

**Type: Hermetic piston compressors**

**Producer: Copeland**

**Series: ZR**

## **Model: ZR11M3E-TWD**

### **Technical data**

Nominal motor power [HP]:	9
Displacement [m <sup>3</sup> /h]:	25,1
Sound pressure level :	67
Gross/Net weight [kg]:	107/96
Oil charge [dm <sup>3</sup> ]:	4,1

### **Electrical data**

Power supply [V/~/Hz]:	1 3/8"
Locked rotor current [A]:	7/8"
Max. operating current [A]:	1 1/4"
Winding resistance [ $\Omega$ ]:	319/357

### **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:		1 3/8"
Discharge connection with supplied sleeve:		7/8"

**R22**
**Cooling capacity [kW]**

<b>t<sub>c</sub> \ t<sub>e</sub></b>	<b>-20</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>	11.59	14.47	17.78	21.60	26.01	31.09	-	-
<b>25</b>	11.10	13.93	17.16	20.87	25.14	30.04	35.67	-
<b>30</b>	10.54	13.33	16.47	20.07	24.19	28.92	34.33	40.50
<b>35</b>	9.93	12.66	15.73	19.21	23.18	27.72	32.91	38.83
<b>40</b>	9.28	11.95	14.93	18.29	22.10	26.45	31.43	37.09
<b>45</b>	-	11.20	14.08	17.32	20.97	25.13	29.88	35.29
<b>50</b>	-	-	13.20	16.30	19.80	23.76	28.28	33.43
<b>55</b>	-	-	-	15.25	18.58	22.35	26.63	31.52
<b>60</b>	-	-	-	-	17.34	20.90	24.95	29.56
<b>65</b>	-	-	-	-	16.06	19.42	23.23	27.57

**Power input [kW]**

<b>t<sub>c</sub> \ t<sub>e</sub></b>	<b>-20</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>	3.79	3.81	3.82	3.83	3.85	3.91	-	-
<b>25</b>	4.24	4.27	4.27	4.27	4.28	4.30	4.36	-
<b>30</b>	4.73	4.76	4.77	4.76	4.75	4.76	4.79	4.85
<b>35</b>	5.24	5.29	5.31	5.30	5.29	5.28	5.28	5.32
<b>40</b>	5.78	5.86	5.89	5.89	5.88	5.86	5.85	5.86
<b>45</b>	-	6.46	6.52	6.54	6.54	6.52	6.50	6.49
<b>50</b>	-	-	7.20	7.24	7.25	7.24	7.22	7.20
<b>55</b>	-	-	-	8.00	8.03	8.03	8.02	8.00
<b>60</b>	-	-	-	-	8.88	8.90	8.90	8.88
<b>65</b>	-	-	-	-	9.80	9.85	9.86	9.85

**Current [A]**

$t_c \setminus t_e$	-20	-15	-10	-5	0	5	10	15
20	9.91	9.94	9.95	9.97	10.00	10.07	-	-
25	10.31	10.35	10.35	10.35	10.35	10.39	10.46	-
30	10.77	10.81	10.81	10.80	10.79	10.79	10.84	10.93
35	11.27	11.33	11.35	11.34	11.32	11.30	11.32	11.38
40	11.84	11.93	11.96	11.96	11.94	11.92	11.91	11.95
45	-	12.60	12.66	12.68	12.67	12.65	12.63	12.64
50	-	-	13.45	13.49	13.50	13.49	13.47	13.47
55	-	-	-	14.41	14.45	14.45	14.45	14.45
60	-	-	-	-	15.51	15.54	15.56	15.56
65	-	-	-	-	16.70	16.77	16.81	16.83

