

FDB Filter Drier

Technical Bulletin

EMERSON **FDB** is a hermetic filter-drier in compacted bead style for use on liquid line.

Features

- Compacted bead style
- Hermetic design.
- Rugged steel shells
- Corrosion resistant epoxy paint
- Cushioned flow for non-turbulent performance
- Filtration first for more effective use of surface area of desiccant
- High water and acid adsorption capacity
- High filtration capacity / efficiency

Construction / Function

Liquid line filter-driers are often referred to as system protectors because they remove harmful elements from the circulating refrigerants and lubricants before serious damage results.

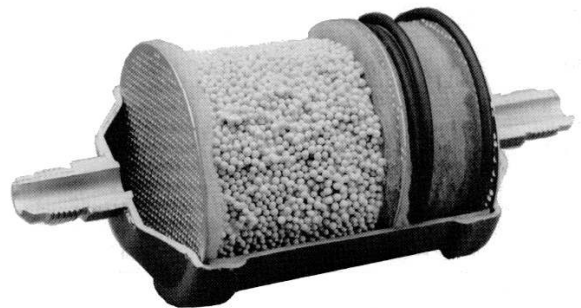
No matter how many precautions are taken during assembly and installation or servicing of a system, contaminants can find (generate) their way into the system. These contaminants can be solid, such as metal swarf, flux, dust and dirt. Other equally menacing contaminants are soluble, such as water, acid and wax.

FDB filter-driers incorporate a desiccant specially formulated and blended from molecular sieves and activated alumina for maximum moisture and acid removal capability.

The active drying material is in the form of beads or pellets. No binding material is used to hold beads together, but rather compacting is performed through some type of mechanical pressure e.g. spring. On the upstream side of the compacted beads is a filter network which cushions flow and traps the solid contaminants.






FDB



Technical Data

Max. allowable pressure PS	45 bar
Test pressure PT	47.3 bar
Liquid Temperature Refrigerant	-45...+65°C
Fluid Group	I + II
List of released refrigerants Fluid group II (A1):	R134a, R404A, R407C, R410A, R448A, R449A, R450A, R452A, R507, R513A
Fluid group I (A2L):	R32, R452B, R454B, R454A, R454C, R455A, R1234ze, R1234yf
<i>Note:</i> Fluid group classification according to PED 2014/68/EU.	

Material shell	Steel
Paint	Epoxy Powder paint
Connections	Solder Flare Copper, ODF Burnished, SAE
Protection	500+ Hours salt spray test
Package	Individual packaged
Marking	 (A2L pending)  (acc. PED, V > 1 liter), 

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Selection table - A1 Refrigerants

Type	Part No.	Connection ODF*/SAE*	Flow capacity (kW) pressure drop 0.07 bar**								
			R134a	R407C	R404A R507	R410A	R448A	R449A	R450A	R452A	R513A
FDB-032	059305	1/4"(6 mm) SAE	6.3	6.6	4.5	6.8	6.0	5.9	5.8	4.6	5.5
FDB-032S	059306	1/4" ODF	9.7	10.1	6.9	10.5	9.2	9.1	8.9	7.0	8.5
FDB-052	059307	1/4"(6 mm) SAE	6.5	6.8	4.6	7.0	6.2	6.1	6.0	4.7	5.7
FDB-052S	059309	1/4" ODF	9.7	10.1	6.9	10.5	9.2	9.1	8.9	7.0	8.5
FDB-053	059308	3/8"(10 mm) SAE	15.5	16.1	11.0	16.7	6.4	6.3	6.2	4.9	5.9
FDB-053S	059310	3/8" ODF	19.3	20.1	13.8	20.8	9.4	9.2	9.1	7.1	8.6
FDB-082	059311	1/4"(6 mm) SAE	6.8	7.1	4.8	7.3	6.4	6.3	6.2	4.9	5.9
FDB-082S	059314	1/4" ODF	9.9	10.3	7.0	10.7	14.7	14.4	14.2	11.2	13.5
FDB-083	059312	3/8"(10 mm) SAE	15.8	16.4	11.2	17.0	18.4	18.0	17.7	14.0	16.9
FDB-083S	059315	3/8" ODF	19.8	20.6	14.1	21.3	15.0	14.7	14.4	11.4	13.8
FDB-084	059313	1/2"(12 mm) SAE	26.4	27.5	18.8	28.4	18.8	18.4	18.1	14.3	17.3
FDB-084S	059316	1/2" ODF	28.3	29.5	20.1	30.5	15.4	15.1	14.9	11.7	14.2
FDB-162	059317	1/4"(6 mm) SAE	6.8	7.1	4.8	7.3	21.9	21.4	21.1	16.6	20.1
FDB-163	059318	3/8"(10 mm) SAE	16.2	16.9	11.5	17.5	17.2	16.8	16.5	13.0	15.8
FDB-163S	059321	3/8" ODF	23.0	23.9	16.4	24.8	25.1	24.6	24.2	19.0	23.0
FDB-164	059319	1/2"(12 mm) SAE	27.9	29.1	19.9	30.1	26.9	26.4	25.9	20.4	24.7
FDB-164S	059322	1/2" ODF	36.0	37.5	25.6	38.8	26.6	26.0	25.6	20.2	24.4
FDB-165	059320	5/8"(16 mm) SAE	36.6	38.2	26.1	39.5	34.2	33.6	33.0	26.0	31.4
FDB-165S	059323	5/8" ODF	48.8	50.8	34.8	52.6	30.2	29.6	29.1	23.0	27.8
FDB-303	059324	3/8"(10 mm) SAE	18.0	18.8	12.8	19.4	36.2	35.4	34.8	27.4	33.2
FDB-304	059325	1/2"(12 mm) SAE	31.8	33.1	22.6	34.2	34.9	34.2	33.6	26.5	32.0
FDB-304S	003667	1/2" ODF	38.0	39.6	27.1	41.0	46.4	45.5	44.7	35.3	42.6
FDB-305	059326	5/8"(16 mm) SAE	40.3	42.0	28.7	43.4	38.3	37.6	36.9	29.1	35.2
FDB-305S	059327	5/8" ODF	53.8	56.0	38.3	57.9	51.2	50.1	49.3	38.8	47.0
FDB-307S	059328	7/8" ODF	60.5	63.1	43.1	65.2	47.3	46.4	45.6	35.9	43.4
FDB-415	059329	5/8"(16 mm) SAE	49.7	51.8	35.4	53.6	57.6	56.5	55.5	43.7	52.9
FDB-417S	059330	7/8" ODF	77.2	80.4	55.0	83.2	73.5	72.0	70.8	55.8	67.5

