
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: Copeland****Series: ZR****Model: ZR90K3E-TWD****Technical data**

Nominal motor power [HP]:	7,5
Displacement [m ³ /h]:	20,9
Sound pressure level :	66
Gross/Net weight [kg]:	105/94
Oil charge [dm ³]:	4,1

Electrical data

Power supply [V/~ /Hz]:	380-420/3/50Hz
Locked rotor current [A]:	99
Max. operating current [A]:	17
Winding resistance [Ω]:	1,45

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 3/8"
Discharge connection with supplied sleeve:		7/8"

R22

Cooling capacity [kW]

t_c \ t_e	-20	-15	-10	-5	0	5	10	15
20	10.32	12.95	15.83	19.06	22.76	27.04	-	-
25	9.25	11.78	14.54	17.64	21.18	25.27	30.03	-
30	8.45	10.89	13.54	16.50	19.88	23.80	28.35	33.65
35	7.84	10.20	12.74	15.57	18.80	22.54	26.89	31.97
40	7.36	9.64	12.08	14.78	17.87	21.43	25.60	30.46
45	-	9.13	11.48	14.06	17.00	20.41	24.38	29.03
50	-	-	10.87	13.34	16.15	19.39	23.18	27.63
55	-	-	-	12.55	15.22	18.31	21.92	26.17
60	-	-	-	-	14.16	17.09	20.53	24.58
65	-	-	-	-	12.88	15.67	18.94	22.81

Power input [kW]

t_c \ t_e	-20	-15	-10	-5	0	5	10	15
20	3.22	3.30	3.35	3.39	3.42	3.46	-	-
25	3.55	3.63	3.67	3.69	3.71	3.74	3.78	-
30	3.93	4.00	4.04	4.05	4.06	4.07	4.11	4.17
35	4.35	4.42	4.46	4.47	4.47	4.47	4.49	4.54
40	4.83	4.90	4.93	4.94	4.93	4.93	4.94	4.98
45	-	5.43	5.46	5.47	5.46	5.45	5.46	5.48
50	-	-	6.06	6.06	6.06	6.04	6.04	6.06
55	-	-	-	6.72	6.71	6.70	6.70	6.71
60	-	-	-	-	7.44	7.43	7.42	7.44
65	-	-	-	-	8.24	8.23	8.23	8.24

Current [A]

t_c \ t_e	-20	-15	-10	-5	0	5	10	15
20	9.52	9.55	9.55	9.52	9.48	9.46	-	-
25	9.71	9.75	9.75	9.73	9.70	9.67	9.67	-
30	9.96	10.01	10.02	10.00	9.97	9.95	9.95	9.99
35	10.29	10.35	10.36	10.34	10.31	10.29	10.29	10.33
40	10.69	10.76	10.78	10.77	10.74	10.72	10.72	10.75
45	-	11.27	11.29	11.28	11.26	11.24	11.23	11.26
50	-	-	11.91	11.90	11.88	11.86	11.85	11.88
55	-	-	-	12.64	12.62	12.59	12.58	12.61
60	-	-	-	-	13.48	13.45	13.44	13.46
65	-	-	-	-	14.47	14.45	14.43	14.45

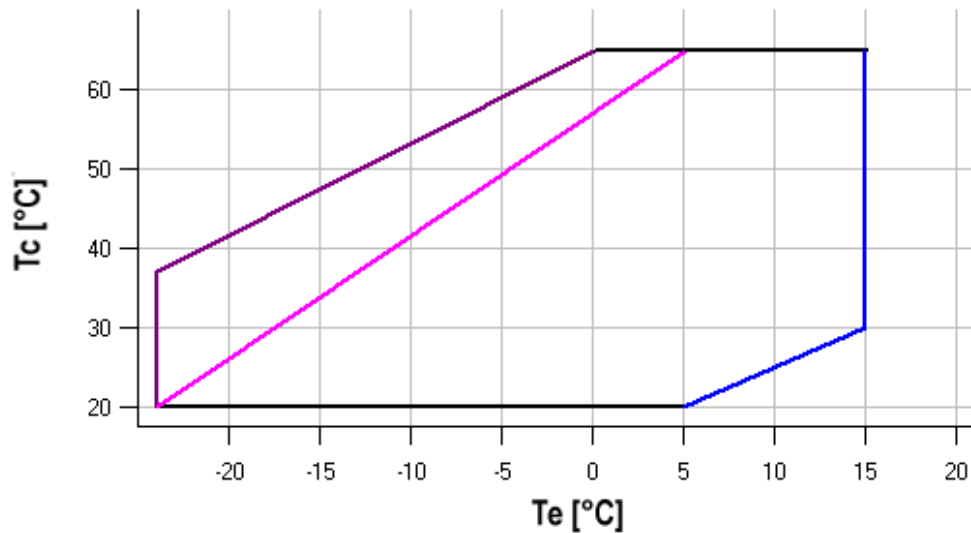
Mass flow [kg/s]

