

**Type: Hermetic piston compressors**

**Producer: Maneurop**

**Series: MTZ**

## **Model: MTZ64**

### **Technical data**

Cylinder count:	2
Displacement [m <sup>3</sup> /h]:	18,74
Cylinder capacity [cm <sup>3</sup> ]:	107,7
RPM [min <sup>-1</sup> ]:	2900
Weight [kg]:	37
Oil charge [dm <sup>3</sup> ]:	2
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 <sup>3</sup> ]:	5
Refrigerant:	R134a, 404A/R507, R407C
Sound power [dB]:	80
Sound power with acoustic hood [dB]:	74

### **Connections**

	<u>milimeters</u>	<u>inches</u>
Suction Rotolock valve connection:		1 3/4"
Discharge Rotolock valve connection:		1 1/4"
Suction connection with supplied sleeve:		7/8"
Discharge connection with supplied sleeve:		3/4"

### **Approvals**

CCC	-
CE	+
UL	+

R134a

**Cooling capacity [W]**

<b>t<sub>c</sub> \ t<sub>e</sub></b>	<b>-15</b>	<b>-10</b>	<b>-5</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>
<b>35</b>	4 202	5 736	7 610	9 869	12 559	15 723	19 407	23 654
<b>40</b>	3 746	5 210	6 999	9 156	11 726	14 754	18 284	22 362
<b>45</b>	3 320	4 704	6 396	8 439	10 879	13 760	17 126	21 023
<b>50</b>	2 930	4 224	5 808	7 727	10 025	12 748	15 939	19 645
<b>55</b>	2 584	3 775	5 241	7 024	9 170	11 724	14 730	18 232
<b>60</b>	-	3 365	4 701	6 338	8 321	10 695	13 504	16 793
<b>65</b>	-	-	-	5 674	7 483	9 666	12 267	15 332
<b>70</b>	-	-	-	-	-	8 644	11 027	13 857
<b>75</b>	-	-	-	-	-	-	9 790	12 373

**Power input [W]**

<b>t<sub>c</sub> \ t<sub>e</sub></b>	<b>-15</b>	<b>-10</b>	<b>-5</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>
<b>35</b>	2 064	2 308	2 532	2 726	2 881	2 989	3 038	3 021
<b>40</b>	2 112	2 377	2 627	2 852	3 044	3 192	3 288	3 322
<b>45</b>	2 143	2 433	2 712	2 972	3 203	3 396	3 542	3 631
<b>50</b>	2 156	2 473	2 785	3 083	3 357	3 598	3 797	3 944
<b>55</b>	2 149	2 497	2 845	3 183	3 504	3 796	4 051	4 260
<b>60</b>	-	2 501	2 888	3 271	3 641	3 988	4 303	4 576
<b>65</b>	-	-	-	3 344	3 766	4 171	4 549	4 891
<b>70</b>	-	-	-	-	-	4 344	4 788	5 201
<b>75</b>	-	-	-	-	-	-	5 018	5 506

**Current [A]**

<b>t<sub>c</sub> \ t<sub>e</sub></b>	<b>-15</b>	<b>-10</b>	<b>-5</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>	<b>20</b>
<b>35</b>	5.30	5.54	5.76	5.95	6.11	6.23	6.30	6.31
<b>40</b>	5.36	5.62	5.87	6.10	6.30	6.47	6.60	6.68
<b>45</b>	5.38	5.67	5.96	6.23	6.49	6.71	6.90	7.05
<b>50</b>	5.38	5.71	6.03	6.35	6.66	6.95	7.20	7.42
<b>55</b>	5.35	5.72	6.09	6.46	6.82	7.17	7.50	7.79
<b>60</b>	-	5.70	6.12	6.54	6.97	7.38	7.78	8.16
<b>65</b>	-	-	-	6.61	7.10	7.59	8.06	8.52
<b>70</b>	-	-	-	-	-	7.78	8.34	8.88
<b>75</b>	-	-	-	-	-	-	8.60	9.24

