aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

CO_2 Innovations

Energy conscious products & solutions for supermarkets

Parker

SPORLAN

ENGINEERING YOUR SUCCESS

PARKER RACE BUSINESS UNIT

PARKER RACE

RACE is part of the Fluid and Climate Control Europe (FCCE) Division that has been created to focus on every process that oversees the control of the fluids.
Core competencies of the Division lie in the design, development and manufacturer of an extensive, diverse range of fluid control products, including solenoid valves, pressure regulators and systems.
In the division, RACE BU is focused in offering a wide range of refrigeration and air conditioning components that cover a large number of refrigeration applications. Approximately 7,000 products are grouped into 20 different technological families including: mechanical and electrical expansion valves, solenoid valves, filter driers, liquid indicators, electronic controllers, ball valves, chemicals and lubricants and a range of copper products.
Key markets, where RACE is point of reference, include commercial and industrial refrigeration, air conditioning and smart solutions. The products are supported by a commercial presence throughout the EMEA area, global manufacturing facilities and a strategic logistics center located in Germany serving the entire EMEA region.
We promise high innovation technologies with low energy consumption, responsible engineering and sustainable growth.

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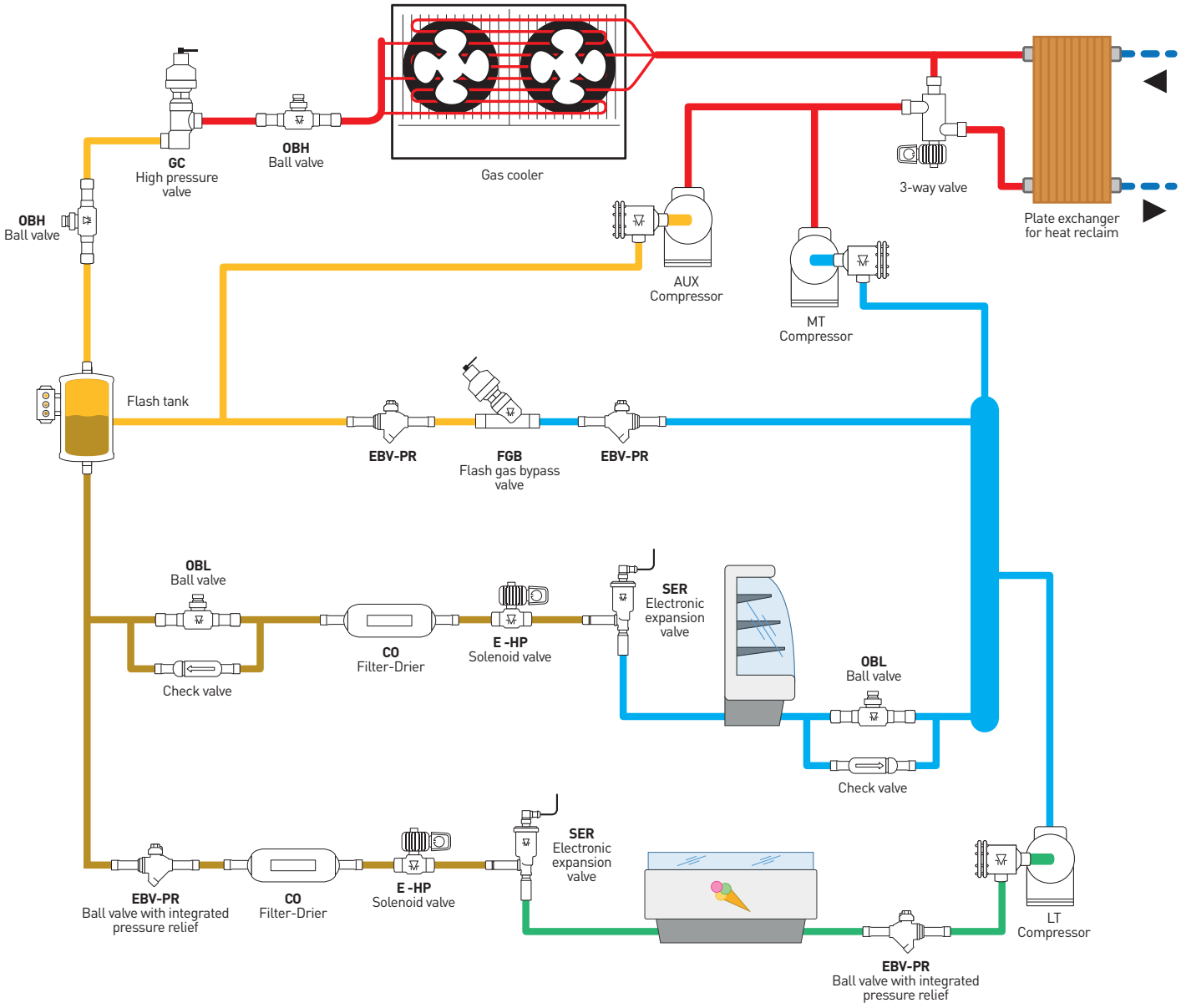
TYPICAL CO_2 CIRCUITS

R744 TRANSCRITICAL BOOSTER SYSTEM SCHEMATIC



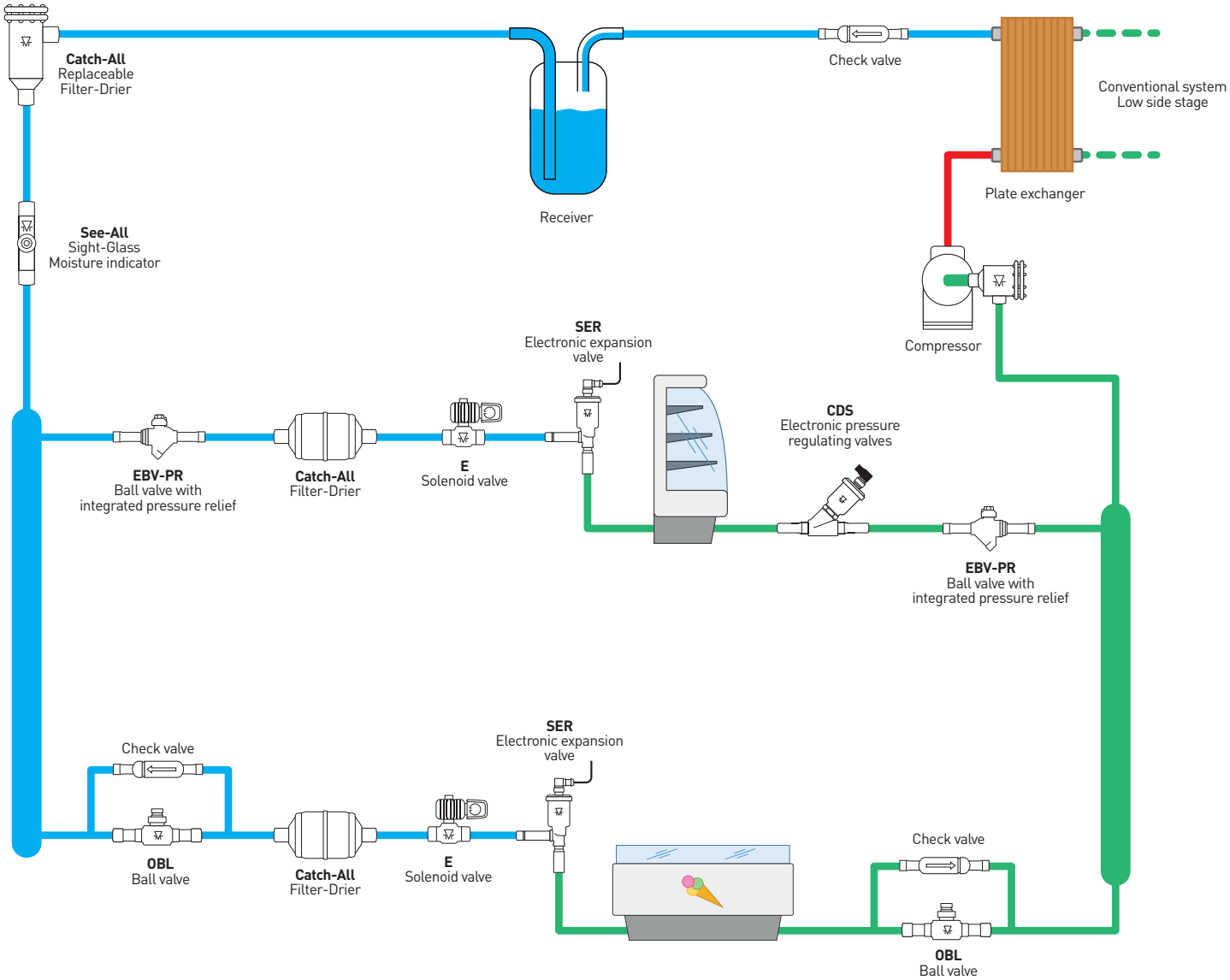
NOTE

This is only a theoretical scheme so some components could not be shown.
All components must be properly pressure rated and protected for safe installation.

