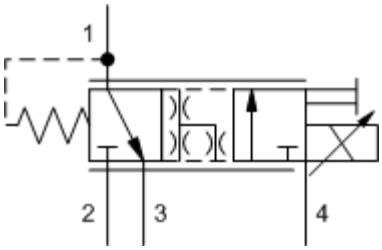
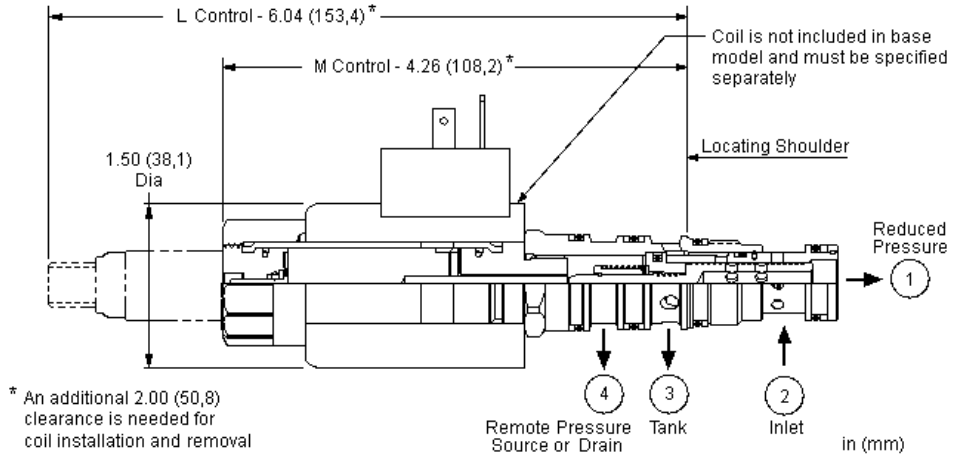
Electro-proportional, direct-acting, pressure reducing/relieving valve with open transition and drain to port 4

CAPACITY: 5 gpm / CAVITY: T-21A





This electro-proportional, direct-acting reducer/reliever valve reduces a high primary pressure at the inlet (port 2) to a constant reduced pressure at port 1, with a full flow relief function from port 1 to tank (port 3). The valve is biased to the relieving mode. Energizing the coil connects port 2 to port 1. Increasing the current to the coil will proportionally increase the reduced pressure at port 1. If pressure at port 1 exceeds the setting induced by the coil, pressure at port 1 is relieved to port 3. Draining port 4 makes the valve insensitive to pressure at port 3. This valve is open in the transition from reducing to relieving which provides good pressure control and dynamic response. Optional full manual control is available.

PROPORTIONAL PERFORMANCE DATA

Hysteresis (with dither)	6%
Hysteresis with DC input	<8%
Linearity (with dither)	<2%
Repeatability (with dither)	<2%
Recommended dither frequency	140 Hz

TECHNICAL DATA

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

Cavity	T-21A
Series	1
Capacity	5 gpm
Maximum Operating Pressure	5000 psi
Maximum Valve Leakage at 110 SUS (24 cSt)	20 in^3/min.
Adjustment - No. of CW Turns from Min. to Max. setting	5
Solenoid Tube Diameter	.75 in.
Valve Hex Size	7/8 in.
Valve Installation Torque	30 - 35 lbf ft
Adjustment Screw Internal Hex Size	5/32 in.
Locknut Hex Size	9/16 in.
Locknut Torque	80 - 90 lbf in.
Model Weight (with coil)	1.20 lb
Seal and nut kit - Coil	Viton: 990-770-006
Seal kit - Cartridge	Buna: 990-021-007
Seal kit - Cartridge	Polyurethane: 990-021-002
Seal kit - Cartridge	Viton: 990-021-006

NOTES: • Please verify cartridge clearance requirements when choosing a Sun manifold. Different valve controls and coils require different clearances.

OPTION SELECTION EXAMPLE: PSDLLMDN

CONTROL	(L)
L	Standard Screw Adjustment
M	Manual Override (Standard)

OPERATING RANGE	(D)
D	50 - 485 psi (3,5 - 33,5 bar)
B	100 - 1125 psi (7 - 77,5 bar)
E	25 - 250 psi (1,7 - 18 bar)
S	10 - 100 psi (0,7 - 7 bar)

SEAL MATERIAL	(N)
N	Buna-N
V	Viton

COIL	
	No coil
224NX01	DIN 43650-Form A, 24 VDC, no transient voltage suppression (TVS) diodes, with XMD-01 driver
224NX02	DIN 43650-Form A, 24 VDC, no transient voltage suppression (TVS) diodes, with XMD-02 driver
912NX01	Deutsch DT04-2P, 12 VDC, no transient voltage suppression (TVS) diodes, with XMD-01 driver
912NX02	Deutsch DT04-2P, 12 VDC, no transient voltage suppression (TVS) diodes, with XMD-02 driver
924NX01	Deutsch DT04-2P, 24 VDC, no transient voltage suppression (TVS) diodes, with XMD-01 driver
924NX02	Deutsch DT04-2P, 24 VDC, no transient voltage suppression (TVS) diodes, with XMD-02 driver

TECHNICAL FEATURES

- Maximum pressure at port 3 should be limited to 3000 psi (210 bar).
- All spring ranges are tested for correct operation with 5000 psi (350 bar) inlet pressure.
- Direct acting concept provides highly reliable operation in contaminated systems, especially at dead headed conditions.
- Pressure on the drain (port 4) is directly additive to the valve setting at a 1:1 ratio and should not exceed 5000 psi (350 bar).
- Leakage specified in Technical Data is out of port 3 with a supply pressure of 2000 psi (140 bar) and the valve set at mid range. This leakage is directly proportional to pressure differential and inversely proportional to viscosity expressed in centistokes.
- The transition from reducing to relieving is slightly open. The result is very good pressure control with oil consumption of about 0.1 gpm (0,4 L/min.).
- For optimum performance, an amplifier with current sensing and adjustable dither should be used. Dither should be adjustable between 100 - 250 Hz.
- Full reverse flow from reduced pressure (port 1) to inlet (port 2) may cause the main spool to close. If reverse free flow is required in the circuit, consider adding a separate check valve to the circuit.
- Uses for the 'L' manual screw adjustment include: emergency valve setting during power failure or alternatively boosting the valve setting
- With the 'L' adjustment screw, all ranges are factory set at zero (adjustment screw fully backed out). With the coil de-energized, clockwise adjustment of the screw will increase the spring bias load up to the maximum setting for that range. With the coil energized, any mechanical pressure setting is directly additive to the coil induced value.
- By controlling the pressure at the drain (port 4), the effective setting of the valve can be increased over the nominal valve setting.
- 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.

PERFORMANCE CURVES