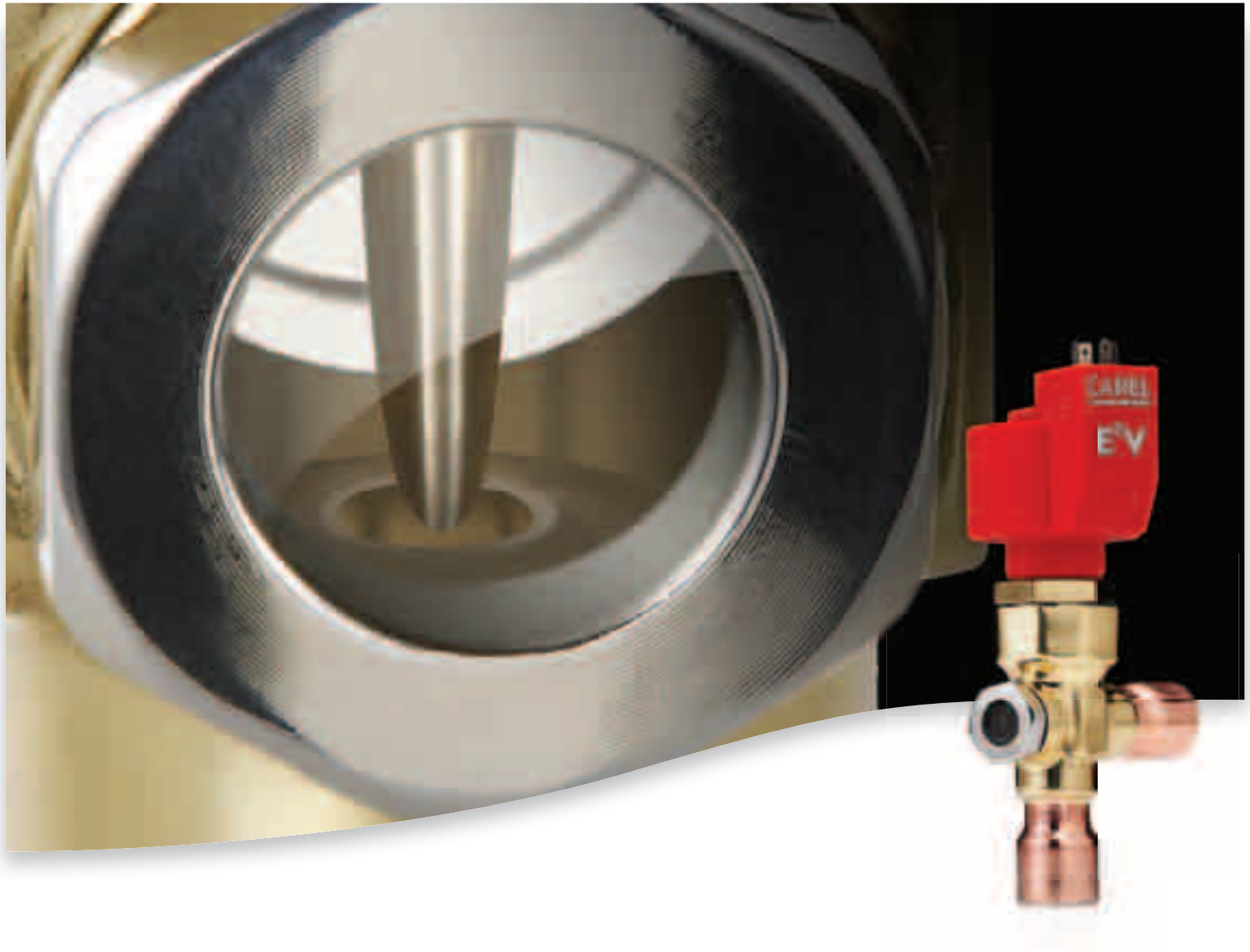




connectivity, monitoring and remote management systems  
electronic expansion valves and drivers

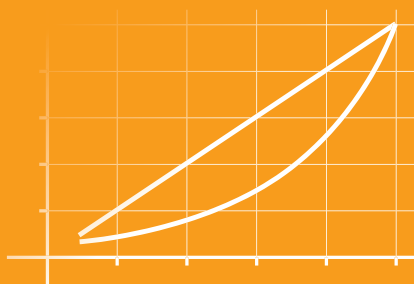


## E<sup>2</sup>V smart electronic expansion valve

# E<sup>2</sup>V smart - high technology for even more flexible operation

The CAREL E<sup>2</sup>V-smart series electronic expansion valves combine the renowned reliability of the CAREL E<sup>2</sup>V with the versatility of a removable cartridge, covering a range of cooling capacities from 1 kW to 40 kW.

