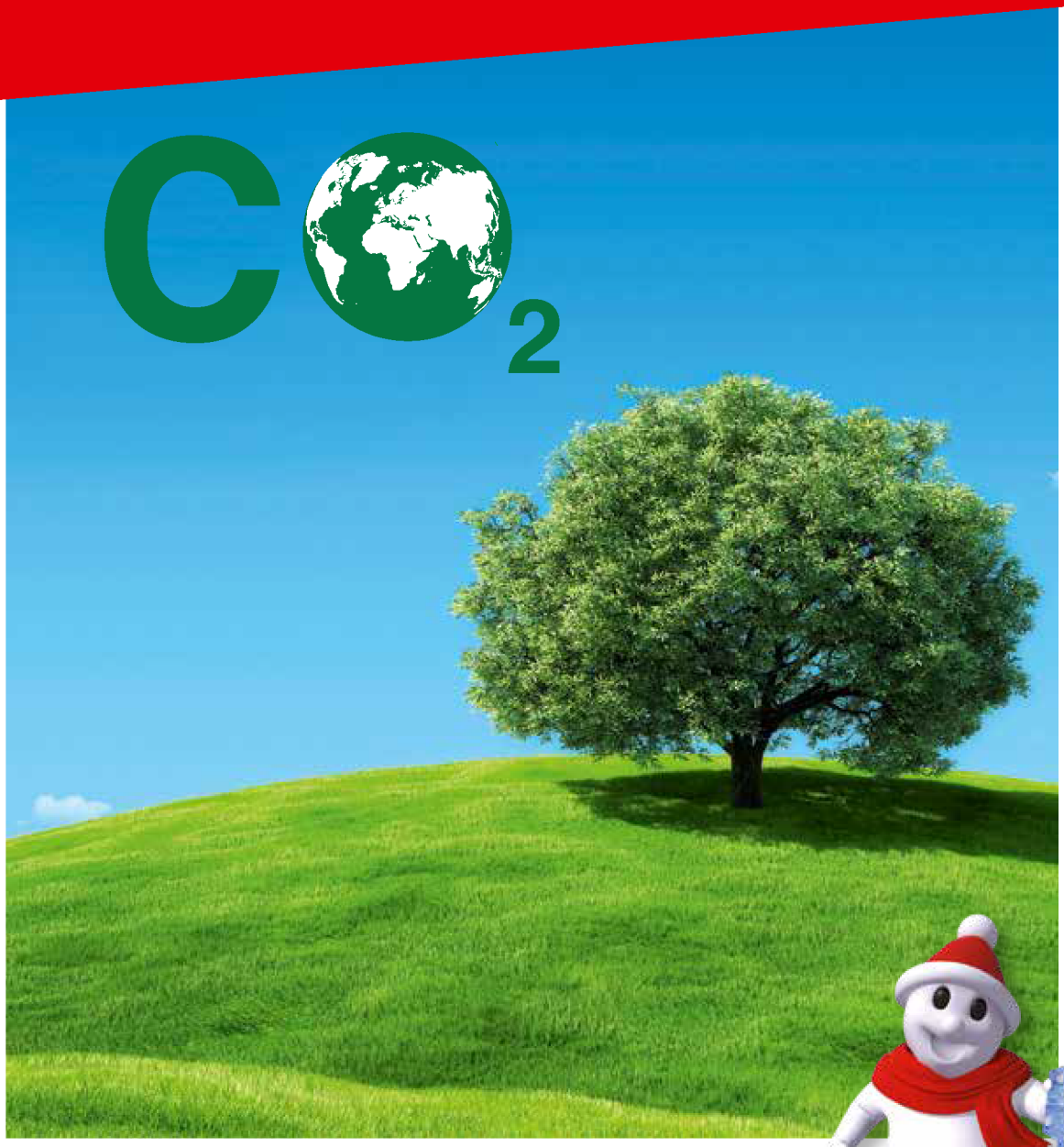
Carly

REFRIGERATION COMPONENTS SOLUTIONS

ACT FOR CO_2, THINK CARLY!



This catalogue is specific for CO_2 (complete catalogue in our website www.carly-sa.com)

Carly

REFRIGERATION COMPONENTS SOLUTIONS

FOR CO_2 - R744

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Editorial

CO_2, an old story and brand new CARLY components.

CO_2 has been used as a refrigerant for more than 120 years, and is now a crucial part of many different applications from commercial and industrial refrigeration to air conditionning, certain kinds of heat pump and - mobile application.

At such a low cost, with such a limited effet on the environment (GWP = 1 and no effet on the ozone layer (ODP = 0), zero toxicity and complete non-flammability, this is often the go-to technical solution for professionnels.

What's more, the F-Gas regulation (N°517/2017) brought in on the 01/01/2015 encourages the use of "natural" refrigerants such as CO_2.

This relatively recent change in direction for the profession is a real challenge, and the CARLY RCS Company is up to it. Working in close collaboration with the leaders in the market, CARLY RCS is constantly developing new ranges of refrigeration line components whiche are adapted for use with CO_2. They also produce a huge number of custom components, meeting the increasing needs of users for component solutions adapted to their specific expectations reather than off-the-shelf systems.

The main feature of these new "CO_2" components is their capacity to work under higher operating pressures than those used with traditionnal refrigerants, 46, 64, 90, 140 bars, or even higher...

Whether the CO_2 system est running a sub-critical or trans-critical cycle, CARLY RCS can provide component solutions for a vast range of refrigeration components: single-block dehydrator filters, replaceable-cartridge filter driers, impurity filters, silent backflows and oil filters. Suction accumulators and liquid tanks can be custome-designed and created.

Recievers to their flexibility, their factory located in the heart of Europe and their particularly agile industrial organisation, CARLY RCS is the ideal partner for all of your CO_2 developments.

Act for CO_2, think CARLY !

CYCO$_2$-EN - 0.1-5 / 05-2026

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Refrigeration Components Solutions

All our production facilities are located in Lissieu, near Lyons. Total manufacturing process control allows us to ensure perfect traceability and optimum quality level.

Confronted with the growing opacity of the goods specific origins, CARLY commits itself to offer its customers “Made in France” refrigerating components.

The location of our production unit, at the heart of Europe, offers an actual proximity thus ensuring customised, responsive service.

Created in 1923, CARLY designs, manufactures and markets a wide range of very high quality components for the refrigerating and air conditioning markets.

For many years, our partnerships with the most prestigious manufacturers, our agreements and exchanges with the best specialised distributors, our ongoing relationships with well-known professional refrigerating installers have helped us increase our experience in order to better serve the profession.

CARLY focuses its efforts in a very specific business area to which it is truly dedicated: refrigerating circuit components.

Research & Development, Production and Marketing investments are therefore targeted towards the line components activity.

This strong specialization has allowed CARLY to become an international reference and to offer its users one of the market’s most comprehensive product lines.

Our technical teams are expert to deal with such different subjects as filtration, decontamination, noise annoyance, oil return management, maintenance of refrigeration systems.

As an international and independent company focusing on its customers, CARLY is a family owned company, which gives it a great adaptation capacity and a high reactivity on a more and more demanding market. Therefore, the company’s management ensures that its teams focus on developing new solutions aimed at reacting to the evolution of a constantly changing environment. The company is certified ISO-9001 for quality and ISO-14001 for the environment.

With more than 60 % of its annual turn-over made on the international market, CARLY’s activities follow a path of ongoing growth that enables the company to offer the actors of the refrigerating industry more and more efficient products and services.

TÜVRheinland CERTIFIÉ

ISO 9001:2008
ISO 14001:2004
Management System

www.tuv.com
ID 9105077923

Warning

- The use of CARLY products requires that the buyer performs a prior technical validation more specifically as regards the following:
  - ➜ The design of the refrigerating circuit into which the product is integrated ;
  - ➜ Oils and refrigerants used ;
  - ➜ The installation operating conditions ;
  - ➜ The parameters of the installation : charge of the installation, pipes diameters, working pressures and temperatures…
- Indeed, the installation designers' responsibility is:
  - ➜ To make sure that all operating equipment items are fitted for their intended use and are compatible with each other ;
  - ➜ To ensure that temperature and pressure requirements of the installation are respected, in conformity with the technical features of the product, adding if necessary a safety valve (the integrator must provide a mean for the recovery of exhaust fumes, in conformity with the regulations in force) ;
  - ➜ To take the necessary measures in order to avoid liquid hammer ;
  - ➜ To ensure that the system works in an almost-static position.

  For specific requirements (pressure, temperature), contact CARLY technical service.
- A complete evaluation of the risks must be performed during phases of design, assembling, and installation of the machine.
- As a component manufacturer, CARLY is not liable for coming up with general scope recommendations, and this applies to all types of installations.
  Nevertheless, CARLY technical department is at the disposal of the buyer in order to answer their questions and guide them in their choices. But CARLY advices, especially about product selection (selection and technical details tables), are not liable and have no contractual aspect. Indeed, the quantity and the diversity of parameters in an installation and its working conditions are mostly unknown for CARLY, and do not allow a complete study that would enable to make detailed and specific answers.
- Each CARLY component should be carefully selected, in order to meet the requirements of the installation as specifically as possible. In order to do so, see the selection tables established for each family of CARLY components. The recommendations in these tables have been established for regular installations, without any specific requirements. For all other specific cases, it is imperative that you get in touch with CARLY's technical services, or your distributor's technical services.
- CARLY components are designed for use with CFCs, HCFCs, HFCs and CO_2 as well as with their associated oils and additives; these are non hazardous refrigerants from group 2 of the Pressure Equipment Directive 2014/68/EU. CARLY components are not compatible with corrosive, toxic or inflammable substances (according to safety classification and information on refrigerants – Cf EN378-1 Appendix E). CARLY denies all responsibilities for damages subsequent to the use of said refrigerants. It is mandatory to use appropriated refrigerants (fluid or gas), in conformity with the indication on the label of the product.

  For the use of CARLY components with refrigerants of group I, type hydrocarbons – Propane R290, Butane R600, Isobutane R600a, Propylene R1270, please contact CARLY technical service.
- CARLY recommends reading its general sales terms and especially the clauses concerning the warranty (report to chapter 117 of CARLY technical catalogue). These general sales terms govern the commercial relationships between CARLY and its customers. They are also detailed on the order confirmations, delivery notes and commercial invoices. They are available as well on request at CARLY company (info@carly-sa.com). Sending an order to CARLY implies the acceptation of its general sales terms without restriction, above any other general purchase conditions.
- CARLY components are designed only for thermodynamic installations (refrigeration, air conditioning, heat pumps…).
- CARLY products are in conformity with the European Pressure Equipment Directive (PED 2014/68/EU). The products dedicated to be installed on a machine in the meaning of the machine directive 2006/42/CE and coming within category I as maximum (article 13, appendix II) are excluded of the scope of PED 2014/68/EU (article 1§2).
- CARLY components are designed in order to be integrated into fix installations. For an integration into mobile installations (EN 378-2), it is the responsibility of the designer and/or manufacturer of the application to make sure of the right fitting of CARLY components into their application, making qualification tests of the components fitting into their application.
- The label on the products with the CE marking, must remain visible and must not be covered nor damaged.

Warning

- A close attention must be paid to intervention areas in order to get a safe and secured working area available.
- Only a skilled personal (EN 13313) trained and initiated to interventions on refrigeration installations and pressure equipment, and with the qualifications required by the regulation of the country of use, is authorized to install CARLY components (See General Assembling Precautions / Specific Procedures of the Technical Catalogue).
- Pressure equipments present some danger. During their handling, it is mandatory to take the necessary safety measures and to wear the individual protections according to the regulation in force.
- Plan a periodical control as often as necessary and in conformity with the regulation in force, of the installation air tightness and of the state of the refrigerant and the oil (moisture, acidity, dirt…) in order not to trouble the efficiency of the installation.
- In the frame of preventive maintenance, check regularly the general aspect and the state of the product, and replace it if necessary.
- It is mandatory to keep the instructions, during all the lifetime of the product.
- CARLY disclaims all responsibility regarding the possible errors and omissions present in the technical catalogues and brochures, or any other document distributed by CARLY.

  CARLY keeps the right to modify its manufacturing without prior notice, which is valid for products already upon order, subject that these modifications do not modify the features defined with the customer.

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European Pressure Equipment Directive 2014/68/EU

PED

■ Definitions - Technical features

- **Volume (V)**: Internal volume for each container including the volume of the connections up to the first connection, not including the volume of permanent internal elements.
- **Nominal size (DN)**: Numerical designation common to all the elements of a piping system other than the elements referenced by their outside diameter or by their thread size.
- **Nature of refrigerant contained**: Liquid or gas, hazardous or non-hazardous.

The technical features of each product (PS/PS BT, V/DN, TS mini/maxi, TSBT, PT) are indicated in the "Technical features" table in each chapter of the technical documentation.

For each product, a description sheet can be obtained from CARLY technical services on request; it certifies each product features.

➜ Application to CARLY products

The refrigerants chosen by CARLY are Group 2 gases, Refrigerants classified as non hazardous according to PED 2014/68/EU (article 13).

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.

* *Pressure Limit for Low Temperatures :*

- *If the PS BT and TS BT values are defined, then for a working temperature between the min. TS and TS BT values, the product's maximum working pressure is limited to the PS BT value.*
- *The PS BT and TS BT values for each Product are indicated in the "Technical features» table in each chapter of the Technical Documentation.*

** *Hydraulic test by sampling for products of CAT.I / for each unit for products of CAT.II and over.*

■ Evaluation of product conformity

In order to be able to market products with "CE" marking, products of category I, II & III are submitted to a conformity evaluation procedure (cf appendix III) in function of the category of the equipment.

Conformity evaluation procedures for CARLY products of:

- Cat I: Module A;
- Cat II: Module D1;
- Cat III: Module B1 + D.

■ CE marking

CE marking is printed on each product and shows the following information:

- CE marking*;
- Manufacturer's name and address;
- Year of manufacture;
- Product reference;
- Manufacturing batch identification;
- The product technical features (PS, V/DN, max. TS, min. TS, PT);
- Refrigerant families to be used.

* *For CE category II, III and IV products, the notified organisation identification number is printed next to the CE marking - For CARLY, this number is N° 0036 (TÜV SÜD Industrie Service GmbH).*

No CE marking is printed on article 4§3 products as they are excluded from the Pressure Equipment Directive.

European Pressure Equipment Directive 2014/68/EU

PED

■ EU declaration of conformity

The UE conformity statement is printed by the manufacturer and certifies that the product concerned matches the requirements of the European Pressure Equipment Directive 2014/68/EU in terms of design, manufacturing and conformity assessment (final test).

➜ Application to CARLY products

CE category I products
The EU conformity statement is not linked to manufacturing batch but to product design.
The original is kept by CARLY.
A copy can be obtained from CARLY technical services on request or for « catalogue » products it is possible to download it from our website www.carly-sa.com.

CE category II products
A EU conformity statement is printed for each manufacturing batch.
The original is kept by CARLY; a copy is enclosed in each product's packing.

CE category III products
A EU conformity statement is printed for each manufacturing batch.
The original is kept by CARLY; a copy is enclosed in each product's packing.

Article 4§3 Products (without CE category)
The conformity declaration is not linked to the manufacturing lot. The original is kept by CARLY. A copy is available upon request at CARLY technical service, or for "catalogue" products, it is possible to download it from our website: www.carly-sa.com.

■ CE Instruction Notice

The CE Instruction Notice should catch the reader's attention on the dangers linked to erroneous use and contain all information dealing with the assembly, commissioning, operation and maintenance of the product concerned.

It also indicates the product features (CE Category retained, PS, V/DN, max. TS, min. TS,…), and also the main recommendations for mounting / assembling the products.

➜Application to CARLY products

CE category I products
For each product, a CE instruction notice can be obtained from CARLY technical services on request.

CE category II products
A CE instruction notice is enclosed in each product packing.

CE category III products
A CE instruction notice is enclosed in each product packing.

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European Pressure Equipment Directive 2014/68/EU

PED

The European Pressure Equipment Directive 2014/68/EU (called PED) aims at harmonizing the national clauses, specific to each member state, in order to enable free flow of equipment under pressure within the European Union.

The essential safety requirements under this directive only apply to risks linked to pressure.

The European Pressure Equipment Directive 2014/68/EU applies to the design, the manufacturing, the conformity assessment of equipment and sets intended to contain refrigerants, gasses or liquids under pressure, which maximum working pressure is higher than 0.5 bar.

Equipment for which the European Pressure Equipment Directive 2014/68/EU (article 4) applies can be the following:

- Receivers non subject to the action of flame or external heat intake;
- Piping;
- Safety accessories;
- Accessories under pressure;
- Sets (equipment under pressure assembled by a manufacturer and making up a functional unit).

→ **Application to CARLY products**

CARLY products can be containers, piping or accessories under pressure.

■ Definitions - CE category

Equipments under pressure are classified in several CE categories according to their “pressure” risk. The risk category is determined in function of:

- The volume of the device;
- The kind of refrigerant / gas used;
- The maximal admissible pressure (PS).

There are 4 categories of CE risk: Categories I, II, III and IV (PED 2014/68/EU, article 13, appendix II)

Category I, II, III and IV equipment items are subject to the essential requirements such as defined in the appendix I of the directive.

The equipments that cannot be classified into one of the 4 categories are excluded from the scope of application of the Directive requirements (article 4§3). So they do not have CE marking.

Nota:

The products dedicated to be installed on a machine in the meaning of the machine directive 2006/42/CE and coming within category I as maximum (article 13, appendix II) are excluded of the scope of PED 2014/68/EU (article 1§2).

■ Definitions - Technical features

- **Pressure**: Pressure with reference to atmospheric pressure (pression relative).
- **Maximum working pressure (PS)**: Maximum pressure for which the equipment was designed.
- **Maximal admissible pressure in low temperature (PS BT)***: Maximal admissible pressure in “low temperature” for which the equipment has been designed.
- **Test pressure (PT)**: hydraulic test pressure of containers**.
- **Working temperatures (TS mini / maxi)**: Minimal and maximal temperatures for which the equipment is designed.
- **Working temperatures (TS BT)***: Minimal admissible working temperature for which the equipment is designed, with a pressure limit.

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Filter driers

→ DCYT-P9 (90 bar) / DCYT-P14 (140 bar)

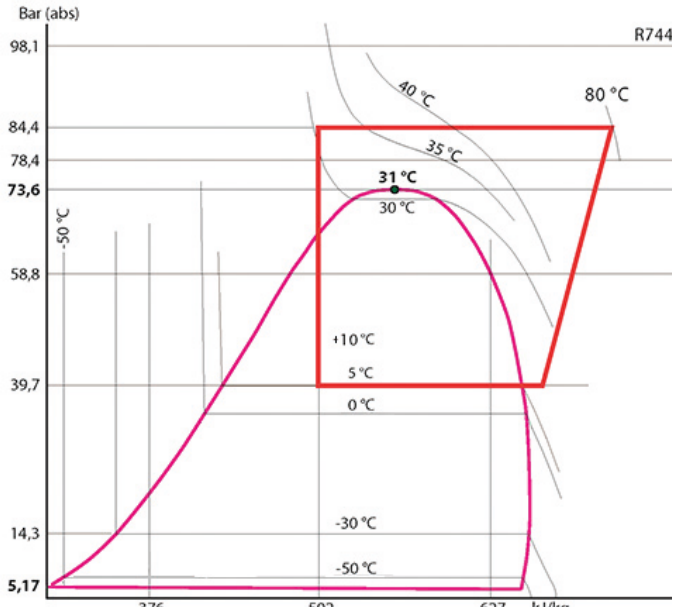
■ Applications

• Filtering and drying of refrigerants for liquid lines of refrigerating and air conditioning installations, running with high working pressures with CO_2 in trancritical compression systems.

NEW

CO2 TRANSCRITICAL

100% Molecular sieves



■ Functional features

• Optimized for small capacity refrigeration untis.
• Products are compatible with CO_2, as well as with its associated oils and additives. Products are designed for use of non-hazardous refrigerants from group 2 of PED 2014/68/EU.
• Product classification in CE categories is done with the PED 2014/68/EU table, corresponding to a volume-based selection.
• Hermetically sealed outer steel enclosure with paint to ensure a high resistance to corrosion.
• Filtering at outlet preventing propagation within the circuit of particles.
• No desorption, even at a high temperature.
• Copper plated steel connections up to 3/4".

■ CARLY advantages

• Maximal working pressure: up to 140 bar with CO_2 in transcritical compression systems.
• Great drying capacity at all temperatures (100% molecular sieves)
• Initial drying capacity guaranteed by oven drying and airtight sealing.
• Increased particle retention capacity thanks to dual stage filtration : 50μm at the inlet and 25μm at the outlet.

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Filter driers

➔ DCYT-P9 (90 bar) / DCYT-P14 (140 bar)

■ Warning

Before selecting or installing any component, please refer to the chapter 0 of CARLY technical catalogue - **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 of CARLY technical catalogue – **GENERAL ASSEMBLY PRECAUTIONS**.

■ Recommendations specific to DCYT-P9 and DCYT-P14 filter driers

- Filter driers are to be mounted on the liquid line between the receiver and the expansion element.
- The refrigerant flow direction is indicated by an “IN” mark in the inlet shell of the filter drier and by an arrow on the filter drier tag. It must be necessarily respected.
- We recommend the vertical mounting of the filter drier with a top-down fluid flow direction in order to favour its filling when in operation and a rapid flow of the fluid when the installation is shut down.
- We recommend the use of a brasing at 38 % silver minimum for the brasing of the copper coated steel connections.
- Be careful to properly select the solenoid valves located downstream of the filter driers; their over-sizing could cause liquid hammer phenomena hindering the filter driers’ mechanical behaviour FILTRY-P9 (90 bar) ; these liquid hammer phenomena can originate from other sources, in longpiping installations.
- Never install the filter driers in an area of the circuit that can be isolated.
- Never trap the refrigerant in its liquid state (between a check valve and a solenoid valve, for instance).
- The filter driers must be changed :
  - ➔ after each intervention on the installation requiring the opening of the circuit
  - ➔ when the liquid indicator indicates an abnormal humidity content
  - ➔ when the pressure loss measured in the dewatering filter is too high
  - ➔ at least once a year as a measure of precaution
- Filter drier efficiency and refrigerant moisture content should be checked using liquid sight glasses.
- Make sure that the piping can support without deformation the weight of the filter drier ; otherwise, plan the attachment of the filter drier with a clamp on a stable part of the installation.

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Filter driers

→ DCYT-P9 (90 bar) / DCYT-P14 (140 bar)

■ Special precautions for components used with CO_2 in subcritical and transcritical systems

- The maximal working pressure and the power variations of the installation must be taken into account as of its design, in order to select all the components consequently.
- The pressure of the circuit during the stop phases must also be taken into account, because it can be very high, due to the pressure equalization according to the ambient temperature; several solutions exist to limit and control this pressure when the installation is stopped.
  - Design of the installation allowing to resist to this pressure.
  - Implementation of a « buffer » volume of storage or expansion (receiver).
  - Installation of a secondary circuit with valve or solenoid valve, allowing the fluid transfer to the coldest point, or the less high in pressure of the installation.
  - Implementation of a small separate refrigeration unit, to maintain the liquid temperature at a pressure lower than the maximal working pressure ; it is so far the most effective technical solution, but with a major drawback, which is the power failure (safety unit to be considered, or backup power supply).
- The implementation on the liquid line of a filter drier **DCYT-P9** or **DCYT-P14** is highly recommended. Serious problems can occur in the presence of moisture, such as expansion valve blocking and formation of dry ice and even carbonic acid. To avoid this, it is imperative to limit the circuit openings in order to avoid air introduction, causing the condensation in the pipes, and to proceed to a high evacuation of the installation, before any commissioning or restarting.
- For an operation with CO_2 at low temperature, provide thermal insulation on the components which can be covered by frost.
- There is no incompatibility between CO_2 and the main metallic materials commonly used in refrigeration systems (steel, copper, brass...)
- On the other hand, there is a real compatibility issue between CO_2 and polymers. For example, swelling phenomena and internal explosion of the seal are possible. Carly filter drier **DCYT-P9** and **DCYT-P14** do not have polymer gaskets directly in contact with CO_2.

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Filter driers

→ DCYT-P9 (90 bar) / DCYT-P14 (140 bar)

■ Selection table

CARLY references	Connections to solder ODF		Capacity	Dehydratable refrigerant capacity kg of refrigerant
	inch	mm	kw$_{(1)}$	R744
				24 °C
DCYT-P14 032 S	1/4	-	5,2	2,5
DCYT-P14 082 S	1/4	-	5,2	6
DCYT-P14 083 S	3/8	-	14,1	6
DCYT-P9 163 S	3/8	-	14,1	19,2
DCYT-P9 164 S	1/2	-	24,6	19,2
DCYT-P9 165 S/MMS	5/8	16	39,5	19,2
DCYT-P9 304 S	1/2	-	26,8	45,2
DCYT-P9 305 S/MMS	5/8	16	41	45,2
DCYT-P9 306 S	3/4	-	54,4	45,2
DCYT-P9 307 S/MMS	7/8	22	64,9	45,2

(1) Capacity in kw for Tk = 30°C and To = -15°C with DeltaP = 0.07b

Nota: the diameter of connections must not be inferior to the diameter of the main pipe.

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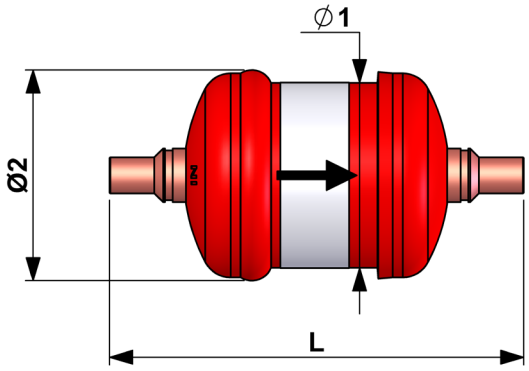
Filter driers

→ DCYT-P9 (90 bar) / DCYT-P14 (140 bar)

■ Technical features

CARLY references	Connections types (1)	Filtering surface	Volume of desiccants	Dimensions		
				Ø1	Ø2	L
		cm^2	cm^3	mm	mm	mm
DCYT-P14 032 S	2	52	29	48,3	55	108
DCYT-P14 082 S	2	117	90	48,3	55	161
DCYT-P14 083 S	2	117	90	48,3	55	161
DCYT-P9 163 S	2	200	215	76,1	84	153
DCYT-P9 164 S	2	200	215	76,1	84	157
DCYT-P9 165 S/MMS	2	200	215	76,1	84	161
DCYT-P9 304 S	2	371	500	76,1	84	239
DCYT-P9 305 S/MMS	2	371	500	76,1	84	243
DCYT-P9 306 S	2	371	500	76,1	84	248
DCYT-P9 307 S/MMS	2	371	500	76,1	84	259

(1) *Chapter "Connection features and drawings" (refer to chapter 114 of CARLY technical catalogue).*



CARLY references	Volume (V)	Working pressure(1)	Maximal Working pressure (PS BT)	Maximal working temperature (TS max)	Minimal working temperature (TS min)	Working temperature(1) (TS BT)	CE Category (2)
	L	bar	bar	°C	°C	°C	
DCYT-P14 032 S	0,09	140bar	90	100	-40	-10	Art4§3
DCYT-P14 082 S	0,17		90	100	-40	-10	Art4§3
DCYT-P14 083 S	0,17		90	100	-40	-10	Art4§3
DCYT-P9 163 S	0,41	90bar	67	100	-40	-10	Art4§3
DCYT-P9 164 S	0,41		67	100	-40	-10	Art4§3
DCYT-P9 165 S/MMS	0,41		67	100	-40	-10	Art4§3
DCYT-P9 304 S	0,73		67	100	-40	-10	Art4§3
DCYT-P9 305 S/MMS	0,73		67	100	-40	-10	Art4§3
DCYT-P9 306 S	0,73		67	100	-40	-10	Art4§3
DCYT-P9 307 S/MMS	0,73		67	100	-40	-10	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 volume, according to PED 2014/68/EU (refer to Chapter 0 of CARLY technical catalogue).*

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Filter driers

→ DCYT-P9 (90 bar) / DCYT-P14 (140 bar)

■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
DCYT-P14 032 S	0,51	0,38	16
DCYT-P14 082 S	0,71	0,58	16
DCYT-P14 083 S	0,71	0,58	16
DCYT-P9 163 S	1,27	1,14	6
DCYT-P9 164 S	1,29	1,16	6
DCYT-P9 165 S/MMS	1,29	1,16	6
DCYT-P9 304 S	1,98	1,85	6
DCYT-P9 305 S/MMS	1,98	1,85	6
DCYT-P9 306 S	2,01	1,88	6
DCYT-P9 307 S/MMS	2,05	1,92	6

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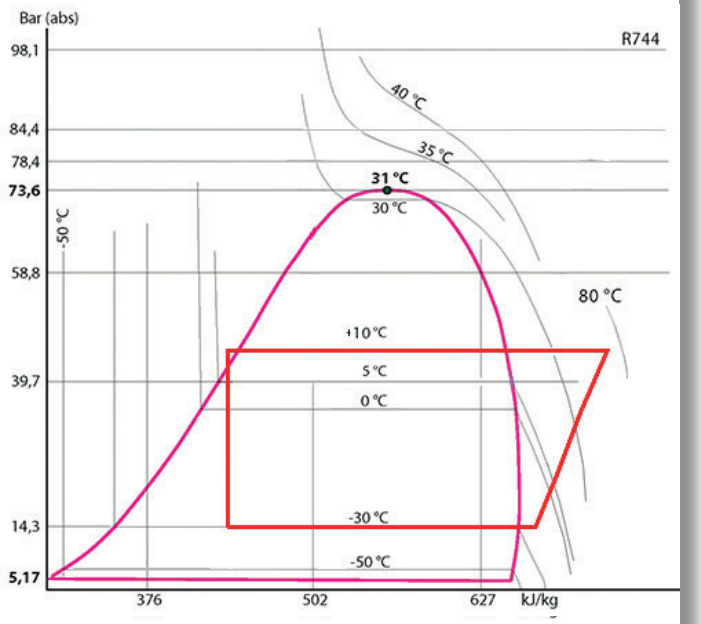
Filter driers

→ DCY-P6 / 64 bar (928 psig)

■ Applications

- Filtering and drying of refrigerants for liquid lines of refrigerating and air conditioning installations, running with high working pressures.

CO$_2$ SUBCRITICAL



■ Functional features

- Products are compatible with HFC, HFO and 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.
- Product classification in CE categories is done with the PED 2014/68/EU table, corresponding to a volume-based selection.
- Hermetically sealed outer steel enclosure with paint to ensure a high resistance to corrosion.
- Filtering at outlet preventing propagation within the circuit of particles bigger than 25 microns, with a very low pressure drop.
- No desorption, even at a high temperature.
- Several types of connections are possible on standard products:
  - → To be screwed type SAE
  - → To be brazed for tubes in inches (S)
  - → To be brazed for tubes in millimeters (MMS)

Possible customization on demand:

- Specific connections (O-RING, ORFS, …)
- Stainless steel casings and unions (resistance to corrosion and at low temperatures).

■ CARLY advantages

- Maximal working pressure: up to 64 bar with CO$_2$ in subcritical compression systems.
- Great drying at all temperatures, thanks to a rigorous selection and a judicious mix of the chemical agents present in the filter driers (activated alumina in order to neutralise the acids and molecular sieves to adsorb moisture); the volume of free-grains drying agents used in a CARLY filter drier is greater than that present in an equivalent model with a solid core.
- Initial drying capacity guaranteed by a 200 °C oven drying and airtight sealing.
- Drying ensured for the subcritical CO$_2$ applications at low temperatures.
- A dispenser located at the inlet ensures optimal distribution and permanent treatment of the whole refrigerant, inside the filter drier.
- The copper-plated steel connections facilitate the brazing and allow using brazing alloys with a low silver percentage.

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Filter driers

→ DCY-P6 / 64 bar (928 psig)

■ Warning

Before selecting or installing any component, please refer to the chapter 0 of CARLY technical catalogue - **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 of CARLY technical catalogue – **GENERAL ASSEMBLY PRECAUTIONS**.

■ Recommendations specific to DCY-P6 filter driers

- Filter driers are to be mounted on the liquid line between the receiver and the expansion element.
- The refrigerant flow direction is indicated by an “IN” mark in the inlet shell of the filter drier and by an arrow on the filter drier tag. It must be necessarily respected.
- We recommend the vertical mounting of the filter drier with a top-down fluid flow direction in order to favour its filling when in operation and a rapid flow of the fluid when the installation is shut down.
- We recommend the use of a brasing at 10 % silver minimum for the brasing of the copper coated silver unions.
- Be careful to properly select the solenoid valves located downstream of the filter driers; their over-sizing could cause liquid hammer phenomena hindering the filter driers’ mechanical behaviour; protection of regulation elements located upstream of the evaporator should be performed with FILTRY-P9 (90 bar) dirt filters (refer to chapter 11 of CARLY technical catalogue); these liquid hammer phenomena can originate from other sources, in longpiping installations.
- Never install the filter driers in an area of the circuit that can be isolated.
- Never trap the refrigerant in its liquid state (between a check valve and a solenoid valve, for instance).
- The filter driers must be changed :
  - → after each intervention on the installation requiring the opening of the circuit
  - → when the liquid indicator indicates an abnormal humidity content
  - → when the pressure loss measured in the dewatering filter is too high
  - → at least once a year as a measure of precaution
- Filter drier efficiency and refrigerant moisture content should be checked using liquid sight glasses.
- Make sure that the piping can support without deformation the weight of the filter drier ; otherwise, plan the attachment of the filter drier with a clamp on a stable part of the installation.

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Filter driers

→ DCY-P6 / 64 bar (928 psig)

■ Special precautions for components used with CO_2 in subcritical and transcritical systems

- The maximal working pressure and the power variations of the installation must be taken into account as of its design, in order to select all the components consequently.
- The pressure of the circuit during the stop phases must also be taken into account, because it can be very high, due to the pressure equalization according to the ambient temperature; several solutions exist to limit and control this pressure when the installation is stopped.
  - Design of the installation allowing to resist to this pressure.
  - Implementation of a « buffer » volume of storage or expansion (receiver).
  - Installation of a secondary circuit with valve or solenoid valve, allowing the fluid transfer to the coldest point, or the less high in pressure of the installation.
  - Implementation of a small separate refrigeration unit, to maintain the liquid temperature at a pressure lower than the maximal working pressure ; it is so far the most effective technical solution, but with a major drawback, which is the power failure (safety unit to be considered, or backup power supply).
- The hot gas defrost, frequently used with CO_2 for low temperatures applications, generates also high pressures (to take in consideration)
- The implementation on the liquid line of a filter drier **DCY-P6** is highly recommended. Serious problems can occur in the presence of moisture, such as expansion valve blocking and formation of dry ice and even carbonic acid. To avoid this, it is imperative to limit the circuit openings in order to avoid air introduction, causing the condensation in the pipes, and to proceed to a high evacuation of the installation, before any commissioning or restarting.
- For an operation with CO_2 at low temperature, provide thermal insulation on the components which can be covered by frost.
- There is no incompatibility between CO_2 and the main metallic materials commonly used in refrigeration systems (steel, copper, brass...)
- On the other hand, there is a real compatibility issue between CO_2 and polymers. For example, swelling phenomena and internal explosion of the seal are possible. Carly **filter drier DCY-P6** do not have polymer gaskets directly in contact with CO_2.

