

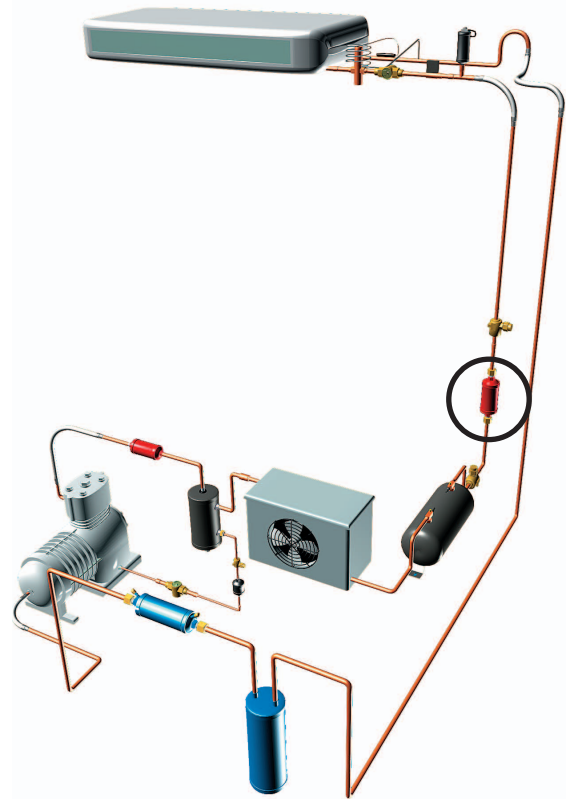


## Anti-acid filter driers

### → DCY

#### ■ Applications

- Filtering and drying of refrigerants and acid neutralization for liquid lines of refrigerating and air conditioning installations.



#### ■ Functional features

- Products are compatible with CFCs, HCFCs, HFCs, CO<sub>2</sub>s, 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 CO<sub>2</sub> 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.
- 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, ...)
- 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.
- 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<sub>2</sub> 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.
- Installation possible in all positions.
- GOST certified products.



# Anti-acid filter driers

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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<sub>2</sub> applications are also developed in chapter 115 – **GENERAL ASSEMBLY PRECAUTIONS**.

### ■ Recommendations specific to DCY 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 dirt filters (refer

to chapter 11); 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 dewatering filter is too high
  - at least once a year as a measure of precaution
- A dewatering filter 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 filter driers with only 100 % of a molecular screen.

- Filter drier efficiency and refrigerant moisture content should be checked using VCYL or VCYLS liquid sight glasses (refer to chapters 9 or 10).
- Make sure that the piping can support without deformation the weight of the filter drier ; otherwise, plan the attachment of the dewatering filter with a clamp on a stable part of the installation.