TYPICAL CO_2 CIRCUITS

R744 CASCADE SYSTEM SCHEMATIC - LOW PRESSURE SIDE

The SER and SERI valves shown in the scheme can be driven with a PSD4 (Superheat Controller) or, as the CDS valves, through the IB-G Board.



NOTE

This is only a theoretical scheme so some components could not be shown.
All components must be properly pressure rated and protected for safe installation.

ELECTRIC VALVES

140 bar

ELECTRIC PRESSURE REGULATING VALVES

TYPE **GC** and **FGB**

The Gas Cooler valve GC and Flash Gas Bypass valve FGB are stepper motor driven pressure regulating valves, designed specifically for transcritical R-744 refrigeration systems.
The GC are applicable as gascooler / condenser holdback valves and can also be applied as flash tank pressure regulating valves (flash gas bypass). The flash gas bypass valve capacity range is expanded with the use of the FGB valves in this application.
All GC and FGB valves have 2500 steps of movement and synthetic seats to provide great resolution and ensure tight shutoff.
The Sporlan GC and FGB valves can be controlled and driven using the PSD4 Interface Board/ Positioner. The PSD4 Interface Board accepts a 0-10VDC or 4-20mA signal from gas cooler/ system controller. The PSD4 translates this signal into a suitable stepper motor sequence to position the valve proportionally. The PSS4B Backup Power Module provides reserve power for one full valve closure in the event of a power loss. This serves to isolate the refrigerant charge and minimize CO_2 refrigerant loss if system pressure exceeds the system's pressure relief valve setting.

MODEL	GC, FGB
Motor type	Permanent magnet bipolar internal (wet) motor
Phase Resistance	12.8 Ω ± 10%
Phase Inductance	18.5 mH (Reference)
Phase Current	275 mA (using current limited / chopper drive)
Holding Current	0 mA
Cable type	M12 A-coded
Step mode	2 Phase, Full Step
Step rate	400/s
Number of steps	2500
Initialization number of steps	3125
Reference Position	Overdrive against fully closed position
Full Stroke Transit Time	7,25s
MRP	2030 psig (140 barg)
MOPD GC	1305 psid (90 bar)
MOPD FGB	725 psid (50 bar)
Max external leakage	0,10 oz/y @ 300 psig (2,8 g/y @ 20 barg)
Ambient temp. range	-40°F to 140°F (-40°C to 60°C)
Fluid temp. range	-40°F to 239°F (-40°C to 115°C)

FEATURES AND BENEFITS

- High resolution actuators with 2500 steps
- 7,25 second full stroke actuation
- Uniquely characterized pin and port combinations to provide excellent full range flow control
- Cartridge valve designs
- Interchangeable bodies with flexible connections
- Replaceable/serviceable screen (GC Series)

ORDERING INSTRUCTIONS

Description	Family		Model		Connection size		Cable length
Possible values	GC	–	10 20		1/2"		LESS CABLE*
	GC	–	30		3/4" 1"		
	GC	–	40 50		1"		
	FGB	–	60 70		1"		
Example	GC	–	30		1"		LESS CABLE

Cables with length of 10', 20', 30' and 40' are available as separated options

FLASH GAS BYPASS VALVE COEFFICIENTS

Full stroke flow coefficients		
	Kv	Cv us
GC-10	0,16	0,19
GC-20	0,48	0,55
GC-30	1,46	1,69
GC-40	2,80	3,24
GC-50	4,15	4,80
FGB-60	7,29	8,43
FGB-70	11,12	12,86

GAS COOLER VALVE CAPACITY

Full stroke capacity (capacities in Tons)			
Gas Cooler Valve inlet conditions	650psi(g); 51°F	725psi(g); 59°F	1450psi(g); 100°F
Gas Cooler Valve outlet conditions	435psi(g); 24°F	561psi(g); 41°F	561psi(g); 41°F
GC-10	9,5	6,20	6,60
GC-20	21,6	14,1	16,9
GC-30	80,2	52,5	61,9
GC-40	154	101	111
GC-50	226	148	163

Full stroke capacity (capacities in kW)			
Gas Cooler Valve inlet conditions	44bar(g); 10°C	50bar(g); 15°C	100bar(g); 38°C
Gas Cooler Valve outlet conditions	30bar(g); -4°C	39bar(g); 5°C	39bar(g); 5°C
GC-10	35,5	21,9	23,3
GC-20	75,8	49,6	58,4
GC-30	282	185	218
GC-40	542	355	390
GC-50	795	520	572

Please refer to specific selection software.

ELECTRIC VALVES

70 bar 90 bar

ELECTRIC EXPANSION VALVES

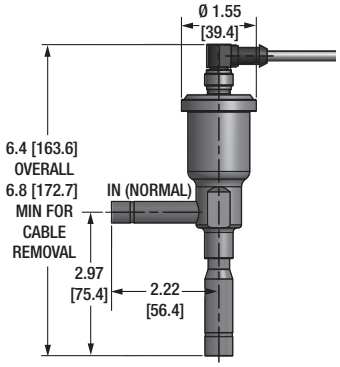
TYPE **SER-AA-HP, SER-A-HP**

The SER valves are suitable for use in subcritical and transcritical CO_2 refrigeration systems as electric expansion valves. The –AA and –A models are available with two distinct pressure ratings. The standard SER valves have a maximum rated pressure (MRP) of 1015 psig (70 bar). The high pressure SER-HP version has a 1305 psig (90 bar) MRP.
Both the SER and SER-HP models have a maximum operating pressure differential (MOPD) of 580 psid (40 bar). With advanced pin and port geometries and precision machined components, these bi-flow valves provide unmatched resolution under the lightest load conditions. The SER-HP valves utilize the existing SER body design and improves its pressure rating with newly designed copper fittings. The SER-HP has the same robust design, corrosion resistance and mounting flexibility for which the SER valve has become known. The SER and SER-HP valves have a removable M12 style cable that is IP67 rated.

MODEL	AA, A	AA-HP, A-HP
Motor type	2 phases, bipolar wet motor	
Compatible oil	All common Mineral, Polyolester and Alkybenzene oils	
Supply voltage	12 V DC, -5%, +10% (L/R)	
Cable type	IP67 Removable M12 connection	
Phase resistance	100 ohm ± 10%	
Stepping current	120 mA/ winding (L/R)	
Step rate	200/s (L/R), up to 400/s (properly configured current chopper)	
Number of steps	2500	
MOPD	580 psid (40 bar)	
MRP	1015 psig (70 bar)	1305 psig (90 bar)
Max internal leakage	100 cc/min @ 100 psid (6.9 bar), dry air	
Max external leakage	0.10 oz./yr @ 300 psig (2.8 g/y @ 20 bar)	
Operating temp. Range	-50 ÷ 155 °F (-45 ÷ 68 °C)	

FEATURES AND BENEFITS

- Step motor operated for precise control
- High resolution drive assembly
- High linear force output
- Self lubricating materials used for long life
- Solenoid tight seating
- Corrosion resistant materials used throughout



ORDERING INSTRUCTIONS

Description	Family		Model		High MRP		Inlet fitting		Outlet fitting	Fitting type		Cable length		Stripped and tinned cable ends
Possible values	SER	–	AA A	–	HP		3/8"	x	3/8" 1/2"	ODF	–	LESS CABLE	–	S
Example	SER	–	AA	–	HP		3/8"	x	3/8"	ODF	–	LESS CABLE	–	S