Filter driers

→ DCY-P6 / 64 bar (928 psig)

■ Selection table: Group 2 fluids (A1, A2L)

CARLY references	Connections		CARLY references	Connections	Refrigerating capacity kW [1]					Dehydratable refrigerant capacity kg of refrigerant [2]						
	To screw SAE	To solder ODF		To solder ODF	R22 R1233zd	R134a R407C R410A R407F	R404A R507A R452A	R1234ze R513A R448A R449A R450A R455A	R744 CO_2	R22 R450A R134a R1233zd		R407F R452A R407C R513A R1234ze		R404A R507 R455A R410A R448A R449A		R744 CO_2 [3]
	inch	inch		mm						24 °C	52 °C	24 °C	52 °C	24 °C	52 °C	24 °C
DCY-P6 053	3/8				22,8	23,5	16,0	20,4	25,8	9,5	9,0	9,0	8,6	8,5	8,0	5,8
DCY-P6 053 S		3/8	DCY-P6 053 MMS	10	22,8	23,5	16,0	20,4	25,8	9,5	9,0	9,0	8,6	8,5	8,0	5,8
DCY-P6 164	1/2				41,5	43,0	32,0	37,4	46,5	40,0	34,0	38,1	32,4	35,7	30,3	24,3
DCY-P6 164 S		1/2	DCY-P6 164 MMS	12	41,5	43,0	32,0	37,4	46,5	40,0	34,0	38,1	32,4	35,7	30,3	24,3
DCY-P6 305	5/8				70,0	72,0	51,0	62,6	78,4	70,0	61,0	66,6	58,0	62,4	54,4	42,5
DCY-P6 305 S/MMS		5/8	DCY-P6 305 S/MMS	16	70,0	72,0	51,0	62,6	78,4	70,0	61,0	66,6	58,0	62,4	54,4	42,5

[1] Refrigerating capacities according to Standard ARI 710-86 for To = – 15 °C, Tk = 30 °C and Δp = 0.07 bar.
If different conditions, refer to correction factors in chapter 112 of CARLY technical catalogue.
[2] Dehydratable refrigerant capacity according to Standard ARI 710-86.
[3] Refrigerating capacities Qn for Tk = – 10 °C and To = – 40 °C
If different conditions, refer to correction factors in chapter 112 of CARLY technical catalogue.
Nota: the diameter of connections must not be inferior to the diameter of the main pipe.

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Filter driers

→ DCY-P6 / 64 bar (928 psig)

■ Example of selection of a DCY-P6 filter drier

The sizing of a product implies that the buyer takes into account the conditions under which the product is going to be used (temperature - pressure - refrigerant - oil - external environment). The values proposed in the CARLY catalogue selection tables match specific test conditions.

In order to define a correct sizing, we suggest that you convert your operating data into data that match the CARLY selection tables.

• Installation operating with CO_2 under the following conditions[1] :

- **→ To = - 40 °C**
- **→ Tk = - 10 °C**
- **→ Q_O = 78 kW**
- **→ 42 kg of refrigerant at 24 °C**

• Which DCY-P6 filter drier to choose?

DCY-P6 selection

• DCY-P6 type selection and reading of selection table on page 1.12

- → CO_2
- → 42 kg refrigerant at 24 °C
- → Q_O = 78 kW

Filter drier volume selection depends on the installation total refrigerant capacity. For a quantity of 42 kg of CO_2, selection should be done from the DCY-P6 300 product line. See dehydratable refrigerant capacity column.

Selection of the connection, hence of the filter drier, is performed by carrying the Qo refrigerating capacity and the refrigerant over to the refrigerating capacity column.

Result: DCY-P6 305 S/MMS (connections to solder) **or DCY-P6 305** (connections to screw)

If the Q_O value is between two CARLY filter drier types in the selection table, it is recommended to select the filter drier with the greater capacity.

CARLY references	Connections To screw SAE inch	Connections To solder ODF inch	CARLY references	Connections To solder ODF mm	Refrigerating capacity kW [1] R22 R1233zd	R134a R407C R410A R407F	R404A R507A R452A	R1234ze R513A R448A R449A R450A R455A	R744 CO_2	Dehydratable refrigerant capacity kg of refrigerant [2] R22 R450A R134a R1233zd 24 °C	52 °C	R407F R452A R407C R513A R1234ze 24 °C	52 °C	R404A R507 R455A R410A R448A R449A 24 °C	52 °C	R744 CO_2 [3] 24 °C
DCY-P6 164	1/2				41,5	40,0	43,0	34,8	46,5	40	34	38,1	32,4	35,7	30,3	24,3
DCY-P6 164 S		1/2	DCY-P6 164 MMS	12	41,5	40,0	43,0	34,8	46,5	40	34	38,1	32,4	35,7	30,3	24,3
DCY-P6 305	5/8				70,0	68,0	78,4	59,1	78,4	70	61	66,6	58,0	62,4	54,4	42,5
DCY-P6 305 S/MMS		5/8	DCY-P6 305 S/MMS	16	70,0	68,0	78,4	59,1	78,4	70	61	66,6	58,0	62,4	54,4	42,5

[1] Chapter "Abbreviations and units" (refer to chapter 113 of CARLY technical catalogue).

[2] Dehydratable refrigerant capacity according to Standard ARI 710-86.

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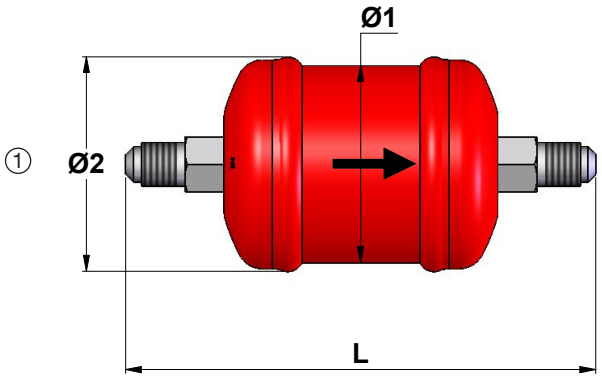
Filter driers

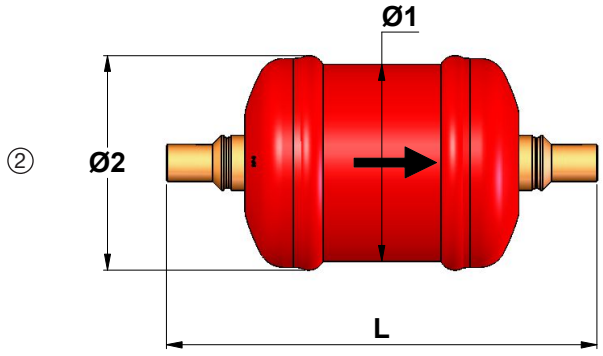
→ DCY-P6 / 64 bar (928 psig)

■ Technical features

CARLY references		Connections types[1]	Drawing Nb	Filtering surface cm²	Volume of desiccation products cm³	Dimensions Ø1 mm	Ø2 mm	L mm
DCY-P6 053		1	1	52	82	50	55	126
DCY-P6 053 S	DCY-P6 053 MMS	2	2	52	82	50	55	110
DCY-P6 164		1	1	102	322	70	76	182
DCY-P6 164 S	DCY-P6 164 MMS	2	2	102	322	70	76	162
DCY-P6 305		1	1	102	582	70	76	262
DCY-P6 305 S/MMS		2	2	102	582	70	76	242

[1] Chapter "Connection features and drawings" (refer to chapter 114 of CARLY technical catalogue).





CARLY references		Volume V L	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]
DCY-P6 053		0,12	64	48	100	-40	-10	Art4§3
DCY-P6 053 S	DCY-P6 053 MMS	0,12	64	48	100	-40	-10	Art4§3
DCY-P6 164		0,42	64	48	100	-40	-10	Art4§3
DCY-P6 164 S	DCY-P6 164 MMS	0,42	64	48	100	-40	-10	Art4§3
DCY-P6 305		0,68	64	48	100	-40	-10	Art4§3
DCY-P6 305 S/MMS		0,68	64	48	100	-40	-10	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 volume, according to PED 2014/68/EU (refer to Chapter 0 of CARLY technical catalogue).

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Filter driers

→ DCY-P6 / 64 bar (928 psig)

■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
DCY-P6 053	0,33	0,30	1
DCY-P6 053 S & MMS	0,33	0,30	1
DCY-P6 164	1,04	1,00	1
DCY-P6 164 S& MMS	1,04	1,00	1
DCY-P6 305	1,57	1,50	1
DCY-P6 305 S/MMS	1,57	1,50	1

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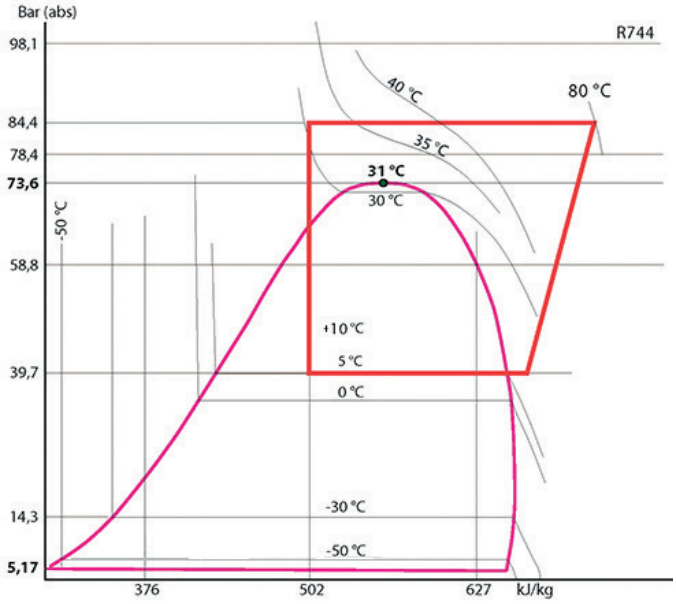
Filter driers

→ DCY-P14 / 140 bar (2030 psig)

■ Applications

- Filtering and drying of refrigerants for liquid lines of refrigerating and air conditioning installations, running with high working pressures with CO_2 in trancritical compression systems.

CO_2 TRANSCRITICAL



■ Functional features

- Products are compatible with CO_2, as well as with its associated oils and additives. Products are designed for use of non-hazardous refrigerants from group 2 of PED 2014/68/EU.
- Product classification in CE categories is done with the PED 2014/68/EU table, corresponding to a volume-based selection.
- Hermetically sealed outer steel enclosure with paint to ensure a high resistance to corrosion.
- Filtering at outlet preventing propagation within the circuit of particles bigger than 25 microns, with a very low pressure drop.
- No desorption, even at a high temperature.
- Several types of connections are possible on standard products:
  → To be brazed or welded for tubes in inches (S)
  → To be brazed or welded for tubes in millimeters (MMS)

Possible customization on demand:

- Stainless steel casings and unions (resistance to corrosion and at low temperatures).

■ CARLY advantages

- Maximal working pressure: up to 140 bar with CO_2 in transcritical compression systems.
- Great drying capacity at all temperatures, thanks to a rigorous selection and a judicious mix of the chemical agents present in the filter driers (activated alumina in order to neutralise the acids and molecular sieves to adsorb moisture); the volume of free-grains drying agents used in a CARLY filter drier is greater than that present in an equivalent model with a solid core.
- Initial drying capacity guaranteed by a 200 °C oven drying and airtight sealing.
- A dispenser located at the inlet ensures optimal distribution and permanent treatment of the whole refrigerant, inside the filter drier.

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Filter driers

➔ DCY-P14 / 140 bar (2030 psig)

■ Warning

Before selecting or installing any component, please refer to the chapter 0 of CARLY technical catalogue - **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 of CARLY technical catalogue – **GENERAL ASSEMBLY PRECAUTIONS**.

■ Recommendations specific to DCY-P14 filter driers

- Filter driers are to be mounted on the liquid line between the receiver and the expansion element.
- The refrigerant flow direction is indicated by an “IN” mark in the inlet shell of the filter drier and by an arrow on the filter drier tag. It must be necessarily respected.
- We recommend the vertical mounting of the filter drier with a top-down fluid flow direction in order to favour its filling when in operation and a rapid flow of the fluid when the installation is shut down.
- We recommend the use of a brasing at 38 % silver minimum for the brasing of the copper coated steel connections.
- Be careful to properly select the solenoid valves located downstream of the filter driers; their over-sizing could cause liquid hammer phenomena hindering the filter driers’ mechanical behaviour FILTRY-P9 (90 bar) ; these liquid hammer phenomena can originate from other sources, in longpiping installations.
- Never install the filter driers in an area of the circuit that can be isolated.
- Never trap the refrigerant in its liquid state (between a check valve and a solenoid valve, for instance).
- The filter driers must be changed :
  - ➔ after each intervention on the installation requiring the opening of the circuit
  - ➔ when the liquid indicator indicates an abnormal humidity content
  - ➔ when the pressure loss measured in the dewatering filter is too high
  - ➔ at least once a year as a measure of precaution
- Filter drier efficiency and refrigerant moisture content should be checked using liquid sight glasses.
- Make sure that the piping can support without deformation the weight of the filter drier ; otherwise, plan the attachment of the filter drier with a clamp on a stable part of the installation.

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Filter driers

→ DCY-P14 / 140 bar (2030 psig)

■ Special precautions for components used with CO_2 in subcritical and transcritical systems

- The maximal working pressure and the power variations of the installation must be taken into account as of its design, in order to select all the components consequently.
- The pressure of the circuit during the stop phases must also be taken into account, because it can be very high, due to the pressure equalization according to the ambient temperature; several solutions exist to limit and control this pressure when the installation is stopped.
  - Design of the installation allowing to resist to this pressure.
  - Implementation of a « buffer » volume of storage or expansion (receiver).
  - Installation of a secondary circuit with valve or solenoid valve, allowing the fluid transfer to the coldest point, or the less high in pressure of the installation.
  - Implementation of a small separate refrigeration unit, to maintain the liquid temperature at a pressure lower than the maximal working pressure ; it is so far the most effective technical solution, but with a major drawback, which is the power failure (safety unit to be considered, or backup power supply).
- The implementation on the liquid line of a filter drier **DCY-P14** is highly recommended. Serious problems can occur in the presence of moisture, such as expansion valve blocking and formation of dry ice and even carbonic acid. To avoid this, it is imperative to limit the circuit openings in order to avoid air introduction, causing the condensation in the pipes, and to proceed to a high evacuation of the installation, before any commissioning or restarting.
- For an operation with CO_2 at low temperature, provide thermal insulation on the components which can be covered by frost.
- There is no incompatibility between CO_2 and the main metallic materials commonly used in refrigeration systems (steel, copper, brass...)
- On the other hand, there is a real compatibility issue between CO_2 and polymers. For example, swelling phenomena and internal explosion of the seal are possible. Carly filter drier DCY-P14 do not have polymer gaskets directly in contact with CO_2.

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Filter driers

→ DCY-P14 / 140 bar (2030 psig)

■ Selection table

CARLY references	Connections To solder ODF inch	CARLY references	Connections To solder ODF mm	Dehydratable refrigerant capacity kg of refrigerant R744 24 °C
DCY-P14 052 S/MMS	1/4	**DCY-P14 052 S/MMS**	6	5,8
DCY-P14 053 S/MMS	3/8	**DCY-P14 053 S/MMS**	10	5,8
DCY-P14 163 S/MMS	3/8	**DCY-P14 163 S/MMS**	10	24,3
DCY-P14 164 S/MMS	1/2	**DCY-P14 164 S/MMS**	12	24,3
DCY-P14 165 S/MMS	5/8	**DCY-P14 165 S/MMS**	16	24,3
DCY-P14 304 S/MMS	1/2	**DCY-P14 304 S/MMS**	12	42,5
DCY-P14 305 S/MMS	5/8	**DCY-P14 305 S/MMS**	16	42,5
DCY-P14 415 S/MMS	5/8	**DCY-P14 415 S/MMS**	16	69,2

Nota: the diameter of connections must not be inferior to the diameter of the main pipe.

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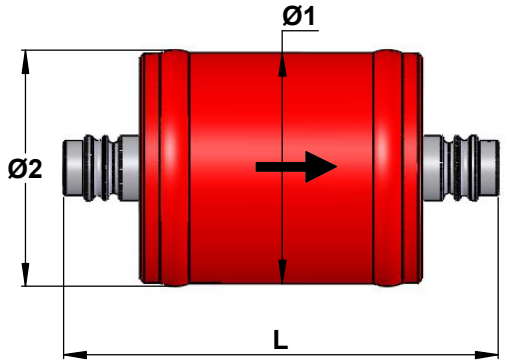
Filter driers

→ DCY-P14 / 140 bar (2030 psig)

■ Technical features

CARLY references	Connections types (1)	Filtering surface	Volume of desiccation products	Dimensions		
				Ø1	Ø2	L
		cm^2	cm^3	mm	mm	mm
DCY-P14 052 S/MMS	4	65	61	60	64	114
DCY-P14 053 S/MMS	4	65	61	60	64	114
DCY-P14 163 S/MMS	4	100	195	73	77	160
DCY-P14 164 S/MMS	4	100	195	73	77	176
DCY-P14 165 S/MMS	5	100	195	73	77	176
DCY-P14 304 S/MMS	4	100	431	73	77	252
DCY-P14 305 S/MMS	5	100	431	73	77	252
DCY-P14 415 S/MMS	5	150	700	89	92	260

(1) *Chapter "Connection features and drawings" (refer to chapter 114 of CARLY technical catalogue).*



CARLY references	Volume	Maximal working pressure	Working pressure (1)	Maximal working temperature	Minimal working temperature	Working temperature (1)	CE Category (2)
	V	PS	PS BT	TS maxi	TS mini	TS BT	
	L	bar	bar	°C	°C	°C	
DCY-P14 052 S/MMS	0,10	140	15	100	-40	-30	Art4§3
DCY-P14 053 S/MMS	0,10	140	15	100	-40	-30	Art4§3
DCY-P14 163 S/MMS	0,27	140	15	100	-40	-30	Art4§3
DCY-P14 164 S/MMS	0,27	140	15	100	-40	-30	Art4§3
DCY-P14 165 S/MMS	0,27	140	15	100	-40	-30	Art4§3
DCY-P14 304 S/MMS	0,51	140	15	100	-40	-30	Art4§3
DCY-P14 305 S/MMS	0,51	140	15	100	-40	-30	Art4§3
DCY-P14 415 S/MMS	0,84	140	15	100	-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 volume, according to PED 2014/68/EU (refer to Chapter 0 of CARLY technical catalogue).*

Filter driers

→ DCY-P14 / 140 bar (2030 psig)

■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
DCY-P14 052 S/MMS	1,09	0,96	1
DCY-P14 053 S/MMS	1,09	0,96	1
DCY-P14 163 S/MMS	2,23	2,10	1
DCY-P14 164 S/MMS	2,23	2,10	1
DCY-P14 165 S/MMS	2,23	2,10	1
DCY-P14 304 S/MMS	3,03	2,90	1
DCY-P14 305 S/MMS	3,03	2,90	1
DCY-P14 415 S/MMS	4,49	4,36	1

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Replaceable core filter drier shells (liquid line)

→ BCY-HP (46 bar)

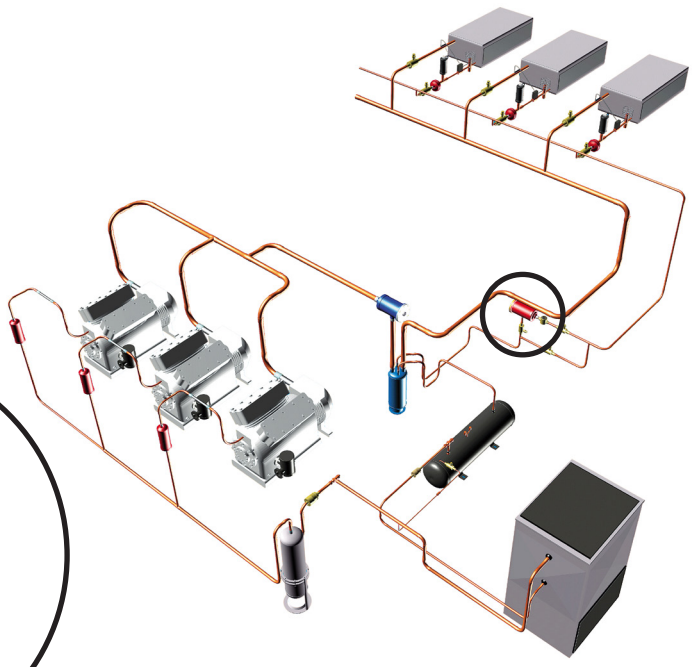
■ Applications

- Refrigerant filtering and drying and acid neutralization for refrigerating and air conditioning installation liquid lines.
- Replaceable core filter drier shells allow the replacement of the filter drier's active parts only.

Shell reference	Core reference (size)
BCY / BCY-HP	CCY 48 / PLATINIUM 48

Customized product in stainless steel


Standard product



■ Functional features

- Products are compatible with HCFCs, HFCs, HFO, HC, CO_2, as well as with their associated oils and additives. Products are designed for use of refrigerants from group 2 of PED 2014/68/EU. To use CARLY components with group 1 fluids, contact CARLY technical department.
- Product classification in CE categories is performed using the PED 2014/68/EU table, corresponding to a volume-based selection.
- Filtering at outlet preventing the propagation within the circuit of particles bigger than 150 microns, with a very low pressure drop.
- 1/4" NPT taper tapping and its plug on end plate, allowing the installation of a pressure tap or a feeding valve.
- End plate perfectly tight thanks to its circular rim and its gasket compatible with all HCFCs, HFCs, HFOs, HCs and CO_2s.

Possible customization on demand:

- Stainless steel casings and connections (corrosion resistance and for use at very low temperature).
- PS 46 bar for BCY-HP 3 and 4 cores.

■ CARLY advantages

- Maximum working pressure : up to 46 bars for the BCY-HP 1 and 2 cartridges.
- Individual core holders treated against corrosion by zinccoating, with a reduced course for easy core replacement; therefore, replacement time is extremely reduced, limiting the time the drying cores and the inner part of the circuit are exposed to the atmosphere.
- Hermetically sealed external body made of steel to which an impregnation varnish and paint are applied to ensure a high resistance to corrosion ; this varnish ensures the internal anti-corrosion protection of the shell when it is opened for the initial set-up or during the replacement of the drying cores.
- Core holder design ensures automatic and immediate centring in the filter drier shells.
- No flow area restriction outside the filter drier shells thanks to an appropriate filtering system.

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Replaceable core filter drier shells (liquid line)

→ BCY-HP (46 bar)

■ Warning

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

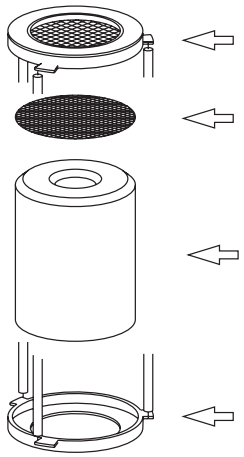
■ General assembly precautions

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**.

■ Specific recommendations to replaceable core filter drier shells BDCY / BCY / BCY-HP

- Filter drier shells are to be mounted on the liquid line between the receiver and the expansion element.
- The refrigerant flow direction, indicated by an arrow on the filter drier shells' tags, should be complied with.
- Assembly can be performed in any position, but not vertically with the outlet connection oriented downwards.
- During filter drier shells assembly, provide for sufficient course to allow core replacement (refer to sizes L2 in the technical features table).
- The connection to the installation, by soldering or welding, of the filter shell, must be done only after removing the closing flange, its gasket and the internal core holders.
- We recommend to clean and to protect the connections of the filter drier shell with appropriate products in order to ensure a good resistance to corrosion of the affected areas.
- Be careful to properly select the solenoid valves located downstream of the filter drier shells; their oversizing could cause liquid hammer phenomena hindering the filter drier shells' proper mechanical behaviour; protection of the regulation elements upstream of the evaporator should be performed with FILTRY dirt filters (refer to chapter 11); these liquid hammer phenomena can originate from other sources, in long-piping installations.
- Never install filter drier shells in an area of the circuit that can be isolated.
- Never trap refrigerant in its liquid state (between a check valve and a solenoid valve, for instance).
- The filter drier shells' efficiency and the refrigerant's moisture content should be checked using VCYL or VCYLS liquid sight glasses (refer to chapter 9 or 10).
- Make sure that the piping can support without deformation the weight of the filter drier shell ; otherwise, provide for a clamp of the filter drier shell with a clamp on a stable part of the installation.
- In order to avoid risk of frost and condensation on the suction filter shells mounted on a cold pipe, it is recommended to insulate them thermally.



CYCO$_2$-EN - 5.1-9 / 05-2026

Replaceable core filter drier shells (liquid line)

→ BCY-HP *(corresponding cores: CCY 48 and PLATINIUM 48)*

■ Core replacement procedure

1 • Isolate the **BCY-HP** filter drier shell.

2 • Purge the installation up to atmospheric pressure (shell should be empty of refrigerants)

3 • Remove the end plate.

4 • Remove the core holders one after the other.

5 • Remove the used cores.

6 • Clean very carefully the core holders, the adapter (**CCY A 48**) and the inner part of the shell case.

7 • Replace systematically the gasket on the end plate and check the core holder and core end gaskets.

8 • Remove the core from its can and put it on the core holder, separating by traction the two flanges that hold the core holder (sketch 1)

9 • Repeat the operation for each core holder.

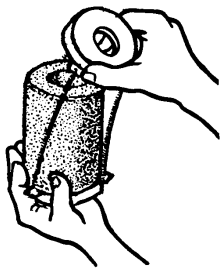
10 • Quickly install the core holders with their core in the shell, complying with their mounting order: the first one holds the filter elements and the last one is the one equipped with the compression spring (sketch 2)

11 • Reinstall the closing flange making sure that the compression spring is correctly positioned and gradually and uniformly tighten the closing screws (refer to chapter 115 – **GENERAL MOUNTING PRECAUTIONS** – Criss-cross tightening). Maximum bolt tightening torque: 30 N.m.

12 • Make sure that the end plate's 1/4" NPT taper tapping has been properly plugged in and sealed.

13 • Make vacuum in the installation and check air-tightness of the whole set before putting back under pressure.

1



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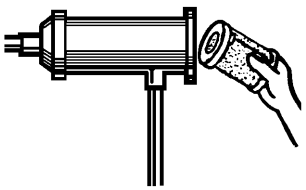

⚠ The standard gasket of the CCY (neoprene) is not compatible with CO_2. Use the reference CY 15555200.

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Replaceable core filter drier shells (liquid line)

→ BCY-HP (46 bar) *(corresponding cores: CCY 48 and PLATINIUM 48)*

■ Selection table : Group 1 fluids (A2, A2L, A3)

CARLY references	Connections To solder ODF inch	CARLY references	Connections To solder ODF mm	Refrigerating capacity kW (1)						Number of cores
				R143A R1234yf	R419A R431A R290 R433A R454C R443A R436A R436B R455A R441A R600a	R454A R413A R432A R444A R600 R601a	R430A R601 R406A R142B R411B R418A R429A R444B R454B R415A	R446 R447A R510A R415B R512A R152A R435A	R32	
BCY-HP 485 S/MMS	5/8	BCY-HP 485 S/MMS	16	59,8	68,3	78,5	92,6	105,7	118,7	1
BCY-HP 487 S/MMS	7/8	BCY-HP 487 S/MMS	22	97,3	111,0	127,7	150,5	171,8	193,0	1
BCY-HP 489 S	1 1/8	BCY-HP 489 MMS	28	131,8	150,4	173,0	203,9	232,8	261,6	1
BCY-HP 4811 S/MMS	1 3/8	BCY-HP 4811 S/MMS	35	157,4	179,6	206,6	243,5	278,0	312,4	1
BCY-HP 4813 S	1 5/8	BCY-HP 4813 MMS	42	191,0	217,9	250,7	295,5	337,3	379,1	1
BCY-HP 4817 S/MMS	2 1/8	BCY-HP 4817 S/MMS	54	223,0	254,4	292,7	345,0	393,8	442,6	1
BCY-HP 967 S/MMS	7/8	BCY-HP 967 S/MMS	22	99,8	113,9	131,0	154,4	176,3	198,1	2
BCY-HP 969 S	1 1/8	BCY-HP 969 MMS	28	149,8	170,8	196,6	231,7	264,4	297,2	2
BCY-HP 9611 S/MMS	1 3/8	BCY-HP 9611 S/MMS	35	212,8	242,7	279,3	329,2	375,7	422,3	2
BCY-HP 9613 S	1 5/8	BCY-HP 9613 MMS	42	261,1	297,8	342,7	403,9	461,0	518,2	2
BCY-HP 9617 S/MMS	2 1/8	BCY-HP 9617 S/MMS	54	263,7	300,8	346,1	407,9	465,6	523,2	2

(1) Refrigerating capacities according to Standard ARI 710-86 for To = – 15 °C, Tk = 30 °C and Δp = 0.07 bar. If different conditions, refer to correction factors in chapter 112.

Nota: the diameter of connections must not be inferior to the diameter of the main pipe.

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Replaceable core filter drier shells (liquid line)

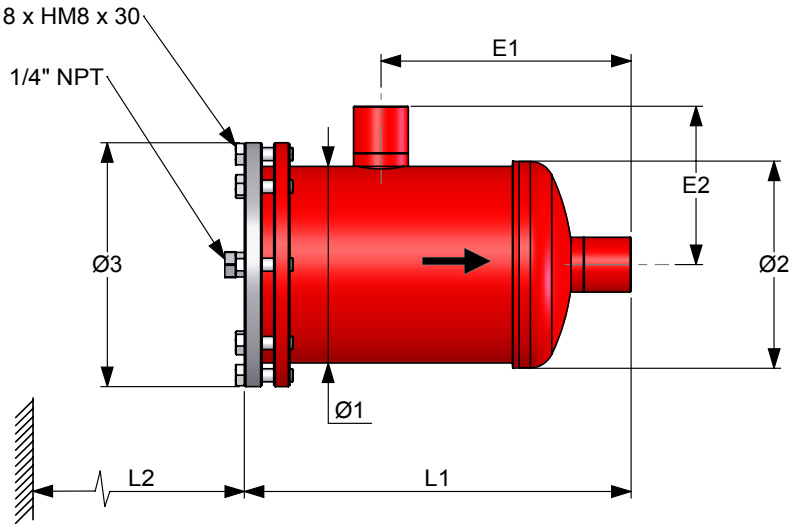
→ BCY-HP (46 bar) *(corresponding cores: CCY 48 and PLATINIUM 48)*

■ Technical features

CARLY references		Connection types (1)	Filtering surface cm²	Dimensions mm						
				Ø1	Ø2 (2)	Ø3	L1	L2	E1	E2
BCY-HP 485 S/MMS		2	420	121	128	150	223	210	139	83
BCY-HP 487 S/MMS		2	420	121	128	150	233	210	149	93
BCY-HP 489 S	BCY-HP 489 MMS	3	420	121	128	150	238	210	154	98
BCY-HP 4811 S/MMS		3	420	121	128	150	247	210	163	108
BCY-HP 4813 S	BCY-HP 4813 MMS	3	420	121	128	150	247	210	163	108
BCY-HP 4817 S/MMS		3	420	121	128	150	260	210	176	124
BCY-HP 967 S/MMS		2	840	121	128	150	373	210	289	93
BCY-HP 969 S	BCY-HP 969 MMS	3	840	121	128	150	378	210	294	98
BCY-HP 9611 S/MMS		3	840	121	128	150	387	210	303	108
BCY-HP 9613 S	BCY-HP 9613 MMS	3	840	121	128	150	387	210	303	108
BCY-HP 9617 S/MMS		3	840	121	128	150	400	210	316	124

(1) *Chapter «Connection features and drawings» (refer to chapter 114).*

(2) *Including weld.*



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Replaceable core filter drier shells (liquid line)

→ BCY-HP (46 bar) *(corresponding cores: CCY 48 and PLATINIUM 48)*

■ Technical features

CARLY references		Volume	Maximal working pressure	Working pressure (1)	Maximal working temperature	Minimal working temperature	Working temperature (1)	CE Category (2)	
		V L	PS bar	PS BT bar	TS maxi °C	TS mini °C	TS BT °C	With fluids G2, A1 and A2L	With fluids G1, A2L, A2 and A3 (3)
BCY-HP 485 S/MMS		1,90	46	34	120	-40	-10	I	II
BCY-HP 487 S/MMS		1,90	46	34	120	-40	-10	I	II
BCY-HP 489 S	**BCY-HP 489 MMS**	1,90	46	34	120	-40	-10	I	II
BCY-HP 4811 S/MMS		1,90	46	34	120	-40	-10	I	II
BCY-HP 4813 S	**BCY-HP 4813 MMS**	1,90	46	34	120	-40	-10	I	II
BCY-HP 4817 S/MMS		2,00	46	34	120	-40	-10	I	II
BCY-HP 967 S/MMS		3,30	46	34	120	-40	-10	I	II
BCY-HP 969 S	**BCY-HP 969 MMS**	3,30	46	34	120	-40	-10	I	II
BCY-HP 9611 S/MMS		3,30	46	34	120	-40	-10	I	II
BCY-HP 9613 S	**BCY-HP 9613 MMS**	3,30	46	34	120	-40	-10	I	II
BCY-HP 9617 S/MMS		3,40	46	34	120	-40	-10	I	II

(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 volume, according to PED 2014/68/EU (refer to chapter 0).

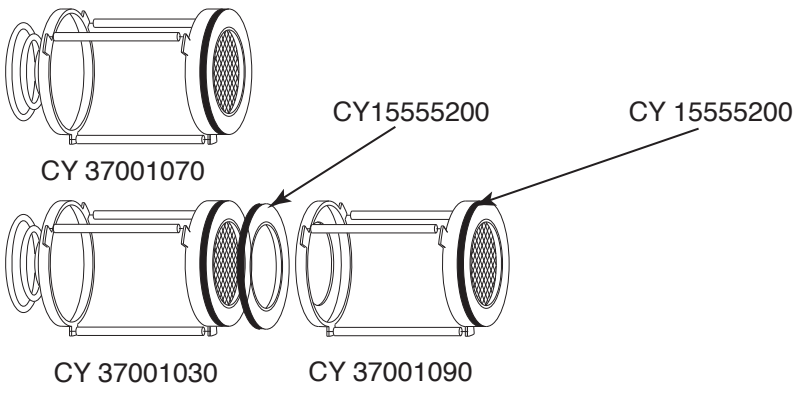
(3) It is essential to use the flat gasket for closing flange (blue) part no. CY 15555303

■ Spare parts

Shells	CARLY References for core holders	Quantity and type of gaskets for use		
		Core holders gasket (1)	End plate gasket (2)	
BCY-HP 1 core	CY 37001070	1 gasket CY 15555200	1 Gasket CY 15555601	1 Gasket (blue) CY 15555303
BCY-HP 2 cores	CY 37001030 + CY 37001090	2 gaskets CY 15555200		

(1) Gasket delivred with core holders

(2) Gasket delivred with cores CCY 48 N, CCY 48 HP and PLATINIUM 48



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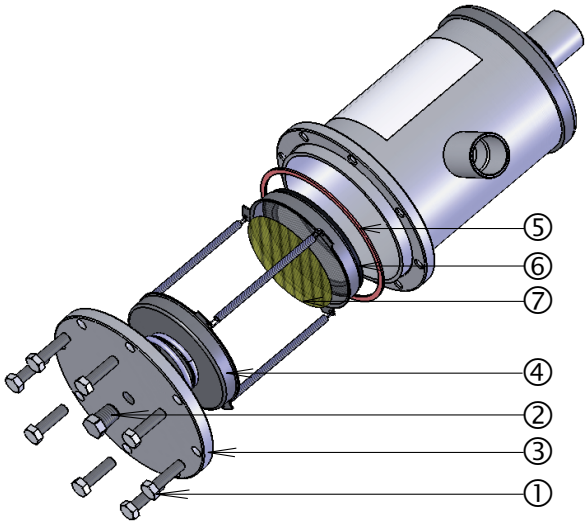
Replaceable core filter drier shells (liquid line)

→ BCY-HP (46 bar) *(corresponding cores: CCY 48 and PLATINIUM 48)*

■ Spare parts

CARLY references	Part N°	Désignation	Quantity
CY 19900411	1	Set of 8 fastening screws for end plate	1
CY 10810010	2	1/4" NPT phosphate plug for end plate	1
CY 33301200	2 + 3 + 5	1/4" NPT plug + end plate + gasket	1
CY 37001030	4	Core holder (2 cores)	1
CY 37001070	4	Core holder (1 core)	1
CY 37001090	4	Core holder (2 cores)	1
CY 15555601	5	End plate gasket (red)	1
CY 15555303	5	End plate gasket (blue)	1
CY 15555200	6	Adhesive gasket for core holders:: CY 37001030, CY 37001040, CY 37001080, CY37001070 and CY3700190	1
CCY A 48	7	Adapter for end core holder	1
CY 15555000		Bag of gaskets for shell end plates : CARLY and for most manufacturers (gaskets: 122 x 114 x 1.6 and 114 x 103 x 1.6)	1



■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
BCY-HP 485 S/MMS	4,45	4,20	1
BCY-HP 487 S/MMS	4,55	4,30	1
BCY-HP 489 S & MMS	4,65	4,40	1
BCY-HP 4811 S/MMS	4,70	4,45	1
BCY-HP 4813 S & MMS	4,80	4,55	1
BCY-HP 4817 S/MMS	5,05	4,80	1

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
BCY-HP 967 S/MMS	5,90	5,60	1
BCY-HP 969 S & MMS	5,95	5,65	1
BCY-HP 9611 S/MMS	6,15	5,85	1
BCY-HP 9613 S & MMS	6,25	5,95	1
BCY-HP 9617 S/MMS	6,40	6,10	1

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Replaceable core filter drier shells (liquid line)

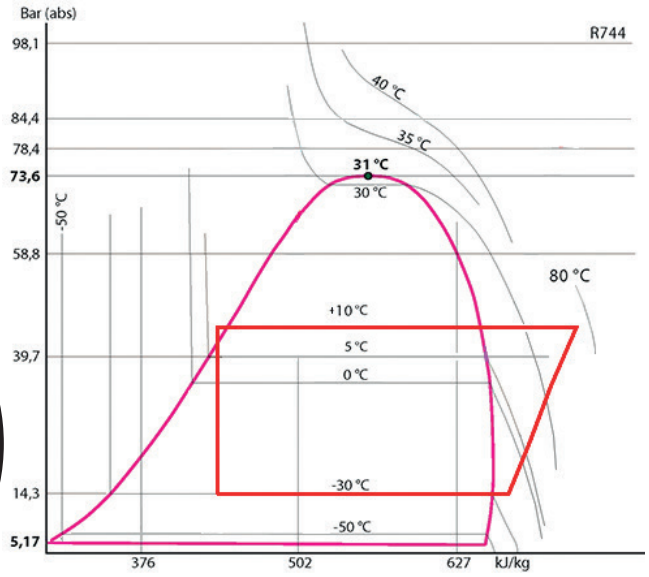
→ BCY-P6 / PS 64 bar (928 psig)

■ Applications

- Refrigerant filtering and drying and acid neutralization for refrigerating and air conditioning installation liquid lines, running in high working pressures.
- Replaceable core filter drier shells allow the replacement of the filter drier's active parts only.

