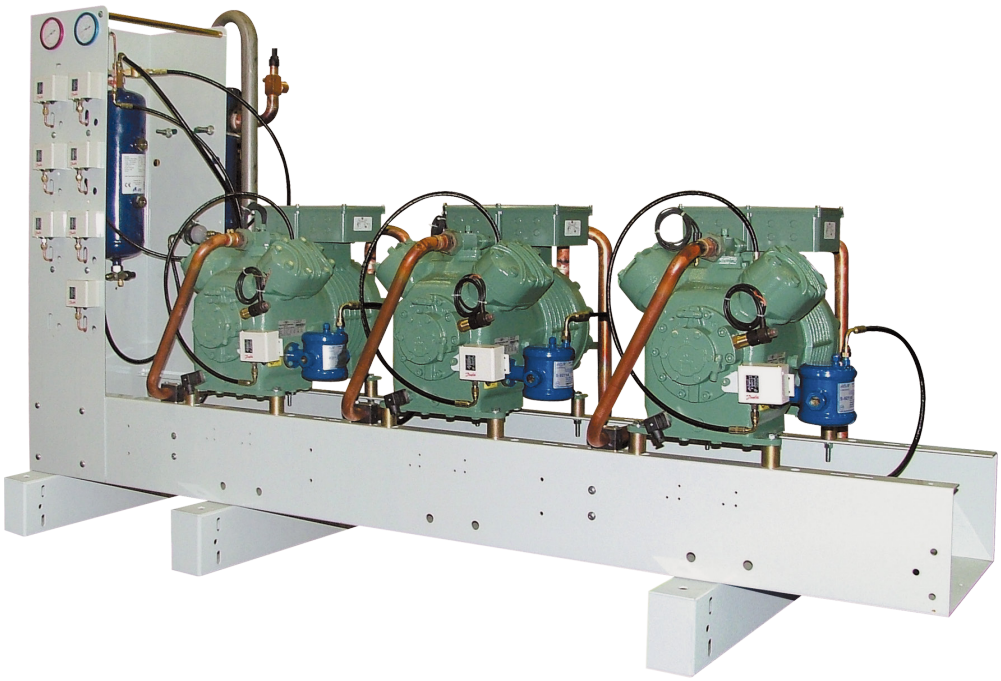
FRIGA-BOHN®

N°IN0008000-G
04.2025

MOPSH

Compressor rack

Installation instructions



Cooling solutions, delivered with care.

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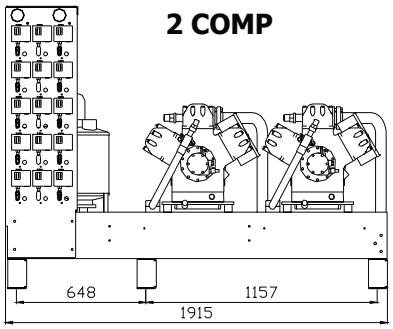
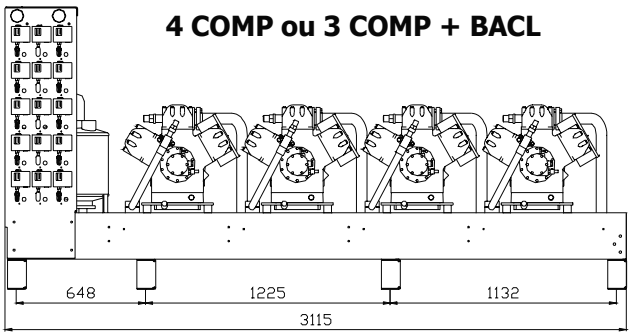
Dimensional characteristics

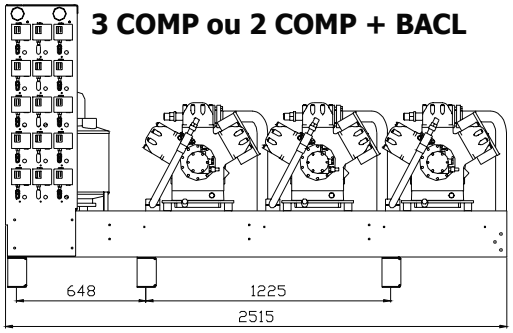
2 COMP



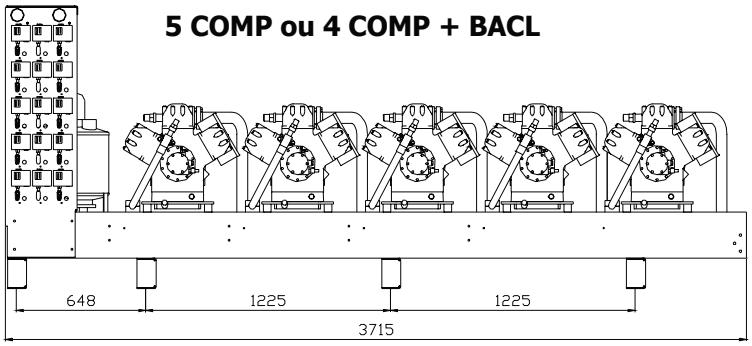
4 COMP ou 3 COMP + BACL



3 COMP ou 2 COMP + BACL



5 COMP ou 4 COMP + BACL



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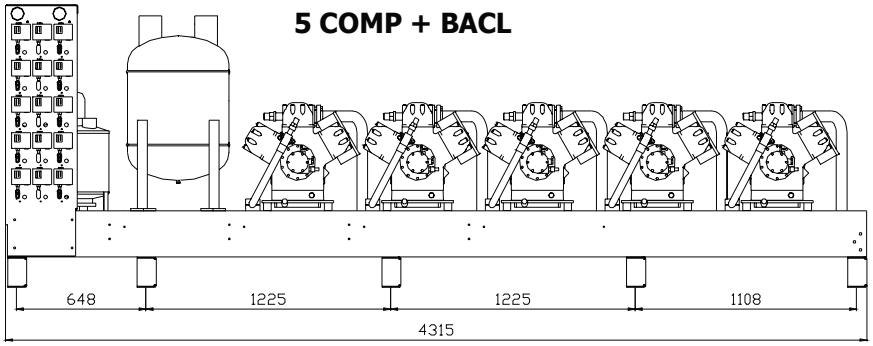
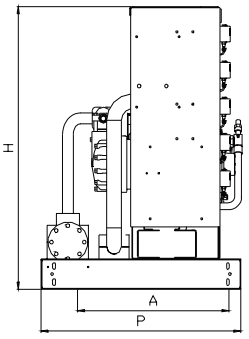
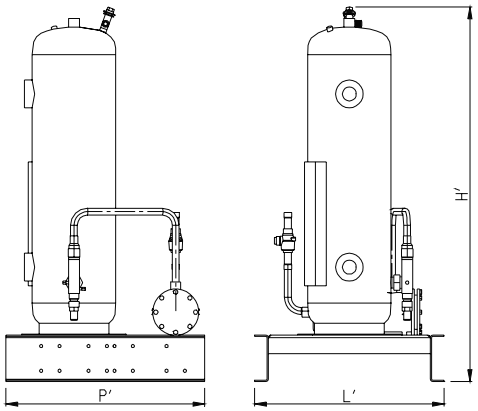






MOPSH Positive

Model	H [mm]	P [mm]	A [mm]	L' [mm]	P' [mm]	H' [mm]	Weight liquid station [kg]
MOPSH 25/2P	1540	800	655	650	620	1350	140
MOPSH 34/2P	1540	800	655	650	620	1700	140
MOPSH 38/3P	1540	800	655	650	620	1700	140
MOPSH 41/2P	1540	800	655	650	620	1700	140
MOPSH 52/3P	1540	800	655	650	620	1700	140
MOPSH 57/2P	1540	800	655	650	620	1700	140
MOPSH 60/2P	1540	800	655	650	620	1700	140
MOPSH 61/3P	1540	800	655	650	620	1950	190
MOPSH 73/2P	1400	800	655	650	620	1700	140
MOPSH 81/4P	1400	800	655	650	620	1950	190
MOPSH 86/3P	1400	800	655	650	620	1950	190
MOPSH 88/2P	1400	800	655	650	620	1950	190
MOPSH 91/3P	1400	1000	755	650	620	1750	230
MOPSH 109/3P	1400	1000	755	650	620	1750	230
MOPSH 115/4P	1400	1000	755	650	620	1750	230
MOPSH 121/4P	1450	1000	755	650	620	1750	230
MOPSH 132/3P	1450	1000	755	650	620	1750	230
MOPSH 146/4P	1450	1000	755	1250	1000	1800	300
MOPSH 160/3P	1450	1000	755	1250	1000	1800	300
MOPSH 175/4P	1450	1000	755	1250	1000	1800	300
MOPSH 186/3P	1450	1000	755	1250	1000	1800	300
MOPSH 213/4P	1580	1000	755	1250	1000	1800	300
MOPSH 234/3P	1580	1000	755	1250	1000	1800	300
MOPSH 248/4P	1580	1000	755	1250	1000	1800	300
MOPSH 287/5P	1580	1000	755	1250	1000	2150	400
MOPSH 310/5P	1580	1000	755	1250	1000	2150	400
MOPSH 317/4P	1580	1000	755	1250	1000	2150	400
MOPSH 397/5P	1780	1000	755	1250	1000	2150	400

MOPSH Négative

Model	H [mm]	P [mm]	A [mm]	L' [mm]	P' [mm]	H' [mm]	Weight liquid station [kg]
MOPSH 8/2N	1540	800	655	650	620	1350	140
MOPSH 10/2N	1540	800	655	650	620	1350	140
MOPSH 12/3N	1540	800	655	650	620	1700	140
MOPSH 14/2N	1540	800	655	650	620	1700	140
MOPSH 15/3N	1540	800	655	650	620	1700	140
MOPSH 18/2N	1400	800	655	650	620	1700	140
MOPSH 19/4N	1400	800	655	650	620	1700	140
MOPSH 21/3N	1400	800	655	650	620	1950	190
MOPSH 26/2N	1400	800	655	650	620	1700	140
MOPSH 27/3N	1400	800	655	650	620	1950	190
MOPSH 28/4N	1400	800	655	650	620	1950	190
MOPSH 31/2N	1400	800	655	650	620	1950	190
MOPSH 33/2N	1450	1000	755	650	620	1950	190
MOPSH 39/2N	1450	1000	755	650	620	1750	230
MOPSH 39/3N	1450	1000	755	650	620	1750	230
MOPSH 41/4N	1450	1000	755	650	620	1750	230
MOPSH 47/3N	1450	1000	755	1250	1000	1800	300
MOPSH 50/3N	1580	1000	755	1250	1000	1800	300
MOPSH 59/3N	1580	1000	755	1250	1000	1800	300
MOPSH 62/4N	1480	1000	755	1250	1000	1800	300
MOPSH 67/4N	1580	1000	755	1250	1000	1800	300
MOPSH 78/5N	1580	1000	755	1250	1000	1800	300
MOPSH 79/4N	1580	1000	755	1250	1000	1800	300
MOPSH 84/5N	1580	1000	755	1250	1000	2150	400
MOPSH 98/5N	1780	1000	755	1250	1000	2150	400

