

Type: Hermetic piston compressors

Producer: Maneurop

Series: MTZ

Model: MTZ160

Technical data

Cylinder count:	4
Displacement [m ³ /h]:	47,25
Cylinder capacity [cm ³]:	271,6
RPM [min ⁻¹]:	2900
Weight [kg]:	69
Oil charge [dm ³]:	4
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]:	10
Refrigerant:	R134a, 404A/R507, R407C
Sound power [dB]:	83
Sound power with acoustic hood [dB]:	77

Connections

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

Approvals

CCC	-
CE	+
UL	+

R134a

Cooling capacity [W]

t_c \ t_e	-15	-10	-5	0	5	10	15	20
35	11 528	15 203	19 657	24 987	31 288	38 658	47 193	56 989
40	10 537	14 034	18 268	23 334	29 328	36 349	44 491	53 851
45	9 609	12 901	16 886	21 661	27 321	33 964	41 685	50 582
50	8 739	11 798	15 506	19 962	25 259	31 497	38 770	47 175
55	7 919	10 717	14 121	18 229	23 137	28 941	35 738	43 624
60	-	9 652	12 725	16 457	20 947	26 289	32 582	39 921
65	-	-	-	14 639	18 682	23 536	29 296	36 060
70	-	-	-	-	-	20 674	25 874	32 034
75	-	-	-	-	-	-	22 308	27 838

Power input [W]

t_c \ t_e	-15	-10	-5	0	5	10	15	20
35	4 897	5 441	5 977	6 494	6 978	7 418	7 802	8 115
40	5 073	5 645	6 218	6 778	7 313	7 810	8 258	8 643
45	5 230	5 836	6 449	7 057	7 646	8 206	8 722	9 183
50	5 366	6 011	6 669	7 329	7 978	8 604	9 194	9 736
55	5 482	6 169	6 878	7 595	8 308	9 005	9 673	10 300
60	-	6 310	7 073	7 852	8 634	9 407	10 158	10 875
65	-	-	-	8 100	8 955	9 809	10 647	11 459
70	-	-	-	-	-	10 210	11 140	12 051
75	-	-	-	-	-	-	11 636	12 651

Current [A]

t_c \ t_e	-15	-10	-5	0	5	10	15	20
35	10.40	10.97	11.54	12.12	12.69	13.25	13.78	14.28
40	10.56	11.17	11.80	12.44	13.09	13.72	14.35	14.95
45	10.71	11.37	12.06	12.77	13.49	14.22	14.94	15.66
50	10.84	11.56	12.31	13.10	13.90	14.73	15.56	16.39
55	10.96	11.73	12.56	13.43	14.33	15.25	16.19	17.15
60	-	11.90	12.80	13.76	14.76	15.79	16.85	17.93
65	-	-	-	14.09	15.20	16.35	17.53	18.75
70	-	-	-	-	-	16.92	18.24	19.60
75	-	-	-	-	-	-	18.96	20.47

Mass flow [kg/s]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15	20
35	256.84	331.92	420.56	524.21	644.35	782.43	939.94	1 118.34
40	245.51	320.28	408.38	511.28	630.43	767.32	923.40	1 100.14
45	234.77	308.49	395.32	496.72	614.16	749.10	903.02	1 077.38
50	224.69	296.62	381.44	480.61	595.59	727.85	878.87	1 050.10
55	215.32	284.73	366.80	463.00	574.78	703.63	851.00	1 018.37
60	-	272.88	351.46	443.95	551.80	676.49	819.49	982.25
65	-	-	-	423.53	526.71	646.51	784.38	941.80
70	-	-	-	-	-	613.73	745.75	897.10
75	-	-	-	-	-	-	703.65	848.18

C.O.P. [W/W]