Shell reference	Core reference (size)
BDCY	CCY 42
BCY / BCY-HP	CCY 48 / PLATINIUM 48
BCY-P6 / BCY-P14	PLATINIUM 48 / CCY 48
BBCY	CCY 100 / PLATINIUM 100

CO2 SUBCRITICAL



■ Functional features

- Products are compatible with HFC, HFO and 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.
- Product classification in CE categories is performed using the PED 2014/68/EU table, corresponding to a volume-based selection.
- Filtering at outlet preventing the propagation within the circuit of particles bigger than 150 microns, with a very low pressure drop.
- 1/4" NPT taper tapping and its plug on end plate, allowing the installation of a pressure tap or a feeding valve.
- End plate perfectly tight thanks to its circular rim and its gasket compatible with all HFC, HFO and CO_2.

Possible customization on demand :

- PS 64 bar for BCY-P6 of 3 and 4 cores.

■ CARLY advantages

- Maximum working pressure : up to 64 bar for the BCY-P6 of 1 and 2 cores, with CO_2 in subscritical compression systems.
- Individual core holders treated against corrosion by zinc coating, with a reduced course for easy core replacement; therefore, replacement time is extremely reduced, limiting the time the drying cores and the inner part of the circuit are exposed to the atmosphere.
- Hermetically sealed external body made of steel to which an impregnation varnish and paint are applied to ensure a high resistance to corrosion ; this varnish ensures the internal anti-corrosion protection of the shell when it is opened for the initial set-up or during the replacement o the drying cores.
- Core holder design ensures automatic and immediate centring of the filter drier shells.
- No flow area restriction outside the filter drier shells thanks to an appropriate filtering system.

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Replaceable core filter drier shells (liquid line)

→ BCY-P6 / PS 64 bar (928 psig)

■ Warning

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

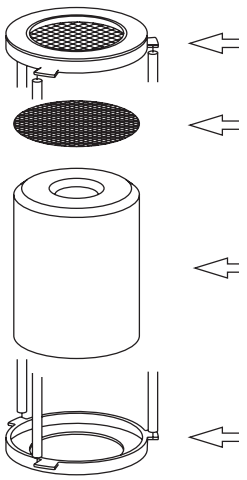
■ General assembly precautions

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**.

■ Specific recommendations to replaceable core filter drier shells BCY-P6

- Filter drier shells are to be mounted on the liquid line between the receiver and the expansion element.
- The refrigerant flow direction, indicated by an arrow on the filter drier shells' tags, should be complied with.
- Assembly can be performed in any position, but not vertically with the outlet connection oriented downwards.
- During filter drier shells assembly, provide for sufficient course to allow core replacement (refer to sizes L2 in the technical features table).
- The connection to the installation, by soldering or welding, of the filter shell, must be done only after removing the closing flange, its gasket and the internal core holders.
- The blue gasket of the closing flange must be lubricated before its installation, with refrigerating oil compatible with the oil of the installation.
- We recommend to clean and to protect the connections of the filter drier shell with appropriate products in order to ensure a good resistance to corrosion of the affected areas.
- Be careful to properly select the solenoid valves located downstream of the filter drier shells; their oversizing could cause liquid hammer phenomena hindering the filter drier shells' proper mechanical behaviour; protection of the regulation elements upstream of the evaporator should be performed with FILTRY dirt filters (refer to chapter 11 of CARLY technical catalogue); these liquid hammer phenomena can originate from other sources, in long-piping installations.
- Never install filter drier shells in an area of the circuit that can be isolated.
- Never trap refrigerant in its liquid state (between a check valve and a solenoid valve, for instance).
- The filter drier shells' efficiency and the refrigerant's moisture content should be checked using liquid sight glasses.
- Make sure that the piping can support without deformation the weight of the filter drier shell ; otherwise, provide for a clamp of the filter drier shell with a clamp on a stable part of the installation.
- In case of remplacement of removable elements of filter drier shells BCY-P6 (flange, screw, gasket), it is mandatory to use only identical components, suggested by CARLY in the list of spare parts at the end of this chapter.



Top core holder with outlet screen

Adapter CCY A

CCY-HP, PLATINIUM, N

Bottom core holder

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Replaceable core filter drier shells (liquid line)

→ BCY-P6 / PS 64 bar (928 psig)

■ Special precautions for components used with CO_2 in subcritical and transcritical systems

- The maximal working pressure and the power variations of the installation must be taken into account as of its design, in order to select all the components consequently.
- The pressure of the circuit during the stop phases must also be taken into account, because it can be very high, due to the pressure equalization according to the ambient temperature; several solutions exist to limit and control this pressure when the installation is stopped.
  - Design of the installation allowing to resist to this pressure.
  - Implementation of a « buffer » volume of storage or expansion (receiver).
  - Installation of a secondary circuit with valve or solenoid valve, allowing the fluid transfer to the coldest point, or the less high in pressure of the installation.
  - Implementation of a small separate refrigeration unit, to maintain the liquid temperature at a pressure lower than the maximal working pressure ; it is so far the most effective technical solution, but with a major drawback, which is the power failure (safety unit to be considered, or backup power supply).
- The hot gas defrost, frequently used with CO_2 for low temperatures applications, generates also high pressures (to take in consideration)
- The implementation on the liquid line of a filter drier shell **BCY-P6** equipped with drying cores **CCY 48 HP** or **PLATINIUM 48**, is highly recommended. Serious problems can occur in the presence of moisture, such as expansion valve blocking and formation of dry ice and even carbonic acid. To avoid this, it is imperative to limit the circuit openings in order to avoid air introduction, causing the condensation in the pipes, and to proceed to a high evacuation of the installation, before any commissioning or restarting.
- For an operation with CO_2 at low temperature, provide thermal insulation on the components which can be covered by frost.
- There is no incompatibility between CO_2 and the main metallic materials commonly used in refrigeration systems (steel, copper, brass...)
- On the other hand, there is a real compatibility issue between CO_2 and polymers. For example, swelling phenomena and internal explosion of the seal are possible. Carly filter drier shells BCY-P6 do not have polymer gaskets directly in contact with CO_2.

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Replaceable core filter drier shells (liquid line)

→ BCY-P6 / PS 64 bar (928 psig)

■ Core replacement procedure (CCY 48, PLATINIUM 48)

1• Isolate the **BCY-P6** filter drier shell.

2 • Purge the installation up to atmospheric pressure (shell should be empty of refrigerants)

3 • Remove the end plate.

4 • Remove the core holders one after the other.

5 • Remove the used cores.

6 • Clean very carefully the core holders, the adapter (**CCY A 48**) and the inner part of the shell case.

7 • Replace systematically the blue gasket on the end plate, and lubricate it before its installation with refrigerating oil compatible with the oil of the installation.

⚠ **Attention : this gasket is specific for this type of shell and it is not included with CCY 48 HP and PLATINIUM 48 cores; it will have to be supplied separately, its reference is indicated in the spare parts list, in the end of this chapter; check the core holder and core end gaskets.**

8 • Remove the core from its can and put it on the core holder, separating by traction the two flanges that hold the core holder (sketch 1)

9 • Repeat the operation for each core holder.

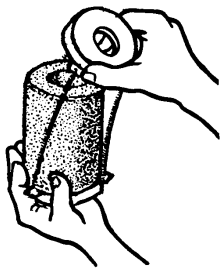
10 • Quickly install the core holders with their core in the shell, complying with their mounting order: the first one holds the filter elements and the last one is the one equipped with the compression spring (sketch 2)

11• Reinstall the closing flange making sure that the compression spring is correctly positioned and gradually and uniformly tighten the closing screws (refer to chapter 115 of CARLY technical catalogue – **GENERAL MOUNTING PRECAUTIONS** – Criss-cross tightening). Maximum bolt tightening torque: 30 N.m.

12 • Make sure that the end plate's 1/4" NPT taper tapping has been properly plugged in and sealed

13 • Make vacuum in the installation and check air-tightness of the whole set before putting back under pressure.

1



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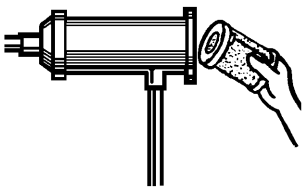

⚠ The standard gasket of the CCY (neoprene) is not compatible with CO_2. Use the reference CY 15555200.

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Replaceable core filter drier shells (liquid line)

→ BCY-P6 / PS 64 bar (928 psig)

■ Selection table

CARLY references	Connections To solder ODF inch	CARLY references	Connections To solder ODF mm	Refrigerating capacity kW (1)					Number of cores
				R22 R1233zd	R134a R407C R410A R407F	R404A R507A R452A	R1234ze R513A R448A R449A R450A R455A	R744(2) CO_2	
BCY-P6 485 S/MMS	5/8	BCY-P6 485 S/MMS	16	93,0	86,0	61,0	75,0	106,0	1
BCY-P6 487 S/MMS	7/8	BCY-P6 487 S/MMS	22	151,0	139,0	100,0	121,0	171,0	1
BCY-P6 489 S/MMS	1 1/8	BCY-P6 489 S/MMS	28	205,0	188,0	135,0	163,5	232,0	1
BCY-P6 4811 S/MMS	1 3/8	BCY-P6 4811 S/MMS	35	245,0	225,0	161,0	196,0	277,0	1
BCY-P6 4813 S	1 5/8	BCY-P6 4813 MMS	42	297,0	273,0	195,0	237,5	336,0	1
BCY-P6 4817 S/MMS	2 1/8	BCY-P6 4817 S/MMS	54	347,0	319,0	228,0	277,5	392,0	1
BCY-P6 967 S/MMS	7/8	BCY-P6 967 S/MMS	22	155,0	143,0	102,0	124,5	176,0	2
BCY-P6 969 S/MMS	1 1/8	BCY-P6 969 S/MMS	28	233,0	214,0	153,0	186,0	264,0	2
BCY-P6 9611 S/MMS	1 3/8	BCY-P6 9611 S/MMS	35	331,0	304,0	217,0	264,5	375,0	2
BCY-P6 9613 S	1 5/8	BCY-P6 9613 MMS	42	406,0	373,0	267,0	324,5	460,0	2
BCY-P6 9617 S/MMS	2 1/8	BCY-P6 9617 S/MMS	54	410,0	377,0	269,0	328,0	464,0	2

(1) Refrigerating capacities according to Standard ARI 710-86 for To = – 15 °C, Tk = 30 °C and Δp = 0.07 bar.
If different conditions, refer to correction factors in chapter 112 of CARLY technical catalogue.

(2) Refrigerating capacities Qn for Tk = – 10 °C and To = – 40 °C
If different conditions, refer to correction factors in chapter 112 of CARLY technical catalogue.

Nota: the diameter of connections must not be inferior to the diameter of the main pipe.

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Replaceable core filter drier shells (liquid line)

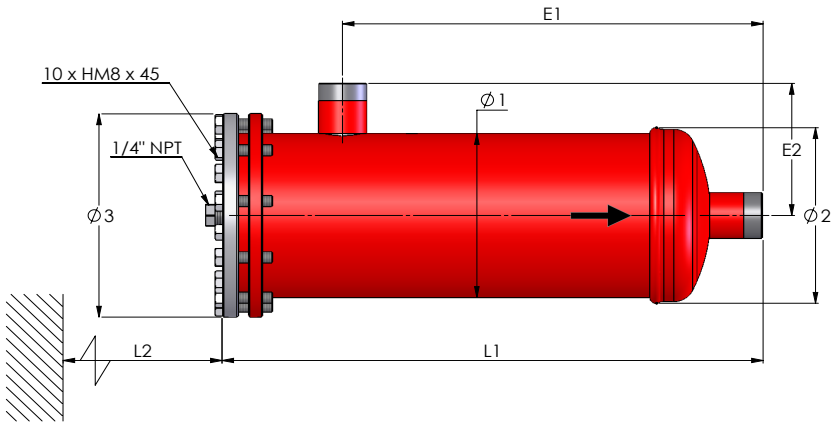
→ BCY-P6 / PS 64 bar (928 psig)

■ Technical features

CARLY references		Connection types (1)	Filtering surface cm²	Dimensions mm Ø1	Ø2 (2)	Ø3	L1	L2	E1	E2	Weight kg
BCY-P6 485 S/MMS		1	420	121	128	150	230	210	141,5	82,5	5,0
BCY-P6 487 S/MMS		1	420	121	128	150	240	210	151,0	92,5	5,1
BCY-P6 489 S/MMS		1	420	121	128	150	245	210	156,0	97,5	5,2
BCY-P6 4811 S/MMS		1	420	121	128	150	254	210	151,5	108,0	5,3
BCY-P6 4813 S	BCY-P6 4813 MMS	1	420	121	128	150	254	210	151,0	107,0	5,4
BCY-P6 4817 S/MMS		1	420	121	128	150	267	210	164,5	124,0	5,6
BCY-P6 967 S/MMS		1	840	121	128	150	380	210	291,0	92,5	6,4
BCY-P6 969 S/MMS		1	840	121	128	150	385	210	296,0	97,5	6,5
BCY-P6 9611 S/MMS		1	840	121	128	150	394	210	292,0	108,0	6,7
BCY-P6 9613 S	BCY-P6 9613 MMS	1	840	121	128	150	394	210	291,0	107,0	6,8
BCY-P6 9617 S/MMS		1	420	121	128	150	407	210	304,5	124,0	6,9

(1) *Chapter «Connection features and drawings» (refer to chapter 114 of CARLY technical catalogue).*

(2) *Including weld.*



CARLY references		Volume V L	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)
BCY-P6 485 S/MMS		1,90	64	48	120	-40	-10	I
BCY-P6 487 S/MMS		1,90	64	48	120	-40	-10	I
BCY-P6 489 S/MMS		1,90	64	48	120	-40	-10	I
BCY-P6 4811 S/MMS		1,90	64	48	120	-40	-10	I
BCY-P6 4813 S	BCY-P6 4813 MMS	1,90	64	48	120	-40	-10	I
BCY-P6 4817 S/MMS		2,00	64	48	120	-40	-10	I
BCY-P6 967 S/MMS		3,30	64	48	120	-40	-10	II
BCY-P6 969 S/MMS		3,30	64	48	120	-40	-10	II
BCY-P6 9611 S/MMS		3,30	64	48	120	-40	-10	II
BCY-P6 9613 S	BCY-P6 9613 MMS	3,30	64	48	120	-40	-10	II
BCY-P6 9617 S/MMS		3,40	64	48	120	-40	-10	II

(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 volume, according to PED 97/23/EC (refer to chapter 0 of CARLY technical catalogue).*

Replaceable core filter drier shells (liquid line)

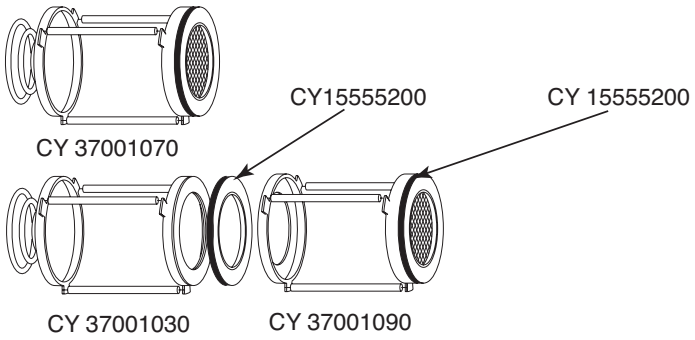
→ BCY-P6 / PS 64 bar (928 psig)

■ Spare parts

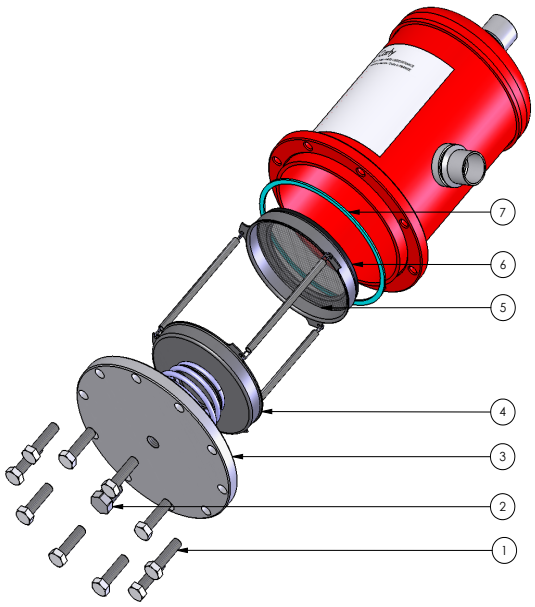
Shells	CARLY References for core holders	Quantity and type of gaskets for use	
		Core holders gasket (1)	End plate gasket (2)
BCY-P6 1 core	CY 37001070	1 gasket CY 15555200	1 gasket CY 15555303
BCY-P6 2 cores	CY 37001030 + CY 37001090	2 gaskets CY 15555200	

(1) *Gasket delivered with core holders*

(2) *Gasket not delivered with cores CCY 48 N, CCY 48 HP and PLATINIUM 48*



CARLY references	Part N°	Désignation	Quantity
CY 19900440	1	Set of 10 fastening screws for end plate	1
CY 10810010	2	1/4" NPT phosphate plug for end plate	1
CY 33301203	2 + 3 + 7	1/4" NPT plug + end plate + gasket	1
CY 37001030	4	Core holder (2 cores)	1
CY 37001070	4	Core holder (1 core)	1
CY 37001090	4	Core holder (2 cores)	1
CCY A 48	5	Adapter for end core holder	1
CY 15555200	6	Adhesive gasket for core holders : CY 37001030, CY 37001040, CY 37001080, CY37001070, CY37001090	1
CY 15555303	7	End plate gasket (blue)	1



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Replaceable core filter drier shells (liquid line)

→ BCY-P6 / PS 64 bar (928 psig)

■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
BCY-P6 485 S/MMS	5,22	4,97	1
BCY-P6 487 S/MMS	5,32	5,07	1
BCY-P6 489 S/MMS	5,42	5,17	1
BCY-P6 4811 S/MMS	5,47	5,22	1
BCY-P6 4813 S & MMS	5,57	5,32	1
BCY-P6 4817 S/MMS	5,82	5,57	1

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
BCY-P6 967 S/MMS	6,67	6,37	1
BCY-P6 969 S/MMS	6,72	6,42	1
BCY-P6 9611 S/MMS	6,92	6,62	1
BCY-P6 9613 S & MMS	7,02	6,72	1
BCY-P6 9617 S/MMS	7,17	6,87	1

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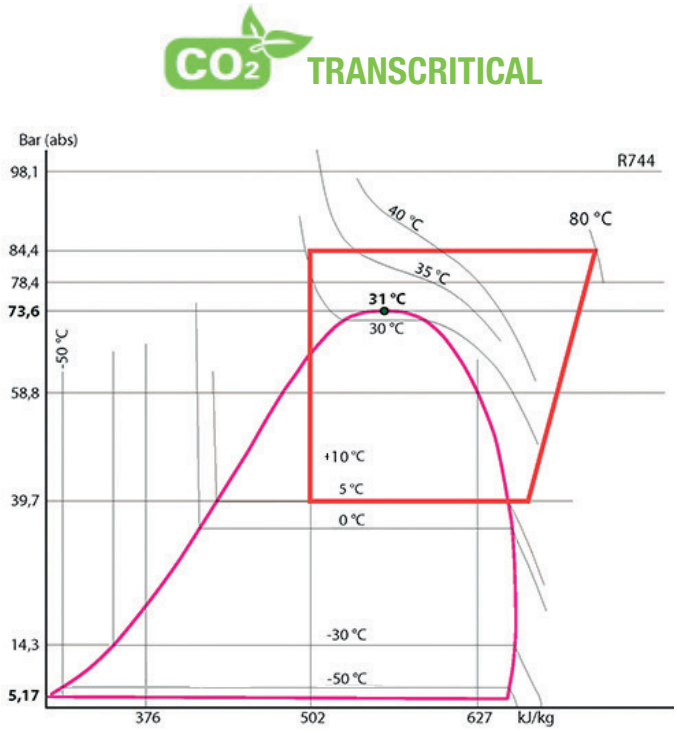
Replaceable core filter drier shells (liquid ans gas line)

→ BCY-P14 / PS 140 bar (2030 psig)

■ Applications

- Refrigerant filtering and drying and acid neutralization for refrigerating and air conditioning installation liquid and gas lines, running in high working pressures with CO_2 in trancritical compression systems.
- Replaceable core filter drier shells allow the replacement of the filter drier's active parts only.

Shell reference	Core reference (size)
BDCY	CCY 42
BCY / BCY-HP	CCY 48 / PLATINIUM 48
BCY-P6 / BCY-P14	PLATINIUM 48 / CCY 48
BBCY	CCY 100 / PLATINIUM 100



■ Functional features

- Products are compatible with 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.
- Product classification in CE categories is performed using the PED 2014/68/EU table, corresponding to a volume-based selection.
- Filtering at outlet preventing the propagation within the circuit of particles bigger than 150 microns, with a very low pressure drop.
- 1/4" NPT taper tapping and its plug on end plate, allowing the installation of a pressure tap or a feeding valve.
- End plate perfectly tight thanks to its circular rim and its O-ring gasket perfectly adapted to CO_2 and to the phenomenon of explosive decompresion that is possible with this refrigerant.

Possible customization on demand :

- Stainless steel casings and connections (corrosion resistance and for use at very low temperatures).
- PS 140 bar for BCY-P14 of 3 and 4 cores.

■ CARLY advantages

- Maximum working pressure : up to 140 bar for the BCY-P14 of 1 and 2 cores, with CO_2 in transcritical compression systems.
- Individual core holders treated against corrosion by zinc coating, with a reduced course for easy core replacement; therefore, replacement time is extremely reduced, limiting the time the drying cores and the inner part of the circuit are exposed to the atmosphere.
- Hermetically sealed external body made of steel to which an impregnation varnish and paint are applied to ensure a high resistance to corrosion ; this varnish ensures the internal anti-corrosion protection of the shell when it is opened for the initial set-up or during the replacement o the drying cores.
- Core holder design ensures automatic and immediate centring of the filter drier shells.
- No flow area restriction outside the filter drier shells thanks to an appropriate filtering system.
- Shell body of large dimensions in order to ensure a good spread of the refrigerant.

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Replaceable core filter drier shells (liquid line)

→ BCY-P14 / PS 140 bar (2030 psig)

■ Warning

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

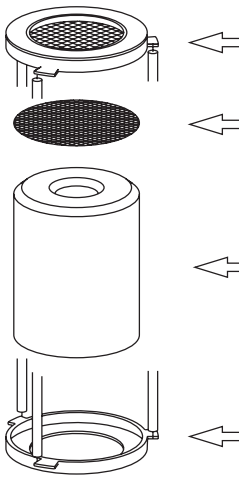
■ General assembly precautions

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 of CARLY technical catalogue – **GENERAL ASSEMBLY PRECAUTIONS**.

■ Specific recommendations to replaceable core filter drier shells BCY-P14

- Filter drier shells are to be mounted on the liquid line between the receiver and the expansion element.
- The refrigerant flow direction, indicated by an arrow on the filter drier shells' tags, should be complied with.
- Assembly can be performed in any position, but not vertically with the outlet connection oriented downwards.
- During filter drier shells assembly, provide for sufficient course to allow core replacement (refer to sizes L2 in the technical features table).
- The connection to the installation, by soldering or welding, of the filter shell, must be done only after removing the closing flange, its gasket and the internal core holders.
- The O-ring gasket of the closing flange must be lubricated before its installation, with refrigerating oil compatible with the oil of the installation.
- We recommend to clean and to protect the connections of the filter drier shell with appropriate products in order to ensure a good resistance to corrosion of the affected areas.
- Be careful to properly select the solenoid valves located downstream of the filter drier shells; their oversizing could cause liquid hammer phenomena hindering the filter drier shells' proper mechanical behaviour; these liquid hammer phenomena can originate from other sources, in long-piping installations.
- Never install filter drier shells in an area of the circuit that can be isolated.
- Never trap refrigerant in its liquid state (between a check valve and a solenoid valve, for instance).
- The filter drier shells' efficiency and the refrigerant's moisture content should be checked using liquid sight glasses.
- Make sure that the piping can support without deformation the weight of the filter drier shell ; otherwise, provide for a clamp of the filter drier shell with a clamp on a stable part of the installation.
- In case of remplacement of removable elements of filter drier shells BCY-P14 (flange, screw, gasket), it is mandatory to use only identical components, suggested by CARLY in the list of spare parts at the end of this chapter.
- In order to avoid risk of frost and condensation on the suction filter shells mounted on a cold pipe, it is recommended to insulate them thermally.



Top core holder with outlet screen

Adapter CCY A

CCY-HP, PLATINIUM, N

Bottom core holder

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Replaceable core filter drier shells (liquid line)

→ BCY-P14 / PS 140 bar (2030 psig)

■ Special precautions for components used with CO_2 in subcritical and transcritical systems

- The maximal working pressure and the power variations of the installation must be taken into account as of its design, in order to select all the components consequently.
- The pressure of the circuit during the stop phases must also be taken into account, because it can be very high, due to the pressure equalization according to the ambient temperature; several solutions exist to limit and control this pressure when the installation is stopped.
  - Design of the installation allowing to resist to this pressure.
  - Implementation of a « buffer » volume of storage or expansion (receiver).
  - Installation of a secondary circuit with valve or solenoid valve, allowing the fluid transfer to the coldest point, or the less high in pressure of the installation.
  - Implementation of a small separate refrigeration unit, to maintain the liquid temperature at a pressure lower than the maximal working pressure ; it is so far the most effective technical solution, but with a major drawback, which is the power failure (safety unit to be considered, or backup power supply).
- The implementation on the liquid line of a filter drier shell **BCY-P14** equipped with drying cores **CCY 48 HP** or **PLATINIUM 48**, is highly recommended. Serious problems can occur in the presence of moisture, such as expansion valve blocking and formation of dry ice and even carbonic acid. To avoid this, it is imperative to limit the circuit openings in order to avoid air introduction, causing the condensation in the pipes, and to proceed to a high evacuation of the installation, before any commissioning or restarting.
- For an operation with CO_2 at low temperature, provide thermal insulation on the components which can be covered by frost.
- There is no incompatibility between CO_2 and the main metallic materials commonly used in refrigeration systems (steel, copper, brass...)
- On the other hand, there is a real compatibility issue between CO_2 and polymers. For example, swelling phenomena and internal explosion of the seal are possible. Carly filter drier shells BCY-P14 do not have polymer gaskets directly in contact with CO_2.

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Replaceable core filter drier shells (liquid line)

→ BCY-P14 / PS 140 bar (2030 psig)

■ Core replacement procedure

1 • Isolate the **BCY-P14** filter drier shell.

2 • Purge the installation up to atmospheric pressure (shell should be empty of refrigerants)

3 • Remove the end plate.

4 • Remove the core holders one after the other.

5 • Remove the used cores.

6 • Clean very carefully the core holders, the adapter (**CCY A 48**) and the inner part of the shell case.

7 • Replace systematically the O-ring gasket on the end plate, and lubricate it before its installation with refrigerating oil compatible with the oil of the installation.

⚠ **Warning: this gasket is specific for this type of shell and it is not included with CCY 48 HP N, F or I and PLATINIUM 48 cores; it will have to be supplied separately, its reference is indicated in the spare parts list, in the end of this chapter; check the core holder and core end gaskets.**

8 • Remove the core from its can and put it on the core holder, separating by traction the two flanges that hold the core holder (sketch 1)

9 • Repeat the operation for each core holder.

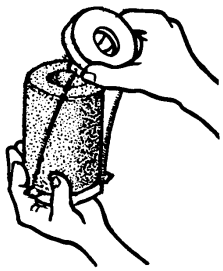
10 • Quickly install the core holders with their core in the shell, complying with their mounting order: the first one holds the filter elements and the last one is the one equipped with the compression spring (sketch 2)

11 • Reinstall the closing flange making sure that the compression spring is correctly positioned and gradually and uniformly tighten the closing screws (refer to chapter 115 of CARLY technical catalogue – **GENERAL MOUNTING PRECAUTIONS** – Criss-cross tightening). Maximum bolt tightening torque: 100 N.m.

12 • Make sure that the end plate's 1/4" NPT taper tapping present on the clamp of the filter shell has been properly plugged in and sealed.

13 • Make vacuum in the installation and check air-tightness of the whole set before putting back under pressure.

1



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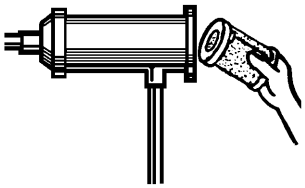

⚠ The standard gasket of the CCY (neoprene) is not compatible with CO_2. Use the reference CY 15555200.

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Replaceable core filter drier shells (liquid line)

→ BCY-P14 / PS 140 bar (2030 psig)

■ Selection table

CARLY references	Connections To solder ODF inch	CARLY references	Connections To solder ODF mm	Dehydratable refrigerant capacity kg of refrigerant R744 24 °C	Number of cores
BCY-P14 485 S/MMS	5/8		16	34	1
BCY-P14 487 S/MMS	7/8		22	34	1
BCY-P14 489 S	1 1/8	**BCY-P14 489 MMS**	28	34	1
BCY-P14 4811 S/MMS	1 3/8		35	34	1
BCY-P14 4813 S	1 5/8	**BCY-P14 4813 MMS**	42	34	1
BCY-P14 967 S/MMS	7/8		22	68	2
BCY-P14 969 S	1 1/8	**BCY-P14 969 MMS**	28	68	2
BCY-P14 9611 S/MMS	1 3/8		35	68	2
BCY-P14 9613 S	1 5/8	**BCY-P14 9613 MMS**	42	68	2
BCY-P14 9617 S/MMS	2 1/8		54	68	2

Nota: the diameter of connections must not be inferior to the diameter of the main pipe.