Weight Positive

Model	Compressor	Weight (kG)	Weight with 1 filter/cp (kG)	Weight with BACL (kG)
25/2	D2DL75X	430		501
34/2	D3DA75X	490		561
41/2	D3DC100X	510		581
57/2	D3DS150X	520		591
60/2	D4DA200X	580		651
	4J13.2Y	530		601
73/2	4H15.2Y	538		609
	D4DH250X	590		661
	4H25.2Y	578		649
88/2	4G20.2Y	572		643
	D4DJ300X	616		687
	4G30.2Y	584		655
38/3	D2DL75X	584		657
52/3	D3DA75X	664		737
61/3	D3DC100X	704		777
86/3	D3DS150X	734		807
91/3	D4DA200X	824	849	922
	4J13.2Y	769	794	867
109/3	4H15.2Y	781	806	879
	D4DH250X	859	884	957
	4H25.2Y	841	866	939
132/3	4G20.2Y	836	861	965
	D4DJ300X	902	927	1031
	4G30.2Y	850	875	948
160/3	6H25.2Y	944	969	1073
	D6DH350X	1004	1029	1133
	6H35.2Y	937	962	1035
186/3	6G30.2Y	984	1009	1113
	D6DJ400X	1084	1109	1213
	6G40.2Y	946	971	1044
234/3	6F40.2Y	1064	1089	1193
	6F50.2Y	1070	1095	1168
	D6SU400X	1190	1215	1288
	D6SK500X	1199	1224	1297

Model	Compressor	Weight (kG)	Weight with 1 filter/cp (kG)	Weight with BACL (kG)
81/4	D3DC100X	931		1034
115/4	D3DS150X	961	991	1094
121/4	D4DA200X	1081	1111	1214
	4J13.2Y	1023	1053	1156
146/4	4H15.2Y	1039	1069	1172
	D4DA200X	1091	1121	1224
	4H25.2Y	1119	1149	1252
175/4	4G20.2Y	1074	1104	1207
	D4DJ300X	1162	1192	1295
	4G30.2Y	1128	1158	1261
213/4	6H25.2Y	1291	1321	1474
	D6DH350X	1371	1401	1554
	6H35.2Y	1244	1274	1377
248/4	6G30.2Y	1311	1341	1494
	D6DJ400X	1441	1471	1624
	6G40.2Y	1256	1286	1389
317/4	6F40.2Y	1371	1401	1554
	6F50.2Y	1383	1413	1516
	D6SU400X	1539	1564	1637
	D6SK500X	1543	1568	1641
287/5	6H25.2Y	1537	1577	1691
	D6DH350X	1727	1767	1881
	6H35.2Y	1592	1632	1746
310/5	6G30.2Y	1557	1597	1711
	D6DJ400X	1724	1764	1878
	6G40.2Y	1717	1757	1871
397/5	6F40.2Y	1647	1687	1801
	6F50.2Y	1657	1697	1811
	D6SU400X	1857	1882	1955
	D6SK500X	1872	1897	1970

Weight négative

Model	Compressor	Weight (kG)	Weight with 1 filter/cp (kG)	Weight with BACL (kG)
8/2	D3DA50X	490		571
10/2	D3DC75X	500		581
14/2	D3DS100X	540		621
18/2	4H15.2Y	582		663
	D4DL150X	610		691
26/2	4G20.2Y	612		693
	D4DT220X	640		721
31/2	6H25.2Y	710		791
	D6DL270X	700		781
33/2	6G30.2Y	720	730	801
	D6DT300X	770	780	851
39/2	6F40.2Y	730	740	811
	D6SU400X	814	824	895
12/3	D3DA50X	674		772
15/3	D3DC75X	684		782
21/3	D3DS100X	754		852
27/3	4H15.2Y	812		910
	D4DL150X	854		952
39/3	4G20.2Y	869	894	998
	D4DT220X	914	939	1043
47/3	6H25.2Y	994	1019	1123
	D6DL270X	1024	1049	1153
50/3	6G30.2Y	1064	1089	1193
	D6DT300X	1144	1169	1273
59/3	6F40.2Y	1084	1109	1213
	D6SU400X	1210	1235	1339

Model	Compressor	Weight (kG)	Weight with 1 filter/cp (kG)	Weight with BACL (kG)
19/4	D3DC75X	911		1013
28/4	D3DS100X	981		1083
41/4	4H15.2Y	1091	1121	1224
	D4DL150X	1147	1177	1280
62/4	6H25.2Y	1321	1351	1504
	D6DL270X	1361	1391	1544
67/4	6G30.2Y	1361	1391	1544
	D6DT300X	1461	1491	1644
79/4	6F40.2Y	1391	1421	1574
	D6SU400X	1559	1584	1688
78/5	6H25.2Y	1577	1637	1791
	D6DL270X	1627	1687	1841
84/5	6G30.2Y	1637	1697	1851
	D6DT300X	1767	1827	1981
98/5	6F40.2Y	1687	1747	1901
	D6SU400X	1897	1922	2026

Technical data

Positive

Model	Compressor standard	Imax (A)	*Idem (A)*	Pmax (kW)	Compressor	Imax (A)	*Idem (A)*	Pmax (kW)
25/2	D2DL75X	26	83	14				
34/2	D3DA75X	35	124	19				
41/2	D3DC100X	41	142	22				
57/2	D3DS150X	58	158	32				
60/2	D4DA200X	65	193	35	4J13.2Y	54	159	31
73/2	4H15.2Y	62	163	36	D4DH250X	83	234	46
88/2	4G20.2Y	74	195	43	D4DJ300X	104	270	56
38/3	D2DL75X	39	96	22				
52/3	D3DA75X	53	141	28				
61/3	D3DC100X	62	162	33				
86/3	D3DS150X	87	187	47				
91/3	D4DA200X	98	225	53	4J13.2Y	81	186	46
109/3	4H15.2Y	93	194	54	D4DH250X	125	215	69
132/3	4G20.2Y	111	232	65	D4DJ300X	156	322	84
160/3	6H 25.2Y	135	283	82	D6DH350X	191	419	103
186/3	6G 30.2Y	159	326	96	D6DJ400X	249	503	131
234/3	6F 40.2Y	234	479	116	D6SU400X	221	494	130
81/4	D3DC100X	82	183	45				
115/4	D3DS150X	116	216	63				
121/4	D4DA200X	130	258	71	4J13.2Y	108	213	62
146/4	4H15.2Y	124	225	72	D4DH250X	166	317	91
175/4	4G20.2Y	148	269	86	D4DJ300X	208	374	113
213/4	6H 25.2Y	180	328	109	D6DH350X	254	483	138
248/4	6G 30.2Y	212	379	128	D6DJ400X	332	586	175
317/4	6F 40.2Y	312	557	154	D6SU400X	295	568	173
287/5	6H 25.2Y	225	373	136	D6DH350X	318	546	172
310/5	6G 30.2Y	265	432	160	D6DJ400X	415	669	218
397/5	6F 40.2Y	390	635	193	D6SU400X	369	642	216

Modèle	Compressor HMT Bitzer	Imax (A)	*Idem (A)*	Pmax (kW)	Compressor HMT Copel	Imax (A)	*Idem (A)*	Pmax (kW)
73/2	4H25.2Y	90.0	238.0	43.2				
88/2	4G30.2Y	106.0	273.0	50.0				
109/3	4H25.2Y	135.0	283.0	64.8				
132/3	4G30.2Y	159.0	326.0	75.0				
160/3	6H35.2Y	183.0	384.0	97.2				
186/3	6G40.2Y	234.0	479.0	112.5				
234/3	6F50.2Y	276.0	588.0	139.2	D6SK500X	284.1	604.4	144.9
146/4	4H25.2Y	180.0	328.0	86.4				
175/4	4G30.2Y	212.0	379.0	100.0				
213/4	6H35.2Y	244.0	445.0	129.6				
248/4	6G40.2Y	312.0	557.0	150.0				
317/4	6F50.2Y	368.0	680.0	185.6	D6SK500X	378.8	699.1	193.2
287/5	6H35.2Y	305.0	506.0	162.0				
310/5	6G40.2Y	390.0	635.0	187.5				
397/5	6F50.2Y	460.0	772.0	232.0	D6SK500X	473.5	793.8	241.5

* Attention: Idem = maximum start current with timer for cascade start-up of compressors.
(The compressors do not all start at the same time).

Négative

Model	Compressor standard	Imax (A)	*Idem (A)*	Pmax(kW)	Compressor	Imax (A)	*Idem (A)*	Pmax(kW)
8/2	D3DA50X	24	67	11				
10/2	D3DC75X	28	84	13				
14/2	D3DS100X	39	141	17				
18/2	4H15.2Y	62	163	36	D4DL150X	57	169	29
26/2	4G20.2Y	74	195	43	D4DT220X	66	193	34
31/2	6H 25.2Y	90	238	54	D6DL270X	86	239	47
33/2	6G 30.2Y	106	273	64	D6DT300X	110	273	58
39/2	6F 40.2Y	156	401	77	D6SU400X	147	421	86
12/3	D3DA50X	36	79	16				
15/3	D3DC75X	42	98	19				
21/3	D3DS100X	59	160	26				
27/3	4H15.2Y	93	194	54	D4DL150X	86	197	44
39/3	4G20.2Y	111	232	65	D4DT220X	99	226	51
47/3	6H 25.2Y	135	283	82	D6DL270X	129	282	70
50/3	6G 30.2Y	159	326	96	D6DT300X	165	328	87
59/3	6F 40.2Y	234	479	116	D6SU400X	221	494	130
19/4	D3DC75X	56	112	26				
28/4	D3DS100X	78	180	35				
41/4	4H15.2Y	124	225	72	D4DL150X	114	226	58
62/4	6H 25.2Y	148	269	86	D6DL270X	172	325	93
67/4	6G 30.2Y	180	328	109	D6DT300X	220	383	116
79/4	6F 40.2Y	212	379	128	D6SU400X	295	568	173
78/5	6H 25.2Y	185	306	108	D6DL270X	215	368	117
84/5	6G 30.2Y	225	373	136	D6DT300X	275	438	146
98/5	6F 40.2Y	265	432	160	D6SU400X	369	642	216

* Attention: Idem = maximum start current with timer for cascade start-up of compressors.
(The compressors do not all start at the same time).

