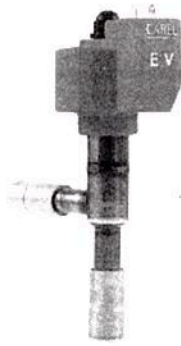


E2V-B - Valvola di espansione elettronica / Electronic expansion valve



ITALIA 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".

ENGLISH 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 expressly 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

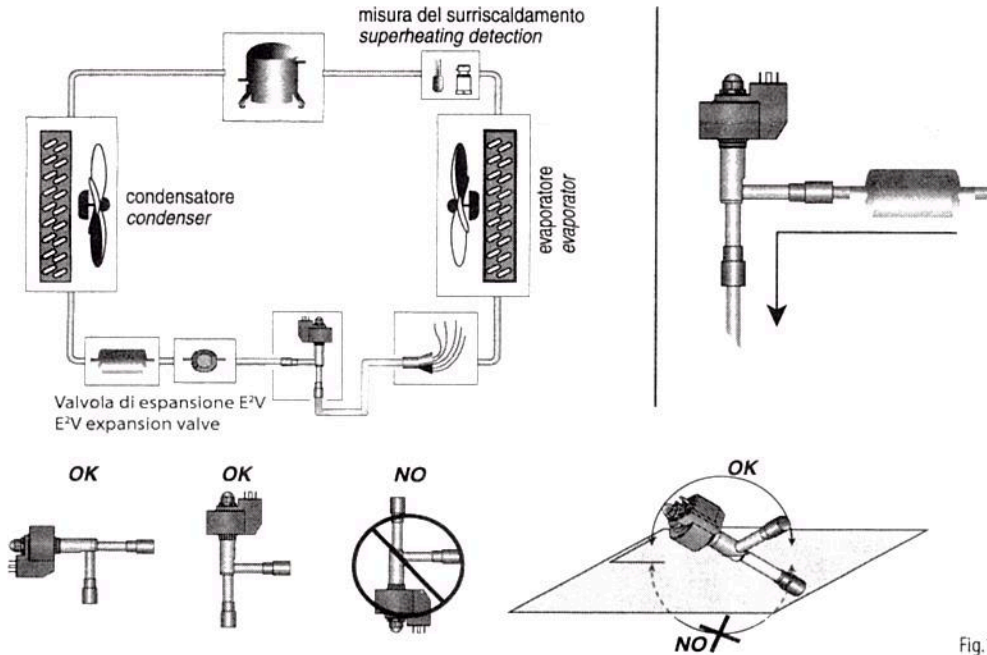


Fig.1

Saldatura e manipolazione / Welding and handling

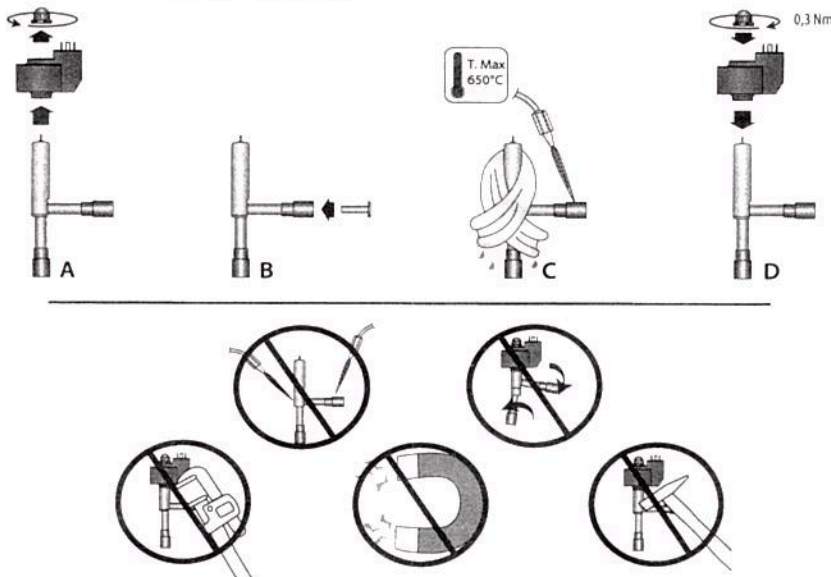


Fig.



DISPOSAL OF THE PRODUCT: The appliance (or the product) must be disposed of separately in accordance with the local waste disposal legislation in force.