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Replaceable core filter drier shells (liquid line)

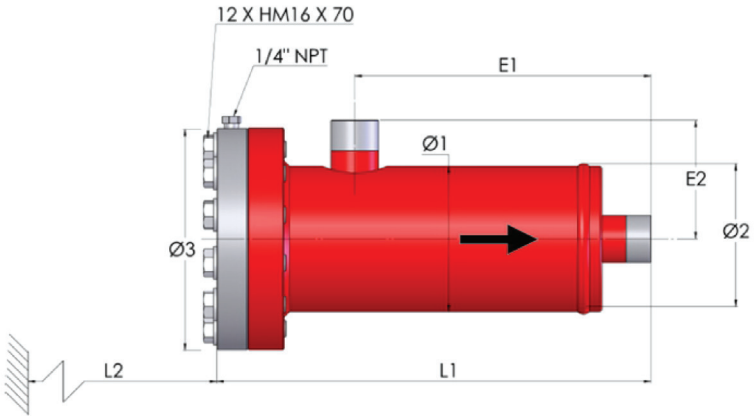
→ BCY-P14 / PS 140 bar (2030 psig)

■ Technical features

CARLY references		Connection types (1)	Filtering surface cm²	Dimensions mm						
				Ø1	Ø2 (2)	Ø3	L1	L2	E1	E2
BCY-P14 485 S/MMS		5	420	141	146	215	263	210	129	98
BCY-P14 487 S/MMS		5	420	141	146	215	277	210	143	115
BCY-P14 489 S	BCY-P14 489 MMS	6	420	141	146	215	286	210	153	131
BCY-P14 4811 S/MMS		5	420	141	146	215	288	210	155	128
BCY-P14 4813 S	BCY-P14 4813 MMS	6	420	141	146	215	304	210	171	144
BCY-P14 967 S/MMS		5	840	141	146	215	417	210	283	115
BCY-P14 969 S	BCY-P14 969 MMS	6	840	141	146	215	426	210	292	131
BCY-P14 9611 S/MMS		5	840	141	146	215	428	210	295	128
BCY-P14 9613 S	BCY-P14 9613 MMS	6	840	141	146	215	444	210	311	144
BCY-P14 9617 S/MMS		6	840	141	146	215	444	210	285	155

(1) *Chapter «Connection features and drawings» (refer to chapter 114 to CARLY technical catalogue).*

(2) *Including weld.*



CARLY references		Volume	Maximal working pressure	Working pressure (1)	Maximal working temperature	Minimal working temperature	Working temperature (1)	CE Category (2)
		V L	PS bar	PS BT bar	TS maxi °C	TS mini °C	TS BT °C	
BCY-P14 485 S/MMS		2,20	140	15 *	100	-40	-30 *	II
BCY-P14 487 S/MMS		2,20	140	15 *	100	-40	-30 *	II
BCY-P14 489 S	BCY-P14 489 MMS	2,20	140	15 *	100	-40	-30 *	II
BCY-P14 4811 S/MMS		2,20	140	15 *	100	-40	-30 *	II
BCY-P14 4813 S	BCY-P14 4813 MMS	2,20	140	15 *	100	-40	-30 *	II
BCY-P14 967 S/MMS		3,80	140	15 *	100	-40	-30 *	II
BCY-P14 969 S	BCY-P14 969 MMS	3,80	140	15 *	100	-40	-30 *	II
BCY-P14 9611 S/MMS		3,80	140	15 *	100	-40	-30 *	II
BCY-P14 9613 S	BCY-P14 9613 MMS	3,80	140	15 *	100	-40	-30 *	II
BCY-P14 9617 S/MMS		3,80	140	15 *	100	-40	-30 *	II

(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 volume, according to PED 2014/68/EU (refer to chapter 0 to CARLY technical catalogue).*

** In option, possibility of maximum pressure on the full range of temperatures.*

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Replaceable core filter drier shells (liquid line)

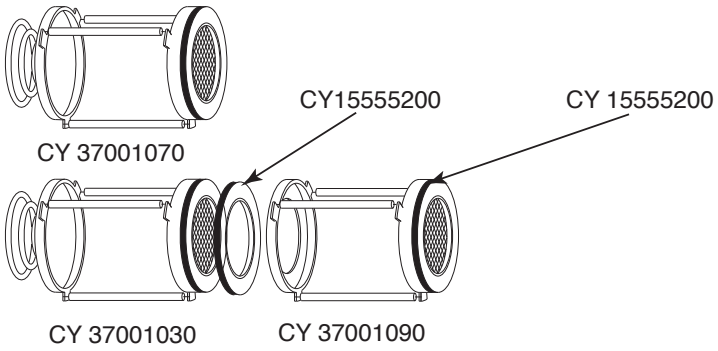
→ BCY-P14 / PS 140 bar (2030 psig)

■ Spare parts

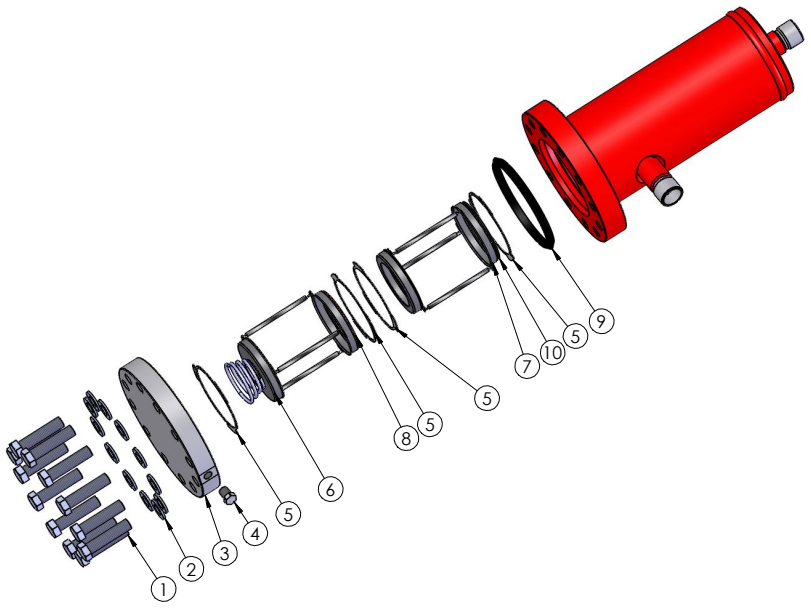
Shells	CARLY References for core holders	Quantity and type of gaskets for use	
		Core holders gasket (1)	End toric gasket (2)
BCY-P14 1 core	CY 37001070	1 gasket CY 15555200	1 gasket CY 15552360
BCY-P14 2 cores	CY 37001030 + CY 37001090	2 gaskets CY 15555200	

(1) *Gasket delivered with core holders*

(2) *Gasket not delivered with cores CCY 48 N, CCY 48 HP, PLATINIUM 48, CCY 48 F, CCY 48 I.*



CARLY references	Part N°	Designation	Quantity
CY 19900700	1+2	Set of 12 fastening screws for end plate	1
CY 33301204	3+4+9	End plate + gasket + 1/4'' NPT phosphate plug	1
CY 37001070	6	Core holder (1 core)	1
CY 37001030	6	Core holder (2 cores) Inlet	1
CY 37001090	6	Core holder (2 cores) Outlet	1
CY 11010900	5	Adapter for core holder	1
CCY A 48	7	Adapter for end core holder	1
CY 15555200	8-10	Adhesive gasket for core holders	1
CY 15552360	9	End torique gasket	1
CY 10810010	4	1/4'' NPT phosphate plug	1



Replaceable core filter drier shells (liquid line)

→ BCY-P14 / PS 140 bar (2030 psig)

■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
BCY-P14 485 S/MMS	23,70	22,50	1
BCY-P14 487 S/MMS	23,70	22,50	1
BCY-P14 489 S & MMS	23,70	22,50	1
BCY-P14 4811 S/MMS	23,70	22,50	1
BCY-P14 4813 S & MMS	23,70	22,50	1
BCY-P14 967 S/MMS	27,90	26,50	1
BCY-P14 969 S & MMS	27,90	26,50	1
BCY-P14 9611 S/MMS	27,90	26,50	1
BCY-P14 9613 S & MMS	27,90	26,50	1
BCY-P14 9617 S/MMS	27,90	26,50	1

Drying, filtering and cleaning cores

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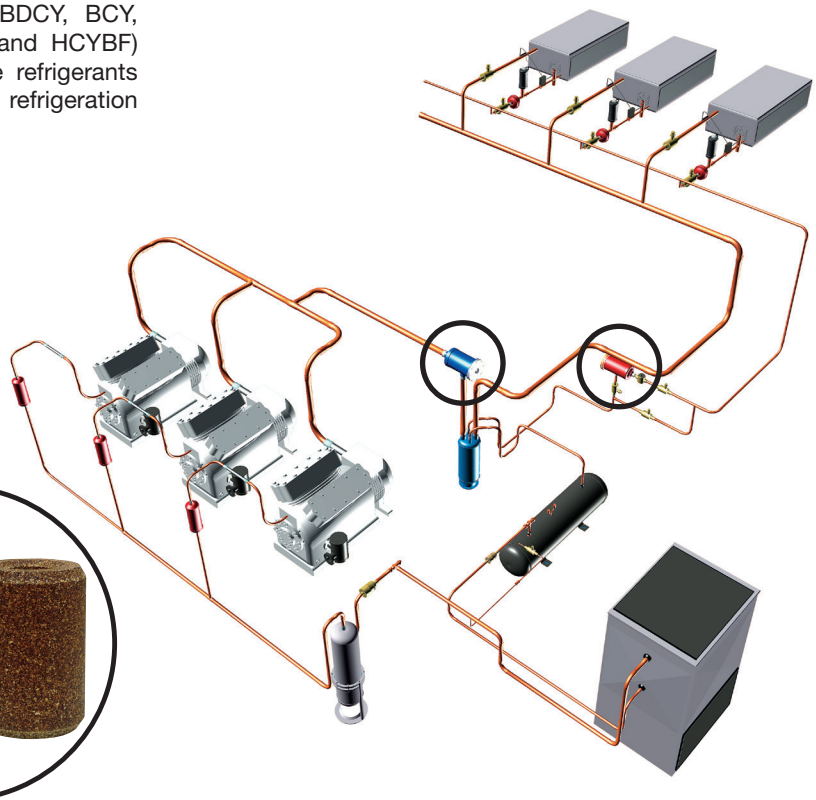
➔ CCY / PLATINIUM

■ Applications

- Interchangeable elements for the filter shells (BDCY, BCY, BCY-HP, BCY-P6, BCY-P14, BBCY, ACY, BACY and HCYBF) ensuring the filtration, drying, or cleaning of the refrigerants and refrigerating oils of the air conditioning and refrigeration installations.

Shell reference	Core reference (size)
BDCY	CCY 42
BCY / BCY-HP / ACY	CCY 48 / PLATINIUM 48
BCY-P6 / BCY-P14	PLATINIUM 48 / CCY 48
BBCY / BACY	CCY 100 / PLATINIUM 100



■ Functional features

- Products are compatible with HCFCs, HFCs, HFOs, HC, CO_2, as well as with their associated oils and additives. Products are designed for use of refrigerants from group 2 and group 1 of PED 2014/68/EU. To use CARLY components for a RANKINE organic cycle application, contact CARLY technical department.
- The cartridges CCY HP, N, PLATINIUM:
  - ➔ can be used with all the filter shells that can be found on the market.
  - ➔ are supplied with a complete set of flange gaskets corresponding to most of the filter shells that can be found on the market. Important : This gaskets set do not contain the one for BCY-P6 and P14 flanges which is specific.
  - ➔ are designed and manufactured to trap with a low pressure drop the humidity and impurities conveyed by the refrigerant and resist against vibrations and the circuit's pressure cyclings.
- The cleaning and drying cores CCY HP and N have a high acid adsorption power.
- The filtering cartridge CCY 48 HU can be used for all types of refrigerating oils with or without additives.

■ CARLY advantages

- The cores CCY HP, PLATINIUM 48 and N are oven-dried in order to be perfectly dehydrated before being packed in an easy-to-open sealed box. These cores have high humidity adsorption capacities at high and low condensation temperatures.
- The CCY I and F cores are efficient whichever the refrigerant flow direction.
- Efficient solutions for refrigerating circuit decontamination thanks to a complete range of cores.
- Presence of a date sticker to be filled in after the maintenance operations (core change).

CYCO$_2$-EN - 7.1-9 / 05-2026

Drying, filtering and cleaning cores

→ CCY / PLATINIUM

■ 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**.

■ Specific recommendations for drying, filtering and cleaning cores CCY HP, N, F, I, HU and PLATINIUM

- Refer to assembly precautions for replaceable core filter drier shells and recommendations for liquid line: BDCY, BCY, BCY-HP, BCY-P6, BCY-P14, BBCY, for suction replaceable core filter shells: BDCY, ACY, BACY, and for HCYBF replaceable core oil filter shells.
- Remove cores from their sealed can at the very last moment before putting them in the shells.
- The cartridges CCY 48 HP, 48 N and PLATINIUM must be positioned in various cartridge holders with their funnel shape at the larger end (see chapter " technical features of cores " , Ø 4 on drawing N°2) on the box outlet union side.
- It is imperative to use CCY A adapters with chemical cores (CCY N, CCY HP and PLATINIUM) in the suction filter shells. Do not forget to remove them before installing CCY F and CCY I cores.
- Important : The CCY cores must be changed very regularly and particularly the CCY HP and PLATINIUM cartridges must be absolutely replaced :
  - → after each intervention on the installation requiring the opening of the circuit
  - → when the liquid indicator (VCYL or VCYLS) indicates an abnormal humidity content
  - → when the pressure loss measured in the filter drier shell is too great
  - → at least once a year as a measure of precaution.
- It is important to regularly monitor the refrigerant's moisture content and condition using sight glasses with CARLY VCYL or VCYLS moisture indicator (refer to chapter 9 or 10).
- For use of various CCY core types in the pollution control and circuit cleaning process after compressor burnout, closely follow the recommendations given to chapter 7.
- Be careful, some additive oils are not compatible with the activated alumina present in the CCY 42/48/100HP and N. It is your responsibility to verify this compatibility.

CYCO$_2$-EN - 7.1-9 / 05-2026

Drying, filtering and cleaning cores

→ CCY / PLATINIUM

■ Functional features

CARLY References	To be used with							Use			Filtration microns	Composition	Features
	BDCY	BCY BCY-HP	BCY-P6 BCY-P14	BBCY	ACY	BACY	HCYBF	On suction line	On liquid line	On oil line			
Felt cores													
CCY 42 F	X							Temporary a few days			10	Felt	For HCFC, HFC, HFO, CO_2 Reinforced filtration
CCY 48 F			X										
CCY 100 F						X							
Stainless steel cores													
CCY 42 I	X							Permanent			140	Stainless steel mesh cloth and screen	For HCFC, HFC, HFO, CO_2 Filtering
CCY 48 I			X		X								
CCY 100 I						X							
High efficiency drying cores													
CCY 42 HP	X							Temporary a few days	Permanent until saturation		50	Chemical agents	For HCFC, HFC, HFO, CO_2 Reinforced drying acid neutralization
CCY 48 HP		X	X		X								
CCY 100 HP				X		X							
Very hich efficiency drying cores													
PLATINIUM 48		X	X		X			Temporary a few days	Permanent until saturation		50	Chemical agents	For HCFC, HFC, HFO, CO_2 Optimum drying
PLATINIUM 100				X		X							
Cleaning cores													
CCY 42 N	X							Temporary a few days	Temporary a few days		50	Chemical agents	For HCFC, HFC, HFO, CO_2 Burnout decontamination, reinforced drying, reinforced acid neutralization, wax and resin binding
CCY 48 N		X	X		X								
CCY 100 N				X		X							
Oil cores													
CCY 48 HU							X			Permanent until saturation	30	Filtrating cellulose, glued, pleated	For refrigerating oil filtering

CYCO$_2$-EN - 7.1-9 / 05-2026

Drying, filtering and cleaning cores

→ CCY HP / PLATINIUM / CCY N

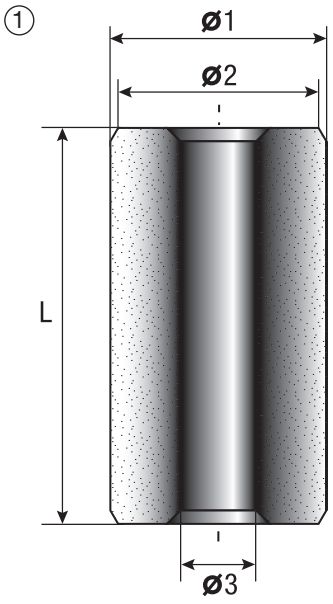
■ Selection table of drying and cleaning cores

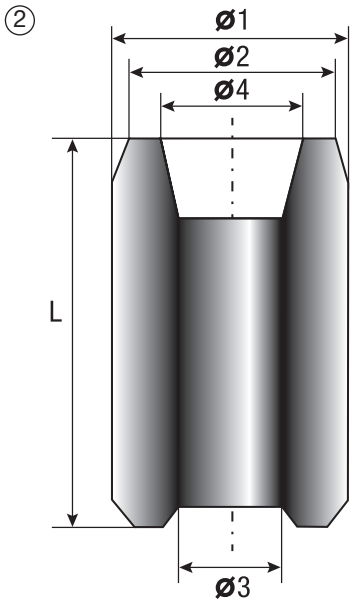
CARLY References	Filtering surface	Volume of desiccation products	Dehydratable refrigerant capacity kg of refrigerant (1)						
			R22 R450A R134a R1233zd		R407F R452A R407C R513A R1234ze		R404A R507 R455A R410A R448A R449A		R744
	cm^2	cm^3	24 °C	52 °C	24 °C	52 °C	24 °C	52 °C	24 °C
CCY 42 HP	374	645	47	40	45	38	42	36	29
CCY 48 HP	420	704	55	48	52	46	49	43	34
CCY 100 HP	630	1495	110	95	105	90	98	85	67
PLATINIUM 48	420	704	72	62	69	59	64	55	44
PLATINIUM 100	630	1495	144	123	137	117	128	110	87
CCY 42 N	374	645	47	40	45	38	42	36	29
CCY 48 N	420	704	55	48	52	46	49	43	34
CCY 100 N	630	1495	110	95	104,7	90,4	98,1	84,7	67

(1) Dehydratable refrigerant capacities according to Standard ARI 710-86.

■ Technical features of drying and cleaning cores

CARLY References	Drawing Nb	Dimensions mm				
		Ø1	Ø2	Ø3	Ø4	L
CCY 42 HP	1	80	74	29	/	148
CCY 48 HP	2	94	82	45	60	139
CCY 100 HP	1	121	108	53	/	164
PLATINIUM 48	2	94	82	45	60	139
PLATINIUM 100	1	121	108	53	/	164
CCY 42 N	1	80	74	29	/	148
CCY 48 N	2	94	82	45	60	139
CCY 100 N	1	121	108	53	/	164





CYCO$_2$-EN - 7.1-9 / 05-2026

Drying, filtering and cleaning cores

→ CCY F / CCY I / CCY HU

■ Selection table and technical features of filtering cores

CARLY References	Drawing Nb	Surface de filtration cm²	Dimensions mm				Maximal working temperature	Minimal working temperature
			Ø1	Ø2	Ø3	L	TS maxi °C	TS maxi °C
CCY 42 F	3	329	81	62	42	155	65	-40
CCY 48 F	5	420	93	/	75	140	65	-40
CCY 100 F	5	630	122	/	105	166	65	-40
CCY 42 I	4	348	81	62	/	155	/	/
CCY 48 I	5	420	93	/	/	140	/	/
CCY 100 I	5	630	122	/	/	166	/	/
CCY 48 HU	6	5790	101	/	27	150	100	-40

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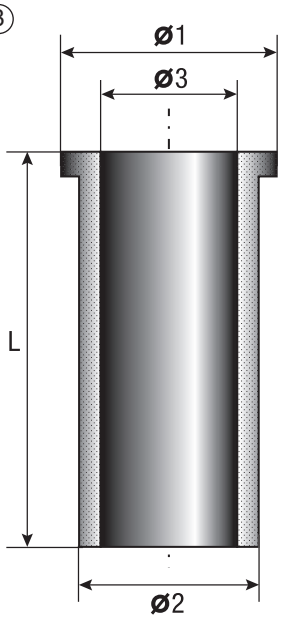

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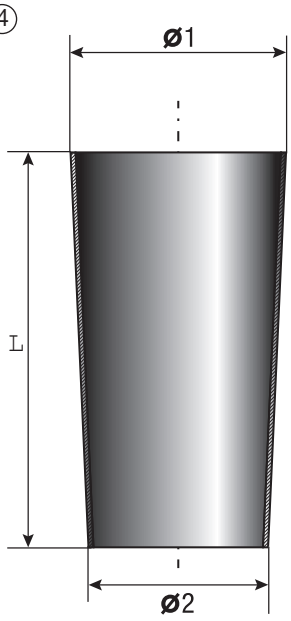

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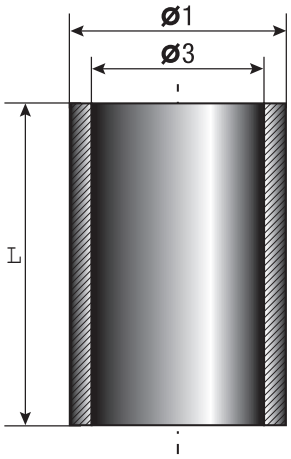

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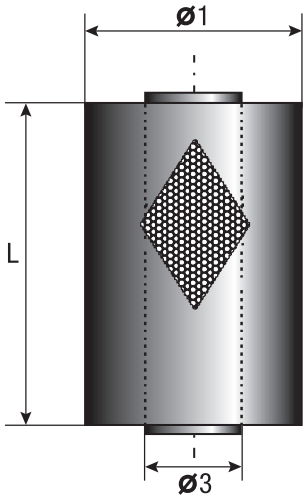


■ Spare parts

CARLY References	Description	Types	Quantity
CY 15555211	End plate gasket (red)	BDCY	1
CY 15552360	End torique gasket	BCY-P14	1
CY 15555601	Gasket for end plate and for flange of oil separator (red)	ACY / BCY / BCY-HP	1
CY 15555303	Gasket for flange of oil separators (blue)	BCY-P6	1
CY 15555701	Gasket for end plate and for oil separator (red)	BACY - BBCY	1

CYCO$_2$-EN - 7.1-9 / 05-2026

Drying, filtering and cleaning cores

→ CCY / PLATINIUM

■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
CCY 42 HP	0,77	0,68	15
CCY 48 HP	0,90	0,79	15
CCY 100 HP	1,75	1,52	6
PLATINIUM 48	0,90	0,79	15
PLATINIUM 100	1,75	1,52	6
CCY 42 N	0,62	0,53	15
CCY 48 N	0,81	0,70	15
CCY 100 N	1,58	1,36	6

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
CCY 42 F	0,13	0,12	6
CCY 48 F	0,26	0,15	15
CCY 100 F	0,24	0,19	6
CCY 42 I	0,11	0,10	6
CCY 48 I	0,21	0,10	15
CCY 100 I	0,24	0,16	6
CCY 48 HU	0,31	0,30	15

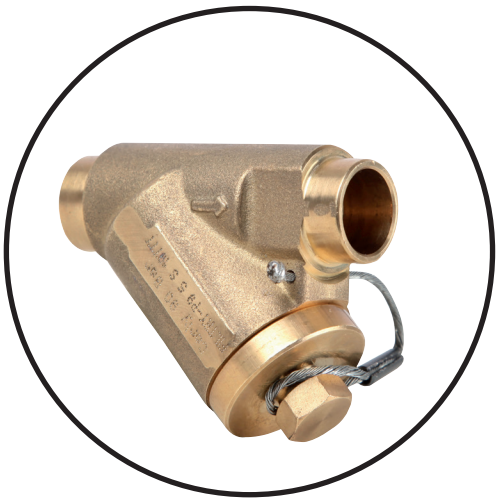
CYCO$_2$-EN - 10.5-6 / 05-2026

Dirt filters

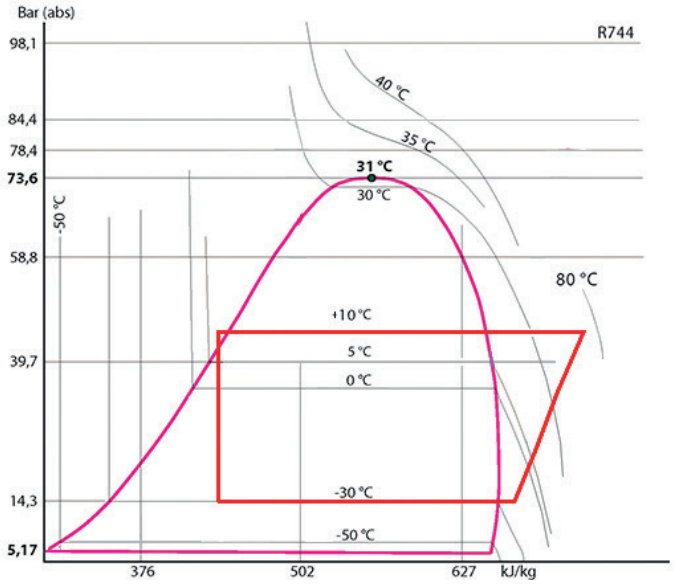
→ FILTRY-P9 / 90 bar (1305 psig) *(permanent use)*

■ Applications

- Permanent refrigerant filtering, regulation and expansion element protection in refrigerating and air conditioning installations.
- These filters are particularly suited for commercial refrigerating applications and installations with important liquid line lengths.



CO2 SUBCRITICAL AND TRANSCRITICAL



■ Functional features

- Products are compatible with HFCs, HFOs, 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.
- Product classification in CE categories is performed using the PED 2014/68/EU table, corresponding to a nominal diameter-based selection.
- Product is ergonomic for quick maintenance interventions.
- Body made of die-cast brass with brazed connection.
- Filtration preventing propagation within the circuit of particles bigger than 50 microns with a filtration area of 16 cm^2.

■ CARLY advantages

- Maximal working pressure: up to 90 bar with CO_2 in subcritical and transcritical compression systems.
- The stainless steel filtrating sleeve can be removed for cleaning, without removing the filter case and without de-brazing the connections, thus allowing important time savings during maintenance operations.
- Plug can be handled with a flat spanner and fitted with a safety metallic cable.
- Fastening plug in brass, can be handled with a spanner.
- Compact product for ease of assembly in reduced footprint.

CYCO$_2$-EN - 10.5-6 / 05-2026

Dirt filters

→ FILTRY-P9 / 90 bar (1305 psig) *(permanent use)*

■ Warning

Before selecting or installing any component, please refer to the chapter 0 of CARLY technical catalogue - **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 of CARLY technical catalogue – **GENERAL ASSEMBLY PRECAUTIONS**.

■ Recommendations specific to dirt filters FILTRY-P9

- FILTRY-P9 dirt filters are to be mounted on the liquid line between the receiver and the expansion element.
- The refrigerant flow direction is indicated by an arrow on filter case. It must be complied with.
- The FILTRY-P9 dirt filters have to be mounted horizontally, the part with the strainer oriented downwards.
- It is mandatory to remove the filtrating sleeve and the O-ring before assembling filter by brazing.
- After brazing, when the base temperature is sufficiently low, put the O-ring back into its recess and screw back the plug complying with a six-side key with the recommended tightening torque of 15 N.m.
- After each removal of the plug, imperatively replace the PTFE O-ring; it is preferable to position, in a first step, the filtrating sleeve in the filter case and in a second step, to screw the plug.
- Be careful to properly select the solenoid valves located downstream of the filters; their oversizing could cause liquid hammer phenomena hindering the filters' proper mechanical behaviour; these liquid hammer phenomena can originate from other sources, in long-piping installations.
- Never install filters in an area of the circuit that can be isolated.
- Never trap refrigerant in its liquid state (between a check valve and a solenoid valve, for instance).
- It is mandatory to change or to clean the filtrating sleeves with a solvent when the pressure drop measured in the FILTRY-P9 filter is too important. CARLY recommends this operation at least once a year as prevention.

Dirt filters

CYCO$_2$-EN - 10.5-6 / 05-2026

→ FILTRY-P9 / 90 bar (1305 psig) *(permanent use)*

■ Special precautions for components used with CO_2 in sub. and transcritical systems

- The maximal working pressure and the power variations of the installation must be taken into account as of its design, in order to select all the components consequently.
- The pressure of the circuit during the stop phases must also be taken into account, because it can be very high, due to the pressure equalization according to the ambient temperature; several solutions exist to limit and control this pressure when the installation is stopped.
  - Design of the installation allowing to resist to this pressure.
  - Implementation of a « buffer » volume of storage or expansion (receiver).
  - Installation of a secondary circuit with valve or solenoid valve, allowing the fluid transfer to the coldest point, or the less high in pressure of the installation.
  - Implementation of a small separate refrigeration unit, to maintain the liquid temperature at a pressure lower than the maximal working pressure ; it is so far the most effective technical solution, but with a major drawback, which is the power failure (safety unit to be considered, or backup power supply).
- The hot gas defrost, frequently used with CO_2 for low temperatures applications, generates also high pressures (to take in consideration)
- The implementation on the liquid line of a filter drier **DCY-P14,** or a filter drier shell **BCY-P14** equipped with drying cores **CCY 48 HP** or **PLATINIUM 48,** is highly recommended. Serious problems can occur in the presence of moisture, such as expansion valve blocking and formation of dry ice and even carbonic acid. To avoid this, it is imperative to limit the circuit openings in order to avoid air introduction, causing the condensation in the pipes, and to proceed to a high evacuation of the installation, before any commissioning or restarting.
- For an operation with CO_2 at low temperature, provide thermal insulation on the components which can be covered by frost.
- There is no incompatibility between CO_2 and the main metallic materials commonly used in refrigeration systems (steel, copper, brass...)
- On the other hand, there is a real compatibility issue between CO_2 and polymers. For example, swelling phenomena and internal explosion of the seal are possible. Carly dirt filters FILTRY-P9 do not have polymer gaskets.

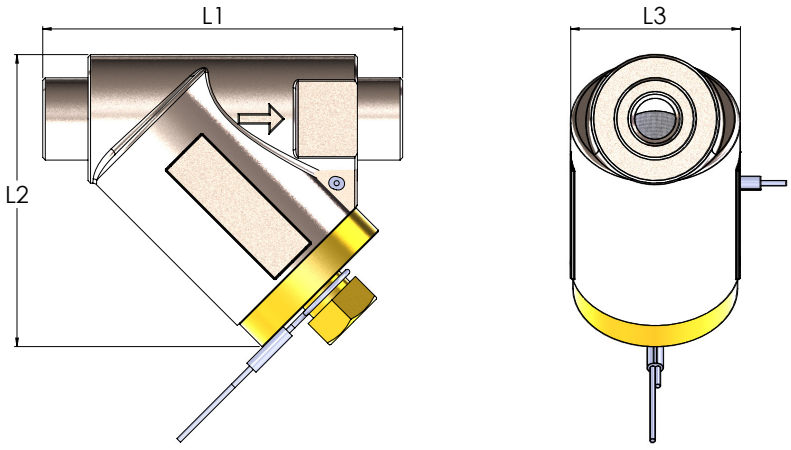
CYCO$_2$-EN - 10.5-6 / 05-2026

Dirt filters

→ FILTRY-P9 / 90 bar (1305 psig) *(permanent use)*

■ Technical features

CARLY references	Connections to solder ODF inch	CARLY references	Connections to solder ODF mm	Filtering surface cm²	KV for standard filtration 50 µm m³/h	Dimensions mm		
						L1	L2	L3
FILTRY-P9 2 S	1/4	FILTRY-P9 2 MMS	6	16	0,5	70	58	33
FILTRY-P9 3 S	3/8	FILTRY-P9 3 MMS	10	16	1	70	58	33
FILTRY-P9 4 S	1/2	FILTRY-P9 4 MMS	12	16	1,8	70	58	33
FILTRY-P9 5 S/MMS	5/8	FILTRY-P9 5 S/MMS	16	16	2,85	70	58	33



CARLY references	Nominal diameter	CARLY references	Nominal diameter	Maximal working pressure	Working pressure (1)	Maximal working temperature	Minimal working temperature	Working temperature (1)	CE Category (2)
	DN inch		DN mm	PS bar	PS BT bar	TS maxi °C	TS mini °C	TS BT °C	
FILTRY-P9 2 S	1/4	FILTRY-P9 2 MMS	6	90	15	100	-40	-30	Art4§3
FILTRY-P9 3 S	3/8	FILTRY-P9 3 MMS	10	90	15	100	-40	-30	Art4§3
FILTRY-P9 4 S	1/2	FILTRY-P9 4 MMS	12	90	15	100	-40	-30	Art4§3
FILTRY-P9 5 S/MMS	5/8	FILTRY-P9 5 S/MMS	16	90	15	100	-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 to CARLY technical catalogue).*

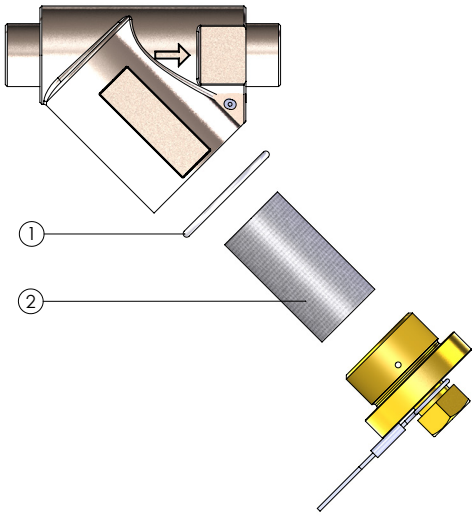
CYCO$_2$-EN - 10.5-6 / 05-2026

Dirt filters

→ FILTRY-P9 / 90 bar (1305 psig) *(permanent use)*

■ Spare parts

CARLY references	Part N°	Description	Quantity
CY 15552205	1	O-ring gasket (black)	1
CY 11610050	2	50 microns filtrating sleeve	1



■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
FILTRY-P9 2 S	0,31	0,30	1
FILTRY-P9 3 S	0,31	0,30	1
FILTRY-P9 4 S	0,31	0,30	1
FILTRY-P9 5 S/MMS	0,31	0,30	1

CYCO$_2$-EN - 11.5-4 / 05-2026

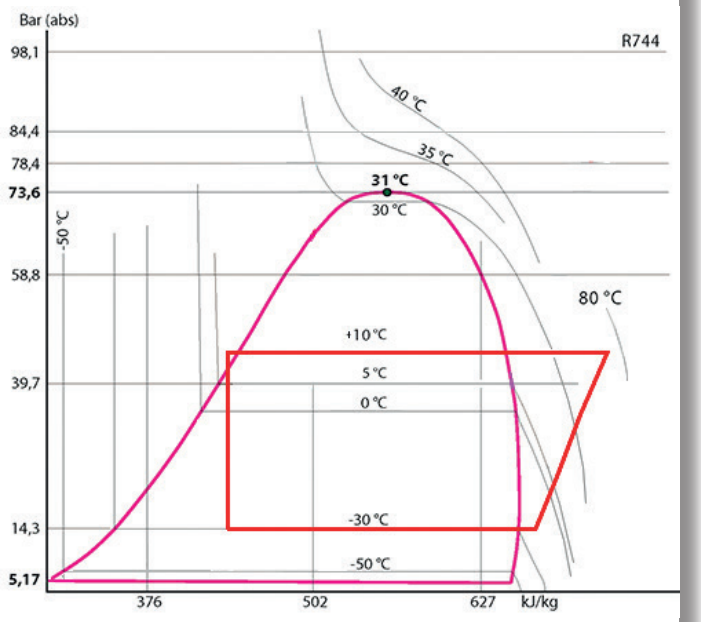
Dirt filters

→ FCY-P6 / 64 bar (928 psig) *(permanent use)*

■ Applications

- Permanent refrigerant filtering, regulation and expansion element protection in refrigerating and air conditioning installations, running with high working pressures.

CO$_2$ SUBCRITICAL



■ Functional features

- Products are compatible with HFC, HFO, 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.
- Product classification in CE categories is performed using the PED 2014/68/EU table, corresponding to a volume-based selection
- External steel body hermetically sealed with paint to ensure a high resistance to corrosion
- Filtering at outlet preventing propagation within the circuit of particles bigger than 25 microns, with a very low pressure drop.
- One type of connection is on standard products: to be screwed type SAE

Possible customization on demand:

- Specific connections (O-RING, ORFS, ...)
- To be brazed for tubes in inches (S)
- To be brazed for tubes in millimeters (MMS)

■ CARLY advantages

- Maximal working pressure: up to 64 bar with CO$_2$ in subcritical compression systems.
- Compact products for ease of assembly in reduced footing.
- Internal retention system with minimum pressure drop, preventing the release of trapped contaminating agents.
- Very large filtering area that limits pressure drop.

CYCO$_2$-EN - 11.5-4 / 05-2026

Dirt filters

→ FCY-P6 / 64 bar (928 psig) *(permanent use)*

■ Warning

Before selecting or installing any component, please refer to the chapter 0 of CARLY technical catalogue - **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 of CARLY technical catalogue – **GENERAL ASSEMBLY PRECAUTIONS**.

■ Recommendations specific to the FCY-P6 dirt filters

- FCY-P6 dirt filters are to be mounted on the liquid line between the receiver and the expansion element.
- Never use these dirt filters on the oil line; in such a case, use HCYF-P6 oil filters (refer to chapter 45 of CARLY technical catalogue).
- The refrigerant flow direction is indicated by an “IN” mark in the inlet shell of the filter drier and by an arrow on the filter tag. It must be necessarily respected.
- We recommend the vertical mounting of the dewatering filter with a top-down fluid flow direction in order to favour its filling when in operation and a rapid flow of the fluid when the installation is shut down.
- Be careful to properly select the solenoid valves located downstream of the filters; their oversizing could cause liquid hammer phenomena hindering the filters’ proper mechanical behaviour; these liquid hammer phenomena can originate from other sources, in long-piping installations; in case of doubt, it is preferable to use FILTRY-P9 dirt filters. (refer to chapter 11 of CARLY technical catalogue).
- Never install the filters in an area of the circuit that can be isolated.
- Never trap refrigerant in its liquid state (between a check valve and a solenoid valve, for instance).
- It is mandatory to change the dirt filters when the pressure drop measured in filter is too important. CARLY recommends this operation at least once a year as prevention.
- Make sure that the piping can support without deformation the weight of the dirt filter ; otherwise, provide for the attachment of the dirt filter with a clamp on a stable part of the installation.

Dirt filters

CYCO$_2$-EN - 11.5-4 / 05-2026

→ FCY-P6 / 64 bar (928 psig) *(permanent use)*

■ Special precautions for components used with CO_2 in subcritical and transcritical systems

- The maximal working pressure and the power variations of the installation must be taken into account as of its design, in order to select all the components consequently.
- The pressure of the circuit during the stop phases must also be taken into account, because it can be very high, due to the pressure equalization according to the ambient temperature; several solutions exist to limit and control this pressure when the installation is stopped.
  - Design of the installation allowing to resist to this pressure.
  - Implementation of a « buffer » volume of storage or expansion (receiver).
  - Installation of a secondary circuit with valve or solenoid valve, allowing the fluid transfer to the coldest point, or the less high in pressure of the installation.
  - Implementation of a small separate refrigeration unit, to maintain the liquid temperature at a pressure lower than the maximal working pressure ; it is so far the most effective technical solution, but with a major drawback, which is the power failure (safety unit to be considered, or backup power supply).
- The hot gas defrost, frequently used with CO_2 for low temperatures applications, generates also high pressures (to take in consideration)
- The implementation on the liquid line of a filter drier **DCY-P6** is highly recommended. Serious problems can occur in the presence of moisture, such as expansion valve blocking and formation of dry ice and even carbonic acid. To avoid this, it is imperative to limit the circuit openings in order to avoid air introduction, causing the condensation in the pipes, and to proceed to a high evacuation of the installation, before any commissioning or restarting.
- For an operation with CO_2 at low temperature, provide thermal insulation on the components which can be covered by frost.
- There is no incompatibility between CO_2 and the main metallic materials commonly used in refrigeration systems (steel, copper, brass...)
- On the other hand, there is a real compatibility issue between CO_2 and polymers. For example, swelling phenomena and internal explosion of the seal are possible. Carly **dirt filters FCY-P6** do not have polymer gaskets directly in contact with CO_2.

