

Copeland scroll ZBV/W & ZFW variable speed compressors

For refrigeration applications



Copeland scroll ZBV/W & ZFW variable speed solutions

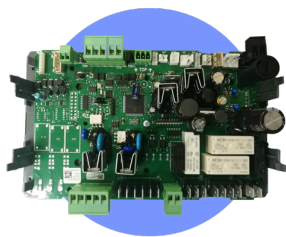
Copeland's ZBV/W & ZFW variable speed solutions are precisely engineered to meet the demands of partners requiring capacity-modulated solutions for both medium and low temperature applications, including convenience stores, supermarkets, process chilling industries, and cold storage facilities.

The innovative variable speed scroll compressors, perfectly paired with inverter drives and controllers, allow OEMs to build reliable, high-performance systems. Supporting components such as plate heat exchangers (PHE), electronic expansion valves (EXV), pressure transducers, temperature sensors, and Enhanced Vapor Injection (EVI) technology ensure exceptional control, efficiency, and system protection tailored to unique needs

Leveraging decades of expertise in scroll compressor technology and the latest advancements in variable speed innovation, Copeland delivers reliable, state-of-the-art solutions for a wide range of refrigeration applications.



**ZBV/W & ZFW
variable speed
compressor & drive**



**System
controller**

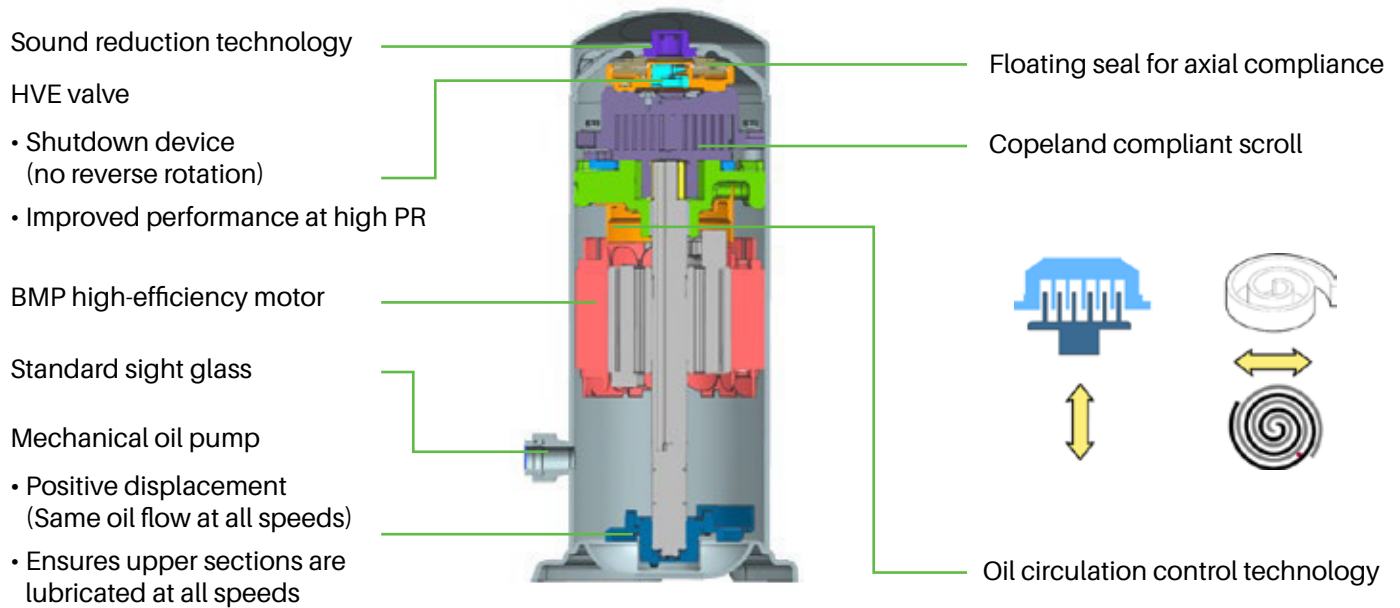


**System components
(optional)**



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ZBV/W & ZFW variable speed compressor key design features



Drive

- Plug and play compressor compatibility
- Optimum combination of compressor and drive, delivering maximum efficiency
- Best-in-class built-in protection & control for reliable operation