# Anti-acid filter driers

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### ■ Selection table

CARLY references	Connections		CARLY references	Connections To solder ODF mm	Refrigerating capacity kW <sup>(1)</sup>					Dehydratable refrigerant capacity kg of refrigerant <sup>(2)</sup>						
	To screw SAE inch	To solder ODF inch			R22	R134a	R404A R507 R407F	R407C R410A	R744 CO <sub>2</sub> <sup>(3)</sup>	R22 R407C R407F		R134a R410A		R404A R507		R744 CO <sub>2</sub>
										24 °C	52 °C	24 °C	52 °C	24 °C	52 °C	24 °C
DCY 032	1/4				8,0	7,7	5,5	8,2	9,0	6,5	5,5	7,0	6,0	6,5	5,5	3,9
DCY 032 S		1/4	DCY 032 MMS	6	8,0	7,7	5,5	8,2	9,0	6,5	5,5	7,0	6,0	6,5	5,5	3,9
DCY 033	3/8				22,0	20,0	15,5	22,5	24,6	6,5	5,5	7,0	6,0	6,5	5,5	3,9
DCY 033 S		3/8	DCY 033 MMS	10	22,0	20,0	15,5	22,5	24,6	6,5	5,5	7,0	6,0	6,5	5,5	3,9
DCY 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
DCY 052 S		1/4	DCY 052 MMS	6	8,5	8,0	6,0	8,5	9,5	9,5	9,0	11,5	10,0	9,5	8,0	5,8
DCY 053	3/8				23,0	22,0	16,0	23,5	25,8	9,5	9,0	11,5	10,0	9,5	8,0	5,8
DCY 053 S		3/8	DCY 053 MMS	10	23,0	22,0	16,0	23,5	25,8	9,5	9,0	11,5	10,0	9,5	8,0	5,8
DCY 082	1/4				9,0	8,5	6,5	9,0	10,1	15,0	14,5	17,0	15,5	14,5	13,5	9,1
DCY 082 S		1/4	DCY 082 MMS	6	9,0	8,5	6,5	9,0	10,1	15,0	14,5	17,0	15,5	14,5	13,5	9,1
DCY 083	3/8				24,0	23,0	17,0	24,5	26,9	15,0	14,5	17,0	15,5	14,5	13,5	9,1
DCY 083 S		3/8	DCY 083 MMS	10	24,0	23,0	17,0	24,5	26,9	15,0	14,5	17,0	15,5	14,5	13,5	9,1
DCY 084	1/2				38,0	37,0	30,0	39,5	42,6	15,0	14,5	17,0	15,5	14,5	13,5	9,1
DCY 084 S		1/2	DCY 084 MMS	12	38,0	37,0	30,0	39,5	42,6	15,0	14,5	17,0	15,5	14,5	13,5	9,1
DCY 162	1/4				9,0	8,5	6,5	9,0	10,1	40,0	34,0	50,0	37,0	38,0	31,0	24,3
DCY 162 S		1/4	DCY 162 MMS	6	9,0	8,5	6,5	9,0	10,1	40,0	34,0	50,0	37,0	38,0	31,0	24,3
DCY 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
DCY 163 S		3/8	DCY 163 MMS	10	24,5	24,0	18,0	25,0	27,4	40,0	34,0	50,0	37,0	38,0	31,0	24,3
DCY 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
DCY 164 S		1/2	DCY 164 MMS	12	41,5	40,0	32,0	43,0	46,5	40,0	34,0	50,0	37,0	38,0	31,0	24,3
DCY 165	5/8				68,0	66,0	50,0	70,0	76,2	40,0	34,0	50,0	37,0	38,0	31,0	24,3
DCY 165 S/MMS		5/8	DCY 165 S/MMS	16	68,0	66,0	50,0	70,0	76,2	40,0	34,0	50,0	37,0	38,0	31,0	24,3
DCY 302	1/4				9,0	8,5	6,5	9,0	10,1	70,0	61,0	80,5	69,0	69,5	56,0	42,5
DCY 303	3/8				25,0	24,5	18,0	26,0	28,0	70,0	61,0	80,5	69,0	69,5	56,0	42,5
DCY 303 S		3/8	DCY 303 MMS	10	25,0	24,5	18,0	26,0	28,0	70,0	61,0	80,5	69,0	69,5	56,0	42,5
DCY 304	1/2				45,0	42,0	34,0	46,0	50,4	70,0	61,0	80,5	69,0	69,5	56,0	42,5
DCY 304 S		1/2	DCY 304 MMS	12	45,0	42,0	34,0	46,0	50,4	70,0	61,0	80,5	69,0	69,5	56,0	42,5
DCY 305	5/8				70,0	68,0	51,0	72,0	78,4	70,0	61,0	80,5	69,0	69,5	56,0	42,5
DCY 305 S/MMS		5/8	DCY 305 S/MMS	16	70,0	68,0	51,0	72,0	78,4	70,0	61,0	80,5	69,0	69,5	56,0	42,5
DCY 307 S/MMS		7/8	DCY 307 S/MMS	22	110,0	105,0	80,0	115,0	123,2	70,0	61,0	80,5	69,0	69,5	56,0	42,5
DCY 414	1/2				46,0	44,0	36,0	47,0	51,5	114,0	102,5	130,0	112,0	108,0	95,0	69,2
DCY 415	5/8				72,0	70,0	52,0	74,0	80,6	114,0	102,5	130,0	112,0	108,0	95,0	69,2
DCY 415 S/MMS		5/8	DCY 415 S/MMS	16	72,0	70,0	52,0	74,0	80,6	114,0	102,5	130,0	112,0	108,0	95,0	69,2
DCY 417 S/MMS		7/8	DCY 417 S/MMS	22	122,0	118,0	85,0	125,0	136,6	114,0	102,5	130,0	112,0	108,0	95,0	69,2
DCY 755	5/8				75,0	73,0	55,0	77,0	84,0	168,0	147,0	179,0	155,0	159,0	134,0	102,0
DCY 756	3/4 BSP				93,0	91,0	65,0	95,0	104,2	168,0	147,0	179,0	155,0	159,0	134,0	102,0
DCY 756 S		3/4	DCY 756 MMS	18	93,0	91,0	65,0	95,0	104,2	168,0	147,0	179,0	155,0	159,0	134,0	102,0
DCY 967 S/MMS		7/8	DCY 967 S/MMS	22	125,0	123,0	91,0	135,0	140,0	168,0	147,0	179,0	155,0	159,0	134,0	102,0
DCY 969 S		1 1/8	DCY 969 MMS	28	126,0	128,0	92,0	148,0	141,1	168,0	147,0	179,0	155,0	159,0	134,0	102,0