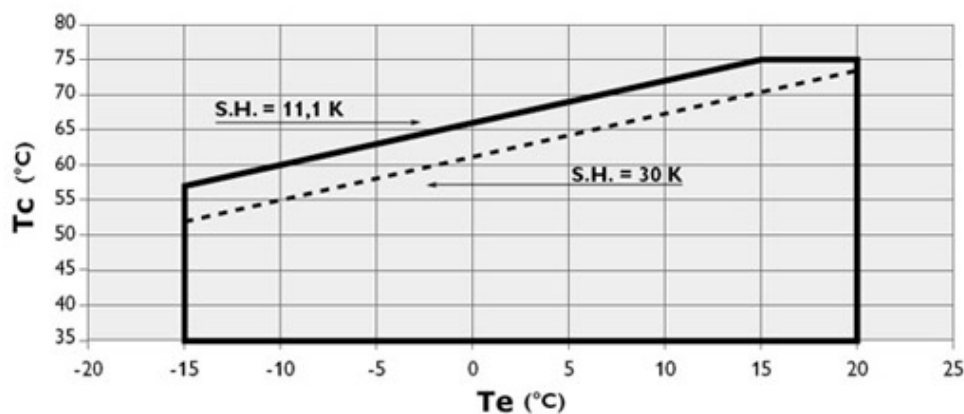
$t_c \setminus t_e$	-15	-10	-5	0	5	10	15	20
35	2.35	2.79	3.29	3.85	4.48	5.21	6.05	7.02
40	2.08	2.49	2.94	3.44	4.01	4.65	5.39	6.23
45	1.84	2.21	2.62	3.07	3.57	4.14	4.78	5.51
50	1.63	1.96	2.33	2.72	3.17	3.66	4.22	4.85
55	1.44	1.74	2.05	2.40	2.78	3.21	3.69	4.24
60	-	1.53	1.80	2.10	2.43	2.79	3.21	3.67
65	-	-	-	1.81	2.09	2.40	2.75	3.15
70	-	-	-	-	-	2.02	2.32	2.66
75	-	-	-	-	-	-	1.92	2.20

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	9 609	12 945	17 010	21 898	27 702	34 515	42 432	51 545	61 948
35	8 450	11 549	15 316	19 845	25 228	31 559	38 932	47 439	57 175
40	7 339	10 192	13 652	17 811	22 764	28 602	35 421	43 314	52 373
45	6 275	8 872	12 014	15 794	20 305	25 642	31 897	39 164	47 537
50	5 254	7 584	10 399	13 789	17 850	22 675	28 356	34 988	42 663
55	-	6 326	8 803	11 794	15 394	19 697	24 794	30 781	37 750
60	-	5 094	7 222	9 805	12 934	16 705	21 209	26 540	32 792

Power input [W]

t_c \ t_e	-30	-25	-20	-15	-10	-5	0	5	10
30	6 678	7 512	8 282	8 999	9 675	10 323	10 955	11 583	12 220
35	6 772	7 709	8 582	9 404	10 186	10 941	11 681	12 418	13 165
40	6 811	7 853	8 832	9 760	10 650	11 514	12 364	13 212	14 071
45	6 804	7 952	9 039	10 076	11 076	12 051	13 013	13 975	14 948
50	6 760	8 017	9 214	10 363	11 475	12 563	13 640	14 717	15 806
55	-	8 058	9 367	10 629	11 855	13 059	14 252	15 447	16 655
60	-	8 084	9 507	10 884	12 228	13 549	14 861	16 175	17 504

Current [A]

t_c \ t_e	-30	-25	-20	-15	-10	-5	0	5	10
30	12.75	13.70	14.66	15.62	16.57	17.48	18.34	19.13	19.85
35	12.87	13.92	14.99	16.07	17.13	18.16	19.14	20.07	20.91
40	12.93	14.11	15.31	16.51	17.70	18.86	19.98	21.04	22.03
45	12.94	14.25	15.58	16.93	18.26	19.57	20.84	22.06	23.20
50	12.87	14.33	15.82	17.32	18.81	20.28	21.72	23.10	24.42
55	-	14.35	16.00	17.67	19.34	20.98	22.60	24.17	25.67
60	-	14.29	16.13	17.98	19.83	21.67	23.48	25.24	26.94