**Mass flow [kg/s]**

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15	20
35	93.72	125.33	162.91	207.14	258.70	318.30	386.60	464.31
40	87.25	118.89	156.43	200.57	251.99	311.39	379.45	456.86
45	81.07	112.45	149.69	193.48	244.50	303.43	370.98	447.83
50	75.34	106.21	142.89	186.05	236.40	294.61	361.38	437.40
55	70.26	100.36	136.20	178.48	227.88	285.11	350.83	425.75
60	-	95.06	129.80	170.93	219.13	275.10	339.51	413.07
65	-	-	-	163.59	210.32	264.77	327.61	399.53
70	-	-	-	-	-	254.30	315.30	385.33
75	-	-	-	-	-	-	302.76	370.64

**C.O.P. [W/W]**

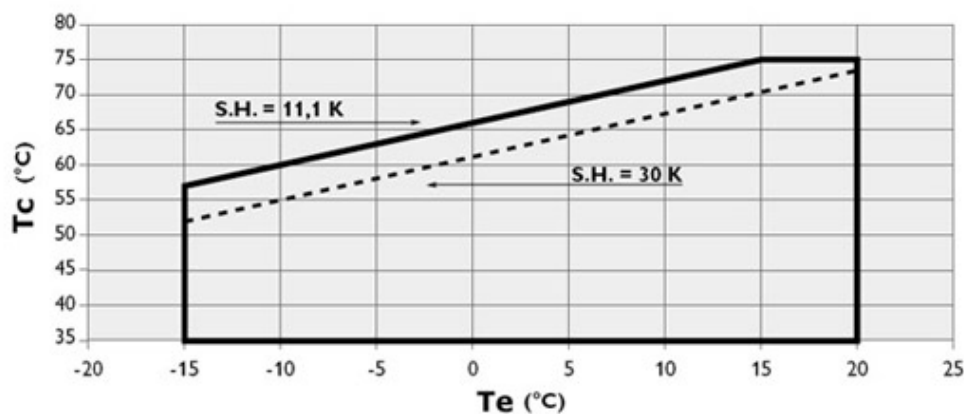
$t_c \setminus t_e$	-15	-10	-5	0	5	10	15	20
35	2.04	2.49	3.01	3.62	4.36	5.26	6.39	7.83
40	1.77	2.19	2.66	3.21	3.85	4.62	5.56	6.73
45	1.55	1.93	2.36	2.84	3.40	4.05	4.84	5.79
50	1.36	1.71	2.09	2.51	2.99	3.54	4.20	4.98
55	1.20	1.51	1.84	2.21	2.62	3.09	3.64	4.28
60	-	1.35	1.63	1.94	2.29	2.68	3.14	3.67
65	-	-	-	1.70	1.99	2.32	2.70	3.14
70	-	-	-	-	-	1.99	2.30	2.66
75	-	-	-	-	-	-	1.95	2.25

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]**

<b>t<sub>c</sub> \ t<sub>e</sub></b>	<b>-30</b>	<b>-25</b>	<b>-20</b>	<b>-15</b>	<b>-10</b>	<b>-5</b>	<b>0</b>	<b>5</b>	<b>10</b>
<b>30</b>	4 239	5 730	7 568	9 797	12 457	15 590	19 239	23 444	28 249
<b>35</b>	3 534	4 979	6 741	8 862	11 385	14 350	17 800	21 777	26 322
<b>40</b>	2 925	4 303	5 967	7 960	10 324	13 100	16 331	20 057	24 322
<b>45</b>	2 407	3 696	5 242	7 085	9 269	11 835	14 825	18 280	22 243
<b>50</b>	1 974	3 154	4 560	6 233	8 216	10 551	13 278	16 441	20 081
<b>55</b>	-	2 672	3 917	5 398	7 159	9 241	11 686	14 535	17 832
<b>60</b>	-	2 245	3 308	4 577	6 094	7 903	10 043	12 558	15 489

