

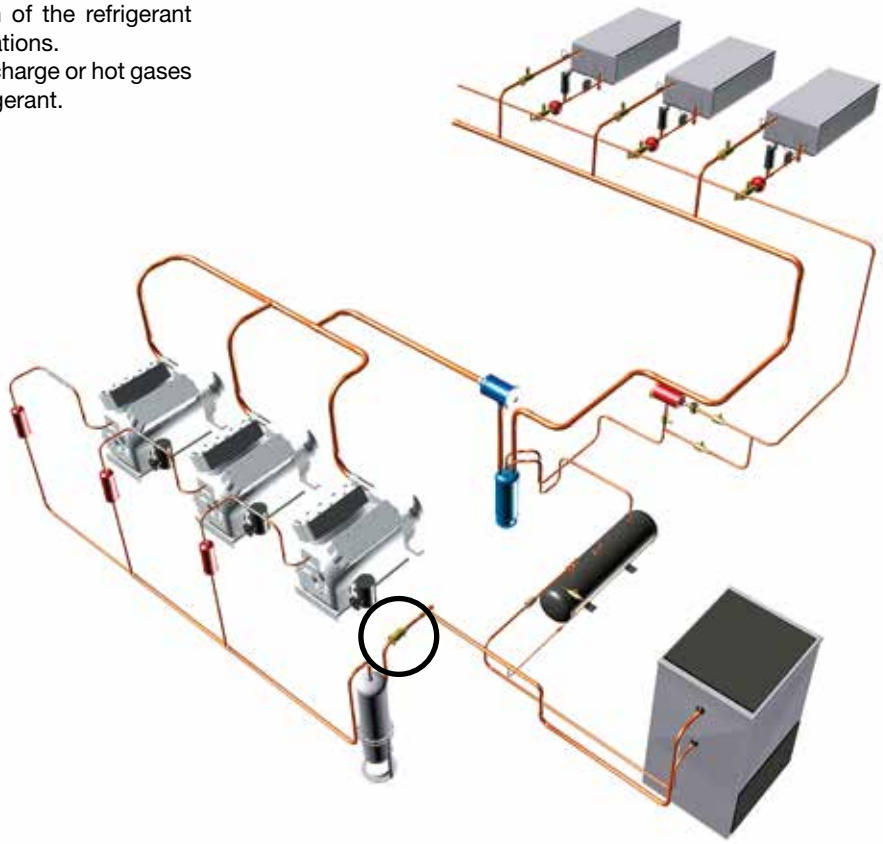
CTCY-EN – 62.1-6 / 07-2018

# Check valves

## → CRCY

### ■ Applications

- The check valves ensure a one-way direction of the refrigerant flow, in refrigerating and air conditioning installations.
- They can be mounted on the liquid, suction, discharge or hot gases defrost line, to prevent unwanted return of refrigerant.



### ■ Functional features

- Products are compatible with CFCs, HCFCs, HFCs, $CO_2$, as well as with their associated oils and additives. Products are designed for use of non-hazardous refrigerants from group 2 of PED 2014/68/EU. To use CARLY components with fluids of the hydrocarbon group 1 – Propane R290, Butane R600, Isobutane R600a, Propylene R1270 – with HFOs and transcritical $CO_2$ and for a RANKINE organic cycle application, contact CARLY technical department.
- Product classification in CE categories is performed using the PED 2014/68/EU table, corresponding to a nominal diameter-based selection.
- The brass body of the valves ensures perfect resistance to corrosion.
- An arrow indicating the refrigerant flow direction is engraved on the brass body of the valve.
- 8 models with connections to braze (from 1/4” to 7/8” and from 6 to 22 mm).
- The long copper sleeves allow quick and safe brazing of connections.

### ■ CARLY advantages

- Maximum working pressure 46 bar.
- The check valves can be installed in all positions.
- They are equipped with an internal pulse absorber piston, with PTFE gasket.
- Pressure drops are negligible.
- Perfect air tightness ensured by a TIG brass weld of the body.
- Thanks to their reduced weight, the check valves CRCY requires no specific fixing.

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### ■ Warning

Before selecting or installing any component, please refer to the chapter 0 - **WARNING**.

### ■ General assembly precautions

The installation of a component in a refrigeration system by a skilled professional, requires some precautions:

- Some are specific to each component, and in this case, they are specified in the **RECOMMENDATIONS SPECIFIC** part defined hereafter ;
- Other are general to all CARLY components, they are presented in the chapter 115 – **GENERAL ASSEMBLY PRECAUTIONS**.
- The recommendations relating to the CARLY components for the subcritical $CO_2$ applications are also developed in chapter 115 – **GENERAL ASSEMBLY PRECAUTIONS**.

