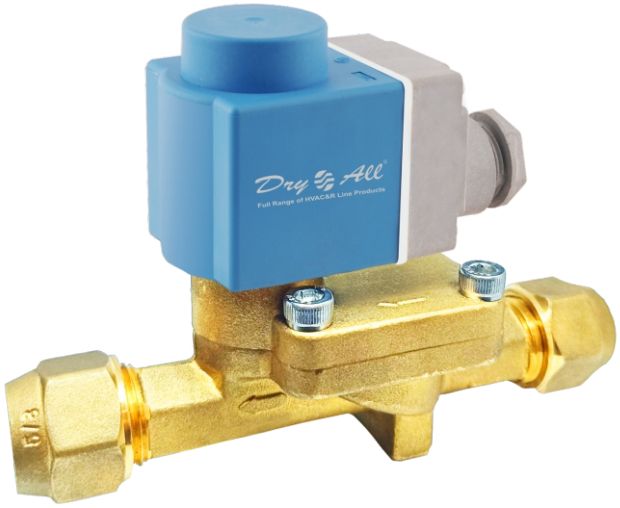
Dry All®

Full Range of HVAC&R Line Products



SOLENOID VALVES SVR SERIES

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Introduction

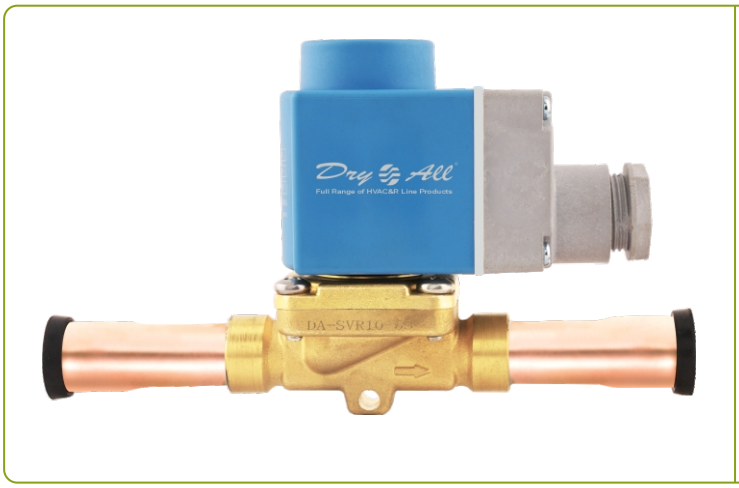
Dry All proudly presents the SVR Series of Solenoid Valves, available in both Flare and Solder connections. Designed for HVAC&R applications, these valves cater to a wide range of refrigerants, including A2L, ensuring efficient control and reliability.

SVR Series Highlights:

- **Wide Range of Options:** Pressure drop range of 0.0 to 31 Bar and flow rates from 0.27 to 10.0 m^3/hr for Solder connections & 0.27 to 2.6 m^3/hr for Flare connections.
- **Precision Engineering & Reliability:** Ideal for industry professionals, ensuring efficient refrigerant flow control.

Available connection sizes:

- Solder: 1/4" to 1-1/8"
- Flare: 1/4" to 3/4"



Dry All Solenoid Valves are versatile, suitable for air, water, and various fluids in refrigeration and air conditioning systems.

The DA-SVR solenoid valve, available in direct-operated and servo-operated versions, ensures good sealing performance and reliable one-directional flow control, making it perfect for use in liquid, air suction, or vapor lines of freezers, cold stores, and air conditioning units.

Notably, Dry All offers the flexibility to choose between packed models (Valve Body + Solenoid) and separated models (Valve Body only) for the DA-SVR solenoid valves. This allows the valve body to be supplied independently from the solenoid, providing greater ease in installation and maintenance.

Key Feature

- Precise flow control
- Automated operations
- Minimal leakage rate
- Lower servicing & maintenance cost
- Compatible with major Refrigerants
- Faster response time

Application

Application of Solenoid Valve in Refrigeration and Air-Conditioning Cycle

1. **Suction Applications**
   In a suction application, the solenoid valve helps complete segregation for temperature control and defrosting, or operates as a suction bypass valve on installation with two or more evaporators in a series.

