
GACO SARL

28, Rue Bencharif Madani

25000 BELLEVUE/CONSTANTINE - ALGERIE

Tel. : 031 92 54 56 / 031 93 22 23 - Fax : 031 92 13 45

Email : gacosarl@gmail.com / benkobbi_fares@yahoo.fr

**Type: Hermetic piston compressors****Producer: Danfoss-Maneurop****Series: MTZ**

Model: MTZ22

Technical data

Cylinder count:	1
Displacement [m ³ /h]:	6,63
Cylinder capacity [cm ³]:	38,1
RPM [min ⁻¹]:	2900
Weight [kg]:	21
Oil charge [dm ³]:	1
Oil type:	160PZ
Crankcase heater type:	PTC 35 W
Maximum system test pressure low side / high side:	25 / 30
Maximum number of starts without softstart [1/h]:	12
Refrigerant charge limit [dm ³]:	3
Refrigerant:	R134a, 404A/R507, R407C
Sound power [dB]:	74
Sound power with accoustic hood [dB]:	68

Connections

	<u>inches</u>
Suction Rotolock valve connection:	1"
Discharge Rotolock valve connection:	1"
Suction connection with supplied sleeve:	1/2"
Discharge connection with supplied sleeve:	3/8"

Approvals

CCC	-
CE	+
UL	+

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R134a

Cooling capacity [W]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15	20
35	1 325	1 861	2 518	3 311	4 256	5 369	6 665	8 159
40	1 170	1 676	2 295	3 043	3 935	4 988	6 216	7 636
45	1 030	1 500	2 077	2 775	3 610	4 597	5 753	7 093
50	907	1 338	1 866	2 509	3 282	4 200	5 279	6 534
55	805	1 191	1 667	2 250	2 956	3 800	4 797	5 962
60	-	1 063	1 482	2 001	2 634	3 399	4 309	5 381
65	-	-	-	1 763	2 320	3 000	3 819	4 792
70	-	-	-	-	-	2 608	3 330	4 199
75	-	-	-	-	-	-	2 845	3 606

Power input [W]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15	20
35	682	763	836	896	940	965	966	941
40	704	792	874	944	1 001	1 039	1 056	1 048
45	718	815	906	989	1 058	1 112	1 146	1 157
50	725	831	933	1 029	1 113	1 183	1 235	1 265
55	724	840	955	1 064	1 164	1 251	1 322	1 373
60	-	842	969	1 094	1 210	1 316	1 407	1 480
65	-	-	-	1 118	1 252	1 378	1 490	1 586
70	-	-	-	-	-	1 435	1 570	1 691
75	-	-	-	-	-	-	1 647	1 792

Current [A]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15	20
35	2.07	2.12	2.17	2.22	2.26	2.30	2.33	2.35
40	2.08	2.14	2.20	2.26	2.32	2.37	2.41	2.45
45	2.09	2.16	2.23	2.30	2.37	2.43	2.49	2.55
50	2.10	2.18	2.26	2.34	2.42	2.50	2.58	2.65
55	2.10	2.19	2.28	2.38	2.47	2.57	2.67	2.76
60	-	2.19	2.30	2.41	2.52	2.64	2.76	2.87
65	-	-	-	2.44	2.57	2.71	2.84	2.98
70	-	-	-	-	-	2.78	2.94	3.10
75	-	-	-	-	-	-	3.03	3.21

Mass flow [kg/s]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15	20
35	29.58	40.68	53.90	69.48	87.65	108.67	132.76	160.17
40	27.25	38.23	51.29	66.65	84.57	105.29	129.03	156.05
45	25.14	35.86	48.60	63.61	81.13	101.39	124.64	151.12
50	23.33	33.64	45.92	60.43	77.40	97.06	119.67	145.47
55	21.91	31.65	43.33	57.19	73.46	92.39	114.21	139.17
60	-	29.99	40.92	53.98	69.41	87.44	108.33	132.31
65	-	-	-	50.87	65.31	82.31	102.12	124.98
70	-	-	-	-	-	77.08	95.66	117.24
75	-	-	-	-	-	-	89.03	109.19

