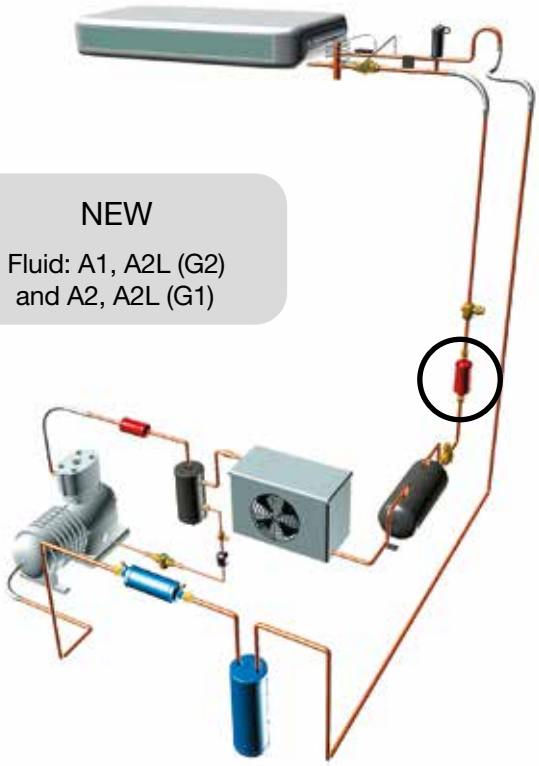
CTCY-EN - 2.1-9 / 05-2022

Bi-directional flow and anti-acid filter driers

➔ DDCY

■ Applications

- Refrigerant filtering, drying and acid neutralization for refrigerating and air conditioning installation liquid lines with change over in flow direction, including heat pumps, with refrigerating capacity up to 450 KW.



NEW

Fluid: A1, A2L (G2) and A2, A2L (G1)

■ Functional features

- Products are compatible with HCFCs, HFCs, HFO, 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 with fluids of security class A3 according EN378, contact CARLY technical department.
- Product classification in CE categories is performed using the PED 2014/68/EU table, corresponding to a volume-based selection.
- Refrigerant flow is possible in both directions, and filtering is ensured whichever the direction.
- 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.
- 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, …)
- Aluminium casings and unions (weight optimisation)
- Stainless steel casings and unions (resistance to corrosion and at low temperatures)
- Connections to braze, 100 % copper.

■ CARLY advantages

- Maximal working pressure: 46 bar.
- Two-way filter drier with very low pressure loss thanks to a CARLY patented internal check valve system ensuring an optimum circuiting of the flows.
- No risk of discharge of the pollutants trapped inside the filter driers, during change over in flow directions.
- 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 CO_2 applications at low temperatures.
- Filter driers sizes that ensure interchangeability with most products of the market.
- 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 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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■ 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**.
- The recommendations relating to the CARLY components for the subcritical CO_2 applications are also developed in chapter 115 of CARLY technical catalogue – **GENERAL ASSEMBLY PRECAUTIONS**.

■ Recommendations specific to the DDCY bi-flow filter driers

- Filter driers are to be mounted on the liquid line, upstream of the pressure relief valve.
- We recommend the vertical mounting of the two-way filter drier in order to favour its filling when in operation.
- 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 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 (VCYL or VCYLS) 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 dewatering filters containing activated alumina in order to neutralise as rapidly as possible the acids present in the circuit and not dewatering filters with only 100 % of a molecular screen (Except in the case of highly additive oils). It is your responsibility to verify that the oil used is compatible with activated alumina.
- Filter drier efficiency and refrigerant moisture content should be checked using VCYL or VCYLS liquid sight glasses (refer to chapters 9 or 10 of CARLY technical catalogue).
- Make sure that the piping can support without deformation the weight of the dewatering filter ; otherwise, provide for the attachment of the dewatering filter with a clamp on a stable part of the installation.
- Example of a selection of a DDCY bi-flow filter drier : see example of a selection of a DCY dewatering filter in chapter 1 of CARLY technical catalogue.