2. **Compressor Unloading**
   Solenoid valves can be used to “unload” compressors in many ways. The most common method is as follows:

   Step

   A. solenoid is employed to divert discharge pressure to a piston that, when activated, “blocks” the suction valve in an open position.

   B. With the valve blocked open, no compression takes place in that cylinder.

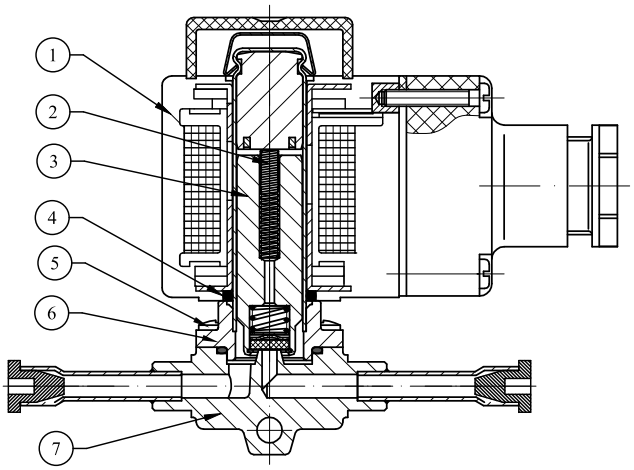
   C. This lack of compression results in a drop in capacity.

3. **Hot Gas Bypass**
   The compressor capacity can be reduced by bypassing the hot discharge gas through a solenoid directly to the suction line. A De-superheating valve must be used in this type of system, to prevent the compressor from overheating and tripping its internal protector.

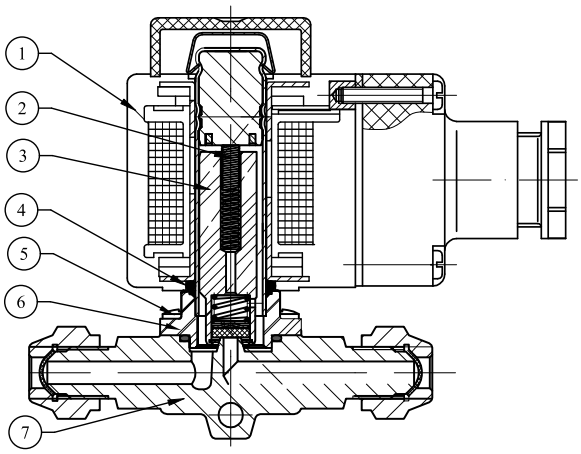
4. **Hot Gas Defrost**
   When defrost is required, the solenoid in the hot-gas-bypass system opens. This allows discharge gas to go to the evaporator, thereby defrosting the coil.

Working Principle

1. Direct Operated Solenoid Valve



Solder Connection

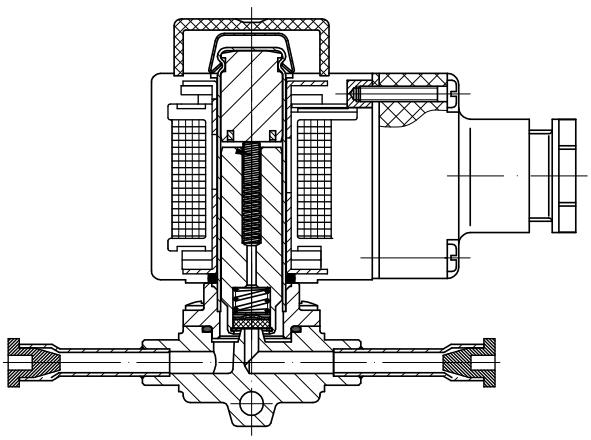


Flare Connection

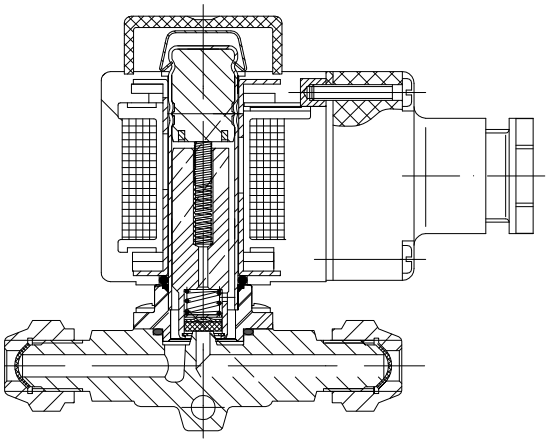
1	Solenoid Coil Body
2	Armature Spring
3	Iron Core Component
4	O-ring
5	Screw
6	Cover
7	Valve Housing Assembly

