

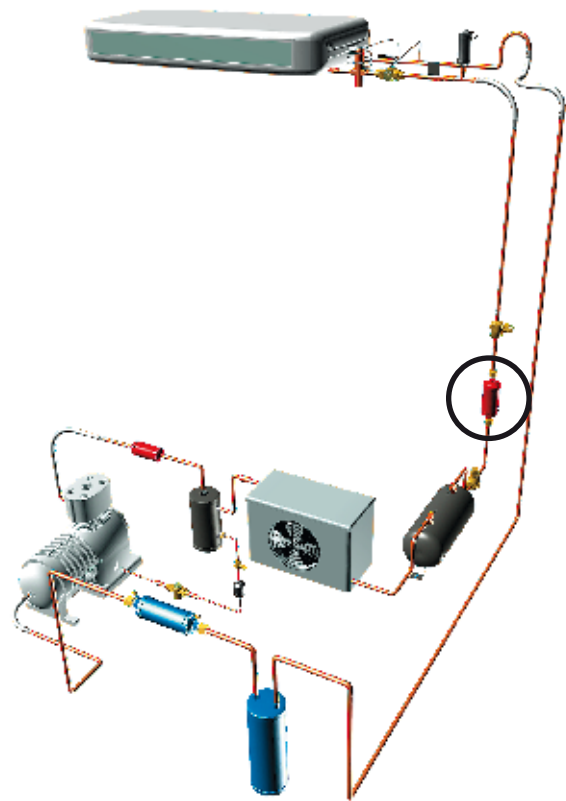


Anti-acid filter driers with liquid sight glass

→ TSGY

■ Applications

- Filtration, drying, and acid neutralization of the refrigerant thanks to the filter drier, and monitoring of the refrigerant state (liquid, humidity) thanks to the liquid sight glass.



■ Functional features

- Products are compatible with CFCs, HCFCs, HFCs, CO₂s, as well as with their associated oils and additives. Products are designed for use of non-hazardous refrigerants from group 2 of PED 97/23/EC. To use CARLY components with fluids of the hydrocarbon group 1 – Propane R290, Butane R600, Isobutane R600a, Propylene R1270 – with HFOs and transcritical CO₂ and for a RANKINE organic cycle application, contact CARLY technical department.
- Product classification in CE categories is done with the PED 97/23/EC table, corresponding to a volume-based selection.
- External steel body hermetically sealed and painted for the filter drier and body made of stamped brass for the liquid indicator, ensure for both of these assembled components 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.
- Visualisation of refrigerant through glass.
- A moisture indicator sensitive to moisture and resistant to acids is positioned under the glass.
- Moisture presence is characterised by a modification of the indicator colour; this modification is reversible.

Possible customization on request:

- Combination specific filter driers / sight glasses (out of catalogue)

■ CARLY advantages

- Maximal working pressure: 42 bar.
- Great drying and acid neutralization 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.
- Drying ensured for the subcritical CO₂ applications at low temperatures.
- A dispenser located at the intake ensures optimal distribution and permanent treatment of the whole refrigerant, inside the filter drier.
- The large size of the glass and the absence of a central hygroscopic tip ensure excellent visibility.
- The sealed design and the seaming principle of the chosen glass ensure perfect air-tightness.
- Two products assembled and controlled in factory, guarantee a perfect air-tightness between the two components.
- GOST certified products.



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■ Warning

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

■ General assembly precautions

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

- Some are specific to each component, and in this case, they are specified in the

RECOMMENDATIONS SPECIFIC part defined hereafter ;

- Other are general to all CARLY components, they are presented in the chapter 115 – **GENERAL ASSEMBLY PRECAUTIONS**.

- The recommendations relating to the CARLY components for the subcritical CO₂ applications are also developed in chapter 115 – **GENERAL ASSEMBLY PRECAUTIONS**.

■ Recommendations specific to the TSGY filter driers with liquid sight glass

- The filter driers with liquid indicator are to be installed on the liquid pipe between the receiver and the expansion valve.
- 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.
- 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 dirt filters (refer to chapter 11); these liquid hammer phenomena can originate from other sources, in long piping installations.
- Never install the filter driers in an area of the circuit that can be isolated.
- Never trap a 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 VCYL indicates an abnormal humidity content
 - when the pressure loss measured in the filter drier is too high
 - at least once a year as a measure of precaution
- A filter drier saturated in humidity no longer retains the water molecules which circulate then in the circuit ; these molecules in contact with other materials and with the POE oils which are very hydrophilic are liable to form acids which can be fatal for the installation ; therefore, it is very important to use filter driers containing activated alumina in order to neutralise as rapidly as possible the acids present in the circuit and not filter driers with molecule sieve only.
- Filter drier efficiency and refrigerant moisture content should be checked by the sight glass.
- The presence of humidity is rapidly indicated ; on the other hand, the hygroscopic ring indicates a return to the normal situation only a few hours after the filter drier is implemented.
- Make sure that the piping can support without deformation the weight of the filter drier with liquid indicator ; otherwise, provide for the attachment of the dewatering filter with a clamp on a stable part of the installation.



