Instruktionsmanual
Carel E2V Unipolar elektronisk expansionsventil

ITA IMPORTANTE

Carel garantisce il corretto funzionamento del Carel ExV, solo se guidato da driver Carel. L'uso del Carel ExVs con driver di altri produttori, se non espressamente concordato con Carel, fa decadere automaticamente la garanzia.

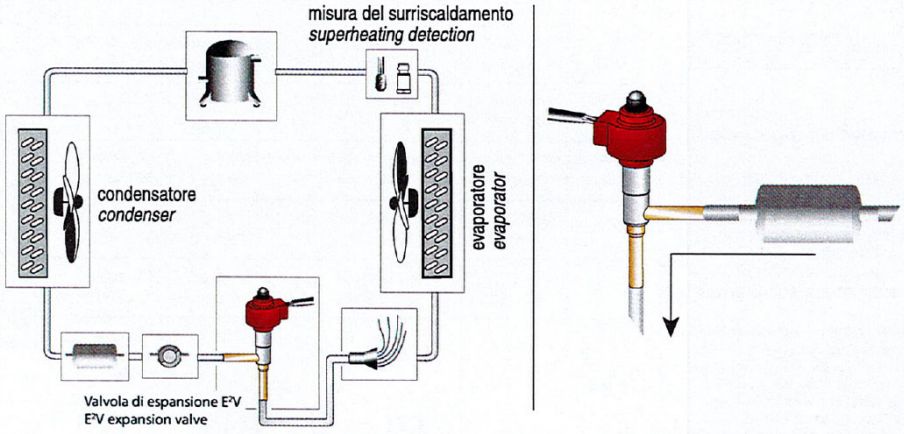
Per ulteriori informazioni, consultare la "Guida al sistema EEV" (codice +030220810) disponibile sul sito www.carel.com, alla sezione "documentazione".

ENG IMPORTANT

Carel guarantees the correct operation of the Carel ExV, if driven by Carel drivers only. The use of the Carel ExVs with other manufacturers driver, if not expressely agreed with Carel, will automatically void the warranty.

For more information, read the "EEV systems operating manual (code +030220811) before installing this product. The manual is available in the "documentation" download area at www.carel.com.

Posizionamento / Positioning



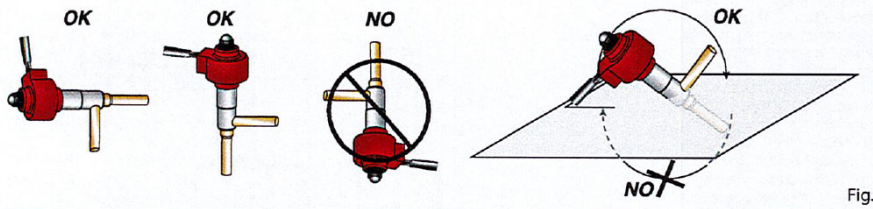


Fig.1

Saldatura e manipolazione / Welding and handling

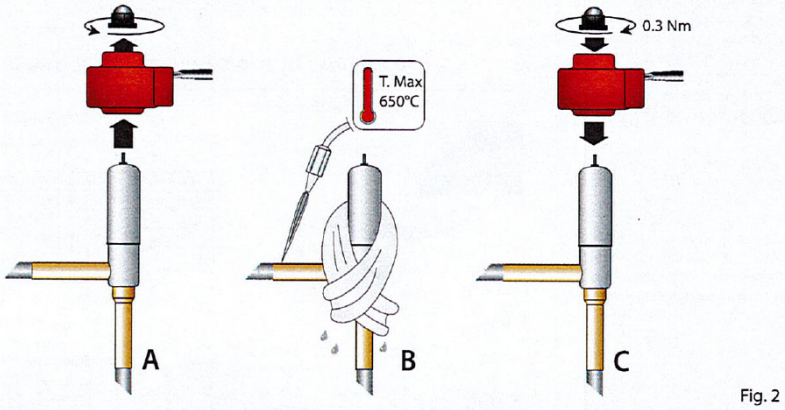


Fig. 2

Smaltimento del prodotto: l'apparecchiatura (o il prodotto) deve essere oggetto di raccolta separata in conformità alle vigenti normative locali in materia di smaltimento.

