ENGINEERING TOMORROW

Data Sheet

Hermetic bi-flow filter drier Type **DMB** and **DCB**

DMB and DCB are for use in liquid lines on heat pumps.

Hermetic bi-flow filter driers, types DMB and DCB are for use in liquid lines on heat pumps.

Hermetic bi-flow filter driers have built-in check valves which ensure that refrigerant liquid always flows through the filter driers from the outer side of the filter core towards the center. Thus all dirt particles are retained irrespective of flow direction.

DMB and DCB filter driers ensure fast and effective adsorption of moisture as well as organic and inorganic acids.

When building heat pump systems, the use of bi-flow filters can, depending on the type of system, save up to ten solder connections. This reduces production costs and the number of potential leakage points.

Available with flare and solder (cu-plated steel) connections.

For other connections please contact your Danfoss Sales Representative.

Features

The Core type DMB
- 100% 3Å Molecular Sieve core
- High drying capacity minimizing the risk of acid formation (hydrolysis)
- Recommended for use with HFO, HC, HFC and HCFC refrigerants
- Will not deplete oil additives

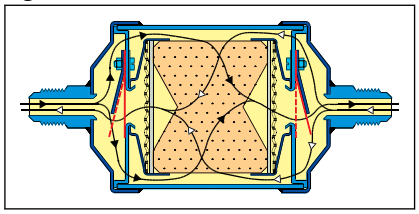
The Core type DCB
- 80% 3Å Molecular Sieve with 20% activated alumina
- Perfect core blend for systems that operate at high condensing temperatures and require high drying capacity
- Recommended for use with HFO, HC, HFC and HCFC refrigerants

The Shell
- PED approved for PS 46 bar
- Available with flare and solder (cu-plated steel) connections
- Optimum flow characteristics and dirt retention
- The check valves are not sensitive to dirt and give minimum restriction, irrespective of flow direction

The Filter
- Effective dirt removal to 25 µm
- No dirt released by reversing the flow direction
- Available in sizes 8 – 30 cubic inches

Construction

Figure 1: Flow direction



Product specification

Technical data

Figure 2: Flare connection

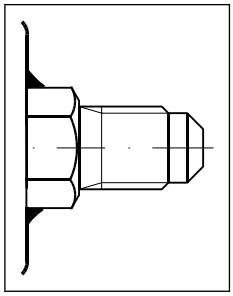


Table 1: Surface and volume

Filter	Solid core surface	Solid core volume	Filter drier volume (shell volume)	Filter drier volume (net volume)
	[cm^2]	[cm^3]	[l]	[l]
DMB/DCB 08	73	80	0.10	0.088
DMB/DCB 16	100	145	0.30	0.234
DMB/DCB 30	250	365	0.49	0.322

Figure 3: Solder connection (cu-plated steel)

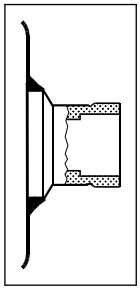


Table 2: Acid capacity

Filter	Acid capacity [1]
	[g]
DCB 08	0.96
DCB 16	1.29
DCB 30	3.16

[1] Adsorption capacity of oleic acid at 0.05 TAN (Total Acid Number).

Temperature range:
-40 – 70 °C

Dirt retention
Particles > 25 µm

Identification

Table 3: Type codes

Type	Codes	Description
Filter drier	D	Drier
Solid core	C	80% Molecular Sieve / 20% activated alumina
	M	100% Molecular Sieve core
Application	B	Bi-flow
Filter housing volume (approx.)	08	8 in.^{3}
	16	16 in.^{3}
	30	30 in.^{3}
Connection (filter connection in 1⁄8 of an inch increments)	2	¼ in. / 6 mm
	3	⅜ in. / 10 mm
	4	½ in. / 12 mm
	5	⅝ in. / 16 mm
	7	⅞ in. / 22 mm
	9	1⅛ in.
Connection type	(blank)	Flare connection
	s	Solder connection (cu-plated steel connector)

Example for type codes

D	Filter drier
M	Solid core
B	Application
16	Size (volume)
4	Connection (filter connection in 1⁄8 of an inch increments)
s	Connection type

Selection

Table 4: Type selection is made considering the application

Refrigerant and oil types		DCB	DMB
Refrigerant	HFO	Recommended	Recommended
	HC [1]	Recommended	Recommended
	HFC	Recommended	Recommended
	HCFC	Recommended	Recommended
Oil	Mineral or AB	Recommended	Recommended
	POE or PAG, pure	Recommended	Recommended
	POE or PAG, with additives	Not recommended [2]	Recommended

[1] Only solder versions (cu-plated / pure copper) and connection sizes below 25 mm are approved for flammable refrigerants now
[2] DCB Hermetic filter driers contain activated alumina, which is a polar material used for acid adsorption. Many oil additives are also polar substances and can be adsorbed by the activated alumina, rendering them useless, and reducing the drier's acid capacity, though this is not harmful to the system

Selection example

Select the appropriate type (DMB or DCB) based on refrigerant and oil type. Then select the drier size based on the adsorption and liquid capacity required.