Cables with length of 10', 20', 30' and 40' are available as separated options

CAPACITY

Full Stroke Capacity (capacities in Tons)															
Evaporation Temp [°F]	-40°F					-20°F					0°F				
Δp [psid]	100	150	200	250	300	100	150	200	250	300	100	150	200	250	300
SER-AA	1,24	1,38	1,51	1,63	1,75	1,08	1,24	1,39	1,52	1,64	0,88	1,08	1,24	1,39	1,52
SER-A	2,67	2,98	3,27	3,53	3,78	2,33	2,69	3,00	3,29	3,55	1,90	2,32	2,68	3,00	3,29

Full stroke capacity (capacities in kW)												
Evaporation Temp [°C]	-40°C				-30°C				-20°C			
Δp [bar]	8	12	16	20	8	12	16	20	8	12	16	20
SER-AA	4,70	5,25	5,75	6,22	4,09	4,73	5,28	5,79	3,34	4,09	4,73	5,29
SER-A	10,15	11,35	12,44	13,43	8,85	10,21	11,42	12,51	7,22	8,85	10,22	11,42

Liquid temperature correction factors									
°F	0	10	20	30	40	50	60	70	80
°C	-18	-12	-7	-1	4	10	16	21	27
	1,13	1,07	**1,00**	0,93	0,86	0,79	0,71	0,62	0,51

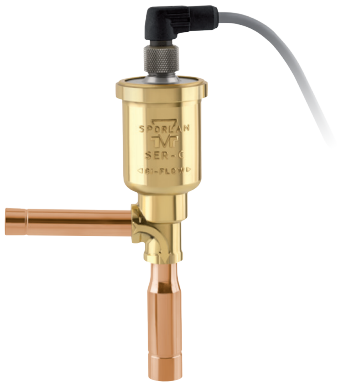
ELECTRIC VALVES

70 bar

ELECTRIC EXPANSION VALVES

TYPE **SER-B, SER-C**

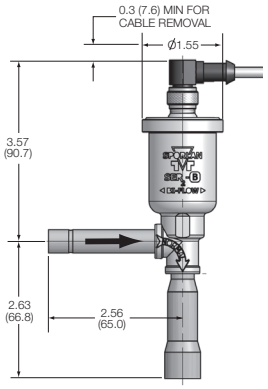
The SER are electronically operated step motor flow control valves, intended for the precise control of liquid refrigerant flow. Synchronized signals to the motor provide discrete angular movement, which translate into precise linear positioning of the valve piston. Valve pistons and ports are uniquely characterized, providing extraordinary flow resolution and performance.
The SER is easily interfaced with microprocessor based controllers, including Sporlan supplied controllers.



MODEL	SER-B, SER-C
Motor type	2 phases, bipolar wet motor
Compatible oil	All common Mineral, Polyolester and Alkybenzene oils
Supply voltage	12 V DC, -5%, +10% measured at the valve leads
Cable type	IP67 Removable Quad-Position
Phase resistance	100 ohm ± 10%
Stepping current	120 mA/ winding
Step rate	200/s (L/R), up to 400/s (current limited)
Number of steps	2500
MOPD	580 psid (40 bar)
MRP	1015 psig (70 bar)
Max internal leakage	100 cc/min @ 100 psid (6.9 bar), dry air
Max external leakage	0.10 oz./yr @ 300 psig (2.8 g/y @ 20 bar)
Operating temp. Range	-50 ÷ 155 °F (-45 ÷ 68 °C)

FEATURES AND BENEFITS

- Step motor operated for precise control
- High resolution drive assembly
- High linear force output
- Self lubricating materials used for long life
- Solenoid tight seating
- Corrosion resistant materials used throughout



ORDERING INSTRUCTIONS

Description	Family		Model		Inlet fitting		Outlet fitting	Fitting type		Cable length		Stripped and tinned cable ends
Possible values	SER	–	B C	–	1/4" 3/8"	x	3/8" 1/2" 5/8"	ODF	–	LESS CABLE	–	S
Example	SER	–	B	–	3/8"	x	3/8"	ODF	–	LESS CABLE		S

Cables with length of 10', 20', 30' and 40' are available as separated options

CAPACITY

Full Stroke Capacity (capacities in Tons)

Evaporation Temp [°F]	-40°F					-20°F					0°F				
Δp [psid]	**100**	**150**	**200**	**250**	**300**	**100**	**150**	**200**	**250**	**300**	**100**	**150**	**200**	**250**	**300**
SER-B	5,13	5,74	6,29	6,79	7,26	4,47	5,17	5,78	6,33	6,83	3,65	4,47	5,16	5,77	6,32
SER-C	13,9	15,6	17,0	18,4	19,7	12,1	14,0	15,7	17,2	18,5	9,9	12,1	14,0	15,6	17,1

Full stroke capacity (capacities in kW)

Evaporation Temp [°C]	-40°C				-30°C				-20°C			
Δp [bar]	**8**	**12**	**16**	**20**	**8**	**12**	**16**	**20**	**8**	**12**	**16**	**20**
SER-B	19,4	21,7	23,8	25,7	16,9	19,6	21,9	24,0	13,8	16,9	19,6	21,9
SER-C	52,7	59,0	64,6	69,8	45,9	53,0	59,3	65,0	37,5	46,0	53,1	59,3

Liquid temperature correction factors

°F	0	10	20	30	40
°C	-18	-12	-7	-1	4
	1,13	1,07	**1,00**	0,93	0,86

ELECTRIC VALVES

90 bar

PULSE WIDTH MODULATION VALVES

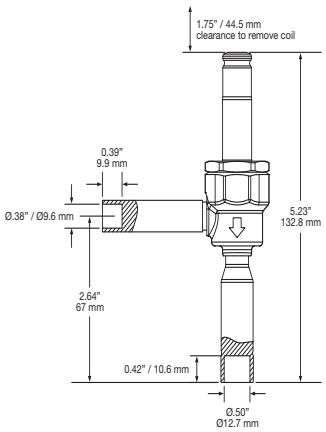
TYPE **SPW**

The Sporlan SPW line of electric expansion valves uses pulse width modulation (PWM) control to manage refrigerant flow in direct expansion refrigeration systems. The valve's duty cycle is varied based on measured evaporator superheat. Typical controllers monitor superheat and vary the duty cycle across a 6 seconds period. The SPW valve family offers 8 port sizes to cover a wide range of evaporator loads. The serviceable port and strainer design allows the contractor to service and clean the SPW valve or easily replace the port during a refrigerant retrofit.

MODEL	SPW
Actuation type	Pulse Width Modulation
Recommended period	6 seconds
Control range	10 – 100% Duty Cycle
Voltage	24 VAC/60 Hz, 110-120 VAC/50-60 Hz, 220-240 VAC/50-60 Hz
Power input	11W
Inrush power	38 VA
Holding power	22 VA
Coil resistance	4.0 Ω (24 VAC) - 103.1 Ω (110-120 VAC) - 412.9 Ω (220-240 VAC)
Electrical connection style	"½" NPT Conduit W/18" leads DIN 43650A"
Mounting Orientation	Enclosing tube no less than horizontal
Strainer size	100µm
Max Internal Leak	5 @ 100 psid
Max External Leak	0.1 oz/year @ 300 psig
Certifications & Compliance	UL File MH4576, PED, Reach, ROHS, LVD
Maximum Rating Pressure (MRP)	1305 psig / 90 barg
MOPD	507 psid / 35 bar
Ambient temp. range	-40°F to 130°F (-40°C to 54°C)
Fluid temp. range	-40°F to 180°F (-40°C to 82°C)

FEATURES AND BENEFITS

- Low Wattage NEMA-4X Coil, IP65 Rated, Class F
- Robust Design, 50 Million+ Cycle Life
- Interchangeable Coil, Port & Strainer
- Tight seating design
- Solenoid tight seating
- Operates from 10% to 100% of rated capacity



ORDERING INSTRUCTIONS

Description	VALVE		Port size		Inlet fitting		Outlet fitting		Fitting type		COIL
Possible values	SPW	-	0 thru 7		3	x	4		ODF		LESS COIL
Example	SPW	-	1		3	x	4		ODF		LESS COIL