Disposal of the product: *the appliance (or the product) must be disposed of separately in accordance with the local waste disposal legislation in force.*

General features

The E²V electronic valve is designed to be installed in refrigerant circuits. The E²V uses the superheat as the control signal which is calculated by a pressure and temperature probe located at the evaporator outlet. The inlet fluid should be suitably subcooled to prevent the valve from operating with flash gas. Valve noise may increase when refrigerant charge is insufficient or there is significant pressure drop downstream of the valve. Only Carel controllers or controllers officially accredited by CAREL are recommended to be used with the E²V valve.
Do not use the E²V outside the normal operating conditions, shown below.

Positioning

The E²V valves are double-acting. Use the side connection as the preferential liquid inlet (Fig. 1), as this helps the valve remain closed in the event of power failures, due to the pressure that pushes the disc into the seat. If using shutoff valves before the expansion valve, the circuit must be set up so that no fluid hammer is created near the valve. The shutoff valve and expansion valve must never be closed at the same time, to avoid dangerous excess pressure in the circuit. Always install a mechanical filter before the refrigerant inlet. The valve can be oriented in any direction, **with the exception of the stator pointed downwards**, (valve upside down). The recommended position for the E²V valve is the same as for a traditional thermostatic valve, that is, upstream of the evaporator and any distributor. The temperature and pressure sensors (not supplied with the E²V) must be positioned downstream of the evaporator, making sure that:

- the temperature sensor is installed with conductive paste and is adequately thermally insulated;
- both sensors are installed BEFORE any devices that may vary the pressure (e.g. valves) and /or temperature (e.g. exchanger).

Installation and handling

E2V valve are available multiple pack, without stator (E2V*****C1). E2V unipolar valve are vailable with copper fittings welded. For the welded connection valve, follow the steps shown in the figure, proceeding as follows:

1. if the stator is already assembled, remove it by unscrewing the fastening nut and sliding it out;
2. **wrap a wet rag around** on the valve and perform the welding without overheating the valve, aiming the flame at the ends of the fittings (for better braze welding without affecting the seal where welding, use alloys with a **fusion temperature less than 650 °C** or with a silver content above 25%);
3. when the valve has cooled down replace the stator on the cartridge, pushing it fully in and then completely tightening the black nut until deforming the rubber ring on the stator (tightening torque 0.3 Nm);
4. connect the pre-wired connector

IMPORTANT: CAREL valves are supplied in the fully open position. If the valve is activated before being welded to the circuit, it must be returned to the fully open position to prevent high temperatures from damaging the internal components.

Do not twist or strain the valve or the connection pipes.
Do not strike the valve with hammers or other objects.
Do not use pliers or other tools that may deform the external structure or damage the internal parts.
Never point the flame at the valve.
Never bring the valve near magnets or magnetic fields.
Do not install or use the valve in the event of:

- **deformation or damage to the external structure;**
- **heavy impact, for example due to dropping;**
- **damage to the electrical parts (stator, cable, connector,...).**

CAREL does not guarantee the operation of the valve in the event of deformation of the external structure or damage to the electrical parts. IMPORTANT: the presence of dirt particles may cause valve malfunctions.

Electrical connections

The E²V unipolar stator comes with a 0,7 m, 1 m or 2 m long 6-wire cable with XHP-6 connector. Alternatively, use codes E2V**F**2* with 0.3 m cable and Superseal series 1.5 connector (IP67), connected to a special cable extension (E2VCABS*U*) for applications in accordance with directive 2004/108/EC and subsequent amendments. Connect the power supply connector (XHP-6 type) to the relevant conter-connector of a compatible unipolar driver paying attention not to invert the power supply phases. See for reference the electrical connections in Fig. 3.