CAREL si riserva la possibilità di apportare modifiche o cambiamenti ai propri prodotti senza alcun preavviso / CAREL reserves the right to modify the features of its products without prior notice

General characteristics

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. CAREL guarantee the correct operation of ExV Carel, even if it can be controlled by driver Carel. The use of Carel EXV with other manufacturer's drivers, don't expressly agreed with Carel, is automatically void the product warranty. 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, both with welded valves (E2V***S***) and valves with fittings (E2V***R***). For part numbers E2V***R*** and E2V***BZ00**, the filter is supplied inside the packaging; for the other part numbers (except for E2V***S0***) a series of optional filters is available: E2VFILO100 for E2V***BSF** valves and E2V***BS1**, E2VFILO200 for E2V***BSM** valves; E2VFILO300 for E2V***BWA** or E2V***BWB** valves. 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 with welded connections (E2V***S***) and pipe fittings (E2V***R***). E2V***BZ00** valve are equipped with mixed connections, then provide both solutions. For the valves with welded connections, follow the steps shown in the figure, proceeding as follows:

- if the stator is already assembled, remove it by unscrewing the fastening nut and sliding it out;
- install the metal mesh filter exclusively on the side inlet connection (Fig. 2-B), making sure it is fully inserted and secured in place by the pipe, before welding the valve. Important! Only use this filter for flow in one direction. If using the valve for flow in two directions, a suitable filter is required in the circuit;
- 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%);
- 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);
- connect the pre-wired connector to the socket on the stepper motor and tighten the screw tightening torque 0.5 Nm following the instructions in Fig. 3. Connect the four-pin end of the cable to the corresponding terminals on the CAREL EVD*** driver or approved CAREL controller and set the parameters as shown in the table below.

Model	Step min	Step max	step close	Step/s speed	mA pk	mA hold	% duty
CAREL	50	480	500	50	450	100	30

CAREL controllers for electronic valves increase the duty cycle from 30% to 100% when closing to reduce stopping time; to further speed up this phase, the valve can be controlled at a maximum frequency of 150 steps/sec. For further information on the parameters to be set for the driver, see the controller manual.

For valves with flare brass fittings, tighten the fittings to the circuit using suitably-sized couplings; the suggested tightening torque is 35Nm; then proceed from point 4.

⚠ 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.

Note:

- 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, contact carrier, 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.
- The presence of dirt particles may cause valve malfunctions.

Electrical connections

Connect an IP67 co-moulded connector only (E2VCAB0***), in which the pin mapping is 1 Green, 2 Yellow, 3 Brown, 4 White. Then connect the four motor phases to your driver so that phase 1 of the valve corresponds to terminal 1 of the driver, and so on. **⚠ Important:** phase no. 4 is marked on the valve stator with the earth symbol. An optional shielded co-moulded connector is available (E2VCABS***) for applications with specific electromagnetic disturbance, in compliance with the standards in force, 89/336/EEC and later amendments. **Avoid using standard DIN 43650 connectors as these will not guarantee optimum product performance.**

Operating specifications CAREL E2V

Compatibility	Gruppe 1: R717 (ammonia, P/N E2V***BS00* and E2V***BS10* only); R290, R600, R600a, R1234yf Gruppe 2: R22, R134a, R404A, R407C, R410A, R417A, R507A, R744, R1234ze, R448A, R449A, R450A, R513A-
Maximum Operating Pressure (MOP)	CE approval: 60 bar; 60 bar (870psi). UL approval: 45bar (652 psi)
Maximum Operating DP (MOPD)	35 bars (508 psi) - 26 bar (377 psi) for E2V35BS0** and E2V35BS1** versions
P.E.D.	Gr. 1 and 2, art. 4, par. 3
ATEX	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 - Two pole low voltage stator (2 phases - 24 polar shoes)

Phase current	450 mA
Drive frequency	50 Hz (up to 150 Hz for emergency closing)
Phase resistance (25°C / 77°F)	36 Ohm ± 10%
Index of protection	IP65 with E2VCON****, IP67 with E2VCAB***
Step angle	15 °
Linear advance/step	0.03 mm (0.0012 inches)
Connections	4 wires (AWG 18/22)
Complete closing steps	500
Control steps	480