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■ Selection table

CARLY references	Flare connections SAE inch	Refrigerating capacity kW ⁽¹⁾					Dehydratable refrigerant capacity kg of refrigerant ⁽²⁾						
		R22	R134a	R404A R507 R407F	R407C R410A	R744 CO ₂ ⁽³⁾	R22 R407C R407F		R134a R410A		R404A R507		R744 CO ₂
							24 °C	52 °C	24 °C	52 °C	24 °C	52 °C	
TSGY 052	1/4	8,5	8,0	6,0	8,5	9,5	9,5	9,0	11,5	10,0	9,5	8,0	5,8
TSGY 082	1/4	9,0	8,5	6,5	9,0	10,1	15,0	14,5	16,5	15,0	14,5	13,5	9,1
TSGY 083	3/8	24,0	23,0	17,0	24,5	26,9	15,0	14,5	16,5	15,0	14,5	13,5	9,1
TSGY 163	3/8	24,5	24,0	18,0	25,0	27,4	40,0	34,0	50,0	37,0	38,0	31,0	24,3
TSGY 164	1/2	41,5	40,0	32,0	43,0	46,5	40,0	34,0	50,0	37,0	38,0	31,0	24,3

⁽¹⁾ Refrigerating capacities according to Standard ARI 710-86 for $T_o = -15\text{ °C}$, $T_k = 30\text{ °C}$ and $\Delta p = 0.07\text{ bar}$.
If different conditions, refer to correction factors in chapter 112.

⁽²⁾ Dehydratable refrigerant capacity according to Standard ARI 710-86.

⁽³⁾ Refrigerating capacities Q_n for $T_k = -10\text{ °C}$ and $T_o = -40\text{ °C}$
 For $T_k = 0\text{ °C}$ $Q_o = Q_n + 12\%$, For $T_k = -20\text{ °C}$ $Q_o = Q_n - 10\%$,
 For $T_o = -30\text{ °C}$ $Q_o = Q_n - 2\%$, For $T_o = -20\text{ °C}$ $Q_o = Q_n - 6\%$

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

Example of the selection of a TSGY dewatering filter with liquid indicator for the dewatering part of the product : see example of selection of a DCY filter drier in chapter 1.

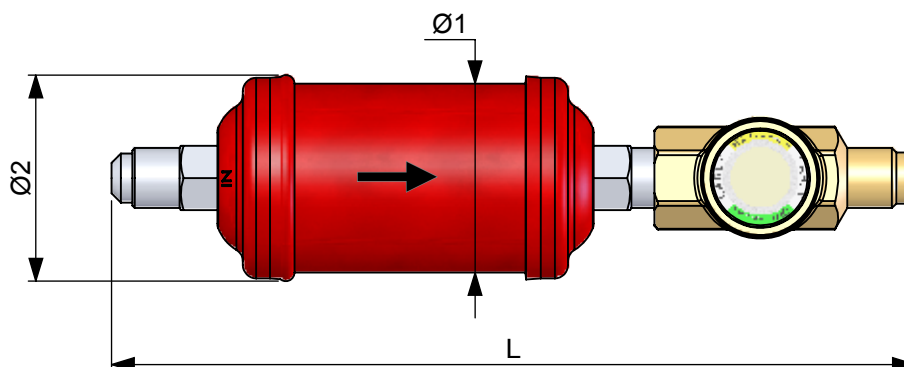


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■ Technical features

CARLY references	Filtering surface cm ²	Volume of desiccation products cm ³	Dimensions		
			Ø1 mm	Ø2 mm	L mm
TSGY 052	52	82	50	55	171
TSGY 082	52	130	50	55	199
TSGY 083	52	130	50	55	213
TSGY 163	102	322	70	76	233
TSGY 164	102	322	70	76	239



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	
TSGY 052	0,12	42	/	80	-20	/	Art3§3
TSGY 082	0,16	42	/	80	-20	/	Art3§3
TSGY 083	0,17	42	/	80	-20	/	Art3§3
TSGY 163	0,40	42	/	80	-20	/	Art3§3
TSGY 164	0,42	42	/	80	-20	/	Art3§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 97/23/EC (refer to Chapter 0).

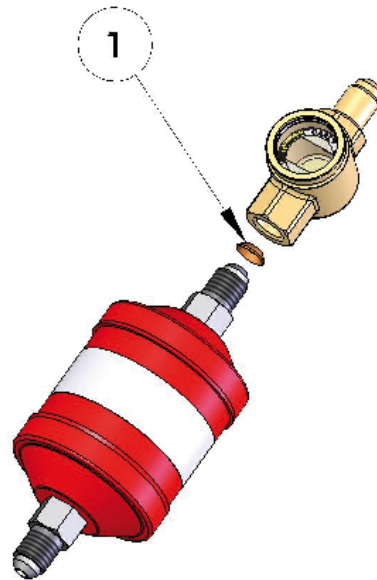


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■ Spare parts

CARLY references	Part N°	Description	Types	Quantity
CY 15590015	1	Set of 25 guided taper copper gaskets for 1/4" SAE (flare) connections	TSGY 052 TSGY 082	1
CY 15590025	1	Set of 25 guided taper copper gaskets for 3/8" SAE (flare) connections	TSGY 083 TSGY 163	1
CY 15590035	1	Set of 25 guided taper copper gaskets for 1/2" SAE (flare) connections	TSGY 164	1



■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
TSGY 052	0,48	0,45	24
TSGY 082	0,59	0,55	16
TSGY 083	0,64	0,60	12
TSGY 163	1,14	1,10	12
TSGY 164	1,24	1,20	12