

SOLENOID OPERATED CARTRIDGE VALVES

MANUAL OVERRIDES

Solenoid valves may be fitted with a manual override, with several override options being available.

- Non-fouling, pin type is standard.
- The handknob is constructed of reinforced plastic and is suitable for operation with a gloved hand.
- Hand-operated overrides are available in three types:
 - Twist. Momentary control. When released, the valve returns to its de-energized position.
 - Twist and lock. Mechanically detented counterclockwise. Detented position is maintained until the knob is twisted clockwise.
 - Dual twist and lock. Momentary shift when the knob is rotated clockwise, detented when rotated counterclockwise.



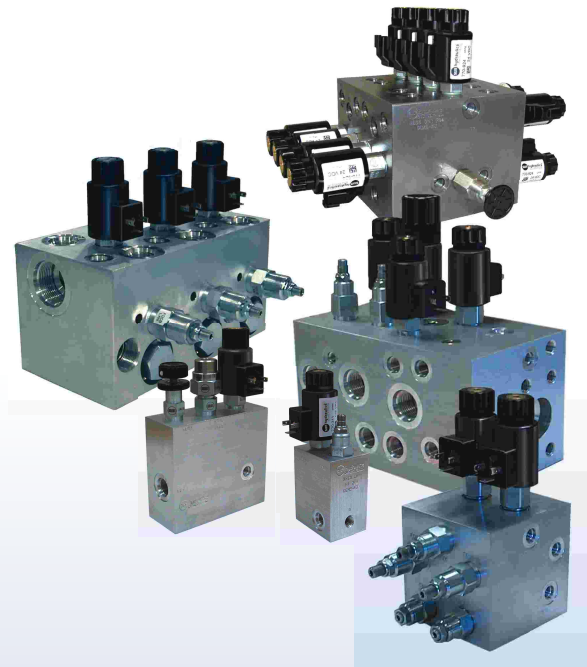
STANDARD AND CUSTOM MANIFOLD CONFIGURATIONS

Sun Hydraulics has been a leading designer and manufacturer of screw-in hydraulic cartridge valves and manifolds for more than 30 years. Sun has established strong recognition in international markets and built a global presence to service customers wherever they choose to manufacture.

Sun's differentiation and attention to detail that we employ in our cartridges are also applied to our manifold designs. We design a more compact manifold that dramatically reduces or eliminates the need for construction plugs and means potentially less leakage points. Our manifolds also have more direct flow paths, which along with the large diameter drilling allowed by the Sun cavity, provide lower pressure drops within the assembly. The ultimate benefit to you is greater design freedom and considerably fewer service complaints.

For our full range of Cartridges and Manifolds, call your distributor or consult the Sun website:

www.sunhydraulics.com



Worldwide manufacturing operations for on time delivery!

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SOLENOID OPERATED CARTRIDGE VALVES

Sun's offering of direct acting, full- and pilot-flow solenoid cartridge valves, incorporates exceptional design features which result in superior performance characteristics:



- Unique cavity allows optimized flow paths.
- Floating style cartridge design minimizes the effect of excessive installation torque.
- 350 bar/5000 psi operating pressure.
- Very low leakage.
- Transient voltage suppression diode is integral to DC coils.
- A wide variety of coil voltages and connector options.
- Rating to IP69K on selected coil connectors.
- Rugged manual overrides.
- The "soft-shift" option extends response time and as a result minimizes hydraulic shock in the system.

Sun's valves will operate in most application environments and are especially well-suited for demanding systems requiring high performance. For our full range of solenoid cartridge valves, visit the Sun website:

www.sunhydraulics.com

SOLENOID OPERATED CARTRIDGE VALVES

CAVITY AND CARTRIDGE DESIGN

All Sun solenoid valves fit the unique Sun cavity. This truly differentiated design allows much larger drill diameters; passage sizes into and out of the valve are maximized, resulting in lower oil velocities and pressure drops.

Sun's "floating style" cartridge design offers many advantages:

- Free-floating subassembly tolerates eccentricity between cavity thread and cartridge nose.
- Tendency of internal working parts to "bind" is diminished.

The unique cavity and floating style cartridge design minimize potential cartridge binding, and allow high and consistent torque levels to be applied to every cartridge.

All Sun solenoid cartridges are rated to 350 bar/5000 psi operating pressure, with very low leakage.

COIL AND SOLENOID DESIGN

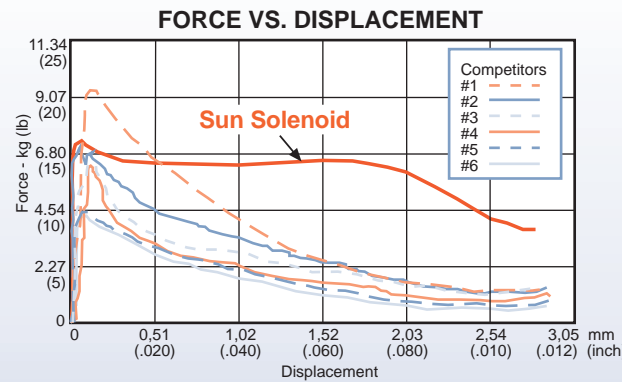
Sun solenoid valves offer industrial valve reliability in a compact, screw-in cartridge. The Sun coil employs a high efficiency, bi-metallic tube design, with a shaped pole face. The tube has a 350 bar/5000 psi fatigue rating. Compared to competitive products, this results in:

- Higher shifting forces
- Lower power consumption
- Higher performance and improved silt resistance

The high performance solenoid tube can be adapted to achieve a "soft-shift" function. Shock and pressure spikes that can occur in the system when the valve is shifted are reduced.

