Dry All®

Full Range of HVAC&R Line Products

OIL SEPARATORS

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Introduction

In HVAC&R systems, the compressor plays a critical role by circulating refrigerant throughout the system. To operate reliably, compressors require continuous lubrication, which is provided by oil stored within the compressor housing. However, during normal operation, a small amount of this oil mixes with the high-pressure refrigerant and travels through the system. Excessive oil carryover can lead to serious problems. Oil accumulation in system components such as evaporators and condensers can reduce heat transfer efficiency, increase pressure drops, and lead to overall system performance degradation. Additionally, the compressor can suffer from oil starvation, leading to overheating, mechanical wear, and even complete failure. An oil separator is therefore essential to the reliable and efficient operation of HVAC systems. It removes oil from the refrigerant gas efficiently and returns this separated oil back to the compressor crankcase. This not only ensures proper lubrication of the compressor but also keeps the refrigerant clean, maximizing the system's heat transfer efficiency and overall performance. Without an oil separator, the risk of system inefficiency, compressor damage, and costly repairs or downtime increases significantly. Hence, installing an oil separator is a must for system safety and longevity.

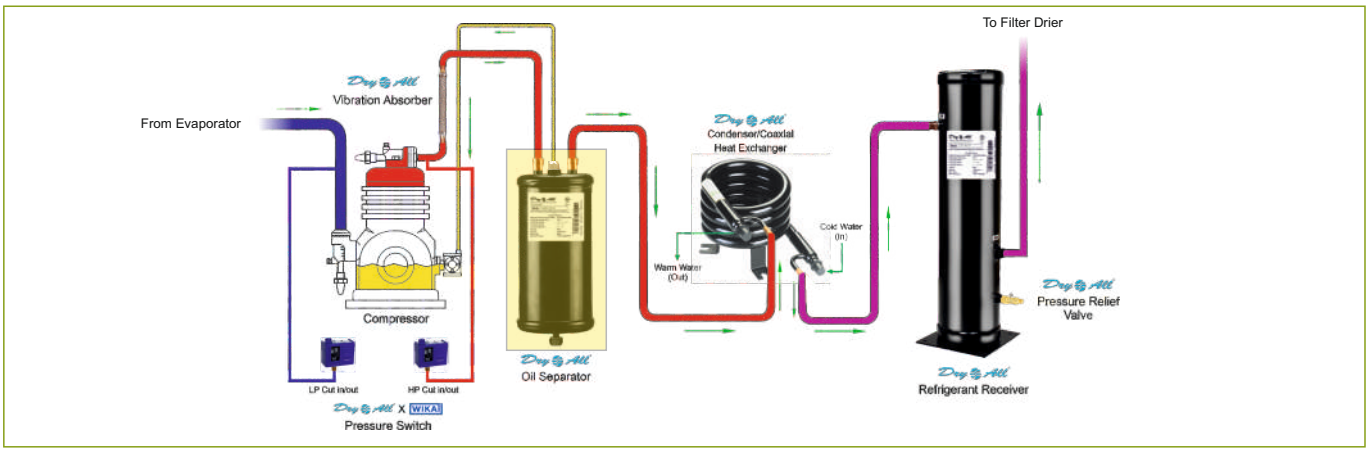
Key Features

1. **Efficient Oil Management:**
   The float ball mechanism ensures that oil is continuously returned to the compressor. This helps maintain proper lubrication for compressor.
2. **Low Pressure Drop:**
   The design allows refrigerant to pass through the separator with minimal resistance. This keeps pressure drop very low, which is important to maintain system performance and reduce energy consumption.
3. **Reliable Mechanical Design:**
   The float ball system works purely through mechanical movement, without the need for electronics or complex systems. This makes it a simple, durable, and cost-effective solution.
4. **Wide Refrigerant and Oil Compatibility:**
   The separator is compatible with all common refrigerants including CFCs, HCFCs, HFCs, HFOs, and hydrocarbons (HCs), as well as with Mineral Oil and POE (Polyolester) lubricants and PVE oils.
5. **Compact Design:**
   Float ball oil separators are typically compact and can be easily integrated into various HVAC system layouts.
6. **Corrosion Resistance:**
   All internal and external parts are cleaned, degreased, coated with iron phosphate, and passivated to protect against rust and corrosion, ensuring long-last life.