- efficient control of refrigeration and air-conditioning units, over an extended range of applications;
- completely removable for extremely simple installation;
- high reliability and high quality materials;
- equipercentile profile: guarantees precise control even when operating at part load



Modulation of refrigerant flow guarantees a wide operating range, due to the combination of the fixed opening and the moving element with a travel of 15 mm driven by stepper motor.

The E<sup>2</sup>V-smart has been carefully designed down to the smallest detail, to guarantee high reliability, and ensures correct operation with fluid flow in both directions. This simplifies the refrigerant circuit for reverse-cycle operation and reduces installation costs.

E<sup>2</sup>V-smart is made from modular components that are assembled during installation; this solution simplifies maintenance and inspection of the individual components.

CAREL products such as the EVD EVO, MPXPRO and pCO<sup>2</sup> feature native support for valve control.



## Easy installation and maintenance

The valve kinematic mechanism can be easily removed, simplifying welding by avoiding the risk of damage and allowing replacement if needed.



## Perfect seal on closing

In the closed position the valve provides perfect sealing to refrigerant flow, thanks to the Teflon gasket on the actuator and the calibrated spring that presses this against the edge of the opening.



## High reliability and high quality materials

The valve kinematic mechanism is made entirely from high quality materials. The construction without reduction gears means the mechanism is reliable and long-lasting, guaranteeing extended product life.

## Components

### Removable stator

Easy to install and no contact with the refrigerant.

### Removable cartridge

Guarantees maximum flexibility in installation, thanks to the possibility to weld the valve body separately from the cartridge.

### Teflon gasket

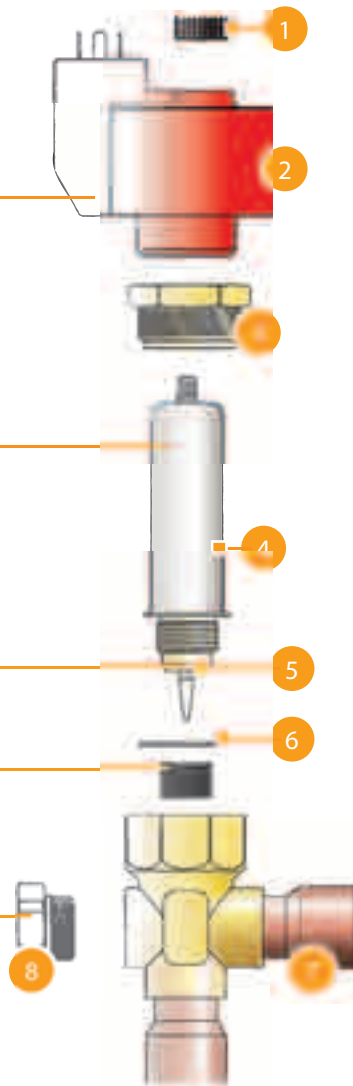
Guarantees perfect seal when valve closed

### Built-in filter

Optional. Easy management of refrigerant filtering

### Add-on sight glass

Optional. Shows the movement of the valve and the quality of expansion



- 1 threaded cap;
- 2 resin-bonded stepper motor with connector pins;
- 3 ring nut;
- 4 removable cartridge with kinematic mechanism and movement (control rod);
- 5 Teflon seal gasket;
- 6 Teflon gaskets;
- 7 body with fittings to be welded to the circuit pipework;
- 8 threaded sight glass with 2 o-rings (optional).

## Technical specifications

### CAREL E<sup>2</sup>V-smart technical specifications

Compatibility	R22, R134a, R404A, R407C, R410A, R744, R507A, R417A
Maximum operating pressure (MOP)	up to 45 bars (653 psi)
Maximum operating press. diff. (MOPD)	35 bars (508 psi)
PED	Group 2, article 3, par. 3
Refrigerant temperature	-40T65 °C (-40T149 °F)
Room temperature	-30T50 °C (-22T122 °F)

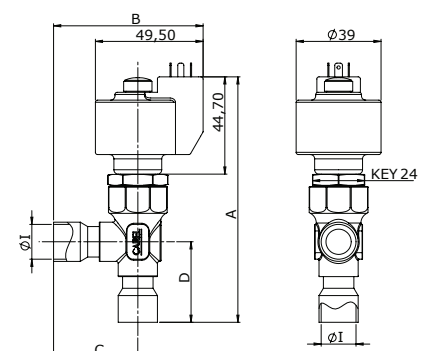
Contact CAREL INDUSTRIES for different operating conditions or alternative refrigerants

