Dry All®

Full Range of HVAC&R Line Products

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File No. SA33181

BI-FLOW FILTER DRIER DCHBF SERIES (BI-DIRECTION)

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Introduction

Heating, Ventilation, Air Conditioning, and Refrigeration (HVAC&R) systems—particularly heat pumps—operate in both cooling and heating modes, requiring components that can manage refrigerant flow in both directions. In such systems, bi-flow filter driers play a vital role by protecting internal components from moisture and contaminants. DCHBF filter drier ensure smooth and unrestricted refrigerant flow regardless of direction, which is essential for maintaining consistent system performance on cooling/heating mode switchover. its bidirectional construction allows refrigerant to flow freely in both directions without restriction.

Bi-flow Filter Drier Core:

The DCHBF filter drier core is made from a blend of 80% molecular sieve and 20% activated alumina, bonded with a low-content binder and baked at a specific temperature for durability and porosity. This solid core ensures high moisture removal, acid absorption, and resistance to attrition, making it ideal for high-flow applications. The molecular sieve efficiently adsorbs water molecules, while the activated alumina enhances acid absorption, ensuring optimal system protection and performance.

Product Conformity/Testing:

The DRY ALL ensures the reliability of its filter driers through filtration efficiency, acid removal, and water drying tests conducted in its laboratory. The DCHBF filter drier offers filtration up to 25µ particle size with over 98% efficiency, effectively absorbing moisture and acids to maintain system performance.

Standard Ratings

Filter driers are rated based on water capacity (in drops) and refrigerant flow capacity at a 1.0 psi pressure drop. DRY ALL adheres to industry standards, conducting tests at its research center in compliance with ASHRAE 63.1 and rating filter driers according to AHRI 710 standards.

Water Capacity

Water capacity represents the amount of water a drier can retain in equilibrium with a refrigerant at a specified temperature and dewpoint dryness. DRY ALL expresses this capacity in drops, with 20 drops equalling 1 gram.

$$\text{Drop of water} = \frac{\text{Kg of refrigerant (Initial PPM} - \text{Final PPM)}}{50}$$

All ratings are in accordance with ANSI/AHRI Standard 710-2009 Water Capacities are based on following standard rating conditions:
Water in refrigerant at EPD for:
Initial PPM: R134a: 1050 PPM, R404A, R507/ R407C: 1020 PPM, R32: 990 PPM, R404A, R410A/ R22: 1050 PPM.
Final PPM: R-134a/R-407C/R-410A/R-404A/R-507A is 50 PPM, R-22 is 60 PPM.
Initial PPM: R-32: 990 PPM, R134a, R410A, R22: 1050 is PPM.
Initial PPM: R404A, R507, R407C: 1020 is PPM.

Refrigerant Flow Capacity

The maximum flow of liquid refrigerant (in tons) that a drier will pass at a 1 psi/0.07 bar pressure drop is the refrigerant flow capacity. The “ton” ratings are based on 86°F/30°C liquid temperature and refrigerant flow rate per Ton of Refrigeration at 86°F Liquid & 5.0°F Saturated Vapor for:
R-134a is 3.1 lb/min/ton,
R-407C is 3.0 lb/min/ton,
R-410A is 2.8 lb/min/ton,
R-404A is 4.1 lb/min/ton,
R-507A is 4.2 lb/min/ton,
R-22 is 3.0 lb/min/ton.

Safety

DRY ALL filter drier tested for burst pressure to comply with the safety DRY ALL manufacturing standard under AHRI Standard 710 meet the requirements of Underwriters' Laboratories, Inc., Standard 207 (UL), “Refrigerant Containing Components and Accessories, Non-electrical.”

Key Features

DCHBF Type

- Compatible with all types of CFC, HCFC, HFO, HFC, and HC refrigerants.
- Compatible with mineral oil and POE lubricants.
- 80% molecular sieve and 20% activated alumina provide high drying capacity & acid removal.
- Greater than 98% filtration efficiency.
- High water adsorption and acid absorption capacity.
- Filter drier can be installed horizontally or vertically.
- Available with flare, solder, and O-Ring Flare connection of various sizes.
- Internal and external components are cleaned, degreased, iron phosphate coated, and passivized for rust prevention.
- Compatible with A2L refrigerant.

Shell

- Oven-baked, corrosion-resistant, epoxy powdered coated has a salt spray life greater than 500hrs.
- Available in sizes 05 to 30 In^3.
- Sustainable to all environmental and adverse conditions.