t_c \ t_e	-20	-15	-10	-5	0	5	10	15
20	205.59	255.89	309.37	368.26	434.77	511.13	-	-
25	190.78	240.67	293.56	351.68	417.26	492.51	579.66	-
30	181.23	230.86	283.33	340.85	405.65	479.96	565.98	665.95
35	175.42	224.97	277.17	334.26	398.45	471.96	557.02	655.86
40	171.85	221.47	273.57	330.38	394.12	467.01	551.27	649.14
45	-	218.85	271.02	327.71	391.16	463.59	547.22	644.27
50	-	-	267.99	324.74	388.06	460.19	543.34	639.74
55	-	-	-	319.95	383.31	455.30	538.13	634.05
60	-	-	-	-	375.38	447.40	530.08	625.67
65	-	-	-	-	362.78	434.98	517.68	613.10

C.O.P. [W/W]

$t_c \setminus t_e$	-20	-15	-10	-5	0	5	10	15
20	3.21	3.92	4.72	5.63	6.66	7.82	-	-
25	2.61	3.25	3.96	4.78	5.71	6.76	7.94	-
30	2.15	2.72	3.35	4.07	4.90	5.84	6.91	8.08
35	1.80	2.31	2.86	3.49	4.21	5.04	5.99	7.04
40	1.52	1.97	2.45	2.99	3.62	4.35	5.18	6.12
45	-	1.68	2.10	2.57	3.11	3.74	4.47	5.30
50	-	-	1.80	2.20	2.67	3.21	3.84	4.56
55	-	-	-	1.87	2.27	2.73	3.27	3.90
60	-	-	-	-	1.90	2.30	2.77	3.31
65	-	-	-	-	1.56	1.90	2.30	2.77

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]

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R134a

Cooling capacity [kW]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
30	6.77	8.52	10.58	13.00	15.81	19.08	22.84
35	6.38	8.07	10.06	12.38	15.09	18.23	21.86
40	6.00	7.62	9.52	11.75	14.34	17.35	20.84
45	5.61	7.17	8.98	11.10	13.57	16.45	19.79
50	-	6.71	8.42	10.43	12.79	15.53	18.71
55	-	-	7.86	9.76	11.98	14.57	17.59
60	-	-	7.28	9.06	11.15	13.59	16.45
65	-	-	-	8.35	10.29	12.59	15.27
70	-	-	-	-	9.42	11.55	14.06

Power input [kW]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
30	2.70	2.72	2.74	2.76	2.79	2.82	2.87
35	3.02	3.05	3.06	3.07	3.08	3.09	3.12
40	3.36	3.39	3.41	3.41	3.41	3.41	3.42
45	3.72	3.76	3.78	3.79	3.79	3.79	3.79
50	-	4.15	4.18	4.20	4.21	4.21	4.21
55	-	-	4.61	4.65	4.67	4.68	4.69
60	-	-	5.05	5.11	5.16	5.19	5.21
65	-	-	-	5.61	5.68	5.74	5.78
70	-	-	-	-	6.23	6.32	6.39

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**Current [A]**

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
30	8.22	8.24	8.25	8.26	8.26	8.26	8.25
35	8.49	8.51	8.52	8.53	8.53	8.52	8.51
40	8.79	8.82	8.84	8.84	8.84	8.84	8.82
45	9.13	9.17	9.19	9.21	9.21	9.21	9.19
50	-	9.56	9.60	9.62	9.63	9.63	9.63
55	-	-	10.06	10.09	10.12	10.13	10.13
60	-	-	10.58	10.63	10.67	10.69	10.71
65	-	-	-	11.23	11.29	11.33	11.36
70	-	-	-	-	11.98	12.05	12.09