Handling

When using a pallet truck or forklift truck, the unit must be handled from the front (compressor side).

Please refer to the associated commercial and/or software documentation for further details.

Appendix 1: Installation log sheet

Company: **Technician:**		**Date**			
Unit	Suction pressure	bar			
	Suction temperature	°C			
	Delivery pressure	bar			
	Power supply voltage (uu, uv, uw)	V			
	Cut-out value HP pressure switch	bar			
	Cut-out value LP pressure switch	bar			
Compressor 1	Input amperage (u, v, w)	A			
	Delivery temperature	°C			
	Crankcase heater in good working order	Y/N			
	Oil level (full ¾ ½ ¼)				
Compressor 2	Input amperage (u, v, w)	A			
	Delivery temperature	°C			
	Crankcase heater in good working order	Y/N			
	Oil level (full ¾ ½ ¼)				
Compressor 3	Input amperage (u, v, w)	A			
	Delivery temperature	°C			
	Crankcase heater in good working order	Y/N			
	Oil level (full ¾ ½ ¼)				
	Presence of humidity	Y/N			
Compressor 4	Input amperage (u, v, w)	A			
	Delivery temperature	°C			
	Crankcase heater in good working order	Y/N			
	Oil level (full ¾ ½ ¼)				
	Presence of humidity	Y/N			
Compressor 5	Input amperage (u, v, w)	A			
	Delivery temperature	°C			
	Crankcase heater in good working order	Y/N			
	Oil level (full ¾ ½ ¼)				
	Presence of humidity	Y/N			
Refrigerant Circuit	Pump down working correctly	Y/N			
	Refrigerant safety devices working correctly	Y/N			
	Hoses in good state	Y/N			
	Circuit sealing	Y/N			
Electrical Cabinet	Connections properly tightened	Y/N			
	Electrical safety devices working correctly	Y/N			

Remarks:

Appendix 2 : Bitzer operating instructions for oil level control OLC-K1

für

4VCS-6.2(Y) .. 4NCS-20.2(Y)
ab Seriennummer 166811090

4FC-3.2(Y) .. 4CC-9.2(Y)
mit speziellem Lagerdeckel

for

4VCS-6.2(Y) .. 4NCS-20.2(Y)
from serial number 166811090

4FC-3.2(Y) .. 4CC-9.2(Y)
with special bearing cover

pour

4VCS-6.2(Y) .. 4NCS-20.2(Y)
à partir du no. de série 166811090

4FC-3.2(Y) .. 4CC-9.2(Y)
avec couvercle de palier spécial

Inhalt

Content

Sommaire

1 Anwendung

Für die Lebensdauer eines Verdichters ist ausreichende Ölversorgung sehr wichtig. Ein Ausfall der Schmierung z. B. durch Ölmangel kann zu schweren Schäden am Triebwerk führen.

Das neu entwickelte Schutzsystem OLC-K1 überwacht die Ölversorgung von Verdichtern mit Zentrifugalschmierung. Dieses System wird besonders für Anlagen mit weitverzweigtem Rohrnetz empfohlen oder in Anwendungen, bei denen sich größere Mengen Öl zur Niederdruckseite verlagern können (z. B. kritische Strömungsgeschwindigkeiten bei Teillast).

Die Ölversorgung des Verdichters wird direkt im Bereich der Ölzufuhr zu den Lagerstellen überwacht. Im Vergleich mit den üblichen Niveauwächtern im Kurbelgehäuse ist damit eine effektivere Schutzfunktion gewährleistet.

1 Application

An adequate oil supply is very important for the operating life of a compressor. Lack of lubrication, e. g. due to oil shortage, can lead to serious damage of the drive gear.

The newly developped monitoring system OLC-K1 checks the oil supply of reciprocating compressors lubricated by an oil centrifuge. This system is recommended especially for plants with a widely extended pipe work, or for applications in which larger quantities of oil can migrate to the low pressure side (e.g. critical flow velocities at part load).

The oil supply of the compressor is monitored directly at the shaft intake to the bearings. A more effective protection function is guaranteed, compared to usual oil level monitoring devices in the crankcase.

1 Application

Une alimentation d'huile suffisante est très importante pour la durée de vie d'un compresseur. Un défaut de lubrification par ex. par manque d'huile peut engendrer des dégâts importants sur le mécanisme d'entraînement.

Le dispositif de protection OLC-K1 développé nouvellement surveille l'alimentation d'huile des compresseurs avec lubrification centrifuge. Ce dispositif est recommandé particulièrement pour des systèmes avec un réseau de tuyauterie très ramifié ou pour des applications, ou des grandes quantités d'huile peuvent migrer vers le coté basse pression (par ex. vitesses d'écoulement critiques en charge partielle).

L'alimentation d'huile du compresseur est surveillée directement au point d'injection vers les paliers. En comparaison avec des dispositifs de contrôle de niveau habituels dans le carter, une fonction de protection plus effective est ainsi garantie.

2 Technische Merkmale

Das OLC-K1 ist ein opto-elektronischer Ölsensor, der die Ölversorgung berührungslos mit infrarotem Licht überwacht. Es besteht aus zwei Teilen: einer Prisma-Einheit und einer opto-elektronischen Einheit (Abb. 1).

- Die Prisma-Einheit wird direkt im Bereich der Ölzufuhr zu den Lagerstellen in den Lagerdeckel eingeschraubt (Abb. 2).
- Die opto-elektronische Einheit steht nicht in direkter Verbindung mit dem Ölkreislauf. Sie wird in die Prisma-Einheit eingeschraubt und in die Steuerungslogik der Anlage integriert. Ein externes Steuergerät ist nicht erforderlich.

Im Unterschied zum Schutzgerät INT265 ist das OLC-K1 zusätzlich mit Lauferkennung ausgestattet. Dadurch reduziert sich der Aufwand beim elektrischen Anschluss.

2 Technical features

The OLC-K1 is an opto-electronic oil sensor for contactless monitoring of the oil supply by means of infrared light. It consists of two parts: a prism unit and an opto-electronic unit (figure 1).

- The prism unit is screwed into the bearing cover directly at the oil supply areas for the bearings (figure 2).
- The opto-electronic unit is not in direct contact with the oil circuit. It is screwed into the prism unit and integrated into the control circuit of the plant. An external control module is not required.

In contrast to the protection device INT265, the OLC-K1 is additionally equipped with operating recognition . Thus, the electrical connection is simplified.

2 Caractéristiques techniques

Le OLC-K1 est une sonde d'huile opto-électronique, qui surveille l'alimentation d'huile sans contact, par lumière infrarouge. Il se compose de deux pièces: une unité prisme et une unité opto-électronique (figure 1).

- L'unité prisme est vissée dans le couvercle de palier directement au point d'injection d'huile vers les paliers (figure 2).
- L'unité opto-électronique n'est pas en contact avec le circuit d'huile. Elle est vissée sur l'unité prisme et intégrée dans la logique de commande de l'installation. Un module de commande extérieur n'est pas nécessaire.

A la différence du dispositif de protection INT265, le OLC-K1 est équipé en plus avec une reconnaissance de marche. Ainsi le raccordement électrique est simplifié.

Technische Daten OLC-K1	Technical data OLC-K1	Données techniques OLC-K1	
Anschluss-Spannung	Supply voltage	Tension d'alimentation	230 V AC ± 10% *
Netzfrequenz	Supply frequency	Fréquence du réseau	50 / 60 Hz
Relais-Ausgänge: Schaltspannung Schaltstrom Schaltleistung	Relay output: Switching voltage Switching current Switching capacity	Sorties de relais: Tension de commutation Intensité de commutation Puissance de commutation	 max. 250 V AC max. 2.5 A max. 300 VA
Vorsicherung für Gerät und Schaltkontakte	Fusing for device and switch contacts	Fusible pour appareil et contacts de commutation	max. 4 A
maximal zulässiger Druck	Maximum allowable pressure	Pression maximale admissible	32 bar
Schutzart (montiert)	Enclosure class (mounted)	Classe de protection (monté)	IP54
Anschlusskabel	Connecting cable	Câble de raccordement	6 x AWG 20 (0.5 mm^2) L = 1 m ①
Kältemittel	Refrigerants	Fluides frigorigènes	HFKW, (H)FCKW HFC, (H)CFC ②
zulässige Umgebungstemperatur	Allowable ambient temperature	Température ambiante admissible	-30 .. +60°C
Gewicht	Weight	Poids	160 g

* andere Spannungen auf Anfrage, auch mit UL-Abnahme erhältlich
① Kabel farbkodiert
② nicht zugelassen für NH_3 und Kohlenwasserstoffe

* other voltages upon request, also available with UL approval
① Cables color coded
② not admitted to NH_3 and hydrocarbons

* d'autres types de tension sur demande, aussi avec contrôle UL
① Câbles avec code couleur
② non admis pour NH_3 et hydrocarbures

2.1 Funktion

Betriebsbereit

Mit dem Einschalten des Verdichters wird die Überwachung der Ölversorgung aktiv (Lauf-Erkennung).

Verriegeln

Wenn ein Ölmangel länger als die Verzögerungszeit andauert, wird der Verdichter abgeschaltet.

Verzögerungszeit:
- nach Verdichterstart 90 s
- im Betrieb 5 s

Das OLC-K1 öffnet dann den Ausgangskontakt und verriegelt elektronisch: Die Steuerspannung zum Verdichterschütz wird unterbrochen. Die rote LED auf der Stirnseite der opto-elektronischen Einheit (Abb. 1) und die Signallampe H2 leuchten.

Entriegeln

Das OLC-K1 kann über eine Reset-Taste manuell zurück gesetzt werden. Diese Reset-Taste (S3) muss im Schaltschrank montiert werden. (Anschluss siehe Prinzipschaltbild.)

- Vor dem Entriegeln Ursache für die Störung der Ölversorgung ermitteln und beseitigen.
- Spannungsversorgung (L/N) mindestens 5 Sekunden lang unterbrechen.

2.1 Function

Ready-to-operate

The oil supply monitoring is activated when the compressor is switched on (operating recognition).

Lock out

If the lack of oil takes longer than the delay time, the compressor is shut off.

Delay time:
- after compressor start 90 s
- in operation 5 s

The OLC-K1 then opens the output contact and locks out electronically: The control voltage to the compressor contactor is interrupted. The red LED at the face side of the opto-electronic unit lights up (figure 1) as well as the signal lamp H2.