Description	COIL		Connector		Coil voltage		Coil type		Wire gauge	Cable length
Possible values	PWC	–	Blank E = DIN		24/60 110-120/50-60 220-240/50-60		Blank C = Conduit		Blank A = 3/16" insulation	Blank 18 (inches)
Example	PWC	–	E		220-240/50-60		C		A	18

CAPACITY

	Full stroke capacity (capacities in kW, pressures in bar)											
Evaporation Temp	-20°C				-30°C				-40°C			
Δp	8	12	16	20	8	12	16	20	8	12	16	20
SPW-0	0,47	0,58	0,67	0,75	0,47	0,58	0,67	0,75	0,47	0,57	0,66	0,74
SPW-1	1,15	1,41	1,63	1,82	1,15	1,41	1,63	1,82	1,14	1,40	1,62	1,81
SPW-2	2,07	2,53	2,92	3,27	2,07	2,53	2,92	3,27	2,05	2,51	2,90	3,25
SPW-3	3,19	3,91	4,51	5,05	3,19	3,91	4,51	5,04	3,17	3,88	4,48	5,01
SPW-4	5,52	6,76	7,81	8,73	5,52	6,76	7,81	8,73	5,48	6,72	7,76	8,67
SPW-5	8,69	10,6	12,3	13,7	8,68	10,6	12,3	13,7	8,63	10,6	12,2	13,6
SPW-6	14,6	17,9	20,6	23,1	14,6	17,9	20,6	23,1	14,5	17,8	20,5	22,9
SPW-7	25,7	31,4	36,3	40,6	25,7	31,4	36,3	40,6	25,5	31,2	36,1	40,3

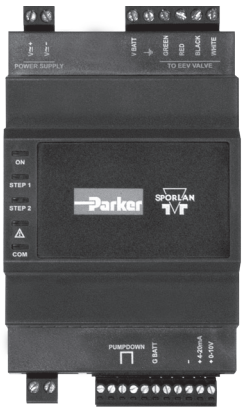
Full Stroke Capacity (capacities in Tons, pressures in psid)												
	0°F				-20°F				-40°F			
	100	150	200	300	100	150	200	300	100	150	200	300
SPW-0	0,12	0,15	0,17	0,21	0,12	0,15	0,18	0,21	0,12	0,15	0,17	0,21
SPW-1	0,30	0,37	0,43	0,52	0,30	0,37	0,43	0,52	0,30	0,37	0,42	0,52
SPW-2	0,54	0,66	0,77	0,94	0,54	0,66	0,77	0,94	0,54	0,66	0,76	0,93
SPW-3	0,84	1,02	1,18	1,45	0,84	1,03	1,18	1,45	0,83	1,02	1,18	1,44
SPW-4	1,45	1,77	2,05	2,51	1,45	1,77	2,05	2,51	1,44	1,76	2,04	2,49
SPW-5	2,28	2,79	3,22	3,94	2,28	2,79	3,22	3,95	2,26	2,77	3,20	3,92
SPW-6	3,83	4,69	5,41	6,63	3,83	4,69	5,42	6,63	3,80	4,66	5,38	6,59
SPW-7	6,73	8,24	9,52	11,7	6,74	8,25	9,53	11,7	6,69	8,19	9,46	11,6

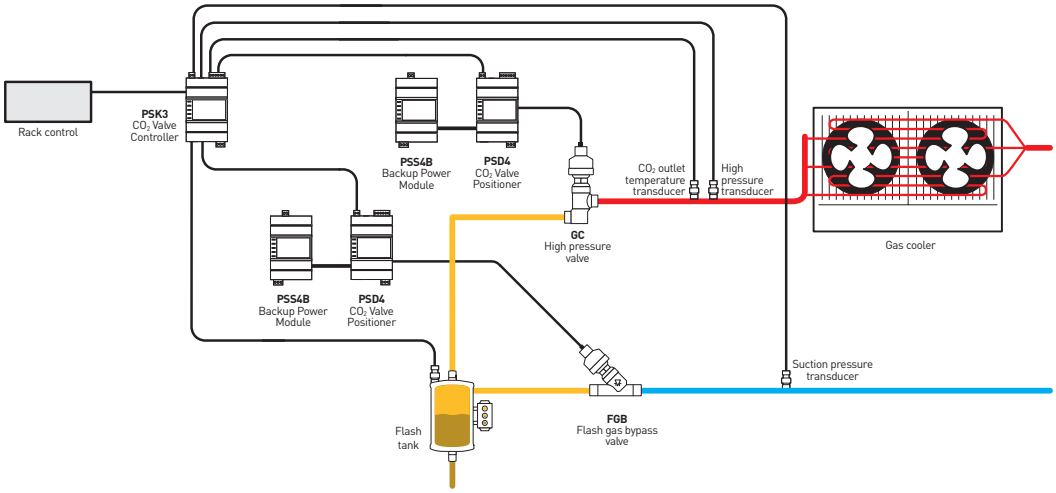
Liquid temperature correction factors						
°F	0	10	20	30	40	50
°C	-18	-12	-7	-1	4	10
	1,32	1,24	1,17	1,09	**1,00**	0,91

ELECTRONIC CONTROLLERS

PSD4BX3XXXVP CO_2 VALVE POSITIONER

PSD4BX3XXXVP CO_2 Valve positioner drives the Parker-Sporlan GC and FGB valves. By providing either a 0-10V or 4-20mA signal from a system controller, the PSD4BX3XXXVP translates this signal in to a suitable stepper motor sequence to position the valve proportionally.
The Backup Power Module PSS4B is available as option. Upon power loss, the backup module provides reserve power for one full valve closure, to isolate the refrigerant and minimize refrigerant loss due to venting.





PSD4 SUPERHEAT CONTROLLER

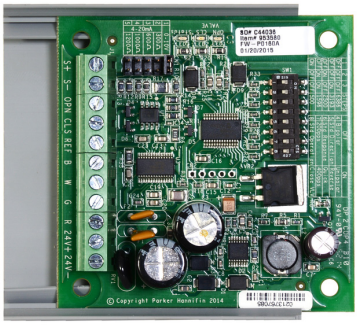
PSD4 is the controller for Parker-Sporlan range of SER electric expansion valves that can be used in the low pressure side of the system as superheat controller. The controller can also be used as an analogue positioner for the SER valves and can be matched with the most part of the main controllers available in the market.
The controller has 4 programmable analog inputs (NTC, Pt1000, 0...20mA, 4..20mA, 0..5V) and 3 configurable digital inputs (enable the controller, change parameters set and resynchronise) and 1 configurable digital output (alarm, solenoid valve). Modbus RS-485 and CANbus communication protocols. Available with integrated LCD display or blind version.

OPTIONS

- Pressure transducer
- Temperature probes
- PSS4B Backup Power Module that provides reserve power for one full valve closure if power supply is lost
- PSKEY10 programming key for quick download of parameters
- PSIF20TUXI PC Programming kit
- PSV4GBR remote LCD programming panel

IB-G BOARD FOR CO_2 APPLICATIONS

IB-G is a small electronic circuit board that extends the functionality of an external system controller to drive Step Motor Valves. The IB-G board can manage SER family of electric expansion valves and CDS family of electric pressure regulating valves. The IB-G board can power one or two valves. Two bipolar valves may be used and will operate simultaneously and will open and close by the same number of steps.
The controller accepts 4-20mA or 0-10V Analog Input signal from external controller. Enhanced features include LED indicators for power and valve position.



FEATURES AND BENEFITS

- Small dimensions
- 24V power supply
- Easy setup
- Initialization routine
- Valve force close/open
- Visual indicators LED

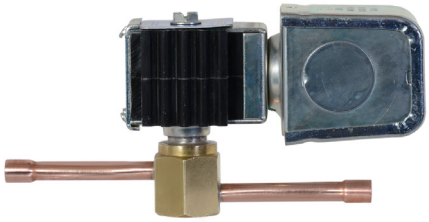
SOLENOID VALVES

48 bar

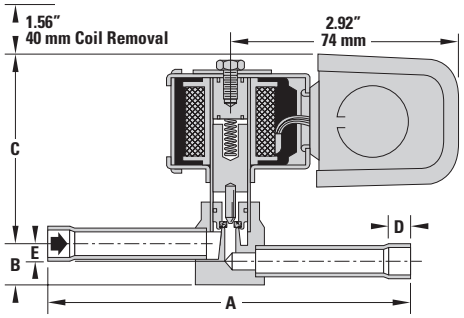
TECHNICAL SPECIFICATIONS

TYPE **E2-HP** and **E5-HP** series

The E2-HP Serie is direct acting hermetic solenoid valve.
The E5-HP Serie is hermetic solenoid valve with pilot operated disc construction.
These valves may be mounted horizontally, on their side or in a vertical line.
The E2-HP and E5-HP series solenoid valves feature extended solder type connections as standard. One important benefit to the user is that all valves in the E2-HP and E5-HP series can be installed using either low or no silver content brazing alloy.
The MKC-1 coil is Class "F" temperature rated and is provided as standard, therefore a high temperature coil is not required for discharge service.