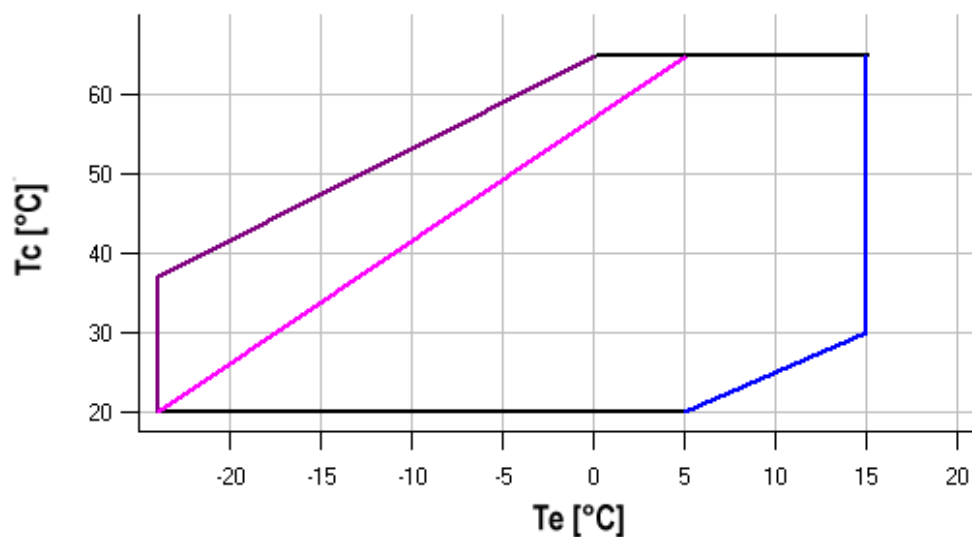
**Mass flow [kg/s]**

$t_c \setminus t_e$	-20	-15	-10	-5	0	5	10	15
20	231.38	285.80	347.05	416.61	495.97	586.61	-	-
25	229.46	284.78	346.62	416.45	495.75	586.01	688.71	-
30	226.26	282.47	344.87	414.94	494.17	584.02	685.99	801.54
35	221.87	278.94	341.88	412.17	491.29	580.72	681.93	796.41
40	216.36	274.28	337.74	408.23	487.21	576.19	676.63	790.01
45	-	268.57	332.52	403.18	482.02	570.52	670.16	782.42
50	-	-	326.31	397.12	475.78	563.78	662.60	773.72
55	-	-	-	390.13	468.59	556.07	654.05	764.00
60	-	-	-	-	460.53	547.46	644.57	753.33
65	-	-	-	-	451.68	538.05	634.26	741.81

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

$t_c \setminus t_e$	-20	-15	-10	-5	0	5	10	15
<b>20</b>	3.06	3.80	4.66	5.64	6.75	7.96	-	-
<b>25</b>	2.62	3.27	4.02	4.89	5.88	6.98	8.18	-
<b>30</b>	2.23	2.80	3.46	4.22	5.09	6.08	7.17	8.35
<b>35</b>	1.90	2.39	2.96	3.62	4.38	5.25	6.23	7.31
<b>40</b>	1.60	2.04	2.53	3.10	3.76	4.51	5.37	6.33
<b>45</b>	-	1.73	2.16	2.65	3.21	3.86	4.60	5.44
<b>50</b>	-	-	1.83	2.25	2.73	3.28	3.92	4.64
<b>55</b>	-	-	-	1.91	2.31	2.78	3.32	3.94
<b>60</b>	-	-	-	-	1.95	2.35	2.80	3.33
<b>65</b>	-	-	-	-	1.64	1.97	2.36	2.80

**Application range**



- Maximum evaporating temperature
- 25°C suction gas temperature
- 10K gas overheat

Operating conditions: 10K suction superheat, 0K subcooling

$t_c$  - Condensing temperature [°C]

$t_e$  - Evaporating temperature [°C]

R134a

**Cooling capacity [kW]**

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
<b>30</b>	8.14	10.29	12.88	15.93	19.48	23.54	28.13
<b>35</b>	7.73	9.78	12.27	15.20	18.62	22.55	27.01
<b>40</b>	7.33	9.26	11.62	14.43	17.71	21.49	25.79
<b>45</b>	6.93	8.73	10.95	13.61	16.74	20.36	24.49
<b>50</b>	-	8.21	10.27	12.78	15.74	19.18	23.13
<b>55</b>	-	-	9.60	11.93	14.70	17.96	21.71
<b>60</b>	-	-	8.94	11.07	13.66	16.70	20.25
<b>65</b>	-	-	-	10.23	12.60	15.43	18.75
<b>70</b>	-	-	-	-	11.55	14.15	17.22