Reset

The OLC-K1 can be manually reset by pressing the reset button. This reset button (S3) has to be mounted into the swich board. (Connection see schematic wiring diagram).

- Before resetting, determine the reason for the oil supply problem and fix it.
- Interrupt supply voltage (L/N) for at least 5 seconds.

2.1 Fonctionnement

Prêt à fonctionner

Avec la mise en marche du compresseur, le contrôle d'alimentation d'huile devient actif (reconnaissance de marche).

Verrouiller

Quand le manque d'huile dure plus longtemps que la temporisation, le compresseur est mis à l'arrêt.

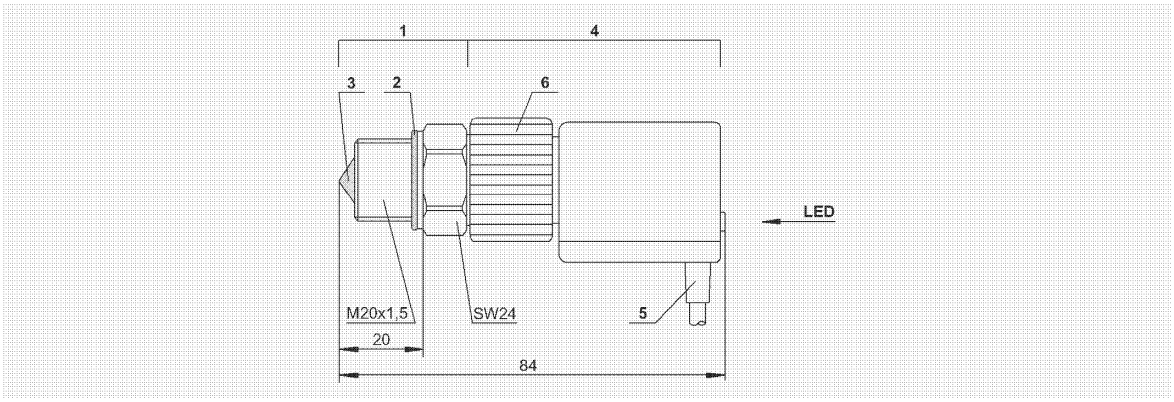
Temporisation:
- après la mise en service 90 s
- en service 5 s

Le OLC-K1 ouvre alors le contact de sortie et verrouille électroniquement: la tension de commande du contacteur du compresseur est coupée. La LED rouge sur le côté frontal de l'unité opto-électronique s'allume (figure 1) et aussi la lampe H2.

Déverrouiller

Le OLC-K1 peut être remis manuellement en fonctionnement par la touche de reset. Cette touche (S3) devra être montée dans l'armoire électrique. (Raccordement voir schéma de principe.)

- Avant déverrouillage: déterminer la cause du défaut d'alimentation d'huile et y remédier.
- Interrompre la tension d'alimentation (L/N) durant 5 secondes minimum.



1 Prisma-Einheit
2 Kupfer-Dichtscheibe
3 Glas-Kegel
4 Opto-elektronische Einheit (360° drehbar)
5 Anschlusskabel
6 Schraubkappe

Abb. 1 Abmessungen und Aufbau

1 Prism unit
2 Copper sealing washer
3 Glass cone
4 Opto-electronic unit (360° revolving)
5 Connecting cable
6 Screwing cap

Fig. 1 Dimensions and design

1 Unité prisme
2 Rondelle d'étanchéité en cuivre
3 Cône en verre
4 Composant opto-électronique (mobile sur 360°)
5 Câble de raccordement
6 Bouchon filetré

Fig. 1 Dimensions et construction

3 Elektrischer Anschluss

OLC-K1 entsprechend Prinzipschaltbild anschließen. Reset-Tasten S2 und S3 im Schaltschrank montieren.

Das folgende Prinzipschaltbild gilt für Teilwicklungs-Anlauf. Bei Direktstart entfallen K2, K1T und Y1.

Legende

B1 .....Steuereinheit
B2 .....Steuereinheit des Leistungsreglers (Option)
F1 .....Hauptsicherung
F2 .....Verdichter-Sicherung
F3 .....Steuersicherung
F5 .....Hochdruckschalter
F6 .....Niederdruckschalter
F12 ....Sicherung der Ölsumpfheizung
F13 ....Überstrom-Relais "Motor" PW1 (empfohlen)
F14 ....Überstrom-Relais "Motor" PW2 (empfohlen)
H1 .....Signallampe "Übertemperatur (Motor und Druckgas)" sowie "Störung der Ölversorgung"
H2 .....Signallampe "Störung der Ölversorgung"
K1 .....Schütz "1. Teilwicklung"
K2 .....Schütz "2. Teilwicklung"
K1T ....Zeitrelais "Teilwicklung"
K2T ....Zeitrelais "Pausenzeit" 300 s
M1 .....Verdichter
Q1 .....Hauptschalter
R1-6 ..PTC-Fühler in Motorwicklung
R7 .....Druckgas-Temperaturfühler (Option)
R8 .....Ölsumpfheizung (Option)
S1 .....Steuerschalter
S2 .....Entriegelung "Übertemperatur (Motor / Druckgas)"
S3 .....Entriegelung "Ölmangel"
U1 .....EMV-Entstörglied (bei Bedarf)
Y1 .....Magnetventil "Anlaufentlastung" (Option)
Y2 .....Magnetventil "Flüssigkeitsleitung"
Y3 .....Magnetventil "Leistungsregelung" (Option)

SE-B1 / SE-B2
.....Verdichter-Schutzgerät

OLC-K1
.....Überwachung der Ölversorgung

3 Electrical connection

Connect OLC-K1 according to schematic wiring diagram. Mount reset buttons S2 and S3 into switch board.

The following schematic wiring diagram applies to part winding start. For direct start K2, K1T and Y1 can be omitted.

Legend

B1 .....Control unit
B2 .....Control unit of capacity regulator (option)
F1 .....Main fuse
F2 .....Compressor fuse
F3 .....Control circuit fuse
F5 .....High pressure cut out
F6 .....Low pressure cut out
F12 ....Fuse of crankcase heater
F13 ....Thermal overload "motor" PW1 (recommended)
F14 ....Thermal overload "motor" PW2 (recommended)
H1 .....Signal lamp "over temperature (motor and discharge gas)" and "oil supply fault"
H2 .....Signal lamp "oil supply fault"
K1 .....Contactor "first PW"
K2 .....Contactor "second PW"
K1T ....Time relay "part winding"
K2T ....Time relay "pause time" 300 s
M1 .....Compressor
Q1 .....Main switch
R1-6 ..PTC sensors in motor windings
R7 .....Discharge gas temperature sensor (option)
R8 .....Crankcase heater (option)
S1 .....Control switch
S2 .....Fault reset "over temperature (motor / discharge gas)"
S3 .....Fault reset "lack of oil"
U1 .....EMC screening unit (if required)
Y1 .....Solenoid valve "start unloading" (option)
Y2 .....Solenoid valve "liquid line"
Y3 .....Solenoid valve "capacity control" (option)

SE-B1 / SE-B2
.....Compressor protection device

OLC-K1
.....Oil supply monitoring

3 Raccordement électrique

Raccorder le OLC-K1 suivant le schéma de principe. Monter les touches de reset S2 et S3 dans l'armoire électrique.

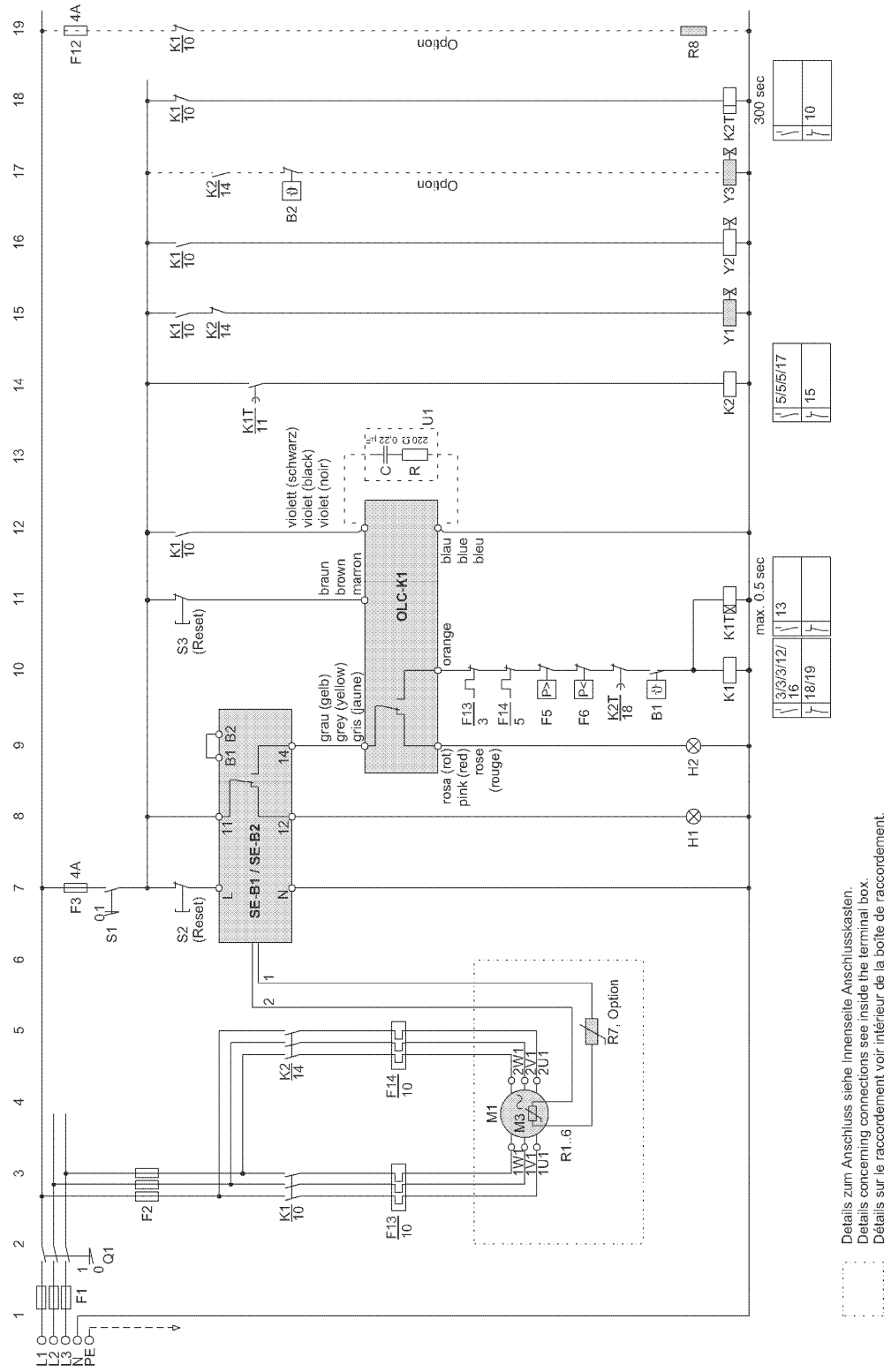
Le schéma de principe s'applique au démarrage à bobinage partiel. En démarrage direct K2, K1T et Y1 sont laissés à côté.