**Power input [W]**

<b>t<sub>c</sub> \ t<sub>e</sub></b>	<b>-30</b>	<b>-25</b>	<b>-20</b>	<b>-15</b>	<b>-10</b>	<b>-5</b>	<b>0</b>	<b>5</b>	<b>10</b>
<b>30</b>	2 509	2 904	3 287	3 646	3 966	4 237	4 443	4 574	4 615
<b>35</b>	2 629	3 035	3 435	3 818	4 171	4 480	4 733	4 917	5 019
<b>40</b>	2 715	3 136	3 560	3 973	4 362	4 716	5 020	5 262	5 429
<b>45</b>	2 765	3 207	3 658	4 106	4 538	4 940	5 300	5 606	5 843
<b>50</b>	2 777	3 244	3 728	4 216	4 695	5 151	5 573	5 947	6 260
<b>55</b>	-	3 246	3 768	4 300	4 831	5 347	5 835	6 282	6 675
<b>60</b>	-	3 211	3 775	4 357	4 945	5 524	6 084	6 609	7 088

**Current [A]**

<b>t<sub>c</sub> \ t<sub>e</sub></b>	<b>-30</b>	<b>-25</b>	<b>-20</b>	<b>-15</b>	<b>-10</b>	<b>-5</b>	<b>0</b>	<b>5</b>	<b>10</b>
<b>30</b>	5.83	6.30	6.75	7.18	7.57	7.90	8.17	8.36	8.45
<b>35</b>	5.97	6.45	6.93	7.40	7.83	8.22	8.55	8.81	8.98
<b>40</b>	6.06	6.57	7.08	7.59	8.07	8.52	8.92	9.27	9.53
<b>45</b>	6.12	6.65	7.20	7.75	8.30	8.82	9.29	9.72	10.08
<b>50</b>	6.13	6.70	7.29	7.90	8.51	9.10	9.66	10.19	10.65
<b>55</b>	-	6.71	7.36	8.03	8.71	9.38	10.03	10.66	11.23
<b>60</b>	-	6.69	7.40	8.14	8.90	9.66	10.41	11.14	11.83

**Mass flow [kg/s]**

$t_c \setminus t_e$	-30	-25	-20	-15	-10	-5	0	5	10
<b>30</b>	117.64	157.63	204.23	258.23	320.42	391.58	472.50	563.95	666.72
<b>35</b>	104.87	145.87	193.34	248.06	310.81	382.37	463.53	555.07	657.78
<b>40</b>	94.09	135.54	183.29	238.14	300.86	372.23	453.06	544.11	646.17
<b>45</b>	85.23	126.53	173.98	228.37	290.47	361.09	440.99	530.96	631.78
<b>50</b>	78.18	118.74	165.31	218.65	279.56	348.82	427.22	515.52	614.53
<b>55</b>	-	112.09	157.19	208.91	268.03	335.35	411.65	497.71	594.32
<b>60</b>	-	106.48	149.51	199.02	255.78	320.58	394.20	477.43	571.05

