

CAREL



connectivity, monitoring and remote management systems
electronic expansion valve and driver



E³V and E⁴V
electronic expansion valves

carel.com

E³V and E⁴V, CAREL's solutions for medium and medium/high capacity air-conditioning units

Used on chillers, heat pumps and CCU units, where the EEV solution is now the standard.

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 CAREL E³V and E⁴V series electronic expansion valves cover a range of cooling capacities from 1 kW to 250 kW.

The E³V and E⁴V have been carefully designed down to the smallest detail, to guarantee high reliability, and ensure correct operation with fluid flow in both directions. This simplifies the refrigerant circuit for reverse-cycle operation and reduces installation costs.

E⁴V is made from modular components that are assembled during installation; this solution simplifies maintenance and the inspection of the individual components. The sight glass can be used to check the movement of the moving element and the flow of refrigerant inside the circuit.

The innovative features of the E⁴V include modularity and the optional sight glass.



Equipercenile profile

Guarantees precise control even when operating at part load..



Easy installation and maintenance

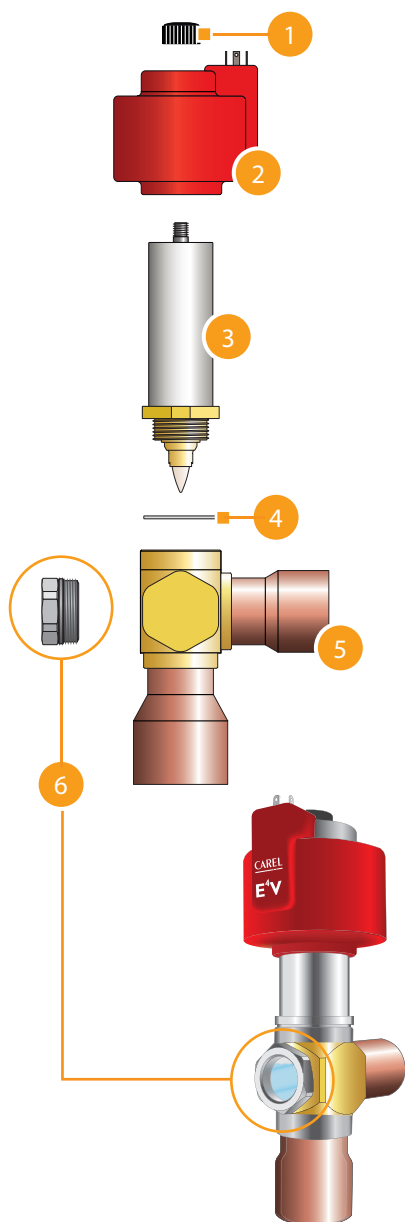
The valve body can be welded separately from the cartridge that contains the kinematic mechanism. The built-in filter can be housed inside the valve body.



High reliability and quality materials

The quality of the materials used and the simple construction guarantees high reliability and long life of the CAREL valve.

Components



- 1 threaded cap;
- 2 resin-bonded stepper motor with connector pins;
- 3 cartridge with kinematic mechanism and movement (control rod);
- 4 OR for seal between body and cartridge
- 5 body with fittings to be welded to the circuit pipework
- 6 *E⁴V only* - threaded sight glass (optional)