Légende

B1 .....Unité de commande
B2 .....Unité de commande du régulateur de puissance (option)
F1 .....Fusible principal
F2 .....Fusible compresseur
F3 .....Fusible protection de commande
F5 .....Pressostat haute pression
F6 .....Pressostat basse pression
F12 ....Fusible de résistance de carter
F13 ....Relais thermique de moteur PW1 (recommandé)
F14 ....Relais thermique de moteur PW2 (recommandé)
H1 .....Lampe "excès de température" (moteur et gaz de refoulement) et "défaut d'alimentation d'huile"
H2 .....Lampe "défaut d'alimentation d'huile"
K1 .....Contacteur "bobinage 1"
K2 .....Contacteur "bobinage 2"
K1T ....Relais temporisé "bobinage partiel"
K2T ....Relais temporisé "pause" 300 s
M1 .....Compresseur
Q1 .....Interrupteur principal
R1-6 ..Sondes PTC dans les bobinages du moteur
R7 .....Sonde de température du gaz de refoulement (option)
R8 .....Résistance de carter (option)
S1 .....Commutateur de commande
S2 .....Réarmement "excès de température" (moteur et gaz de refoulement)
S3 .....Réarmement "manque d'huile"
U1 .....Elément d'antiparasitage de CEM (si nécessaire)
Y1 .....Vanne magnétique "démarrage à vide" (option)
Y2 .....Vanne magnétique "conduite de liquide"
Y3 .....Vanne magnétique "régulation de puissance" (option)

SE-B1 / SE-B2
.....Dispositif de protection du compresseur

OLC-K1
.....Contrôle d'alimentation d'huile


L1
L2
L3
N
PE
F1
Q1
F2
F3 4A
F12 4A
S1
S2 (Reset)
S3 (Reset)
SE-B1 / SE-B2
B1 B2
L
N
OLC-K1
violett (schwarz)
violet (black)
violet (noir)
braun
brown
marron
blau
blue
bleu
orange
grau (gelb)
grey (yellow)
gris (jaune)
rosa (rot)
pink (red)
rose
(rouge)
C
R
U1
220 Ω 0,22 µF
F13 3
F14 5
F5
F6
K2T 18
B1
H1
H2
K1T
max. 0.5 sec
3/3/3/12/16
13
18/19
K1
K2
K1T
K2T
Y1
Y2
Y3
300 sec
10
5/5/5/17
15
R8
Option
B2
K1 10
K2 14
K1T 11
F14 10
F13 10
M1
M3
1W1
1V1
1U1
2W1
2V1
2U1
R1.6
R7, Option
Details zum Anschluss siehe Innenseite Anschlusskasten.
Details concerning connections see inside the terminal box.
Détails sur le raccordement voir intérieur de la boîte de raccordement.

4 Montage

OLC-K1 vorzugsweise montieren, bevor der Verdichter in die Anlage eingebaut wird.

Warnung!
Verdichter steht unter Druck!
Schwere Verletzungen möglich.
Verdichter auf drucklosen Zustand bringen!
Schutzbrille tragen!

- Verdichter kippen, indem er an der Unterseite des Lagerdeckels angehoben wird, damit das in der Öltasche des Lagerdeckels befindliche Öl nicht durch die Anschlussbohrung abfließen kann.
- Schraube (M20x1,5) am Lagerdeckel ausschrauben und Gewindeloch reinigen.
- Glaskegel der Prisma-Einheit innen und außen auf Sauberkeit prüfen und ggf. reinigen.
- Prisma-Einheit mit Metall-Dichtung in den Lagerdeckel einschrauben. Anzugsmoment ca. 75 Nm.

4 Mounting

Mount the OLC-K1 best before the compressor is installed.

Warning!
Compressor is under pressure!
Serious injuries are possible.
Release the pressure in the compressor!
Wear safety goggles!

- Tilt the compressor by lifting it at the bottom side of the bearing cover in order to keep the oil in the oil pocket of the bearing cover from draining through the connection bore.
- Remove the screw (M20x1,5) at the bearing cover and clean the threaded hole.
- Check if glass cone of prism unit is clean on inside and outside and clean if necessary.
- Fit the prism unit with metal gasket into the bearing cover. Tightening torque approximately 75 Nm.

4 Montage

Monter de préférence le OLC-K1, avant que le compresseur soit incorporé dans l'installation frigorifique.

Avertissement !
Compresseur est sous pression !
Des graves blessures sont possibles.
Retirer la pression sur le compresseur !
Porter des lunettes de protection !

- Basculer le compresseur en le soulevant côté couvercle de palier (l'agripper au bas du couvercle) afin que l'huile qui se trouve dans la poche de ce même couvercle ne s'écoule pas par l'alésage de raccordement.
- Dévisser la vis (M20x1,5) du couvercle de palier et nettoyer le trou taraudé.
- Vérifier la propreté du cône en verre de l'unité prisme à l'intérieur et à l'extérieur et le nettoyer, si nécessaire.
- Visser l'unité prisme avec joint métallique dans le couvercle de palier. Couple de serrage environ 75 Nm.

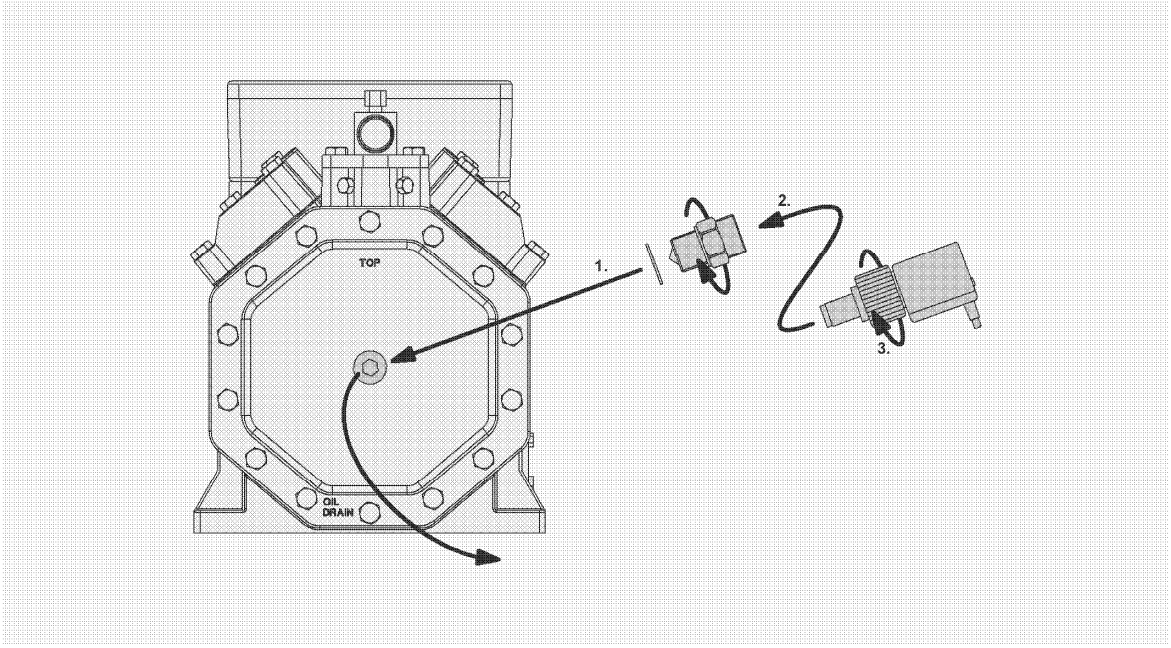


Abb. 2 OLC-K1 montieren

Fig. 2 Mounting of OLC-K1

Fig. 2 Monter le OLC-K1

- Opto-elektronische Einheit sorgfältig in die Prisma-Einheit bis zum Anschlag einschieben und Schraubkappe von Hand fest anziehen.

Achtung!
Ausfall des Schutzgeräts möglich!
Unmittelbar vor dem Einschrauben der opto-elektronischen Einheit sicherstellen, dass die Prisma-Einheit trocken ist!
Kondenswasser sorgfältig entfernen!

Achtung!
Gefahr von Verdichterausfall!
Zerstörung des Schutzgeräts durch eintretende Feuchtigkeit möglich!
Sicherstellen, dass der Kabelanschluss immer nach unten weist!

- Opto-elektronische Einheit keinesfalls demontieren!

- Slide the opto-electronic unit carefully into the prism to the stop and firmly tighten the screwing cap manually.

Attention!
Possible failure of protection device!
Immediately before screwing in the opto-electronic unit, ensure that the prism is dry!
Remove condensing water carefully!

Attention!
Danger of compressor breakdown!
Moisture ingress may destroy the protection device!
Ensure that the cable connection always points downwards!

- In no case dismount the opto-electronic unit!

- Glisser l'unité opto-électronique soigneusement dans l'unité prisme jusqu'à la butée et serrer fermement le bouchon fileté, à la main.

Attention !
Défaillance du dispositif de protection possible !
Immédiatement avant de serrer la vis de l'unité opto-électronique, il faut garantir que l'unité prisme est sèche.
Enlever soigneusement l'eau condensation !

Attention !
Danger de défaillance du compresseur !
Destruction du dispositif de protection possible par introduction d'humidité !
Garantir que le raccordement de câble est toujours dirigé vers le bas.

- En aucun cas, démonter l'unité opto-électronique !

Appendix 3 : Bitzer operating instructions for oil pressure monitoring "Delta-P"

Oil Pressure Monitoring

Types

Semi-hermetic and open drive BITZER reciprocating compressors with integrated oil pump Content

1 General

An adequate oil supply is very important for the operating life of a compressor. Lack of lubrication e. g. due to oil shortage can lead to serious damage of bearings and sliding surfaces. BITZER offers two systems for monitoring the oil pressure of pump lubricated reciprocating compressors: in addition to the externally mounted differential oil pressure switches also an incorporated sensor Delta-PII is available. It is directly screwed into the pump housing (bearing cover). The main advantage is that tube connections, with the danger of breakage, are not used between compressor and differential oil pressure switch. Thus the mounting effort is reduced and the safety in view of leakages is increased at the same time.