**Power input [kW]**

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
<b>30</b>	3.17	3.23	3.29	3.34	3.38	3.42	3.45
<b>35</b>	3.54	3.60	3.66	3.71	3.74	3.77	3.78
<b>40</b>	3.93	4.01	4.07	4.11	4.15	4.17	4.18
<b>45</b>	4.35	4.44	4.51	4.57	4.61	4.63	4.64
<b>50</b>	-	4.90	4.99	5.06	5.11	5.14	5.16
<b>55</b>	-	-	5.50	5.59	5.66	5.71	5.74
<b>60</b>	-	-	6.03	6.15	6.24	6.32	6.37
<b>65</b>	-	-	-	6.74	6.87	6.97	7.05
<b>70</b>	-	-	-	-	7.53	7.67	7.77

**Current [A]**

$t_c \setminus t_e$	<b>-15</b>	<b>-10</b>	<b>-5</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>
<b>30</b>	9.23	9.24	9.25	9.26	9.31	9.40	9.55
<b>35</b>	9.54	9.55	9.55	9.56	9.59	9.66	9.78
<b>40</b>	9.89	9.92	9.92	9.93	9.94	9.99	10.09
<b>45</b>	10.31	10.35	10.36	10.37	10.38	10.41	10.49
<b>50</b>	-	10.85	10.87	10.88	10.89	10.92	10.98
<b>55</b>	-	-	11.46	11.49	11.50	11.52	11.57
<b>60</b>	-	-	12.14	12.18	12.20	12.22	12.27
<b>65</b>	-	-	-	12.96	13.00	13.03	13.07
<b>70</b>	-	-	-	-	13.90	13.94	13.99