Mass flow [kg/s]

$t_c \setminus t_e$	-30	-25	-20	-15	-10	-5	0	5	10
30	302.08	398.31	510.35	640.20	789.88	961.42	1 156.81	1 378.08	1 627.24
35	286.09	381.24	491.88	620.03	767.70	936.91	1 129.67	1 347.99	1 593.89
40	269.59	363.47	472.53	598.78	744.24	910.92	1 100.85	1 316.03	1 558.47
45	252.68	345.09	452.36	576.52	719.57	883.54	1 070.43	1 282.27	1 521.06
50	235.43	326.17	431.46	553.32	693.77	854.83	1 038.49	1 246.79	1 481.74
55	-	306.78	409.90	529.27	666.93	824.87	1 005.11	1 209.68	1 440.58
60	-	287.02	387.76	504.45	639.10	793.74	970.36	1 171.00	1 397.66

C.O.P. [W/W]

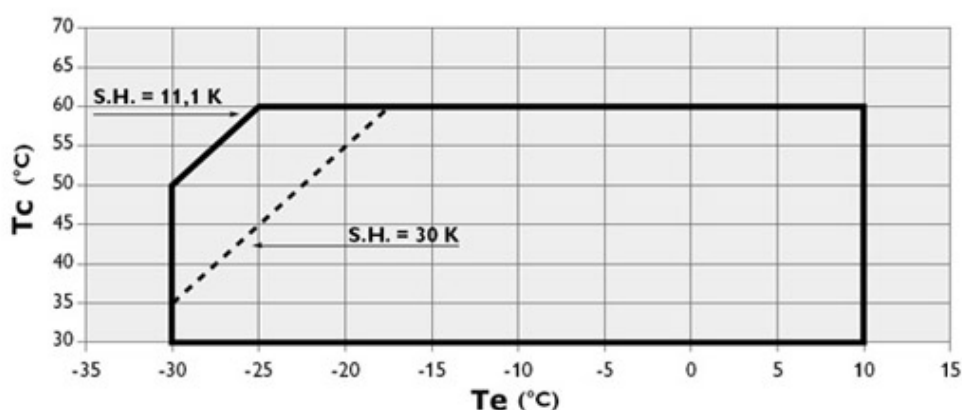
$t_c \setminus t_e$	-30	-25	-20	-15	-10	-5	0	5	10
30	1.44	1.72	2.05	2.43	2.86	3.34	3.87	4.45	5.07
35	1.25	1.50	1.78	2.11	2.48	2.88	3.33	3.82	4.34
40	1.08	1.30	1.55	1.82	2.14	2.48	2.86	3.28	3.72
45	0.92	1.12	1.33	1.57	1.83	2.13	2.45	2.80	3.18
50	0.78	0.95	1.13	1.33	1.56	1.80	2.08	2.38	2.70
55	-	0.79	0.94	1.11	1.30	1.51	1.74	1.99	2.27
60	-	0.63	0.76	0.90	1.06	1.23	1.43	1.64	1.87

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

t_c - Condensing temperature [°C]

t_e - Evaporating temperature [°C]

Application range



R407C

Cooling capacity [W]

t_c \ t_e	-15	-10	-5	0	5	10	15
35	16 998	21 980	27 923	34 947	43 176	52 730	63 731
40	15 537	20 244	25 839	32 442	40 175	49 161	59 520
45	14 059	18 489	23 732	29 911	37 146	45 559	55 273
50	-	16 719	21 607	27 357	34 091	41 929	50 995
55	-	-	19 467	24 786	31 014	38 274	46 688
60	-	-	-	22 199	27 920	34 598	42 356
65	-	-	-	19 602	24 811	30 904	38 004