Filtration

- 25 µm filter provides high filtration and dirt retention with minimal pressure drop.
- Filter pad -> high temperature resistance.

Specifications

- Maximum working pressure of 45 bar i.e., 653psig.
- Sustainable temperature range -40°C to +70°C.
- Burst pressure-five times of MWP.
- SAE, ORFS, and O'ring connections are Steel & Nickel Plated.
- ODF Type connection is in Steel - Nickel Plated.

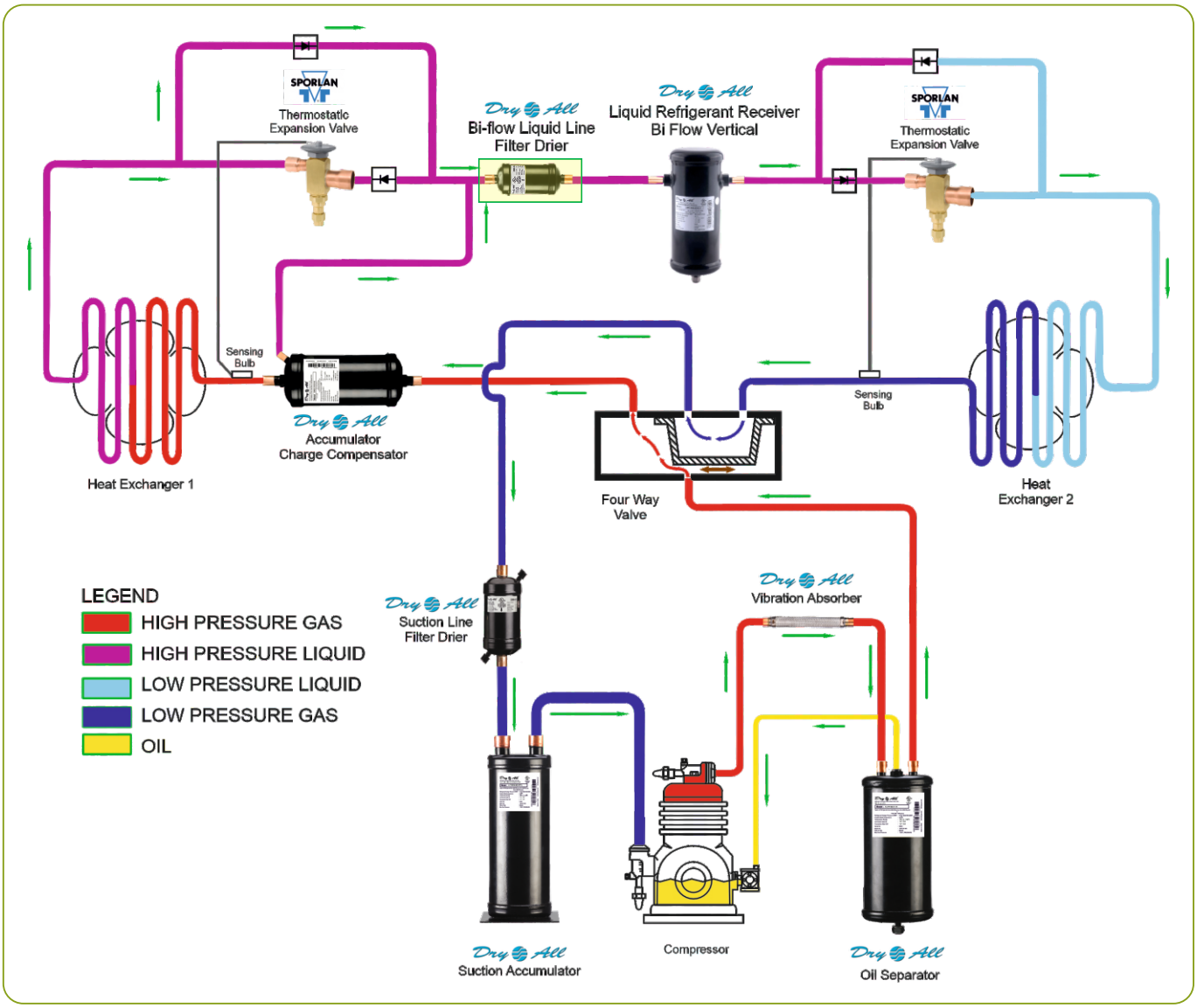
Application

Heat Pump

The market is coming up daily with new refrigerants to tackle modern-day problems such as low GWP, ODP, Energy Efficiency, etc.

