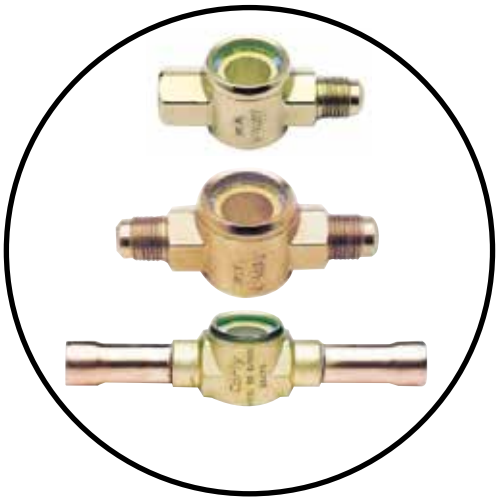
CTCY-EN - 8.1-9 / 05-2022

Liquid sight glasses

→ VCYL

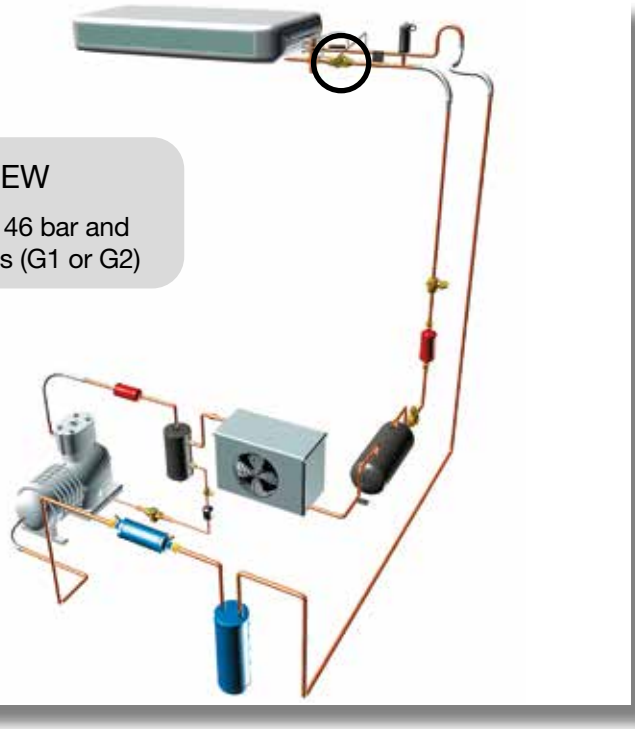
■ Applications

- Immediate and direct monitoring of flow, condition or moisture content of the refrigerant in its liquid or diphasic phase in refrigerating and air conditioning installations.



NEW

Max WP 46 bar and multi-fluids (G1 or G2)



■ Functional features

- Products are compatible with HCFCs, HFCs, HFOs, CO_2, as well as with their associated oils and additives. Products are designed for use with 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.
- Product classification in CE categories is performed using the PED 2014/68/EU table, corresponding to a nominal diameter-based selection.
- Monitoring with a large sight glass of the refrigerant state in the liquid pipes of the installation. The possible presence of bubbles in the refrigerant will be visible by the VCYL and it might have several meanings such as a lack of refrigerant, a too low or absent subcooling, or also a too important pressure drop due to the filter drier, which would have then to be changed.
- A reliable hygroscopic indicator responsive to humidity and resistant to acids is positioned under the glass.
- Moisture presence is characterized by a modification of the indicator colour (green when the refrigerant is dry, and yellow when it is too wet); this continuous indication is reliable and this color change is reversible. It is very important to check the level of moisture in the refrigerant, in order to avoid the formation of acids harmful to the proper functioning of the installation.
- The sight glasses die-cast brass body guarantees perfect resistance to corrosion.
- The brazed liquid sight glasses' long copper sleeves allow quick and safe brazing of connections; since the body and the glass are attached, brazing can be performed without removing the glass.
- Several types of connections are possible on standard products:
  - To be screwed type SAE, male/male and male/female
  - To be brazed for tubes in inches (S), female/female and male/female
  - To be brazed for tubes in millimeters (MMS), female/female and male/female

Possible customization on demand:

- CARLY can supply, upon request, some liquid sight glasses to solder on tubes, of type VCYLS, without hygroscopic paper or with a ball for level monitoring.