Power input [W]

t_c \ t_e	-15	-10	-5	0	5	10	15
35	7 638	8 357	9 014	9 629	10 226	10 825	11 448
40	7 965	8 806	9 568	10 275	10 947	11 608	12 278
45	8 213	9 197	10 087	10 907	11 678	12 423	13 162
50	-	9 516	10 557	11 513	12 405	13 255	14 085
55	-	-	10 964	12 078	13 112	14 090	15 034
60	-	-	-	12 587	13 787	14 915	15 994
65	-	-	-	13 027	14 414	15 715	16 951

Current [A]

t_c \ t_e	-15	-10	-5	0	5	10	15
35	13.91	14.84	15.73	16.54	17.26	17.85	18.27
40	14.28	15.33	16.35	17.31	18.18	18.93	19.52
45	14.60	15.79	16.96	18.09	19.13	20.06	20.84
50	-	16.21	17.55	18.85	20.08	21.21	22.21
55	-	-	18.08	19.58	21.01	22.36	23.59
60	-	-	-	20.25	21.91	23.49	24.96
65	-	-	-	20.84	22.75	24.58	26.31

Mass flow [kg/s]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
35	368.77	469.22	586.34	722.18	878.80	1 058.25	1 262.58
40	354.53	453.91	569.45	703.20	857.20	1 033.52	1 234.19
45	339.00	437.24	551.12	682.68	833.99	1 007.08	1 204.02
50	-	419.09	531.22	660.52	809.05	978.84	1 171.96
55	-	-	509.65	636.61	782.26	948.67	1 137.88
60	-	-	-	610.81	753.52	916.46	1 101.68
65	-	-	-	583.02	722.70	882.09	1 063.25

C.O.P. [W/W]

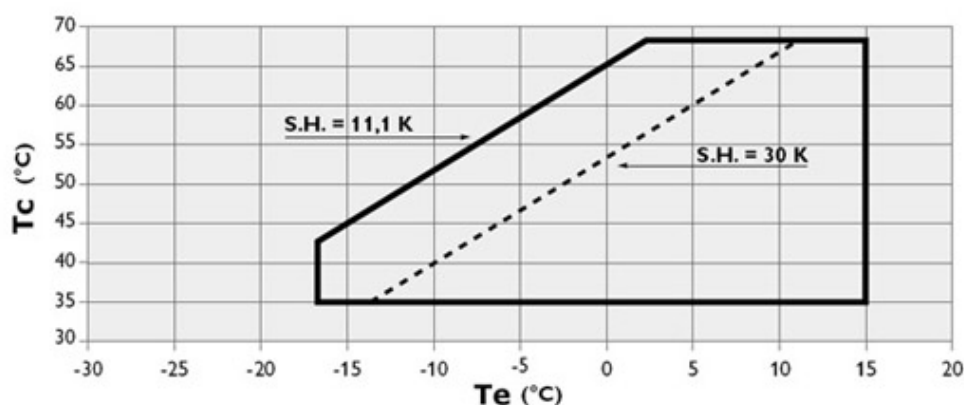
$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
35	2.23	2.63	3.10	3.63	4.22	4.87	5.57
40	1.95	2.30	2.70	3.16	3.67	4.24	4.85
45	1.71	2.01	2.35	2.74	3.18	3.67	4.20
50	-	1.76	2.05	2.38	2.75	3.16	3.62
55	-	-	1.78	2.05	2.37	2.72	3.11
60	-	-	-	1.76	2.03	2.32	2.65
65	-	-	-	1.50	1.72	1.97	2.24