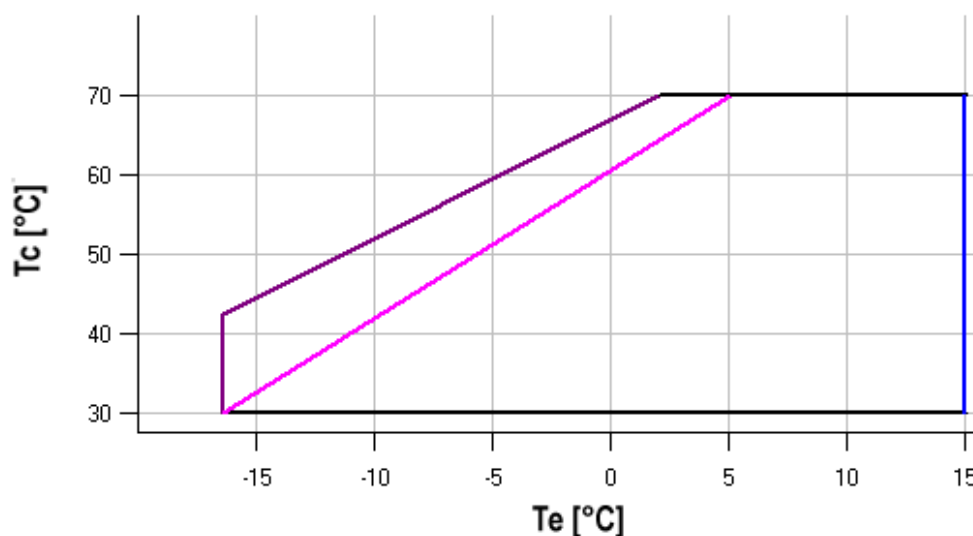
Mass flow [kg/s]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
30	156.33	193.25	235.31	283.31	338.07	400.36	471.00
35	154.99	192.02	234.20	282.35	337.25	399.71	470.53
40	153.67	190.73	232.96	281.17	336.15	398.70	469.62
45	152.34	189.36	231.56	279.76	334.74	397.30	468.24
50	-	187.87	229.97	278.07	332.97	395.47	466.36
55	-	-	228.15	276.08	330.82	393.18	463.94
60	-	-	226.08	273.76	328.27	390.40	460.96
65	-	-	-	271.08	325.27	387.11	457.38
70	-	-	-	-	321.81	383.27	453.18

C.O.P. [W/W]

$t_c \setminus t_e$	-15	-10	-5	0	5	10	15
30	2.51	3.13	3.86	4.70	5.67	6.77	7.96
35	2.11	2.65	3.29	4.04	4.90	5.90	7.02
40	1.78	2.25	2.79	3.44	4.20	5.08	6.09
45	1.51	1.91	2.37	2.93	3.58	4.34	5.22
50	-	1.62	2.01	2.48	3.04	3.69	4.44
55	-	-	1.71	2.10	2.57	3.11	3.75
60	-	-	1.44	1.77	2.16	2.62	3.16
65	-	-	-	1.49	1.81	2.19	2.64
70	-	-	-	-	1.51	1.83	2.20

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]

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**R407C****Cooling capacity [kW]**

t_c \ t_e	-20	-15	-10	-5	0	5	10	15
10	9.99	12.67	15.85	19.60	-	-	-	-
15	9.37	11.96	15.03	18.64	22.86	-	-	-
20	8.76	11.26	14.21	17.69	21.75	26.44	-	-
25	8.17	10.57	13.41	16.74	20.64	25.15	30.33	-
30	7.60	9.90	12.61	15.81	19.53	23.85	28.82	34.51
35	7.04	9.24	11.83	14.88	18.43	22.56	27.32	32.76
40	6.51	8.60	11.06	13.95	17.34	21.27	25.81	31.01
45	-	7.97	10.30	13.04	16.25	19.98	24.30	29.26
50	-	-	9.56	12.14	15.17	18.70	22.80	27.51
55	-	-	-	11.25	14.10	17.43	21.29	25.76
60	-	-	-	-	13.04	16.16	19.79	24.01
65	-	-	-	-	-	14.89	18.30	22.25