**C.O.P. [W/W]**

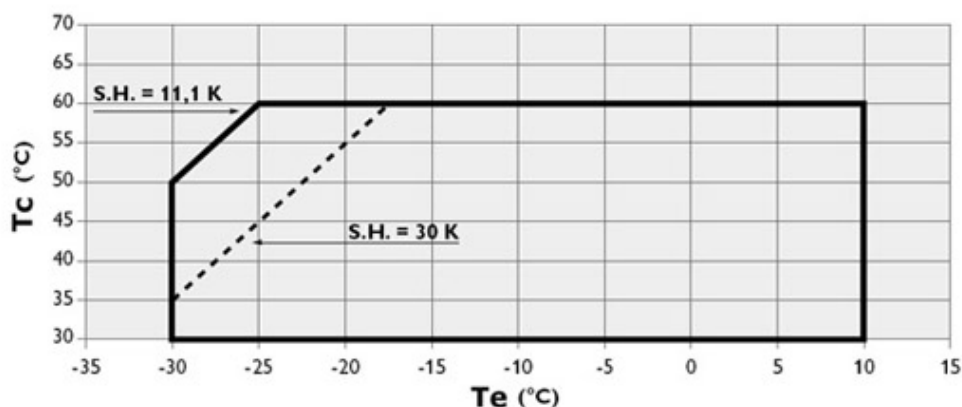
$t_c \setminus t_e$	-30	-25	-20	-15	-10	-5	0	5	10
<b>30</b>	1.69	1.97	2.30	2.69	3.14	3.68	4.33	5.13	6.12
<b>35</b>	1.34	1.64	1.96	2.32	2.73	3.20	3.76	4.43	5.24
<b>40</b>	1.08	1.37	1.68	2.00	2.37	2.78	3.25	3.81	4.48
<b>45</b>	0.87	1.15	1.43	1.73	2.04	2.40	2.80	3.26	3.81
<b>50</b>	0.71	0.97	1.22	1.48	1.75	2.05	2.38	2.76	3.21
<b>55</b>	-	0.82	1.04	1.26	1.48	1.73	2.00	2.31	2.67
<b>60</b>	-	0.70	0.88	1.05	1.23	1.43	1.65	1.90	2.19

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

$t_c$  - Condensing temperature [°C]

$t_e$  - Evaporating temperature [°C]

**Application range**



R407C

**Cooling capacity [W]**

<b>t<sub>c</sub> \ t<sub>e</sub></b>	<b>-15</b>	<b>-10</b>	<b>-5</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>
<b>35</b>	6 342	8 618	11 346	14 575	18 354	22 731	27 756
<b>40</b>	5 666	7 830	10 418	13 480	17 064	21 218	25 992
<b>45</b>	5 023	7 056	9 486	12 361	15 730	19 642	24 145
<b>50</b>	-	6 310	8 561	11 230	14 366	18 016	22 230
<b>55</b>	-	-	7 660	10 104	12 987	16 356	20 261
<b>60</b>	-	-	-	8 995	11 606	14 676	18 253
<b>65</b>	-	-	-	7 919	10 238	12 989	16 219

**Power input [W]**

<b>t<sub>c</sub> \ t<sub>e</sub></b>	<b>-15</b>	<b>-10</b>	<b>-5</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>
<b>35</b>	2 797	3 189	3 558	3 893	4 182	4 414	4 578
<b>40</b>	2 859	3 279	3 682	4 057	4 394	4 681	4 906
<b>45</b>	2 911	3 362	3 804	4 225	4 614	4 960	5 251
<b>50</b>	-	3 438	3 923	4 394	4 840	5 250	5 611
<b>55</b>	-	-	4 039	4 565	5 073	5 551	5 988
<b>60</b>	-	-	-	4 737	5 311	5 862	6 379
<b>65</b>	-	-	-	4 908	5 553	6 182	6 783

**Current [A]**

<b>t<sub>c</sub> \ t<sub>e</sub></b>	<b>-15</b>	<b>-10</b>	<b>-5</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>
<b>35</b>	6.27	6.72	7.15	7.55	7.92	8.24	8.50
<b>40</b>	6.34	6.82	7.30	7.77	8.20	8.60	8.95
<b>45</b>	6.39	6.92	7.46	7.98	8.49	8.97	9.41
<b>50</b>	-	7.01	7.61	8.20	8.79	9.36	9.90
<b>55</b>	-	-	7.75	8.43	9.10	9.77	10.41
<b>60</b>	-	-	-	8.66	9.42	10.19	10.95
<b>65</b>	-	-	-	8.89	9.76	10.64	11.52

**Mass flow [kg/s]**

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
35	126.21	168.26	217.47	274.58	340.36	415.54	500.88
40	117.64	159.68	208.73	265.54	330.85	405.42	489.99
45	109.55	151.11	199.53	255.56	319.93	393.42	476.75
50	-	142.77	190.09	244.86	307.83	379.75	461.37
55	-	-	180.62	233.66	294.75	364.64	444.08
60	-	-	-	222.19	280.93	348.31	425.10
65	-	-	-	210.65	266.57	330.98	404.64

