

## Features

- Three different construction styles:
  - Hermetic
  - Top flange
  - Bottom flange with supporter
- Copper ODF connection
- Stainless steel needle valve and floater
- Temperature range TS: -40°C to +65°C
- Permanent magnet to filter metal particles out of the oil circulation
- Corrosion resistant epoxy powder painting
- CE marking according PED 97/23 EC
- Comply with UL standard



OST

OSH

OSB

## Introduction

Refrigeration compressors are lubricated by refrigeration oil that circulates from the compressor crankcase or housing. As refrigerant gas is discharged by the compressor, it will leave with a fine oil mist, that will be circulated throughout the entire system.

Small amounts of oil circulating through the system will not affect the system performance. Too much refrigeration oil circulating in the system will have adverse effects on the components in the system. Circulating oil reduces the ability of the system to effectively remove the heat. Condensers, evaporators and other heat exchangers lose efficiency when coated internally with an oil film.

Refrigeration oil not returning to the compressor causes improper lubrication and eventual compressor failure. At low temperature application, refrigeration oil thickness becomes difficult to move, causing oil to be trapped in the system.

## Function

Refrigerant gas leaving the compressor through the discharge line contains refrigeration oil in a vaporous mist. As this mixture enters the oil separator, the velocity is reduced to allow oil separation to begin. The refrigerant gas and oil mixture enters the oil separator and passes through an inlet screen, causing the fine particles to combine. Larger oil particles are formed and drop to the bottom of the oil separator.

The refrigerant gas then passes through an outlet screen to remove residual oil particles. The oil gathers in the bottom of the oil separator until a float operated needle valve opens to allow the return of oil to the compressor. Oil returns quickly to the compressor, because of the higher pressure in the oil separator than in the compressor crankcase. When the oil level has lowered, the needle valve closes to prevent refrigerant gas from returning back to the compressor. The refrigerant gas leaves through the outlet of the oil separator and goes to the condenser.

# D A T A S H E E T

### Nomenclature

**OS X - X XX**

**Product line**  
Oil Separators

**Construction**  
H: Hermetic  
T: Top flange  
B: Bottom flange with supporter

**Nominal shell diameter**  
4: approx. 10 cm  
6: approx. 15 cm

**ODF connection**

04: 1/2"  
05: 5/8" (16mm)  
07: 7/8" (22mm)  
09: 1-1/8"  
11: 1-3/8" (35mm)  
13: 1-5/8"  
17: 2-1/8"

### Selection table

Type	Part No.	Connection ODF	Conformity Assessment Category	Conformity Assessment Procedure	Nominal capacity (kW)			Volume Lit.
					R 22 / R 407C	R 134a	R 404A / R 507	
<b>OSH-404</b>	<b>881 598</b>	1/2"	Cat. I	Module A*	7.0	4.9	7.3	2.0
<b>OSH-405</b>	<b>881 599</b>	5/8"			18.7	13.1	19.4	2.4
<b>OSH-407</b>	<b>881 600</b>	7/8"			28.1	19.7	29.0	2.8
<b>OSH-409</b>	<b>881 792</b>	1-1/8"			37.4	26.2	38.7	3.0
<b>OSH-411</b>	<b>881 794</b>	1-3/8"			46.8	32.8	48.4	3.6
<b>OSH-413</b>	<b>881 856</b>	1-5/8"			65.5	45.9	67.8	3.6
<b>OSH-611</b>	<b>881 940</b>	1-3/8"	Cat. II	Module D1	51.5	36.1	53.3	6.5
<b>OSH-613</b>	<b>881 953</b>	1-5/8"			65.5	45.9	67.8	7.9
<b>OSH-642</b>	<b>889 022</b>	42 mm			65.5	45.9	67.8	7.9
<b>OSH-617</b>	<b>881 970</b>	2-1/8"			105.3	73.8	108.9	7.9
<b>OST-404</b>	<b>881 860</b>	1/2"	Cat. I	Module A*	7.0	4.9	7.3	1.8
<b>OST-405</b>	<b>881 861</b>	5/8"			18.7	13.1	19.4	2.6
<b>OST-407</b>	<b>881 862</b>	7/8"			28.1	19.7	29.0	3.2
<b>OST-409</b>	<b>881 863</b>	1-1/8"			37.4	26.2	38.7	3.8
<b>OST-411</b>	<b>881 938</b>	1-3/8"			46.8	32.8	48.4	3.8
<b>OST-413</b>	<b>881 939</b>	1-5/8"			65.5	45.9	67.8	3.8
<b>OSB-613</b>	<b>881 971</b>	1-5/8"	Cat. II	Module D1	65.5	45.9	67.8	7.8
<b>OSB-617</b>	<b>881 972</b>	2-1/8"			105.3	73.8	108.9	7.8