CYCO$_2$-EN - 11.5-4 / 05-2026

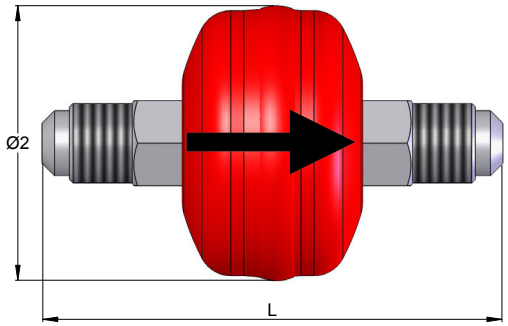
Dirt filters

→ FCY-P6 / 64 bar (928 psig) *(permanent use)*

■ Technical features

CARLY references	Connections (1)		Connections types (1)	Filtering surface	Dimensions mm	
	To screw SAE inch	To solder ODF inch		cm²	Ø2	L
FCY-P6 502	1/4"		1	20	55	86
FCY-P6 503	3/8"		1	20	55	92

(1) *Chapter «Connection features and drawings» (refer to chapter 114 of CARLY technical catalogue).*



CARLY references	Volume V L	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)
FCY-P6 502	0,06	64	48	100	-40	-10	Art4§3
FCY-P6 503	0,06	64	48	100	-40	-10	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 volume, according to PED 2014/68/EU (refer to chapter 0 of CARLY technical catalogue).*

■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
FCY-P6 502	0,28	0,25	1
FCY-P6 503	0,28	0,25	1

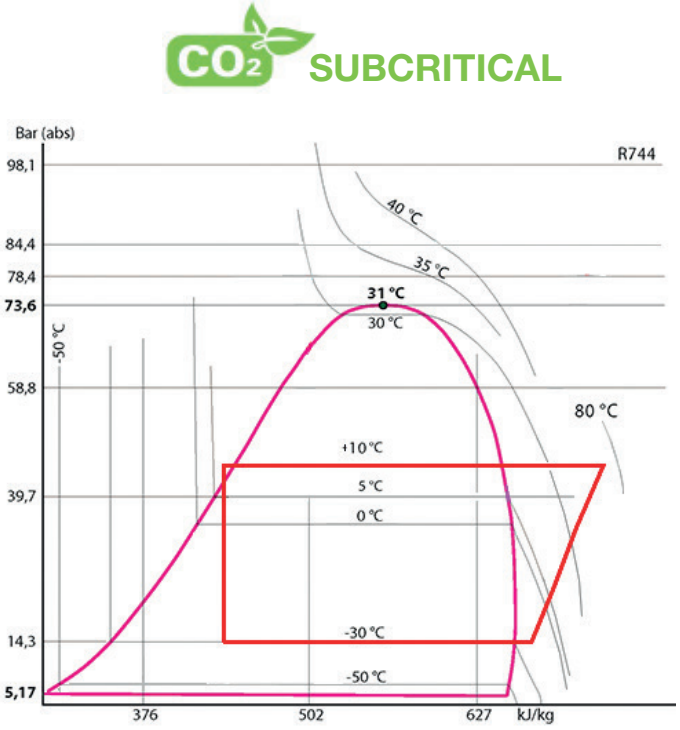
Discharge line mufflers

CYCO$_2$-EN - 21.7-5 / 05-2026

→ SCY-P6 / 64 bar (928 psig)

■ Applications

- Reduction of noise caused by gas pulses in the discharge lines of refrigerating and air conditioning installations, running with high working pressures.
- Those pulses generally come from reciprocating compressors or screw compressors. The mufflers have no effect on the mechanical vibrations transmitted to the pipes by the compressors.



■ Functional features

- Products are compatible with HFC, 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.
- Product classification in CE categories is performed using the PED 2014/68/EU table, corresponding to a volume-based selection.
- Hermetically sealed outer steel enclosure with paint to ensure a high resistance to corrosion.
- Several types of connections are possible on standard products:
  → To be brazed for tubes in inches (S)
  → To be brazed for tubes in millimeters (MMS).

Possible customization on demand :

- Specific connections (SAE, O-RING, ORFS, …).
- Stainless steel casings and connections (resistance to corrosion and at low temperature).

■ CARLY advantages

- Maximal working pressure: up to 64 bar with CO_2 in subcritical compression systems.
- Design allows coverage of a wide range of frequencies.
- Discharge line muffler mounting is possible in vertical and horizontal positions. There is no oil trap whichever the position. The refrigerant can flow in both directions.
- Excellent distribution of the refrigerant in its gaseous phase, with minimum pressure drop.
- The copper-plated steel connections up to a diameter of 3/4" - 18 mm facilitate the brazing and allow using brazing alloys with a low silver percentage.

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Discharge line mufflers

→ SCY-P6 / 64 bar (928 psig)

■ Warning

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

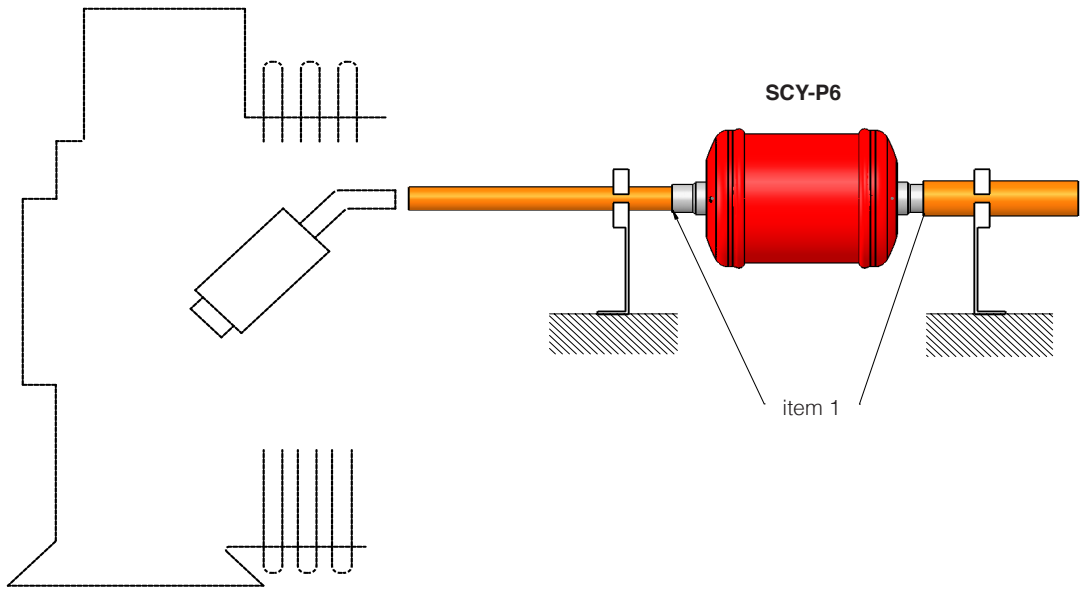
■ General assembly precautions

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 of CARLY technical catalogue – **GENERAL ASSEMBLY PRECAUTIONS**.

■ Recommendations specific to SCY-P6 mufflers

- The discharge line mufflers are to be mounted on the discharge gas line between the compressor and the condenser; the muffler's connections diameter must correspond to the discharges pipes diameter.
- The optimum muffler position will be determined according to your installation's features, by getting in touch with your distributor or with CARLY's technical services.
- It is recommended to perform an inner connection at the intake point, and an outer connection at the muffler outlet point (refer to drawing below item 1).
- In case of vertical assembling, it is recommended not to place the muffler just over the compressor.
- Provide for efficient clamping before the intake and after the outlet of the mufflers (refer to drawing below).



Discharge line mufflers

CYCO$_2$-EN - 21.7-5 / 05-2026

→ SCY-P6 / 64 bar (928 psig)

■ Special precautions for components used with CO_2 in subcritical and transcritical systems

- The maximal working pressure and the power variations of the installation must be taken into account as of its design, in order to select all the components consequently.
- The pressure of the circuit during the stop phases must also be taken into account, because it can be very high, due to the pressure equalization according to the ambient temperature; several solutions exist to limit and control this pressure when the installation is stopped.
  - Design of the installation allowing to resist to this pressure.
  - Implementation of a « buffer » volume of storage or expansion (receiver).
  - Installation of a secondary circuit with valve or solenoid valve, allowing the fluid transfer to the coldest point, or the less high in pressure of the installation.
  - Implementation of a small separate refrigeration unit, to maintain the liquid temperature at a pressure lower than the maximal working pressure ; it is so far the most effective technical solution, but with a major drawback, which is the power failure (safety unit to be considered, or backup power supply).
- The hot gas defrost, frequently used with CO_2 for low temperatures applications, generates also high pressures (to take in consideration)
- The implementation on the liquid line of a filter drier **DCY-P6, or a** filter drier shell **BCY-P6** equipped with drying cores **CCY 48 HP** or **PLATINIUM 48,** is highly recommended. Serious problems can occur in the presence of moisture, such as expansion valve blocking and formation of dry ice even carbonic acid. To avoid this, it is imperative to limit the circuit openings in order to avoid air introduction, causing the condensation in the pipes, and to proceed to a high evacuation of the installation, before any commissioning or restarting.
- For an operation with CO_2 at low temperature, provide thermal insulation on the components which can be covered by frost.
- There is no incompatibility between CO_2 and the main metallic materials commonly used in refrigeration systems (steel, copper, brass...)
- On the other hand, there is a real compatibility issue between CO_2 and polymers. For example, swelling phenomena and internal explosion of the seal are possible. Carly mufflers SCY-P6 do not have polymer gaskets directly in contact with CO_2.

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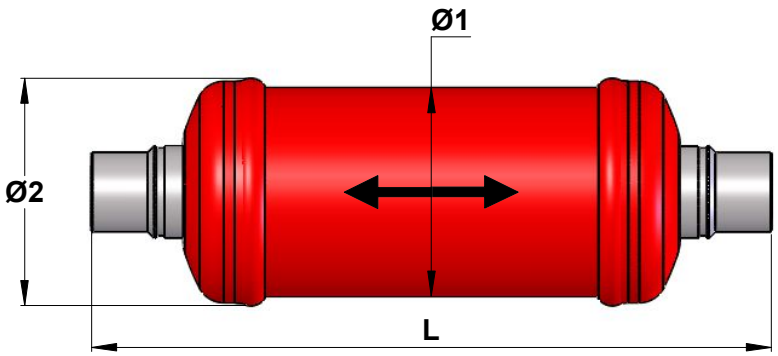
Discharge line mufflers

→ SCY-P6 / 64 bar (928 psig)

■ Technical features

CARLY references	Connections [1] To solder ODF pouce	CARLY references	Connections [1] To solder ODF mm	Connections types	Dimensions mm Ø1	Ø2	L
SCY-P6 30 S	3/8	SCY-P6 30 MMS	10	2	50	55	159
SCY-P6 40 S	1/2	SCY-P6 40 MMS	12	2	50	55	159
SCY-P6 50 S/MMS	5/8		16	2	50	55	163
SCY-P6 60 S	3/4	SCY-P6 60 MMS	18	2	89	96	171
SCY-P6 70 S/MMS	7/8		22	2	89	96	185
SCY-P6 90 S	1 1/8		28	3	114.3	129	283
SCY-P6 110 S/MMS	1 3/8		35	3	114.3	129	302
SCY-P6 130 S	1"5/8		-	3	121	135	306

[1] *Chapter «Connection features and drawings» (refer to chapter 114 of CARLY technical catalogue).*



CARLY references		Volume V L	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]
SCY-P6 30 S	SCY-P6 30 MMS	0.19	64	48	120	-40	-10	Art4§3
SCY-P6 40 S	SCY-P6 40 MMS	0.19	64	48	120	-40	-10	Art4§3
SCY-P6 50 S/MMS		0.19	64	48	120	-40	-10	Art4§3
SCY-P6 60 S	SCY-P6 60 MMS	0.56	64	48	120	-40	-10	Art4§3
SCY-P6 70 S/MMS		0.57	64	48	120	-40	-10	Art4§3
SCY-P6 90 S		1.70	64	48	120	-40	-10	Cat I
SCY-P6 110 S/MMS		1.70	64	48	120	-40	-10	Cat I
SCY-P6 130 S		2.10	64	48	120	-40	-10	Cat I

[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 volume, according to PED 2014/68/EU (refer to chapter 0 of CARLY technical catalogue).*

CYCO$_2$-EN - 21.7-5 / 05-2026

Discharge line mufflers

→ SCY-P6 / 64 bar (928 psig)

■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
SCY-P6 30 S & MMS	0,41	0,38	1
SCY-P6 40 S & MMS	0,41	0,38	1
SCY-P6 50 S/MMS	0,41	0,38	1
SCY-P6 60 S & MMS	1,32	1,27	1
SCY-P6 70 S/MMS	1,32	1,27	1
SCY-P6 90 S	4,15	4,10	1
SCY-P6 110 S/MMS	4,45	4,40	1
SCY-P6 130 S	3,15	3,10	1

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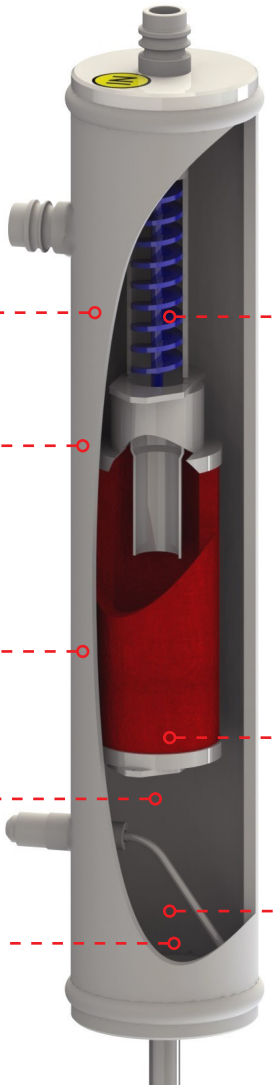
TURBOIL-R-P14

140 bar

Oil separator receivers



Maximum working pressure:
till 140 bar at 160°C

The reliability and efficiency of TURBOIL-R-P14 oil separators are achieved thanks to a new CARLY-patented process, which simultaneously combines 2 separation chambers, namely:

Efficiency of up to 99.5%
at all operating speeds

Can be mounted vertically
or horizontally, depending on model

For models with sight glasses,
the sight glass can be replaced
with an adapter for mounting a level switch.

Presence of a permanent magnet,
to trap metal particles

Integrated oil reservoir

a) A static separation chamber

using several oil separation techniques:

➜centrifugation by means of a helical movement generated by several spirals

➜coalescence thanks to the needled material of these spirals

➜sudden change in speed due to an increase in the cross-sectional area at the separator inlet

➜sudden change in fluid direction

b) A dynamic separation chamber

by coalescence and adapting to the operating regime

Maintenance-free

■ Applications

Specifically developed based on the results of many years of research, they are designed for subcritical and transcritical CO_2 (R744) applications up to pressures of 140 bar, and ensure:

- Separating and recovering the oil entrained in the vapour-phase refrigerant at the compressor outlet of refrigeration and air-conditioning systems.
- Limits the quantity of oil in the circuit, thus increasing heat exchanger performance.
- High-pressure oil return to compressor crankcases, helping to reduce compressor vibrations and discharge gas noise.
- By choosing TURBOIL-R-P14 oil separator tanks, you can avoid having to install a separate oil receiver.
- Recommended for very low-temperature applications.

■ Functional features

- Products are classified in CE categories using the table in PED 2014/68/EU, corresponding to selection by volume.
- Hermetically sealed carbon steel outer casing, with 160° C polyurethane paint for high corrosion resistance.
- Recognized efficiency with all EN378 group 2 fluids.
- Oil reserve function provided by built-in reservoir.
- High-pressure oil outlet via 1/4” or 3/8” SAE connection, depending on model.

Customization available on request:

- Compatible with group 1 fluids
- Customized oil receiver volume
- Additional indicators and connections

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TURBOIL-R-P14

140 bar

Oil separator receivers

■ Warning

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

■ General assembly precautions

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

- Some are specific to each components and in this case, they are specified in the **RECOMMANDATIONS SPECIFIC** part defined hereafter;
- Others are general to all CARLY components, they are presented in the chapter 115 - **GENERAL ASSEMBLY PRECAUTIONS**.

■ Recommandations specific to oil separator receivers TURBOIL-R-P14

- The recommendations are identical to those for TURBOIL® oil separators (see chapter 41).
- Caution: discharge temperatures can be very high. We recommend that you take all necessary precautions..
- Given the high oil pressure at the TURBOIL-R-P14 outlet, the use of LEVOIL mechanical oil level regulators is not possible, so we recommend the use of electronic oil level regulators.
- For multi-compressor installations, CARLY recommends the use of one TURBOIL-R-P14 oil separator per compressor.
- When starting up a new installation, fill the TURBOIL-R-P14 tank section with the same oil used in the compressors.
- During the first two days of operation, carefully monitor the oil level in the separator tanks. For oil pre-loading, refer to the selection table.)
- If the system has already been running, oil must be added with great care. After the first day's operation, the oil reintegrated into the system should be sufficient to fill the TURBOIL-R® reservoir to the top sight glass. If the oil level has not reached the upper sight glass, the necessary quantity of oil must be topped up. On the other hand, if the oil level exceeds the upper sight glass, it is imperative to drain the excess; this operation is possible via the TURBOIL-R® lower valve.
- Always use the same oil as the compressor(s).
- Since oil separation efficiency is never 100%, especially at variable operating speeds, the installation of an oil separator does not mean that oil traps and slopes in the direction of the fluid should be avoided when designing and building the system's piping. A check valve can be installed on the oil separator's gas outlet piping, to prevent any backflow of liquid refrigerant from the condenser.
- Ensure that the connection diameter of the TURBOIL-R-P14 oil separator is equal to the diameter of the compressor discharge line or discharge manifold.

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TURBOIL-R-P14

140 bar

Oil separator receivers

■ Selection table

The person responsible for sizing a product must take into account the conditions under which it will be used (temperature - pressure - fluid - oil - external environment).The values given in the selection tables in the CARLY catalog correspond to precise test conditions.

We advise you to convert your operating data into data corresponding to the CARLY selection table in order to enable you to dimension rigorously and correctly.

CARLY references	Connections To solder ODF	Working conditions	Refrigerating capacity (kW)						Mass flow (kg/s)					
	inch / mm		+ 10 °C	0 °C	-10 °C	-20 °C	-30 °C	-40 °C	+ 10 °C	0 °C	-10 °C	-20 °C	-30 °C	-40 °C
TURBOIL-R-P14 103 S	3/8 / 10	75bar / 30°C	21,0	18,1	15,3	12,4	9,6	6,8	0,149	0,129	0,108	0,088	0,068	0,048
		90bar / 35°C	18,4	15,7	13,0	10,3	7,6	4,9	0,138	0,118	0,097	0,077	0,057	0,037
		100bar / 40°C	15,8	13,3	10,7	8,1	5,6	3,1	0,132	0,111	0,089	0,068	0,047	0,026
		120bar / 50°C	13,2	10,9	8,4	5,9	3,6	1,2	0,137	0,113	0,087	0,061	0,037	0,013
TURBOIL-R-P14 205 S	5/8 / 16	75bar / 30°C	69,8	60,4	50,8	41,3	32,0	22,6	0,496	0,429	0,361	0,294	0,228	0,161
		90bar / 35°C	61,1	52,3	43,2	34,1	25,4	16,4	0,458	0,392	0,324	0,256	0,190	0,123
		100bar / 40°C	52,5	44,2	35,6	26,9	18,7	10,2	0,439	0,370	0,298	0,225	0,156	0,086
		120bar / 50°C	43,8	36,2	27,9	19,7	12,0	4,0	0,456	0,377	0,291	0,205	0,125	0,042
TURBOIL-R-P14 207 S	7/8 / 22	75bar / 30°C	119,4	103,3	86,9	70,7	54,8	38,7	0,848	0,734	0,617	0,502	0,389	0,275
		90bar / 35°C	104,6	89,5	73,9	58,4	43,4	28,1	0,784	0,671	0,554	0,438	0,325	0,211
		100bar / 40°C	89,7	75,7	60,8	46,0	31,9	17,5	0,752	0,634	0,510	0,385	0,267	0,146
		120bar / 50°C	74,9	61,9	47,8	33,6	20,5	6,9	0,780	0,644	0,498	0,350	0,213	0,072
TURBOIL-R-P14 309 S	1 1/8	75bar / 30°C	185,5	160,6	135,1	109,9	85,2	60,2	1,318	1,141	0,959	0,781	0,605	0,428
		90bar / 35°C	162,5	139,1	114,8	90,7	67,4	43,7	1,219	1,043	0,861	0,680	0,506	0,328
		100bar / 40°C	139,5	117,6	94,6	71,5	49,6	27,2	1,168	0,985	0,792	0,599	0,416	0,228
		120bar / 50°C	116,5	96,1	74,3	52,3	31,8	10,7	1,213	1,001	0,774	0,544	0,332	0,111
TURBOIL-R-P14 411 S	1 3/8 / 35	75bar / 30°C	252,4	218,4	183,7	149,6	115,9	81,9	1,793	1,552	1,305	1,062	0,823	0,582
		90bar / 35°C	221,1	189,2	156,2	123,4	91,7	59,4	1,658	1,419	1,171	0,926	0,688	0,446
		100bar / 40°C	189,8	160,0	128,6	97,2	67,5	37,0	1,589	1,340	1,077	0,814	0,565	0,310
		120bar / 50°C	158,4	130,8	101,1	71,1	43,3	14,6	1,650	1,362	1,052	0,740	0,451	0,152
TURBOIL-R-P14 813 S	1 5/8	75bar / 30°C	466,9	404,1	339,9	276,7	214,4	151,5	3,317	2,870	2,414	1,966	1,523	1,076
		90bar / 35°C	409,0	350,0	288,9	228,3	169,7	110,0	3,067	2,625	2,167	1,712	1,273	0,825
		100bar / 40°C	351,1	296,0	237,9	179,9	124,9	68,4	2,940	2,479	1,993	1,507	1,046	0,573
		120bar / 50°C	293,1	241,9	187,0	131,5	80,1	26,9	3,053	2,519	1,947	1,369	0,835	0,280

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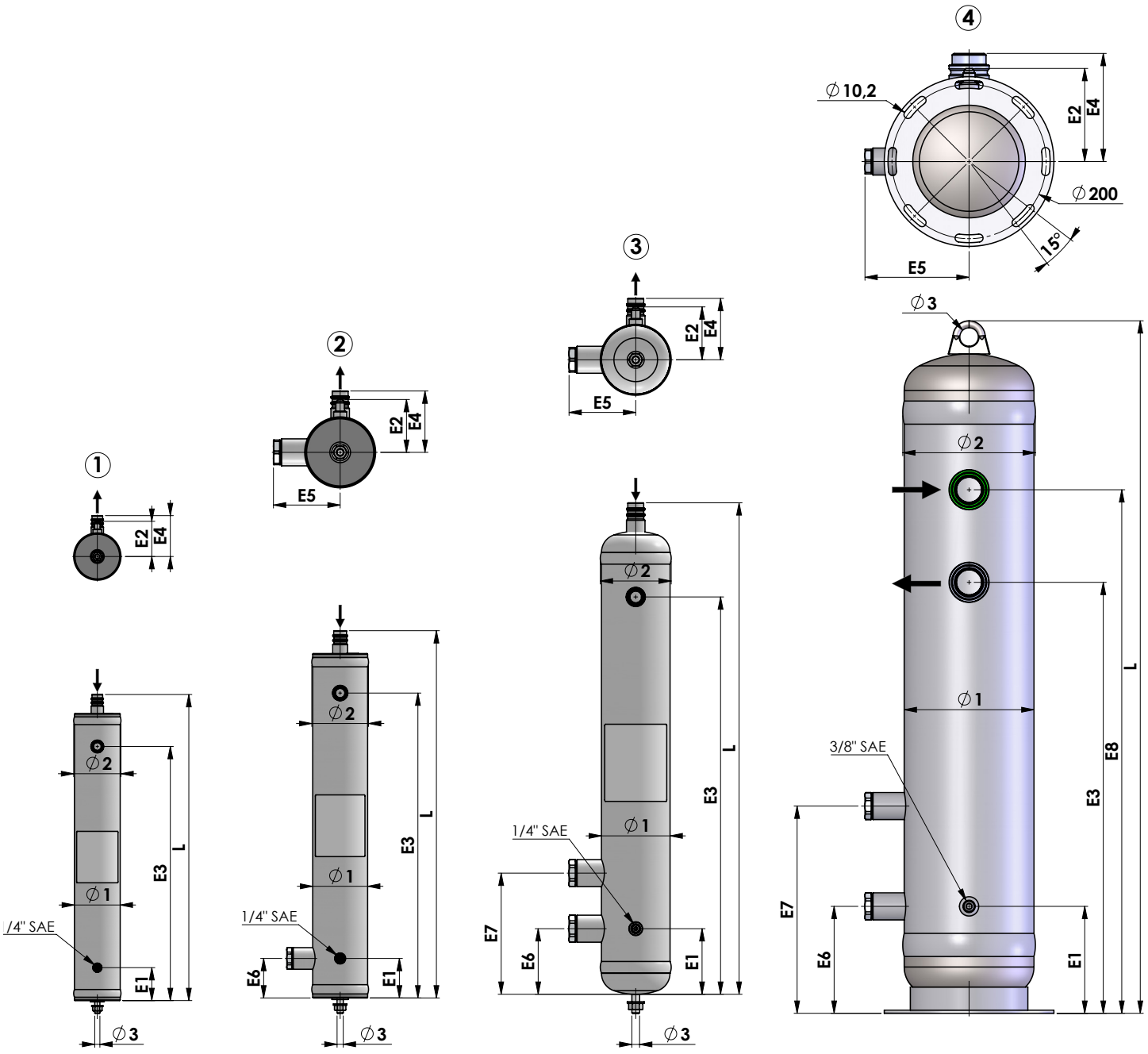
TURBOIL-R-P14

140 bar

Oil separator receivers

■ Technical features

CARLY references	Connections To solder ODF inch	Connections To solder ODF mm	Connec-tions types	Drawing No	Ø1	Ø2	Ø3	L	E1	E2	E3	E4	E5	E6	E7	E8
TURBOIL-R-P14 103 S/MMS	3/8	10	4	1	60,3	64	M10	340	59	54	255	54	-	-	-	-
TURBOIL-R-P14 205 S/MMS	5/8	16	5	2	88,9	92	M10	595	64	69	494	80	87	64	-	-
TURBOIL-R-P14 207 S/MMS	7/8	22	5	2	114,3	118	M12	662	65	81	549	101	99	65	-	-
TURBOIL-R-P14 309 S	1"1/8	28	6	3	141,3	146	M12	755	68	95	623	131	113	68	280	-
TURBOIL-R-P14 411 S/MMS	1"3/8	35	6	4	168,3	172	-	898	139	121	559	140	135	139	269	679



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TURBOIL-R-P14

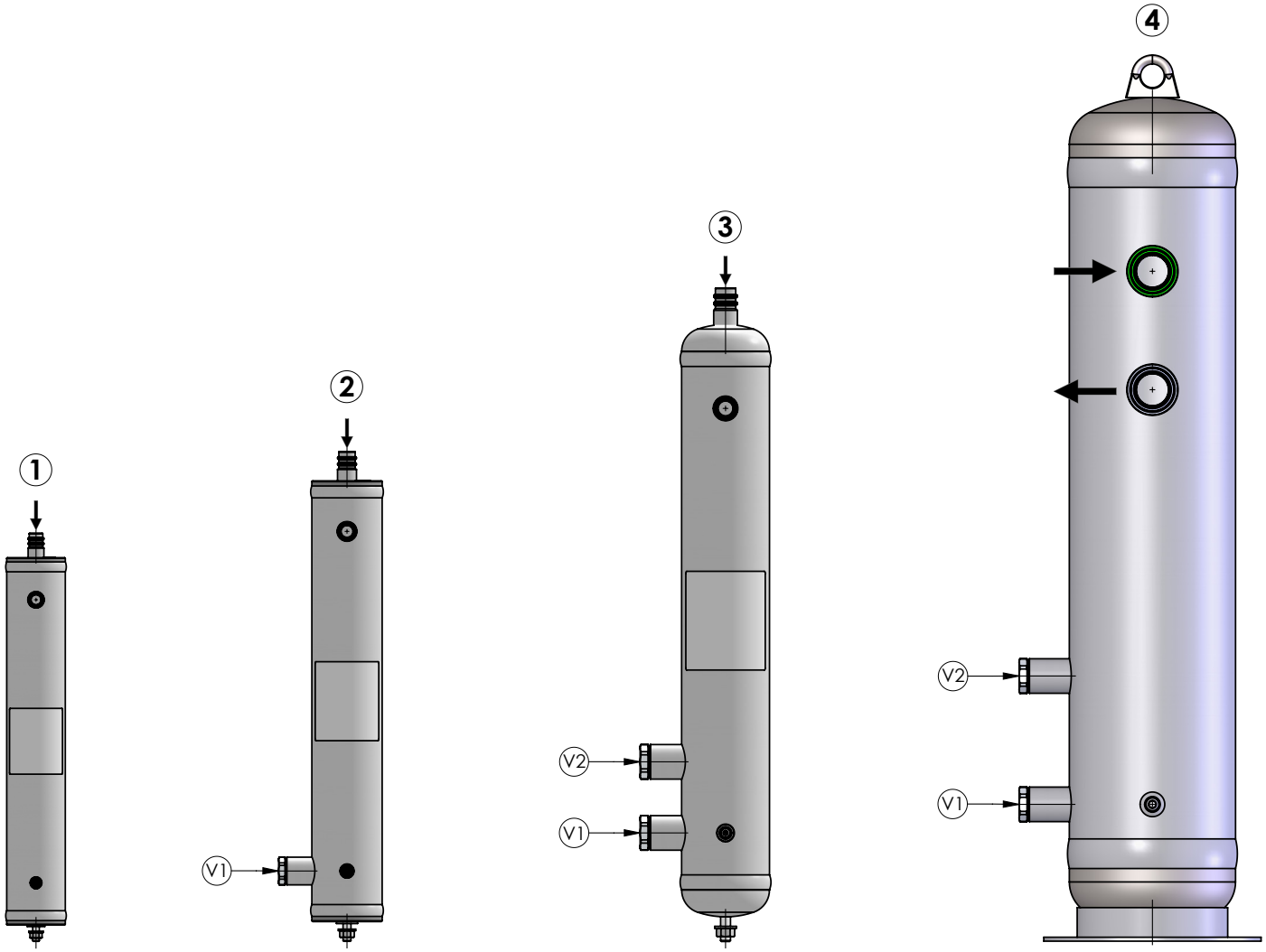
140 bar

Oil separator receivers

■ Technical features

CARLY references	Drawing No	Volume total V L	Volume of the receiver VR L	Volume (3) V1 L	Volume (3) V2 L	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)
TURBOIL-R-P14 103 S/MMS	1	0,62	0,20	-	-	140	15	160	-40	-30	Art4§3
TURBOIL-R-P14 205 S/MMS	2	2,50	0,75	0,20	-	140	15	160	-40	-30	II
TURBOIL-R-P14 207 S/MMS	2	4,30	1,45	0,40	-	140	15	160	-40	-30	II
TURBOIL-R-P14 309 S	3	7,60	3,00	0,50	3,00	140	15	100	-40	-30	III
TURBOIL-R-P14 411 S/MMS	4	13,0	3,80	1,60	3,80	140	15	160	-40	-30	III

(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 volume, according to PED 2014/68/EU (refer to chapter 0).
(3) Volume corresponding to sight glasses' level V1 and V2, fitted as standard from model 205 upwards.



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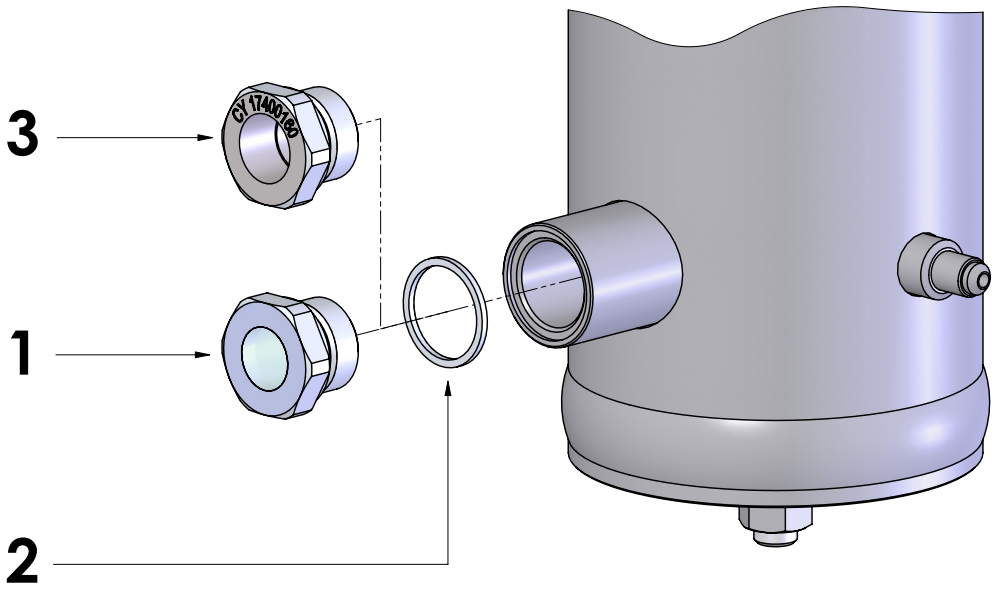
TURBOIL-R-P14

140 bar

Oil separator receivers

■ Spare parts and options

CARLY reference	Part number	Description	Quantity
CY 15011160	1	Glass without hygroscopic crown (flat aluminum gasket included)	1
CY 15511160	2	Aluminum flat gasket	1
CY 17400160	3	1/2'' NPT level sensor adapter (incl. aluminum flat gasket)	1



■ Weights and Packaging

CARLY eference	Unit weight kg		Packaging Number of pieces
	With packaging	Without packaging	
TURBOIL-R-P14 103 S/MMS	3,00	2,60	1
TURBOIL-R-P14 205 S/MMS	10,00	9,40	1
TURBOIL-R-P14 207 S/MMS	18,00	16,80	1
TURBOIL-R-P14 309 S	30,30	27,90	1
TURBOIL-R-P14 411 S/MMS	49,00	47,00	1

CYCO$_2$-EN - 45.5-4 / 05-2026

Oil filters

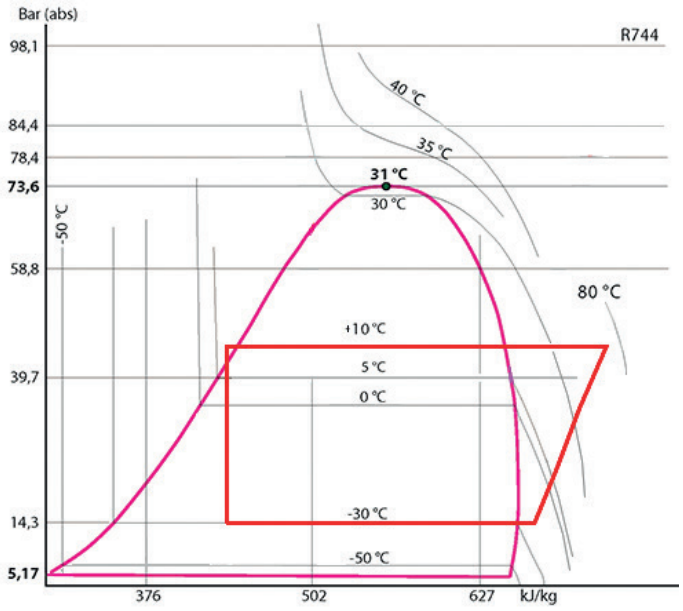
→ HCYF-P6 / 64 bar (928 psig)

■ Applications

64 bar

CO$_2$ SUBCRITICAL

- Oil filtering on the oil return line to the compressor sumps of refrigerating and air conditioning installations, running in high working pressures.
- These filters are required for the good operation of oil level regulators and compressors. It protect them from any contaminants that could damage them (metallic chips, filings, oxides, sludge, etc…).