Applications

- Commercial HAVC&R systems
- Industrial refrigeration
- Transport refrigeration
- Marine refrigeration
- Residential HVAC&R
- Specialized applications: ideal for cryogenic systems, heat pumps, and custom OEM solutions.

Product installed in Refrigeration System



Working Principle

- Refrigeration oil easily mixes with the refrigerant, allowing some oil to leave the compressor and circulate throughout the system.
- The oil-refrigerant mixture enters the oil separator directly from the compressor discharge line, where the flow velocity drops significantly.
- This reduction in velocity, along with filter pockets at both the inlet and outlet, helps the heavier oil droplets settle out by gravity, separating them from the lighter refrigerant vapor.
- The refrigerant vapor, being lighter, rises and exits through the outlet filter pocket. A deflector plate between the inlet and outlet prevents direct flow-through, while a magnet at the bottom captures any metallic particles.
- As oil collects at the bottom of the separator, it builds up to a certain level, causing the float ball mechanism to activate.

- The rising float ball opens an internal valve, allowing the separated oil to flow back to the compressor for proper lubrication.
- The float ball mechanism operates automatically without the need for any external controls or power, ensuring continuous oil return.
- This automatic oil return process keeps the compressor properly lubricated and maintains stable, efficient system performance.

Technical Specification

- Max. Working Pressure:
  - DAHW – 600 psig. / 41.36 Bar
  - DAAF – 450 psig. / 31.02 Bar
- Working Temperature Range: -10°C to + 120°C.
- Fusible Plug as per customer requirement.
- Refrigerants: - HCFC, HFC & HCO, R123, R134A, R22, R32, R404A, R407C, R410A, R507, R448A, R449A, R454B, R455A.
- Burst pressure-five times of MWP

Certificate/Compliances

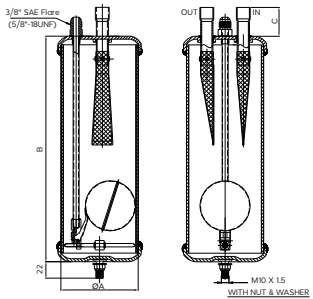
- UL listed File no. SA44851 [UL 207]
- RoHS Compliance [ROHS-3.0 2015/863/EU Directive]
- REACH Compliance [EC 1907/2006]
- CE Marking- SEP (A4P3)/CAT1/CAT2

c UL us LISTED
File No. SA44851

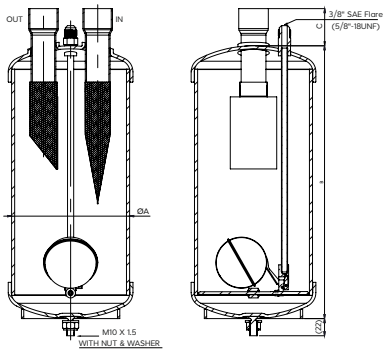
Image, Drawings & Models Available

DIMENSIONAL DATA

DAHW



DRAWING-1



DRAWING-2

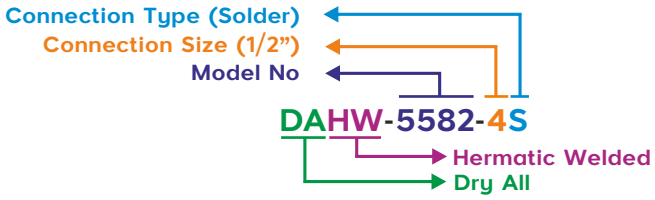
Sr. No.	Model	Connection Size	Oil Return Connection	Dimension								Mounting Option	Oil Charge Amount	Refer Drawing No.
				ØA		B		C		D				
		In & Out		mm	Inch	mm	Inch	mm	Inch	mm	Inch			
HERMETIC WELDED TYPE														
1	DAHW-5582-3S	3/8" ODF	1/4" SAE*	101.6	4	160	6.30	26	1.00	NA	NA	M10 X 1.5 BOLT WITH WASHER & NUT	500 ml	1
2	DAHW-5582-4S	1/2" ODF	3/8" SAE*			250	9.80	37	1.50					
3	DAHW-5585-5S	5/8" ODF				297	11.70	38						
4	DAHW-5587-7S	7/8" ODF				344	13.50	37						
5	DAHW-5588-9S	1-1/8" ODF				375	14.80	37						
6	DAHW-5590-11S	1-3/8" ODF				451	17.80	46.5	1.80					
7	DAHW-5690-11S	1-3/8" ODF		152.4	6	352	13.90	48	1.90				1250 ml	2
8	DAHW-5692-13S	1-5/8" ODF				430	16.90	59	2.30					
9	DAHW-5694-17S	*2-1/8" ODF						50	2.00					
HERMETIC WELDED TYPE - CE														
1	DAHW-5585-5S	5/8" ODF	3/8" SAE*	101.6	4	297	11.70	38	1.50	NA	NA	M10 X 1.5 BOLT WITH WASHER & NUT	500 ml	2

1) Maximum working pressure of 600 psig.