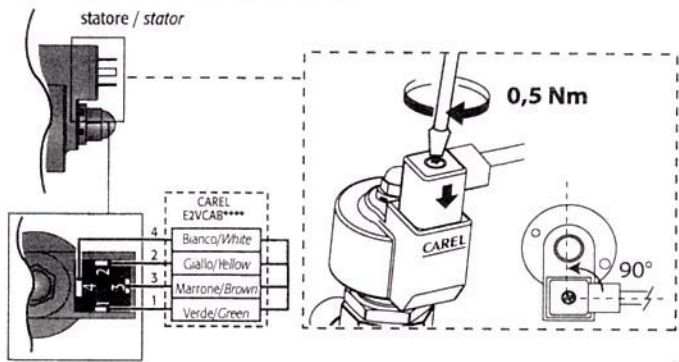


Fig. 3

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

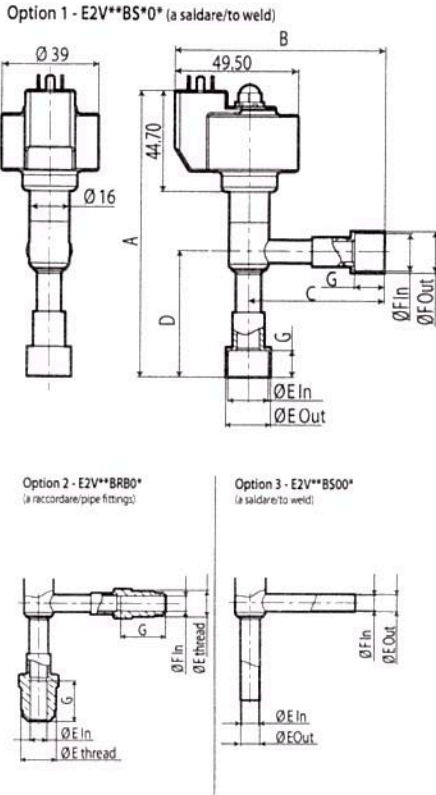


Fig. 4

Tipo valvola / Valve type	A	B	C	D	E	F	G
E2V**BSF0* rame/copper 12-12 mm ODF (4.95 inch) (3.24 inch)	125.8 mm (4.95 inch)	82.3 mm (3.24 inch)	52.3 mm (2.06 inch)	53.3 mm (2.10 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)
E2V**BSM0* rame/copper 16-16 mm ODF (5.03 inch) (3.32 inch)	127.8 mm (5.03 inch)	84.3 mm (3.32 inch)	54.3 mm (2.14 inch)	55.3 mm (2.18 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)	12 mm (0.47 inch)
E2V**BRB0* ottone/brass 3/8" - 1/2" SAE (5.59 inch) (3.87 inch)	142.0 mm (5.59 inch)	98.3 mm (3.87 inch)	68.3 mm (2.69 inch)	69.5 mm (2.74 inch)	Int. 9 mm - filett. 3/4" (In 0.35 inch - thread 3/4")	Int. 9 mm - filett. 5/8" (In 0.35 inch - thread 5/8")	24 mm (0.94 inch)
E2V**BS00* inox/steel 10-10 mm ODF (4.95 inch) (3.34 inch)	125.8 mm (4.95 inch)	84.8 mm (3.34 inch)	54.8 mm (2.16 inch)	56 mm (2.20 inch)	Int. 9/Est. 10 mm (In 0.35/Out 0.39 inch)	Int. 9/Est. 10 mm (In 0.35/Out 0.39 inch)	-
E2V**BS10* inox/steel 13-13 mm ODF (4.95 inch) (3.24 inch)	125.8 mm (4.95 inch)	82.3 mm (3.24 inch)	52.3 mm (2.06 inch)	53.3 mm (2.10 inch)	Int. 13/Est. 18 mm (In 0.51/Out 0.71 inch)	Int. 13/Est. 18 mm (In 0.51/Out 0.71 inch)	10 mm (0.39 inch)
E2V**BWA0* rame/copper 3/8" - 3/8" ODF (4.95 inch) (3.24 inch)	125.8 mm (4.95 inch)	82.3 mm (3.24 inch)	52.3 mm (2.06 inch)	53.3 mm (2.10 inch)	Int. 9.5/Est. 13 mm (In 3/8/Out 0.51 inch)	Int. 9.5/Est. 13 mm (In 3/8/Out 0.51 inch)	10 mm (0.39 inch)
E2V**BW0* rame/copper 3/8" - 1/2" ODF (4.95 inch) (3.24 inch)	125.8 mm (4.95 inch)	82.3 mm (3.24 inch)	52.3 mm (2.06 inch)	53.3 mm (2.10 inch)	Int. 12.8/Est. 15 mm (In 1/2/Out 0.51 inch)	Int. 9.5/Est. 13 mm (In 3/8/Out 0.51 inch)	10 mm (0.39 inch)