**C.O.P. [W/W]**

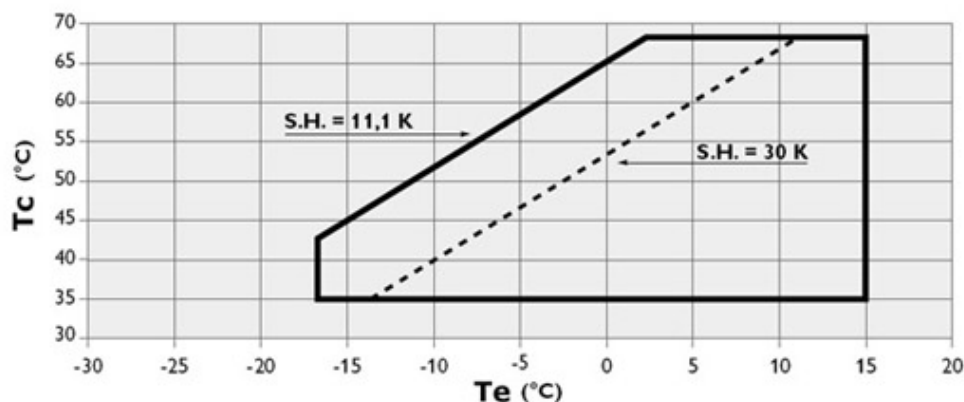
$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
35	2.27	2.70	3.19	3.74	4.39	5.15	6.06
40	1.98	2.39	2.83	3.32	3.88	4.53	5.30
45	1.73	2.10	2.49	2.93	3.41	3.96	4.60
50	-	1.84	2.18	2.56	2.97	3.43	3.96
55	-	-	1.90	2.21	2.56	2.95	3.38
60	-	-	-	1.90	2.19	2.50	2.86
65	-	-	-	1.61	1.84	2.10	2.39

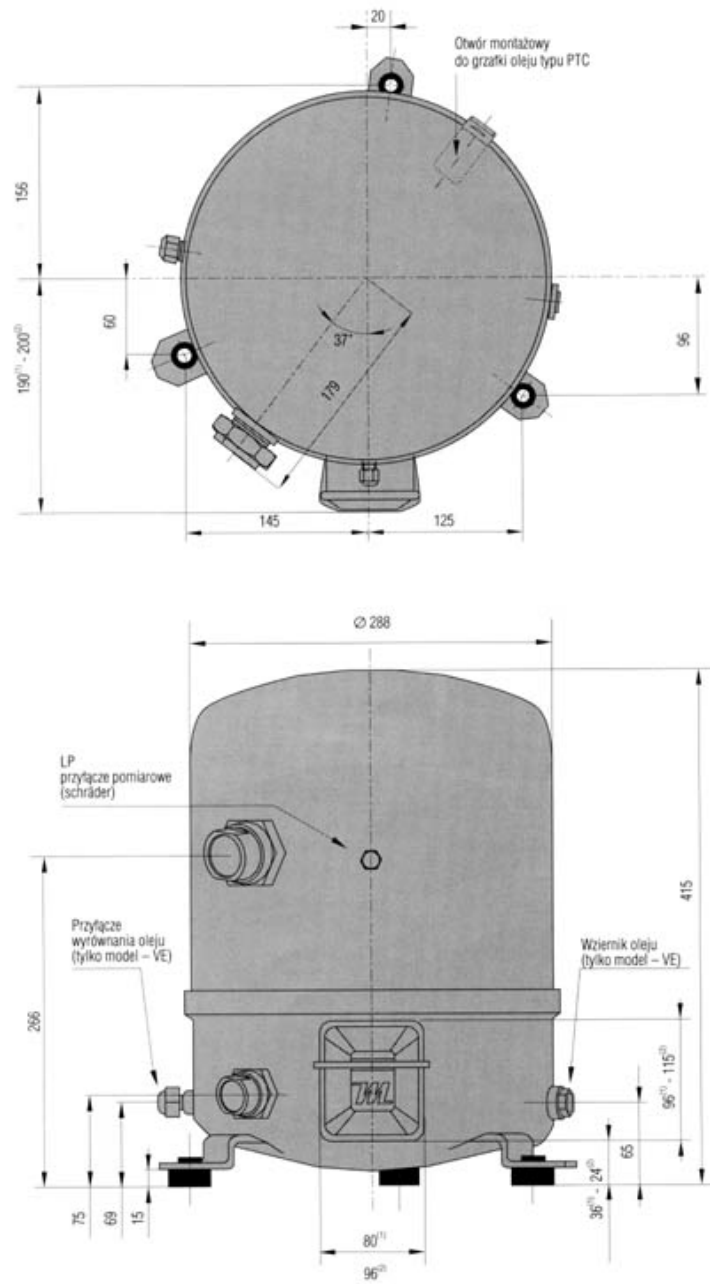
Operating conditions: suction superheat: 11.1 K, subcooling: 8.3 K

