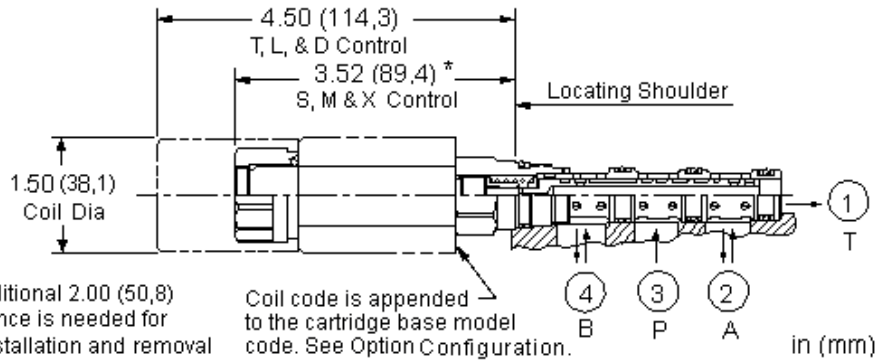


M or S-Control, Y-Spool

CONFIGURATION

M Control	Manual Override
Y Spool Configuration	Motor, Shift to Cross
E Seal Material	EPDM
224 Coil	DIN 43650-Form A, 24 VDC



This solenoid-operated 4-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-31A
Series	1
Capacity	10 gpm
Maximum Operating Pressure	5000 psi
Maximum Valve Leakage at 110 SUS (24 cSt)	10 in ³ /min.@3000 psi
Manual Override Force Requirement	5 lbs/1000 psi @ Port 1
Manual Override Stroke	.10 in.
Response Time - Typical	50 ms
Switching Frequency	15,000 max. cycles/hr
Solenoid Tube Diameter	.75 in.
Valve Hex Size	7/8 in.
Valve Installation Torque	30 - 35 lbf ft
Seal kit - Cartridge	Buna: 990431007
Seal kit - Cartridge	EPDM: 990431014
Seal kit - Cartridge	Viton: 990431006
Seal and nut kit - Coil	Viton: 990770006
Model Weight	1.26 lb.

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.

CONFIGURATION OPTIONS

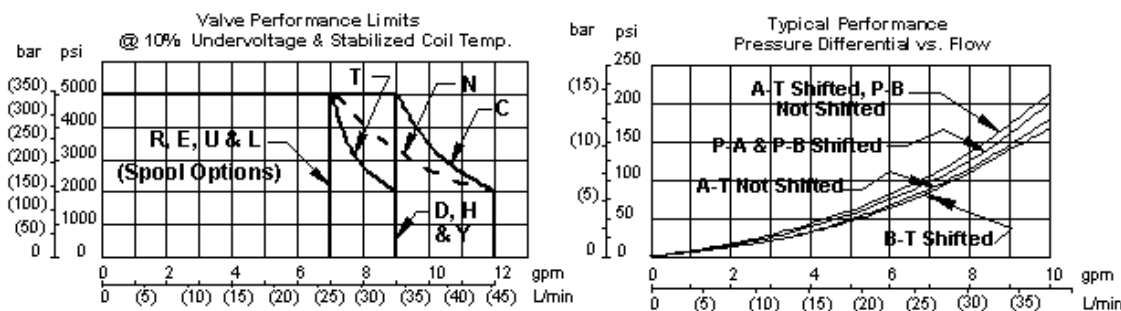
Model Code Example: DNDAMYE224

CONTROL	(M)	SPOOL CONFIGURATION	(Y)	SEAL MATERIAL	(E)	COIL *	(224)
M Manual Override		Y Motor, Shift to Cross		E EPDM		224 DIN 43650-Form A, 24 VDC	
X No Manual Override		C Closed, Shift to Through		N Buna-N		No coil	
D Twist/Lock (Dual) Manual Override		D Closed, Shift to Cross		V Viton		212 DIN 43650-Form A, 12 VDC	
L Twist/Lock (Detent) Manual Override		E Cross, Shift to Closed				912 Deutsch DT04-2P, 12 VDC	
T Twist (Momentary) Manual Override		H Open, Shift to Cross				924 Deutsch DT04-2P, 24 VDC	
		N Through, Shift to Cross					* Additional coil options are available
		J Open, Shift to Through					
		L Cross, Shift to P to A, B and T Blocked					
		R Regen, Shift to Cross					
		S Regen, Shift to Through					
		T Tandem, Shift to Through					
		U Through, Shift to Tandem					
		X Cross, Shift to Through					
		Z Motor, Shift to Through					

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.
- This cartridge has several manual override choices, including no manual override. See the CONFIGURATION section. Please note: Manual override functionality is not compatible with weatherized coils.
- Cartridges configured with EPDM seals are for use in systems with phosphate ester fluids. Exposure to petroleum based fluids, greases and lubricants will damage the seals.
- 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.
- A wide variety of coil termination and voltage options are available, with and without surge protection. See the CONFIGURATION section.
- 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 are interchangeable with other Sun Series 1 solenoid products and can be mounted on the tube in either direction.
- Coil connector options offer ratings up to IP69K. See individual coil product pages for details. Additional weatherized coils and kits are available for more complete environmental protection.
- 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.