C.O.P. [W/W]

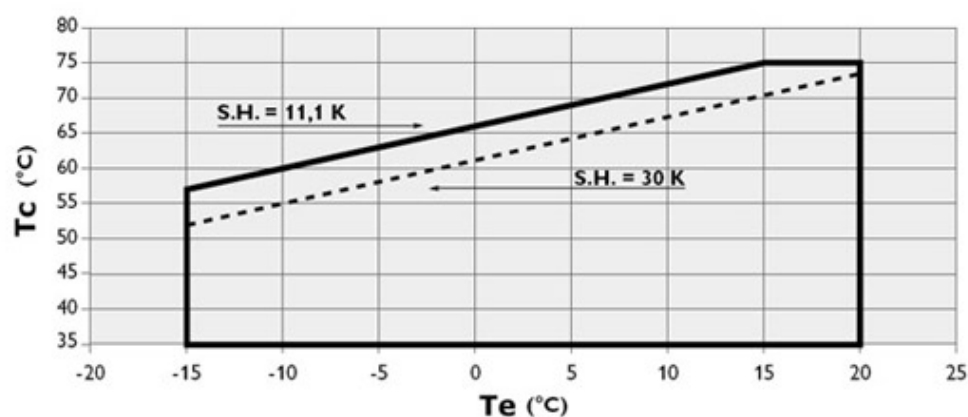
$t_c \setminus t_e$	-15	-10	-5	0	5	10	15	20
35	1.94	2.44	3.01	3.69	4.53	5.56	6.90	8.67
40	1.66	2.12	2.63	3.22	3.93	4.80	5.88	7.28
45	1.43	1.84	2.29	2.81	3.41	4.13	5.02	6.13
50	1.25	1.61	2.00	2.44	2.95	3.55	4.28	5.17
55	1.11	1.42	1.75	2.12	2.54	3.04	3.63	4.34
60	-	1.26	1.53	1.83	2.18	2.58	3.06	3.63
65	-	-	-	1.58	1.85	2.18	2.56	3.02
70	-	-	-	-	-	1.82	2.12	2.48
75	-	-	-	-	-	-	1.73	2.01

Operating conditions: suction superheat: 11.1 K, subcooling: 8.3 K

t_c - Condensing temperature [°C]

t_e - Evaporating temperature [°C]

Application range



R404A/R507**Cooling capacity [W]**

t_c \ t_e	-30	-25	-20	-15	-10	-5	0	5	10
30	1 070	1 535	2 125	2 856	3 744	4 804	6 052	7 504	9 176
35	918	1 342	1 882	2 552	3 368	4 347	5 504	6 854	8 413
40	774	1 156	1 643	2 251	2 995	3 891	4 954	6 201	7 647
45	639	978	1 411	1 955	2 625	3 436	4 405	5 547	6 878
50	515	809	1 187	1 665	2 259	2 985	3 857	4 892	6 106
55	-	650	971	1 382	1 899	2 537	3 311	4 239	5 334
60	-	503	765	1 108	1 545	2 094	2 769	3 587	4 563

Power input [W]

t_c \ t_e	-30	-25	-20	-15	-10	-5	0	5	10
30	893	1 017	1 128	1 224	1 305	1 369	1 414	1 440	1 443
35	890	1 029	1 156	1 270	1 370	1 454	1 521	1 570	1 599
40	879	1 032	1 176	1 309	1 428	1 534	1 624	1 697	1 752
45	859	1 029	1 190	1 342	1 482	1 610	1 724	1 822	1 904
50	832	1 019	1 198	1 370	1 532	1 683	1 821	1 945	2 054
55	-	1 002	1 201	1 393	1 577	1 752	1 916	2 067	2 204
60	-	980	1 199	1 413	1 620	1 819	2 009	2 188	2 354