- Amount of charge: 15 kg R134a at tL = 24 °C To dry 15 kg R134a at 24 °C from 1050 to 60 ppm moisture, a DMB 16 is necessary
- Cooling capacity: Qe = 25 kW, To obtain a mass flow corresponding to 25 kW cooling capacity with a DMB 16 filter drier, a 1⁄2 inch connection must be chosen. Larger connections can be chosen in accordance with the liquid line dimension
- Result DMB 164 or DMB 165 can be used

If the initial moisture content is very small or a planned change of the filter drier is considered, a smaller filter drier size can be chosen.

Type	Drying capacity [kg] refrigerant [1]												Liquid capacity [kW] [2]						Max. Working Pressure PS
	R134a		R404A		R507		R22		R407C		R410A		R134a	R404A	R507	R22	R407C	R410A	
	[°C]																		
	24	52	24	52	24	52	24	52	24	52	24	52							[bar]
DMB 082/082s	9.1	8.6	9.7	9.2	9.9	9.2	9.2	8.5	9.1	8.4	8.3	7.6	3.9	2.8	2.8	4.3	4.3	4.3	46
DMB 083/083s	9.1	8.6	9.7	9.2	9.9	9.2	9.2	8.5	9.1	8.4	8.3	7.6	7.4	5.3	5.3	8.2	8.2	8.2	46
DMB 084/084s	9.1	8.6	9.7	9.2	9.9	9.2	9.2	8.5	9.1	8.4	8.3	7.6	8.3	6.0	6.0	9.2	9.2	9.2	46
DMB 163/163s	17.1	16.2	18.4	17.4	18.7	17.3	17.3	16.0	17.1	15.8	15.6	14.4	18.0	13.0	13.0	20.0	20.0	20.0	46
DMB 164/164s	17.1	16.2	18.4	17.4	18.7	17.3	17.3	16.0	17.1	15.8	15.6	14.4	28.0	20.0	20.0	32.0	32.0	32.0	46
DMB 165/165s	17.1	16.2	18.4	17.4	18.7	17.3	17.3	16.0	17.1	15.8	15.6	14.4	37.0	29.0	29.0	40.0	40.0	40.0	46
DMB 303	42.0	39.7	45.2	42.8	46.0	42.5	42.5	39.3	42.1	38.9	38.3	35.3	19.0	15.0	15.0	21.0	21.0	21.0	46
DMB 304/304s	42.0	39.7	45.2	42.8	46.0	42.5	42.5	39.3	42.1	38.9	38.3	35.3	28.0	20.0	20.0	31.0	31.0	31.0	46
DMB 305/305s	42.0	39.7	45.2	42.8	46.0	42.5	42.5	39.3	42.1	38.9	38.3	35.3	38.0	28.0	28.0	42.0	42.0	42.0	46

Dimensions and weights

Figure 4: Flare connections

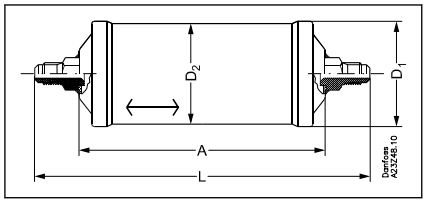


Table 5: DMB and DCB

Type	A	L	D_1	D_2	Net weight
	[mm]	[mm]	[mm]	[mm]	[Kg]
DMB/DCB 082	103	147	58	54	0.50
DMB/DCB 083	103	160	58	54	0.50
DMB/DCB 084	103	168	58	54	0.60

Type	A	L	D_1	D_2	Net weight
	[mm]	[mm]	[mm]	[mm]	[Kg]
DMB/DCB 162	112	156	80	76	0.80
DMB/DCB 163	112	169	80	76	0.80
DMB/DCB 164	112	177	80	76	0.90
DMB/DCB 165	112	186	80	76	0.90
DMB/DCB 303	188	245	80	76	1.10
DMB/DCB 304	188	253	80	76	1.2
DMB/DCB 305	188	262	80	76	1.2

Figure 5: Solder connection (cu-plated steel connectors)

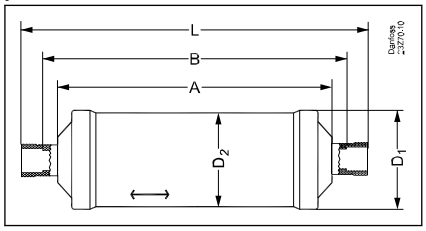


Table 6: DMB and DCB

Type	A	B	L	D_1	D_2	Net weight
	[mm]	[mm]	[mm]	[mm]	[mm]	[Kg]
DMB/DCB 082s	103	119	135	58	54	0.50
DMB/DCB 083s	103	122	141	58	54	0.50
DMB/DCB 084s	103	124	145	58	54	0.60
DMB/DCB 163s	112	131	150	80	76	0.80
DMB/DCB 164s	112	133	154	80	76	0.80
DMB/DCB 165s	112	136	160	80	76	0.90
DMB/DCB 304s	188	209	230	80	76	1.00
DMB/DCB 305s	188	212	236	80	76	1.10
DMB/DCB 307s	188	214	250	80	76	1.10
DMB 309s	188	198	252	80	76	1.44