$t_c$  - Condensing temperature [°C]

$t_e$  - Evaporating temperature [°C]

**Application range**







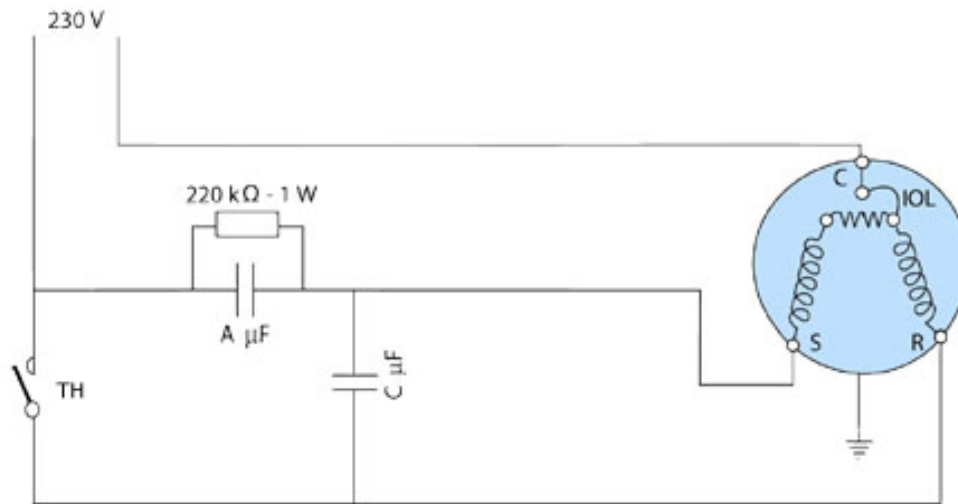


## Single phase power supply

### Electrical data

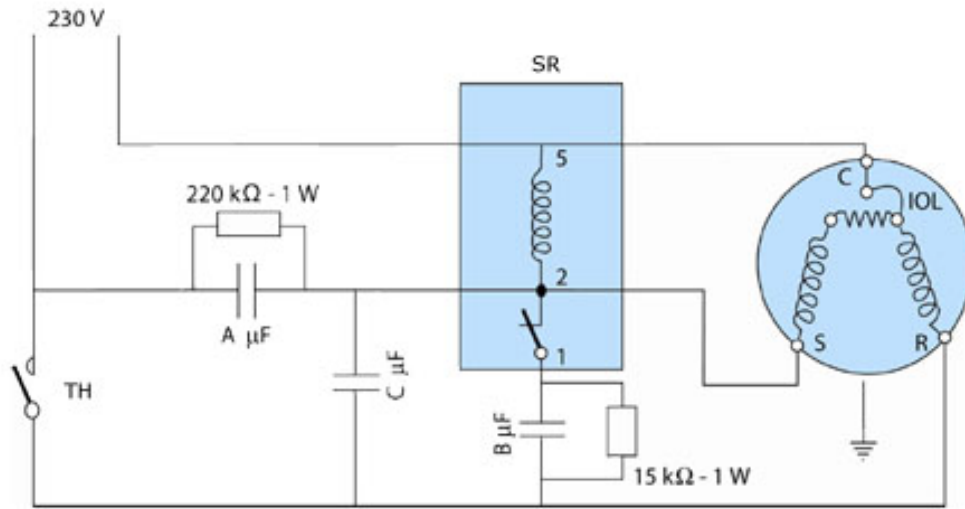
Motor voltage code:	1	5
Starting current [A]:	143	
Maximum Continuous Current (MCC) [A]:	46	
Winding resistance (between phases) (run/start) [ $\Omega$ ]:	0,32/2,1	/