Current [A]

t_c \ t_e	-30	-25	-20	-15	-10	-5	0	5	10
30	2.41	2.53	2.65	2.76	2.86	2.94	3.00	3.04	3.04
35	2.42	2.55	2.68	2.80	2.92	3.02	3.10	3.15	3.18
40	2.43	2.57	2.71	2.85	2.99	3.11	3.21	3.30	3.36
45	2.41	2.57	2.74	2.90	3.06	3.21	3.35	3.47	3.56
50	2.38	2.56	2.75	2.94	3.13	3.32	3.49	3.65	3.78
55	-	2.52	2.74	2.97	3.20	3.42	3.64	3.84	4.02
60	-	2.45	2.71	2.98	3.25	3.52	3.78	4.03	4.26

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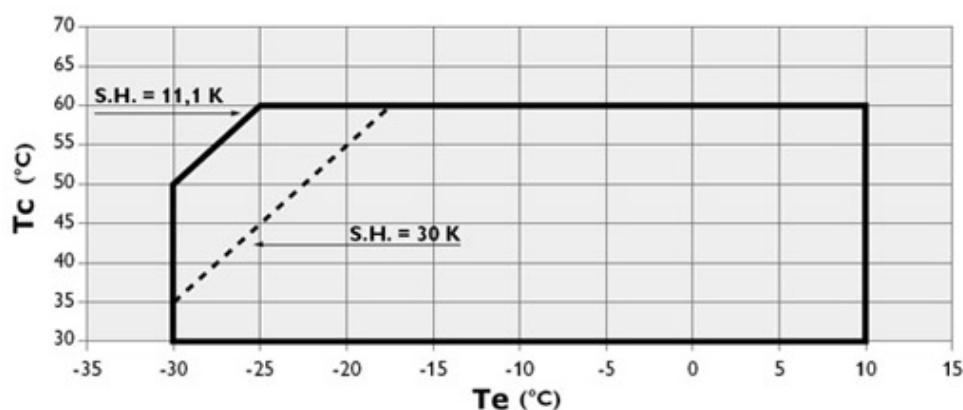
**Mass flow [kg/s]**

$t_c \setminus t_e$	-30	-25	-20	-15	-10	-5	0	5	10
30	33.63	47.31	63.83	83.52	106.70	133.68	164.78	200.32	240.61
35	31.03	44.32	60.46	79.74	102.50	129.04	159.69	194.77	234.58
40	28.39	41.22	56.88	75.67	97.92	123.94	154.06	188.58	227.82
45	25.75	38.03	53.12	71.34	93.00	118.41	147.90	181.79	220.38
50	23.14	34.79	49.23	66.78	87.76	112.48	141.26	174.43	212.28
55	-	31.52	45.22	62.03	82.24	106.18	134.17	166.52	203.56
60	-	28.25	41.14	57.10	76.47	99.54	126.65	158.11	194.24

C.O.P. [W/W]

$t_c \setminus t_e$	-30	-25	-20	-15	-10	-5	0	5	10
30	1.20	1.51	1.88	2.33	2.87	3.51	4.28	5.21	6.36
35	1.03	1.30	1.63	2.01	2.46	2.99	3.62	4.37	5.26
40	0.88	1.12	1.40	1.72	2.10	2.54	3.05	3.65	4.36
45	0.74	0.95	1.19	1.46	1.77	2.13	2.56	3.04	3.61
50	0.62	0.79	0.99	1.22	1.47	1.77	2.12	2.52	2.97
55	-	0.65	0.81	0.99	1.20	1.45	1.73	2.05	2.42
60	-	0.51	0.64	0.78	0.95	1.15	1.38	1.64	1.94

Operating conditions: suction superheat: 10 K, subcooling: 0 K

 t_c - Condensing temperature [°C] t_e - Evaporating temperature [°C]**Application range**

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R407C

Cooling capacity [W]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
35	2 090	2 840	3 729	4 774	5 992	7 400	9 013
40	1 853	2 559	3 393	4 372	5 512	6 830	8 343
45	1 619	2 280	3 058	3 969	5 030	6 258	7 669
50	-	2 006	2 727	3 569	4 550	5 687	6 995
55	-	-	2 401	3 175	4 075	5 119	6 324
60	-	-	-	2 788	3 607	4 558	5 658
65	-	-	-	2 412	3 148	4 005	5 000