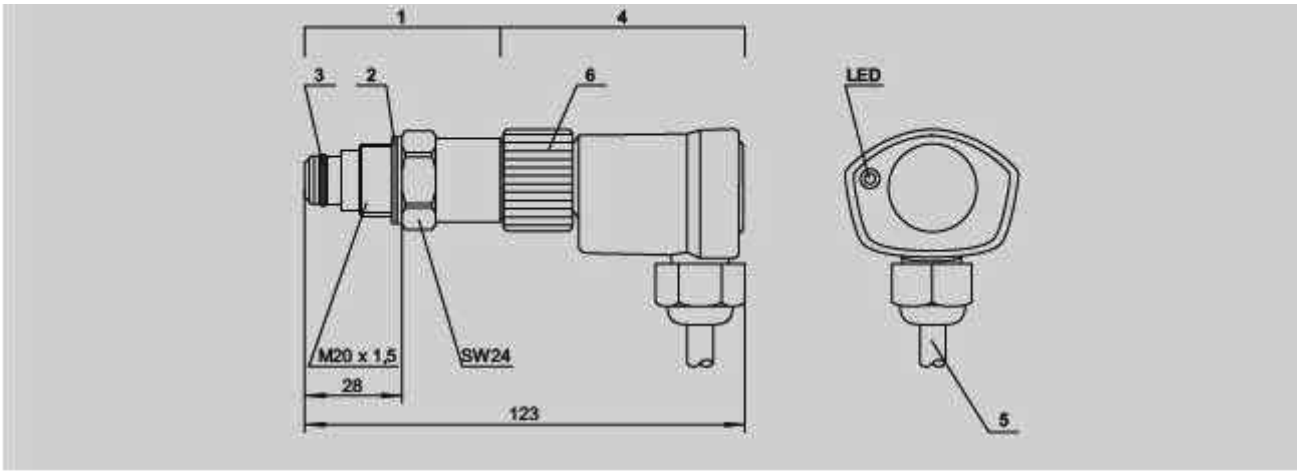
2 Differential oil pressure switch Delta-PII

2.1 Technical features

• The differential oil pressure switch Delta-PII consists of two parts: a sensor unit and an electronic unit (fig. 1).

• The sensor unit is screwed directly into the pump housing of the compressor (bearing cover, fig. 2). It contains a switching element which is connected by channels with the suction and discharge pressure of the oil pump. Therefore external tubes and flare connections are omitted.

• The electronic unit is not in direct contact with the oil circuit. It is screwed into the sensor unit. Thus, the mounting and dismantling is possible without intervention into the refrigeration circuit. An external control module is not required. • The red LED at front end of the electronic unit (fig. 1) signals the operating condition of Delta-PII while compressor is running.



1 Sensor-Einheit	1 Sensor unit	1 Unité de sonde
2 Metall-Dichtscheibe	2 Metal sealing washer	2 Rondelle d'étanchéité métallique
3 O-Ring	3 O-ring	3 Joint annulaire
4 Elektronische Einheit (360° drehbar)	4 Electronic unit (360° revolving)	4 Unité électronique (mobile sur 360°)
5 Anschlusskabel	5 Connecting cable	5 Câble de raccordement
6 Schraubkappe	6 Screwing cap	6 Bouchon fileté
Abb. 1 Abmessungen und Aufbau des Delta-PII	Fig. 1 Dimensions and design of the Delta-PII	Fig. 1 Dimensions et construction de Delta-PII

The Delta-PII is optionally available as a pure switching device (with REED contact) – e. g. for PLC control. Time delay must then be integrated into the control logic.

2.2 Technical data

• Operating voltage: 115 .. 230 V AC +10% / -15%, 50/60 Hz also available with UL approval
• Power consumption: 3 VA
• Relay output: Switch voltage 250 V ~ Switching current max. 2.5 A Switching capacity 300 VA ind.
• Connecting cables: 6 x AWG18 (0,75 mm²) L = 1 m color coded
• Differential cut-out pressure: 0,65 bar
• Time delay with insufficient differential oil pressure: 90 s ± 5 s
• Lock out: electronical
• Admissible ambient temperature: -30°C .. +70°C
• Fuse for protection device and switch contacts: max. 6 A
• Enclosure class: IP54 when electronic unit is mounted and connecting cable points downwards
• Refrigerants: HFC, (H)CFC not admitted to NH3
• Weight: 200 g

2.3 Function Compressor start

The oil pressure monitoring is activated when supply voltage is applied via an auxiliary contact of the motor contactor K1 (operating recognition, see also schematic wiring diagram). The LED at the front end of the electronic unit immediately signals an insufficient differential oil pressure.

Operation

Once the preset value has been reached, this LED extinguishes. The output contact remains closed if the differential oil pressure reaches or exceeds the preset value.

Differential oil pressure below preset value

If the differential oil pressure remains or drops below the preset value for longer than the time delay (approx. 90 s), the output contact opens. The Delta-PII locks out and shuts off the compressor. The signal lamp H2 and the LED at the protection device both stay on until Delta-PII has been reset. Shorter times of insufficient oil pressure are also recognised by the internal microprocessor. They also lead to a compressor shut-off after a correspondingly extended time delay (time integration).

Manual reset

Interrupt power supply (L/N) for at least 5 seconds (reset button S3, see schematic wiring diagram).

Fault of Delta-PII

In case the supply voltage is too low or if the electronic unit is not completely mounted, the Delta-PII locks out. The LED at at the front end of the electronic unit is flashing.

LED indications

- LED is on: lack of oil The signal lamp H2 is also on.
- LED is flashing: fault of Delta-PII
- LED is off: sufficient oil supply

2.4 Mounting

Warning!

Compressor is under pressure! Serious injuries are possible. Release the pressure in the compressor! Wear safety goggles!

- Close the shut-off valves at the compressor and release the pressure in the compressor.
- Unscrew the plug (or mounted pressure sensor) at the bearing cover and clean the threaded hole.
- Fit the sensor unit with o-ring and metal sealing washer into the bearing cover. Mount the o-ring very carefully, do not damage it! Tightening torque approx. 75 Nm.
- Slide the electronic unit to the stop and firmly tighten the screwing cap manually. This unit is freely revolving. Position connecting cable facing downwards.

Attention!

Moisture ingress may destroy the protection device! Ensure that the connecting cable always points downwards!

- Connect cables according to schematic wiring diagram (see chapter 2.5).

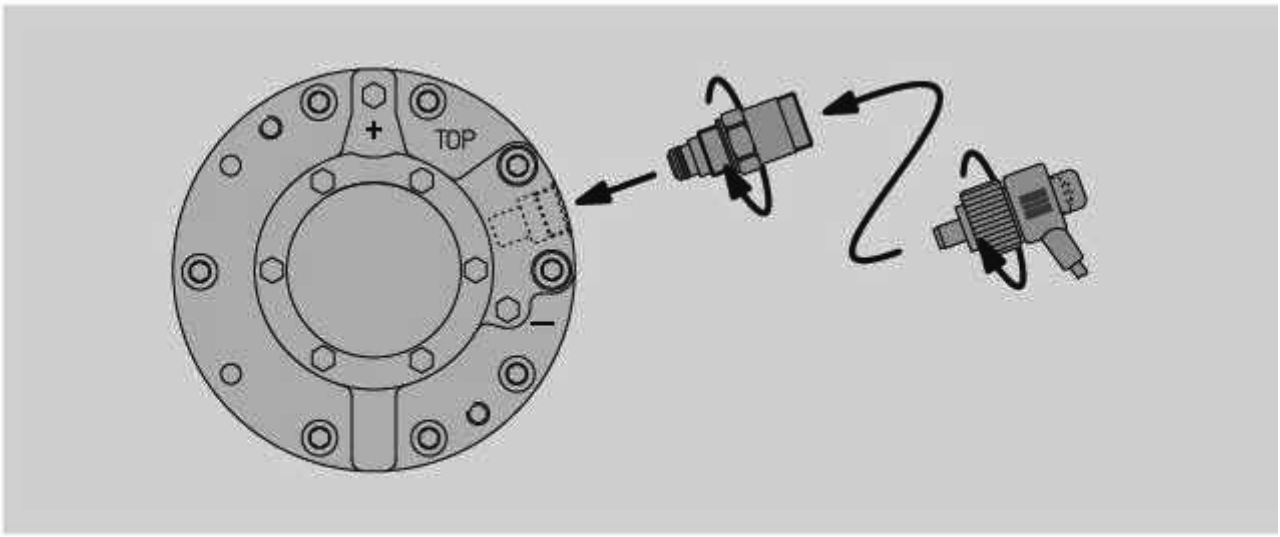


Abb. 2 Öldifferenzdruck-Schalter Delta-PII montieren.