2) Working Temperature range -10 to 100°C

3) [*] Denotes Connections are of Steel

Nomenclature



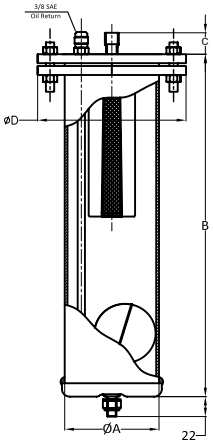
Flow Capacity/Capacity Rating

Maximum Capacity of Refrigerant at Evaporator Temparature											
Refrigerent	Evaporator		Model No.								
			DAHW-5582-3S	DAHW-5582-4S	DAHW-5585-5S	DAHW-5587-7S	DAHW-5588-9S	DAHW-5590-11S	DAHW-5690-11S	DAHW-5692-13S	DAHW-5694-17S
	°F	°C	TR	TR	TR	TR	TR	TR	TR	TR	TR
R22	40	4.4	2.02	3.96	6.18	12.13	14.13	19.10	18.99	27.65	47.67
	30	-1.1	1.98	3.90	6.10	11.96	13.87	18.75	18.65	27.15	46.81
	20	-6.7	1.93	3.86	6.03	11.82	13.58	18.36	18.26	26.58	45.82
	10	-12	1.88	3.81	5.95	11.67	13.27	17.95	17.85	25.98	44.79
	0	-18	1.81	3.75	5.86	11.49	12.87	17.43	17.33	25.22	43.48
	-10	-23	1.75	3.68	5.76	11.29	12.49	16.94	16.84	24.49	42.23
	-20	-29	1.66	3.64	5.68	11.15	11.96	16.25	16.16	23.49	40.51
R410A	40	4.4	2.38	4.24	6.62	11.98	15.92	21.60	21.48	22.46	54.04
	30	-1.1	2.34	4.17	6.51	11.80	15.68	21.28	21.16	21.87	53.24
	20	-6.7	2.30	4.09	6.39	11.59	15.41	20.92	20.81	21.25	52.33
	10	-12	2.26	4.02	6.28	11.38	15.15	20.57	20.46	20.64	51.45
	0	-18	2.21	3.93	6.13	11.13	14.83	20.14	20.03	19.95	50.37
	-10	-23	2.17	3.85	6.02	10.92	14.56	19.78	19.67	19.35	49.47
	-20	-29	2.11	3.75	5.86	10.65	14.21	19.32	19.21	18.62	48.30
	-30	-34	1.90	3.67	5.74	10.43	13.93	18.93	18.83	18.00	47.34
	-40	-40	1.85	3.57	5.58	10.15	13.57	18.46	18.35	17.26	46.14
R404	40	4.4	1.72	3.05	4.77	8.61	11.41	15.46	15.37	31.37	38.68
	30	-1.1	1.67	2.97	4.64	8.38	11.11	15.06	14.97	30.90	37.68
	20	-6.7	1.62	2.88	4.51	8.14	10.79	14.63	14.54	30.38	36.60
	10	-12	1.57	2.80	4.38	7.91	10.48	14.21	14.13	29.86	35.56
	0	-18	1.52	2.70	4.23	7.64	10.13	13.74	13.66	29.24	34.37
	-10	-23	1.47	2.62	4.10	7.41	9.83	13.32	13.25	28.71	33.33
	-20	-29	1.42	2.52	3.94	7.12	9.45	12.82	12.75	28.03	32.08
	-30	-34	1.25	2.43	3.80	6.88	9.14	12.39	12.32	27.47	31.01
	-40	-40	1.20	2.33	3.65	6.60	8.76	11.89	11.82	26.78	29.74
R134a	40	4.4	1.87	3.33	5.20	9.58	12.97	17.75	17.65	25.70	44.30
	30	-1.1	1.83	3.25	5.08	9.34	12.66	17.33	17.23	25.09	43.25
	20	-6.7	1.78	3.17	4.95	9.11	12.35	16.90	16.81	24.47	42.19
	10	-12	1.74	3.09	4.83	8.89	12.05	16.49	16.40	23.88	41.17
	0	-18	1.68	3.00	4.68	8.63	11.70	16.02	15.93	23.19	39.98
	-10	-23	1.64	2.92	4.56	8.41	11.41	15.62	15.53	22.61	38.98
	-20	-29	1.59	2.82	4.41	8.14	11.05	15.13	15.05	21.90	37.76
	-30	-34	1.44	2.75	4.29	7.91	10.75	14.73	14.64	21.31	36.75
	-40	-40	1.39	2.65	4.14	7.64	10.39	14.23	14.15	20.60	35.52
R407C	40	4.4	2.17	3.86	6.04	10.99	14.69	17.75	19.87	29.00	49.96
	30	-1.1	2.13	3.78	5.91	10.76	14.39	17.33	19.47	28.41	48.95
	20	-6.7	2.08	3.70	5.78	10.52	14.08	16.90	19.06	27.80	47.91
	10	-12	2.03	3.61	5.65	10.29	13.78	16.49	18.65	27.20	46.87
	0	-18	1.98	3.52	5.49	10.02	13.42	16.02	18.17	26.49	45.66
	-10	-23	1.93	3.43	5.37	9.79	13.12	15.62	17.77	25.91	44.65
	-20	-29	1.87	3.33	5.21	9.50	12.75	15.13	17.27	25.18	43.40
	-30	-34	1.69	3.24	5.07	9.26	12.42	14.73	16.83	24.55	42.30
	-40	-40	1.64	3.14	4.91	8.97	12.05	14.23	16.34	23.82	41.05
R449A	40	4.4	1.95	3.46	5.40	9.72	13.14	17.61	17.51	25.57	44.05
	30	-1.1	1.89	3.35	5.24	9.43	12.77	17.12	17.02	24.85	42.81
	20	-6.7	1.82	3.24	5.06	9.11	12.36	16.58	16.49	24.07	41.46
	10	-12	1.75	3.11	4.86	8.78	11.93	16.01	15.92	23.24	40.04
	0	-18	1.69	3.00	4.69	8.47	11.52	15.48	15.39	22.46	38.69
	-10	-23	1.63	2.89	4.52	8.18	11.15	14.99	14.90	21.74	37.45
	-30	-34	1.49	2.66	4.15	7.53	10.31	13.88	13.80	20.12	34.67

