Electric Expansion Valves

Electrically operated stepper motor valves
for precise flow control of liquid refrigerants

Parker SPORLAN

ENGINEERING YOUR SUCCESS.

Description

Built on a foundation of more than 75 years of refrigerant flow control designs, and over 20 years of experience in electronic superheat control, these valves are a perfect fit for today's demanding applications.
From the unique uni-body construction and quad-position cable found on the **SER-B** through **SER-D**, to the multiple body configurations and built-in sight glass on the **SERI-G** through **SERI-L**, these valves are designed for flexibility, reliability, and ease of use.
Equipped with advanced pin designs and Digital Linear Actuators, Parker Sporlan Electric Expansion Valves have minimal energy requirements, without sacrificing performance. **Parker Sporlan Electric Expansion Valves (EEVs)** are currently available in nominal R-407C capacities from 2 to 400 tons (7 to 1400 kW), and can control refrigerant flow from **10% to 100%** of nominal capacity. Valve selection and SKU (Stock Keeping Units) reduction are simplified.

The **SER**, **SERI** and **SEHI Valves** are Electronically Operated Stepper Motor flow control valves, intended for the precise control of liquid refrigerant flow. Synchronized signals to the motor provide discrete angular movement, which translates into precise linear positioning of the valve piston. Valve pistons and ports are uniquely characterized, providing improved flow resolution and performance.
The **SER**, **SERI** and **SEHI Valves** are easily interfaced with microprocessor based controllers, including Parker Sporlan supplied controllers (**PSC** Superheat Controller and **IB** interface board).

For all requests, consult your nearest Parker Sporlan Wholesaler or contact us on:
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Accurate at the time of going to print.

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Electronic Expansion Valves

SER, SERI or SEHI

Valve Nomenclature/Ordering Instructions

Parker Sporlan valves are available in angle and/or straight through offset configurations (reference the Available Connections table for additional details). The SERI and SEHI valves are equipped with a built-in sight-glass (not available on the small SER family of valves). The sight-glass indicates the moisture level of the refrigerant, flash gas present upstream of the valve, and provides a visual confirmation of valve piston movement.
This unique feature is useful for system refrigerant charging, service and diagnostics.

SER-B, -C, -D

SER	-	C	3/8"	X	1/2"	ODF	-	10	-	S
Valve Family		Valve Model	Inlet Connections Size		Outlet Connection Size	Fitting Type ODF only		Cable Lenght 10' (3 m) standard		Stripped and Tinned cable ends

SERI-F, -G, -J, -K, -L

SERI	-	J	S	7/8"	X	1-1/8"	ODF	-	10	-	S
Valve Family		Valve Model	Straight Through Offset Configuration (blank if angle)	Inlet Connections Size		Outlet Connection Size	Fitting Type ODF only		Cable Lenght 10' (3 m) standard		Stripped and Tinned cable ends

When installing theses valves with solder connections, the internal parts should be protected from overheating by using a Parker calorie discharger (TB2) - see page 269 - or by wrapping the valve with a wet cloth.
Sporlan Electric Expansion Valves (EEVs), now rated at full stroke (100% open) with no reserve capacity, are currently available in nominal R-22 capacities from 2.5 to 434 tons (8.2 to 1424 kW), and can control refrigerant flow down to 10% of rated capacity. Therefore, they are applicable on all the same types of systems found in the air conditioning and refrigeration industries as thermostatic expansion valves. Sporlan electric valves are designed for compatibility with all current halocarbon refrigerants (HCFCs and HFCs including R-410A), in addition to subcritical CO_2.

Specifications				
Valve	**SER-B, -C, -D**	**SERI-G, -J, -K, -L**	**SEHI-175**	**SEHI-400**
Motor Type	2 phase, bipolar wet motor			
Compatible Refrigerant	All common, HCFC and HFC refrigerants, including R-410A and subcritical R-744			All common, HCFC and HFC refrigerants
Compatible Oils	All common Mineral, Polyolester and Alkybenzene oils			
Supply Voltage	12 VDC -5% +10% measured at the valve leads			
Cable Type	IP67 Removable Quad Position	IP66 Removable	Hermetic	Hermetic
Phase Resistance	100 Ohms ± 10%	100 Ohms ± 10%	75 Ohms ± 10%	75 Ohms ± 10%
Current Range	120 mA / winding	120 mA / winding	160 mA / winding	160 mA / winding
Power Input	2.8 watts	2.8 watts	3.8 watts	3.8 watts
Recommended Step Rate	200 / second (L/R), up to 400 / second (current limited)			
Number of Steps	2500	2500	6386	6386
Full Motor Transit Time	12.5 seconds	12.5 seconds	34 seconds	34 seconds
Resolution	.00009'' (.0023 mm) / step.	.00012'' (.003 mm) / step.	00008'' (.002 mm) / step .	00008" (.002 mm) / step.
Stroke	0.23'' (5.8 mm)	.297'' (7.5 mm)	.500'' (12.7 mm)	.500'' (12.7 mm)
MOPD	580 psid (40 bar)	500 psid (34 bar)	500 psid (34 bar)	300 psid (21 bar)
MRP	700 psig (48 bar)	700 psig (48 bar)	620 psig (43 bar)	500 psig (34 bar)
Max Internal Leakage	100 cc/min @ 100 psig (6.9 bar), dry air			
Max External Leakage	.10 oz/yr @ 300 psig (2.8 g/yr @ 20 bar)			
Operating Temp. Range	-50°F to 155°F (-45°C to 68°C)			
Materials of Construction	Brass, copper, synthetic seals, stainless steel			