Note 1: Flow capacities are in accordance with ARI710-86 and DIN8949.

Note 2: *) SAE = Flare. ODF = Brazing female

Note 3: **) 0.14 bar pressure drop, multiply values by 1.4

Note 4: Product label update is pending!

Nominal Flow Capacities bases on following operating conditions:

Refrigerant	Evaporating temperature	Liquid temperature	Flow rate kg/kW/sec.	Refrigerant	Evaporating temperature	Liquid temperature	Flow rate kg/kW/sec.
R134a	-15°C	+30°C	0.0068	R448A	-15°C	+30°C	0.0061
R407C			0.0063	R449A			0.0061
R404A/R50			0.0088	R450A			0.0074
R410A			0.0059	R452A			0.0086
				R513A			0.0079

Note: For other operating conditions use the "Controls Navigator 4.1" selection tool.

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Selection table - A2L Refrigerants

Type	Part No.	Connection ODF*/SAE*	Flow capacity (kW) pressure drop 0.07 bar**							
			R32	R452B	R454B	R454A	R454C	R455A	R1234ze	R1234yf
FDB-032	059305	1/4"(6mm) SAE	9.8	7.6	7.7	5.8	5.1	5.4	4.5	5.5
FDB-032S	059306	1/4" ODF	15.0	11.7	11.8	9.0	7.8	8.3	7.0	8.5
FDB-052	059307	1/4"(6mm) SAE	10.1	7.9	7.9	6.0	5.3	5.6	4.7	5.7
FDB-052S	059309	1/4" ODF	15.0	11.7	11.8	9.0	7.8	8.3	7.0	8.5
FDB-053	059308	3/8"(10mm) SAE	23.9	18.7	18.8	14.3	12.5	13.2	11.1	13.6
FDB-053S	059310	3/8" ODF	29.9	23.4	23.5	17.8	15.6	16.5	13.9	16.9
FDB-082	059311	1/4"(6mm) SAE	10.5	8.2	8.2	6.3	5.5	8.5	4.9	5.9
FDB-082S	059314	1/4" ODF	15.3	12.0	12.0	9.1	8.0	5.8	7.1	8.7
FDB-083	059312	3/8"(10mm) SAE	24.4	19.1	19.2	14.5	12.7	13.5	11.3	13.8
FDB-083S	059315	3/8" ODF	30.6	23.9	24.1	18.3	16.0	16.9	14.2	17.3
FDB-084	059313	1/2"(12mm) SAE	40.8	31.9	32.1	24.3	21.3	22.6	19.0	23.1
FDB-084S	059316	1/2" ODF	43.8	34.2	34.4	26.1	22.9	24.2	20.4	24.8
FDB-162	059317	1/4"(6mm) SAE	10.5	8.2	8.2	6.3	5.5	5.8	4.9	5.9
FDB-163	059318	3/8"(10mm) SAE	25.1	19.6	19.7	15.0	13.1	13.9	11.7	14.2
FDB-163S	059321	3/8" ODF	35.5	27.8	28.0	21.2	18.6	19.7	16.5	20.1
FDB-164	059319	1/2"(12mm) SAE	43.2	33.8	34.0	25.8	22.6	23.9	20.1	24.5
FDB-164S	059322	1/2" ODF	55.7	43.5	43.8	33.2	29.1	30.8	25.9	31.5
FDB-165	059320	5/8"(16mm) SAE	56.6	44.3	44.6	33.8	29.6	31.3	26.4	32.1
FDB-165S	059323	5/8" ODF	75.5	59.0	59.4	45.1	39.4	41.8	35.1	42.8
FDB-303	059324	3/8"(10mm) SAE	27.9	21.8	21.9	16.7	14.6	15.4	13.0	15.8
