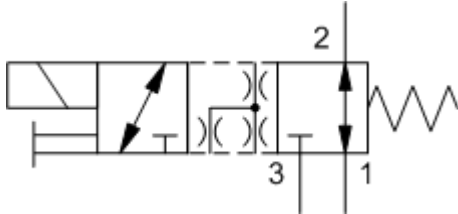
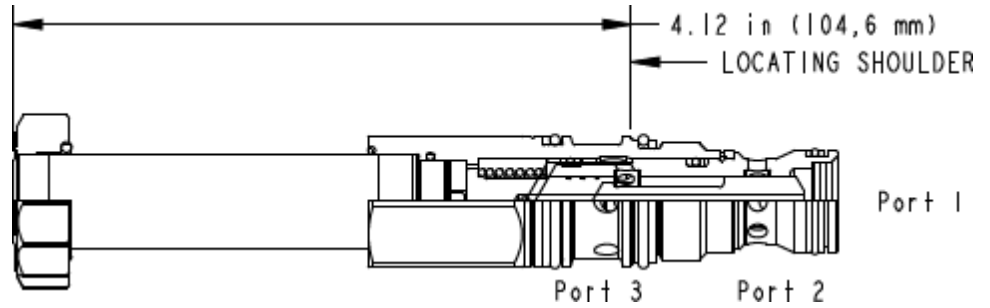


X-Control, A-Spool



M or S-Control, A-Spool



This solenoid-operated 3-way, 2-position cartridge is a direct-acting, balanced spool directional valve.

**TECHNICAL DATA** NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Cavity	T-11A
Series	1
Capacity	12 gpm
Maximum Operating Pressure	5000 psi
Manual Override Force Requirement	5 lbs/1000 psi @ Port 1
Manual Override Stroke	.10 in.
Maximum Valve Leakage at 110 SUS (24 cSt)	5 in <sup>3</sup> /min.@3000 psi
Response Time - Typical	50 ms
Switching Frequency	15,000 max. cycles/hr
Solenoid Tube Diameter	.63 in.
Valve Hex Size	7/8 in.
Valve Installation Torque	30 - 35 lbf ft
Model Weight	0.61 lb.
Seal and nut kit - Coil	Viton: 990-740-006
Seal kit - Cartridge	Buna: 990-411-007
Seal kit - Cartridge	Viton: 990-411-006

- NOTES:**
- Please verify cartridge clearance requirements when choosing a Sun manifold. Different valve controls and coils require different clearances.
  - An additional 2.00 inches (50,8 mm) beyond the valve extension is needed for coil installation and removal.

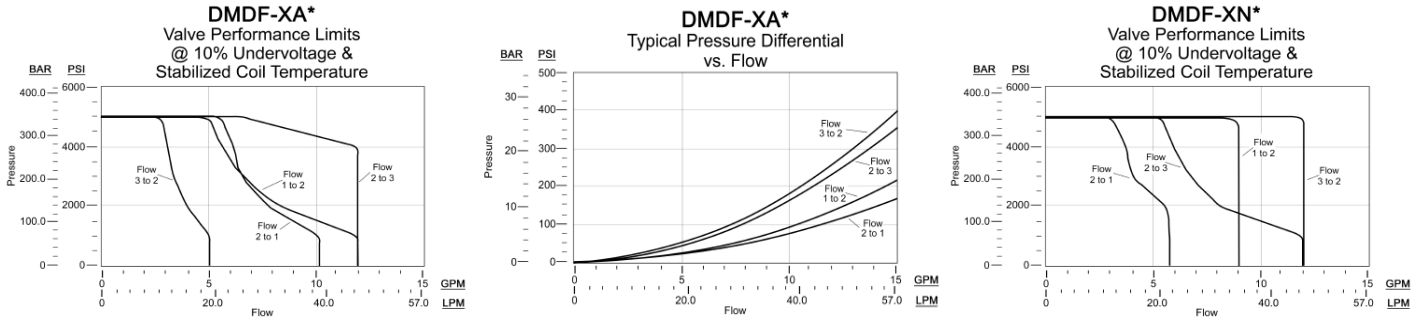
# OPTION SELECTION EXAMPLE: DMDFXAN

CONTROL	(X) SPOOL CONFIGURATION	(A) SEAL MATERIAL	(N) COIL
<b>X</b> No Manual Override	<b>A</b> Normally Open 1 to 2, Closed 2 to 3	<b>N</b> Buna-N	No coil
<b>D</b> Twist/Lock (Dual) Manual Override	<b>N</b> Normally Open 2 to 3, Closed 1 to 2	<b>V</b> Viton	
<b>L</b> Twist/Lock (Detent) Manual Override	<b>R</b> Normally Open 2 to 3, Closed 1 to 2, Closed Transition		
<b>M</b> Manual Override			
<b>T</b> Twist (Momentary) Manual Override			

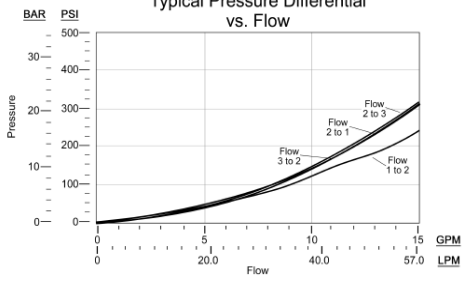
## TECHNICAL FEATURES

- The solenoid tube assembly is fatigue rated for 5000 psi (350 bar) service.
- This valve is direct actuated and requires no minimum hydraulic pressure for operation.
- All configurations of this valve include zinc-nickel plating as standard for 1000-hour salt fog protection.
- Coil connector options offer ratings up to IP69K. See individual coil product pages for details.
- This cartridge utilizes both 740 Series high-power and 747 Series hazardous location coils.
- This cartridge has an option for manual override. See the CONFIGURATION section.
- On models equipped with the D or L control, the detent mechanism in the manual override is meant for temporary actuation. The D, L and T manual control assemblies have a mechanical life expectancy of approximately 7,000 cycles.
- This valve utilizes a wet armature design. This means that the working fluid surrounds the armature and is exposed to the heat generated by the coil. This can be a factor if the coil is energized for long periods of time. Some fluids, notably water/glycol mixtures, break down at these temperatures over time and form varnishes that will affect the function of the cartridge.
- The solenoid's unique magnetic design results in a high efficiency solenoid, yielding high spool actuating force per Watt expended, leading to reliable valve shifting.
- Coils can be mounted on the tube in either direction.
- Incorporates the Sun floating style construction to minimize the possibility of internal parts binding due to excessive installation torque and/or cavity/cartridge machining variations.
- The R-spool is closed in the transition between its two positions. This results in a higher performance limit at the expense of lower capacity. When used as pilot controls, where capacity is not a factor, the closed transition will provide faster and more consistent response times.

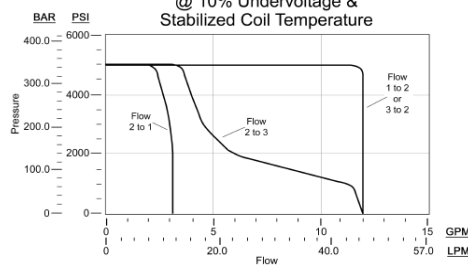
## PERFORMANCE CURVES



**D MDF-XN\***  
Typical Pressure Differential vs. Flow



**D MDF-XR\***  
Valve Performance Limits  
@ 10% Undervoltage &  
Stabilized Coil Temperature



**D MDF-XR\***  
Typical Pressure Differential vs. Flow