- Dry ALL filter driers are compatible with almost all the refrigerants available in the market, can install the Dry All filter drier in any HFC, HCFC, HFO, or HC system.
- The High working pressure enables the Dry All filter drier ready for new Refrigerants like R32, R410, etc. Dry All filter driers can also be used with flammable refrigerants such as R600a, R600, R290, etc.
- For new refrigerants compatibility please consult to Dry All technical team.

Product Installed in Refrigeration Cycle



Certificate/Compliances

- UL listed File no. SA33181 [UL 207]
- RoHS Compliance [ROHS-3.0 2015/863/EU Directive]
- REACH Compliance [EC 1907/2006]
- CE Marking- SEP (A4P3)/CAT1/CAT2

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Dimensional Data

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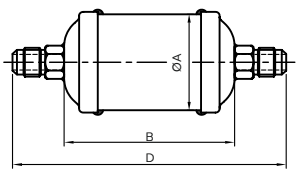
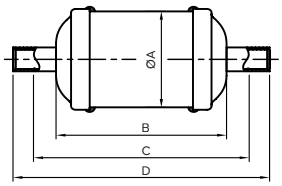
DIMENSIONAL DATA



Dimensional - 1



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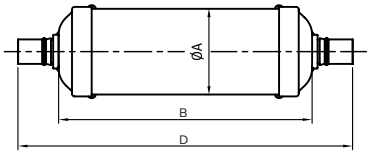

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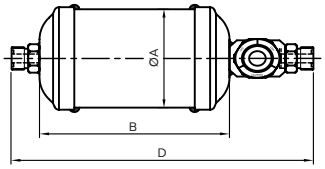


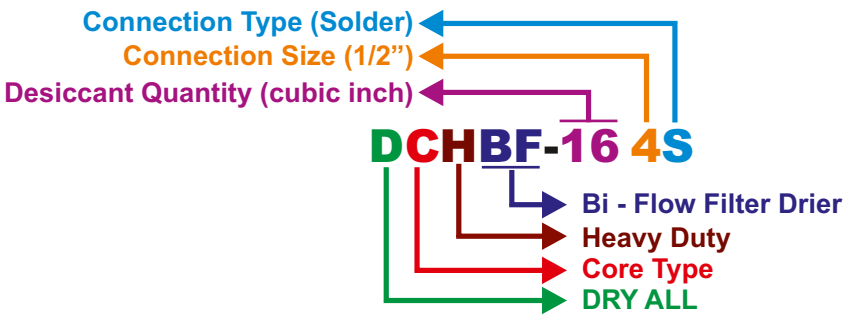
Dimensional - 4

Sr No.	Model	Connection type	Outer Dia Ø A		Body Length B		Stopper To Stopper Length C		Overall Length D		Refer Drawing No.
			mm	Inch	mm	Inch	mm	Inch	mm	Inch	
1	DCHBF-052F	1/4" SAE	Ø63.5	Ø2.5	76	2.99	--	--	122	4.80	DRAWING - 1
2	DCHBF-052S	1/4" ODF					106	4.17	126	4.96	DRAWING - 2
3	DCHBF-053F	3/8" SAE					--	--	130	5.12	DRAWING - 1
4	DCHBF-053S	3/8" ODF					102.3	4.03	126	4.96	DRAWING - 2
5	DCHBF-082F	1/4" SAE			97	3.82	--	--	143	5.63	DRAWING - 1
6	DCHBF-082S	1/4" ODF					127	5.00	147	5.79	DRAWING - 2
7	DCHBF-083F	3/8" SAE					--	--	151	5.94	DRAWING - 1
8	DCHBF-083S	3/8" ODF					123	4.85	147	5.79	DRAWING - 2
9	DCHBFSG-083 ORN	3/8" 'O' RING					--	--	173	7.09	DRAWING - 4
10	DCHBF-084F	1/2" SAE					--	--	157	6.18	DRAWING - 1
11	DCHBF-084S	1/2" ODF					123	4.85	147	5.79	DRAWING - 2
12	DCHBF-163F	3/8" SAE			117	4.61	--	--	171	6.73	DRAWING - 1
13	DCHBF-163S	3/8" ODF					143	5.64	167	6.57	DRAWING - 2
14	DCHBF-164F	1/2" SAE					--	--	177	6.97	DRAWING - 1
15	DCHBF-164S	1/2" ODF					143	5.64	167	6.57	DRAWING - 2
16	DCHBF-165F	5/8" SAE					--	--	185	7.28	DRAWING - 1
17	DCHBF-165S	5/8" ODF					143	5.64	167	6.57	DRAWING - 2
18	DCHBF-303F	3/8" SAE	Ø76.2	Ø3	191	7.52	--	--	245	9.65	DRAWING - 1
19	DCHBF-303S	3/8" ODF					217	8.56	241	9.49	DRAWING - 2
20	DCHBF-304F	1/2" SAE					--	--	251	9.88	DRAWING - 1
21	DCHBF-304S	1/2" ODF					217	8.56	241	9.49	DRAWING - 2
22	DCHBF-305F	5/8" SAE					--	--	259	10.20	DRAWING - 1
23	DCHBF-305S	5/8" ODF					217	8.56	241	9.49	DRAWING - 2
24	DCHBF-306F	3/4" SAE					--	--	265	10.43	DRAWING - 1
25	DCHBF-306S	3/4" ODF					217	8.56	241	9.49	DRAWING - 2
26	DCHBF-307S	7/8" ODF					221	8.70	265	10.40	DRAWING - 3
27	DCHBF-309S	1 1/8" ODF					221	8.70	275	10.80	DRAWING - 3