Power input [W]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
35	1 045	1 159	1 249	1 319	1 370	1 405	1 429
40	1 067	1 208	1 323	1 414	1 484	1 537	1 576
45	1 071	1 243	1 386	1 503	1 597	1 671	1 729
50	-	1 262	1 437	1 584	1 706	1 806	1 888
55	-	-	1 476	1 657	1 811	1 941	2 049
60	-	-	-	1 719	1 909	2 073	2 212
65	-	-	-	1 770	2 000	2 201	2 376

Current [A]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
35	2.55	2.66	2.74	2.81	2.88	2.94	3.00
40	2.58	2.71	2.82	2.91	2.99	3.07	3.14
45	2.59	2.76	2.90	3.02	3.13	3.22	3.31
50	-	2.78	2.97	3.13	3.27	3.40	3.51
55	-	-	3.01	3.23	3.41	3.58	3.73
60	-	-	-	3.30	3.55	3.76	3.96
65	-	-	-	3.36	3.66	3.94	4.20

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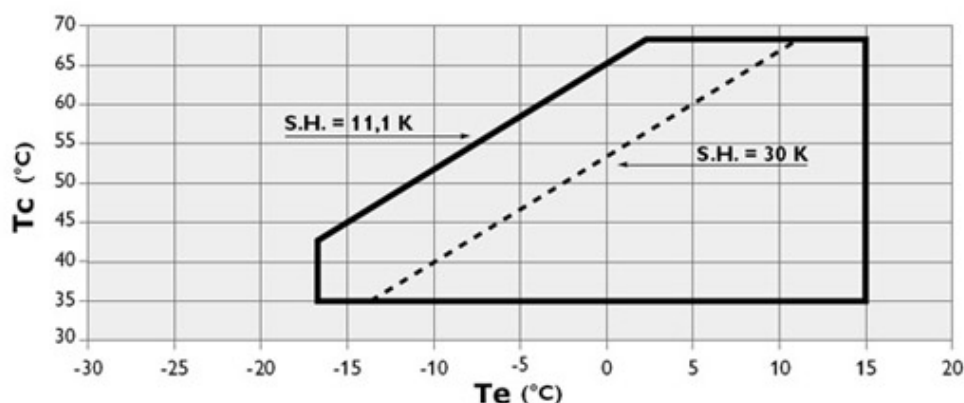
**Mass flow [kg/s]**

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
35	45.35	60.62	78.29	98.64	121.94	148.48	178.54
40	42.28	57.38	74.78	94.76	117.61	143.60	173.01
45	39.03	53.92	71.02	90.60	112.95	138.35	167.07
50	-	50.29	67.04	86.18	108.00	132.76	160.76
55	-	-	62.88	81.54	102.78	126.87	154.10
60	-	-	-	76.71	97.33	120.71	147.13
65	-	-	-	71.72	91.68	114.32	139.89

C.O.P. [W/W]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
35	2.00	2.45	2.98	3.62	4.38	5.27	6.31
40	1.74	2.12	2.57	3.09	3.71	4.44	5.29
45	1.51	1.83	2.21	2.64	3.15	3.74	4.43
50	-	1.59	1.90	2.25	2.67	3.15	3.71
55	-	-	1.63	1.92	2.25	2.64	3.09
60	-	-	-	1.62	1.89	2.20	2.56
65	-	-	-	1.36	1.57	1.82	2.10

Operating conditions: suction superheat: 10 K, subcooling: 0 K

 t_c - Condensing temperature [°C] t_e - Evaporating temperature [°C]**Application range**