■ CARLY advantages

- Maximal working pressure: up to 46 bar.
- Multi-fluids (G1 or G2).
- The large size of the glass and the absence of a central hygroscopic tip ensure excellent visibility.
- The moisture indicator fastening system ensures protection against erosion and prevents fouling by oils and dirts present in the circuit; it also eliminates any turbulence that would hinder proper vision of the refrigerant and does not lead to any pressure drop.
- The sealed design and the seaming principle of the chosen glass ensure perfect air-tightness.
- Two very thick hexagon head bolts facilitate sight glasses positioning and handling for tightening of connections to screw.
- The male/female sight glasses to screw are delivered with a guided copper gasket on the female side (except for the VCYL 25 which has a non-guided gasket), which enables a quick and reliable positioning.
- The male/female sight glasses to screw can be screwed directly at the outlet of the filter drier.
- The low weight of the VCYL sight glasses requires no specific binding.

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■ Warning

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

■ General assembly precautions

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

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

■ Recommendations specific to liquid sight glasses VCYL

- Assembly is performed on the liquid line between the filter drier and the pressure relief valve.
- For liquid sight glasses with female connections to screw, pay attention to the correct positioning of the supplied copper seal.
- The tightening of sight glasses with screw connections must be performed with two open end spanners, in order to avoid the pipe torsion or damages to the brass body of the sight glass (tightening with pliers prohibited).
- The VCYL sight glasses have a seal underneath the glass which ensures their air tightness. This seal being very sensitive to heat, it is strongly recommended, for the sight glasses with connections to solder, not to damage it when brazing the copper connections, as significant leakage can appear. It is therefore imperative not to direct the flame of the torch in the direction of the glass and the seal, and to cool the sight glass body with a humid cloth or with **CARLYCOOL** calories discharger (refer to chapter 95).
- The indication of moisture presence is quick; on the other hand, the moisture indicator indicates the return to normal situation only a few hours after implementation of a drying system (**DCY** filter drier, **DDCY** bi-directional flow and anti-acid filter driers, **RCY** filter drier-receiver or **CCY HP/N** or **PLATINIUM 48** drying cores).

READING OF THE MOISTURE INDICATOR

Reminder of acceptable moisture rates expressed in ppm (part per million of water in the refrigerant): DIN 8949

R22 : ➜ 60 ppm	R404A : ➜ 50 ppm	R407C : ➜ 50 ppm	R744 : ➜ 10 ppm
R134a : ➜ 50 ppm	R507 : ➜ 50 ppm	R410A : ➜ 50 ppm	

- Colour: **Green**
  Normal conditions, perfectly dried circuit; the filter driers or the drying cores, in the case of replaceable core filter drier shells, are active.
- Colour: **Light green**
  The filter driers or the drying cores, in the case of replaceable core filter drier shells, are saturating. it is necessary to quickly replace them.
- Colour: **Yellow**
  The filter driers or drying cores, in the case of replaceable core filter drier shells, are entirely saturated. There is a possibility of danger, the circuit is humid and polluted; immediate intervention is required: quickly install a new drying system such as **DCY** filter drier, **DDCY** bi-directional flow and anti-acid filter driers, **RCY** filter drier-receiver or **CCY HP/N** or **PLATINIUM 48** drying cores.

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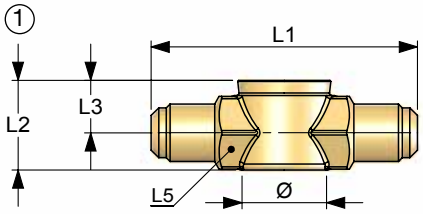
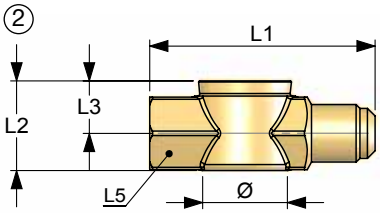
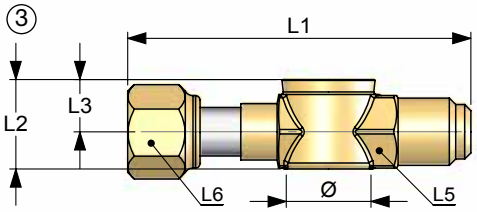
■ Technical features