1. Internal Assembly - Solid Core Type.
2. Maximum Working Pressure - 45 bar (653 psig).
3. Temperature range -40°C to 70°C.
4. SAE, ORFS & 'O'Ring Type Connection are in Steel, Nickel Plated.
5. ODF Type Connection is in Seel & Nickel Plated.

Nomenclature

Type	Nomenclature	
Brand	D	Dry All
Desiccant Type	C	Core Type
Vessel Type	H	Heavy Duty
Connection Size (in^3)	2	1/4"
	3	3/8"
	4	1/2"
	5	5/8"
	6	3/4"
	7	7/8"
	9	1 1/8"
Desiccant Quantity (in^3)	1.5	1.5 in^3
	3	3 in^3
	5	5 in^3
	8	8 in^3
	16	16 in^3
	30	30 in^3
	41	41 in^3
	75	75 in^3
Connection Types	S	Solder connection
	F	Flare connection
	ORN	O" ring connection
	R	Rotolock (ORFS) Connection



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Drying Capacity

Sr No.	Model	Flow capacity TR @ 1psi ΔP (For Kw multiply TR by 3.5)						Water Capacity Drops of Water									
								R134a		R22		R407c		R410A		R404A & R507	
		R134a	R22	R407C	R410A	R404A	R507A	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F	75°F	125°F
1	DCHBF-052F	1.78	2.0	1.8	1.9	1.3	1.2	26	116	118	107	97	78	81	62	131	123
2	DCHBF-052S	1.78	2.0	1.8	1.9	1.3	1.2	126	116	118	107	97	78	81	62	131	123
3	DCHBF-053F	3	3.3	3.0	3.1	2.1	2.1	126	116	118	107	97	78	81	62	131	123
4	DCHBF-053S	3	3.3	3.0	3.1	2.1	2.1	126	116	118	107	97	78	81	62	131	123
5	DCHBF-082F	1.78	2.0	1.8	1.9	1.3	1.2	186	172	175	158	144	116	119	91	193	182
6	DCHBF-082S	1.78	2.0	1.8	1.9	1.3	1.2	186	172	175	158	144	116	119	91	193	182
7	DCHBF-083F	3.3	3.7	3.4	3.5	2.3	2.3	186	172	175	158	144	116	119	91	193	182
8	DCHBF-083S	3.3	3.7	3.4	3.5	2.3	2.3	86	172	175	158	144	116	119	91	193	182
9	DCHBFSG-083 ORN	3.3	3.7	3.4	3.5	2.3	2.3	186	172	175	158	144	116	119	91	193	182
10	DCHBF-084F	4.8	5.3	4.8	5.0	3.4	3.3	186	172	175	158	144	116	119	91	193	182
11	DCHBF-084S	4.8	5.3	4.8	5.0	3.4	3.3	186	172	175	158	144	116	119	91	193	182
12	DCHBF-163F	3.3	3.6	3.3	3.4	2.3	2.3	367	348	345	320	284	235	235	185	380	370
13	DCHBF-163S	4.1	4.5	4.1	4.2	2.9	2.8	367	348	345	320	284	235	235	185	380	370
14	DCHBF-164F	5.6	6.2	5.6	5.8	3.9	3.8	367	348	345	320	284	235	235	185	380	370
15	DCHBF-164S	5.6	6.2	5.6	5.8	3.9	3.8	367	348	345	320	284	235	235	185	380	370
16	DCHBF-165F	9.3	10.3	9.4	9.6	6.6	6.4	367	348	345	320	284	235	235	185	380	370
17	DCHBF-165S	10.3	10.3	9.4	9.6	6.6	6.4	367	348	345	320	284	235	235	185	380	370
18	DCHBF-303F	3.7	4.1	3.8	3.9	2.6	2.6	835	774	785	710	646	521	536	410	866	821
19	DCHBF-303S	3.7	4.1	3.8	3.9	2.6	2.6	835	774	785	710	646	521	536	410	866	821
20	DCHBF-304F	8.0	8.8	8.0	8.2	5.6	5.5	835	774	785	710	646	521	536	410	866	821
21	DCHBF-304S	8.0	8.8	8.0	8.2	5.6	5.5	835	774	785	710	646	521	536	410	866	821
22	DCHBF-305F	8.1	8.9	8.1	8.3	5.7	5.5	835	774	785	710	646	521	536	410	866	821
23	DCHBF-305S	8.1	8.9	8.1	8.3	5.7	5.5	835	774	785	710	646	521	536	410	866	821
24	DCHBF-306F	9.3	10.2	9.4	9.6	6.5	6.4	835	774	785	710	646	521	536	410	866	821
25	DCHBF-306S	9.3	10	9.4	9.6	6.5	6.4	835	774	785	710	646	521	536	410	866	821
26	DCHBF-307S*	12.8	14.1	12.9	13.2	9.0	8.8	835	774	785	710	646	521	536	410	866	821
27	DCHBF-309S*	15	16.5	15.1	15.5	10.6	10.3	835	774	785	710	646	521	536	410	866	821