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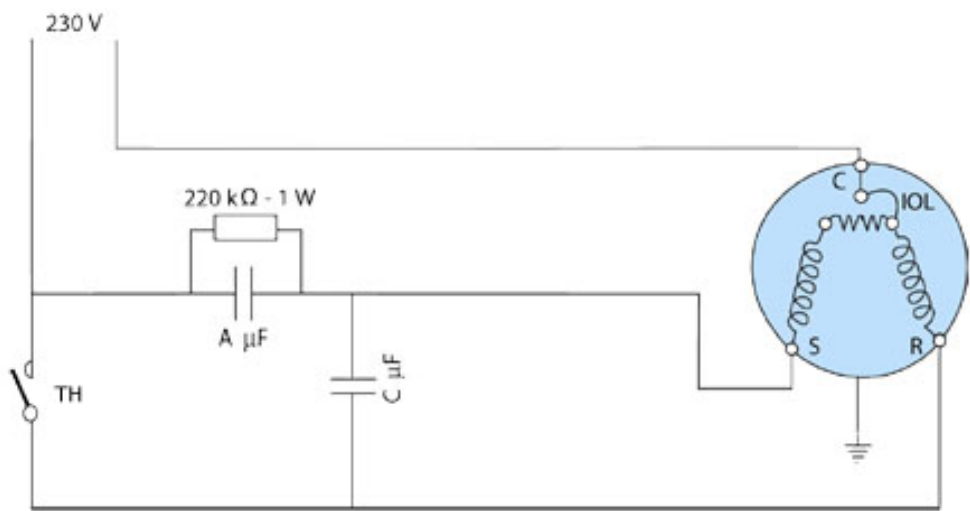


Single phase power supply

Electrical data

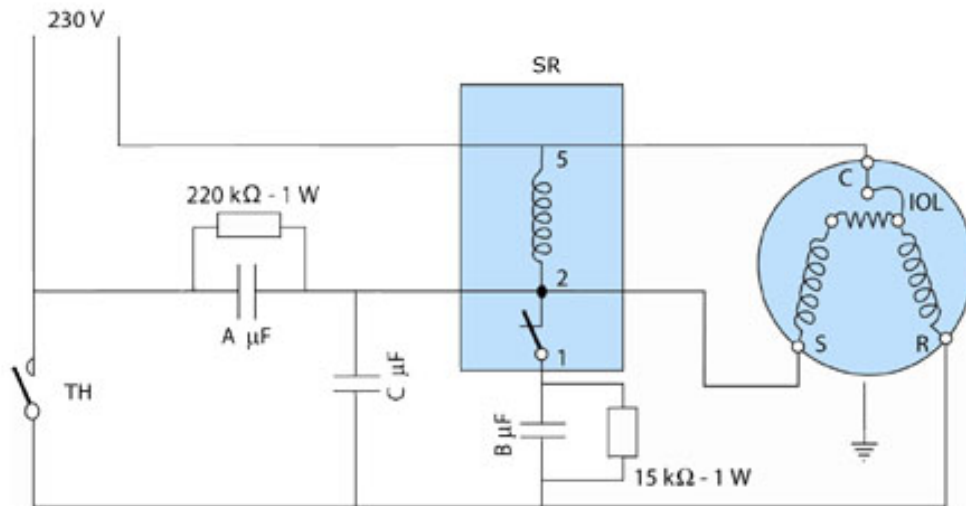
Motor voltage code:	1	5
Starting current [A]:	49,3	41
Maximum Continuous Current (MCC) [A]:	17	15
Winding resistance (between phases) (run/start) [Ω]:	1,25/2,49	1,78/4,74
Main condenser (A) (PSC/CSR) [μ F]:		20
Main condenser (C) (PSC/CSR) [μ F]:		10
Starting condenser (B) (CSR) [μ F]:		100
Starting relay (CSR):		3ARR3J4A4

PSC starting with additional winding



IOL: inner motor protection (klixon)
A, C: main condensers
C: starting condenser / S: common
TH: thermostat
SR: movement transmitter

CSR starting with additional winding



IOL: inner motor protection (klixon)