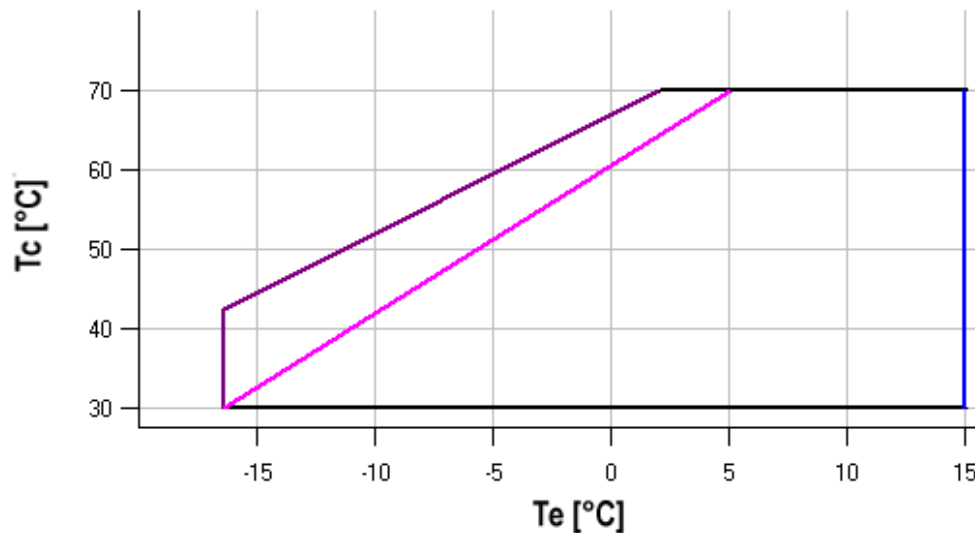
**Mass flow [kg/s]**

$t_c \setminus t_e$	<b>-15</b>	<b>-10</b>	<b>-5</b>	<b>0</b>	<b>5</b>	<b>10</b>	<b>15</b>
<b>30</b>	188.17	233.30	286.27	347.26	416.40	493.87	579.82
<b>35</b>	187.92	232.67	285.55	346.71	416.32	494.53	581.50
<b>40</b>	187.66	231.73	284.21	345.26	415.03	493.69	581.39
<b>45</b>	187.59	230.69	282.48	343.12	412.76	491.56	579.69
<b>50</b>	-	229.79	280.58	340.51	409.72	488.38	576.64
<b>55</b>	-	-	278.75	337.67	406.15	484.36	572.45
<b>60</b>	-	-	277.19	334.80	402.26	479.73	567.35
<b>65</b>	-	-	-	332.15	398.29	474.71	561.57
<b>70</b>	-	-	-	-	394.44	469.52	555.33

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

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
<b>30</b>	2.57	3.18	3.91	4.77	5.75	6.88	8.15
<b>35</b>	2.19	2.72	3.35	4.10	4.98	5.99	7.14
<b>40</b>	1.86	2.31	2.86	3.51	4.27	5.15	6.17
<b>45</b>	1.59	1.97	2.43	2.98	3.63	4.40	5.28
<b>50</b>	-	1.67	2.06	2.53	3.08	3.73	4.48
<b>55</b>	-	-	1.75	2.14	2.60	3.15	3.78
<b>60</b>	-	-	1.48	1.80	2.19	2.64	3.18
<b>65</b>	-	-	-	1.52	1.83	2.21	2.66
<b>70</b>	-	-	-	-	1.53	1.85	2.22

**Application range**



- Maximum evaporating temperature
- 25°C suction gas temperature
- 10K gas overheat

Operating conditions: 10K suction superheat, 0K subcooling

$t_c$  - Condensing temperature [°C]

$t_e$  - Evaporating temperature [°C]

R407C

**Cooling capacity [kW]**

$t_c \setminus t_e$	-20	-15	-10	-5	0	5	10	15
10	12.39	15.43	19.04	23.31	-	-	-	-
15	11.76	14.71	18.21	22.33	27.14	-	-	-
20	11.14	13.99	17.37	21.34	25.98	31.35	-	-
25	10.51	13.26	16.51	20.34	24.80	29.98	35.92	-
30	9.88	12.53	15.65	19.32	23.61	28.57	34.29	40.83
35	9.25	11.78	14.77	18.29	22.39	27.15	32.63	38.91
40	8.61	11.03	13.88	17.23	21.14	25.69	30.94	36.95
45	-	10.27	12.98	16.16	19.88	24.21	29.21	34.96
50	-	-	12.06	15.07	18.59	22.70	27.46	32.93
55	-	-	-	13.96	17.28	21.16	25.66	30.87
60	-	-	-	-	15.94	19.59	23.84	28.76
65	-	-	-	-	-	17.99	21.98	26.61

**Power input [kW]**

$t_c \setminus t_e$	-20	-15	-10	-5	0	5	10	15
10	3.03	2.99	2.96	2.94	-	-	-	-
15	3.39	3.35	3.31	3.28	3.26	-	-	-
20	3.77	3.73	3.70	3.66	3.63	3.62	-	-
25	4.19	4.16	4.13	4.09	4.06	4.03	4.02	-
30	4.65	4.63	4.61	4.58	4.54	4.51	4.49	4.48
35	5.15	5.15	5.14	5.12	5.09	5.06	5.03	5.01
40	5.71	5.73	5.74	5.73	5.71	5.68	5.66	5.63
45	-	6.37	6.40	6.41	6.40	6.38	6.36	6.34
50	-	-	7.14	7.16	7.17	7.17	7.16	7.14
55	-	-	-	8.00	8.04	8.05	8.05	8.04
60	-	-	-	-	8.99	9.02	9.04	9.05
65	-	-	-	-	-	10.10	10.14	10.17