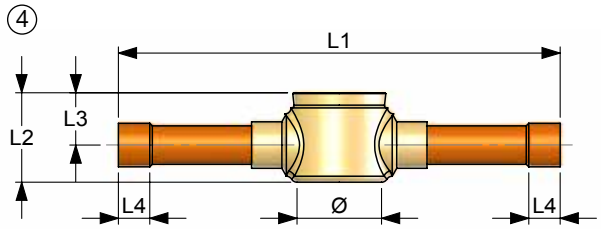
CARLY references	Connections to screw SAE pouce	Connections		Drawing Nb	Dimensions mm					
		Male / Male	Female / Male		Ø	L1	L2	L3	L5 upper faces	L6 upper faces
VCYL 12	1/4	X		1	26	67	27	16	16	/
VCYL 13	3/8	X		1	32	82	30	17	24	/
VCYL 14	1/2	X		1	32	88	30	17	24	/
VCYL 15	5/8	X		1	32	94	30	17	24	/
VCYL 22	1/4		X	2	26	59	27	16	16	/
VCYL 23	3/8		X	2	32	69	30	17	24	/
VCYL 24	1/2		X	2	32	75	30	17	24	/
VCYL 25	5/8		X	3	32	113	30	17	24	27

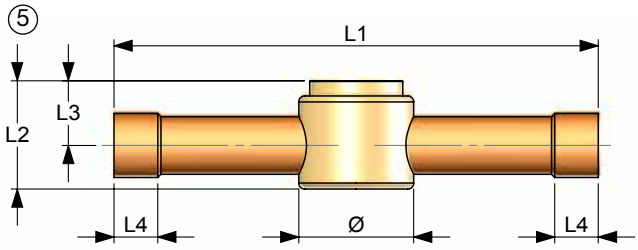
① 

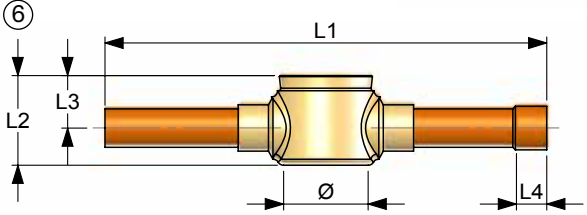
② 

③ 

CARLY references	Connections to solder ODF inch	CARLY references	Connections to solder ODF mm	Connections		Drawing Nb	Dimensions mm				
				Male / Female	Female / Female		Ø	L1	L2	L3	L4
VCYL 32 S	1/4	VCYL 32 MMS	6		X	4	26	101	27	16	8
VCYL 33 S	3/8	VCYL 33 MMS	10		X	4	26	119	27	16	10
VCYL 34 S	1/2	VCYL 34 MMS	12		X	4	32	146	30	17	10
VCYL 35 S/MMS	5/8	VCYL 35 S/MMS	16		X	4	32	146	30	17	12
VCYL 36 S	3/4	VCYL 36 MMS	18		X	5	38	160	36	21	14
VCYL 37 S/MMS	7/8	VCYL 37 S/MMS	22		X	5	38	160	36	21	17
VCYL 39 S	1 1/8	VCYL 39 MMS	28		X	5	43	160	42	25	23
VCYL 52 S	1/4	VCYL 52 MMS	6	X		6	26	101	27	16	8
VCYL 53 S	3/8	VCYL 53 MMS	10	X		6	26	119	27	16	10
VCYL 54 S	1/2	VCYL 54 MMS	12	X		6	32	146	30	17	10
VCYL 55 S/MMS	5/8	VCYL 55 S/MMS	16	X		6	32	146	30	17	12