### ■ Recommendations specific to the check valves CRCY

- The check valves are to be mounted in any position on the suction, discharge and liquid lines of the installation.
- The fluid flow direction is indicated by an arrow engraved on the brass body of the valve. It must imperatively be respected.
- In order to avoid any phenomenon of internal beat, never over-size a check valve compared to the diameter of piping concerned.
- Always cool the valve body when brazing the copper sleeves with a damp cloth, or by using the calories discharger CARLYCOOL (refer to chapter 95). Indeed, excessive overheating of the valve may damage the internal PTFE gasket and make it inoperative.

### ■ Selection table CRCY

| CARLY references | Connections To solder ODF | | Refrigerating capacity kW (1) | | | | | | | | | | | | | | Δ P (2) bar | kv (3) m³/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Liquid | | | | | Suction compressor | | | | | Compressor discharge line | | | | | |
| | inch | mm | R22 | R134a | R404A R507 R407F | R407C R410A | R744(4) | R22 R407F | R134a | R404A R507 | R407C R410A | R744(4) | R22 R407F | R134a | R404A R507 | R407C R410A | R744(4) | |
| CRCY 2 S | 1/4 | | 12,5 | 11,6 | 8,2 | 11,5 | 14,9 | 1,9 | 1,5 | 1,5 | 1,8 | 6,6 | 8,2 | 6,0 | 6,9 | 8,8 | 10,2 | 0,06 | 0,69 |
| CRCY 2 MMS | | 6 | 12,5 | 11,6 | 8,2 | 11,5 | 14,9 | 1,9 | 1,5 | 1,5 | 1,8 | 6,6 | 8,2 | 6,0 | 6,9 | 8,8 | 10,2 | 0,06 | 0,69 |
| CRCY 3 S | 3/8 | | 31,7 | 29,3 | 20,8 | 29,2 | 37,7 | 4,7 | 3,8 | 3,8 | 4,5 | 16,8 | 20,8 | 15,1 | 17,5 | 22,2 | 25,8 | 0,06 | 1,75 |
| CRCY 3 MMS | | 10 | 31,7 | 29,3 | 20,8 | 29,2 | 37,7 | 4,7 | 3,8 | 3,8 | 4,5 | 16,8 | 20,8 | 15,1 | 17,5 | 22,2 | 25,8 | 0,06 | 1,75 |
| CRCY 4 S | 1/2 | | 59,2 | 54,8 | 38,9 | 54,6 | 70,4 | 8,8 | 7,1 | 7,1 | 8,4 | 31,5 | 38,0 | 28,3 | 32,7 | 40,6 | 47,1 | 0,05 | 3,27 |
| CRCY 4 MMS | | 12 | 59,2 | 54,8 | 38,9 | 54,6 | 70,4 | 8,8 | 7,1 | 7,1 | 8,4 | 31,5 | 38,0 | 28,3 | 32,7 | 40,6 | 47,1 | 0,05 | 3,27 |
| CRCY 5 S/MMS | 5/8 | 16 | 65,9 | 61,0 | 43,3 | 60,7 | 78,4 | 9,8 | 7,9 | 7,9 | 9,3 | 35,1 | 43,3 | 31,5 | 36,4 | 46,3 | 53,7 | 0,05 | 3,64 |
| CRCY 6 S | 3/4 | | 125,5 | 116,1 | 82,4 | 115,7 | 149,3 | 18,7 | 15,0 | 15,0 | 17,8 | 66,9 | 82,4 | 59,9 | 69,3 | 88,0 | 102,2 | 0,03 | 6,93 |
| CRCY 6 MMS | | 18 | 125,5 | 116,1 | 82,4 | 115,7 | 149,3 | 18,7 | 15,0 | 15,0 | 17,8 | 66,9 | 82,4 | 59,9 | 69,3 | 88,0 | 102,2 | 0,03 | 6,93 |
| CRCY 7 S/MMS | 7/8 | 22 | 136,4 | 126,4 | 89,8 | 125,7 | 162,3 | 20,5 | 16,3 | 17,0 | 19,5 | 73,4 | 87,5 | 63,8 | 75,0 | 93,5 | 108,5 | 0,03 | 7,50 |