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

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
DDCY 082	1/4				9,0	8,5	6,5	7,4	10,1	15,0	14,5	14,3	13,8	13,4	12,9	9,1
DDCY 082 S		1/4	DDCY 082 MMS	6	9,0	8,5	6,5	7,4	10,1	15,0	14,5	14,3	13,8	13,4	12,9	9,1
DDCY 083	3/8				24,3	23,0	17,0	20,0	26,9	15,0	14,5	14,3	13,8	13,4	12,9	9,1
DDCY 083 S		3/8	DDCY 083 MMS	10	24,3	23,0	17,0	20,0	26,9	15,0	14,5	14,3	13,8	13,4	12,9	9,1
DDCY 084	1/2				38,8	37,0	30,0	32,2	42,6	15,0	14,5	14,3	13,8	13,4	12,9	9,1
DDCY 084 S		1/2	DDCY 084 MMS	12	38,8	37,0	30,0	32,2	42,6	15,0	14,5	14,3	13,8	13,4	12,9	9,1
DDCY 163	3/8				24,8	24,0	18,0	20,9	27,4	40,0	34,0	38,1	32,4	35,7	30,3	24,3
DDCY 163 S		3/8	DDCY 163 MMS	10	24,8	24,0	18,0	20,9	27,4	40,0	34,0	38,1	32,4	35,7	30,3	24,3
DDCY 164	1/2				42,3	40,0	32,0	34,8	46,5	40,0	34,0	38,1	32,4	35,7	30,3	24,3
DDCY 164 S		1/2	DDCY 164 MMS	12	42,3	40,0	32,0	34,8	46,5	40,0	34,0	38,1	32,4	35,7	30,3	24,3
DDCY 165	5/8				69,0	66,0	50,0	57,4	76,2	40,0	34,0	38,1	32,4	35,7	30,3	24,3
DDCY 165 S/MMS		5/8	DDCY 165 S/MMS	16	69,0	66,0	50,0	57,4	76,2	40,0	34,0	38,1	32,4	35,7	30,3	24,3
DDCY 305	5/8				71,0	68,0	51,0	59,1	78,4	70,0	61,0	66,6	58,0	62,4	54,4	42,5
DDCY 305 S/MMS		5/8	DDCY 305 S/MMS	16	71,0	68,0	51,0	59,1	78,4	70,0	61,0	66,6	58,0	62,4	54,4	42,5
DDCY 307 S/MMS		7/8	DDCY 307 S/MMS	22	112,5	105,0	80,0	91,3	123,2	70,0	61,0	66,6	58,0	62,4	54,4	42,5
DDCY 409 S		1 1/8			165,3	154,5	117,5	134,3	181,0	93,3	81,3	88,8	77,4	83,2	72,5	56,7
DDCY 411 S/MMS		1 3/8	DDCY 411 S/MMS	35	202,5	189,0	144,0	164,3	222,0	93,3	81,3	88,8	77,4	83,2	72,5	56,7
DDCY 513 S		1 5/8			320,3	299,0	228,0	260,0	351,0	186,7	162,7	177,6	154,8	166,4	145,0	113,3
DDCY 517 S/MMS		2 1/8	DDCY 517 S/MMS	54	442,3	413,0	314,5	359,1	484,5	186,7	162,7	177,6	154,8	166,4	145,0	113,3

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

CARLY references	Connections To solder ODF inch	CARLY references	Connections To solder ODF mm	Refrigerating capacity kW (1) R1234yf	R32	R454A	R454B	R454C	R152a R447A R452B	R455A	Dehydratable refrigerant capacity kg of refrigerant (2) R152a R32 R454B R447A R452B 24 °C	52 °C	R454A R455A R454C R1234yf 24 °C	52 °C
DDCY 082 S	1/4	DDCY 082 MMS	6	5,9	10,9	8,0	9,1	7,5	9,7	6,7	12,3	11,9	13,4	12,9
DDCY 083 S	3/8	DDCY 083 MMS	10	16,1	29,3	21,7	24,5	20,2	26,2	17,9	12,3	11,9	13,4	12,9
DDCY 084 S	1/2	DDCY 084 MMS	12	25,9	46,9	34,6	39,1	32,3	41,9	28,7	12,3	11,9	13,4	12,9
DDCY 163 S	3/8	DDCY 163 MMS	10	16,8	29,9	22,1	25,0	20,6	26,7	18,3	32,7	27,8	35,6	30,3
DDCY 164 S	1/2	DDCY 164 MMS	12	28,0	51,1	37,7	42,7	35,2	45,6	31,3	32,7	27,8	35,6	30,3
DDCY 165 S/MMS	5/8	DDCY 165 S/MMS	16	46,2	83,5	61,6	69,7	57,5	74,5	51,1	32,7	27,8	35,6	30,3
DDCY 305 S/MMS	5/8	DDCY 305 S/MMS	16	47,6	85,9	63,4	71,7	59,2	76,7	52,5	57,2	49,9	62,3	54,3
DDCY 307 S	7/8	DDCY 307 MMS	22	73,4	136,1	100,4	113,6	93,8	121,5	83,3	57,2	49,9	62,3	54,3