<sup>(1)</sup> 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.

<sup>(2)</sup> Dehydratable refrigerant capacity according to Standard ARI 710-86.

<sup>(3)</sup> Refrigerating capacities Qn for Tk = -10 °C and To = -40 °C

For Tk = 0 °C Qo = Qn + 12 %,  
For To = -30 °C Qo = Qn - 2 %,

For Tk = -20 °C Qo = Qn - 10 %,  
For To = -20 °C Qo = Qn - 6 %

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



# Anti-acid filter driers

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### ■ Example of selection of a DCY anti-acid 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 R404A under the following conditions<sup>(1)</sup> :
  - To = - 20 °C
  - Tk = 35 °C
  - Q<sub>o</sub>x = 46 kW
  - 69 kg of refrigerant at 24 °C
- Which DCY anti-acid filter drier to choose?

### DCY selection

- Conversion of installation capacity to match the conditions of Standard ARI 710-86.  
Refer to the table of correction factors in chapter 112 – liquid line – R 404A: fct = 1.10

$$Q_{o}x \text{ x fct} = Q_{o}ARI$$

$$Q_{o}ARI = 46 \times 1,10 = 50,6 \text{ i.e } 51 \text{ kW}$$

- DCY type selection and reading of selection table on page 1.3
  - R 404A
  - 69 kg refrigerant at 24 °C
  - Q<sub>o</sub>ARI = 51 kW

Filter drier volume selection depends on the installation total refrigerant capacity. For a quantity of 69 kg of R404A, selection should be done from the DCY 300 product line. See dehydratable refrigerant capacity column.

Selection of the connection, hence of the filter drier, is performed by carrying the Q<sub>o</sub>ARI refrigerating capacity and the refrigerant over to the refrigerating capacity column.

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

If the Q<sub>o</sub>ARI 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		CARLY references	Connections To solder ODF mm	Refrigerating capacity kW <sup>(1)</sup>					Dehydratable refrigerant capacity kg of refrigerant <sup>(2)</sup>						
	To screw SAE inch	To solder ODF inch			R22	R134a	R404A R507 R407F	R407C R410A	R744 CO <sub>2</sub>	R22 R407C R407F		R134a R410A		R404A R507		R744 CO <sub>2</sub>
										24 °C	52 °C	24 °C	52 °C	24 °C	52 °C	
DCY 304	1/2				45,0	42,0	34,0	46,0	50,4	70,0	61,0	80,5	69,0	69,5	56,0	42,5
DCY 304 S		1/2	DCY 304 MMS	12	45,0	42,0	34,0	46,0	50,4	70,0	61,0	80,5	69,0	69,5	56,0	42,5
DCY 305	5/8				70,0	68,0	51,0	72,0	78,4	70,0	61,0	80,5	69,0	69,5	56,0	42,5
DCY 305 S/MMS		5/8	DCY 305 S/MMS	16	70,0	68,0	51,0	72,0	78,4	70,0	61,0	80,5	69,0	69,5	56,0	42,5

<sup>(1)</sup> Chapter "Abbreviations and units" (refer to chapter 113).