The push-type solenoid allows for a simple, reliable manual override design, with low operating force.

DC coil types incorporate an integral TVS (transient voltage suppression) diode, which eliminates "flash-back" arcing and provides over-voltage protection by suppressing damaging voltage spikes.



COILS AND CONNECTOR OPTIONS

Pilot Flow Solenoid Valves

ISO/DIN 43650	Twin Spade SAE J858A	Twin Lead
115 V AC, 50/60 Hz	-----	-----
230 V AC, 50/60 Hz	-----	-----
6 V DC	6 V DC	6 V DC
12 V DC	12 V DC	12 V DC
-----	-----	-----
24 V DC	24 V DC	24 V DC
-----	-----	-----
36 V DC	-----	-----
48 V DC	-----	-----
-----	-----	-----

Full Flow Solenoid Valves

ISO/DIN 43650	Twin Spade SAE J858A	AMP® Junior Timer	Twin Lead	Metri-Pack	Deutsch DT04-2P
115 V AC, 50/60 Hz	-----	-----	-----	-----	-----
230 V AC, 50/60 Hz	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
12 V DC	12 V DC	12 V DC	12 V DC	12 V DC	12 V DC
14 V DC	14 V DC	14 V DC	14 V DC	14 V DC	14 V DC
24 V DC	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC
28 V DC	28 V DC	28 V DC	28 V DC	28 V DC	28 V DC
36 V DC	36 V DC	36 V DC	36 V DC	36 V DC	36 V DC
48 V DC	48 V DC	48 V DC	48 V DC	48 V DC	48 V DC
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127 V DC	-----	-----	-----	-----	-----

Sun offers a wide variety of coils, voltages, and connectors, however, certain combinations may not be available. Please consult the Sun website.

PILOT FLOW SOLENOID VALVES

Type	Description	Nominal Capacity	Model	Cavity	Function Symbol
2-way	Spool	1 L/min. (.25 gpm)	DAAA	T-8A	
2-way	Spool	1 L/min. (.25 gpm)	DAAL*	T-8A	
2-way	Spool, Soft Shift	1 L/min. (.25 gpm)	DAAL-S*	T-8A	
2-way	Spool, CSA approved	1 L/min. (.25 gpm)	DAAC	T-8A	
3-way	Spool, 2-position	1 L/min. (.25 gpm)	DBAA	T-9A	
3-way	Spool, 2-position	1 L/min. (.25 gpm)	DBAL*	T-9A	
3-way	Spool, 2-position, Soft Shift	1 L/min. (.25 gpm)	DBAL-S*	T-9A	
3-way	Spool, 2-position, CSA approved	1 L/min. (.25 gpm)	DBAC	T-9A	

FULL FLOW SOLENOID VALVES

2-way	Poppet	40 L/min. (10 gpm)	DTDA	T-13A	
2-way	Poppet, Soft Shift	15 L/min. (4 gpm)	DTDA-S	T-13A	
2-way	Spool	45 L/min. (12 gpm)	DLDA	T-13A	
2-way	Spool, Soft Shift	30 L/min. (7.5 gpm)	DLDA-S	T-13A	
3-way	Poppet, 2-position	30 L/min. (7.5 gpm)	DWDA	T-11A	
3-way	Spool, 2-position	45 L/min. (12 gpm)	DMDA	T-11A	
3-way	Spool, 2-position, Soft Shift	20 L/min. (5 gpm)	DMDA-S	T-11A	
4-way	Spool, 2-position	40 L/min. (10 gpm)	DNDA	T-31A	
4-way	Spool, 2-position, Soft Shift	15 L/min. (4 gpm)	DNDA-S	T-31A	
4-way	Spool, 3-position	20 L/min. (5 gpm)	DNDC	T-31A	
6-way	Spool, 2-position	20 L/min. (5 gpm)	DNDY	T-61A	
6-way	Spool, 2-position, Soft Shift	20 L/min. (5 gpm)	DNDY-S	T-61A	

* Integrates the coils, manual overrides, and a wider variety of connector options available on the full flow valves with the pilot flow models.

TYPICAL MAXIMUM LEAKAGE RATES:

- All pilot valves: 0.66 cm³/min. (10 drops/min.) @ 350 bar (5000 psi).
- 2- and 3-way poppet valves: 0.66 cm³/min. (10 drops/min.) @ 350 bar (5000 psi).
- 2-, 3-, and 4-way spool valves: 82 cm³/min. (5 in³/min.) @ 210 bar (3000 psi).

Normally open (N.O.) and normally closed (N.C.) versions have similar performance. Valves have true bi-directional operation. Alternate flow paths have similar performance.

