

Danfoss DML-083

Danfoss Liquid Line Filter Dryer DML-083 Instruction Manual

Model: DML-083

1. INTRODUCTION

This instruction manual provides essential information for the safe and effective installation, operation, and maintenance of the Danfoss DML-083 Liquid Line Filter Dryer. Please read this manual thoroughly before installation and keep it for future reference.

2. PRODUCT OVERVIEW

The Danfoss DML-083 is a high-performance liquid line filter dryer designed for refrigeration and air conditioning systems. It is specifically engineered for use with HFC refrigerants (such as R134a, R404A, R410A) utilizing polyol ester (POE) or polyalkylene glycol (PAG) oils. It is also compatible with R22 refrigerant.

The DML series is characterized by its high water absorption capability. Unlike some other filter dryers, the DML-083 does not contain activated alumina, which helps prevent the reduction of additives present in modern refrigeration oils. This design ensures optimal system performance and longevity.

- **Refrigerant Compatibility:** HFC (R134a, R404A, R410A, etc.) with POE/PAG oils, and R22.
- **Connection Size:** 3/8 inch flare.
- **Solid Core:** Surface area 131 cm², Volume 104 cm³.
- **Filter Dryer Capacity:** 0.17 liters.

3. SAFETY INFORMATION

Always adhere to local and national safety regulations when installing or servicing refrigeration equipment. Only qualified personnel should perform installation and maintenance procedures.

- Ensure the system is depressurized before attempting any installation or removal of the filter dryer.
- Wear appropriate personal protective equipment (PPE), including safety glasses and gloves.
- Avoid contact with refrigerants and refrigeration oils, as they can cause frostbite or chemical burns.
- Do not exceed the maximum operating pressure specified for the system and the filter dryer.
- Properly dispose of used filter dryers and refrigerants according to environmental regulations.

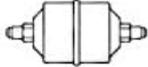
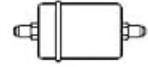
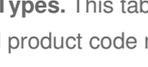
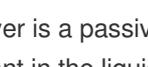
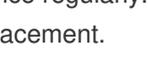
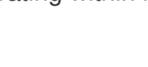
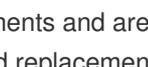
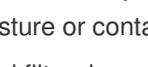
4. SETUP AND INSTALLATION

The DML-083 filter dryer is designed for installation in the liquid line of a refrigeration system. Ensure the system is clean and free of contaminants before installation.

- System Preparation:** Isolate the section of the liquid line where the filter dryer will be installed. Recover any refrigerant from this section.
- Orientation:** Install the filter dryer with the flow arrow on the body pointing in the direction of refrigerant flow (towards the expansion device).
- Connection:** The DML-083 uses 3/8 inch flare connections. Ensure proper flaring of the copper tubing to prevent leaks. Use appropriate flare nuts and tighten them to the manufacturer's recommended torque specifications.
- Brazing (if applicable):** If brazing connections, ensure the filter dryer body is protected from excessive heat to prevent damage to the desiccant material. Use a wet rag or heat-absorbing paste.
- Leak Testing:** After installation, perform a thorough leak test using an inert gas (e.g., nitrogen) to ensure all connections are sealed.
- Evacuation:** Evacuate the system to a deep vacuum (typically below 500 microns) to remove non-condensable gases and moisture.
- Refrigerant Charging:** Recharge the system with the appropriate refrigerant according to the system manufacturer's specifications.

形式	寸法						質量 kg
	A mm	A ₁ mm	A ₂ mm	L mm	D ₁ mm	D ₂ mm	
DML 032	66	33	33	110	46	43	0.20
DML 033	66	33	33	123	46	43	0.23
DML 052	75	24.5	50.5	119	58	54	0.39
DML 053	75	24.5	50.5	132	58	54	0.42
DML 082	101	50.5	50.5	145	58	54	0.40
DML 083	101	50.5	50.5	158	58	54	0.44
DML 084	101	50.5	50.5	166	58	54	0.48
DML 085	101	50.5	50.5	175	58	54	0.52
DML 162	108	54	54	152	80	76	0.79
DML 163	108	54	54	165	80	76	0.82
DML 164	108	54	54	173	80	76	0.87
DML 165	108	54	54	182	80	76	0.91
DML 166	108	54	54	180	80	76	0.99
DML 303	186	—	—	243	80	76	1.33
DML 304	186	—	—	251	80	76	1.38
DML 305	186	—	—	260	80	76	1.42
DML 306	186	—	—	258	80	76	1.49
DML 413	187	—	—	244	93	89	1.86
DML 414	187	—	—	252	93	89	1.91
DML 415	187	—	—	261	93	89	1.95