Operating specifications CAREL E²V

Compatibility	Group 1: R1234yf, R290, R600, R600a Group 2: R22, R134a, R404A, R407C, R410A, R417A, R507A, R744, R1234ze, R448A, R449A, R450A, R513A
Maximum Operating Pressure (MOP)	CE approval: 60 bar: 60 bar (870 psi). UL approval: 45bar (652 psi)
Maximum Operating DP (MOPD)	35 bar (508 psi); **for E2V35 unipolar:** 26bar (377psi)
P.E.D.	**Gr 1 and 2, art. 4, par. 3.** If using hydrocarbons, meets the requirements of EN 60079-15:2005-10, as required by EN 60335-2-40/A1:2006-04 and EN 60335-2-89:2002-12, EN 60335-2-89/A1:2005-04, EN 60335-2-89/A11:2004-07, EN 60335-2-89/A2:2007-03. The valves have been tested in accordance with ATEX Directive 94/9/EC for Group II, Category 3G refrigerants, in accordance with harmonised standards EN 60079-15:2005 (only the parts required by EN 60335-2-40 and EN 60335-2-89).
Refrigerant temperature	-40T70 °C (-40T158 °F)
Room temperature	-30T70 °C (-22T158 °F)
Contact CAREL for other normal operating conditions or alternative refrigerants.	

CAREL stator E²V - Unipolar low voltage stator

Power supply voltage	12 V
Drive frequency	50 Hz
Phase resistance (25°C / 77°F)	40 Ohm ± 10%
Index of protection	IP67
Step angle	15°
Linear advance/step	0.03 mm (0-0012 inches)
Connections	6 pin (AWG 18-22) with cable: - 1 m long with XHP-6 connector (codes E2V**F**0*) - 2 m long with XHP-6 connector (codes E2V**F**1*) - 0.3 m long with Superseal series 1.5 connector (IP67, codes E2V**F**2*).
Complete closing steps	500
Control steps	480

Connessioni elettriche / Electrical connections

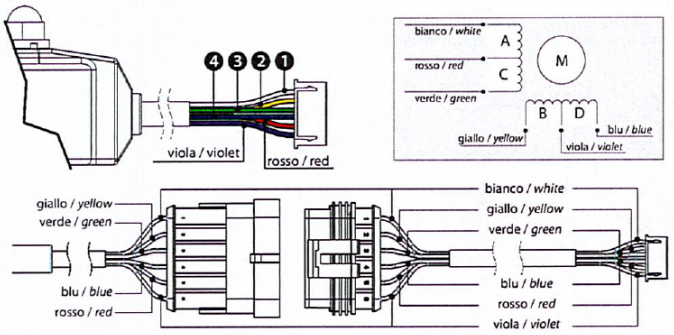
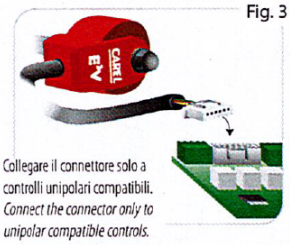


Fig. 3

Avvol. Coil	Filo Wire	Stato eccitazione Excitation state							
		1	2	3	4	5	6	7	8
A	❶ Bianco/White	12 V	12 V	OFF	OFF	OFF	OFF	OFF	12 V
B	❷ Giallo/Yellow	OFF	12 V	12 V	12 V	OFF	OFF	OFF	OFF
C	❸ Verde/Green	OFF	OFF	OFF	12 V	12 V	12 V	OFF	OFF
D	❹ Blu/Blue	OFF	OFF	OFF	OFF	OFF	12 V	12 V	12 V

apri valvola / *open valve*
chiudi valvola / *close valve*



Collegare il connettore solo a controlli unipolari compatibili.
Connect the connector only to unipolar compatible controls.