### CAREL E<sup>2</sup>V-smart stator

Phase current	450 mA
Control frequency	50 Hz (up to 150 Hz for emergency closing)
Phase resistance (25 °C)	36 Ohm ±100%
Index of protection	IP65 with E2VCON****, IP67 with E2VCAB***
Step angle	15°
Linear progress/step	0.03 mm (0.0012 inch)
Connections	4 wires (AWG 18/22)
Complete closing steps	550
Control steps	480

## Dimensions

Type of valve	A mm (inch)	B mm (inch)	C mm (inch)	D mm (inch)	E mm (inch)
E2V**SSF**	109,8 (4.32)	65,7 (2.59)	35,7 (1.41)	34 (1.34)	12 (0.47)
E2V**SWF**	107,8 (4.24)	63,7 (2.51)	33,7 (1.33)	32 (1.26)	12,7 (1/2)
E2V**SSM**	112,8 (4.44)	68,7 (2.70)	38,7 (1.52)	37 (1.46)	16 (5/8)



## Cooling capacity (kw)

### AIR-CONDITIONING

condensing temp.= 38 °C, evaporation temp.= 4,4 °C

	R22	R134a	R404a	R410a	R407c	R507a
E2V05	1.7	1.3	1.2	2	1.7	1.2
E2V09	2.6	2	1.8	3.1	2.6	1.8
E2V11	4.5	3.5	3.3	5.4	4.7	3.2
E2V14	6.9	5.3	5	8.3	7.1	4.9
E2V18	9.9	7.6	7.1	11.8	10.1	6.9
E2V24	19.6	15.1	14.1	23.6	20.2	13.8
E2V30	31.2	23.9	22.3	37.5	32	21.8
E2V35	39.5	30.3	28.4	47.5	40.6	27.7

subcooling 1 °C

### NT REFRIGERATION

condensing temp.= 40 °C, evaporation temp.= -15 °C

	R22	R134a	R404a	R410a	R407c	R507a
E2V05	1.9	1.4	1.4	2.3	2	1.3
E2V09	2.9	2.2	2.1	3.6	3	2
E2V11	5.2	3.9	3.7	6.4	5.3	3.6
E2V14	8	6	5.7	9.8	8	5.5
E2V18	11.4	8.5	8	13.9	11.5	7.8
E2V24	22.6	16.9	16	27.6	22.9	15.6
E2V30	35.8	26.7	25.5	43.7	36.3	24.8
E2V35	45.5	34	32.2	55.6	46.2	31.5

subcooling 5 °C

### LT REFRIGERATION

condensing temp.= 40 °C, evaporation temp.= 40 °C

	R22	R134a	R404a	R410a	R407c	R507a
E2V05	2	1.4	1.3	2.3	1.9	1.2
E2V09	3	2.1	2	3.6	2.9	1.9
E2V11	5.3	3.8	3.5	6.4	5.2	3.4
E2V14	8.1	5.8	5.4	9.9	8	5.2
E2V18	11.5	8.2	7.6	14	11.3	7.4
E2V24	23	16.3	15.2	27.9	22.6	14.8
E2V30	36.4	25.9	24.1	44.2	35.9	23.4
E2V35	46.3	32.9	30.5	56.2	45.5	29.8

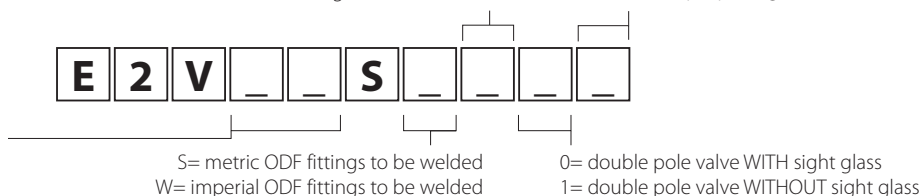
subcooling 5 °C

## Codes

05= E2VS size 05  
09= E2VS size 09  
11= E2VS size 11  
14= E2VS size 14  
18= E2VS size 18  
24= E2VS size 24  
30= E2VS size 30  
35= E2VS size 35

F= - 12-12 mm fittings for sizes 09 to 18 metric (S)  
- 1/2-1/2" fittings for sizes 09 to 18 imperial (W)  
M= 16-16 mm fittings for sizes 24, 30 and 35

0= single package  
1= multiple package (10)



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