Power input [kW]

t_c \ t_e	-20	-15	-10	-5	0	5	10	15
10	2.80	2.81	2.92	3.17	-	-	-	-
15	3.02	2.99	3.03	3.17	3.45	-	-	-
20	3.29	3.24	3.22	3.28	3.45	3.77	-	-
25	3.60	3.55	3.50	3.50	3.58	3.79	4.15	-
30	3.94	3.92	3.86	3.83	3.84	3.95	4.19	4.60
35	4.31	4.33	4.30	4.25	4.22	4.26	4.39	4.67
40	4.71	4.80	4.80	4.76	4.71	4.70	4.75	4.92
45	-	5.30	5.37	5.36	5.31	5.27	5.26	5.34
50	-	-	5.98	6.03	6.01	5.96	5.92	5.94
55	-	-	-	6.77	6.80	6.77	6.72	6.69
60	-	-	-	-	7.67	7.68	7.64	7.60
65	-	-	-	-	-	8.70	8.70	8.65

Current [A]

t_c \ t_e	-20	-15	-10	-5	0	5	10	15
10	8.67	8.63	8.59	8.54	-	-	-	-
15	9.03	9.01	8.98	8.95	8.91	-	-	-
20	9.34	9.34	9.33	9.31	9.28	9.26	-	-
25	9.65	9.66	9.66	9.65	9.63	9.62	9.61	-
30	9.97	10.00	10.01	10.01	10.00	9.99	9.99	10.00
35	10.34	10.38	10.40	10.41	10.40	10.40	10.40	10.41
40	10.80	10.85	10.87	10.88	10.88	10.88	10.88	10.89
45	-	11.42	11.45	11.46	11.46	11.46	11.46	11.47
50	-	-	12.16	12.18	12.18	12.18	12.17	12.18
55	-	-	-	13.06	13.06	13.06	13.05	13.04
60	-	-	-	-	14.14	14.13	14.11	14.10
65	-	-	-	-	-	15.42	15.40	15.38

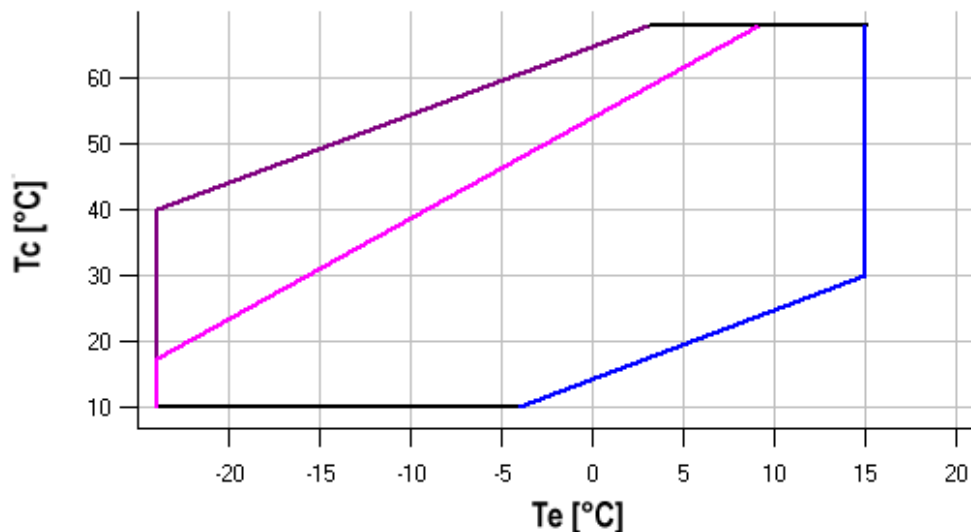
Mass flow [kg/s]