E2S120E-HP



FEATURES AND BENEFITS

- Compact, Pilot Operated or direct acting
- Mount Horizontally, on Side, or in a Vertical Line
- MKC-1 and OMKC-1 Coils, Class F
- Tight closing through use of synthetic seating material.

ORDERING INSTRUCTIONS

Description	Series	Port size in 1/32"	Connections	Coil size	Connections size in 1/8"	Connection type*	Coil connection		Pressure
Possible values	E	2 5	S=Solder	1	2 3	0 = ODF x ODF 1 = ODF x ODM 2 = ODM x ODF 3 = ODM x ODM	S = Spade E = DIN 43650A	–	HP
Example	E	2	S	1	2	0	E	–	HP

*Standard connections are ODF inlet x ODF outlet on "E" Series valves. Minimum quantities may be required for other connections.

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.
When ordering Body Assembly, specify Valve Type and Connections.
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.
Example: MKC-1 120/50-60.

Voltage and cycles availabe:
24V/50-60Hz, 120V/50-60Hz, 208-240V/50-60Hz, 120-208-240V/50-60Hz.

For Secondary Coolant CO_2 applications, please refer to Bulletin 30-10-10, or contact Parker RACE

TECHNICAL DATA

Series	TYPE	A [inch]	B [inch]	C [inch]	D Fitting depth (ODF) [inch]	E OFFSET [inch]	Connec-tions ODF [inch]	Cv	Port size [inch]	MRP [psi]	MOPD (AC) [psi]	MOPD (DC) [psi]
E2	E2S120-HP	4,63	0,55	1,96	0,31	0,29	1/4	0,15	0,075	1.015	450	400
E5	E5S130-HP	4,56	0,53	2,48	0,31	0,23	3/8	0,53	0,150	1.015	450	400

Series	TYPE	A [mm]	B [mm]	C [mm]	D Fitting depth (ODF) [mm]	E OFFSET [mm]	Connec-tions ODF [inch]	Kv	Port size [mm]	MRP [bar]	MOPD (AC) [bar]	MOPD (DC) [bar]
E2	E2S120-HP	118	14	50	8	7,4	1/4	0,13	1,9	70	31	27,6
E5	E5S130-HP	116	13	63	8	5,8	3/8	0,46	3,8	70	31	27,6

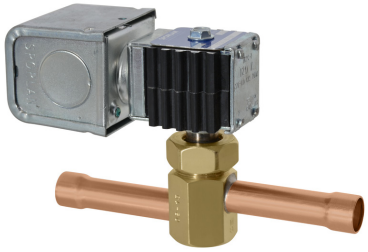
SOLENOID VALVES

48 bar

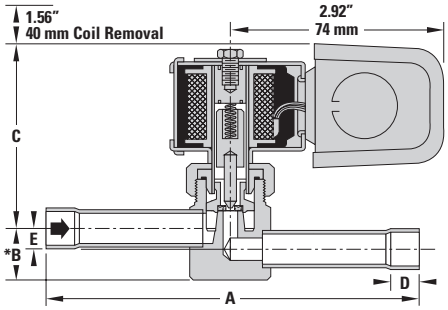
TECHNICAL SPECIFICATIONS

TYPE **E6-HP** and **E8-HP** series

The E6-HP and E8-HP Series are compact solenoid valves with pilot operated disc construction for refrigeration and air conditioning.
These valves may be mounted horizontally, on their side or in a vertical line. They are suitable for suction line service because very low pressure differential, 1 psi, is required for full operation.
The Type E6-HP and E8-HP series solenoid valves feature extended solder type connections as standard. One important benefit to the user is that all valves in the E6-HP and E8-HP series can be installed without disassembly using either low or no silver content brazing alloy.
The MKC-1 coil is Class "F" temperature rated and is provided as standard, therefore a high temperature coil is not required for discharge service.



E8S140E-HP



FEATURES AND BENEFITS

- Compact, Pilot Operated Disc Construction
- Mount Horizontally, on Side, or in a Vertical Line
- MKC-1 and OMKC-1 Coils, Class F
- Tight closing through use of synthetic seating material.

ORDERING INSTRUCTIONS

Description	Series	Port size in 1/32"	Connections	Coil size	Connections size in 1/8"	Connection type*	Coil connection		Pressure
Possible values	E ME	6 8	S=Solder	1	3 4	0 = ODF x ODF 1 = ODF x ODM 2 = ODM x ODF 3 = ODM x ODM	S = Spade E = DIN 43650A	–	HP
Example	ME	8	S	1	4	0	E	–	HP

*Standard connections are ODF inlet x ODF outlet on "E" Series valves. Minimum quantities may be required for other connections.

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.
When ordering Body Assembly, specify Valve Type and Connections.
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.
Example: MKC-1 120/50-60.

Voltage and cycles availabe:
24V/50-60Hz, 120V/50-60Hz, 208-240V/50-60Hz, 120-208-240V/50-60Hz.

For Secondary Coolant CO_2 applications, please refer to Bulletin 30-10-10, or contact Parker RACE

TECHNICAL DATA

Series	TYPE	A [inch]	B [inch]	C [inch]	D Fitting depth (ODF) [inch]	E OFFSET [inch]	Connec-tions ODF [inch]	Cv	Port size [inch]	MRP [psi]	MOPD (AC) [psi]	MOPD (DC) [psi]
E6	E6S130-HP	4,66	0,73	2,59	0,31	0,31	3/8	0,93	0,188	1.015	450	400
	E6S140-HP	5,00	0,73	2,59	0,38	0,31	1/2	0,93	0,188	1.015	450	400
E8	E8S140-HP	5,00	0,73	2,59	0,38	0,31	1/2	0,93	0,250	1.015	450	400

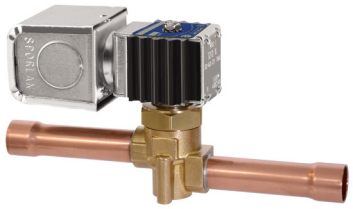
Series	TYPE	A [mm]	B [mm]	C [mm]	D Fitting depth (ODF) [mm]	E OFFSET [mm]	Connec-tions ODF [mm]	Kv	Port size [mm]	MRP [bar]	MOPD (AC) [bar]	MOPD (DC) [bar]
E6	E6S130-HP	118	19	66	7,9	7,9	3/8	0,81	4,8	70	31	27,6
	E6S140-HP	127	19	66	9,7	7,9	1/2	0,81	4,8	70	31	27,6
E8	E8S140-HP	127	19	66	9,7	7,9	1/2	1,02	6,3	70	31	27,6

SOLENOID VALVES

48 bar

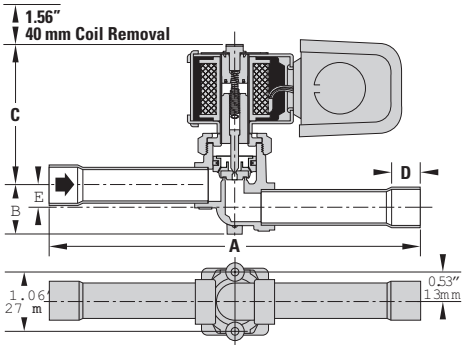
TECHNICAL SPECIFICATIONS

TYPE **E10S1-HP** series



E10S140E-HP

Type E10S1-HP Series are compact solenoid valves with pilot operated disc construction for refrigeration and air conditioning.
These valves may be mounted horizontally, on their side or in a vertical line. They are suitable for suction line service because very low pressure differential, 1 psi, is required for full operation.
The Type E10S1-HP Series solenoid valves features extended solder type connections as standard and the MKC-1 coil. One important benefit to the user is that all valves in the E10S1-HP series can be installed without disassembly using either low or no silver content brazing alloy.
The MKC-1 and OMKC-1 coils are Class "F" temperature rated and are provided as standard, therefore a high temperature coil is not required for discharge service.



