



E<sup>2</sup>V-Z:  
Electronic valves for refrigeration  
Performance and simplicity  
without compromises

# The traditional performance of the Carel ExV range has now reached the highest level in terms of ease-of-use

The Carel ExV range of expansion valves has been extended to include a new model, E2V-Z, which retains all of the features of the platform while further simplifying installation, maintenance and logistics management.

## 1) Ease of use

E2V-Z has been developed for applications requiring the use of valves that can be disassembled for maintenance. The built-in filter can be cleaned even when the system has already been started. The new moveable element protects the mechanisms in the event of accidental impact.

## 2) Stepper valve

Stepper technology ensures perfect and constant control of refrigerant flow in the evaporator, bringing increased system efficiency and stable control. Coupled with energy-saving algorithms such as floating suction pressure, floating condensing pressure and smooth lines, the evaporator is controlled at all times, with refrigerant flow calibrated precisely based on operating conditions.

## 3) Simplified installation

The possibility to separate the valve body, actuator and stator makes installation easier.

1. Only the valve body is involved during the welding process, avoiding potentially damaging excess temperatures.
2. Valve selection and assembly are carried out when manufacturing the unit.
3. The correct stator is combined and the cable connected during the wiring stage.



### Equipercentile profile

This ensures precise control in all working conditions, from part load to full capacity.



### Excellent tightness on closing

In the closed position, the valve ensures excellent tightness to the flow of refrigerant, thanks to the calibrated spring that exerts steady and constant pressure on the cone-shaped moveable element against the edge of the port. By using specific Ultracap modules, solenoid valves are no longer required.



### High reliability

The valve mechanism and gearless construction, combined with intensive tests up to 1.2 billion cycles under heavy-duty conditions, ensure the highest reliability of the solution in the chosen application.



#### 4) Resistance to extreme environments

The new encased stator (IP69K) and integrated cable mean E2V-Z valves can be used in all refrigeration applications, both medium and low temperature, even under the most critical operating conditions (e.g. condensing humidity, ice formation,...)



#### CO<sub>2</sub> Applications

E2V-Z is the perfect solution for showcase and cold room applications in centralised CO<sub>2</sub> systems:

- used with MPXPRO, it guarantees optimum performance thanks to CAREL stepper motor and driver technology
- the valve can be disassembled, and includes a built-in, cleanable filter
- withstands extreme applications
- maximum operating pressure 60 bars, maximum system pressure limit 90 bars

#### 5) Simple logistics: just one body, different cartridges

E2V-Z features the ability to use one single body for all valve sizes. The bodies differ according to the diameter of the connections required for the system, while the different cartridges can be installed subsequently on any body.

In turn, the single-pole or two-pole stator can also be chosen according to the application and type of electronic controller used.



#### Cooling capacity

		E2V03Z	E2V05Z	E2V09Z	E2V11Z	E2V14Z	E2V18Z	E2V24Z	E2V30Z	E2V35Z
Flow coefficient	kV [m <sup>3</sup> /h] @ 1 bar Δ p	0.012	0.019	0.033	0.059	0.09	0.12	0.20	0.27	0.44
	Cv [USGPM] @ 1 PSI Δ p	0.014	0.023	0.038	0.068	0.11	0.14	0.23	0.31	0.51

The choice is further amplified by the availability of three different diameters of fittings:

E2V\*\*ZSF\*\* Ø12mm ODF copper fittings

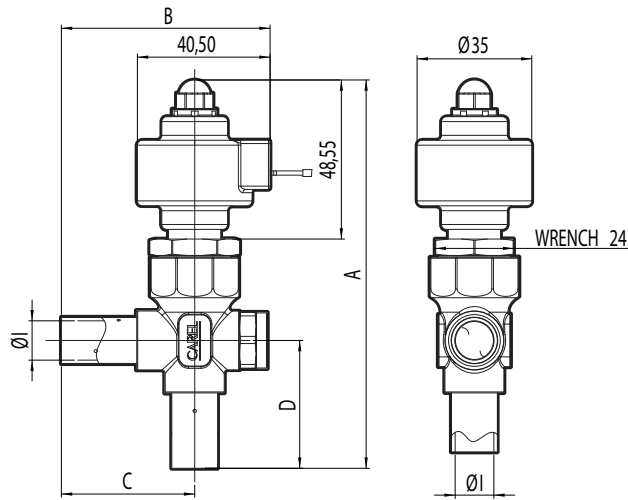
E2V\*\*ZWF\*\* ½" ODF copper fittings

E2V\*\*ZSM\*\* Ø16mm (5/8") ODF copper fittings

# CAREL E2V-Z operating specifications

Compatibility	Group 1: R1234yf, R32, R170, R290, R600, R600a, R601, R601a, R1270 Group 2: R22, R134a, R404A, R407C, R410A, R744, R507A, R417A, R1234z, R448A, R449A, R450A, R513A
Maximum operating pressure (MOP):	PS = 60 barg (870 psig), 90 barg (1305 PSig) with system off
Maximum operating pressure differential (MOPD):	35 bars (508 psig) - with two-pole stator - 26 bars (377 psig) with single-pole stator
PED	Group 1 and 2, Art. 4, par. 3
UL / CSA Certification (UL 429 and CSA C22.2 no. 139-2010 Standard for Electrically Operated Valves)	UL file No. E304579
UL file No. E304579	-40T70°C (-40T158°F)
Ambient temperature:	-30T70°C (-22T158°F)
Complete closing steps	500
Control steps	480
Contact CAREL for different operating conditions or alternative refrigerants.	

## Dimensions



E2V**ZSF** - copper 12-12 mm	118.5 mm (4.67 inch)	63.7 mm (2.51 inch)	40.7 mm (1.60 inch)	39 mm (1.54 inch)	12 mm (0.47 inch)
E2V**ZWF** - copper 1/2"-1/2"	118.5 mm (4.67 inch)	63.7 mm (2.51 inch)	40.7 mm (1.60 inch)	39 mm (1.54 inch)	12.7 mm (1/2")
E2V**ZSM** - copper 16-16 mm	118.5 mm (4.67 inch)	63.7 mm (2.51 inch)	40.7 mm (1.60 inch)	39 mm (1.54 inch)	16 mm (5/8 inch)



CAREL exv lab is the tool that helps users select and use CAREL valves. It is a web environment where both expert designers and novice users can find tools to select the right valve for their application, and identify the possible operating range of the EXV.

<https://exvselectiontool.carel.com/ExVLab/>

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