Image, Drawings & Models Available

DIMENSIONAL DATA

DAAF

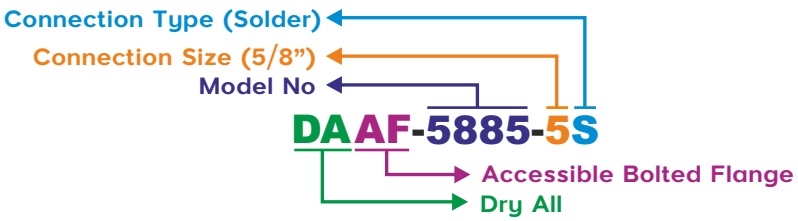


DRAWING-1

Sr. No.	Model	Connection Size	Oil Return Connection	Dimension								Mounting Option	Oil Charge Amount	Refer Drawing No.
				ØA		B		C		D				
		In & Out		mm	Inch	mm	Inch	mm	Inch	mm	Inch			
ACCESSIBLE BOLTED FLANGE TYPE														
1	DAAF-5885-5S	5/8" ODF	3/8" SAE*	101.6	4	335	13.19	35	1.38	142	5.59	M10 X 1.5 BOLT WITH WASHER & NUT	500 ml	1
2	DAAF-5887-7S	7/8" ODF		101.6	4	416	16.38	40	1.57	142	5.59			
3	DAAF-5888-9S	1-1/8" ODF		101.6	4	498	19.6	42	1.65	142	5.59			
4	DAAF-5890-11S	1-3/8" ODF	1/4" SAE*	101.6	4	478	18.82	42	1.65	142	5.59			

1) [*] Denotes Connections are of Steel.