FDB-304	059325	1/2"(12mm) SAE	49.1	38.4	38.7	29.3	25.7	27.2	22.9	27.8
FDB-304S	003667	1/2" ODF	58.8	46.0	46.2	35.1	30.7	32.5	27.3	33.3
FDB-305	059326	5/8"(16mm) SAE	62.3	48.7	49.0	37.2	32.5	34.5	29.0	35.3
FDB-305S	059327	5/8" ODF	83.1	65.0	65.4	49.6	43.4	46.0	38.7	47.1
FDB-307S	059328	7/8" ODF	93.6	73.2	73.6	55.9	48.9	51.8	43.6	53.0
FDB-415	059329	5/8"(16mm) SAE	76.9	60.1	60.5	45.9	40.2	51.8	35.8	43.6
FDB-417S	059330	7/8" ODF	119.4	93.4	93.9	71.3	62.3	66.0	55.6	67.6

Note 1: Flow capacities are in accordance with ARI710-86 and DIN8949.

Note 2: *) SAE = Flare. ODF = Brazing female

Note 3: **) 0.14 bar pressure drop, multiply values by 1.4

Note 4: Product label update is pending!

Nominal Flow Capacities bases on following operating conditions:

Refrigerant	Evaporating temperature	Liquid temperature	Flow rate kg/kW/sec.	Refrigerant	Evaporating temperature	Liquid temperature	Flow rate kg/kW/sec.
R32	-15°C	+30°C	0.0039	R454C	-15°C	+30°C	0.0058
R452B			0.0043	R455A			0.0072
R454B			0.0047	R1234ze			0.0076
R454A			0.0061	R1234yf			0.0089

Note: For other operating conditions use the "Controls Navigator 4.1" selection tool.

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Water and Acid Adsorption Capacity

A1 Refrigerants

Type / Size	Water adsorption capacity (gram)									
	Liquid Temperature 24°C					Liquid Temperature 52°C				
	R134a	R404A R507	R407C	R410A	R452A	R134a	R404A/ R507	R407C	R410A	R452A
FDB-03...	1.9	1.9	1.7	1.6	2.4	1.8	1.9	1.6	1.3	2.0
FDB-05...	5.5	5.5	5.0	4.4	6.5	5.2	5.3	4.5	3.3	5.5
FDB-08...	8.8	8.8	8.0	7.1	10.4	8.4	8.5	7.2	5.4	8.8
FDB-16...	17.7	17.6	15.9	14.2	20.7	16.8	17.1	14.5	10.8	17.5
FDB-30...	31.7	31.6	28.5	25.0	36.3	30.1	30.5	26.0	19.0	30.8
FDB-41...	44.2	44.1	39.9	35.0	50.9	42.1	42.7	36.3	26.6	43.2

Type / Size	Water adsorption capacity (gram)									
	Liquid Temperature 24°C					Liquid Temperature 52°C				
	R448A	R449A	R450A	R513A		R448A	R449A	R450A	R513A	
FDB-03...	2.5	2.5	2.5	2.5		2.3	2.3	2.3	2.3	
FDB-05...	6.8	6.8	6.9	6.9		6.2	6.2	6.3	6.3	
FDB-08...	10.9	10.9	11.1	11.1		9.9	9.9	10.1	10.1	
FDB-16...	21.6	21.6	22.0	22.0		19.7	19.7	20.0	20.0	
FDB-30...	37.9	37.9	38.6	38.6		34.6	34.6	35.2	35.2	
FDB-41...	53.2	53.2	54.2	54.2		48.5	48.5	49.4	49.4	