■ Functional features

- Products are compatible with HFC, 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.
- Product classification in CE categories is performed using the PED 2014/68/EU table, corresponding to a volume-based selection.
- Hermetically sealed outer steel enclosure with paint to ensure a high resistance to corrosion.
- Filtrating core made of stainless steel mesh cloth.
- Filtering efficient at 5 microns.
- Several types of connections are possible on standard products:
  - To be screwed type SAE
  - To be brazed for tubes in inches (S)
  - To be brazed for tubes in millimetres (MMS).

Possible customization on demand :

- Specific connections (O-RING, ORFS,…).
- Stainless steel casings and unions (resistance to corrosion and at low temperatures).
- Lower filtration threshold.
- Filtering surface of the core, more or less important according to the specificities of the machine.

■ CARLY advantages

- Maximum working pressure: up to 64 bar with CO$_2$ in subcritical compression systems.
- Very large filtering surface areas for very low pressure drop.
- Presence of a permanent magnet located at the inlet of the filter, ensuring the immediate “trapping” of all steel particles.
- Very large range of filters: 6 different models.
- Connections to solder are made of copper-plated steel and allow to use brazing alloys with a low silver percentage; their resistance to pressure is much higher than the full copper connections.

Oil filters

→ HCYF-P6 / 64 bar (928 psig)

■ Warning

Before selecting or installing any component, please refer to the chapter 0 of CARLY technical catalogue - **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 of CARLY technical catalogue – **GENERAL ASSEMBLY PRECAUTIONS**.

■ Recommendations specific to the oil filters HCYF-P6

- The oil filters are to be mounted on the oil return line, between the oil separator and the oil level regulator, as close as possible to the latter.
- The direction of oil flow, indicated by an arrow on the filter tag and by an “IN” sticker next to the inlet connection, must imperatively be respected.
- The degree of clogging of the filters must be regularly checked, ensuring that the oil return is correct in the crankcases of compressors; oil filters must be imperatively replaced at the first sign of clogging.
- It is highly recommended to install downstream oil filter an oil sight glass in order to visually check the presence and the condition of the oil.
- HCYF-P6 oil filter only ensures mechanical filtering of solid contaminants.
- Make sure that the piping can support without deformation the weight of the oil filter; otherwise, plan the attachment of the oil filter with a clamp on a stable part of the installation.

CYCO$_2$-EN - 45.5-4 / 05-2026

Oil filters

→ HCYF-P6 / 64 bar (928 psig)

■ Special precautions for components used with CO_2 in subcritical and transcritical systems

- The maximal working pressure and the power variations of the installation must be taken into account as of its design, in order to select all the components consequently.
- The pressure of the circuit during the stop phases must also be taken into account, because it can be very high, due to the pressure equalization according to the ambient temperature; several solutions exist to limit and control this pressure when the installation is stopped.
  - Design of the installation allowing to resist to this pressure.
  - Implementation of a « buffer » volume of storage or expansion (receiver).
  - Installation of a secondary circuit with valve or solenoid valve, allowing the fluid transfer to the coldest point, or the less high in pressure of the installation.
  - Implementation of a small separate refrigeration unit, to maintain the liquid temperature at a pressure lower than the maximal working pressure ; it is so far the most effective technical solution, but with a major drawback, which is the power failure (safety unit to be considered, or backup power supply).
- The hot gas defrost, frequently used with CO_2 for low temperatures applications, generates also high pressures (to take in consideration)
- The implementation on the liquid line of a filter drier **DCY-P6,** or a filter drier shell **BCY-P6** equipped with drying cores **CCY 48 HP** or **PLATINIUM 48,** is highly recommended. Serious problems can occur in the presence of moisture, such as expansion valve blocking and formation of dry ice and even carbonic acid. To avoid this, it is imperative to limit the circuit openings in order to avoid air introduction, causing the condensation in the pipes, and to proceed to a high evacuation of the installation, before any commissioning or restarting.
- For an operation with CO_2 at low temperature, provide thermal insulation on the components which can be covered by frost.
- There is no incompatibility between CO_2 and the main metallic materials commonly used in refrigeration systems (steel, copper, brass...)
- On the other hand, there is a real compatibility issue between CO_2 and polymers. For example, swelling phenomena and internal explosion of the seal are possible. Carly oil filters HCYF-P6 do not have polymer gaskets directly in contact with CO_2.

CYCO$_2$-EN - 45.5-4 / 05-2026

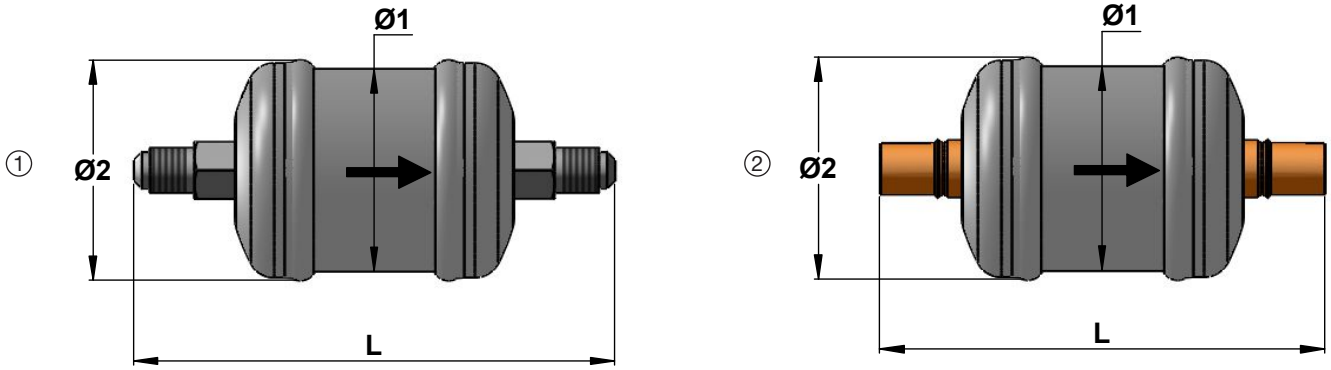
Oil filters

→ HCYF-P6 / 64 bar (928 psig)

■ Technical features

CARLY references	Connections To screw SAE inch	Connections To solder ODF inch	CARLY references	Connections To solder ODF mm	Connections types (1)	Drawing Nb	Filtering surface cm²	Dimensions mm Ø1	Ø2	L
HCYF-P6 52	1/4				1	1	70	50	55	119
HCYF-P6 53	3/8				1	1	70	50	55	125
HCYF-P6 53 S		3/8	HCYF-P6 53 MMS	10	2	2	70	50	55	112
HCYF-P6 83	3/8				1	1	121	89	96	142
HCYF-P6 84	1/2				1	1	121	89	96	146

(1) *Chapter "Connection features and drawings" (refer to chapter 114 of CARLY technical catalogue).*



CARLY references		Volume V L	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)
HCYF-P6 52		0,15	64	48	120	-40	-10	Art4§3
HCYF-P6 53		0,15	64	48	120	-40	-10	Art4§3
HCYF-P6 53 S	HCYF-P6 53 MMS	0,15	64	48	120	-40	-10	Art4§3
HCYF-P6 83		0,50	64	48	120	-40	-10	Art4§3
HCYF-P6 84		0,50	64	48	120	-40	-10	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 volume, according to PED 2014/68/EU (refer to chapter 0 of CARLY technical catalogue).*

CYCO$_2$-EN - 45.5-4 / 05-2026

Oil filters

→ HCYF-P6 / 64 bar (928 psig)

■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
HCYF-P6 52	0,31	0,28	1
HCYF-P6 53	0,31	0,28	1
HCYF-P6 53 S & MMS	0,31	0,28	1
HCYF-P6 83	0,78	0,75	1
HCYF-P6 84	0,83	0,80	1

Oil filters

CTCY-EN - 45.11-4 / 06-2020

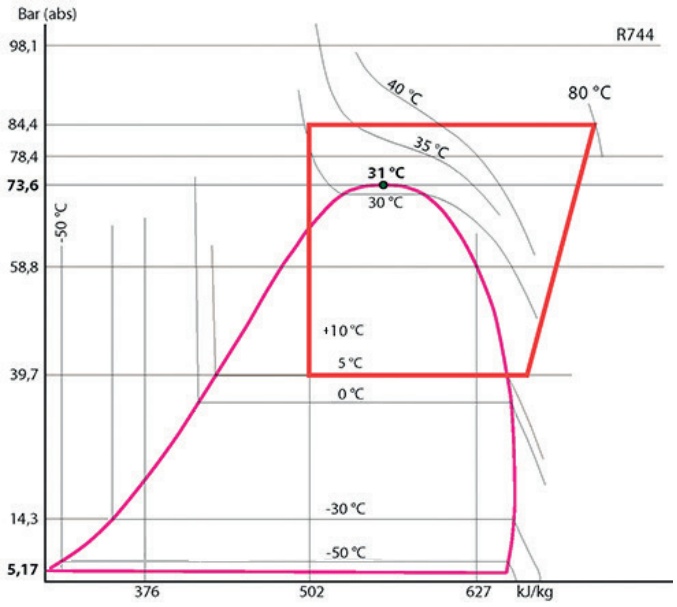
→ HCYF-P14 / 140 bar (2030 psig)

■ Applications

140 bar

TRANSCRITICAL

- Oil filtering on the oil return line to the compressor sumps of refrigerating and air conditioning installations, running with high working pressures, with CO_2 in trancritical compression systems.
- These filters are required for the good operation of oil level regulators and compressors. They protect them from any contaminants that could damage them (metallic chips, filings, oxides, sludge, etc…).



■ Functional features

- Products are compatible with CO_2, as well as with its associated oils and additives. Products are designed for use of non-hazardous refrigerants from group 2 of PED 2014/68/EU.
- Product classification in CE categories is performed using the PED 2014/68/EU table, corresponding to a volume-based selection.
- Hermetically sealed outer steel enclosure with paint to ensure a high resistance to corrosion.
- Filtrating core made of stainless steel mesh cloth.
- Filtering efficient at 5 microns.
- Connections on standard products: screwed type SAE and ODF to solder.

Possible customization on demand :

- Specific connections (O-RING, ORFS,…).
- Stainless steel casings and unions (resistance to corrosion and at low temperatures).
- Lower filtration threshold.
- Filtering surface of the core, more or less important according to the specificities of the machine.

■ CARLY advantages

- Maximum working pressure: up to 140 bar with CO_2 in transcritical compression systems.
- Very large retention capacity and filtering surface areas for very low pressure drop.
- Automatic bypass of the internal filter when it is too dirty and when the pressure drop generated exceeds 3 bar; this particularity ensures the continuity of compressor lubrication, even if filter maintenance is late.

CYCO$_2$-EN - 45.11-4 / 05-2026

Oil filters

→ HCYF-P14 / 140 bar (2030 psig)

■ Warning

Before selecting or installing any component, please refer to the chapter 0 of CARLY technical catalogue - **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 of CARLY technical catalogue – **GENERAL ASSEMBLY PRECAUTIONS**.

■ Recommendations specific to the oil filters HCYF-P14

- The oil filters are to be mounted on the oil return line, between the oil separator and the oil level regulator, as close as possible to the latter.
- The direction of oil flow, indicated by an arrow on the filter tag and by an “IN” sticker next to the inlet connection, must imperatively be respected.
- The degree of clogging of the filters must be regularly checked, ensuring that the oil return is correct in the crankcases of compressors; oil filters must be imperatively replaced at the first sign of clogging.
- It is highly recommended to install downstream oil filter an oil sight glass in order to visually check the presence and the condition of the oil.
- HCYF-P14 oil filter only ensures mechanical filtering of solid contaminants.
- Make sure that the piping can support without deformation the weight of the oil filter; otherwise, plan the attachment of the oil filter with a clamp on a stable part of the installation.

CYCO$_2$-EN - 45.11-4 / 05-2026

Oil filters

→ HCYF-P14 / 140 bar (2030 psig)

■ Special precautions for components used with CO_2 in subcritical and trancritical systems

- The maximal working pressure and the power variations of the installation must be taken into account as of its design, in order to select all the components consequently.
- The pressure of the circuit during the stop phases must also be taken into account, because it can be very high, due to the pressure equalization according to the ambient temperature; several solutions exist to limit and control this pressure when the installation is stopped.
  - Design of the installation allowing to resist to this pressure.
  - Implementation of a « buffer » volume of storage or expansion (receiver).
  - Installation of a secondary circuit with valve or solenoid valve, allowing the fluid transfer to the coldest point, or the less high in pressure of the installation.
  - Implementation of a small separate refrigeration unit, to maintain the liquid temperature at a pressure lower than the maximal working pressure ; it is so far the most effective technical solution, but with a major drawback, which is the power failure (safety unit to be considered, or backup power supply).
- The implementation on the liquid line of a filter drier **DCY-P14**, or a filter drier shell **BCY-P14** equipped with drying cores **CCY 48 HP** or **PLATINIUM 48**, is highly recommended. Serious problems can occur in the presence of moisture, such as expansion valve blocking and formation of dry ice and even carbonic acid. To avoid this, it is imperative to limit the circuit openings in order to avoid air introduction, causing the condensation in the pipes, and to proceed to a high evacuation of the installation, before any commissioning or restarting.
- For an operation with CO_2 at low temperature, provide thermal insulation on the components which can be covered by frost.
- There is no incompatibility between CO_2 and the main metallic materials commonly used in refrigeration systems (steel, copper, brass...)
- On the other hand, there is a real compatibility issue between CO_2 and polymers. For example, swelling phenomena and internal explosion of the seal are possible. Carly oil filters HCYF-P14 do not have polymer gaskets directly in contact with CO_2.

CYCO$_2$-EN - 45.11-4 / 05-2026

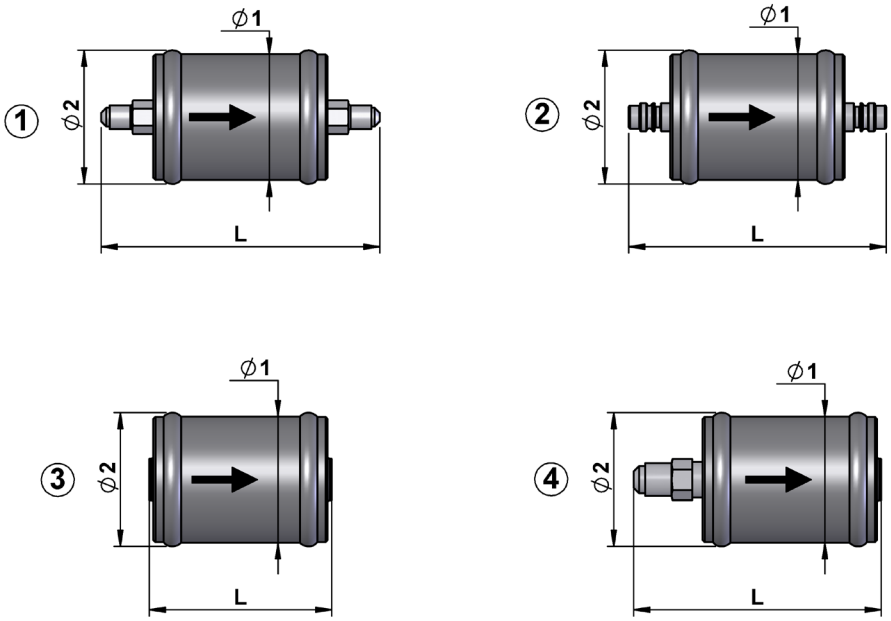
Oil filters

→ HCYF-P14 / 140 bar (2030 psig)

■ Technical features

CARLY references	Connections To screw SAE inch	Connections To solder ODF inch	Connections To solder ODF mm	Connections types (1)	Drawing Nb	Filtering surface cm²	Dimensions mm Ø1	Ø2	L
HCYF-P14 52	1/4			1	1	70	60	64	134
HCYF-P14 52 FF	1/4 G (BSP)				3	70	60	64	88
HCYF-P14 52 S/MMS		1/4	6	4	2	70	60	64	124
HCYF-P14 53	3/8			1	1	70	60	64	150
HCYF-P14 53 S/MMS		3/8	10	4	2	70	60	64	124
HCYF-P14 53-2 MF (2)	SAE - 3/8 SAE M - 1-4 G F				4	70	60	64	118

(1) *Chapter "Connection features and drawings" (refer to chapter 114 of CARLY technical catalogue).*
(2) *UL application submitted, currently Under review.*



CARLY references	Volume V L	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)
HCYF-P14 52	0,11	140	15	120	-40	-30	Art4§3
HCYF-P14 52 FF	0,11	140	15	120	-40	-30	Art4§3
HCYF-P14 52 S/MMS	0,11	140	15	120	-40	-30	Art4§3
HCYF-P14 53	0,11	140	15	120	-40	-30	Art4§3
HCYF-P14 53 S/MMS	0,11	140	15	120	-40	-30	Art4§3
HCYF-P14 53-2 MF (3)	0,11	140	15	160	-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 volume, according to PED 2014/68/EU (refer to chapter 0 of CARLY technical catalogue).*
(3) *UL application submitted, currently Under review.*

CYCO$_2$-EN - 45.11-4 / 05-2026

Oil filters

→ HCYF-P14 / 140 bar (2030 psig)

■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
HCYF-P14 52	1,20	1,07	1
HCYF-P14 52 FF	1,15	1,02	1
HCYF-P14 52 S/MMS	1,20	1,07	1
HCYF-P14 53	1,20	1,07	1
HCYF-P14 53 S/MMS	1,20	1,07	1
HCYF-P14 53-2 MF (1)	1,20	1,07	1

(1) UL application submitted, currently Under review.

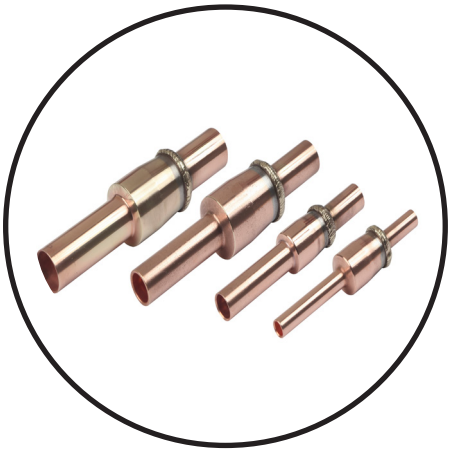
Check valves

CYCO$_2$-EN - 62.5-4 / 05-2026

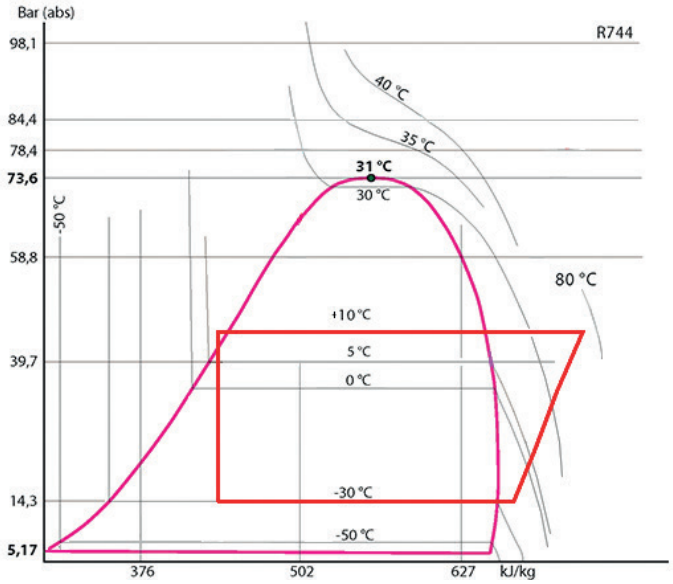
→ CRCY-P9 / 90 bar (1305 psig)

■ Applications

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



CO2 SUBCRITICAL AND TRANSCRITICAL



■ Functional features

- Products are compatible with HFC, HFO and 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.
- 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.
- 7 models with connections to braze (from 1/4" to 5/8" and from 6 to 16 mm).

■ CARLY advantages

- Maximum working pressure : up to 90 bar with CO_2 in subcritical and transcritical compression systems.
- 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-P9 requires no specific fixing.

Check valves

→ CRCY-P9 / 90 bar (1305 psig)

■ Warning

Before selecting or installing any component, please refer to the chapter 0 of CARLY technical catalogue - **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 of CARLY technical catalogue – **GENERAL ASSEMBLY PRECAUTIONS**.

■ Recommendations specific to the check valves CRCY-P9

- 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. The minimum ΔP must be respected.
- 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 of CARLY technical catalogue). Indeed, excessive overheating of the valve may damage the internal PTFE gasket and make it inoperative.

Check valves

CYCO$_2$-EN - 62.5-4 / 05-2026

→ CRCY-P9 / 90 bar (1305 psig)

■ Special precautions for components used with CO_2 in sub. and transcritical systems

- The maximal working pressure and the power variations of the installation must be taken into account as of its design, in order to select all the components consequently.
- The pressure of the circuit during the stop phases must also be taken into account, because it can be very high, due to the pressure equalization according to the ambient temperature; several solutions exist to limit and control this pressure when the installation is stopped.
  - Design of the installation allowing to resist to this pressure.
  - Implementation of a « buffer » volume of storage or expansion (receiver).
  - Installation of a secondary circuit with valve or solenoid valve, allowing the fluid transfer to the coldest point, or the less high in pressure of the installation.
  - Implementation of a small separate refrigeration unit, to maintain the liquid temperature at a pressure lower than the maximal working pressure ; it is so far the most effective technical solution, but with a major drawback, which is the power failure (safety unit to be considered, or backup power supply).
- The hot gas defrost, frequently used with CO_2 for low temperatures applications, generates also high pressures (to take in consideration)
- The implementation on the liquid line of a filter drier **DCY-P14,** or a filter drier shell **BCY-P14** equipped with drying cores **CCY 48 HP** or **PLATINIUM 48,** is highly recommended. Serious problems can occur in the presence of moisture, such as expansion valve blocking and formation of dry ice and even carbonic acid. To avoid this, it is imperative to limit the circuit openings in order to avoid air introduction, causing the condensation in the pipes, and to proceed to a high evacuation of the installation, before any commissioning or restarting.
- For an operation with CO_2 at low temperature, provide thermal insulation on the components which can be covered by frost.
- There is no incompatibility between CO_2 and the main metallic materials commonly used in refrigeration systems (steel, copper, brass...)
- On the other hand, there is a real compatibility issue between CO_2 and polymers. For example, swelling phenomena and internal explosion of the seal are possible. Carly check valves CRCY-P9 do not have polymer gaskets.

■ Selection table CRCY-P9

CARLY references	Connections To solder ODF inch	CARLY references	Connections To solder ODF mm	Δ P (1) bar	kv (2) m³/h
CRCY-P9 2 S	1/4	CRCY-P9 2 MMS	6	0,06	0,69
CRCY-P9 3 S	3/8	CRCY-P9 3 MMS	10	0,06	1,75
CRCY-P9 4 S	1/2	CRCY-P9 4 MMS	12	0,05	3,27
CRCY-P9 5 S/MMS	5/8	CRCY-P9 5 S/MMS	16	0,05	3,64

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

(2) 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).

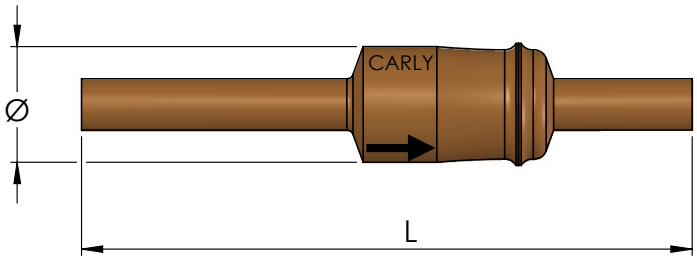
CYCO$_2$-EN - 62.5-4 / 05-2026

Check valves

→ CRCY-P9 / 90 bar (1305 psig)

■ Technical features

CARLY references	Connections To solder ODF inch	CARLY references	Connections To solder ODF mm	Dimensions mm	
				Ø	L
CRCY-P9 2 S	1/4	CRCY-P9 2 MMS	6	18	95
CRCY-P9 3 S	3/8	CRCY-P9 3 MMS	10	18	95
CRCY-P9 4 S	1/2	CRCY-P9 4 MMS	12	27	117
CRCY-P9 5 S/MMS	5/8	CRCY-P9 5 S/MMS	16	27	117



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-P9 2 S	1/4	CRCY-P9 2 MMS	6	90	15	140	-40	-30	Art4§3
CRCY-P9 3 S	3/8	CRCY-P9 3 MMS	10	90	15	140	-40	-30	Art4§3
CRCY-P9 4 S	1/2	CRCY-P9 4 MMS	12	90	15	140	-40	-30	Art4§3
CRCY-P9 5 S/MMS	5/8	CRCY-P9 5 S/MMS	16	90	15	140	-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 to CARLY technical catalogue).

■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
CRCY-P9 2 S & MMS	0,07	0,06	1
CRCY-P9 3 S & MMS	0,07	0,06	1
CRCY-P9 4 S & MMS	0,16	0,15	1
CRCY-P9 5 S/MMS	0,21	0,20	1

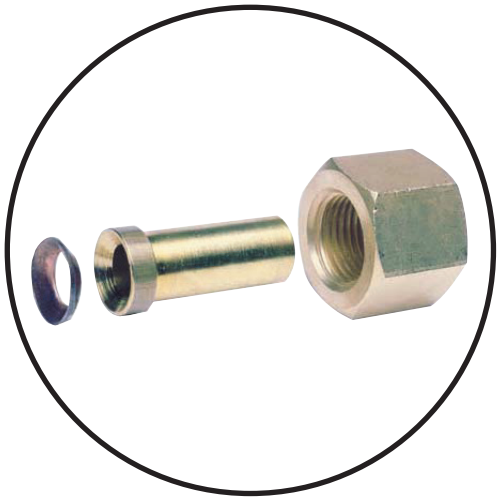
Connection sets

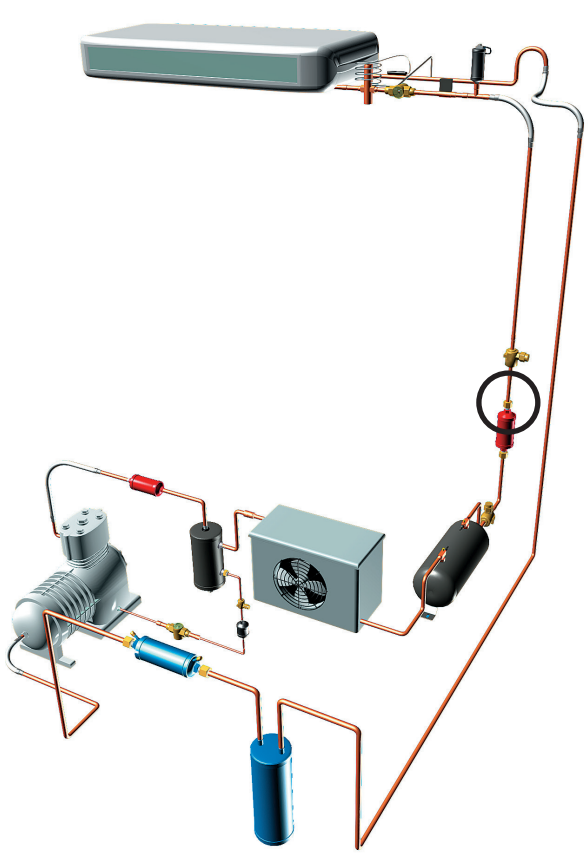
CYCO$_2$-EN - 71.1-9 / 05-2026

→ KRCY

■ Applications

- The connection sets can be used with all line components equipped with SAE connections to screw, in refrigerating and air conditioning installations.
- They ensure perfect air-tightness, even after several replacements of components, and facilitate maintenance conditions.





■ Functional features

- Products are compatible with HFCs, HCFCs, HFOs, HC, CO_2 as well as with their associated oils and additives. Products designed for use with non-hazardous refrigerants from Group 2 and hazardous refrigerants from Group 1 of PED 2014/68/EU.
- Product classification in CE categories is performed using the PED 2014/68/EU table, corresponding to a nominal diameter-based selection.
- The connection sets are composed of a brass dudgeon, a brass nut and a guided copper ring (except KRCY 6 S/MMS).
- The dudgeon is brazed on the piping on one side and the nut is screwed on a component on the other; the guided copper ring is positioned at the end of the dudgeon, in a specifically designed housing.
- For each model, connection sets are supplied in plastic bags containing 10 complete sets each. To avoid any risk of deterioration, 10 copper seals are packed in a reinforced cardboard box.

■ CARLY advantages

- Maximum working pressure 140 bar.
- Compared with a traditional mounting (dudgeon on copper piping), the connection sets:
  - → ensure higher air tightness
  - → increase the connection's reliability in time
  - → allow numerous mountings and removals of components, at a lower cost and without work hardening or rupture of the piping dudgeon, which are major sources of refrigerant leaks.

CYCO$_2$-EN - 71.1-9 / 05-2026

Connection sets

→ KRCY

■ 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 connection sets KRCY

- When mounting the connection sets, it is imperative to ensure a good positioning of the copper gaskets in their housing, in order avoid them any abnormal deformation during tightening.
- The tightening of the connection sets on the components must imperatively be made with two open-end spanners, in order to avoid the twisting of the pipes, and the deterioration of their brass nut (tightening with pliers proscribed).
- It is imperative to respect the tightening torques listed in the table below.
- After each removal, imperatively replace the copper gaskets.
- KRCY kits are made of brass and copper. It is essential to check chemical compatibility with the refrigerant and oil used.

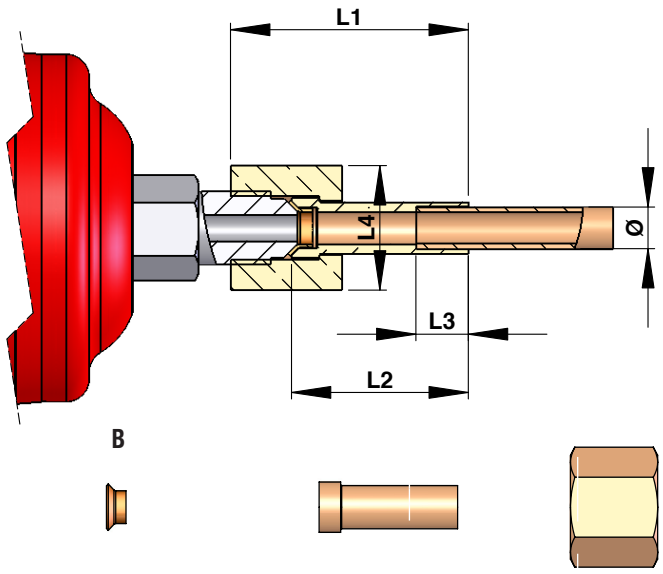
CYCO$_2$-EN - 71.1-9 / 05-2026

Connection sets

→ KRCY

■ Technical features

CARLY references	Connections To screw SAE inch	Connections To solder Ø ODF inch	CARLY references	Connections To screw SAE inch	Connections To solder Ø ODF mm	Gasket type	Dimensions mm L1	L2	L3	L4 upper faces	Maximum tightening torque N.m
KRCY 2 S	1/4	1/4	KRCY 2 MMS	1/4	6	B	36	27	8	19	20
KRCY 3 S	3/8	3/8	KRCY 3 MMS	3/8	10	B	41	31	12	24	45
KRCY 4 S	1/2	1/2	KRCY 4 MMS	1/2	12	B	46	33	12	27	60
KRCY 5 S/MMS	5/8	5/8	KRCY 5 S/MMS	5/8	16	B	51	35	15	30	80
KRCY 6 S	3/4 BSP	3/4	KRCY 6 MMS	3/4 BSP	18	A	55	37	15	36	85
KRCY 23 S	3/8	1/4	KRCY 23 MMS	3/8	6	B	37	27	8	24	45
KRCY 34 S	1/2	3/8	KRCY 34 MMS	1/2	10	B	44	31	12	27	60



Copper gasket (before 2004 for every KRCY)

Guided copper gasket (since 2004 except KRCY 6)

Brass dudgeon

Brass nut

Reference	CARLY References Nominal diameter DN inch	Reference	Nominal diameter DN mm	Operating pressure (1) maximal G1 & G2 bar	BT bar	Operating temperature (1) maximal TS maxi °C	minimal TS mini °C	TS BT °C	CE Category (2) With fluids G2 A1 et A2L	With fluids G1 A2L, A2 et A3
KRCY 2 S	1/4	KRCY 2 MMS	6	140	/	120	-40	/	Art 4§3	Art 4§3
KRCY 3 S	3/8	KRCY 3 MMS	10	140	/	120	-40	/	Art 4§3	Art 4§3
KRCY 4 S	1/2	KRCY 4 MMS	12	140	/	120	-40	/	Art 4§3	Art 4§3
KRCY 5 S/MMS	5/8	KRCY 5 S/MMS	16	**46**	/	120	-40	/	Art 4§3	Art 4§3
KRCY 6 S	3/4	KRCY 6 MMS	18	**46**	/	120	-40	/	Art 4§3	Art 4§3
KRCY 23 S	1/4	KRCY 23 MMS	6	140	/	120	-40	/	Art 4§3	Art 4§3
KRCY 34 S	3/8	KRCY 34 MMS	10	140	/	120	-40	/	Art 4§3	Art 4§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).