<sup>(2)</sup> Dehydratable refrigerant capacity according to Standard ARI 710-86.



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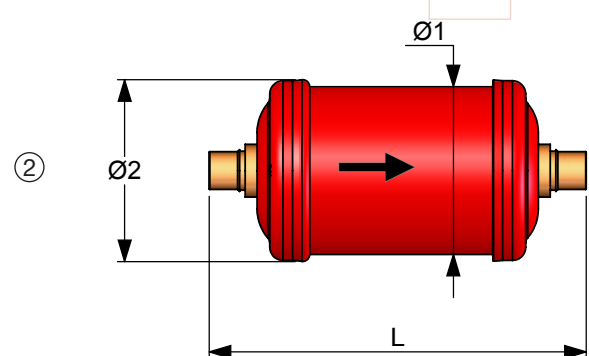
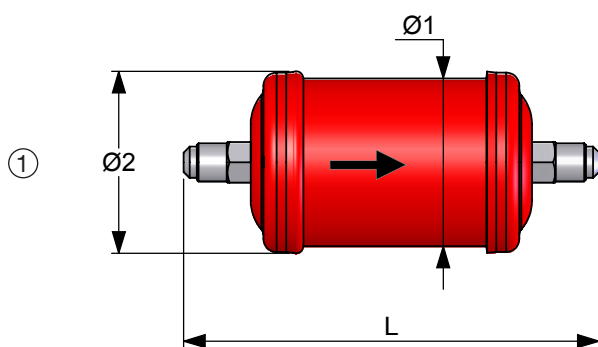
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## → DCY

### ■ Technical features

CARLY references	Connections types <sup>(1)</sup>	Drawing Nb	Filtering surface cm <sup>2</sup>	Volume of desiccation products cm <sup>3</sup>	Dimensions		
					Ø1 mm	Ø2 mm	L mm
DCY 032		1	52	59	50	55	109
DCY 032 S	DCY 032 MMS	2	52	59	50	55	99
DCY 033		1	52	59	50	55	115
DCY 033 S	DCY 033 MMS	2	52	59	50	55	99
DCY 052		1	52	82	50	55	122
DCY 052 S	DCY 052 MMS	2	52	82	50	55	112
DCY 053		1	52	82	50	55	128
DCY 053 S	DCY 053 MMS	2	52	82	50	55	112
DCY 082		1	52	130	50	55	150
DCY 082 S	DCY 082 MMS	2	52	130	50	55	140
DCY 083		1	52	130	50	55	156
DCY 083 S	DCY 083 MMS	2	52	130	50	55	140
DCY 084		1	52	130	50	55	160
DCY 084 S	DCY 084 MMS	2	52	130	50	55	140
DCY 162		1	102	322	70	76	169
DCY 162 S	DCY 162 MMS	2	102	322	70	76	159
DCY 163		1	102	322	70	76	175
DCY 163 S	DCY 163 MMS	2	102	322	70	76	159
DCY 164		1	102	322	70	76	180
DCY 164 S	DCY 164 MMS	2	102	322	70	76	159
DCY 165		1	102	322	70	76	184
DCY 165 S/MMS	DCY 165 S/MMS	2	102	322	70	76	163

<sup>(1)</sup> Chapter "Connection features and drawings" (refer to chapter 114).