A, C: main condensers

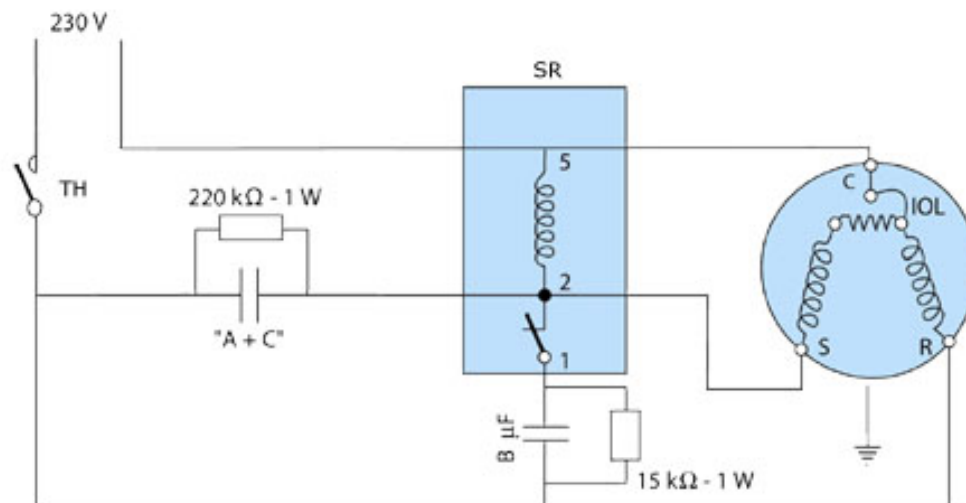
B: starting condenser

C: common / S: additional starting winding

TH: thermostat

SR: movement transmitter

CSR starting without additional winding



IOL: inner motor protection (klixon)

A, C: main condensers

B: starting condenser

C: common / S: additional starting winding

TH: thermostat

SR: movement transmitter

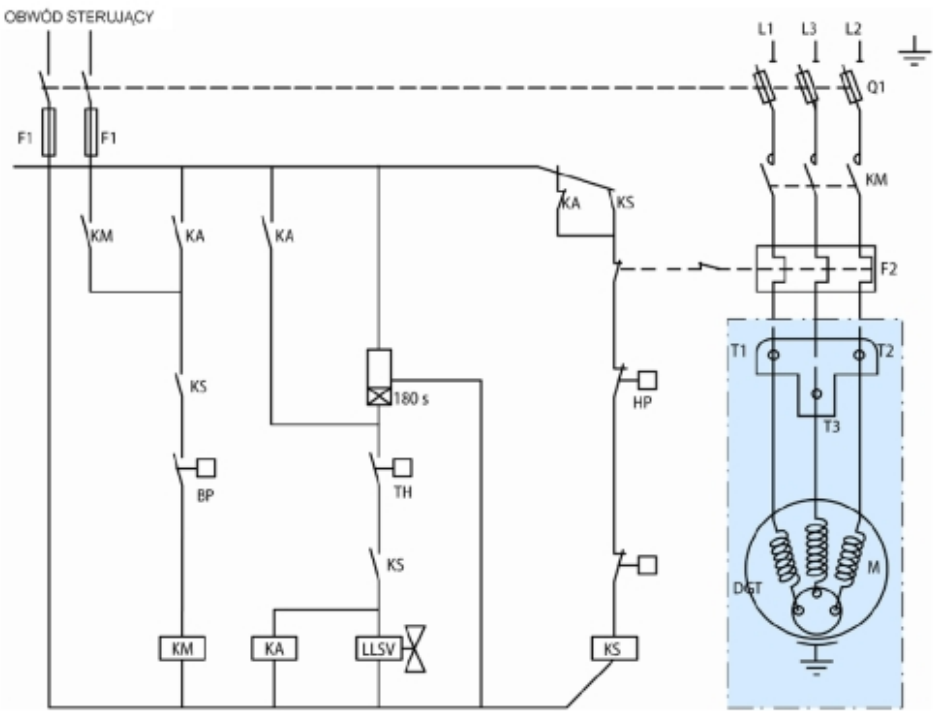
condensers A and C are replaced by one condenser of capacity A + C