(1) Refrigerating capacities according to Standard ARI 710-86 for To = – 15 °C, Tk = 30 °C and Δp = 0,21bar. 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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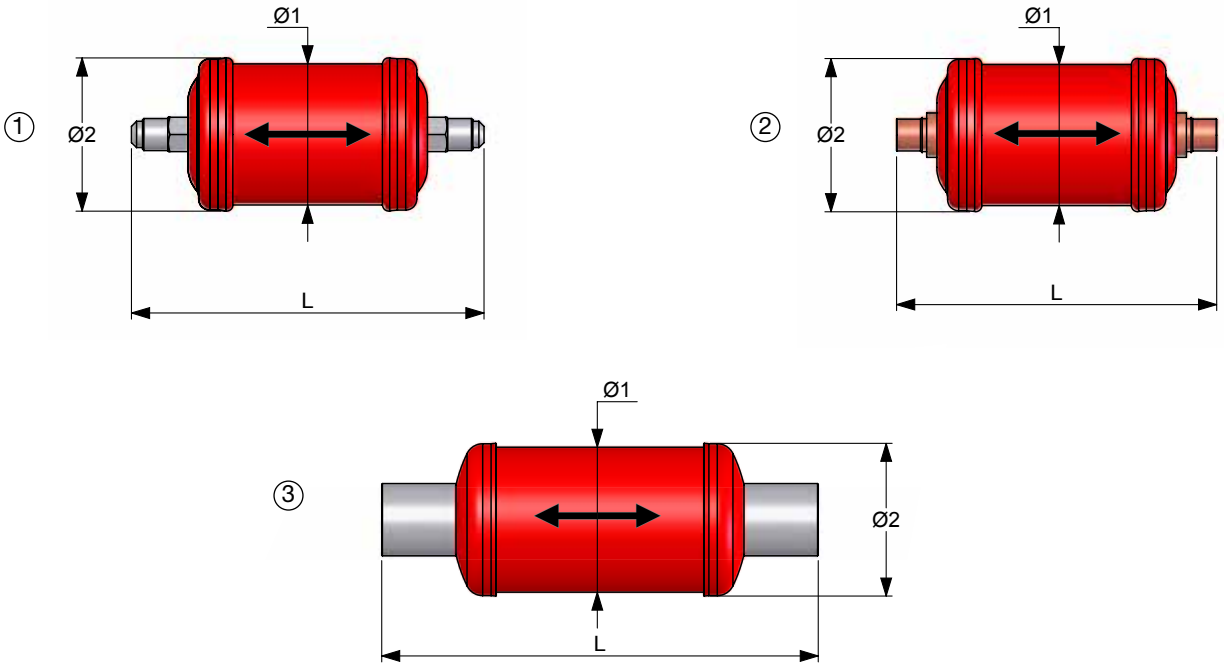
■ Technical features

CARLY references		Connection types[1]	Drawing Nb	Filtering surface cm²	Volume of desiccation products cm³	Dimensions Ø1 mm	Ø2 mm	L mm
DDCY 082		1	1	64	118	50,0	55	151
DDCY 082 S	DDCY 082 MMS	2	2	64	118	50,0	55	141
DDCY 083		1	1	64	118	50,0	55	157
DDCY 083 S	DDCY 083 MMS	2	2	64	118	50,0	55	141
DDCY 084		1	1	64	118	50,0	55	161
DDCY 084 S	DDCY 084 MMS	2	2	64	118	50,0	55	141
DDCY 163		1	1	160	298	70,0	76	175
DDCY 163 S	DDCY 163 MMS	2	2	160	298	70,0	76	159
DDCY 164		1	1	160	298	70,0	76	179
DDCY 164 S	DDCY 164 MMS	2	2	160	298	70,0	76	159
DDCY 165		1	1	160	298	70,0	76	183
DDCY 165 S/MMS	DDCY 165 S/MMS	2	2	160	298	70,0	76	163
DDCY 305		1	1	160	558	70,0	76	259
DDCY 305 S/MMS	DDCY 305 S/MMS	2	2	160	558	70,0	76	239
DDCY 307 S/MMS	DDCY 307 S/MMS	2	2	160	558	70,0	76	259
DDCY 409 S		3	3	300	750	101,6	109	248
DDCY 411 S/MMS	DDCY 411 S/MMS	3	3	300	750	101,6	109	267
DDCY 513 S		3	3	390	1440	152,4	156	339
DDCY 517 S/MMS	DDCY 517 S/MMS	3	3	390	1440	152,4	156	366