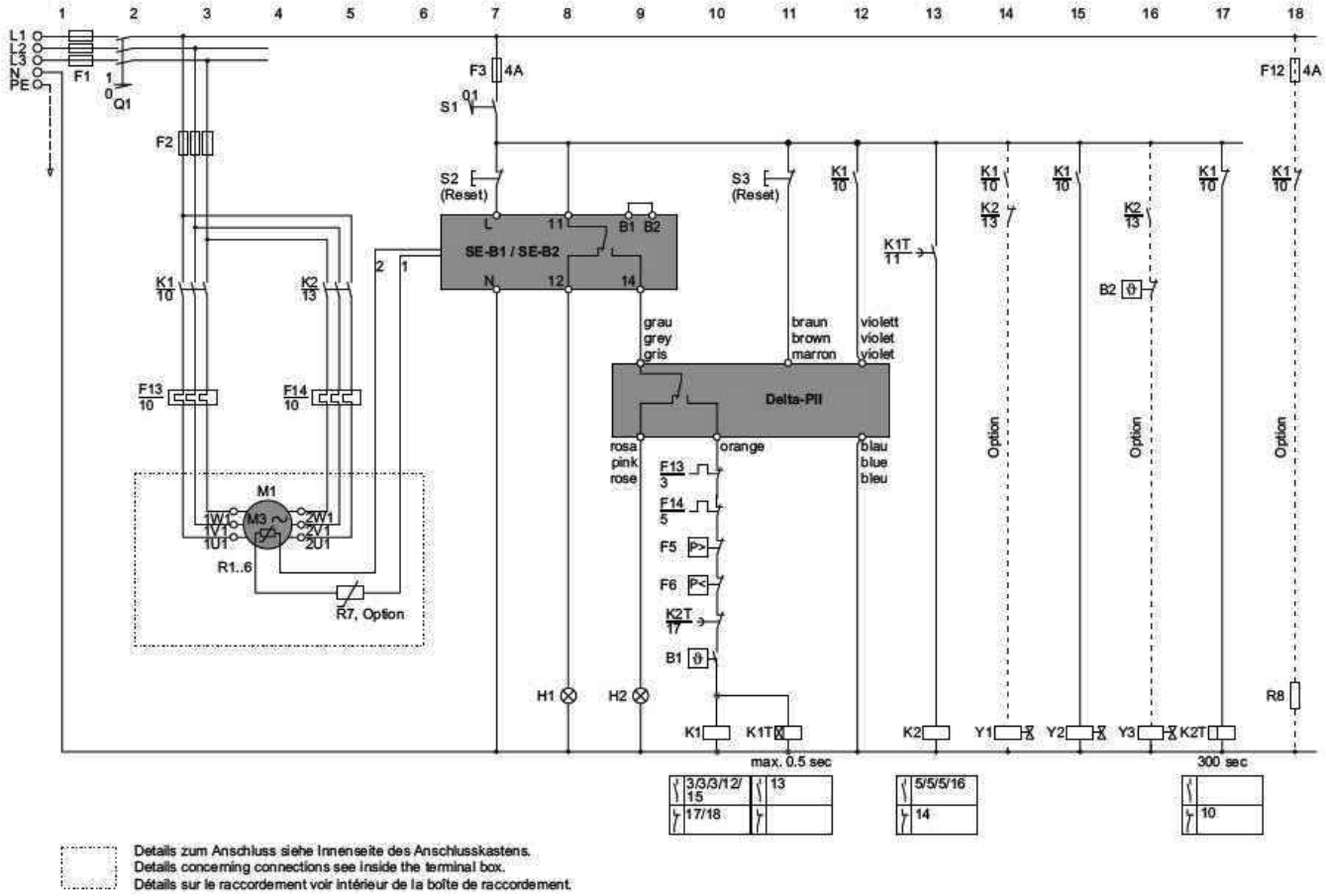
Fig. 2 Mounting the differential oil pressure switch Delta-PII.

Fig. 2 Monter le pressostat différentiel d'huile Delta-PII.

2.5 Electrical connection

Connect Delta-PII according to schematic wiring diagram. Mount reset buttons S2 and S3 into switch board. The following schematic wiring diagram applies to part winding start. For direct start K2, K1T and Y1 can be omitted.

Legend
B1 .....Control unit
B2 .....Control unit of capacity regulator (option)
F1 .....Main fuse
F2 .....Compressor fuse
F3 .....Control circuit fuse
F5 .....High pressure cut out
F6 .....Low pressure cut out
F12 ....Fuse of crankcase heater
F13 ....Thermal overload "motor" PW1 (recommended)
F14 ....Thermal overload "motor" PW2 (recommended)
H1 .....Signal lamp "over temperature (motor and discharge gas)" and "oil supply fault"
H2 .....Signal lamp "oil supply fault"
K1 .....Contactor "first PW"
K2 .....Contactor "second PW"
K1T ....Time relay "part winding"
K2T ....Time relay "pause time" 300 s
M1.....Compressor
Q1.....Main switch
R1-6 ..PTC sensors in motor windings
R7 .....Discharge gas temperature sensor (option)
R8 .....Crankcase heater (option)
S1 .....Control switch
S2 .....Fault reset "over temperature (motor / discharge gas)"
S3 .....Fault reset "lack of oil"
Y1 .....Solenoid valve "start unloading" (option)
Y2 .....Solenoid valve "liquid line"
Y3 .....Solenoid valve "capacity control" (option)
SE-B1 / SE-B2 .....Compressor protection device
Delta-PII .....Differential oil pressure switch



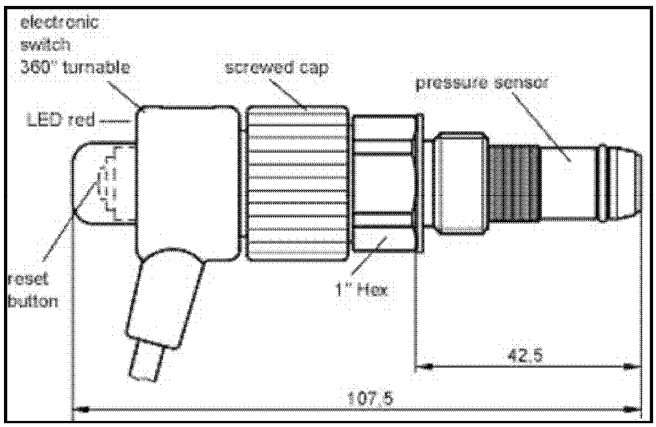
2.6 Function test
Check when the compressor is shut off. Remove the motor fuses and – if refrigerant is already charged – cut the power supply to the liquid solenoid valve(s). Switch on the control voltage. The compressor contactor (K1) closes and thus activating the differential oil pressure monitoring. With correct function the LED will be lit about 90 s. Afterwards the output contact and the compressor contactor open. The signal lamp H2 lights up additionally.

Appendix 4 : Copeland operating instructions for oil pressure monitoring "OPS1"

Application

Monitoring the oil differential pressures in refrigeration compressors. OPS1 consists of two parts: a pressure sensor and an electronic switch. It is easy to apply and due to the pre-assembled sensor environmentally friendly, the risks of refrigerant leakage are minimized.

The pressure sensor of the oil differential switch is directly screwed into the pump housing of the compressor. Internal channels link the switch to the suction and discharge ports of the oil pump. No capillary connections are necessary. The electronic switch can be fitted or removed without opening the refrigeration circuit.



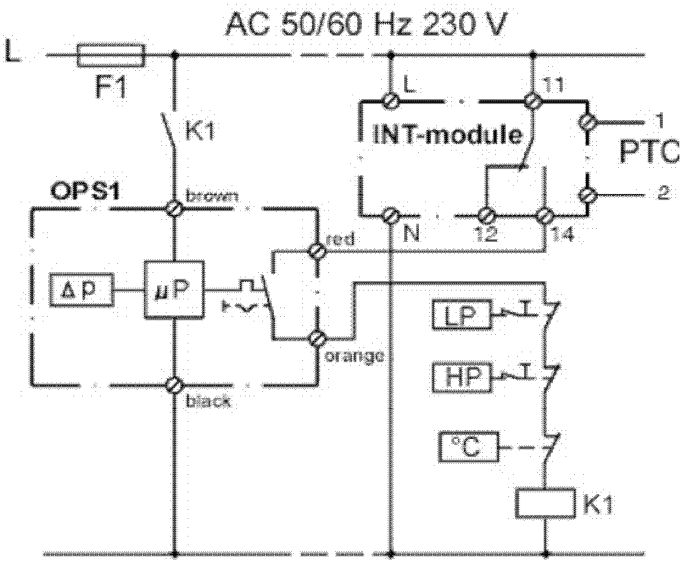
Functional description:

The differential pressure monitor is activated when the supply voltage is applied via an auxiliary contact of the motor contactor K1. A red LED signals insufficient differential oil pressure immediately. Once the pre-set value has been reached, the LED is extinguished. The output contact remains closed when the set value is reached or exceeded. If the oil differential pressure remains or drops below the set value for longer than the time delay time, the output contact opens and locks out mechanically. Depressing the reset button can reactivate the switch. Shorter periods of insufficient differential pressure are also recognised by the internal microprocessor circuitry and lead to a trip and lockout after correspondingly extended delay time (integration).

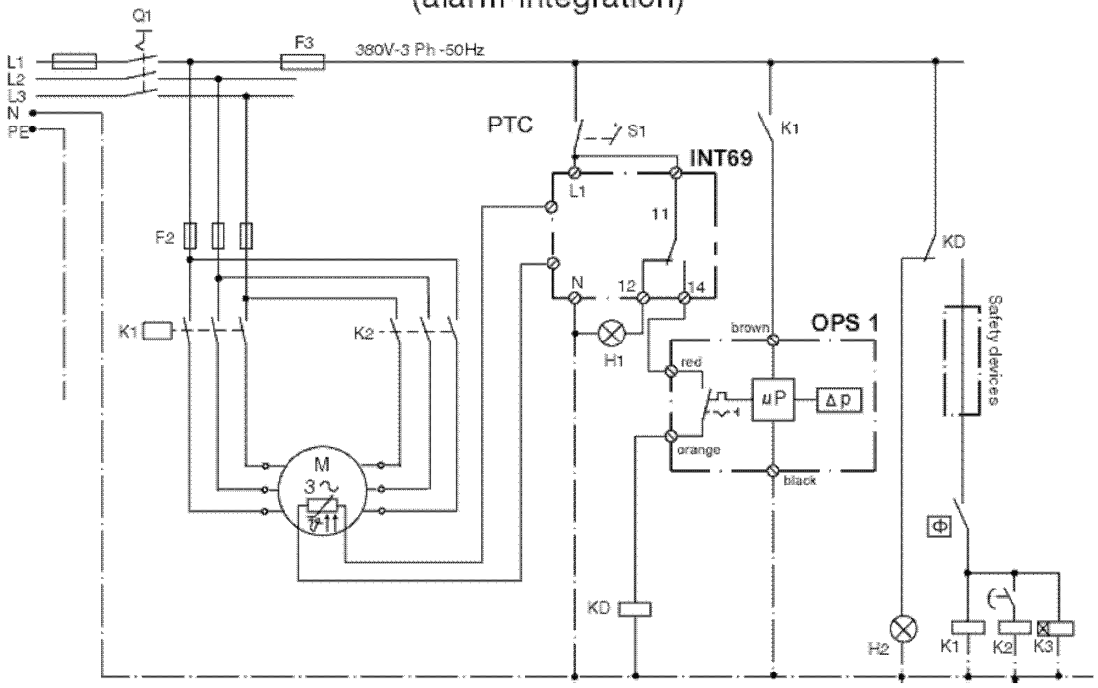
Trained electrical personnel must connect the unit. All valid standards for connecting electrical and refrigeration equipment must be observed. Limit values for the supply voltage of the unit may not be exceeded. The oil differential switch needs no maintenance.