(1) ***Warning***:
*Liquid/Compressor discharge: refrigerating capacity calculated with a flow rate corresponding to a pressure drop of 0.15 bar for To = 4°C and Tk = 38°C.*
*Compressor suction line: refrigerating capacity according to Standard ARI 730-2001. Flow rate corresponding to a pressure drop of 1 bar suction temperature = 18°C.*

(2) *i.e. the minimum pressure difference for which the check valve remains fully open.*

(3) *i.e. the flow rate in m3/hr for a pressure drop in the check valve of 1 bar (refrigerant used: water with per volume ratio = 1.000 kg/m3).*

(4) *Refrigerating capacity Qn for Tk = -10°C and To = -40°C* *For Tk = 0 °C Qo = Qn + 12 %, For Tk = – 20 °C Qo = Qn – 10 %, For To = – 30 °C Qo = Qn – 2 %, For To = – 20 °C Qo = Qn – 6 %,*

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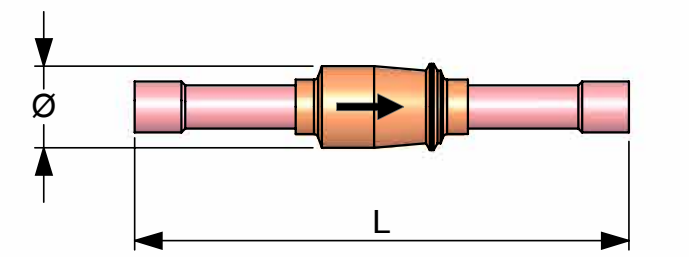
### ■ Technical features

| CARLY references | Connections To solder ODF inch | CARLY references | Connections To solder ODF mm | Dimensions mm | |
|---|---|---|---|---|---|
| | | | | Ø | L |
| CRCY 2 S | 1/4 | CRCY 2 MMS | 6 | 18 | 92 |
| CRCY 3 S | 3/8 | CRCY 3 MMS | 10 | 18 | 109 |
| CRCY 4 S | 1/2 | CRCY 4 MMS | 12 | 27 | 131 |
| CRCY 5 S/MMS | 5/8 | CRCY 5 S/MMS | 16 | 27 | 138 |
| CRCY 6 S | 3/4 | CRCY 6 MMS | 18 | 36 | 156 |
| CRCY 7 S/MMS | 7/8 | CRCY 7 S/MMS | 22 | 36 | 180 |




| CARLY references | Nominal diameter DN inch | CARLY references | Nominal diameter DN mm | Maximal working pressure PS bar | Working pressure (1) PS BT bar | Maximal working temperature TS maxi °C | Minimal working temperature TS mini °C | Working temperature (1) TS BT °C | CE Category (2) |
|---|---|---|---|---|---|---|---|---|---|
| CRCY 2 S | 1/4 | CRCY 2 MMS | 6 | 46 | 15 | 120 | -40 | -30 | Art4§3 |
| CRCY 3 S | 3/8 | CRCY 3 MMS | 10 | 46 | 15 | 120 | -40 | -30 | Art4§3 |
| CRCY 4 S | 1/2 | CRCY 4 MMS | 12 | 46 | 15 | 120 | -40 | -30 | Art4§3 |
| CRCY 5 S/MMS | 5/8 | CRCY 5 S/MMS | 16 | 46 | 15 | 120 | -40 | -30 | Art4§3 |
| CRCY 6 S | 3/4 | CRCY 6 MMS | 18 | 46 | 15 | 120 | -40 | -30 | Art4§3 |
| CRCY 7 S/MMS | 7/8 | CRCY 7 S/MMS | 22 | 46 | 15 | 120 | -40 | -30 | Art4§3 |

*(1) The working pressure is limited to the PS BT value when working temperature is lower than or equal to TS BT value.*

*(2) Classification by diameter, according to PED 2014/68/EU (refer to chapter 0).*

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# Check valves

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### ■ Weights and packaging

| CARLY references | Unit weight kg | | Packaging number of pieces |
|---|---|---|---|
| | With packaging | Without packaging | |
| CRCY 2 S & MMS | 0,06 | 0,05 | 1 |
| CRCY 3 S & MMS | 0,09 | 0,06 | 1 |
| CRCY 4 S & MMS | 0,14 | 0,13 | 1 |
| CRCY 5 S/MMS | 0,21 | 0,20 | 1 |
| CRCY 6 S & MMS | 0,26 | 0,24 | 1 |
| CRCY 7 S/MMS | 0,28 | 0,25 | 1 |