\* applied higher module as required

The nominal capacities at +38°C condensing temperature (+38°C bubble point or +43°C dew point for R407C), +4°C evaporating temperature and 1 K liquid subcooling at the inlet of the expansion valve.

### Nominal capacities for other operating conditions

For other operating conditions than nominal correction factors have to be used:

$$Q_n = Q_o \times K_t$$

$Q_n$ : Nominal oil separator capacity

$Q_o$ : System cooling capacity at specific operating conditions

$K_t$ : Correction factor

Refrigerant	Condensing Temperature °C	Correction factor $K_t$						
		Evaporating temperature °C						
		10	0	-10	-20	-30	-40	-50
<b>R 22</b> <b>R 407</b>	25	1,29	1,31	1,33	1,36	1,40	1,44	1,49
	30	1,16	1,17	1,20	1,23	1,27	1,31	1,36
	35	1,05	1,07	1,09	1,11	1,13	1,17	1,23
	40	0,95	0,96	0,98	1,00	1,03	1,07	1,12
	45	0,87	0,88	0,90	0,92	0,95	0,99	1,04
	50	0,81	0,83	0,85	0,87	0,89	0,93	0,99

Refrigerant	Condensing Temperature °C	Correction factor $K_t$						
		Evaporating temperature °C						
		10	0	-10	-20	-30	-40	-50
<b>R 134a</b>	25	1,31	1,36	1,39	1,43	1,50		
	30	1,18	1,21	1,24	1,28	1,35		
	35	1,06	1,08	1,11	1,15	1,21		
	40	0,95	0,98	1,01	1,05	1,10		
	45	0,86	0,88	0,92	0,95	1,02		
	50	0,80	0,81	0,85	0,89	0,97		

Refrigerant	Condensing Temperature °C	Correction factor $K_t$						
		Evaporating temperature °C						
		10	0	-10	-20	-30	-40	-50
<b>R 404A</b> <b>R 507</b>	25	1,22	1,25	1,30	1,33	1,43	1,53	1,63
	30	1,12	1,15	1,20	1,26	1,32	1,42	1,54
	35	1,03	1,06	1,11	1,16	1,24	1,34	1,46
	40	0,95	0,99	1,04	1,09	1,17	1,28	1,41
	45	0,90	0,92	0,97	1,03	1,14	1,26	1,39
	50	0,86	0,89	0,93	1,00	1,13	1,26	1,39

### Technical data

Maximum working pressure	PS: 31 bar
Factory test pressure PT	
Hazard category I	34.1 bar
Hazard category II	44.3 bar
Temperature Range TS	-40°C to +65°C
Fluid group	II
Marking	CE
Compatibility	CFC, HCFC, HFC, mineral and ester lubricants *

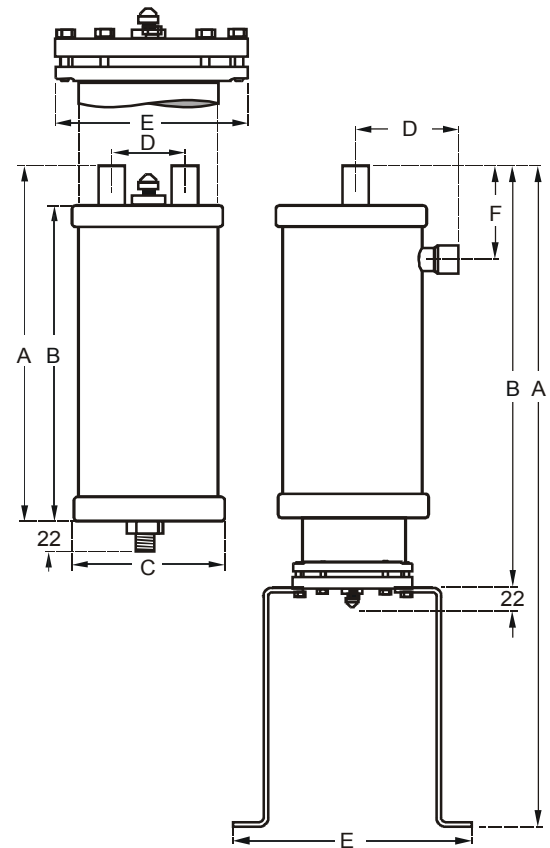
Approvals	UL
Paint	Epoxy powder paint
Protection	minimum 500 hours salt spray test
Solder connections	copper, ODF
Shell material	steel
Package	Individual packaged Master box quantity: 6 pcs