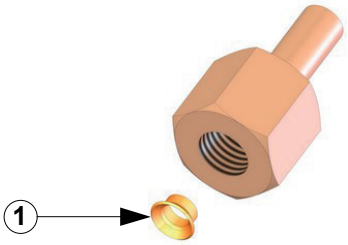
CYCO$_2$-EN - 71.1-9 / 05-2026

Connection sets

→ KRCY

■ Spare parts

CARLY references		Part Nb	Description	Quantity
Types	Spare parts			
2 S/MMS before 2004	**CY 15590010**	1	Set of 25 copper taper gaskets for 1/4" SAE connection	1
2 S/MMS after 2004	**CY 15590015**	1	Set of 25 guided taper copper gaskets for 1/4" SAE connection	1
3 S/MMS - 23 S/MMS before 2004	**CY 15590020**	1	Set of 25 copper taper gaskets for 3/8" SAE connection	1
3 S/MMS - 23 S/MMS after 2004	**CY 15590025**	1	Set of 25 guided taper copper gaskets for 3/8" SAE connection	1
4 S/MMS - 34 S/MMS before 2004	**CY 15590030**	1	Set of 25 copper taper gaskets for 1/2" SAE connection	1
4 S/MMS - 34 S/MMS after 2004	**CY 15590035**	1	Set of 25 guided taper copper gaskets for 1/2" SAE connection	1
5 S/MMS before 2004	**CY 15590040**	1	Set of 25 copper taper gaskets for 5/8" SAE connection	1
5 S/MMS after 2004	**CY 15590045**	1	Set of 25 guided taper copper gaskets for 5/8" SAE connection	1
6 S/MMS	**CY 15590050**	1	Set of 25 copper taper gaskets for 3/4" SAE connection	1



■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
KRCY 2 S & MMS	0,041	0,040	10
KRCY 3 S & MMS	0,066	0,065	10
KRCY 4 S & MMS	0,091	0,090	10
KRCY 5 S/MMS	0,116	0,115	10

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
KRCY 6 S & MMS	0,186	0,185	10
KRCY 23 S & MMS	0,071	0,070	10
KRCY 34 S & MMS	0,101	0,100	10

- *1 KRCY consists of 1 dudgeon, 1 nut and 1 taper copper gasket.*
- *The KRCY are sold in multiples of 10 pieces.*

CYCO$_2$-EN - 41.1-1 / 05-2026

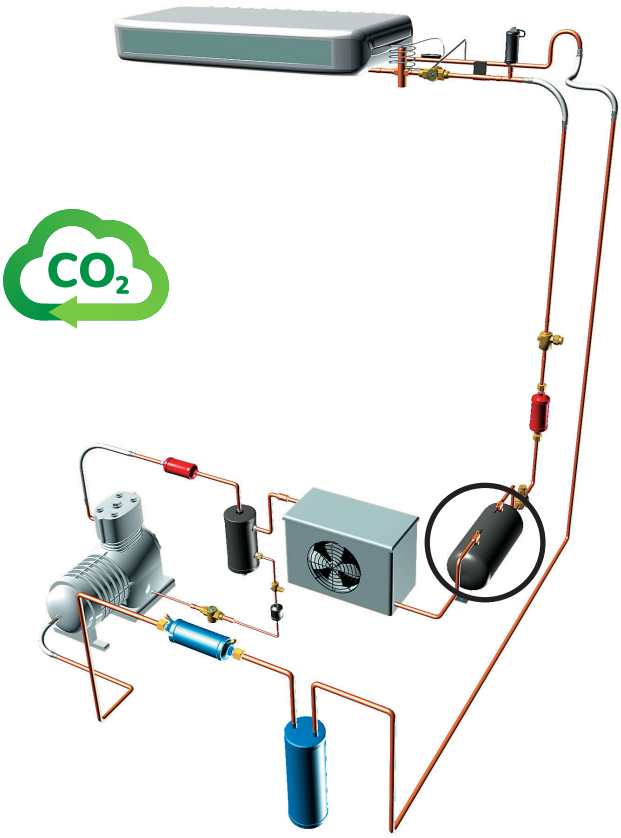
Custom made Liquid receivers

→ RLVCY & RLHCY - P

■ Applications

- Liquid receivers ensure the compensation of refrigerant volume variations in refrigeration and air conditioning units.
- These volume variations are due to fluctuations generated by various operating temperatures at various seasons, and to the opening and closing sequences of the expansion valve, which fills - or not - the evaporator with its refrigerant.
- Liquid receivers also allow storage of the whole installation's refrigerant, for maintenance or breakdown service.

UP TO 160 bar



CO_2

■ Custom made

- Volume **0.5 → 50L**
- Pressure **46 → 160 bar**
- Temperature: **40 and up to 160°C**
- Customized positioning of :
  - → mounting and fastening support
  - → inlet / outlet connections
- Options:
  - → level sensor connection
  - → safety valve connection

To best meet the needs of manufactures and users !

CYCO$_2$-EN - 41.2-1 / 05-2026

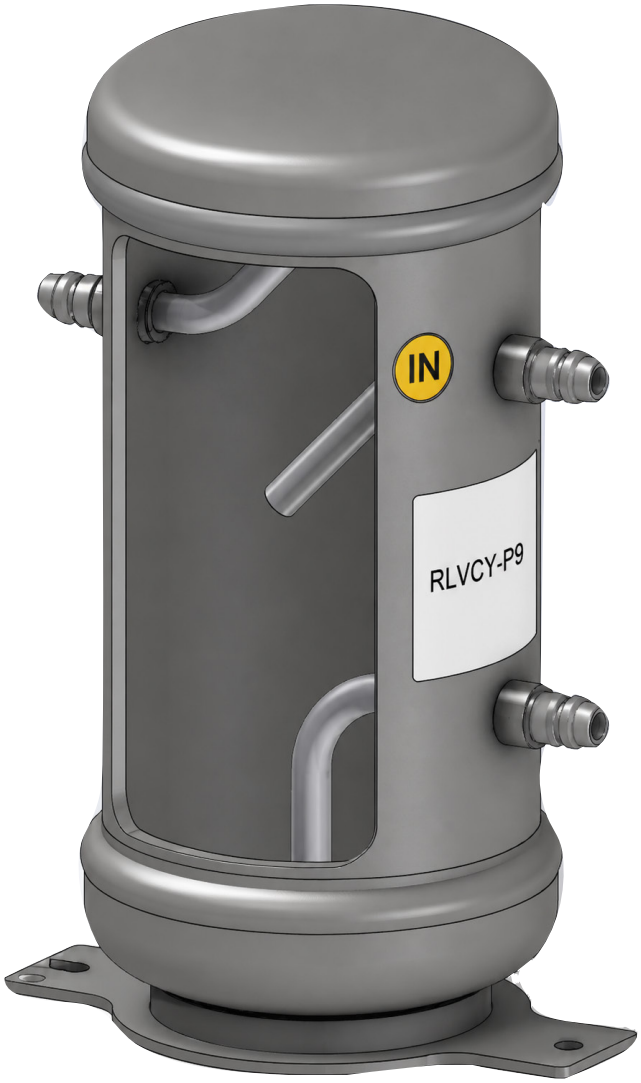
Custom made Liquid receivers

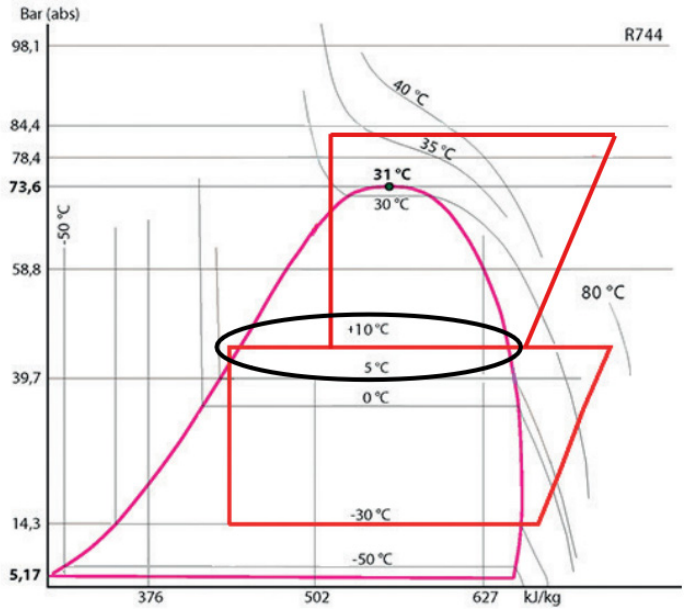
→ FLASH TANK - RECEIVER

■ Applications

UP TO 140 bar

- Flash tank/receivers ensure the compensation of refrigerant volume variations in refrigeration a units.
- Allows for an increase in the COP of CO2 installations.





■ Custom made

- Volume **0.5 → 50L**
- Pressure **46 → 160 bar**
- Temperature: **40 and up to 160°C**
- Customized positioning of :
  - → inlet / outlet connections
  - → internal pipes
  - → horizontal or vertical
- Options:
  - → level sensor connection
  - → heat exchangers

To best meet the needs of manufactures and users !

CYCO$_2$-EN - 41.3-1 / 05-2026

Custom made Oil receivers

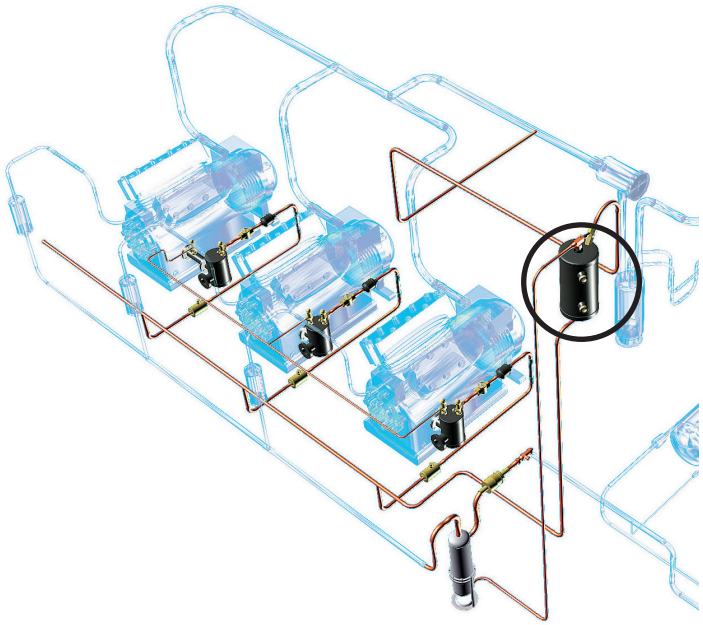
→ HCYR-P

■ Applications

UP TO 140 bar

- Storage of the oil separated from the refrigerant by the oil separator(s) of refrigeration and air conditioning units.
- This oil is then re-distributed to the compressor sumps.

CO_2



■ Custom made

- Volume **0.5 → 50L**
- Pressure **46 → 140 bar**
- Temperature: **40 and up to 160°C**
- Customized positioning of :
  - → inlet / outlet connections
  - → horizontal or vertical
- Options:
  - → level sensor connection
  - → sight glass(es)

To best meet the needs of manufactures and users !

CYCO$_2$-EN - 41.4-1 / 05-2026

Custom made
Suction line accumulators

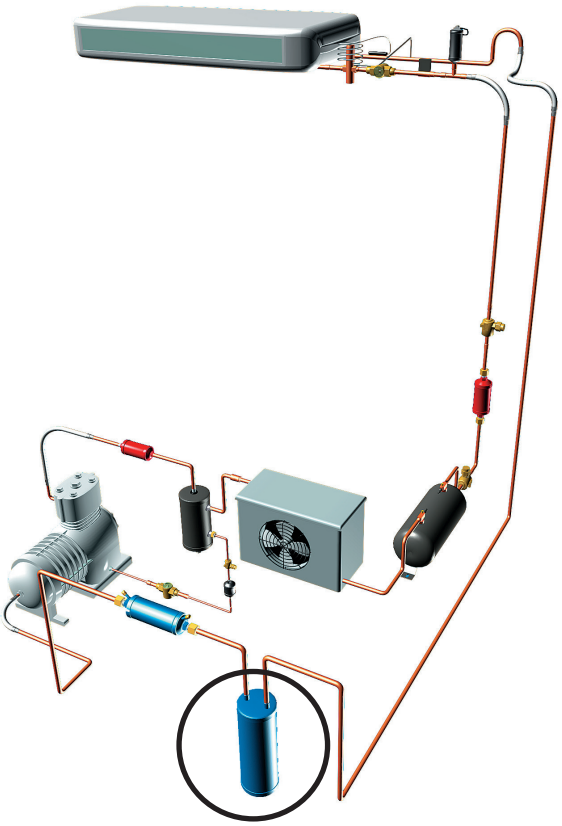
→ LCY-P / LCYE-P

■ Applications

UP TO 100 bar

- Elimination of risks linked to the return of refrigerant in its liquid phase and to the massive oil intake at compressor's suction of refrigeration and air conditioning units.
- The suction line accumulators LCY and LCYE are particularly recommended for installations that are:
  - exposed to sudden thermal load variations,
  - whose piping lengths are important,
  - operating with cycle inversions.

CO_2



■ Custom made

- Volume **0.5 → 50L**
- Pressure **46 → 100 bar**
- Temperature: **40 and up to 100°C**
- Customized positioning of :
  - → mounting and fastening support
  - → inlet / outlet connections
- Options:
  - → level sensor connection
  - → heat exchangers

To best meet the needs of manufactures and users !

CYCO$_2$-EN - 91.1-5 / 05-2026

Acidity tests for refrigerant oils

→ TESTOIL-3P-CO$_2$

The oil acidity content is an important parameter to check because it determines the refrigerating installation's good operating condition.

Two internal chemical processes can alter the oil quality and generate the formation of acids and sludge harmful for the installation:

- the formation of free fluorinated and chlorinated acids produced by alteration of halogen refrigerants;
- the formation of fatty acids by hydrolysis of POE-type oils.

These acids then generate metallic salts and oxides (iron or copper) that could block the oil filter or lead to the copper plating of metallic parts in motion. These degradation phenomena are dangerous for the installation, because they lead to seizing of oil pumps and to severe damage due to lubrication defect.

The new oils (mineral, alkylbenzenes, polyvinylether and polyol-esters) have different acidity indices due to the addition of (anti-wear, antioxidant, anticorrosive…) additives by the manufacturer, in order to reduce mechanical wear and extend the compressor's service life.

■ Applications

- **TESTOILs** ensure monitoring of the mineral, alkylbenzene, polyol-ester, polyvinylether… oils acidity in refrigerating and air conditioning installations.
- Intended for professional use.

■ Functional features

- **TESTOILs** are solvent-based flammable chemical solutions, coming from natural products (they do not contain benzene, or xylene, or toluene).
- **TESTOIL-MAS** is compatible with no additive mineral, alkylbenzene and polyvinylether oils
- **TESTOIL-POE** is compatible with additive polyol-ester oils.
- **TESTOIL-3P-CO$_2$** is compatible with the oils used in CO$_2$ installations (POE, PAG, PAO...).
- Compounds of biodegradable substances.
- Non-toxic for humans : do not contain carcinogenic, mutagenic, toxic to the reproduction compounds.
- Level of VOC (Volatil Organic Compounds): 98 % - 16.9 grams / product.

■ CARLY advantages

- **TESTOILs** are ready for use products, usable on site.
- The measurement process is simple, quick and efficient.
- **TESTOIL-3P-CO$_2$** is specially designed for oils used in CO$_2$ installations (POE, PAG, PAO...).

CYCO$_2$-EN - 91.1-5 / 05-2026

Acidity tests for refrigerant oils

→ TESTOIL-3P-CO$_2$

■ Directions for use

- **TESTOIL** bottles should be opened only for immediate use.
- Pour an oil sample in the bottle.
- Shake and let it rest for 10 seconds until colour stabilisation.
- Observe the test solution colour:
  → Purple: test is satisfactory, oil acidity is correct;
  → Yellow: oil acidity is high, oil should be replaced.

■ Precautions for use

Precautions of use - see the Safety Data Sheet

- Highly flammable liquid and vapour.
- Causes serious eye irritation.
- May cause drowsiness or dizziness.
- Wear eye protection, protective gloves.
- Avoid breathing vapours.
- Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Keep container tightly closed.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Store in a well-ventilated place. Keep cool.
- The test solution colour changes with highly additive oils but this does not mean that they are faulty: it is therefore very important to inquire about the additive contents of the oil used, for a correct interpretation of the result obtained when the acidity test is performed using **TESTOIL**.
- To ensure reliable measurement, shorten the handling time between the oil sampling from the compressor and the opening of the **TESTOIL** bottle.
- Do not swallow.
- The product is solvent-based and should be kept in a cool and dry place.
- Do not expose the product to sun-light.
- Do not use **TESTOIL** in a circuit containing a tracer (the tracer distorts the test's interpretation).

Storage conditions

- Keep the product at temperatures between + 5°C and + 30°C, in a dry and cool place, and protect from sunlight.

Waste treatment

- Used products must be disposed of in accordance with current regulations for hazardous industrial waste.
- Do not dispose into drains or the environment.

■ Technical features

CARLY references	Acid test for oils	Packaging
TESTOIL-MAS	mineral, alkylbenzene and polyvinylether	1 bottle of 30 ml
TESTOIL-POE	polyol-ester	1 bottle of 30 ml
TESTOIL-MP	mineral, alkylbenzene, polyvinylether and polyol-ester	2 bottles of 30 ml
TESTOIL-3P-CO$_2$	polyol-ester, polyalkyleneglycol, polyalphaolefin	1 bottle of 30 ml

■ Weights and packaging

CARLY references	Unit weight kg	Packaging unit
TESTOIL-MAS	0,07	18
TESTOIL-POE	0,07	18
TESTOIL-MP	0,11	16
TESTOIL-3P-CO$_2$	0,07	18

CYCO$_2$-EN - 116.1-12 / 05-2026

Weights and packaging

→ DCYT-P9 / DCYT-P14

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
DCYT-P9 163 S	1,27	1,14	6
DCYT-P9 164 S	1,29	1,16	6
DCYT-P9 165 S/MMS	1,29	1,16	6
DCYT-P9 304 S	1,98	1,85	6
DCYT-P9 305 S/MMS	1,98	1,85	6
DCYT-P9 306 S	2,01	1,88	6
DCYT-P9 307 S/MMS	2,05	1,92	6

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
DCYT-P14 032 S	0,51	0,38	16
DCYT-P14 082 S	0,71	0,58	16
DCYT-P14 083 S	0,71	0,58	16

→ DCY-P6 / DCY-P14

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
DCY-P6 053	0,33	0,30	1
DCY-P6 053 S & MMS	0,33	0,30	1
DCY-P6 164	1,04	1,00	1
DCY-P6 164 S& MMS	1,04	1,00	1
DCY-P6 305	1,57	1,50	1
DCY-P6 305 S/MMS	1,57	1,50	1

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
DCY-P14 052 S/MMS	1,09	0,96	1
DCY-P14 053 S/MMS	1,09	0,96	1
DCY-P14 163 S/MMS	2,23	2,10	1
DCY-P14 164 S/MMS	2,23	2,10	1
DCY-P14 165 S/MMS	2,23	2,10	1
DCY-P14 304 S/MMS	3,03	2,90	1
DCY-P14 305 S/MMS	3,03	2,90	1
DCY-P14 415 S/MMS	4,49	4,36	1

→ BCY-HP

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
BCY-HP 485 S/MMS	4,45	4,20	1
BCY-HP 487 S/MMS	4,55	4,30	1
BCY-HP 489 S & MMS	4,65	4,40	1
BCY-HP 4811 S/MMS	4,70	4,45	1
BCY-HP 4813 S & MMS	4,80	4,55	1
BCY-HP 4817 S/MMS	5,05	4,80	1

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
BCY-HP 967 S/MMS	5,90	5,60	1
BCY-HP 969 S & MMS	5,95	5,65	1
BCY-HP 9611 S/MMS	6,15	5,85	1
BCY-HP 9613 S & MMS	6,25	5,95	1
BCY-HP 9617 S/MMS	6,40	6,10	1

CYCO$_2$-EN - 116.1-12 / 05-2026

Weights and packaging

→ BCY-P6

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
BCY-P6 485 S/MMS	5,22	4,97	1
BCY-P6 487 S/MMS	5,32	5,07	1
BCY-P6 489 S/MMS	5,42	5,17	1
BCY-P6 4811 S/MMS	5,47	5,22	1
BCY-P6 4813 S & MMS	5,57	5,32	1
BCY-P6 4817 S/MMS	5,82	5,57	1

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
BCY-P6 967 S/MMS	6,67	6,37	1
BCY-P6 969 S/MMS	6,72	6,42	1
BCY-P6 9611 S/MMS	6,92	6,62	1
BCY-P6 9613 S & MMS	7,02	6,72	1
BCY-P6 9617 S/MMS	7,17	6,87	1

→ BCY-P14

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
BCY-P14 485 S/MMS	23,70	22,50	1
BCY-P14 487 S/MMS	23,70	22,50	1
BCY-P14 489 S & MMS	23,70	22,50	1
BCY-P14 4811 S/MMS	23,70	22,50	1
BCY-P14 4813 S & MMS	23,70	22,50	1
BCY-P14 967 S/MMS	27,90	26,50	1
BCY-P14 969 S & MMS	27,90	26,50	1
BCY-P14 9611 S/MMS	27,90	26,50	1
BCY-P14 9613 S & MMS	27,90	26,50	1
BCY-P14 9617 S/MMS	27,90	26,50	1

→ CCY / PLATINIUM

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
CCY 42 HP	0,77	0,68	15
CCY 48 HP	0,90	0,79	15
CCY 100 HP	1,75	1,52	6
PLATINIUM 48	0,90	0,79	15
PLATINIUM 100	1,75	1,52	6
CCY 42 N	0,62	0,53	15
CCY 48 N	0,81	0,70	15
CCY 100 N	1,58	1,36	6

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
CCY 42 F	0,13	0,12	6
CCY 48 F	0,26	0,15	15
CCY 100 F	0,24	0,19	6
CCY 42 I	0,11	0,10	6
CCY 48 I	0,21	0,10	15
CCY 100 I	0,24	0,16	6
CCY 48 HU	0,31	0,30	15

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Weights and packaging

→ FILTRY-P9

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
FILTRY-P9 2 S	0,31	0,30	1
FILTRY-P9 3 S	0,31	0,30	1
FILTRY-P9 4 S	0,31	0,30	1
FILTRY-P9 5 S/MMS	0,31	0,30	1

→ FCY-P6

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
FCY-P6 502	0,28	0,25	1
FCY-P6 503	0,28	0,25	1

→ SCY-P6 / SCY-P14

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
SCY-P6 30 S & MMS	0,41	0,38	1
SCY-P6 40 S & MMS	0,41	0,38	1
SCY-P6 50 S/MMS	0,41	0,38	1
SCY-P6 60 S & MMS	1,32	1,27	1
SCY-P6 70 S/MMS	1,32	1,27	1
SCY-P6 90 S	4,15	4,10	1
SCY-P6 110 S/MMS	4,45	4,40	1
SCY-P6 130 S	3,15	3,10	1

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
SCY-P14 30 S/MMS	1,33	1,20	1
SCY-P14 40 S/MMS	1,33	1,20	1
SCY-P14 50 S/MMS	1,33	1,20	1
SCY-P14 60 S & MMS	3,13	3,00	1
SCY-P14 70 S/MMS	3,13	3,00	1
SCY-P14 90 S & MMS	7,13	7,00	1
SCY-P14 110 S/MMS	7,13	7,00	1
SCY-P14 130 S/MMS	16,47	16,13	1

→ TURBOIL-R-P14

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
TURBOIL-R-P14 103 S/MMS	3,00	2,60	1
TURBOIL-R-P14 205 S/MMS	10,00	9,40	1
TURBOIL-R-P14 207 S/MMS	18,00	16,80	1
TURBOIL-R-P14 309 S	30,30	27,90	1
TURBOIL-R-P14 411 S/MMS	49,00	47,00	1

CYCO$_2$-EN - 116.1-12 / 05-2026

Weights and packaging

→ HCYF-P6 / HCYF-P14

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
HCYF-P6 52	0,31	0,28	1
HCYF-P6 53	0,31	0,28	1
HCYF-P6 53 S & MMS	0,31	0,28	1
HCYF-P6 83	0,78	0,75	1
HCYF-P6 84	0,83	0,80	1

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
HCYF-P14 52	1,20	1,07	1
HCYF-P14 52 FF	1,15	1,02	1
HCYF-P14 52 S/MMS	1,20	1,07	1
HCYF-P14 53	1,20	1,07	1
HCYF-P14 53 S/MMS	1,20	1,07	1
HCYF-P14 53-2 MF	1,20	1,07	1

→ CRCY-P9

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
CRCY-P9 2 S & MMS	0,07	0,06	1
CRCY-P9 3 S & MMS	0,07	0,06	1
CRCY-P9 4 S & MMS	0,16	0,15	1
CRCY-P9 5 S/MMS	0,21	0,20	1

→ KRCY

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
KRCY 2 S & MMS	0,041	0,040	10
KRCY 3 S & MMS	0,066	0,065	10
KRCY 4 S & MMS	0,091	0,090	10
KRCY 5 S/MMS	0,116	0,115	10

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
KRCY 6 S & MMS	0,186	0,185	10
KRCY 23 S & MMS	0,071	0,070	10
KRCY 34 S & MMS	0,101	0,100	10

CYCO$_2$-EN - 111.1-12 / 05-2026

Spare parts (classification by reference)

→ CY

CARLY references	Description	Types of products
CCY A 48	Adapter for end core holders	BCY-HP / BCY-P6 / BCY-P14
CY 10810010	1/4" NPT phosphate plug for end plate	BCY-HP / BCY-P6 / BCY-P14
CY 11010900	Adapter for core holders	BCY-P14
CY 11610150	150 microns filtrating sleeve	FILTRY-P9
CY 15552205	O-ring gasket	FILTRY-P9
CY 15552360	End torique gasket	BCY-P14
CY 15555300	Gasket for 48 model core ends	CCY : HP / N / PLATINIUM
CY 15555000	Bag of gaskets for shell end plates: CARLY and for most manufacturers of the market (gaskets: 122 x 114 x 1,6 and 114 x 103 x 1,6)	BCY-HP
CY 15555200	Adhesive gasket for core holders	BCY-HP / BCY-P6 / BCY-P14
CY 15555303	Gasket for flange of oil separators (blue)	BCY-P6
CY 15555601	Gasket for end plate and for flange of oil separator (red)	BCY-HP
CY 19900411	Set of 8 fastening screws for flange	BCY-HP
CY 19900440	Set of 10 fastening screws for flange	BCY-P6
CY 19900700	Set of 12 fastening screws for end plate	BCY-P14
CY 33301200	Flange with gasket and 1/4" NPT plug	BCY-HP
CY 33301203	End plate + gasket + 1/4'' NPT phosphate plug	BCY-P6
CY 33301204	End plate + gasket + 1/4'' NPT phosphate plug	BCY-P14
CY 37001030	Core holder	BCY-HP / BCY-P6 / BCY-P14
CY 37001076	A1 core holder	BCY-HP / BCY-P6 / BCY-P14
CY 37001096	G1 core holder	BCY-HP / BCY-P6 / BCY-P1

CYCO$_2$-EN - 112.1-4 / 05-2026

Correction factors for refrigerating capacities

LIQUID LINE / SUCTION LINE (CO_2 - R744)

The refrigerating capacities values of CARLY products selection tables for the suction and liquid line have been established with:

- Following rate conditions[1]:
  - → T_o = -40 °C
  - → T_k = -10 °C
  - → Flow rate corresponding to the pressure drop caused by the filter of 0.21 bar.
- For different rate conditions, a correction factor must be used that will depend on the refrigerant and on the evaporation and condensation temperatures.
  In order to bring the installation's capacity (Qox) to this reference conditions, apply the following formula:

$$Q_{ox} \times fct = Q_{oREF}$$

- This capacity correction allows rigorous selection of the product to be installed on the refrigerating installation, by referring to the selection tables present in each product-related chapter.

■ Example

- **Installation operating with R744 under the following rate conditions:**
  - → **T_o = – 45 °C**
  - → **Tk = 0 °C**
  - → **Q_{ox} = 100 kW**
- **How to convert the refrigerating installation's capacity to the reference conditions?**

- **Lecture du facteur de correction page 112.10**
  - → T_o = – 45 °C
  - → T_k = 0 °C
  - → R744 Refrigerant

  □ fct = 1.11
- **Application of the formula**

$$Q_{ox} \times fct = Q_{oREF}$$

  - → 100 x 1.11 = **111 kW**

The installation's capacity under the reference conditions is therefore 111 kW.

[1] *Chapter «Abbreviations and units» (refer to chapter 113).*

Correction factors for refrigerating capacities

LIQUID LINE / SUCTION LINE (CO_2 - R744)

■ R744

Condensing temperature T_k °C	Evaporating temperature T_0 °C											
	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50
30	2,11	2,05	2,01	1,98	1,96	1,96	1,95	1,96	1,97	1,98	2,00	2,02
25	1,69	1,66	1,63	1,61	1,60	1,60	1,59	1,60	1,60	1,61	1,62	1,64
20	1,51	1,48	1,46	1,44	1,43	1,43	1,43	1,43	1,43	1,44	1,45	1,46
15	1,38	1,36	1,34	1,33	1,32	1,31	1,31	1,31	1,32	1,32	1,33	1,34
10	1,28	1,26	1,25	1,24	1,23	1,23	1,22	1,23	1,23	1,23	1,24	1,25
5		1,19	1,17	1,16	1,16	1,15	1,15	1,15	1,16	1,16	1,17	1,18
0			1,11	1,10	1,10	1,09	1,09	1,09	1,10	1,10	1,11	1,11
-5				1,05	1,04	1,04	1,04	1,04	1,04	1,05	1,05	1,06
-10					1,00	0,99	0,99	0,99	1,00	1,00	1,00	1,01
-15						0,95	0,95	0,95	0,96	0,96	0,96	0,97
-20							0,92	0,92	0,92	0,92	0,93	0,93
-25								0,88	0,88	0,89	0,89	0,90
-30									0,85	0,86	0,86	0,86
-35										0,83	0,83	0,84
-40											0,81	0,81

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Abbreviations and units

→ ABBREVIATIONS

ARI Air conditioning and Refrigeration Institut.
BSP British Standard Pipe, defines the cylindrical «gas» threading, «Whitworth» profile.
NPT National Pipe Taper, defines the taper threading with which air-tightness is ensured metal on metal, and the link by NPT and NPTF taper threads.
ODF Outside Diameter Female.
ODM Outside Diameter Male.
SAE Society of Automotive Engineers, deals with flare connections.
UNF Unified pipe thread, defines the threading of a part in compliance with the international refrigerating industry Standard (STANDARD DIN 8904) and is equivalent to the SAE threading.
PTFE Polytetrafluoroethylene.
T_o Evaporation temperature.
T_k Condensation temperature.
Q_o Refrigerating capacity.
ΔP Pressure drop or pressure differential.
F_{ct} Correction factor.
Q_k Condensation capacity.
ΔT1 Condensation temperature - water inlet temperature.
TL1 Water inlet temperature.

■ Refrigerants

HFC Hydrofluorocarbon
HCFC Hydrochlorofluorocarbon
CFC Chlorofluorocarbon
HFO Tetrafluoropropen
HC Hydrocarbons
R1…, R2…, R3… Pure refrigerants
R4… : 4 Zeotropic refrigerant (e.g. R404A: «A» defines the mixture)
R5… : 5 Azeotropic refrigerant (e.g. R507)
R6… : 6 Hydrocarbon (e.g. R600)
R7… : 7 Inorganic refrigerant (e.g. R717: 17 = molar mass of NH_3 refrigerant)
(e.g. R744: 44 = molar mass of refrigerant)

■ Oils

Mineral oils: Paraffinic or naphtenic oils, used with CFCs, HCFCs, NH_3, HC, HFO, HFC

Semi-synthetic oils: Mixture of mineral and synthetic oils, used with CFCs, HCFCs, NH_3

Synthetic oils:
AB Alkylbenzenes, used with CFCs, HCFCs, NH_3
PAO Polyalphaolefines, used with CFCs, HCFCs, NH_3
PAG Polyalkyleneglycols, used with R134a and NH_3
POE Polyolesters, used with HFCs
PVE Polyvinylether, used with HFCs
TAN Total Acid Number (mg of potash/g of oil)

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Abbreviations and units

→ UNITS

■ Lengths

Units A	Units SI	Adjustment factor F_{ct}
Inch (in.)	m	0.254
Foot (ft)	m	0.3048
Yard (yd)	m	0.9144

Unit $_{SI}$ = Unit $_A$ x F_{ct}
Unit $_A$ = Unit $_{SI}$ / F_{ct}

■ Volumes

Units A	Units SI	Adjustment factor F_{ct}
Cubic inch (cu.in)	m^3	$16.387.10^{-6}$
Cubic foot (cu.ft)	m^3	0.02832
US-Gallon	m^3	0.003785
Imperial-Gallon	m^3	0.004546

Unit $_{SI}$ = Unit $_A$ x F_{ct}
Unit $_A$ = Unit $_{SI}$ / F_{ct}

■ Masses

Units A	Units SI	Adjustment factor F_{ct}
lb (pound)	kg	0.4536
short ton	kg	907.2
long ton	kg	1016

Unit $_{SI}$ = Unit $_A$ x F_{ct}
Unit $_A$ = Unit $_{SI}$ / F_{ct}

■ Mass concentration

ppm Part per million in mass, i.e. 1 milligram of water per kilogram of refrigerant.

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Abbreviations and units

→ UNITS

■ Pressures

Units A	Units SI	Adjustment factor F_{ct}
bar	Pa	100 000
kg/cm^2	Pa	98 070
lb/sq.ft	Pa	47.9
lb/sq.in	Pa	6 895
atm	Pa	101 325
Torr	Pa	133.33
hPa	Pa	100
Mpa	Pa	1 000 000

$Unit_{SI} = Unit_A \times F_{ct}$
$Unit_A = Unit_{SI} / F_{ct}$

- The pressures announced in the technical documentation are expressed in relative values with the atmospheric pressure as reference value.
- Example:
  A maximum working pressure of 42 bar is that read on a manometer whose 0 graduation corresponds to the atmospheric pressure.

■ Temperatures

SI Units: Kelvin (K) or degree Celsius (°C)
0 °C = 273 K

Fahrenheit Degree (°F) 0 °C = 32 °F
Conversion of °C in °F: $t_{oF} = 9/5\ t_{oC} + 32$
Conversion of °F in °C: $t_{oC} = 5/9\ (t_{oF} - 32)$

Abbreviations and units

→ UNITS

■ Energetics

Units A	Units SI	Adjustment factor F_{ct}
kcal/h	W	1.163
Btu/p.hr	W	0.293
Br.u.r (British theoretical unit of refrigeration)	W	5615
Br.ton (Bristish commercial ton of refrigeration)	W	3888
ton (Standard commercial ton of refrigeration)	W	3513
PS (cheval vapeur)	W	735.5
h.p (horse power)	W	745.7
m.kg/s	W	9.804

Unit $_{SI}$ = Unit $_A$ x F_{ct}
Unit $_A$ = Unit $_{SI}$ / F_{ct}

■ Flow rates

Kv coefficient of a valve

$$Kv = \frac{Qv}{\sqrt{\Delta P}}$$

with
Qv: Liquid volume flow rate (m^3/hr)
ΔP: Pressure drop (bar)
Kv represents the volume flow rate of water running through the device for a pressure drop of 1 bar.