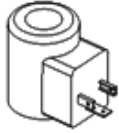
PERFORMANCE CURVES



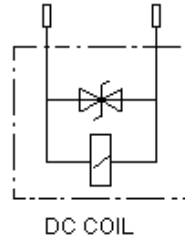
Note: Performance limits are derived with 4-way operation and symmetrical flow.
For valve applications where either asymmetrical flow or 3-way operation is present, these performance limits may be reduced.

RELATED MODELS

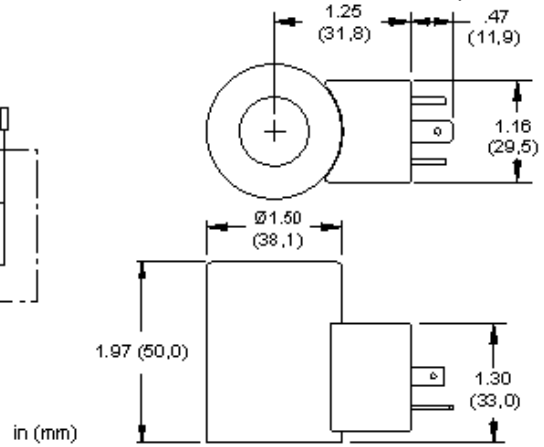
- [DNDAS](#) 4-way, 2-position, soft shift, solenoid-operated directional spool valve



CONFIGURATION



DC COIL



TECHNICAL DATA

Maximum Coil Temperature at 68°F (20°C) Ambient	218°F (105°C)
Arc Suppression (TVS)	Included
Power Consumption (cold) - at rated voltage	22 watts
Maximum Ambient Temperature	122 °F
Voltage/Frequency	24 VDC
Operating Voltage Range	+/- 10% nominal
Duty Cycle Rating	100 %
Connector	ISO4400 - EN/DIN175301-803, Form A (ISO/DIN 43650) 3-pin
Connector Environment Rating	IP65/IP67
Solenoid Tube Diameter	.75 in.
Coil Nut Torque	4.5 lbf in.
Model Weight	0.51 lb.

PROPORTIONAL PERFORMANCE DATA

Maximum Current	590 mA
Nominal Coil Resistance at 122°F (50°C) Stabilized	37.2 ±5% ohms
Nominal Coil Resistance at 68°F (20°C) Cold	26.2 ±5% ohms

USED WITH

DAAL	DAALS	DBAL	DBALS	DFCA	DFCB	DFDA	DFDB	DFEA	DFEB
DFFA	DFFB	DLDA	DLDAS	DLDAZ	DMDA	DMDAS	DMDAZ	DNCA	DNCAZ
DNDA	DNDAS	DNDC	DNDY	DNDYS	DTCA	DTCAZ	DTDA	DTDAS	DWDA
FMDA	FMDB	FPCC	FPCH	FPFK	FPHK	HDDA	PRDL	PRDM	PRDN
PRDP	PSDL	PSDP	RBAN	RBAP					

TECHNICAL FEATURES

- Coil windings utilize Class N, (392° F [200 °C] rated) magnet wire.
- A TVS surge suppression diode is built into DC coils. Nominal breakdown voltage: 68V. Model code 1.5 KE68CA Steady state power dissipation @ 75°C is 6.5 W and peak pulse dissipation is 1500 W for 1 ms, nonrepetitive.
- Power cable with mating connector is required and is not included with product.
- This coil is CE compliant. It meets the requirements of the Low Voltage Directive (2006/95/EC) and EN 60204-1:2006.
- The coil is magnetically symmetrical and can be mounted in either direction on the solenoid tube without affecting performance.
- For optimum proportional performance, an amplifier with current sensing and adjustable dither should be used. Dither should be adjustable between 100 - 250 Hz.
- IP rating is dependent on the coil connector and the mating connector used.
- RoHS compliant. Restricted materials less than 0.1% total by weight.
- The external steel shell is plated with clear zinc trivalent.