**Current [A]**

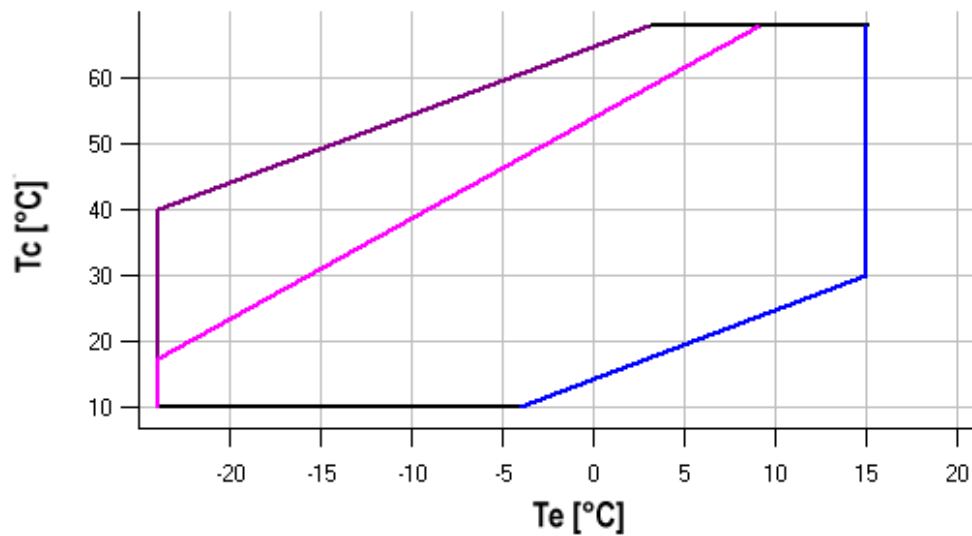
$t_c \setminus t_e$	-20	-15	-10	-5	0	5	10	15
<b>10</b>	11.33	11.19	11.10	11.06	-	-	-	-
<b>15</b>	11.47	11.34	11.24	11.19	11.18	-	-	-
<b>20</b>	11.66	11.53	11.44	11.38	11.36	11.37	-	-
<b>25</b>	11.90	11.79	11.71	11.65	11.62	11.61	11.64	-
<b>30</b>	12.22	12.13	12.06	12.00	11.97	11.95	11.96	11.99
<b>35</b>	12.63	12.56	12.50	12.45	12.42	12.40	12.39	12.40
<b>40</b>	13.13	13.09	13.05	13.02	12.99	12.96	12.94	12.93
<b>45</b>	-	13.73	13.72	13.70	13.68	13.66	13.63	13.61
<b>50</b>	-	-	14.52	14.52	14.51	14.49	14.47	14.43
<b>55</b>	-	-	-	15.49	15.50	15.49	15.46	15.42
<b>60</b>	-	-	-	-	16.64	16.65	16.63	16.59
<b>65</b>	-	-	-	-	-	17.99	17.98	17.95

**Mass flow [kg/s]**

$t_c \setminus t_e$	-20	-15	-10	-5	0	5	10	15
<b>10</b>	219.75	271.60	331.39	400.24	-	-	-	-
<b>15</b>	217.73	269.42	329.07	397.78	476.68	-	-	-
<b>20</b>	215.16	266.71	326.22	394.82	473.62	563.74	-	-
<b>25</b>	212.08	263.51	322.92	391.43	470.15	560.20	662.71	-
<b>30</b>	208.56	259.89	319.22	387.65	466.31	556.32	658.80	774.86
<b>35</b>	204.65	255.91	315.18	383.56	462.18	552.16	654.62	770.69
<b>40</b>	200.42	251.63	310.85	379.20	457.81	547.79	650.26	766.34
<b>45</b>	-	247.10	306.30	374.65	453.26	543.25	645.75	761.88
<b>50</b>	-	-	301.59	369.95	448.58	538.62	641.17	757.36
<b>55</b>	-	-	-	365.17	443.85	533.94	636.56	752.84
<b>60</b>	-	-	-	-	439.12	529.29	632.00	748.38
<b>65</b>	-	-	-	-	-	524.71	627.54	744.04