For New Refrigerants Compatibility Please Consult to Dry ALL Technical Team.
All ratings are in accordance with ANSI/AHRI Standard 710-2009.

Water Capacities are based on the following standard rating conditions:
Water in refrigerant at EPD for:
R-134a/R-407C/R-410A/R-404A/R-507A is 50 ppm,
R-22 is 60 ppm.

Flow Capacities are based on the following standard rating conditions:
Flow Rate per Ton of Refrigeration at 86°F Liquid & 5.0°F Saturated Vapor for:
R-134a is 3.1 lb/min/ton, R-22 is 3.0 lb/min/ton
R-407C is 3.0 lb/min/ton, R-507A is 4.2 lb/min/ton
R-410A is 2.8 lb/min/ton, R-404A is 4.1 lb/min/ton,

Filter Drier Selection Criteria

- Select the appropriate filter drier based on refrigerants and oil compatibility. Then select the filter drier size for the required drying and flow capacity.
- The filter drier drying capacity is rated in drops, determined by the drops of water to be absorbed by the filter drier.

$$\text{The drop of water} = \frac{(\text{Initial PPM of water-Final PPM of water}) \times \text{kg of refrigerant})}{50}$$

System input data:

- Refrigerant: R134a,
- Condensing temperature: 50°C,
- Weight of refrigerant: 12 Kg,
- Cooling capacity: 5 Ton,

$$\text{The drop of water} = \frac{(\text{Initial PPM of water-Final PPM of water}) \times \text{kg of refrigerant})}{50}$$

$$\text{The drop of water} = \frac{(1050\text{-}50) \times 12)}{50}$$

Refrigerant: R134a,
Condensing temperature: 50°C,
Weight of refrigerant: 12 Kg,
Cooling capacity: 5 Ton,

- Drops of water = 240

Where,

- Moisture in the R134a refrigerant at the inlet of the filter drier according to ARI standard 710:86 is 1050 ppm.
- Moisture in the R134a refrigerant at the outlet of the filter drier according to ARI standard 710:86 is 50 ppm.
- For calculated water capacity, DCHBF 08 series is considered the exact model selection. For 5 Ton capacity, DCHBF – 084F or DCHBF – 084S model is to be selected as per connection.
- For required drying capacity or liquid capacity, one should always choose a slightly larger filter drier.

Note: Dry All reserves the right to alter its products without notice and will not accept any responsibility for possible errors in catalogues, brochures and other printed materials. Imitation / reproduction of information from this catalogue in part or whole cannot be done without prior approval in writing from our company.

Check Hologram for
Genuine Product

Dry All
Full Range of HVAC&R Line Products

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