A2L Refrigerants

Type / Size	Water adsorption capacity (gram)									
	Liquid Temperature 24°C					Liquid Temperature 52°C				
	R32	R452B	R454A R454B R454C	R455A	R1234ze R1234yf	R32	R452B	R454A R454B R454C	R455A	R1234ze R1234yf
FDB-03...	2.3	2.4	2.4	2.4	2.5	2.2	2.0	2.0	2.0	2.3
FDB-05...	6.3	6.5	6.5	6.5	6.9	5.9	5.5	5.5	5.5	6.3
FDB-08...	10.1	10.4	10.4	10.4	11.1	9.5	8.8	8.8	8.8	10.1
FDB-16...	20.1	20.7	20.7	20.7	22.0	18.8	17.5	17.5	17.5	20.0
FDB-30...	35.3	36.3	36.3	36.3	38.6	33.1	30.8	30.8	30.8	35.2
FDB-41...	49.5	50.9	50.9	50.9	54.2	46.4	43.2	43.2	43.2	49.4

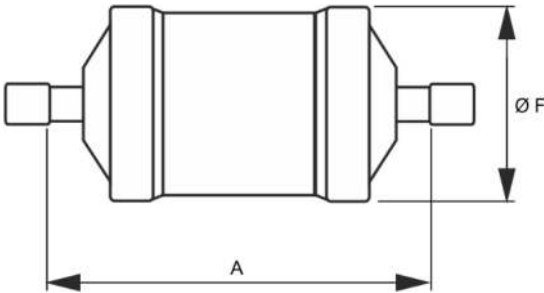
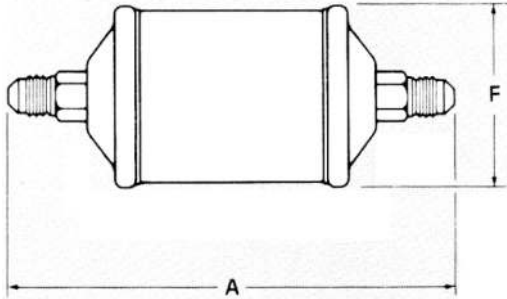
The water capacities are according to ARI-Standard 710 and DIN 8948.

Refrigerant	EPD	Refrigerant	EPD	Refrigerant	EPD	Refrigerant	EPD
R134a	50 ppm	R448A	60 ppm	R32	50 ppm	R454C	60 ppm
R407C	50 ppm	R449A	60 ppm	R452B	60 ppm	R455A	60 ppm
R404A/R507	50 ppm	R450A	60 ppm	R454B	60 ppm	R1234ze	50 ppm
R410A	50 ppm	R452A	60 ppm	R454A	60 ppm	R1234yf	50 ppm
		R513A	60 ppm				

Note: EPD = End Point Dryness

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Dimensions (mm)



Type	Part No.	A (mm)	B (mm)	F (mm)	Connection			
					Brazing/ ODF (mm)	(Inch)	Flare/ SAE (mm)	(Inch)
FDB-032	059305	111	-	41	-	-	6	1/4"
FDB-032S	059306	98	79	41	-	1/4"	-	-
FDB-052	059307	122	-	67	-	-	6	1/4"
FDB-052S	059309	113	94	67	-	1/4"	-	-
FDB-053	059308	130	-	67	-	-	10	3/8"
FDB-053S	059310	114	92	67	-	3/8"	-	-
FDB-082	059311	143	-	67	-	-	6	1/4"
FDB-082S	059314	133	114	67	-	1/4"	-	-
FDB-083	059312	151	-	67	-	-	10	3/8"
FDB-083S	059315	135	113	67	-	3/8"	-	-
FDB-084	059313	157	-	67	-	-	12	1/2"
FDB-084S	059316	137	111	67	-	1/2"	-	-
FDB-162	059317	167	-	67	-	-	6	1/4"
FDB-163	059318	175	-	67	-	-	10	3/8"
FDB-163S	059321	159	137	67	-	3/8"	-	-
FDB-164	059319	179	-	67	-	-	12	1/2"
FDB-164S	059322	160	135	67	-	1/2"	-	-
FDB-165	059320	191	-	67	-	-	16	5/8"
FDB-165S	059323	167	135	67	-	5/8"	-	-
FDB-303	059324	244	-	78	-	-	10	3/8"
FDB-304	059325	251	-	78	-	-	12	1/2"
FDB-304S	003667	226	205	78	-	1/2"	-	-
FDB-305	059326	262	-	78	-	-	16	5/8"
FDB-305S	059327	237	205	78	-	5/8"	-	-
FDB-307S	059328	251	213	78	-	7/8"	-	-
FDB-415	059329	265	-	94	-	-	16	5/8"
FDB-417S	059330	254	216	94	-	7/8"	-	-

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