NOMENCLATURE

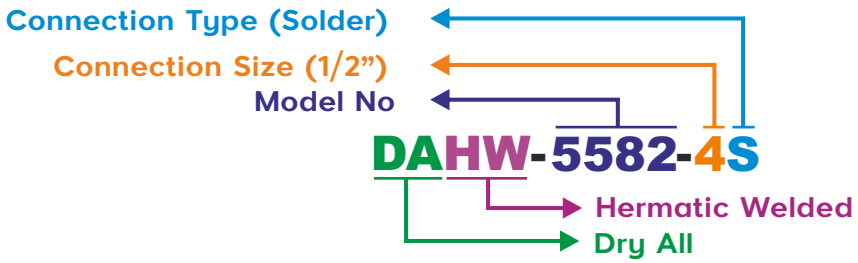


Flow Capacity/Capacity Rating

Maximum Capacity of Refrigerant at Evaporator Temparature							
SR. No.	Refrigerent	Evaporator		Model No.			
				DAAF-5885-5S	DAAF-5858-7S	DAAF-5888-9S	DAAF-5890-11S
		°F	°C	TR	TR	TR	TR
1.	R22	40	4.4	6.18	12.13	14.13	19.10
		30	-1.1	6.10	11.96	13.87	18.75
		20	-6.7	6.03	11.82	13.58	18.36
		10	-12	5.95	11.67	13.27	17.95
		0	-18	5.86	11.49	12.87	17.43
		-10	-23	5.76	11.29	12.49	16.94
		-20	-29	5.68	11.15	11.96	16.25
2.	R410A	40	4.4	6.62	11.98	15.92	21.60
		30	-1.1	6.51	11.80	15.68	21.28
		20	-6.7	6.39	11.59	15.41	20.92
		10	-12	6.28	11.38	15.15	20.57
		0	-18	6.13	11.13	14.83	20.14
		-10	-23	6.02	10.92	14.56	19.78
		-20	-29	5.86	10.65	14.21	19.32
		-30	-34	5.74	10.43	13.93	18.93
		-40	-40	5.58	10.15	13.57	18.46
3.	R404	40	4.4	4.77	8.61	11.41	15.46
		30	-1.1	4.64	8.38	11.11	15.06
		20	-6.7	4.51	8.14	10.79	14.63
		10	-12	4.38	7.91	10.48	14.21
		0	-18	4.23	7.64	10.13	13.74
		-10	-23	4.10	7.41	9.83	13.32
		-20	-29	3.94	7.12	9.45	12.82
		-30	-34	3.80	6.88	9.14	12.39
		-40	-40	3.65	6.60	8.76	11.89
4.	R134a	40	4.4	5.20	9.58	12.97	17.75
		30	-1.1	5.08	9.34	12.66	17.33
		20	-6.7	4.95	9.11	12.35	16.90
		10	-12	4.83	8.89	12.05	16.49
		0	-18	4.68	8.63	11.70	16.02
		-10	-23	4.56	8.41	11.41	15.62
		-20	-29	4.41	8.14	11.05	15.13
		-30	-34	4.29	7.91	10.75	14.73
		-40	-40	4.14	7.64	10.39	14.23
5.	R407C	40	4.4	6.04	10.99	14.69	17.75
		30	-1.1	5.91	10.76	14.39	17.33
		20	-6.7	5.78	10.52	14.08	16.90
		10	-12	5.65	10.29	13.78	16.49
		0	-18	5.49	10.02	13.42	16.02
		-10	-23	5.37	9.79	13.12	15.62
		-20	-29	5.21	9.50	12.75	15.13
		-30	-34	5.07	9.26	12.42	14.73
		-40	-40	4.91	8.97	12.05	14.23
6.	R449A	40	4.4	5.40	9.72	13.14	17.61
		30	-1.1	5.24	9.43	12.77	17.12
		20	-6.7	5.06	9.11	12.36	16.58
		10	-12	4.86	8.78	11.93	16.01
		0	-18	4.69	8.47	11.52	15.48
		-10	-23	4.52	8.18	11.15	14.99
		-30	-34	4.15	7.53	10.31	13.88

Nomenclature

Type	Nomenclature	
Brand	DA	Dry All
Desiccant Types	HW	Hermetic Welded
	AF	Accessible Bolted Flange
Vessel Type	5582	Unique Model number
Connection Size (Inches)	3	3/8"
	4	1/2"
	5	5/8"
	6	3/4"
	7	7/8"
	9	1-1/8"
	11	1-3/8”
	13	1-5/8”
	17	2-1/8”
Connection Types	S	Solder connection



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Genuine Product

Dry All
Full Range of HVAC&R Line Products

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