three families and still privately held, Ross has grown from a small MI valve company into a company with global subsidiaries and distribution throughout the world. It is this global presence that allows Ross to focus on specific industries and provide the support required in our integrated world. Ross continues to lead in industries such as safety by providing products to meet or exceed the specific requirements of those industries as well as the global standards.

Our global safety team can assist with system and product selection and provide solutions that help customers standardize globally.