Three-phase power supply

Electrical data

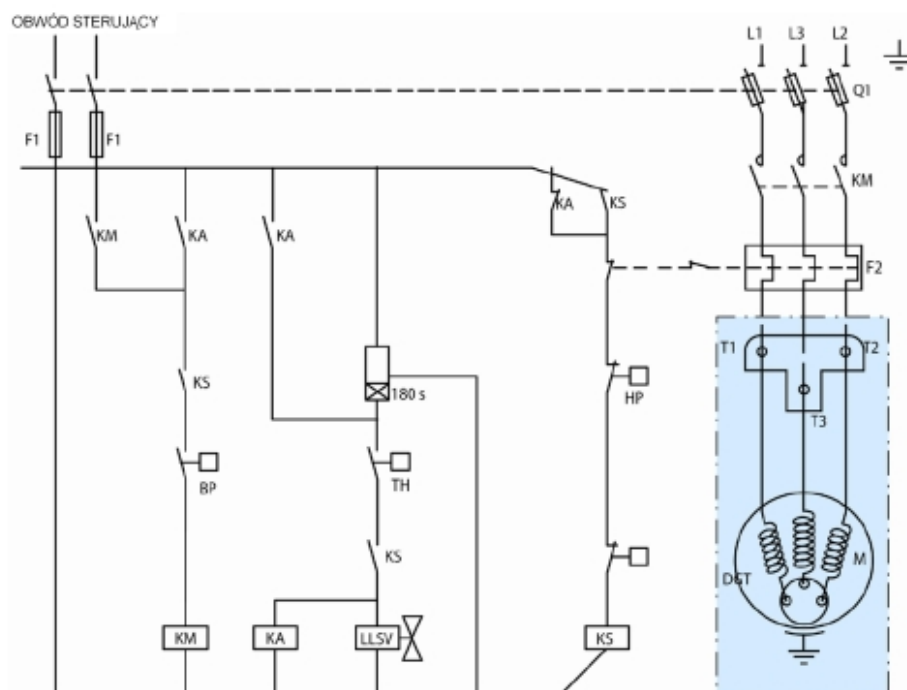
Motor voltage code:	3	4	6	7	9
Starting current [A]:	38	16	30	16	22,5
Maximum Continuous	11	6	30	4,5	6
Current (MCC) [A]:					
Winding resistance	2,49	10,24	3,38	15,2	6,58
(between phases) [Ω]:					

Connection diagram for systems without refrigerant suction



- TH: Thermostat
- 180 s: Optional short cycle timer (3min) 5 pts
- KA: Control relay
- LLSV: Liquid Solenoid valve
- KM: Compressor contactor
- KS: Safety lock out relay
- BP: Low pressure switch
- HP: High pressure switch
- Q1: Fused disconnect
- F1: Fuses
- F2: External overload protection
- M: Compressor's engine
- thM: Motor safety thermostat
- DGT: Discharge gas thermostat

Connection diagram for systems with refrigerant suction



TH: Thermostat

180 s: Optional short cycle timer (3min) 5 pts

KA: Control relay

LLSV: Liquid Solenoid valve

KM: Compressor contactor

KS: Safety lock out relay

BP: Low pressure switch

HP: High pressure switch

Q1: Fused disconnect

F1: Fuses

F2: External overload protection

M: Compressor's engine

thM: Motor safety thermostat

DGT: Discharge gas thermostat

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Equipment

- ▶ crankcase heater - PTC 35 W
- ▶ belt type heater - crankcase heater 55W, 230V
- ▶ Rotolock valves
 - suction: Rotolock valve connection 1", connection with supplied sleeve 1/2"
 - discharge: Rotolock valve connection 1", connection with supplied sleeve 3/8"
- ▶ soft-start kit - electronic softstart MCI 15C
- ▶ accoustic hood - acoustic shield of Danfoss catalogue number 7755001