Ordering

Figure 6: Flare connection

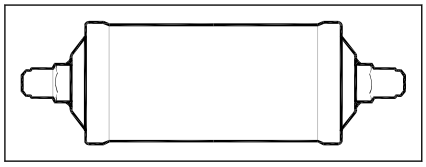


Table 7: Type DMB flare

Type	Conn.		Multi pack	
	[in.]	[mm]	Qty.	Code no.
DMB 082	¼	6	24	023Z1412
DMB 083	⅜	10	24	023Z1411
DMB 084	½	12	24	023Z1410
DMB 162	¼	6	12	023Z1416
DMB 163	⅜	10	12	023Z1415
DMB 164	½	12	12	023Z1414
DMB 165	⅝	16	12	023Z1413
DMB 303	⅜	10	8	023Z1419
DMB 304	½	12	8	023Z1418
DMB 305	⅝	16	8	023Z1417

Table 8: Type DCB flare

Type	Conn.		Multi pack	
	[in.]	[mm]	Qty.	Code no.
DCB 082	1/4	6	24	023Z1402
DCB 083	3/8	10	24	023Z1401
DCB 084	1/2	12	24	023Z1400
DCB 162	1/4	6	12	023Z1406
DCB 163	3/8	10	12	023Z1405
DCB 164	1/2	12	12	023Z1404
DCB 165	5/8	16	12	023Z1403
DCB 303	3/8	10	8	023Z1409
DCB 304	1/2	12	8	023Z1408
DCB 305	5/8	16	8	023Z1407

Figure 7: Solder (cu-plated steel connectors)

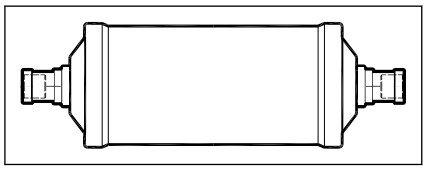


Table 9: Type DMB Solder (cu-plated steel connectors)

Type	Conn.	Multi pack		Industrial pack		Conn.	Multi pack	
	[in.]	Qty.	Code no.	Qty.	Code no.	[mm]	Qty.	Code no.
DMB 082s	1/4	24	023Z1473	–	–	6	24	023Z1461
DMB 083s	3/8	24	023Z1472	16	023Z1672	10	24	023Z1459
DMB 084s	1/2	24	023Z1471	16	023Z1671	12	24	023Z1457
DMB 163s	3/8	12	023Z1476	12	023Z1676	10	12	023Z1455
DMB 164s	1/2	12	023Z1475	12	023Z1675	12	12	023Z1453
DMB 165s	5/8	12	023Z1474	12	023Z1674	–	–	–
DMB 303s	3/8	8	023Z1481	–	–	–	–	–
DMB 304s	1/2	8	023Z1479	–	–	12	8	023Z1451
DMB 305s	5/8	8	023Z1478	8	023Z1487	–	–	–
DMB 307s	7/8	8	023Z1477	8	023Z1498	–	–	–
DMB 309s	1 1/8	–	–	8	023Z1493	–	–	–

Table 10: Type DCB Solder (cu-plated steel connectors)

Type	Conn.	Multi pack		Industrial pack		Conn.	Multi pack	
	[in.]	Qty.	Code no.	Qty.	Code no.	[mm]	Qty.	Code no.
DCB 082s	1/4	24	023Z1464	–	–	–	–	–
DCB 083s	3/8	24	023Z1463	–	–	10	24	023Z1458
DCB 084s	1/2	24	023Z1462	–	–	–	–	–
DCB 163s	3/8	12	023Z1467	–	–	–	–	–
DCB 164s	1/2	12	023Z1466	12	023Z1666	12	12	023Z1452
DCB 165s	5/8	12	023Z1465	12	023Z1665	–	–	–
DCB 304s	1/2	8	023Z1470	–	–	–	–	–
DCB 305s	5/8	8	023Z1469	–	–	–	–	–
DCB 307s	7/8	8	023Z1468	–	–	–	–	–

Certificates, declarations, and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

Table 11: Certificates, declarations, and approvals

Document name	Document type	Document topic	Approval authority
SA 6398	UL Certificate	Mechanical Safety Certificate	UL
023Z9601.AF	Manufacturer's Declaration	ATEX/PED/RoHS	Danfoss
023Z9610.AA	Manufacturer's Declaration	China RoHS	Danfoss
RU Д-DK.АИ08.B.00828_19	EAC Declaration	Machinery & Equipment	EAC

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