Figure 1: DML Flare Connection Dimensions. This diagram illustrates the physical dimensions and connection types for various DML models, including the DML-083. Note the flow arrow indicating the correct installation direction.

DML形 フレア継手			
形 式	接続サイズ in	コード番号	
	DML 032 *	1/4	023Z5035
	DML 033 *	3/8	023Z5036
	DML 033	3/8	023Z5090
	DML 052	1/4	023Z5037
	DML 053	3/8	023Z5038
	DML 082	1/4	1)
	DML 083	3/8	023Z5040
	DML 084	1/2	023Z5041
	DML 085	5/8	023Z5073
	DML 162	1/4	023Z5042
	DML 163	3/8	023Z5043
	DML 164	1/2	023Z5044
	DML 165	5/8	023Z5045
	DML 166	3/4	023Z5046
	DML 303	3/8	1)
	DML 304	1/2	023Z0050
	DML 305	5/8	023Z0051
	DML 306	3/4	023Z0193
	DML 413	3/8	023Z0108
	DML 414	1/2	023Z0109
	DML 415	5/8	1)

*メッシュ金網付
1) お問い合わせ製品。

Figure 2: DML Flare Connection Types. This table provides a list of DML models, their corresponding connection sizes (in inches), and product code numbers. The DML-083 has a 3/8 inch connection.

5. OPERATING INSTRUCTIONS

The Danfoss DML-083 filter dryer is a passive component designed to continuously remove moisture and contaminants from the refrigerant in the liquid line. Once installed correctly, it operates automatically as part of the refrigeration cycle.

- Monitor system performance regularly. A significant pressure drop across the filter dryer may indicate it is clogged and requires replacement.
- Ensure the system is operating within its design parameters to prevent premature failure of components, including the filter dryer.

6. MAINTENANCE

Filter dryers are sealed components and are not designed for internal cleaning or repair. Maintenance primarily involves periodic inspection and replacement.

- **Inspection:** Visually inspect the filter dryer for signs of external damage, corrosion, or leaks during routine system checks.
- **Replacement:** The lifespan of a filter dryer depends on system cleanliness and operating conditions. It is recommended to replace the filter dryer whenever a system is opened for major repairs, after a compressor burnout, or if signs of moisture or contamination are detected (e.g., acid test, sight glass indicator).
- **Disposal:** Dispose of used filter dryers in accordance with local environmental regulations for hazardous waste, as they may contain residual refrigerant and oil.

7. TROUBLESHOOTING

While the DML-083 is a reliable component, issues in the refrigeration system can sometimes be attributed to or exacerbated by a failing filter dryer.

Symptom	Possible Cause	Action
High pressure drop across filter dryer	Clogged filter dryer due to solid contaminants or excessive moisture absorption.	Replace the filter dryer. Investigate and address the source of contamination.
Moisture indicator (if present in system) shows moisture	Filter dryer is saturated with moisture or system has a leak allowing moisture ingress.	Replace the filter dryer. Perform a thorough leak check and repair any leaks. Re-evacuate and recharge the system.
System performance degradation (e.g., reduced cooling capacity)	Partially clogged filter dryer restricting refrigerant flow.	Check pressure drop across the filter dryer. If significant, replace the unit.