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

$t_c \setminus t_e$	-20	-15	-10	-5	0	5	10	15
<b>10</b>	4.09	5.15	6.43	7.93	-	-	-	-
<b>15</b>	3.47	4.39	5.50	6.81	8.32	-	-	-
<b>20</b>	2.95	3.75	4.70	5.83	7.15	8.67	-	-
<b>25</b>	2.51	3.19	4.00	4.97	6.11	7.43	8.94	-
<b>30</b>	2.13	2.70	3.40	4.22	5.20	6.33	7.64	9.12
<b>35</b>	1.80	2.29	2.87	3.57	4.40	5.36	6.48	7.76
<b>40</b>	1.51	1.92	2.42	3.01	3.70	4.52	5.47	6.56
<b>45</b>	-	1.61	2.03	2.52	3.11	3.79	4.59	5.51
<b>50</b>	-	-	1.69	2.10	2.59	3.17	3.84	4.61
<b>55</b>	-	-	-	1.74	2.15	2.63	3.19	3.84
<b>60</b>	-	-	-	-	1.77	2.17	2.64	3.18
<b>65</b>	-	-	-	-	-	1.78	2.17	2.62

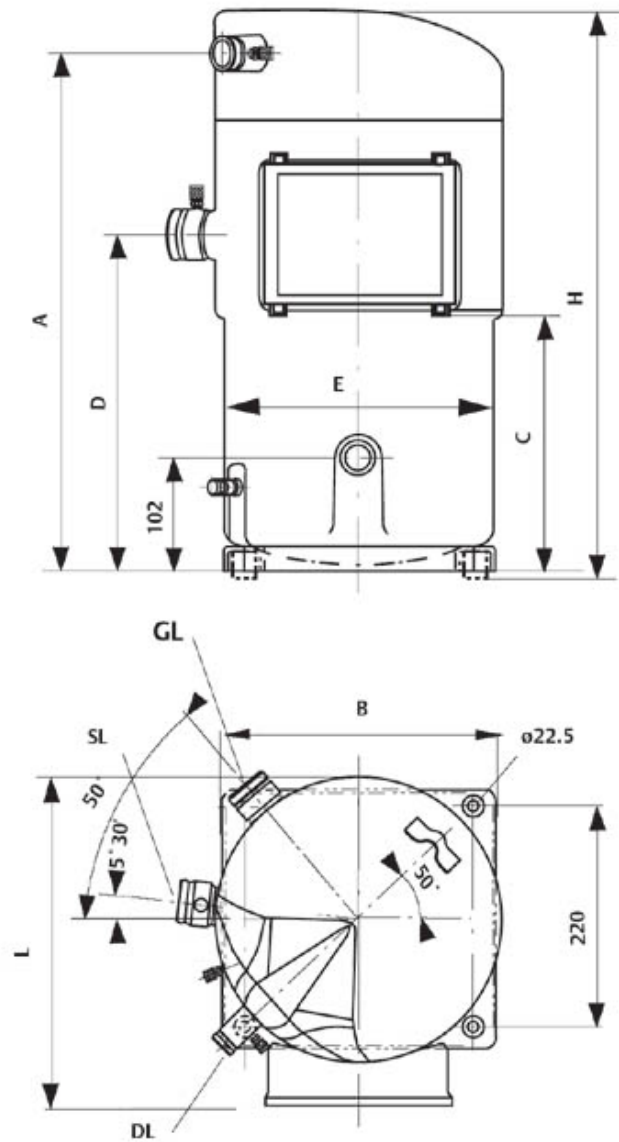
**Application range**


- Maximum evaporating temperature
- 25°C suction gas temperature
- 10K gas overheat

Operating conditions: 10K suction superheat, 0K subcooling

$t_c$  - Condensing temperature [°C]

$t_e$  - Evaporating temperature [°C]



A	497 mm
B	268 mm
C	224 mm
D	318 mm
E	283 mm
H	538 mm
L	360 mm