\*) The oil separators are not released for use with caustic, poisonous or flammable substances.

Note: All pressure are given in gauge pressure

### Dimensions (mm)

Type	Part No.	Connection ODF	A	B	C	D	E	F
OSH-404	881 598	1/2"	274	249	102	48	-	-
OSH-405	881 599	5/8"	335	297	102	48	-	-
OSH-407	881 600	7/8"	381	345	102	48	-	-
OSH-409	881 792	1-1/8"	413	369	102	48	-	-
OSH-411	881 794	1-3/8"	497	449	102	48	-	-
OSH-413	881 856	1-5/8"	505	449	102	48	-	-
OSH-611	881 940	1-3/8"	400	356	153	76	-	-
OSH-613	881 953	1-5/8"	483	432	153	76	-	-
OSH-617	881 970	2-1/8"	495	432	153	76	-	-
OST-404	881 860	1/2"	266	237	102	48	140	-
OST-405	881 861	5/8"	381	339	102	48	140	-
OST-407	881 862	7/8"	456	415	102	48	140	-
OST-409	881 863	1-1/8"	540	492	102	48	140	-
OST-411	881 938	1-3/8"	543	492	102	48	140	-
OST-413	881 939	1-5/8"	552	492	102	48	140	-
OSB-613	881 971	1-5/8"	740	511	153	111	273	137
OSB-617	881 972	2-1/8"	745	516	153	118	273	141



ALCO CONTROLS is not to be held responsible for erroneous literature regarding capacities, dimensions, applications, etc. stated herein. Products, specifications and data in this literature are subject to change without notice. The information given herein is based on technical data and tests which ALCO CONTROLS believes to be reliable and which are in compliance with technical knowledge of today. It is intended only for use by persons having the appropriate technical knowledge and skills, at their own discretion and risk. Since conditions of use are outside of ALCO'S control we can not assume any liability for results

obtained or damages occurred due to improper application. Our products are designed and adapted for fixed locations. For mobile applications failures may occur. The suitability for this has to be assured from the plant manufacturer which may include making appropriate tests.

This document replaces all earlier versions.

		Phone:	Fax:
<b>Emerson Electric GmbH &amp; Co OHG</b> <b>ALCO CONTROLS</b> <b>Postfach 1251</b> <b>Heerstraße 111</b> <b>D-71332 Waiblingen</b> <b>Germany</b> <b>Phone ...49-7151-509-0</b> <b>Fax ...49-7151-509-200</b>  <a href="http://www.emersonclimate.eu">www.emersonclimate.eu</a>	Benelux	+31 (0)77 324 0 234	+31 (0)77 324 0 235
	Germany, Austria & Switzerland	+49 (0)6109 6059 -0	+49 (0)6109 6059 40
	France, Greece, Maghreb	+33 (0)4 78 66 85 70	+33 (0)4 78 66 85 71
	Italia	+39 02 961 781	+39 02 961 788 888
	Spain & Portugal	+34 93 41 23 752	+34 93 41 24 2
	UK & Ireland	+44 (0) 1635 876 161	+44 (0) 1635 877 111
	Sweden, Denmark, Norway & Finland	+49 (0)2408 929 0	+49 (0)2408 929 528
	Eastern Europe & Turkey	+49 (0)2408 929 0	+49 (0)2408 929 525
	Poland	+48 (0)22 458 9205	+48 (0)22 458 9255
	Russia & Cis	+7 495 981 9811	+7 495 981 9816
	Balkan	+385 (0) 1560 38 75	+385 (0) 1 560 3879
	Romania	+40 364 73 11 72	+40 364 73 12 98
	Ukraine	+38 44 4 92 99 24	+38 44 4 92 99 28