Technical specifications

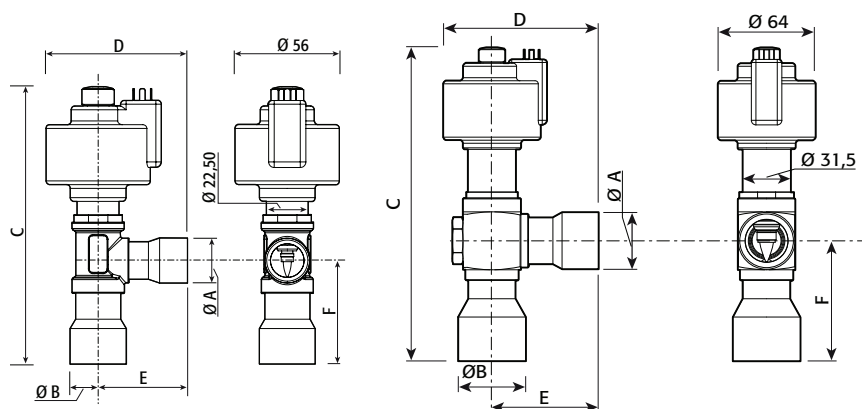
E³V and E⁴V

Compatibility	R22, R134a, R407C, R410A, R404A, R507A, R417A
Maximum operating pressure (MOP)	up to 45 bars
Maximum operating pressure differential (MOPD)	35 bars for E3V 30 bars for E4V85 24 bars for E4V95
PED	Group 2, article 3, par. 3
Refrigerant temperature	-35T65 °C for E3V; -20T65 °C for E4V
Room temperature	-10T50 °C for E3V; -10T65 °C for E4V
Stator - double pole low voltage (2 phases - 24 bipolar expansions)	
Phase current	450 mA
Control frequency	50 Hz; 150 Hz in emergency mode
Phase resistance (25 °C)	36 Ohm ±10% (25 °C/77 °F)
Index of protection	IP65 with E2VCON**** connector IP67 with E2VCAB***
Step angle	7.5°
Linear progress/step	0.02 mm for E3V 0.03 mm for E4V
Connections	4 wires (AWG 18/22)
Complete closing steps	500

Contact CAREL INDUSTRIES for different operating conditions or alternative refrigerants

Dimensions

Type of valve	A	B	C	D	E	F
E3V						
E3V45ASR00	18	22	139	67	39	46
E3V55ASR00	18	22	139	67	39	46
E3V55ASS00	22	28	149	76	48	56
E3V65ASS0	22	28	149	76	48	56
E4V						
E4V55ASS00 / E4V55ASS10	22	28	184	82	50	57
E4V65ASS00 / E4V65ASS10	22	28	184	82	50	57
E4V85AST00 / E4V85AST10	28	35	198	88	56	71
E4V95AST00 / E4V95AST10	28	35	198	88	56	71



Cooling capacities (kw)

Water cooling

Operating conditions	
Saturated condensing temperature	37.8 °C
Saturated evaporation temperature	1.7 °C
Subcooling	5.6 °C
Condensing unit pressure drop	0.5 bar
Evaporating unit pressure drop	1.5 bar

Valve	R22	R407	R410a	R134a
E3V				
E3V45*	63	65	78	47
E3V55*	96.0	99.2	120.1	71.2
E3V65*	131.9	136.3	165.1	97.8
E4V				
E4V55*	96.0	99.2	120.1	71.2
E4V65*	131.9	136.3	165.1	97.8
E4V85*	182.8	189.0	228.8	135.6
E4V95*	254.1	262.6	-	188.5

Air-conditioning

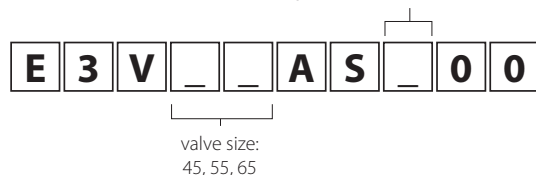
Operating conditions	
Saturated condensing temperature	54.4 °C
Saturated evaporation temperature	7.2 °C
Subcooling	8.3 °C
Condensing unit pressure drop	0.5 bar
Evaporating unit pressure drop	2.5 bar

Valve	R22	R407	R410a	R134a
E3V				
E3V45*	73	75	85	56
E3V55*	108.6	110.9	128.1	81.4
E3V65*	149.3	152.4	176	111.8
E4V				
E4V55*	108.6	110.9	128.1	81.4
E4V65*	149.3	152.4	176	111.8
E4V85*	206.9	211.2	243.9	155
E4V95*	287.6	293.6	-	215.4

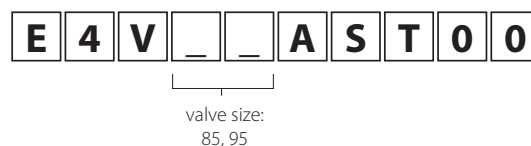
Codes

E³V electronic expansion valve with weldable copper fittings.

R= 18-22 mm ODF straight fittings (not available for size 65)
S= 22-28 mm ODF expansion fittings (not available for size 45)



E⁴V electronic expansion valve with 22-28 ODF weldable copper expansion fittings and sight glass.



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