### PSC starting with additional winding



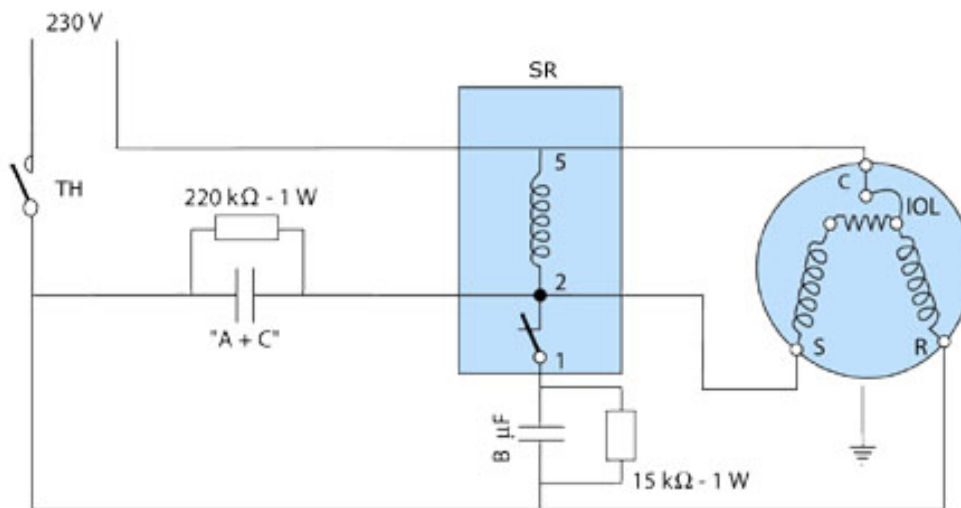
- IOL: inner motor protection (klixon)
- A, C: main condensers
- C: starting condenser / S: common
- TH: thermostat
- SR: movement transmitter

**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**



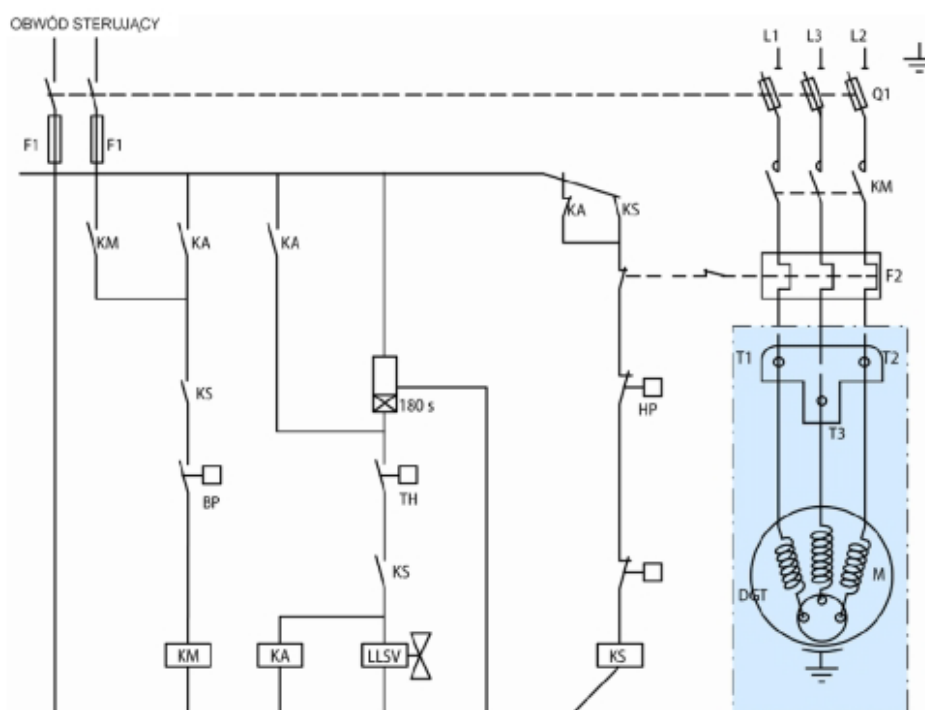
- IOL: inner motor protection (klixon)
- A, C: main condensers
- B: starting condenser
- C: common / S: additional starting winding
- TH: thermostat
- SR: movement transmitter
- condensers A and C are replaced by one condenser of capacity A + C