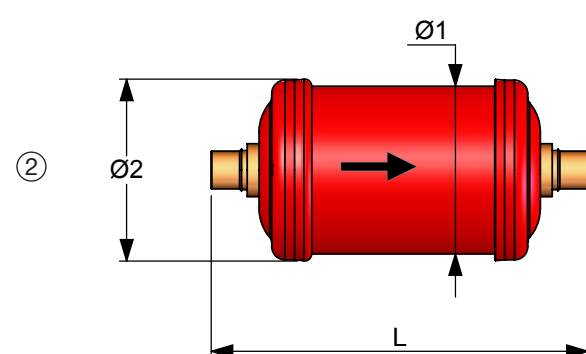
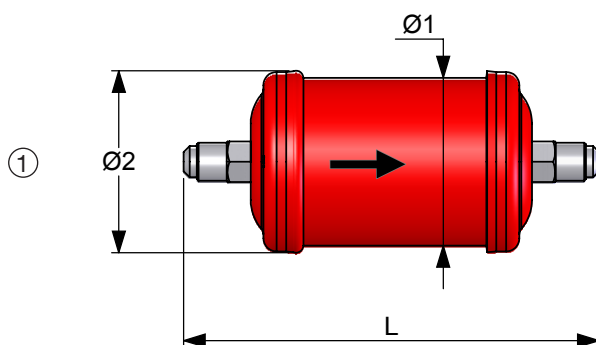
# Anti-acid filter driers

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### ■ Technical features

CARLY references	Connections types <sup>(1)</sup>	Drawing Nb	Filtering surface cm <sup>2</sup>	Volume of desiccation products cm <sup>3</sup>	Dimensions		
					Ø1 mm	Ø2 mm	L mm
DCY 302	1	1	102	582	70	76	246
DCY 303	1	1	102	582	70	76	252
DCY 303 S	DCY 303 MMS	2	102	582	70	76	236
DCY 304	1	1	102	582	70	76	256
DCY 304 S	DCY 304 MMS	2	102	582	70	76	236
DCY 305	1	1	102	582	70	76	260
DCY 305 S/MMS	DCY 305 S/MMS	2	102	582	70	76	240
DCY 307 S/MMS	DCY 307 S/MMS	2	102	582	70	76	260
DCY 414	1	1	170	936	89	96	255
DCY 415	1	1	170	987	89	96	268
DCY 415 S/MMS	DCY 415 S/MMS	2	170	987	89	96	248
DCY 417 S/MMS	DCY 417 S/MMS	2	170	1060	89	96	281
DCY 755	1	1	170	1327	89	96	328
DCY 756	1	1	170	1327	89	96	336
DCY 756 S	DCY 756 MMS	2	170	1327	89	96	314
DCY 967 S/MMS	DCY 967 S/MMS	2	170	1327	89	96	328
DCY 969 S	DCY 969 MMS	3	170	1327	89	96	338

<sup>(1)</sup> Chapter «Connection features and drawings» (refer to chapter 114).