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



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■ Technical features

CARLY references		Volume	G2 (PS: 46 Bar)		G1 (PS: 46 Bar)		Working pressure (1)	Maximal working temperature	Minimal working temperature	Working temperature (1)	CE Category (2)
		V L	A1	A2L	A2	A2L	PS BT bar	TS maxi °C	TS mini °C	TS BT °C	
DDCY 082		0,2	X	X			15,0	100,0	-40,0	-30,0	Art4§3
DDCY 082 S	DDCY 082 MMS	0,2	X	X	X	X	15,0	100,0	-40,0	-30,0	Art4§3
DDCY 083		0,2	X	X			15,0	100,0	-40,0	-30,0	Art4§3
DDCY 083 S	DDCY 083 MMS	0,2	X	X	X	X	15,0	100,0	-40,0	-30,0	Art4§3
DDCY 084		0,2	X	X			15,0	100,0	-40,0	-30,0	Art4§3
DDCY 084 S	DDCY 084 MMS	0,2	X	X	X	X	15,0	100,0	-40,0	-30,0	Art4§3
DDCY 163		0,4	X	X			15,0	100,0	-40,0	-30,0	Art4§3
DDCY 163 S	DDCY 163 MMS	0,4	X	X	X	X	15,0	100,0	-40,0	-30,0	Art4§3
DDCY 164		0,4	X	X			15,0	100,0	-40,0	-30,0	Art4§3
DDCY 164 S	DDCY 164 MMS	0,4	X	X	X	X	15,0	100,0	-40,0	-30,0	Art4§3
DDCY 165		0,4	X	X			15,0	100,0	-40,0	-30,0	Art4§3
DDCY 165 S/MMS	DDCY 165 S/MMS	0,4	X	X	X	X	15,0	100,0	-40,0	-30,0	Art4§3
DDCY 305		0,7	X	X			15,0	100,0	-40,0	-30,0	Art4§3
DDCY 305 S/MMS	DDCY 305 S/MMS	0,7	X	X	X	X	15,0	100,0	-40,0	-30,0	Art4§3
DDCY 307 S/MMS	DDCY 307 S/MMS	0,7	X	X	X	X	15,0	100,0	-40,0	-30,0	Art4§3
DDCY 409 S		1,2	X	X			15,0	100,0	-40,0	-30,0	I
DDCY 411 S/MMS	DDCY 411 S/MMS	1,2	X	X			15,0	100,0	-40,0	-30,0	I
DDCY 513 S		4,2	X	X			15,0	100,0	-40,0	-30,0	I
DDCY 517 S/MMS	DDCY 517 S/MMS	4,2	X	X			15,0	100,0	-40,0	-30,0	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).

■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
DDCY 082	0,43	0,40	24
DDCY 082 S & MMS	0,43	0,40	24
DDCY 083	0,43	0,40	24
DDCY 083 S & MMS	0,43	0,40	24
DDCY 084	0,53	0,50	24
DDCY 084 S & MMS	0,53	0,50	24
DDCY 163	0,94	0,90	16

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
DDCY 163 S & MMS	0,94	0,90	16
DDCY 164	0,99	0,95	16
DDCY 164 S & MMS	0,99	0,95	16
DDCY 165	1,04	1,00	16
DDCY 165 S/MMS	1,04	1,00	16
DDCY 305	1,52	1,45	12
DDCY 305 S/MMS	1,52	1,45	12
DDCY 307 S/MMS	1,52	1,45	12
DDCY 409 S	2,51	2,42	1
DDCY 411 S/MMS	2,51	2,42	1
DDCY 513 S	6,08	5,99	1
DDCY 517 S/MMS	6,08	5,99	1