- Model DA-SVR 3 is a direct-operated solenoid valve. When the iron core component (3) moves upward by the magnetic force of the solenoid, the solenoid valve will open directly, that is, the solenoid valve could be operated under zero pressure differential.
- The sealing valve core (modified PTFE) is directly, mounted on the iron core component.
- The inlet pressure is applied onto the iron core from the upper side. Therefore, the joint action of the inlet pressure, spring force and self-gravity of the iron core component will close the valve when the solenoid is not energized.

2. Servo Operated Solenoid Valve



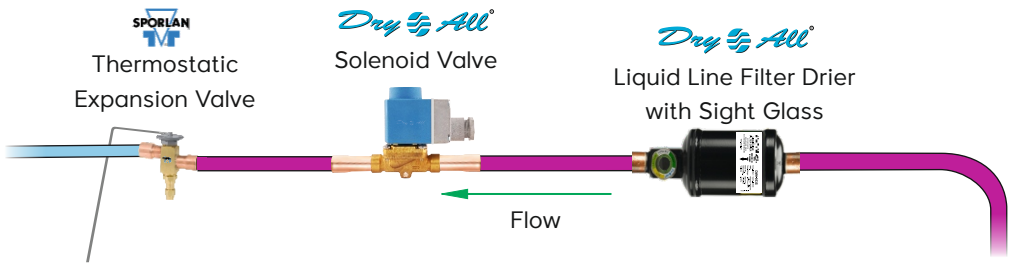
Solder Connection



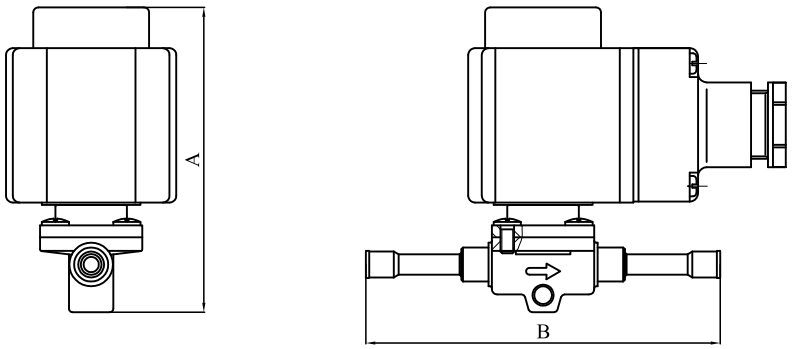
Flare Connection

- Model SVR 6/10/15/20 are servo-operated solenoid valves with movable valve core (7). The guide valve core diaphragm (modified PTFE compound diaphragm) are mounted on the valve core.
- The main valve port and guide valve port is closed when the solenoid is not energized. The joint action of the self-gravity of the iron core component, spring force and the pressure differential between inlet and outlet will close valve.
- When the solenoid is energized, the iron core component (3) moves upward to open the guide valve on the diaphragm. The moment the pressure on the diaphragm is decreased and the space above the diaphragm is communicated with the outlet of the valve. The pressure differential between the inlet and outlet moves the diaphragm upward and open. Therefore, it needs a minimum pressure differential to open the valve and maintain the opening.
- When the power is cut off, the guide valve on the diaphragm is closed and the balance hole on the diaphragm will the pressure rise as the same as the inlet pressure. Consequently, the diaphragm will move downward to close the main valve port.