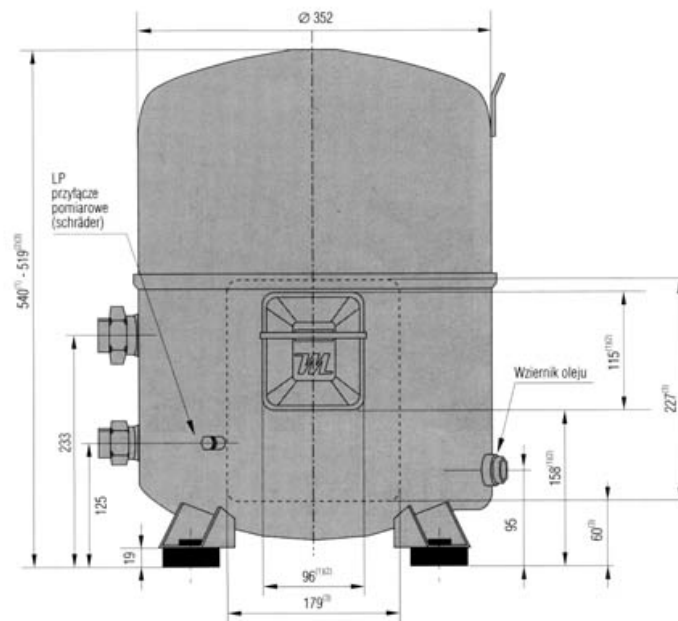
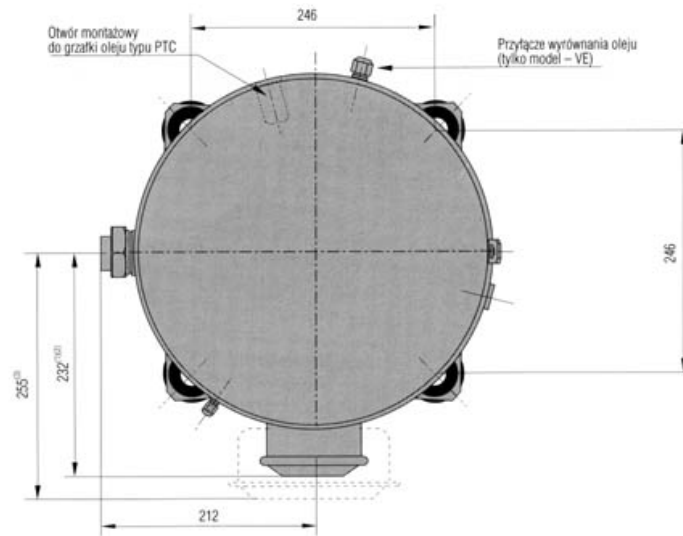
Operating conditions: suction superheat: 10 K, subcooling: 0 K

t_c - Condensing temperature [°C]

t_e - Evaporating temperature [°C]