Certification:

The **SER**, **SERI** and **SEHI Electric Expansions Valves** comply with the Pressure Equipment Directive PED 97/23/EC.

Benefits

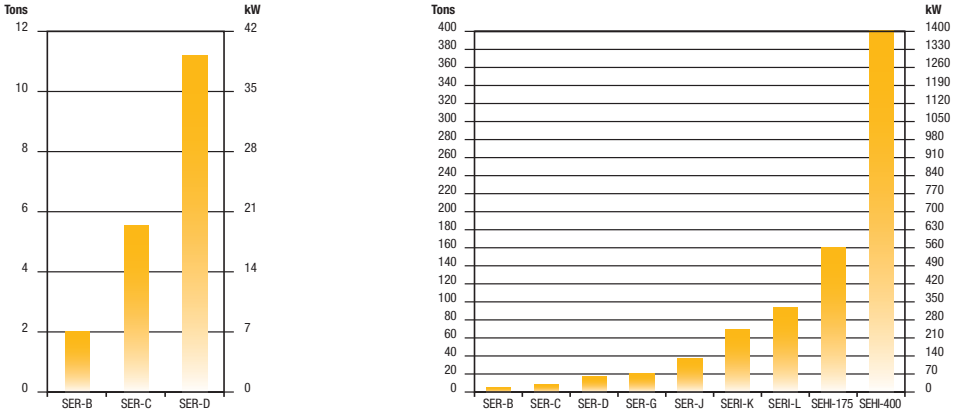
- MOPD up to 40 barg in both directions
- Wide flow control
- Step motor operated for precise control
- High resolution drive assembly
- Field proven reliability
- Low power consumption - less than 4 watts
- Unique built-in sight glass - indicates valve operation, moisture levels and refrigerant quality (SEHI & SERI only)
- Compatibility tested with most HCFC, and HFC refrigerants and oils
- Self lubricating materials used for long life
- High linear force output

Available Connections

Valve Type	Inlet - Inches*** ODF	Outlet - Inches*** ODF	Configuration	Cable Length		Cable Ends
				Feet	Meters	
SER-B*	1/4, 3/8	3/8, 1/2, 5/8	Angle	10, 20	3, 6	S Stripped and Tinned
SER-C*	1/4, 3/8	3/8, 1/2, 5/8	Angle			
SER-D*	3/8, 1/2, 5/8	1/2, 5/8, 7/8, 1-1/8	Straight Through Offset			
SERI-G*	5/8, 7/8	1/2, 5/8, 7/8, 1-1/8	Angle or Straight Through Offset	10, 20, 30, 40	3, 6, 9, 12	
SERI-J*	7/8, 1-1/8	7/8, 1-1/8, 1-3/8				
SERI-K **	1-1/8	7/8, 1-1/8, 1-3/8, 1-5/8				
SERI-L**	1-1/8, 1-3/8	1-1/8, 1-3/8, 1-5/8				
SEHI-175	1-1/8, 1-3/8, 1-5/8	2-1/8	Straight Through Offset	10, 20, 30, 40	3, 6, 9, 12	
SEHI-400	1-5/8, 2-1/8, 2-5/8	1-5/8, 2-1/8, 2-5/8, 3-1/8 (ODM)	Angle			

* Suitable for bi-directional applications.
** Bi-sealing, reduced flow in reverse direction.
*** Some fitting Combinations may not be available.

Capacity



R-407C at 100°F (38°C) liquid, 100 psi (7bar) pressure drop, and 40°F (5°C) evaporator temperature.

For all requests, consult your nearest Parker Sporlan Wholesaler or contact us on:
racecustomerservice@parker.com / www.parker.com/race