FEATURES AND BENEFITS

- Compact, Pilot Operated, Disc Construction
- Mount Horizontally, on Side, or in a Vertical Line
- MKC-1 and OMKC-1 Coils, Class F
- Tight closing through use of synthetic seating material.

ORDERING INSTRUCTIONS

Description	Series	Port size in 1/32"	Connections	Coil size	Connections size in 1/8"	Connection type*	Coil connection		Pressure
Possible values	E ME	10	S=Solder	1	4 5	0 = ODF x ODF 1 = ODF x ODM 2 = ODM x ODF 3 = ODM x ODM	S = Spade E = DIN 43650A	–	HP
Example	E	10	S	1	4	0	E	–	HP

*Standard connections are ODF inlet x ODF outlet on "E" Series valves. Minimum quantities may be required for other connections.

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.
When ordering Body Assembly, specify Valve Type and Connections.
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.
Example: MKC-1 120/50-60.

Voltage and cycles availabe:
24V/50-60Hz, 120V/50-60Hz, 208-240V/50-60Hz, 120-208-240V/50-60Hz.

For Secondary Coolant CO_2 applications, please refer to Bulletin 30-10-10, or contact Parker RACE

TECHNICAL DATA

Series	TYPE	A [inch]	B [inch]	C [inch]	D Fitting depth (ODF) [inch]	E OFFSET [inch]	Connec-tions ODF [inch]	Cv	Port size [inch]	MRP [psi]	MOPD (AC) [psi]	MOPD (DC) [psi]
E10S1-HP	E10S140-HP	5,00	0,86	2,52	0,38	0,39	1/2	2,10	5/16	1.015	450	400
	E10S150-HP	6,49	0,86	2,52	0,50	0,39	5/8	2,10	5/16	1.015	450	400

Series	TYPE	A [mm]	B [mm]	C [mm]	D Fitting depth (ODF) [mm]	E OFFSET [mm]	Connec-tions ODF [mm]	Kv	Port size [mm]	MRP [bar]	MOPD (AC) [bar]	MOPD (DC) [bar]
E10S1-HP	E10S140-HP	127	22	64	10,0	10,0	1/2	1,81	7,9	70	31	27,6
	E10S150-HP	165	22	64	13,0	10,0	5/8	1,81	7,9	70	31	27,6

SOLENOID VALVES

SELECTION – CAPACITY RATIO

LIQUID CAPACITY SELECTION TABLE												
Series	TYPE		Tons of refrigeration					kW of refrigeration				
	Without manual lift stem	With manual lift stem	Pressure drop *									
			[psi]					[bar]				
	Normally closed	Normally closed	1	2	3	4	5	0,07	0,1	0,2	0,3	0,4
E2-HP	E2S120-HP	-	0,66	0,95	1,16	1,34	1,51	2,3	2,8	3,9	4,8	5,6
E5-HP	E5S130-HP	-	2,34	3,33	4,09	4,73	5,30	8,1	9,7	13,9	17,0	19,7
E6-HP	E6S130-HP	ME6S130-HP	4,20	5,90	7,21	8,30	9,26	14,6	17,4	24,4	29,8	34,3
	E6S140-HP	ME6S140-HP										
E8-HP	E8S140-HP	ME8S140-HP	5,38	7,60	9,31	10,75	12,02	18,9	22,7	32,2	39,2	45,5
E10S1-HP	E10S140-HP	-	9,11	12,90	15,90	18,40	20,60	32,0	38,6	54,6	67,0	77,0
	E10S150-HP	-										

* Do not use below 1 psi (0.07 bar) pressure drop.
Ratings based on 20°F (-5°C) liquid, -20°F (-30°C) evaporator temperature.
All solenoid valves are tested and rated in accordance with A.R.I. Standard No. 760-2001.
For the selection capacity, MOPD and electrical specifications are required.

CORRECTION FACTOR, LIQUID CAPACITY RATING										
Liquid temperature										
0°F	10°F	20°F	30°F	40°F	-20°C	-15°C	-10°C	-5°C	0°C	5°C
1,13	1,07	1,00	0,93	0,86	1,18	1,12	1,06	1,00	0,94	0,87

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of 40°F (5°C). For each 10°F (10°C) reduction in evaporating temperature, capacities are reduced by approximately 1-1/2%.
For Secondary Coolant CO_2 applications, please refer to Bulletin 30-10-10, or contact Parker RACE

Some CO_2 systems do not use oil or lubrication in their systems. If so, the lack of lubrication in the system may cause the internal components of the valve to wear prematurely resulting in eventual failure of the valve.
This disclaimer is for solenoid valves only.

SUCTION CAPACITY SELECTION TABLE												
Series	TYPE		Tons of refrigeration					kW of refrigeration				
	Without manual lift stem	With manual lift stem	Evaporation temperature									
			[°F]					[°C]				
	Normally closed	Normally closed	-40°	-30°	-20°	-10°	0°	-40°	-35°	-30°	-25°	-20°
E2-HP	E2S120-HP	-	0,10	0,11	0,12	0,13	0,15	2,3	2,8	3,9	4,8	5,6
E5-HP	E5S130-HP	-	0,35	0,39	0,43	0,47	0,52	1,23	1,37	1,51	1,65	1,83
E6-HP	E6S130-HP	ME6S130-HP	0,68	0,75	0,82	0,90	0,98	2,39	2,64	2,88	3,16	3,45
	E6S140-HP	ME6S140-HP										
E8-HP	E8S140-HP	ME8S140-HP	0,82	0,92	1,02	1,14	1,27	2,88	3,23	3,59	4,00	4,46
E10S1-HP	E10S140-HP	-	1,35	1,52	1,70	1,90	2,12	4,75	5,34	5,98	6,68	7,46
	E10S150-HP	-										

Ratings based on 20°F (-5°C) liquid, 25°F (14°C) superheat, 1psi (0,07bar) Δp.

DISCHARGE CAPACITY SELECTION TABLE												
Series	TYPE		Tons of refrigeration					kW of refrigeration				
	Without manual lift stem	With manual lift stem	Pressure drop									
			[psi]					[bar]				
	Normally closed	Normally closed	2	5	10	25	50	0,15	0,3	0,7	1,5	4,0
E2-HP	E2S120-HP	-	0,21	0,34	0,48	0,77	1,25	0,78	1,11	1,71	2,52	4,67
E5-HP	E5S130-HP	-	0,75	1,20	1,70	2,72	4,39	2,75	3,91	6,02	8,87	16,5
E6-HP	E6S130-HP	ME6S130-HP	1,40	2,20	3,09	4,85	7,46	5,11	7,19	10,9	15,9	27,9
	E6S140-HP	ME6S140-HP										
E8-HP	E8S140-HP	ME8S140-HP	1,81	2,89	4,05	6,41	8,78	6,61	9,36	14,2	20,9	32,8
E10S1-HP	E10S140-HP	-	2,90	4,63	6,60	10,5	15,5	10,6	15,2	23,4	34,5	58,1
	E10S150-HP	-										

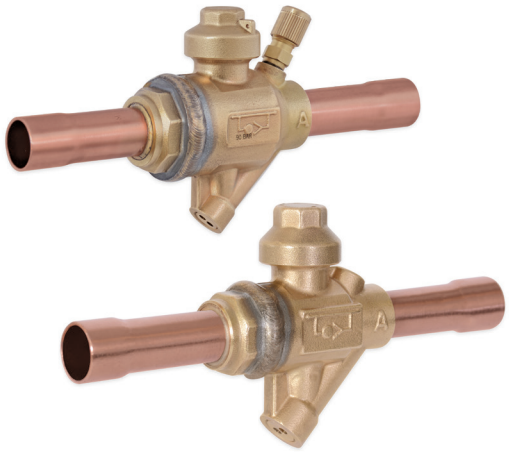
Ratings based on 20°F (-5°C) condensing, isentropic compression plus 50°F (28°C), -20°F (-30°C) evaporator, 5°F (-15°C) suction gas at the compressor.