Dimensioni in mm (inch)/ Dimensions in mm (inch)

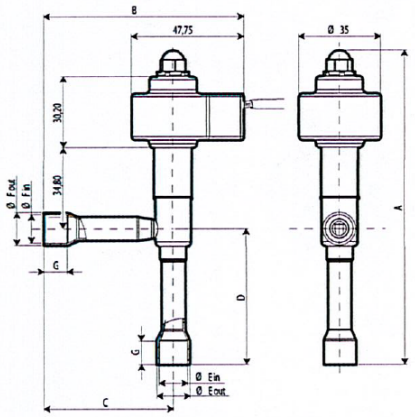


Fig. 4

Tipo valvola / Valve type	A	B	C	D	E	F	G
E2VFSA**** rame/copper 8-8mm IDM	123.5mm (4.86inch)	75.4 mm (2.97 inch)	55.1 mm (2.17 inch)	47.5 mm (1.87 inch)	Int. 6.5/Est. 8 mm (In 0.26/Out 0.31 inch)	Int. 6.5/Est. 8 mm (In 0.26/Out 0.31 inch)	-
E2VFSB**** rame/copper 10-10mm IDM	133.5mm (5.26inch)	85.4 mm (3.36 inch)	55.1 mm (2.17 inch)	57.5 mm (2.26 inch)	Int.8/Est.10 mm (In 0.31/Out 0.39 inch)	Int.8/Est.10 mm (In 0.31/Out 0.39 inch)	-
E2VFSF**** rame/copper 12 -12mm ODF	133.5mm (5.26inch)	85.4 mm (3.36 inch)	55.1 mm (2.17 inch)	57.5 mm (2.26 inch)	Int.12/Est.14 mm (In 0.47/Out 0.55 inch)	Int.12/Est.14 mm (In 0.47/Out 0.55 inch)	10 mm (0.39 inch)
E2VFWA**** rame/copper 3/8" 3/8" ODF	133.5mm (5.26inch)	85.4 mm (3.36 inch)	55.1 mm (2.17 inch)	57.5 mm (2.26 inch)	Int.9.6/Est.11.6 mm (In 3/8"/Out 0.46 inch)	Int.9.6/Est.11.6 mm (In 3/8"/Out 0.46 inch)	10 mm (0.39 inch)
E2VFWF**** rame/copper 1/2" -1/2" ODF	133.5mm (5.26inch)	85.4 mm (3.36 inch)	55.1 mm (2.17 inch)	57.5 mm (2.26 inch)	Int.12.7/Est.14.7 mm (In 1/2"/Out 0.55 inch)	Int.12.7/Est.14.7 mm (In 1/2"/Out 0.55 inch)	10 mm (0.39 inch)
E2VFSM**** rame/copper 16 -16mm (5.8" - 5.8") ODF	133.5mm (5.26inch)	85.4 mm (3.36 inch)	55.1 mm (2.17 inch)	57.5 mm (2.26 inch)	Int.16/Est.18 mm (In 5/8"/Out 0.71 inch)	Int.16/Est.18 mm (In 5/8"/Out 0.71 inch)	10 mm (0.39 inch)

Nota: i codici E2V**F**0* hanno cavo di lunghezza 1 m e connettore XHP-6; i codici E2V**F**1* hanno cavo di lunghezza 2 m e connettore XHP-6; i codici E2V**F**2* hanno cavo di lunghezza 0,3 m e connettore Superseal serie 1.5.

*Note: codes E2V**F**0* have a 1 m long cable and XHP-6 connector; codes E2V**F**1* have a 2 m long cable and XHP-6 connector; codes E2V**F**2* have a 0.3 m long cable and Superseal series 1.5 connector.*

Tipo valvola *Type valve*	Descrizione	*Description*
E2V**F***0	imballo singolo	*single package*
E2V**F***1	imballo multiplo senza statore (usare con codice E2VSTA0**1 statore unipolare imballo 10 pezzi)	*multi-package without coil (to be used with code E2VSTA0**1 unipolar stator multi-package 10 pcs)*