Product Installed in Ref. Cycle



Drawing & Models Available

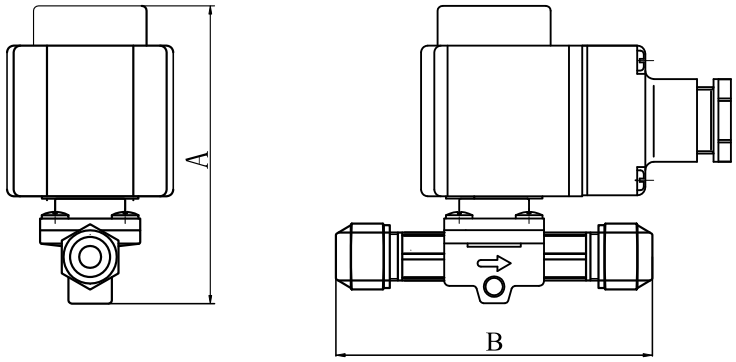


Solder Connection

Sr. No	Model No	Connection Type	Dimensions (mm)		△P (Bar) Liquid		Max Working Pressure (Bar)	K_v (m^3/hr)
		Soldered	A	B	Min	Max		
1	DA-SVR3-2S	1/4"	90	102	0	31 (Close) 21 (Open)	45	0.27
2	DA-SVR3-3S	3/8"	90	118				
3	DA-SVR6-3S	3/8"	90.9	124	0.05			0.8
4	DA-SVR6-4S	1/2"	91	130				
5	DA-SVR10-4S	1/2"	93	138				2.2
6	DA-SVR10-5S	5/8"	93	156				
7	DA-SVR15-5S	5/8"	114	168	0.2			2.6
8	DA-SVR20-7S	7/8"	126	191				5.7
9	DA-SVR25-9S	1-1/8"	133	246				10.0

1. K_v : The flow rate (m^3/h) of water of density 1000Kg/m^3 passing through the solenoid valve under the pressure differential of 100 Kpa.
2. The Max △P of the gaseous medium is about 1 bar higher than that of liquid.
3. Solenoid coil to be ordered Separately

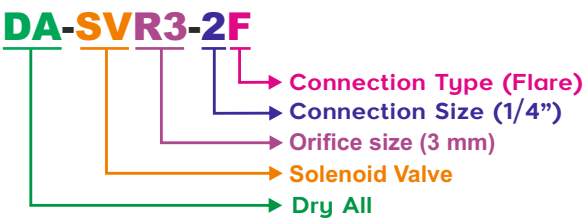
Drawing & Models Available



Flare Connection

Sr. No	Model No	Connection Type	Dimensions (mm)		△P (Bar) Liquid		Max Working Pressure (Bar)	K_v (m^3/hr)
		Flared	A	B	Min	Max		
1	DA-SVR3-2F	1/4"	89	85	0	31 (Close) 21 (Open)	45	0.27
2	DA-SVR3-3F	3/8"	89	85				
3	DA-SVR6-3F	3/8"	91	108	0.05			0.8
4	DA-SVR6-4F	1/2"	91	110				
5	DA-SVR10-4F	1/2"	93	114				2.2
6	DA-SVR10-5F	5/8"	93	120				
7	DA-SVR15-5F	5/8"	114	145	0.2			2.6
8	DA-SVR15-6F	3/4"	114	145				

1. K_v : The flow rate (m^3/h) of water of density 1000Kg/m^3 passing through the solenoid valve under the pressure differential of 100 Kpa.
2. The Max △P of the gaseous medium is about 1 bar higher than that of liquid.
3. Solenoid coil to be ordered Separately



Technical Parameters

Refrigeration Capacity (kW)

Sr. No	Model No	Nominal Refrigerating Capacity kW								
		Liquid			Suction Vapour			Hot Vapour		
		R22\ R407C	R134a	R404A\ R507	R22\ R407C	R134a	R404\ R507	R22\ R407C	R134a	R404A\ R507
1	DA-SVR3	5.4	5	3.8	-	-	-	2	2	2
2	DA-SVR6	16.1	14.8	11.2	1.8	1.3	1.6	7.4	5.9	6
3	DA-SVR10	38.2	35.3	26.7	4.3	3.1	3.9	17.5	13.9	14.3
4	DA-SVR15	52.3	48.3	36.5	5.9	4.2	5.3	24	19	19.6
5	DA-SVR20	101	92.8	70.3	11.4	8.1	10.2	46.2	36.6	37.7
6	DA-SVR25	201	186	141	22.8	16.3	20.4	92.3	73.2	75.3