■ Electrical power

VA Volt Ampere
V Volt
Ac Alternating current
Hz Hertz
A Ampere
W Watt

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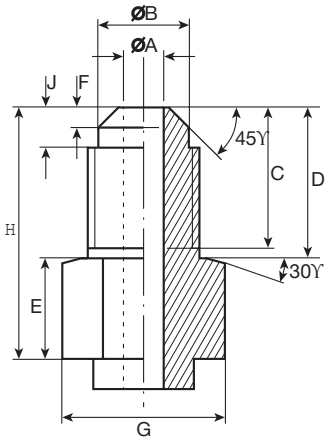
Drawings and connection features

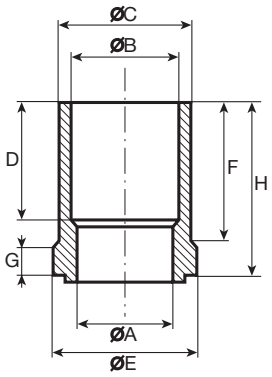
TYPE 1 CONNECTIONS

Connections to screw inch	CARLY size	Number of threads inch	Dimensions mm								
			ØA	ØB	C	D	E	F	G	H	J
1/4 SAE	2	7/16 - 20	4	9	13	15	10	2,0	14	25	4
3/8 SAE	3	5/8 - 18	7	13	17	18	10	2,5	17	28	5
1/2 SAE	4	3/4 - 16	10	16	19	20	10	2,5	22	30	5
5/8 SAE	5	7/8 - 14	13	18	22	23	9	2,3	24	32	5
3/4 BSP	6	1 1/6 - 14	17	23	24	25	11	2,5	30	36	5



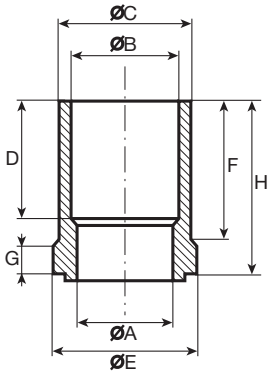
TYPE 2 CONNECTIONS *(in inches)*

Connections to solder ODF inch	CARLY size	Dimensions mm							
		ØA	ØB	ØC	D	E	F	G	H
1/4	2	4,3	6,40	9,40	6	14	12	5	20
3/8	3	8,0	9,60	12,60	9	14	12	6	20
1/2	4	10,0	12,80	15,80	10	22	13	5	20
5/8	5	14,0	16,10	18,95	16	22	13	7	22
3/4	6	17,0	19,15	22,10	17	27	15	8	25
7/8	7	20,0	22,30	25,30	19	34	21	7	32
1		24,0	25,50	28,50	24	34	26	8	37



TYPE 2 CONNECTIONS *(in mm)*

Connections to solder ODF mm	CARLY size	Dimensions mm							
		ØA	ØB	ØC	D	E	F	G	H
6	2	4,3	6,1	9,40	6	14	12	5	20
10	3	8,0	10,1	12,60	9	14	12	6	20
12	4	10,0	12,1	15,80	10	22	13	5	20
16	5	14,0	16,1	18,95	16	22	13	7	22
18	6	17,0	18,1	22,10	17	27	15	8	25
22	7	20,0	22,1	25,30	19	34	21	7	32



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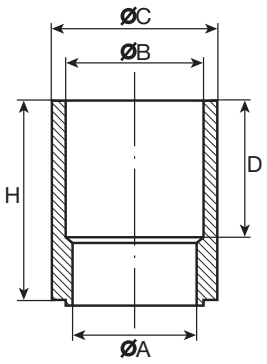
Drawings and connection features

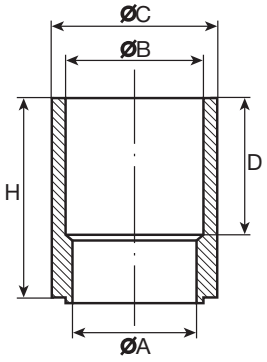
TYPE 3 CONNECTIONS *(in inches)*

Connections to solder ODF inch	CARLY size	Dimensions mm				
		ØA	ØB	ØC	D	H
1 1/8	9	26,0	28,7	34,0	24	37
1 3/8	11	32,0	35,0	40,0	30	47
1 5/8	13	38,0	41,4	45,0	30	47
2 1/8	17	52,3	54,1	60,3	35	62
2 5/8	21	66,1	66,8	76,1	38	74
3 1/8	25	76,3	79,5	88,8	45	85
3 5/8	29	89,0	92,2	101,6	55	92
4 1/8	33	101,7	104,9	114,3	55	100
5 1/8		127,1	130,3	139,7	55	100



TYPE 3 CONNECTIONS *(in mm)*

Connections to solder ODF mm	CARLY size	Dimensions mm				
		ØA	ØB	ØC	D	H
28	9	26,0	28,1	34,0	24	37
35	11	32,0	35,1	40,0	30	47
42	13	38,4	42,1	48,3	30	47
54	17	52,0	54,1	60,3	35	62
67	21	66,0	67,1	76,1	38	74
80	25	79,0	80,1	88,8	45	85
88.9	29	90,0	89,0	101,6	55	92
108	33	102,0	108,1	114,3	55	100
130		127,1	130,1	139,7	55	100



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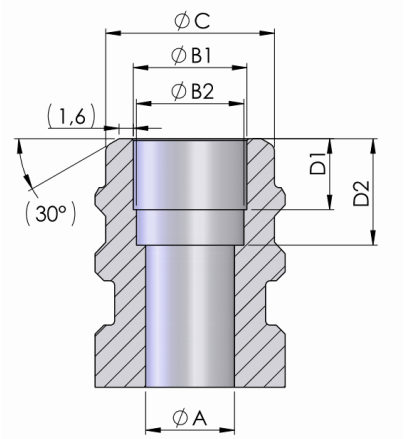
Drawings and connection features

TYPE 4 CONNECTIONS *(in inches and in mm)*

Connections to solder ODF inch	Connections to solder ODF mm	CARLY size	Dimensions mm ØA	ØB1	ØB2	ØC	D1	D2
1/4	6	2	5,5	6,4	6,1	11,0	6	10
3/8	10	3	8,0	10,1	9,6	14,2	6	10
1/2	12	4	10,0	12,8	12,1	19,0	8	12

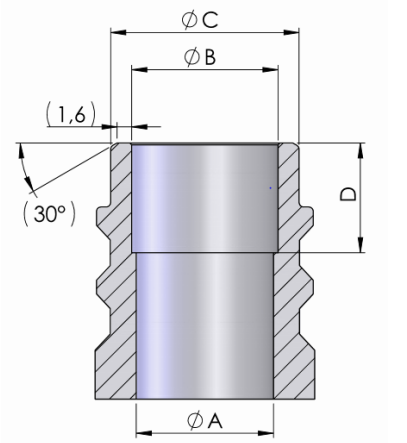


Preparation of the connection ends for:
- Butt-welding according EN 10253
- Brazing according EN 1254

Carbon steel connections - Group 1 or 11 according EN 15608

TYPE 5 CONNECTIONS *(in inches and in mm)*

Connections to solder ODF inch	Connections to solder ODF mm	CARLY size	Dimensions mm ØA	ØB	ØC	D
5/8	16	5	15,0	16,1	20,6	12
3/4	-	6	17,0	19,2	28,0	16
7/8	22	7	20,0	22,3	28,0	18
1 3/8	35	11	32,4	35,1	44,0	30

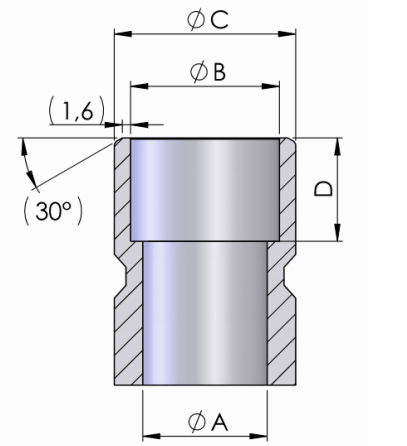


Preparation of the connection ends for:
- Butt-welding according EN 10253
- Brazing according EN 1254

Carbon steel connections - Group 1 or 11 according EN 15608

TYPE 6 CONNECTIONS *(in inches and in mm)*

Connections to solder ODF inch	Connections to solder ODF mm	CARLY size	Dimensions mm ØA	ØB	ØC	D
1 1/8		9	24,0	28,7	35,0	20
	28	9	24,0	28,1	35,0	20
1 5/8		13	32,0	41,4	47,9	30
2 1/8	54	17	51,0	54,2	64,5	35



Preparation of the connection ends for:
- Butt-welding according EN 10253
- Brazing according EN 1254

Carbon steel connections - Group 1 or 11 according EN 15608

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General assembly precautions

USE OF CARLY COMPONENTS

- CARLY components are designed for use with CFCs, HCFCs, HFCs and CO_2 as well as with their associated oils and additives; these are non hazardous refrigerants from group 2 of the Pressure Equipment Directive 2014/68/EU.
  For the use of CARLY components with refrigerants of group I, type hydrocarbons – Propane R290, Butane R600, Isobutane R600a, Propylene R1270, please contact CARLY technical service.
- The label on the products with the CE marking, must remain visible and must not be covered nor damaged.
- Refrigerants used are particularly expansible depending on the temperatures they bear. Consequently, they can produce very important pressure variations, which are function of these temperatures and the areas on which these pressures apply. In consideration of the law of mechanics and fluid thermodynamics, and in order to avoid any phenomenon linked to hydrostatic forces, some precautions are mandatory; for instance, one must ensure that none part of the circuit, and especially none component at any time might be full of liquid without the protection of a device such as a safety valve in order to protect from an overpressure that would excess the maximum working pressure admissible in this part of the installation. This recommendation especially applies to installations using the technology of sub cooling of the refrigerant. Not respecting this rule may have serious material and corporal consequences.
- Pressure equipments present some danger. During their handling, it is mandatory to take the necessary safety measures and to wear the individual protections according to the regulation in force.
- Only a skilled personal (EN 13313) trained and initiated to interventions on refrigeration installations and pressure equipment, and with the qualifications required by the regulation of the country of use, is authorized to install CARLY components.
- Respect admissible pressures and temperatures, indicated on the label or marked on the products.
- Take all the necessary measures in order to avoid liquid hammer phenomenon, especially at the starting-up of the installation.
- It is important to check regularly the pressure drop due to components, and to replace them as soon as they produce a level of pressure drop that could trouble the right working of the installation.

COMPONENT INSTALLATION

- Check that the component and its packaging actually bear the references corresponding to the model selected.
- A close attention must be paid to the preparation and the realization of the assembling, that is to say:
  - Ensure that the tubes are cut in right angle, and that the ends have a perfectly circular shape, without oval ;
  - Eliminate burrs and unevenness due to pipe cut; to be made rather by a pipe cutter than with a saw ;
  - Pipe bending has to be made in a way that avoids modifying the shape of the ends.
- The components and the piping used must be totally clean, dry and sealed at ends, before their use; to that purpose, check that the components' blanking plugs are always properly in place and remove them at the last moment only, just before installing them on the circuit.
- The pipe network of the installation must be as short and compact as possible and must not create oil traps in the lower parts of the network ; suction pipes have to be designed taking into account the oil return to the compressor.
- In order to prevent internal condensation phenomena, the components must be at a temperature higher or equal to the ambient temperature, before being installed.
- Most components have a precise way of mounting that has to be respected, taking into account the direction of the refrigerant flow inside indicated by the word ''IN" marked on the inlet end of the component or an arrow printed on the label.
- Ensure that the component is installed at the right place of the installation and mounted in the right direction (horizontal or vertical).
- Components must not support any additional stresses from the pipes or the supports of any type.

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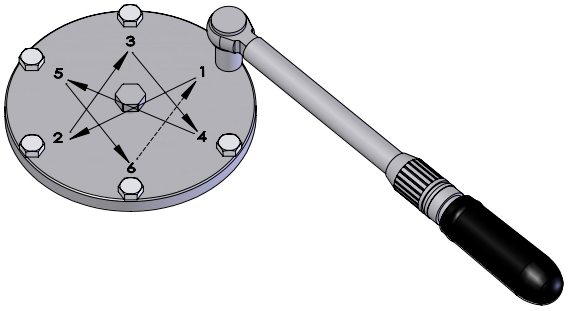
General assembly precautions

COMPONENT INSTALLATION

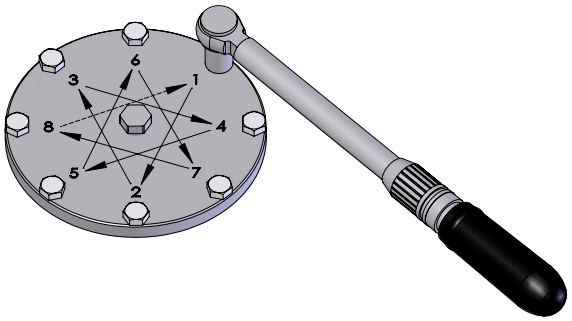
- When installing components with replaceable elements, or accessible for cleaning, such as: BDCY, BCY, BCT-HP, ACY, BBCY, BACY, HCYBF, TURBOIL-F, provide necessary space for their assembly and disassembly. This dimension is specified in the technical characteristics table of the component.

- **Procedure of tightening crossways for flanges of demountable products**
  - After positioning the gasket in the groove of the flange, put the flange back on the component, position all the screws and tighten them by hand until contact.
  - First tightening pass: must imperatively be done crossways and with a relatively low value (see sketch and values hereafter), in order to properly position the gasket.
  - Second tightening pass: must be able to correct de tightening inhomogeneities; the order of tightening the screws staying the same.
  - From the third to the last tightening pass: it must achieve the desired nominal effort; i.e. the specified torque. The screws tightening must always be done in the same order as previously. To give the gasket the time to creep, it is recommended to wait few minutes before doing the last pass.
  - For components with flanges with 10 holes, six tightening passes are recommended in order to achieve the recommended tightening torque.
  - If dispersions exist between the screws, it is recommended to carry out other passes, until obtaining the correct torque on all the screws.
  - The values of torque tightening and the order for the cross tightening of the screws are as follow:

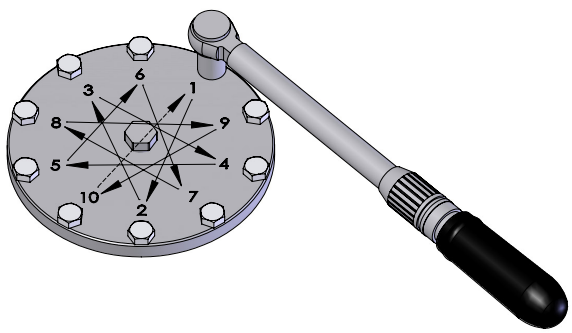
Tightening for screws M8 CL 10-9 - Flange 6 holes BDCY - TURBOIL-F 2505 S/MMS --> 3011 S/MMS	
Stage 1	Tightening the screws by hand
Stage 2	Tightening torque : 5 Nm
Stage 3	Tightening torque : 10 Nm
Stage 4	Tightening torque : 20 Nm
Stage 5	Tightening torque : 30 Nm



Tightening for screws M8 CL 10-9 - Flange 8 holes ACY - BCY - TURBOIL-F 15017 S/MMS --> 30025 S-MMS	
Stage 1	Tightening the screws by hand
Stage 2	Tightening torque : 5 Nm
Stage 3	Tightening torque : 10 Nm
Stage 4	Tightening torque : 20 Nm
Stage 5	Tightening torque : 30 Nm



Tightening for screws M10 CL 10-9 - Flange 10 holes BACY - BBCY - TURBOIL-F 7011 S/MMS --> 9017 S/MMS	
Stage 1	Tightening the screws by hand
Stage 2	Tightening torque : 5 Nm
Stage 3	Tightening torque : 10 Nm
Stage 4	Tightening torque : 20 Nm
Stage 5	Tightening torque : 35 Nm
Stage 6	Tightening torque : 45 Nm
Stage 7	Tightening torque : 55 Nm



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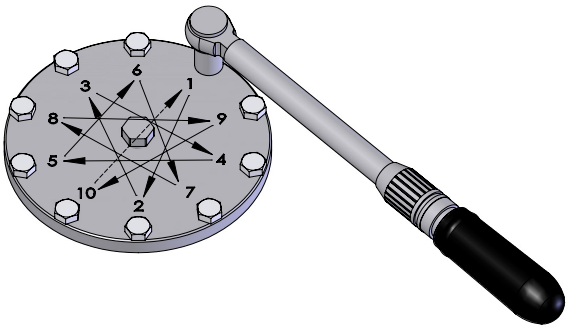
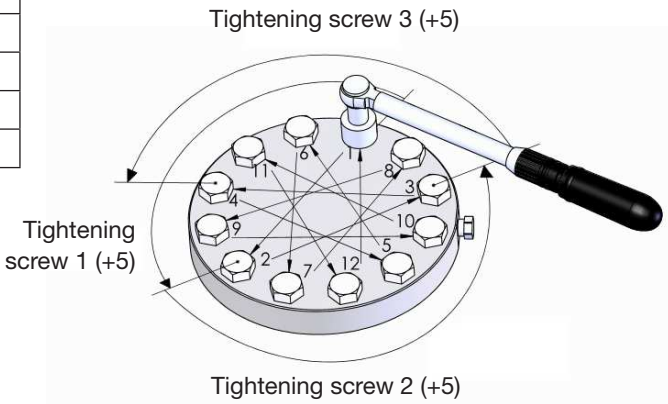
General assembly precautions

COMPONENT INSTALLATION

Tightening for screws M8 CL 10-9 - Flange 10 holes BCY-P6	
Stage 1	Tightening the screws by hand
Stage 2	Tightening torque : 5 Nm
Stage 3	Tightening torque : 10 Nm
Stage 4	Tightening torque : 20 Nm
Stage 5	Tightening torque : 30 Nm



Tightening for screws M 16 CL 8-8 - Flange 12 holes BCY-P14	
Stage 1	Tightening the screws by hand
Stage 2	Tightening torque : 25 Nm
Stage 3	Tightening torque : 50 Nm
Stage 4	Tightening torque : 100 Nm



- Before any intervention, ensure among other things that :
  - The electric part of the installation is confined ;
  - The components to be installed are available, in order not to open the circuit by anticipation ;
  - The components are at ambient temperatures in order to avoid burns. If necessary, wear the appropriate protections ;
  - The installation is empty of refrigerant / gas. Vacuum (-1 Bar) can be made in the products during maintenance operations. During an operation of maintenance, the refrigerant / gas of the installation has to be recovered and recycled in conformity with the regulation in force;
  - The components are protected from bumps in order to avoid damages to the paint and the anticorrosion protection ;
  - The components are protected from seismic and fire risks.
- After each installation or replacement of a component, always check that :
  - The air tightness of this component and its assembling on the circuit, according to the regulation in force ;
  - There is no vibration in the pipe.
- Perform all recommended operations according to the art and to the intervention to perform: circuit rinsing, draining, air tightening, depressurization, refrigerant load…
- The persons responsible for commissioning of CARLY components must ensure that these components will never be exposed to vibration stresses that could cause resonance. Such situation would definitely cause breakage that would be harmful for the installation.
  This monitoring must apply most particularly to “on-board” installations.

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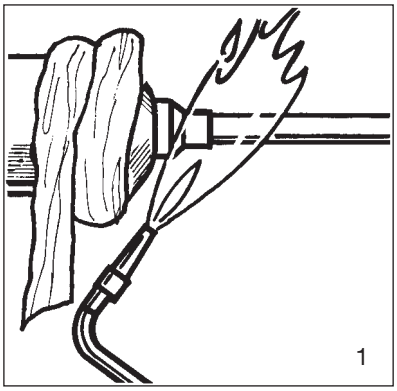
General assembly precautions

ASSEMBLING COMPONENTS WITH SOLDER CONNECTIONS

- Never braze nor solder on an installation charged with non-confined refrigerant (preferably, the refrigerant has to be stored in the liquid receiver).
- Rigorously clean the internal and external fitting surfaces.
- Ensure that the intake material selected matches the materials and refrigerants used.
- The component's body must imperatively be cooled during brazing: with a humid cloth (**sketch No. 1**), or with **CARLYCOOL** calories discharger (refer to chapter 95) in order not to exceed the maximum working conditions of the product.
- Seals and removable internal elements of CARLY flanged products (**BDCY, BCY, BCY-HP, ACY, BBCY, BACY, FILTRY, VCYLS, VCYR**) must absolutely be removed, before the operation of brazing, and reinstalled only after the heated areas have been cooled to the ambient temperature again.
- Some CARLY components contain "Schrader" type access valves. In the case of brazed components, be careful to remove the internal mechanism of these valves before brazing, in order to preserve the built-in gasket (**sketch No. 2**).
- For the brazing of connections, use a wide flame welding torch; this one has to be adjusted in order to ensure a quick and uniform heating of the connections and be oriented only towards them, avoiding any overheating; an excessive heating of the component paint may produce toxic fumes and trigger serious injuries: the brazing of components has to be performed only in perfectly ventilated areas.
- **ATTENTION**: products of brazing and stripper flows may produce some toxic fumes; read carefully the instructions of the different suppliers and follow their safety rules. It is important to plan an efficient suction at the level of the flame, with an appropriate outlet.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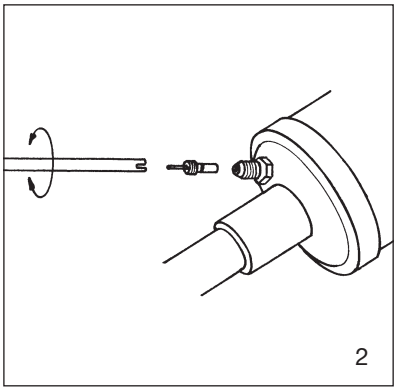
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- The intake metal has to melt at the contact of the heated part, and not at the contact of the flame; on a copper tube, it is important to always move the flame in order to avoid any overheating of the tube; the dark red color is an indicator of the limit temperature not to excess; above this temperature, the copper pipe might suffer irreversible damages; in case of parts with different conductivities or weights, a soft pre heating has to be performed on the part with the highest thermal inertia.
- During brazing, use an inert protection gas inside the component (nitrogen for instance) in order to prevent the formation of oxide particles that are going to contaminate the circuit; the protection gas flow must preferably follow the direction of the product flow, in order to avoid damages to sensitive internal elements (**DCY**s' felt-glass filtrating medium, for instance).
- Check the air tightness (with the leak detector **CARLYLOC**) in order to check there is no leak in the different assembling parts and to be in conformity with the regulations in force.
- Eliminate by brushing the residues of brazing fluxes and the possible dirts present outside the heated surfaces.
- A visual check of the brazing made will be the first mandatory control to make, in order to realize the external state of the brazing; it enables to remark the defaults arising on the area (porosity, bad filling, irregular shape of the brazing cord, link defaults).
- After cleaning, protect the heated areas of steel connectors, by the application of paint or other anticorrosion protection products/devices such as **CARLYCOAT**, or cold galvanization, for instance.
- Always close the ends of used components after replacement, in order to avoid the possible release of refrigerants and oils. The elimination of these components must follow the regulations in force.

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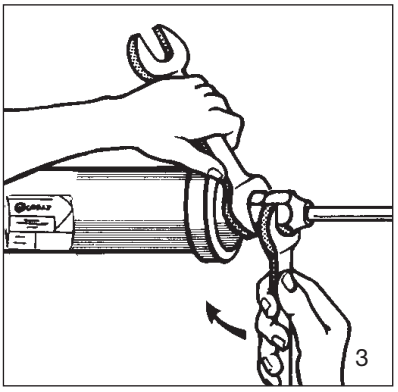
General assembly precautions

ASSEMBLING COMPONENTS WITH SCREW CONNECTIONS

- Never unscrew the components in an installation full of non confined refrigerant (preferably, store the refrigerant in the liquid receiver).
- Systematically check the dudgeon condition on the copper piping, in order to ensure good air tightness of the assembly; if copper gaskets are used, check their good positioning and replace them after each product removal.
- In order to ensure a better confinement of the installations including components with connections to screw on dudgeons, CARLY highly recommends to replace the dudgeon device by the installation of connection sets, type **KRCY**. See photo and chapter 71 of the technical catalogue.

- Tightening of Flare connections should imperatively be performed with two wrenches, positioned on the six faces of the connections, in order to prevent piping twisting (**sketch No. 3**).
- Comply with the tightening torque recommended in the **"Specific recommendations "** chapter for each component concerned.
- Check the air tightness (with the leak detector **CARLYLOC**) in order to check there is no leak in the different assembling parts and to be in conformity with the regulations in force.
- Always close the ends of used components after replacement, in order to avoid the possible release of refrigerants and oils. The elimination of these components must follow the regulations in force.



PERIODICAL INTERVENTIONS

- Plan a periodical control as often as necessary and in conformity with the regulation in force, of the installation air tightness and of the state of the refrigerant and the oil (moisture, acidity, dirt…) in order not to trouble the efficiency of the installation.
- Make a visual check of the external area of all components on the circuit, in order to detect:
  - Bumps ;
  - Points of corrosion ;
  - Traces of refrigerant leak ;
  - Seepage of oil ;
  - Traces of moisture or ice in service ;
  - Vibration of the pipes connected to components ;
  - Damages to component supports.

  Correct the defaults found.
- Monitor the pressure losses of dehydrating, acid neutralizing and filtering components generally located on the liquid, suction and oil lines. Their contaminant neutralization capacities are by definition limited in time. The saturation and obstruction time depends on the contaminant types and amounts and depends of course on the capacity of the component selected.
- After each opening of the circuit, the **DCY**, filter drier or the **CCY 42/48/100 HP** and **PLATINIUM 48/100** drying cores have to be replaced in order to keep the circuit dry enough.
- Replace systematically synthetic air-tightness gaskets after each intervention that requires the dismounting or the opening of flanged products.
- During any intervention, the opening of the refrigeration circuit must be as short as possible; if it were not the case, close the system as hermetically as possible, and charge it with a slight overpressure of dry nitrogen, in order to avoid the introduction of moisture.
- During maintenance operations, the refrigerants of the installation have to be recovered and recycled according to the regulation in force.

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General assembly precautions

SPECIAL PRECAUTIONS FOR COMPONENTS USED IN CO_2 SUBCRITICAL APPLICATIONS

- The maximal working pressure and the power variations of the installation must be taken into account as of its design, in order to select all the components consequently.
- The pressure of the circuit during the stop phases must also be taken into account, because it can be very high, due to the pressure equalization according to the ambient temperature; several solutions exist to limit and control this pressure when the installation is stopped.
  - Design of the installation allowing to resist to this pressure.
  - Implementation of a « buffer » volume of storage or expansion (receiver).
  - Installation of a secondary circuit with valve or solenoid valve, allowing the fluid transfer to the coldest point, or the less high in pressure of the installation.
  - Implementation of a small separate refrigeration unit, to maintain the liquid temperature at a pressure lower than the maximal working pressure ; it is so far the most effective technical solution, but with a major drawback, which is the power failure (safety unit to be considered, or backup power supply).
- The hot gas defrost, frequently used with CO_2 for low temperatures applications, generates also high pressures (to take in consideration)
- The implementation on the liquid line of a filter drier **DCY / DCY-P6 / DCY-P14** or of a drier shell **BCY-HP / BCY-P6 / BCY-P14** equipped with drying cores **CCY HP** or **PLATINIUM**, is highly recommended. Serious problems can occur in the presence of moisture, such as expansion valve blocking and formation of dry ice even carbonic acid. To avoid this, it is imperative to limit the circuit openings in order to avoid air introduction, causing the condensation in the pipes, and to proceed to a high evacuation of the installation, before any commissioning or restarting.
- For an operation with CO_2 at low temperature, provide thermal insulation on the components which can be covered by frost.
- There is no incompatibility between CO_2 and the main metallic materials commonly used in refrigeration systems (steel, copper, brass...)
- On the other hand, there is a real compatibility issue between CO_2 and polymers. For example, swelling phenomena and internal explosion of the seal are possible. Carly components do not have polymer gaskets directly in contact with CO_2.

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General sales terms

■ Updated in December 2013

- **ARTICLE 1 - SCOPE OF APPLICATION**
The present terms and conditions of sale (hereafter CGV) govern the rights and obligations of CARLY SAS (hereafter designated as «CARLY») and its customer, an entity acting in the capacity of an informed professional (hereafter designated as "Customer"), having ordered products from CARLY (hereafter designated as "Products").
In that the products present particular technical specificities, a document called "NOTICE", mentioned in article 10 of the present document, is provided to the Customer before placing any order. This document is available from CARLY upon simple request. It may also be found in the CARLY technical documentation, as well as on the Internet site www.carly-sa.com.
The Customer acknowledges that it has become familiar with the present CGV and the "NOTICE" before placing its order, which it approves and accepts in all their provisions.
Any order from the Customer placed with CARLY is deemed as its adherence without restriction or reservation to the present CGV and to the "NOTICE", which prevail over its eventual terms and conditions of purchase and over any other document to the contrary.

- **ARTICLE 2 - ESTABLISHMENT OF THE CONTRACT**
Any order placed by the Customer is subject to acceptance by CARLY.
The order is considered as firm and definitive from the time of receipt by the Customer of written order confirmation from CARLY, which confirms that said order has been definitively recorded. This confirmation is deemed as the date of establishment of the sales contract and acceptance of the CGV and the NOTICE.
No order confirmed by CARLY may be cancelled by the customer unless this has been approved in writing by CARLY and provided that the Customer fully indemnifies CARLY for any charge or loss borne by it due to this cancellation.

- **ARTICLE 3 - PRICE**
The prices of the products sold are those applicable on the order date. They are expressed in Euro and calculated before taxes, free of packaging costs. The final price indicated on the invoice is set according to the specific terms of the order, after applying possible reductions, and after entering the French VAT, as needed, as well as carriage costs on the order date.
Any carriage cost shall be negotiated upon the order, as well as any express shipping cost. A sale price scale is available on request.
CARLY reserves the right to change its rates at any time. However, CARLY agrees to charge order products at the prices indicated on the order.
Clients based outside metropolitan France should inquire about import duties or taxes that may apply, and shall be responsible for declaring and paying such duties and taxes.

- **ARTICLE 4 - DELIVERY**
Delivery may be made in two ways:
- the Customer takes delivery of the goods ordered in our workshops on the agreed date,
- the delivery is done by a transport company chosen by CARLY. In this case, the timeframes will depend on this company and shall be stated to the Customer, upon request, at the time of order placement.
In any event, the week of shipment indicated at the time of order confirmation is only provided for informational purposes and is under no circumstances guaranteed by CARLY. As a result, no delay in delivery of the Products authorizes the Customer to refuse receipt, cancel the order, delay the payment date for these Products, or request damages from CARLY.

- **ARTICLE 5 - RISKS INCURRED**
All our merchandise, even that delivered carriage free, is sold as accepted in our warehouses.
In any event, the transport risk is borne in totality by the Customer, which has responsibility for verifying the apparent condition of the Products delivered and, in case of damage or loss, for stating all reservations in writing on the waybill and to exercising all recourse against the transporters, which are solely responsible.
CARLY is within its rights to refuse a shipment of Products in case of force majeure or in case of refusal of payment by the Customer for a previous order.

- **ARTICLE 6 - CONFORMITY TO THE ORDER**
No claim will be acknowledged by CARLY unless it is made within a period of FORTY-EIGHT (48) hours following receipt of the Products, by fax or e-mail and by registered letter, and confirmed on the waybill. Beyond this timeframe, the Products of CARLY shall be deemed as conforming in quantity and quality to the order.
No Product return will be able to take place without written approval from CARLY, which implies no acceptance by CARLY of the grounds alleged by the Customer to support the return of the Products.
In case of a delivery that does not conform to the order, the guarantee from CARLY is limited to the supply of replacement Products, to the exclusion of all damages.

- **ARTICLE 7 - CLAUSE OF RESERVATION OF OWNERSHIP**
Ownership of the Products sold shall only be transferred to the Customer after payment of the entire price billed and the VAT. In the event of a collections procedure against the Customer, CARLY reserves the right to reclaim the Products sold and for which payment has not been received. For the duration of the period of reservation of ownership, the risks related to the Products are the responsibility of the Customer once they have been accepted by the transporter or the Customer.

- **ARTICLE 8 - BILLING AND PAYMENT**
The minimum order amount is EUR 350 before taxes.
Payments will have to be sent to the Service Comptable (Accounting Department) of CARLY S.A.S - ZI de Braille - 69380 LISSIEU - FRANCE.
Unless otherwise indicated in writing and agreed by the parties, all invoices are payable in cash before shipment.
The absence of total or partial payment for the Products by the due date results, rightfully and without prior notice, in:
1) the application of a late penalty equal to three times the legal rate of interest, being specified that this rate is equal to the interest rate applied by the Central European Bank to its most recent refinancing operation, increased by 10 percentage points, calculated on the amount including tax remaining due, from the payment due date to the date that it is paid in full,
2) immediate forfeiture of the term of payment for amounts remaining due to CARLY by the Customer and not yet come due. The eventual discounts and rebates that are separate from the invoices are only due to the Customer to the extent that his payments are up-to-date. Furthermore, any prior payment incidents suspend orders in progress.
3) Application of a statutory lump-sum indemnification of € 40 for coverage of collection costs, and full indemnification of costs actually incurred by the company above that amount.

- **ARTICLE 9 - CONFIDENTIALITY**
Studies, drawings, schematics and documents given or sent by CARLY shall remain its property. They shall not be disclosed to any third party for any reason, or performed without its written authorisation, under penalty of damages.

- **ARTICLE 10 - CHARACTERISTICS OF THE PRODUCTS - NOTICE**
To adapt to any legal or regulatory requirement, French or European, as well as for reasons related to safety and technical progress, CARLY reserves the right to modify the characteristics and design of its Products at any time, as well as of those mentioned in an order. The Customer who has placed an order shall be notified about the abovementioned modifications in writing; his absence of opposition, sent by fax or e-mail and by registered letter, is deemed as acceptance of these modifications.
The specificities of these Products require technical validation by the Customer, which is an informed professional. As a result:
1) a document entitled "NOTICE" is attached to any Product description, regardless of the medium, which details said specificities as well as the precautions to be taken by the Customer before any order;
2) only the Product effectively sold enters into the contractual scope, to the exclusion of all catalogues or other documentation describing the Products. In that these commercial documents only offer an initial presentation of the Products, in no way do they engage the liability of CARLY, even if they contain errors.

- **ARTICLE 11 - GUARANTEE**
11.1 The Products of CARLY are guaranteed for ONE (1) year starting from the date of shipment. This guarantee is strictly limited to providing a Product to replace the defective Product. This guarantee shall not be taken into account:
1) if the material is not used under the conditions as stated in the document called "NOTICE", in the written instructions and in the various technical documents of CARLY,
2) if the Customer has not validated the Products beforehand in conformity with the provisions of the NOTICE,
3) for deterioration resulting from the addition of equipment and accessories which are not included among the Products of CARLY,
4) if the Customer modified the equipment without having informed CARLY and provided an explicit plan followed by a written agreement from CARLY. The guarantee clause will not be able to be invoked in case of negligence, accidental damage or normal wear and tear, as well as in case of non-respect of our recommendations.
11.2 Under this guarantee, CARLY accepts to provide the Product which replaces the defective Product after an assessment if its responsibility is demonstrated; the scrapped parts shall be the property of CARLY. For countries outside of the European Union, CARLY reserves the right to return the equipment by boat, and takes responsibility for the freight to the port which best suits the Customer. The cost of land transport from the port to the domicile of the Customer shall be its responsibility.
11.3 In case of default observed during the period of guarantee, it is the responsibility of the Customer to notify CARLY within a period of TWENTY-FOUR (24) hours (otherwise the guarantee will not be able to be applied), and to return the equipment under similar conditions to those of the first shipment, carriage and insurance paid. Proof of said defect is always incumbent upon the Customer. The charges for assembly and disassembly may not be claimed from CARLY. Any returned equipment will obligatorily have to be accompanied by a file which includes the invoice, the conditions of use and the defect observed.
11.4 Our distributors benefit from the manufacturer's guarantee to the limits stated in their own terms and conditions of sale.

- **ARTICLE 12 - SECONDARY DAMAGES / LIABILITY**
12.1 CARLY is not responsible for expenses incurred by the Customer at the time of intervention on the Products such as, notably, labour charges, movement, loss of liquid refrigerant, transport, etc. At any rate and even in the event the Product guarantee specified in article 11 applies, CARLY' liability shall not be involved other than for damages caused to people and property, excluding any trading loss, loss of stored equipment or other losses. The liability of CARLY is strictly limited, all causes combined, to the supply of the replacement Product; said replacement not suspending the initial guarantee and not under any circumstances prolonging its duration. CARLY is only bound towards its Customer, an informed professional, by an obligation of means, not of results. The Customer agrees to render the contractual limits of liability defined in the present CGV as enforceable against its insurers, its own Customer and their insurers.
12.2 The Products bought in continuation of the use of the selection assistance software available on CARLY website or CD, benefit from the guarantee aimed under article 11. Nevertheless, the use of the data and the results provided by the software is done under the full, whole and exclusive responsibility of the buyer. It is for the Customer to verify the relevance and accuracy of results and data suggested by the software compared to the installation and the desired use. In particular, company CARLY cannot be held responsible for the consequences (whatever they are) of using the software or of an error of choice in the software use.

- **ARTICLE 13 - RETURN OF PRODUCT**
Any return must be approved beforehand in writing by CARLY. Any Product whose return has been accepted will be sent to CARLY under similar conditions to those of the initial shipment, carriage and insurance paid by the Customer. No return may call into question the various payment due dates, even in case of return with involvement of the guarantee, with any payment default being deemed as termination of said guarantee. If equipment is taken back, a reduction of a minimum of THIRTY (30) % shall be taken from the initial purchase price, subject to the returned material being in perfect condition, excluding repackaging charges.
The possibility of the return of merchandise does not involve specially manufactured items (not in the catalogue).

- **ARTICLE 14 - ASSIGNMENT OF JURISDICTION / CORRESPONDENCE**
The present CGV are drafted in the French language, which is the only applicable version in case of a dispute. They are subject to French law.
Any dispute relative to the interpretation, execution or termination of the contract of sale established between the Customer and CARLY is subject to French law. The invalidity of one of the present provisions shall not result in the invalidity of the other provisions. In the absence of an amicable agreement, the dispute shall be brought before the Commerce Court of LYON.
All correspondence must be sent to the company headquarters of CARLY:
- By postal mail to: CARLY S.A.S - ZI de Braille - 69380 LISSIEU - FRANCE.
- By fax to: +33 (0)4.78.47.36.98
- By email to: info@carly-sa.com.

Carly

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