Application range





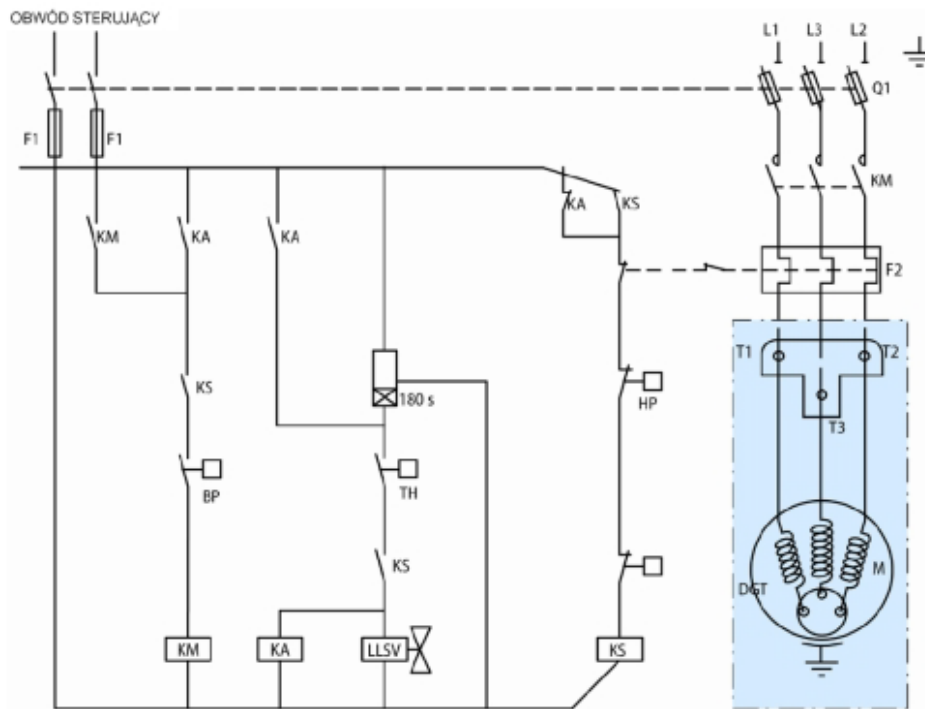


Three-phase power supply

Electrical data

Motor voltage code:	3	4	6	7	9
Starting current [A]:	259	140	208	99	165
Maximum Continuous Current (MCC) [A]:	70	36	208	29	46
Winding resistance (between phases) [Ω]:	0,27	1,1	0,37	1,76	1,1

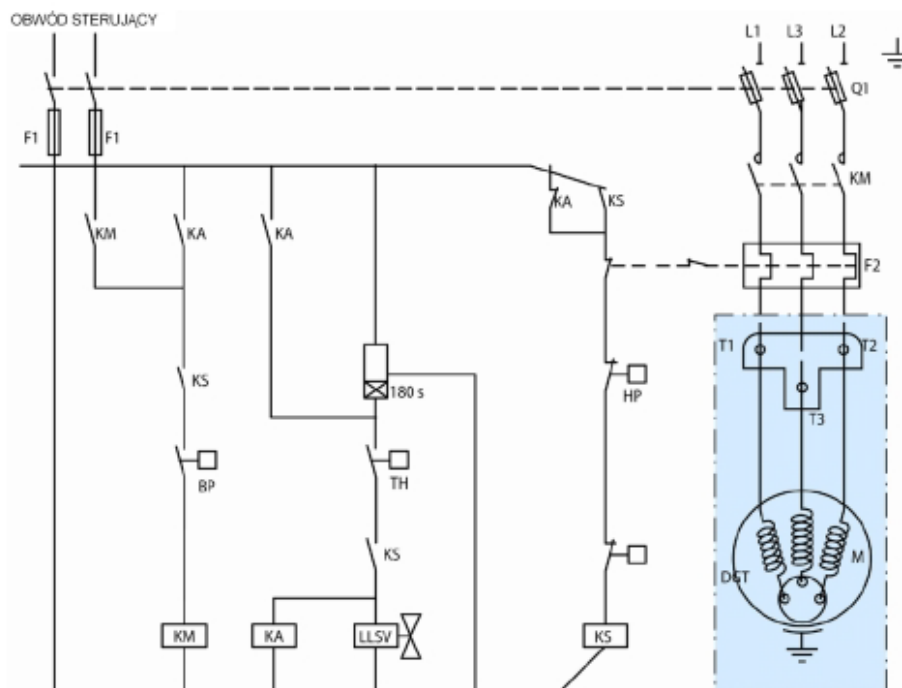
Connection diagram for systems without refrigerant suction



- 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

Equipment

- ▶ crankcase heater - PTC 35 W
- ▶ belt type heater - crankcase heater 75W, 230V
- ▶ Rotolock valves
 - suction: Rotolock valve connection 1 3/4", connection with supplied sleeve 1 1/8"
 - discharge: Rotolock valve connection 1 1/4", connection with supplied sleeve 3/4"
- ▶ soft-start kit - electronic softstart MCI 25C
- ▶ acoustic hood - acoustic shield of Danfoss catalogue number 7755003