# Anti-acid filter driers

## → DCY

### ■ Technical features

CARLY references	Volume	Maximal working pressure	Working pressure		Maximal working temperature	Minimal working temperature	Working temperature	CE Category	
			(1)	(1)					
	V L	PS bar	PS BT bar	TS maxi °C	TS mini °C	TS BT °C	(2)		
DCY 032	0,10	46	15	100	-40	-30	Art3§3		
DCY 032 S	DCY 032 MMS	0,10	46	15	100	-40	-30	Art3§3	
DCY 033	0,10	46	15	100	-40	-30	Art3§3		
DCY 033 S	DCY 033 MMS	0,10	46	15	100	-40	-30	Art3§3	
DCY 052	0,12	46	15	100	-40	-30	Art3§3		
DCY 052 S	DCY 052 MMS	0,12	46	15	100	-40	-30	Art3§3	
DCY 053	0,12	46	15	100	-40	-30	Art3§3		
DCY 053 S	DCY 053 MMS	0,12	46	15	100	-40	-30	Art3§3	
DCY 082	0,16	46	15	100	-40	-30	Art3§3		
DCY 082 S	DCY 082 MMS	0,16	46	15	100	-40	-30	Art3§3	
DCY 083	0,17	46	15	100	-40	-30	Art3§3		
DCY 083 S	DCY 083 MMS	0,17	46	15	100	-40	-30	Art3§3	
DCY 084	0,17	46	15	100	-40	-30	Art3§3		
DCY 084 S	DCY 084 MMS	0,17	46	15	100	-40	-30	Art3§3	
DCY 162	0,39	46	15	100	-40	-30	Art3§3		
DCY 162 S	DCY 162 MMS	0,39	46	15	100	-40	-30	Art3§3	
DCY 163	0,40	46	15	100	-40	-30	Art3§3		
DCY 163 S	DCY 163 MMS	0,40	46	15	100	-40	-30	Art3§3	
DCY 164	0,42	46	15	100	-40	-30	Art3§3		
DCY 164 S	DCY 164 MMS	0,42	46	15	100	-40	-30	Art3§3	
DCY 165	0,42	46	15	100	-40	-30	Art3§3		
DCY 165 S/MMS	DCY 165 S/MMS	0,42	46	15	100	-40	-30	Art3§3	
DCY 302	0,65	46	15	100	-40	-30	Art3§3		
DCY 303	0,66	46	15	100	-40	-30	Art3§3		
DCY 303 S	DCY 303 MMS	0,66	46	15	100	-40	-30	Art3§3	
DCY 304	0,67	46	15	100	-40	-30	Art3§3		
DCY 304 S	DCY 304 MMS	0,67	46	15	100	-40	-30	Art3§3	
DCY 305	0,68	46	15	100	-40	-30	Art3§3		
DCY 305 S/MMS	DCY 305 S/MMS	0,68	46	15	100	-40	-30	Art3§3	
DCY 307 S/MMS	DCY 307 S/MMS	0,68	46	15	100	-40	-30	Art3§3	
DCY 414	1,09	46	15	100	-40	-30	I		
DCY 415	1,14	46	15	100	-40	-30	I		
DCY 415 S/MMS	DCY 415 S/MMS	1,14	46	15	100	-40	-30	I	
DCY 417 S/MMS	DCY 417 S/MMS	1,22	46	15	100	-40	-30	I	
DCY 755	1,48	46	15	100	-40	-30	I		
DCY 756	1,48	46	15	100	-40	-30	I		
DCY 756 S	DCY 756 MMS	1,48	46	15	100	-40	-30	I	
DCY 967 S/MMS	DCY 967 S/MMS	1,49	46	15	100	-40	-30	I	
DCY 969 S	DCY 969 MMS	1,49	46	15	100	-40	-30	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 97/23/EC (refer to Chapter 0).



# Anti-acid filter driers

## → DCY

### ■ Weights and packaging

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
DCY 032	0,33	0,30	24
DCY 032 S & MMS	0,33	0,30	24
DCY 033	0,33	0,30	24
DCY 033 S & MMS	0,33	0,30	24
DCY 052	0,38	0,35	24
DCY 052 S & MMS	0,38	0,35	24
DCY 053	0,38	0,35	24
DCY 053 S & MMS	0,38	0,35	24
DCY 082	0,41	0,40	24
DCY 082 S & MMS	0,43	0,40	24
DCY 083	0,43	0,40	24
DCY 083 S & MMS	0,40	0,35	24
DCY 084	0,48	0,45	24
DCY 084 S & MMS	0,48	0,45	24
DCY 162	0,94	0,90	16
DCY 162 S & MMS	0,94	0,90	16
DCY 163	0,94	0,90	16
DCY 163 S & MMS	0,94	0,90	16
DCY 164	0,99	0,95	16
DCY 164 S & MMS	0,99	0,95	16
DCY 165	1,04	1,00	16
DCY 165 S/MMS	1,04	1,00	16

CARLY references	Unit weight kg		Packaging number of pieces
	With packaging	Without packaging	
DCY 302	1,42	1,35	12
DCY 303	1,42	1,35	12
DCY 303 S & MMS	1,42	1,35	12
DCY 304	1,47	1,40	12
DCY 304 S & MMS	1,47	1,40	12
DCY 305	1,57	1,50	12
DCY 305 S/MMS	1,57	1,50	12
DCY 307 S/MMS	1,62	1,55	12
DCY 414	2,18	2,10	6
DCY 415	2,28	2,20	6
DCY 415 S/MMS	2,28	2,20	6
DCY 417 S/MMS	2,33	2,25	6
DCY 755	2,78	2,70	6
DCY 756	2,78	2,70	6
DCY 756 S & MMS	2,78	2,70	6
DCY 967 S/MMS	2,83	2,75	6
DCY 969 S & MMS	2,93	2,85	6