t_c \ t_e	-20	-15	-10	-5	0	5	10	15
10	177.14	222.94	275.70	336.38	-	-	-	-
15	173.48	219.06	271.61	332.09	401.44	-	-	-
20	169.37	214.74	267.08	327.34	396.49	475.47	-	-
25	164.96	210.12	262.25	322.30	391.24	470.01	559.58	-
30	160.40	205.35	257.27	317.12	385.85	464.42	553.79	654.91
35	155.84	200.59	252.31	311.95	380.48	458.85	548.01	648.93
40	151.45	195.99	247.51	306.95	375.28	453.45	542.41	643.13
45	-	191.71	243.03	302.27	370.40	448.37	537.14	637.67
50	-	-	239.02	298.07	366.00	443.78	532.35	632.68
55	-	-	-	294.49	362.23	439.82	528.20	628.34
60	-	-	-	-	359.25	436.64	524.84	624.79
65	-	-	-	-	-	434.41	522.41	622.18

C.O.P. [W/W]

$t_c \setminus t_e$	-20	-15	-10	-5	0	5	10	15
10	3.57	4.50	5.42	6.19	-	-	-	-
15	3.11	4.00	4.97	5.89	6.63	-	-	-
20	2.67	3.48	4.41	5.40	6.30	7.01	-	-
25	2.27	2.98	3.83	4.78	5.76	6.64	7.30	-
30	1.93	2.53	3.26	4.13	5.08	6.04	6.88	7.50
35	1.63	2.13	2.75	3.50	4.37	5.30	6.22	7.02
40	1.38	1.79	2.30	2.93	3.68	4.53	5.43	6.30
45	-	1.50	1.92	2.44	3.06	3.79	4.62	5.48
50	-	-	1.60	2.01	2.53	3.14	3.85	4.64
55	-	-	-	1.66	2.07	2.58	3.17	3.85
60	-	-	-	-	1.70	2.10	2.59	3.16
65	-	-	-	-	-	1.71	2.10	2.57

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]

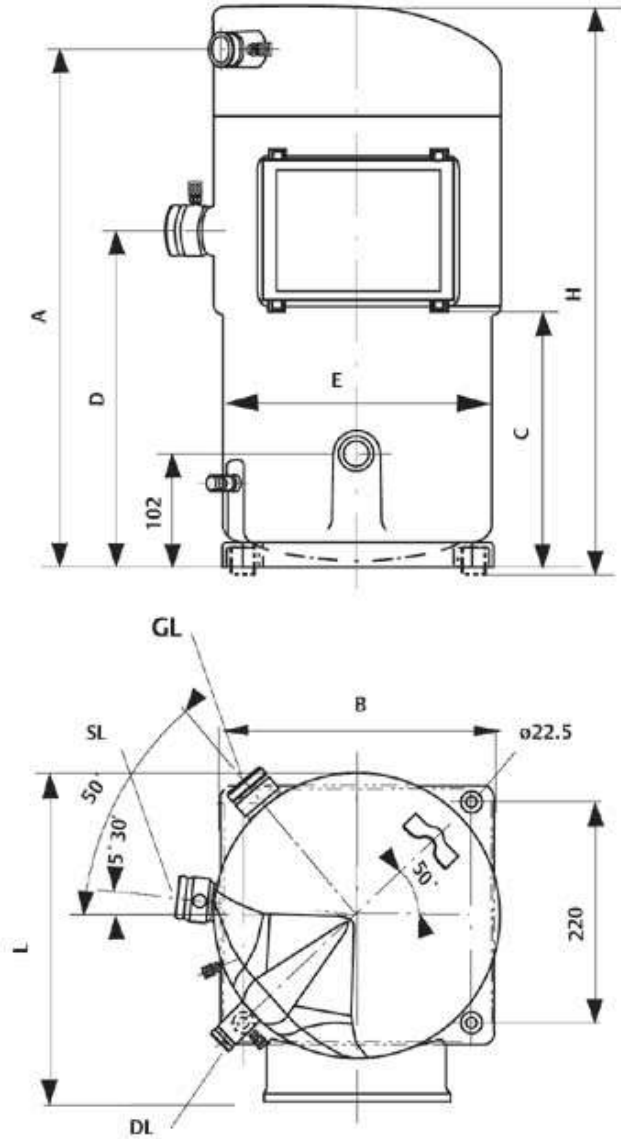
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A	49
B	26
C	22
D	31
E	283 mm
H	538 mm
L	360 mm

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