BALL VALVES

90 bar

BALL VALVE WITH INTEGRATED PRESSURE RELIEF

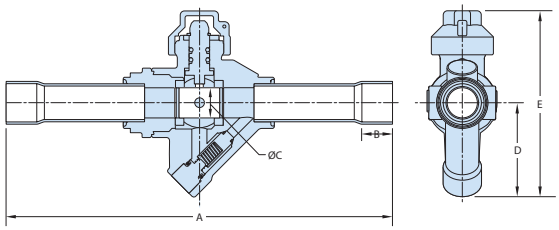
TYPE **EBV-PR**



For greater system design flexibility and increased productivity, specify the EBV-PR Ball Valve with Integrated Pressure Relief. This compact solution eliminates the check valve and associated brazing involved when piping a ball valve and check valve in parallel to protect a system from over pressurization.
EBV-PR allows for positive shut-off in one direction and flow in the other direction whenever pressure differential is present. The integrated pressure relief feature is in one direction only.

FEATURES AND BENEFITS

- All EBV-PR ball valves may be installed in any position.
- Protects system from pressure spikes when servicing equipment.
- Stainless steel stop plate ensures fully open to fully closed with a 1/4 turn.
- Full size ports for unrestricted flow on most sizes, 10 mm (3/8") through 28 mm (1-1/8").
- Dual Teflon seals surround the polished, brass ball to prevent leakage. Stem seal and stem washer provide the primary stem seal. Bottom load stem for safety.
- Maximum Rating Pressure (MRP) of 1.305 psig (90 barg)
- Operating temperature range: -40°C to +107°C (-40°F to +225°F)
- ODF connection



ORDERING INSTRUCTIONS

Description	Valve type	Access fitting	-	Pressure relief	Fitting size
Possible values	EBV	T	-	PR	x/x" imperial xxMM metric
Example	EBV	T	-	PR	3/8" 10MM

DIMENSIONS AND TECHNICAL DATA

	Connection (ODF)	A Overall length [mm]	B Socket depth [mm]	C Port size [mm]	D [mm]	E Overall height [mm]	Kv m^3/h
EBV-PR 3/8"	3/8"	165,10	7,90	12,70	39,62	78,23	3,67
EBV-PR 1/2"	1/2"	165,10	9,65	12,70	39,62	78,23	5,97
EBV-PR 5/8"	5/8"'	165,10	12,70	12,70	39,62	78,23	11,86
EBV-PR 3/4"	3/4"	184,15	15,75	19,05	45,47	91,19	17,93
EBV-PR 7/8"	7/8"	184,15	19,05	19,05	45,47	91,19	25,86
EBV-PR 1-1/8"	1-1/8"	215,90	23,10	25,40	54,10	104,39	52,29
EBVT-PR 3/8"	3/8"	165,10	7,90	12,70	39,62	78,23	3,67
EBVT-PR 1/2"	1/2"	165,10	9,65	12,70	39,62	78,23	5,97
EBVT-PR 5/8"	5/8"'	165,10	12,70	12,70	39,62	78,23	11,86
EBVT-PR 3/4"	3/4"	184,15	15,75	19,05	45,47	91,19	17,93
EBVT-PR 7/8"	7/8"	184,15	19,05	19,05	45,47	91,19	25,86
EBVT-PR 1-1/8"	1-1/8"	215,90	23,10	25,40	54,10	104,39	52,29

	Connection (ODF)	A Overall length [mm]	B Socket depth [mm]	C Port size [mm]	D [mm]	E Overall height [mm]	Kv m^3/h
EBV-PR 10MM	10 mm	165,10	7,90	12,70	39,62	78,23	3,67
EBV-PR 12MM	12 mm	165,10	9,65	12,70	39,62	78,23	5,97
EBV-PR 16MM	16 mm	165,10	12,70	12,70	39,62	78,23	11,86
EBV-PR 18MM	18 mm	184,15	15,75	19,05	45,47	91,19	17,93
EBV-PR 22MM	22 mm	184,15	19,05	19,05	45,47	91,19	25,86
EBV-PR 28MM	28 mm	215,90	23,10	25,40	54,10	104,39	52,29
EBVT-PR 10MM	10 mm	165,10	7,90	12,70	39,62	78,23	3,67
EBVT-PR 12MM	12 mm	165,10	9,65	12,70	39,62	78,23	5,97
EBVT-PR 16MM	16 mm	165,10	12,70	12,70	39,62	78,23	11,86
EBVT-PR 18MM	18 mm	184,15	15,75	19,05	45,47	91,19	17,93
EBVT-PR 22MM	22 mm	184,15	19,05	19,05	45,47	91,19	25,86
EBVT-PR 28MM	28 mm	215,90	23,10	25,40	54,10	104,39	52,29

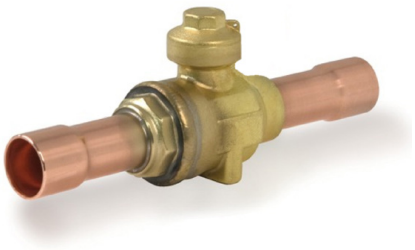
BALL VALVES

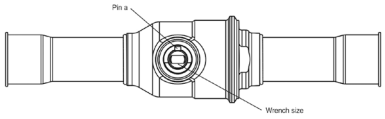
70 bar

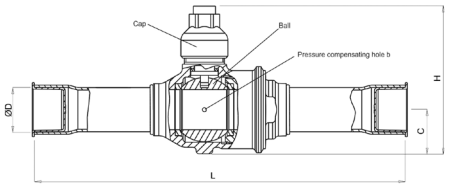
BI-FLOW CO_2 BALL VALVE

TYPE **OBL**

OBL valves have a maximum working pressure of 70 bar and are available in a range of metric sizes from 6 to 35 mm and imperial sizes from 1/4'' to 1-3/8".
A small hole in one sealing face of the ball prevents refrigerant being locked within the ball when closed. It also allows the ball to exert a greater force against the teflon ball seal when closed, giving greater close-off safety.
Valves from 15mm (5/8") have K65 connections.







TECHNICAL DATA

Metric Reference							
	Description	**OD [mm]**	**Bore diameter [mm]**	**L [mm]**	**C [mm]**	**H [mm]**	**Kv [m³/h]**
OBL6mm	BV CO_2 70bar 6mm	6	10	126	13	51	1,6
OBL8mm	BV CO_2 70bar 8mm	8	10	132	13	51	4,2
OBL10mm	BV CO_2 70bar 10mm	10	10	132	13	51	5,3
OBL12mm	BV CO_2 70bar 12mm	12	10	140	13	51	6,6
OBL15mm	BV CO_2 70bar 15mm	15	16	146	18,5	64	13
OBL5	BV CO_2 70bar 16mm & 5/8"	16	16	146	18,5	64	13
OBL18mm	BV CO_2 70bar 18mm	18	16	146	18,5	64	17
OBL22mm	BV CO_2 70bar 22mm	22	20	185	21	74	26
OBL28mm	BV CO_2 70bar 28mm	28	25	205	26	80	41
OBL11	BV CO_2 70bar 35mm & 1-3/8"	35	32	208	32	95	86

Inches Reference							
	Description	**OD [mm]**	**Bore diameter [mm]**	**L [mm]**	**C [mm]**	**H [mm]**	**Kv [m³/h]**
OBL2	BV CO_2 70bar 1/4"	1/4"	10	126	13	51	1,6
OBL3	BV CO_2 70bar 3/8"	3/8"	10	132	13	51	4,2
OBL4	BV CO_2 70bar 1/2"	1/2"	10	132	13	51	5,3
OBL5	BV CO_2 70bar 5/8" & 16mm	5/8"	10	140	13	51	6,6
OBL6	BV CO_2 70bar 3/4"	3/4"	16	146	18,5	64	13
OBL7	BV CO_2 70bar 7/8"	7/8"	16	146	18,5	64	13
OBL9	BV CO_2 70bar 1-1/8"	1 1/8"	16	146	18,5	64	17
OBL11	BV CO_2 70bar 1-3/8" & 35mm	1 3/8"	20	185	21	74	26