8. SPECIFICATIONS

Detailed specifications for the Danfoss DML-083 filter dryer are provided below:

- **Brand:** Danfoss
- **Model:** DML-083
- **Product Dimensions:** 15.8 x 5.8 x 5.8 cm (approximately)
- **Product Weight:** 440 g
- **Connection Type:** Flare
- **Connection Size:** 3/8 inch
- **Solid Core Surface Area:** 131 cm²
- **Solid Core Volume:** 104 cm³
- **Filter Dryer Internal Volume:** 0.17 L
- **Operating Temperature Range:** -40°C to 70°C

仕 様	コア表面積および内容積			
	形 式	ソリッドコア		フィルタドライヤ 内容量 [ℓ]
		表面積 [cm ²]	内容積 [cm ³]	
	DML 03	82	41	0.08
	DML 05	95	67	0.12
	DML 08	131	104	0.17
	DML 16	220	234	0.36
	DML 30	378	494	0.72
	DML 41	510	681	0.97
	DML 60	756	988	1.34
	DML 75	1019	1363	1.81

使用温度範囲：- 40~70°C

Figure 3: DML Core Surface Area and Volume. This table details the solid core surface area and internal volume for different DML filter dryer models, including the DML-083.

形式		水分吸着能力 (冷媒処理量) kg ¹⁾						冷媒液容量 kW ²⁾			最高使用 圧力 bar ³⁾
		R134a		R404A R507		R22 R407C R410A		R134a	R404A R507	R22 R407C R410A	
		24°C	52°C	24°C	52°C	24°C	52°C				
DML 032 / 032s							7	5	7	42(46)	
DML 032.5s	5.5	5	7.5	4.5	4.5	4	9	7	10		
DML 033 / 033s							17	13	19		
DML 052 / 052s							7	5	8	42(46)	
DML 052.5s	8.5	8	13	7.5	8	7	9	7	10		
DML 053 / 053s							18	14	19		
DML 054s							25	18	27		
DML 082 / 082s							7	5	8		
DML 082.5s							10	8	11	42(46)	
DML 083 / 083s	12.5	12	20	11.5	12.5	11	19	14	21		
DML 084 / 084s							26	20	29		
DML 085 / 085s							42	31	46		
DML 162 / 162s							7	5	8		
DML 162.5s							10	8	11	42(46)	
DML 163 / 163s	27	25.5	43.5	24	27	23	22	16	24		
DML 164 / 164s							30	22	33		
DML 165 / 165s							43	30	47		
DML 166 / 166s							44	31	48		
DML 303 / 303s							21	15	23	42(46)	
DML 304 / 304s							31	22	34		
DML 305 / 305s							45	33	49		
DML 306 / 306s	57	54	92.5	51	57	48.5	62	45	68		
DML 307s							62	45	68		
DML 309s							62	45	68	35(35)	
DML 413							25	18	27	42(46)	
DML 414 / 414s							32	23	35		
DML 415 / 415s	80	75	130	70	80	74	53	37	58		
DML 417s							91	65	100		
DML 419s							91	65	100		
DML 604s							27	20	31	42(46)	
DML 606s							44	32	48	35(35)	
DML 607s	113	107	185	101	114	97	75	54	82		
DML 609s							87	64	95		
DML 757s							82	60	90		
DML 759s	160	150	260	140	160	148	94	68	102		

1) 冷媒処理量の条件
R22:1050 ppm W から 60 ppm W
(ARI 規格 710 - 86 による)
R134a:1050 ppm W から 75 ppm W
(乾燥機の水分会含有量 50ppmW が必
要な場合、乾燥より 15% 減少します)
R404A, R407C, R507:
1020 ppm W から 30 ppm W
R410A:1050 ppm W から 60 ppm W
2) 冷媒液容量の条件
蒸発温度 te = -15°C,
凝縮温度 tc = +30°C,
フィルタドライヤ前後の圧力降
下 Δp = 0.02bar で
ARI 規格 710 - 86 に基づきます。
3) 内は IIL 規定基準における値

Figure 4: DML Water Absorption Capacity and Liquid Line Capacity. This table provides data on the water absorption capability and liquid line capacity for various DML models across different refrigerants (R134a, R404A, R507, R22, R407C, R410A) at specified temperatures.

9. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the official Danfoss website or contact your local Danfoss distributor. Keep your purchase receipt as proof of purchase.

Danfoss Official Website: www.danfoss.com