④ 

⑤ 

⑥ 

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■ Technical features

CARLY references	Nominal diameter DN inch	CARLY references	Nominal diameter DN mm	Fluid G1 (3)	Fluid G2 (3)	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)
VCYL 12	1/4			x	x	46	/	100	-20	/	Art4§3
VCYL 13	3/8			x	x	46	/	100	-20	/	Art4§3
VCYL 14	1/2			x	x	46	/	100	-20	/	Art4§3
VCYL 15	5/8			x	x	46	/	100	-20	/	Art4§3
VCYL 22	1/2			x	x	46	/	100	-20	/	Art4§3
VCYL 23	3/8			x	x	46	/	100	-20	/	Art4§3
VCYL 24	1/4			x	x	46	/	100	-20	/	Art4§3
VCYL 25	5/8			x	x	46	/	100	-20	/	Art4§3
VCYL 32 S	1/4	**VCYL 32 MMS**	6	x	x	46	/	100	-20	/	Art4§3
VCYL 33 S	3/8	**VCYL 33 MMS**	10	x	x	46	/	100	-20	/	Art4§3
VCYL 34 S	1/2	**VCYL 34 MMS**	12	x	x	46	/	100	-20	/	Art4§3
VCYL 35 S/MMS	5/8	**VCYL 35 S/MMS**	16	x	x	46	/	100	-20	/	Art4§3
VCYL 36 S	3/4	**VCYL 36 MMS**	18	x	x	46	/	100	-20	/	Art4§3
VCYL 37 S/MMS	7/8	**VCYL 37 S/MMS**	22	x	x	46	/	100	-20	/	Art4§3
VCYL 39 S	1 1/8	**VCYL 39 MMS**	28	x	x	46	/	100	-20	/	Art4§3
VCYL 52 S	1/4	**VCYL 52 MMS**	6	x	x	46	/	100	-20	/	Art4§3
VCYL 53 S	3/8	**VCYL 53 MMS**	10	x	x	46	/	100	-20	/	Art4§3
VCYL 54 S	1/2	**VCYL 54 MMS**	12	x	x	46	/	100	-20	/	Art4§3
VCYL 55 S/MMS	5/8	**VCYL 55 S/MMS**	19	x	x	46	/	100	-20	/	Art4§3

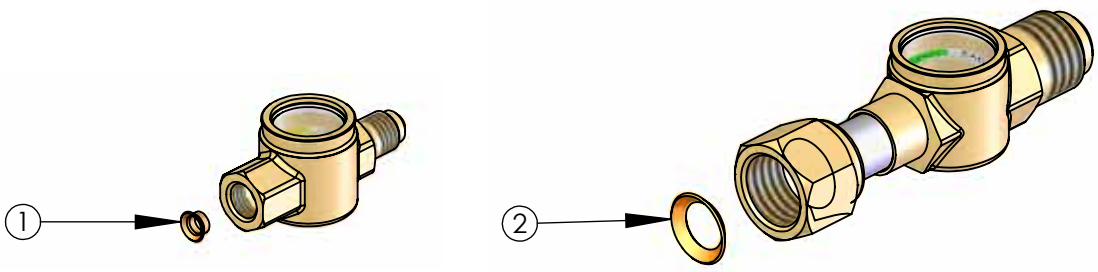
(1) The working pressure is limited to the PS BT value when working temperature is lower than or equal to TS BT value.

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

(3) G1 (HC, HFO) - G2 (CFC, HFC, HCFC, HFO, CO_2) - PED 2014/68/EU

■ 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	VCYL 22	1
CY 15590025	1	Set of 25 guided taper copper gaskets for 3/8" SAE (flare) connections	VCYL 23	1
CY 15590035	1	Set of 25 guided taper copper gaskets for 1/2" SAE (flare) connections	VCYL 24	1
CY 15590040	2	Set of 25 taper copper gaskets for 5/8" SAE (flare) connections	VCYL 25	1



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Liquid sight glasses

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■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
VCYL 12	0,11	0,10	1
VCYL 13	0,21	0,20	1
VCYL 14	0,26	0,25	1
VCYL 15	0,31	0,30	1
VCYL 22	0,16	0,15	8
VCYL 23	0,21	0,20	8
VCYL 24	0,26	0,25	1
VCYL 25	0,29	0,28	1

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
VCYL 32 S & MMS	0,12	0,10	1
VCYL 33 S & MMS	0,12	0,10	1
VCYL 34 S & MMS	0,17	0,15	1
VCYL 35 S/MMS	0,22	0,20	1
VCYL 36 S & MMS	0,25	0,22	1
VCYL 37 S/MMS	0,28	0,25	1
VCYL 39 S & MMS	0,28	0,25	1
VCYL 52 S & MMS	0,12	0,10	1
VCYL 53 S & MMS	0,12	0,10	1
VCYL 54 S & MMS	0,17	0,15	1
VCYL 55 S/MMS	0,22	0,20	1