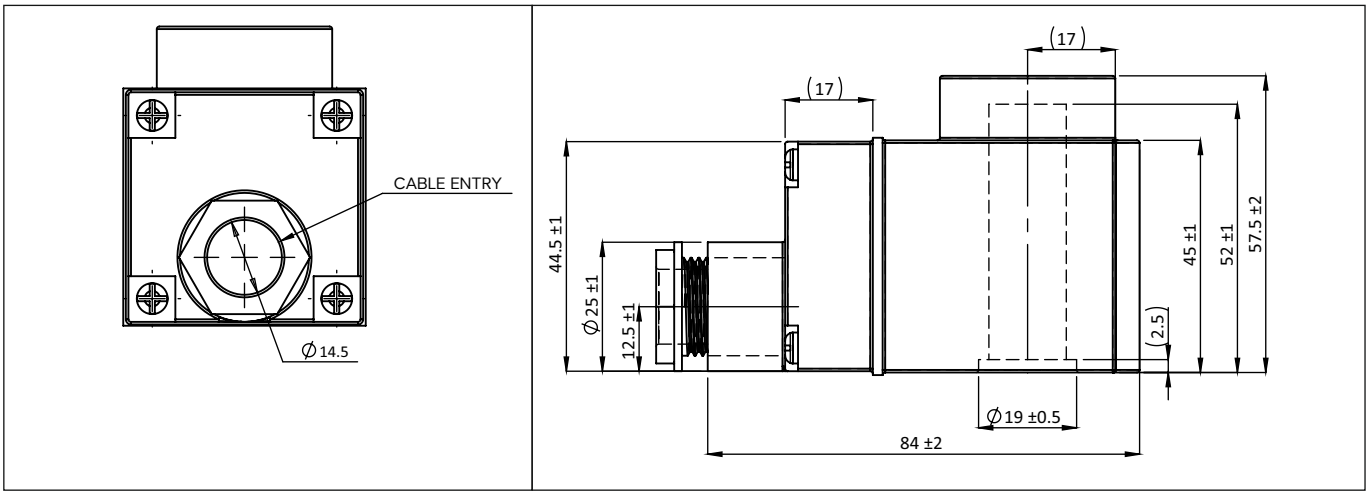
Rated liquid and suction vapour capacity is based on

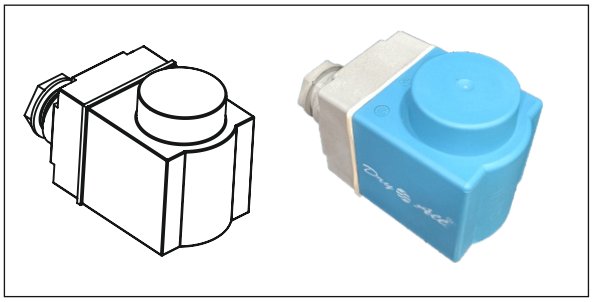
1. Evaporating Temperature t_e= -10 ^{0}C
2. Liquid temperature ahead of valve t_l=25 ^{0}C
3. Pressure drop in valve Δp = 0.15 bar.

Rated hot gas capacity is based on

1. Condensing Temperature t_c=40 ^{0}C
2. Hot Gas temperature t_h=65 ^{0}C
3. Pressure drop in valve Δp = 0.8 bar.
4. Subcooling of refrigerant Δt_{sub}=4 K

Drawing & Image





Coil Specifications

Sr. No	Model	Coil Type	Supply Voltage (Volts)	Power (Watts)	Allowable Voltage Fluctuation	Current Type
1.	DA-SVC-220V AC	Terminal box	220	10	+10% to -15%	AC
2.	DA-SVC-24V DC	Terminal box	24	18	+10% to -15%	DC

Note: Solenoid coil and valve body to be ordered separately

Technical Parameters	
Applicable Refrigerants	HCFC, HFC and HFO
Applicable Medium Temperature	-30°C to 105°C
Application Ambient Temperature of Solenoid	-40°C to 65°C
Standard Voltage Ratings	1. 220V/50Hz 2. DC 24V/50Hz *Other Voltage options available as per customer requirement.
Allowable Voltage Fluctuation for Solenoid	+10% , 15%
Connection of Solenoid	Standard 3-wire Insert Connector

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Dry All
Full Range of HVAC&R Line Products

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