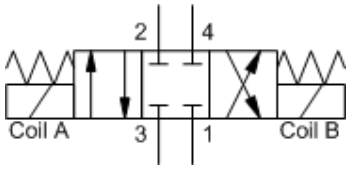
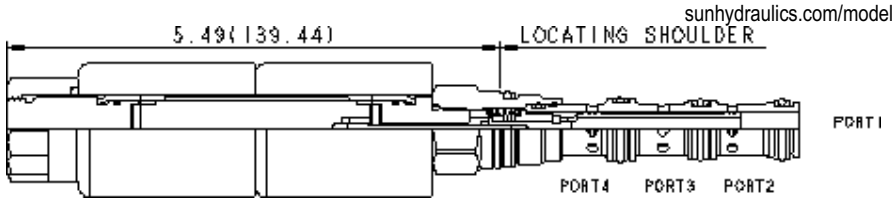
MODEL
DNDC

4-way, 3-position, solenoid-operated directional spool valve
SERIES 1 / CAPACITY: 5 gpm / CAVITY: T-31A

sunhydraulics.com/model/DNDC



C-Spool



This direct acting, solenoid-operated, 4-way, 3-position spool valve is spring centered to the neutral position. When coil A is energized, the flow is from port 3 (P) to port 2 (A) and from port 4 (B) to port 1 (T). When coil B is energized, the flow is from port 3 to port 4 and from port 2 to port 1.

CONFIGURATION

X	Control	No Manual Override
C	Spool Configuration	Blocked Center
N	Seal Material	Buna-N
724	Coil	Twin Lead, 24 VDC

TECHNICAL DATA

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

Cavity	T-31A
Series	1
Capacity	5 gpm
Maximum Operating Pressure	5000 psi
Maximum Valve Leakage at 110 SUS (24 cSt)	10 in³/min.@3000 psi
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	2.03 lb.

NOTES

The two coils used in this assembly are interchangeable with one another, but once installed and wired, the coil closest to the hex body is considered Coil A, and the coil closest to the coil nut is Coil B.

CONFIGURATION OPTIONS

Model Code Example: DNDCXCN724

CONTROL (X)

- **X** No Manual Override

SPOOL CONFIGURATION (C)

- **C** Blocked Center
- **A** A to T Center
- **B** B to T Center
- **H** Open Center
- **R** Regen Center
- **T** Tandem Center
- **W** A and B Bleed to T Center
- **Y** A and B to T Center

SEAL MATERIAL (N)

- **N** Buna-N
- **E** EPDM
- **V** Viton

COIL * (724)

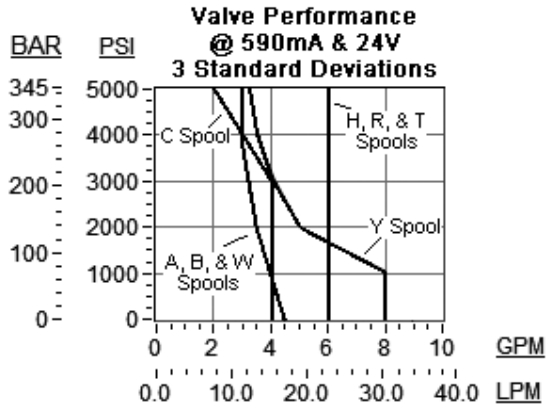
- **724** Twin Lead, 24 VDC
- No coil
- **212** DIN 43650-Form A, 12 VDC
- **224** DIN 43650-Form A, 24 VDC
- **912** Deutsch DT04-2P, 12 VDC
- **924** Deutsch DT04-2P, 24 VDC

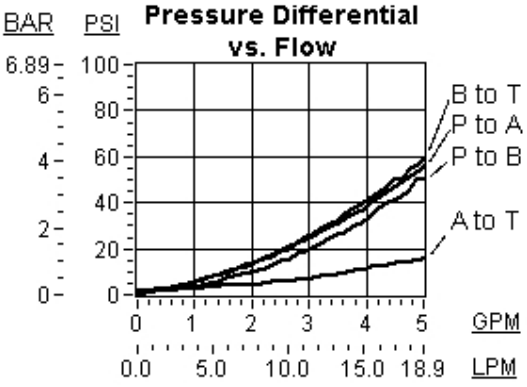
* Additional coil options are available

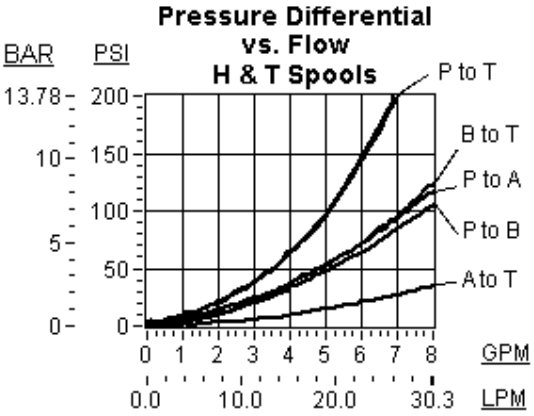
TECHNICAL FEATURES

- 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.
- In differential flow circuits, the higher return flow should be directed through port 2 (A) to port 1 (T).
- 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.
- 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.

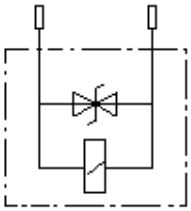
PERFORMANCE CURVES

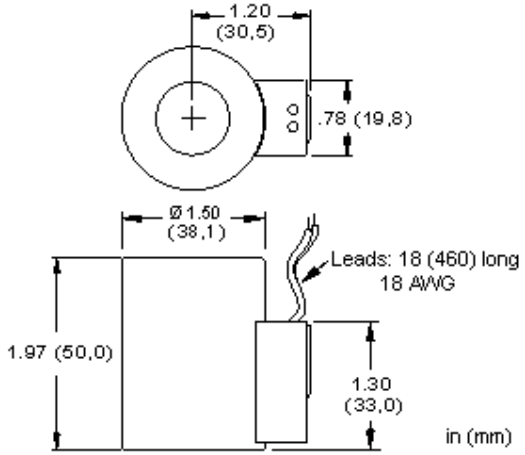






CONFIGURATION





TECHNICAL DATA

Maximum Coil Temperature at 68ºF (20ºC) Ambient	218ºF (105ºC)
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	Twin lead 18 AWG x 18 in. (460 mm)
Connector Environment Rating	IP65
Solenoid Tube Diameter	.75 in.
Coil Nut Torque	4.5 lbf in.
Model Weight	0.53 lb.

PROPORTIONAL PERFORMANCE DATA

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

USED WITH

DAAL	DAALS	DBAL	DBALS	DFCA	DFCB	DFDA	DFDB	DFEA	DFEB
DFFA	DFFB	DLDA	DLDAS	DMDA	DMDAS	DMDAZ	DNCA	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

- 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.
- Coil windings utilize Class N, (392° F [200 °C] rated) magnet wire.
- 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.
- The external steel shell is plated with clear zinc trivalent.
- RoHS compliant. Restricted materials less than 0.1% total by weight.