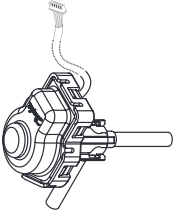
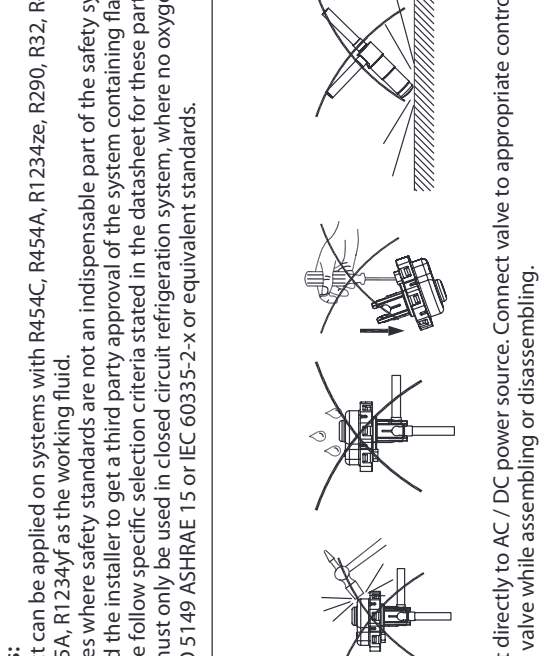
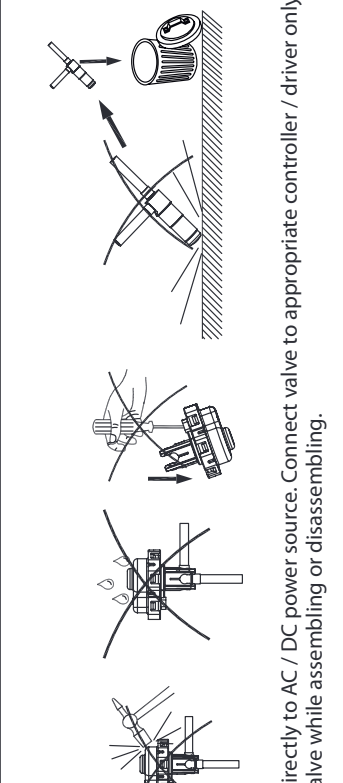




## Installation guide

# Electric expansion valve Type ETS 5M

<p><b>Refrigerants</b> R410A, R22, R32, R290, R454C, R515B, R1234ze, R452B, R1234yf, R452A, R454B, R454A, R455A, R449A, R407C, R134a, R407H, R513A, R449B, R404A, R448A, R463A</p>	<p><b>Max. working pressure</b> PS / MWP: 4.55 MPa / 45.5 barg / 660 psig</p> <p><b>Refrigerant temperature</b> <math>t_{Min.} : -30^{\circ}\text{C} / -22^{\circ}\text{F}</math>, <math>t_{Max.} : 70^{\circ}\text{C} / 158^{\circ}\text{F}</math></p>		<p><b>Phase current</b> 240 mA</p> <p><b>Resistance</b> 50 <math>\Omega</math></p>
<p><b>Allowable ambient temperature</b> <math>-30^{\circ}\text{C} / -22^{\circ}\text{F} - 60^{\circ}\text{C} / 140^{\circ}\text{F}</math></p> <p><b>Stepper motor type</b> Unipolar</p> <p><b>Nominal voltage</b> 12V DC</p>		<p><b>1 Mounting Angle</b></p> 	
<p><b>Safety notes for flammable refrigerants (R454C, R454A, R1234ze, R290, R32, R452B, R454B, R455A, R454B, R455A, R1234yf)</b></p> <ul style="list-style-type: none"> <li>- This product is validated in accordance to ATEX, EN 378, ISO 5149, ASHRAE 15, IEC 60335-2-x or equivalent standards.</li> <li>- Ignition risk is evaluated in accordance to ISO 5149 and IEC 60335.</li> <li>- See safety note below.</li> </ul>		<p><b>Safety notes:</b></p> <ul style="list-style-type: none"> <li>- The product can be applied on systems with R454C, R454A, R1234ze, R290, R32, R452B, R454B, R455A, R1234yf as the working fluid.</li> <li>- For countries where safety standards are not an indispensable part of the safety system Danfoss recommend the installer to get a third party approval of the system containing flammable refrigerant.</li> <li>- Note, please follow specific selection criteria stated in the datasheet for these particular refrigerants.</li> <li>- The valve must only be used in closed circuit refrigeration system, where no oxygen is present acc. EN 378, ISO 5149 ASHRAE 15 or IEC 60335-2-x or equivalent standards.</li> </ul>	
<p><b>Warning!</b></p>  <p>Do not connect directly to AC / DC power source. Connect valve to appropriate controller / driver only. Do not operate valve while assembling or disassembling.</p>		<p><b>Info for UK customers only:</b> Danfoss Ltd., 22 Wycombe End, HP9 1NB, GB</p> <p>034R9819</p>	



**2 Open position**  
Always open valve to override before brazing using manual coil.  
ETS 5M manual coil: Code no. 034G3803

**3 Brazing option 1**

**Brazing option 2**

N<sub>2</sub> gas from opposite side of soldering point.

**4 Assembling**

**5 Connection**

50±5Ω

**Table:1 Stepper motor open and close sequence**

	Yellow (A1)	Orange (A2)	Brown (B1)	Black (B2)	Red (Com)
Valve Opening ↑↑	ON	OFF	OFF	OFF	0
	ON	OFF	ON	OFF	0
	OFF	OFF	ON	OFF	0
	OFF	ON	ON	OFF	0
	OFF	ON	OFF	OFF	0
	OFF	ON	OFF	ON	0
Valve Closing ↓↓	OFF	OFF	OFF	ON	0
	ON	OFF	OFF	ON	0
	ON	OFF	OFF	ON	0

B1 B2

E (2 : 1)

**Color coding**

JST 5/6	5/6: RED	- Common
-/5:	No wire	- Coil A1
4/4:	Yellow	- Coil B2
3/3:	Black	- Coil A2
2/2:	Orange	- Coil B1
1/1:	Brown	- Coil B1