Technical data:

Supply voltage	AC 50/60 Hz 230V +/– 10% 10VA
Ambient temperature range	-30…..+60°C
Time delay	120 s
Cut-in pressure (fixed)	0,95 bar +/- 0,15 bar
Cut-out pressure (fixed)	0,63 bar +/- 0,15 bar
Switching capacity	AC 250 V, max. 2,5A, 720 VA ind.
Refrigerant compatibility	yes (brass)
Protection class according EN 60529	IP54
Reset	manual
Connection cable	4xAWG20 (0,5 mm^2), L=1m colour coded cores
Weight	ca. 200 g



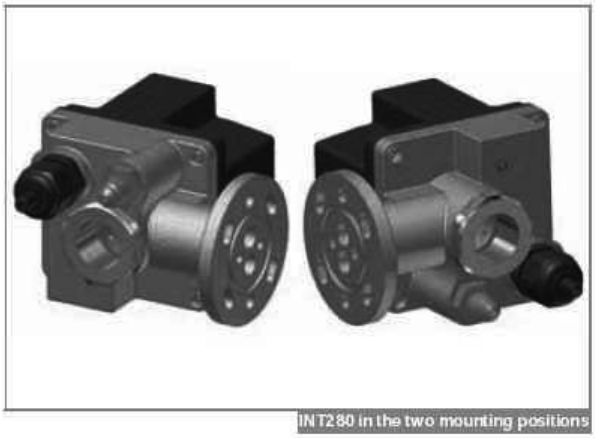
Wiring diagram OPS 1 with aux. relay KD
(alarm-integration)



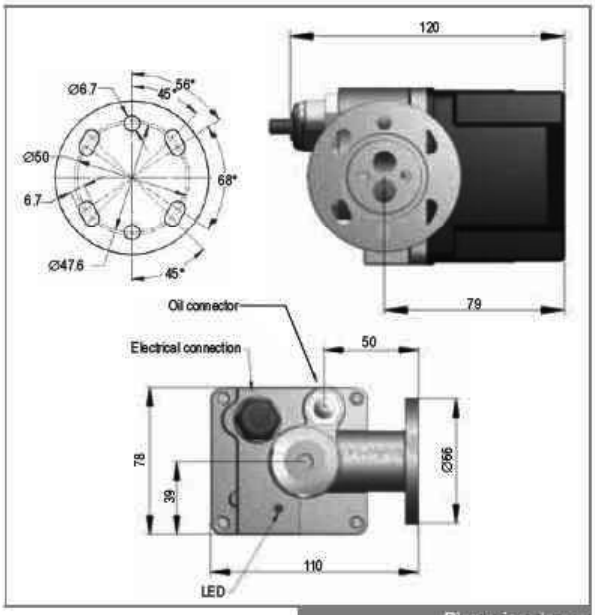
KRIWAN

INT280® Oil level regulator

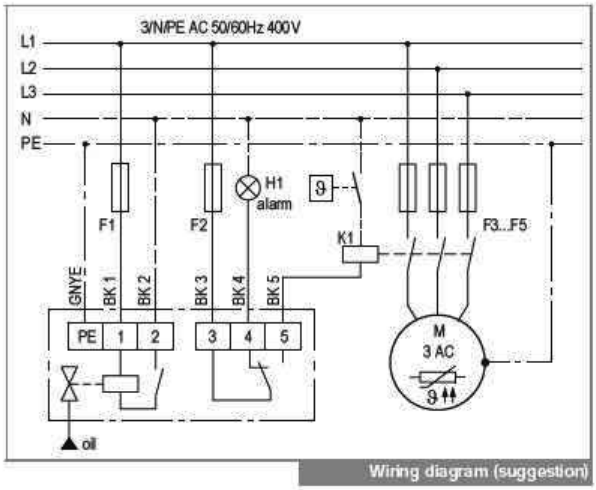
INT280®



INT280 in the two mounting positions



Dimensions in mm



Wiring diagram (suggestion)

Application

The INT280 monitors and controls the oil level in the refrigerant compressors. In particular, the problem of bad oil distribution in multi-compressor packs is solved, thanks to active oil supply from a shared oil reservoir. The oil level regulator keeps the oil level at half the height of the sight glass.

Functional description

If the optical monitoring unit detects that the oil level is low, the integrated oil supply solenoid valve is activated by the electronics. Via the solenoid valve, oil is cyclically injected into the compressor crankcase. The INT280 generates an alarm signal and activates the relay output if the oil level is still too low after a defined period of time. During the "oil deficiency" alarm status, the electronics of the INT280 continues to operate the solenoid valve, in order to inject oil into the crankcase. The alarm status is automatically reset if the oil level is at half the height of the sight glass.

LED status display

Level OK	Green is continuously lit
Filling	Green flashes
Oil level too low	Red is continuously lit
Internal error	Red flashes

Installation instructions

The user has to ensure that the flange is properly tight. The electrical connection needs to be carried out according to the wiring diagram.

⚠ The unit must be connected by trained electrical personnel. All valid European and national standards for connecting electrical equipment must be observed.

Technical specifications

Supply voltage	AC 24V 50/60Hz ±10%, 15VA AC 115V 50/60Hz ±10%, 15VA AC 230V 50/60Hz ±10%, 15VA
Permitted ambient temperature	-30...+60°C
Medium temperature	-30...+100°C
Operating pressure	-1...46bar
Differential pressure	1...25bar (across valve)
Relay	AC 240V, 2.5A, C300
Mechanical service life	Approx. 10^6 switching cycles
Protection class acc. to EN 60529	IP65
Connecting cable	6xAWG18 (0.75mm²), length 1m
Housing material	Aluminium PA66/PA6, glass-fibre-reinforced
Flange connection	3-/4- hole flange
Oil connection	7/16"-20 UNF
Permitted oils	Standard mineral and ester oil, without additives
Permitted refrigerants	All non-corrosive standard refrigerants
Dimensions	Refer to dimensions
Weight	Approx. 950g

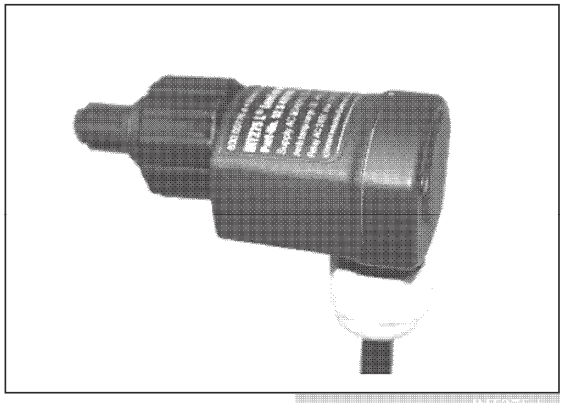
Order data

AC 24V	**31 S 381**
AC 115V	**41 S 381**
AC 230V	**52 S 381**

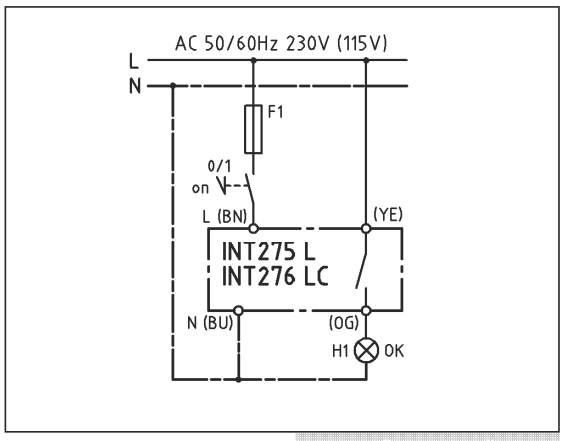
INT275 L®
Level monitoring

KRIWAN

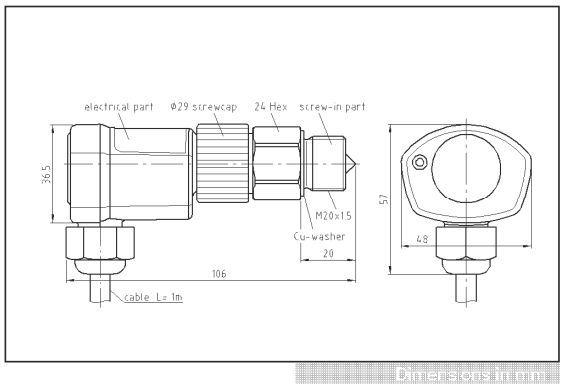
INT275 L®



INT275 L



Connection diagram



Dimensions in mm

The unit must be connected by trained electrical personnel. All valid standards for connecting electrical equipment must be observed. Limit values for the supply voltage of the unit may not be exceeded.

Application:

The optical sensor INT275 L is developed for contactless level monitoring of liquids. A screw-in part mounted at the required location and a removable electrical part perform this function. The electrical part can be fitted or removed without opening the liquid tank.
When the supply voltage is applied, the relay switches on after about 3s.

On absence of liquid or when a fault occurs the relay trips after a delay. When liquid is present or the fault disappears, the relay pulls in after a delay. The potential free normally open contact can be directly wired in a control circuit without an additional auxiliary relay. An integrated self-monitoring circuit ensures high reliability. A mounting check eliminates wrong installation or manipulation.

Installation instruction:

Mounting:
The installer must ensure seal tightness for the specific application. The maximum tightening torque is approx. 75Nm. Clean the inside of the screw-in part as well as the prism. Fit the electrical part in the screw-in part and tighten the coupling ring (torque approx. 10Nm). Pay attention to the position of the lead (cable exit downwards). Complete the electrical wiring in accordance with the attached circuit suggestions. After filling the tank, check the tightness of all joints.

Technical data screw-in part

Ambient temperature range	-30...+60°C
Max. temperature at prism	+80°C
Test pressure	32bar
Housing	VA 1.4510 or 1.4305
Mounting	M20x1.5mm, wrench size 24 NPT1/2", wrench size 24
Weight	approx. 75g

Technical data electrical part

Supply voltage (52S...)	AC50/60Hz 230V ±10%
Supply voltage (41S...)	AC50/60Hz 115V ±10%
Ambient temperature range	-30...+60°C
Delays	
- Relay on after supply voltage on Level monitoring active after Relay on	3s±1s
Relay off (low level) after	5s±2s
Relay off (fault) after	5s±2s
Relay on (level high again) after	5s±2s
Relay on (fault disappears) after	5s±2s
Relay	AC250V, 2.5A, C300
Mechanical service life	approx. 10^5 switching cycles
Housing	Ultramid A3XZG5
Protection class acc. to EN60529	IP54 when mounted
Mounting	coupling ring on screw-in part
Connecting cable	4xAWG18 (0.75mm²) L=1m, colour-coded
Weight	approx. 80g

Ordering information

230V-Version: INT275 L Level monitoring Electrical Part	**52S475S60**
115V-Version: INT275 L Level monitoring Electrical Part	**41S475S60**
screw-in part M20x1.5mm	**02K465**
screw-in part NPT1/2"	**02K460S22**

Product group S
Edition: 690.00263.0

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