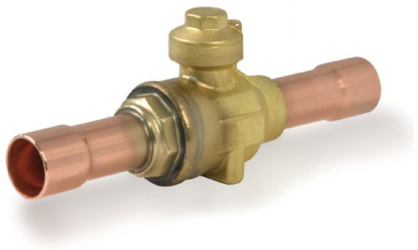
BALL VALVES

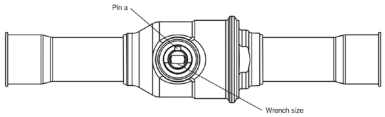
120 bar

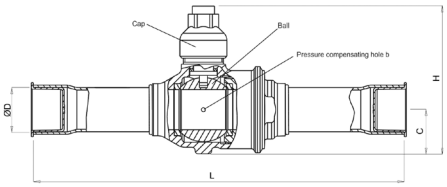
BI-FLOW CO_2 BALL VALVE

TYPE **OBH**

Parker Bi-Flow CO_2 Ball valves are available for application on transcritical circuit and for high pressure side.
OBH valves have a maximum working pressure of 120 bar and are available in a range of metric sizes from 6 to 54 mm and imperial sizes from 1/4'' to 2-1/8''.
A small hole in one sealing face of the ball prevents refrigerant being locked within the ball when closed. It also allows the ball to exert a greater force against the teflon ball seal when closed, giving greater close-off safety.
Valves from 15mm (5/8") have K65 connections.







TECHNICAL DATA

Metric Reference							
	Description	**OD [mm]**	**Bore diameter [mm]**	**L [mm]**	**C [mm]**	**H [mm]**	**Kv [m³/h]**
OBH6mm	BV CO_2 120bar 6mm	6	10	126	13	51	1,6
OBH8mm	BV CO_2 120bar 8mm	8	10	132	13	51	4,2
OBH10mm	BV CO_2 120bar 10mm	10	10	132	13	51	5,3
OBH12mm	BV CO_2 120bar 12mm	12	10	140	13	51	6,6
OBH15mm	BV CO_2 120bar 15mm	15	16	146	18,5	64	13
OBH5	BV CO_2 120bar 16mm & 5/8"	16	16	146	18,5	64	13
OBH18mm	BV CO_2 120bar 18mm	18	16	146	18,5	64	17
OBH22mm	BV CO_2 120bar 22mm	22	20	185	21	74	26
OBH28mm	BV CO_2 120bar 28mm	28	25	205	26	80	41
OBH11	BV CO_2 20bar 35mm & 1-3/8"	35	32	208	32	95	86
OBH42mm	BV CO_2 120bar 42mm	42	38	242	38,5	117	110
OBH17	BV CO_2 120bar 54mm & 2-1/8"	54	50	273	48,5	134	208

Inches Reference							
	Description	**OD [mm]**	**Bore diameter [mm]**	**L [mm]**	**C [mm]**	**H [mm]**	**Kv [m³/h]**
OBH2	BV CO_2 120bar 1/4"	1/4"	10	126	13	51	1,6
OBH3	BV CO_2 120bar 3/8"	3/8"	10	132	13	51	5,3
OBH4	BV CO_2 120bar 1/2"	1/2"	10	140	13	51	6,6
OBH5	BV CO_2 120bar 5/8" & 16mm	5/8"	16	146	18,5	64	13
OBH6	BV CO_2 120bar 3/4"	3/4"	16	146	18,5	64	17
OBH7	BV CO_2 120bar 7/8"	7/8"	20	185	22	74	26
OBH9	BV CO_2 120bar 1-1/8"	1 1/8"	25	205	26	80	41
OBH11	BV CO_2 120bar 1-3/8" & 35mm	1 3/8"	32	208	32	95	86
OBH13	BV CO_2 120bar 1-5/8"	1 5/8"	38	242	38,5	117	110
OBH17	BV CO_2 120bar 2-1/8'' & 54mm	2 1/8"	50	273	48,5	134	208

FILTER–DRIERS

155 bar

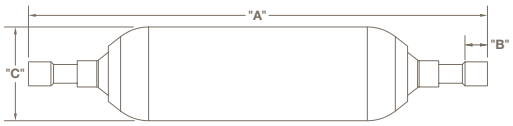
FILTER-DRIERS FOR CO_2 APPLICATIONS

TYPE **CO** series

The CO series product has been designed to withstand the extreme pressure of transcritical carbon dioxide (R-744) systems while providing complete system protection in a compact design. A unique combination of moisture, acid, and solid debris removal extends the life, reliability, and capacity of these systems that operate under extreme conditions.
Combining ideal capability in a compact size, the CO Series enables system optimization while maximizing protection and cost effectiveness. Other fitting sizes are available upon request. Please contact your Sales Engineer for assistance.

FEATURES AND BENEFITS

- Desiccants optimized for use with R744
- Maximum Rated Pressure (MRP) of 2250 psi (155 bar)
- Burst Pressure Rating 6750 psi (465 bar)
- Solid copper connections for fast, easy system connection



TECHNICAL DATA

Model	CONNECTIONS ODF solder	R744 FLOW CAPACITY		A OVERALL LENGTH		B SOCKET DEPTH		C SHELL DIAMETER		DROPS OF R744 WATER CAPACITY @140°F (60°C)
	[inches]	[Tons]	[kW]	[inches]	[mm]	[inches]	[mm]	[inches]	[mm]	[mm]
CO-0115-S	3/16"	0,7	2,5	5,72	145	0,20	5,0	0,88	22,4	30,0
CO-012-S	1/4"	1,7	6,0	5,72	145	0,25	6,4	0,88	22,4	30,0
CO-022-S	1/4"	2,3	8,0	6,25	159	0,25	6,4	1,25	31,8	60,0
CO-082-S	1/4"	2,7	8,4	10,94	278	0,25	6,4	2,38	61,0	200,0
CO-085-S	5/8"	9,8	34,0	10,94	278	0,50	12,7	2,38	61,0	200,0

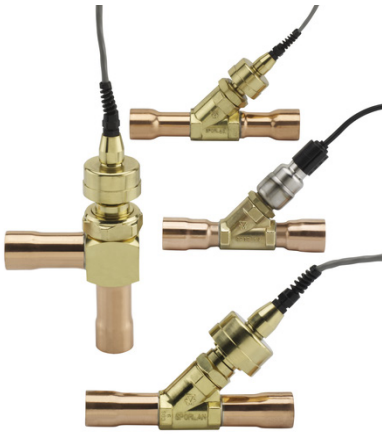
OTHER COMPONENTS

ELECTRIC PRESSURE REGULATING VALVES TYPE CDS SERIES

47 bar 48 bar

The CDS family represents a line of electronically controlled step motor valves, designed to contribute minimal pressure drop to the system. In addition to their traditional application as Electric Evaporator Pressure Regulators, CDS valves can also be applied as Heat Reclaim, Head Pressure Control or Liquid Line Differential valves. CDS valves can be used to replace a variety of mechanical and solenoid valves throughout typical refrigeration systems, where low pressure drop and precise refrigerant flow control are desired.

Maximum rated pressure of 47 or 48 bar in according with the model.



FILTER-DRIERS CATCH-ALL® SERIES

41 bar 45 bar

The Catch-All® filter-drier removes moisture from the refrigerant by absorbing and retaining it deep within the desiccant granules. Large filtering area of the filter-drier core permits it to collect a large amount of dirt without plug up. Refrigerant flow capacity from 7 up to 163kW at ΔP=0.07bar -5°C liquid temperature and -30°C evaporator temperature.
In according with model and size, Catch-All® are available as sealed type or with replaceable core type.

Maximum rated pressure up to 44,8 bar in according with the model.

SIGHT-GLASSES AND MOISTURE INDICATORS TYPE SEE-ALL® SERIES

45 bar

See-All® Moisture and Liquid Indicator combines the two functions of moisture and liquid indication into a single economical product. It takes the guess work out of servicing refrigeration and air conditioning equipment. The See-All® assists the technician in determining the state of the circulating refrigerant at a particular location and if a safe moisture level exists in the system. Reliable and accurately calibrated colour change points, replaceable indicator element and unnecessary disassembly for installation are the three bigger benefits on use of See-All®.

Maximum rated pressure of 44,8 barg.

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CO2_Catalogue_2024.10 10.2024

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