IMPORTANT WARNINGS: The CAREL product is a state-of-the-art product, whose operation is specified in the technical documentation supplied with the product or can be downloaded, even prior to purchase, from the website www.carel.com. - The client (builder, developer or installer of the final equipment) assumes every responsibility and risk relating to the phase of configuration of the product in order to reach the expected results in relation to the specific final installation and/or equipment. The lack of such phase of study, which is requested/indicated in the user manual, can cause the final product to malfunction of which CAREL can not be held responsible. The final client must use the product only in the manner described in the documentation related to the product itself. The liability of CAREL in relation to its own product is regulated by CAREL's general contract conditions edited on the website www.carel.com and/or by specific agreements with clients.



WARNING: separate as much as possible the probe and digital input signal cables from the cables carrying inductive loads and power cables to avoid possible electromagnetic disturbance. Never run power cables (including the electrical panel wiring) and signal cables in the same conduits.

Caratteristiche generale

Le detentore elettronico E2V per il liquido refrigerante in L di pressione e di temperatura entrata è necessario per evitare il rumore prodotto dalla valvola a fuita importanti di carica e di desistemi approvati per il funzionamento della E2V Carel, fabbricanti, salvo accordo espresso con i detentore E2V per d'altri ut

Posizionamento

La valvola E2V è bidirezionale e la valvola deve restare fermata in caso di l'obturatore contro l'orificio. In caso di circuito a terra non si produce il suono. Installare sempre un filtro a sinter (E2V**S***) qu'aveva de le filtre est: fornito à l'intérieur de sont disponibles en option: E2V E2V**BSM***, E2VFIL0300 pour chaque configuration exceptée pour le detentore E2V est la m placé avant l'évaporateur et avant avec les E2V) doivent être positionnés de manière à ce que le capteur de température soit approprié.

- ce que les deux capteurs sol (ex. soupapes) et/ou tempé

Installation et manipulation

Les vannes E2V sont soudées (E connexions alors mixtes fournir è comme su :

1. si le stator est déjà assemblé.
2. Insérer le filtre dans le treillis butée et en le bloquant avec en mode monodirectionnel dans le circuit.
3. enrouler un chiffon mouillé e raccords (pour effectuer un s une température de fusion ir
4. une fois que le detentore est noir jusqu'à la butée au point c
5. Raccorder le connecteur déj un couple de 0,5 Nm en suiv aux bornes correspondante: paramètres selon la valeur re

Model	Step min
CAREL	50

Les contrôleurs CAREL pour de 30% à 100% en phase davantage cette phase, il Pour plus d'informations sur Pour les vannes à raccorder, i couple de serrage recomma

⚠ AT: Les detentore CAREL se soudé sur le circuit frigorifique, il les hautes températures qui pou

⚠ NB:

- Ne pas exercer de torsions ou
- Ne pas taper sur la soupape
- Ne pas utiliser de pinces ou
- Ne pas utiliser des organes internes - Ne jam
- Ne pas approcher des aiman
- Ne pas installer ou utiliser en
- déformation ou endommage
- fort impact dû à une chute p
- endommagement de la part
- CAREL ne garantit pas le fonc d'endommagements des par
- La présence de particules du

Connexions Electriques

Rélier uniquement un connecte 4 Blanc. Ensuite, relier les quat correspond à la borne n° 1 du symbole de terre. Un connecteur ayant des interférences électron modifications ultérieures. Il faut permettent pas de garantir les p

Spécifications opérationn

Compatibilité	Groupe 1: R290, R600 R744, R123
Pression d'exercice maximale (MOP)	Certificati 35 bar (50
Pression d'exercice maximale (MOPD)	35 bar (50
PEID	Gr 1 et 2, g
ATEX	En cas d' comme le 2-89/A1-2C examinées 3G, selon l d'une obli
Temp. du réfrigérant	-40T70 °C
Temp. ambiante	-30T70 °C
Contacter CAREL pour des cong	

Stator CAREL E2V - Stator bi

Courant de phase	
Fréquence de pilotage	
Résistance de phase (25 °C)	
Index de protection	
Angle de pas	
Avancement linéaire/pas	
Connexions	
Pas de fermeture complète	
Pas de réglage	