## Three-phase power supply

### Electrical data

Motor voltage code:	3	4	6	7	9
Starting current [A]:	137	67	124		72
Maximum Continuous	29	15	124		17,5
Current (MCC) [A]:					
Winding resistance (between phases) [ $\Omega$ ]:	0,57	2,41	0,76		1,64

### Connection diagram for systems without refrigerant suction



TH: Termostat

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

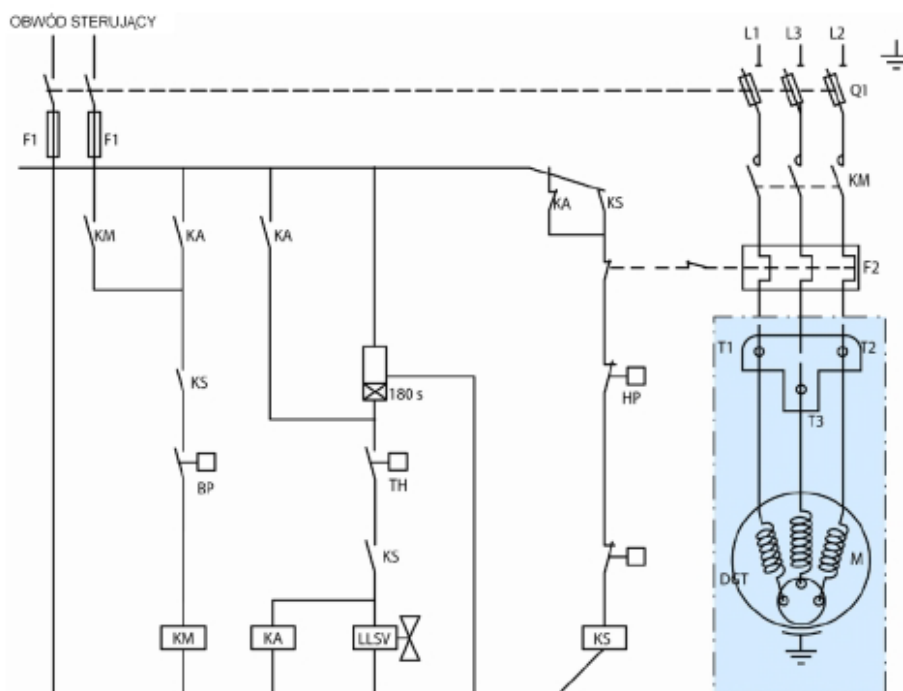
F2: External overload protection

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

## **Equipment**

- ▶ crankcase heater - PTC 35 W
- ▶ belt type heater - crankcase heater 65W, 230V
- ▶ Rotolock valves
  - suction: Rotolock valve connection 1 3/4", connection with supplied sleeve 7/8"
  - discharge: Rotolock valve connection 1 1/4", connection with supplied sleeve 3/4"
- ▶ soft-start kit - electronic softstart MCI 15C
- ▶ acoustic hood - acoustic shield of Danfoss catalogue number 7755002