Variable speed advantage



Modulated capacity, high efficiency at full and part-load



Low noise operation



Accurate temperature control for food safety



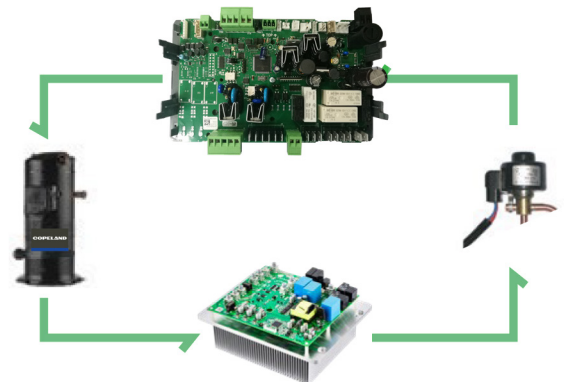
Wide input range minimizes grid impact

Copeland integrated solutions to meet customer needs

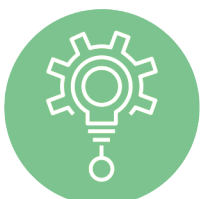
Customer pain points		Copeland solution
Need to coordinate with various compressor and electronics suppliers for system development	➔	 One-stop shop Capability to supply all core components in variable speed systems including compressors, drives, controllers, temperature sensors, valves etc.
Lack of adequate technical support	➔	 Dedicated integrated solutions team Expert Copeland engineering team provides specialized support for all refrigeration requirements
Long lead times for variable speed system development	➔	 Qualified solution with high reliability Fully integrated control logic, system protection and optimized parameters
Poor performance in low evaporating conditions	➔	 Refrigeration variable speed scroll ZBV and ZBW for medium temperature applications ZFW for low temperature applications
Low efficiency at high pressure ratio conditions	➔	 Vapor injection technology Significantly improving efficiency, providing best-in-class lifecycle cost

Copeland integrated solutions

Copeland is fully committed to developing innovative solutions for the HVACR industry and to help customers achieve their cold chain objectives. Copeland responds quickly to the market changes and listens attentively to the voice of customers. With Copeland, you can consider your cold chain challenges solved.



Value for customers



Market-leading system performance



Trusted Copeland brand with decades of cold chain solutions



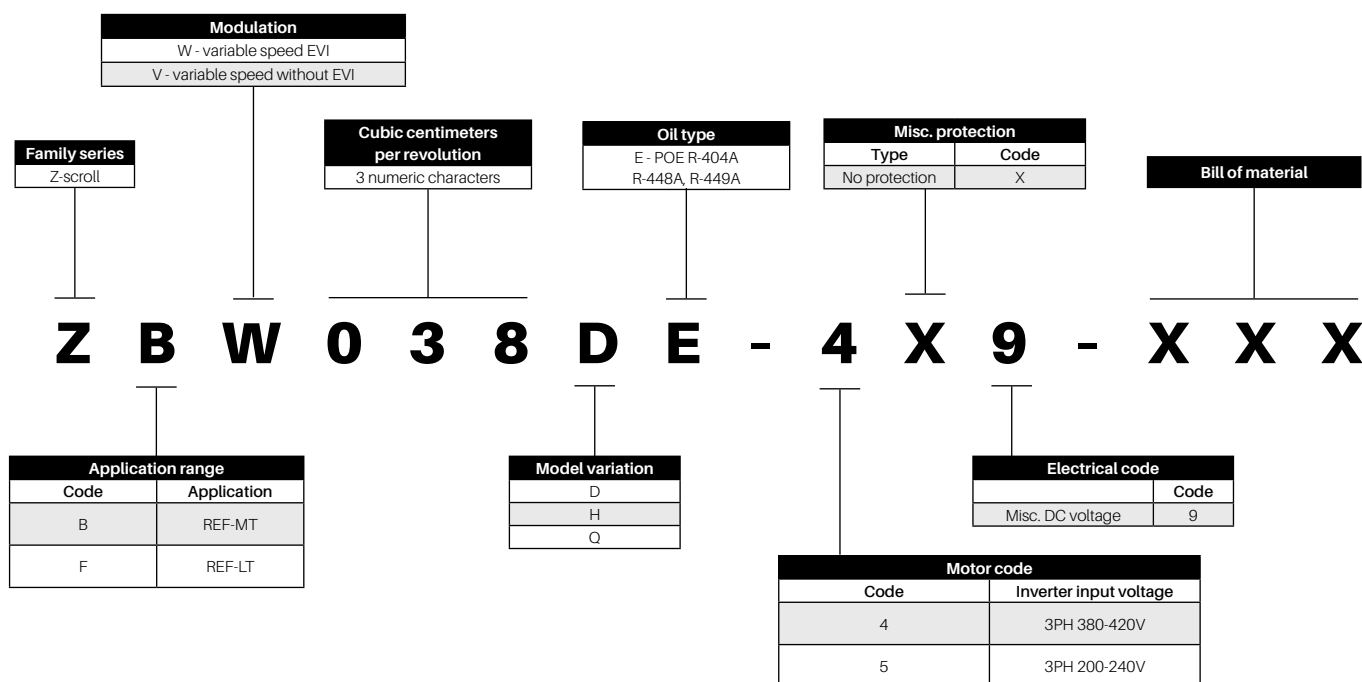
Helping customers respond quickly to market demands



Higher unit reliability



On-site monitoring continuously tracks real-time performance

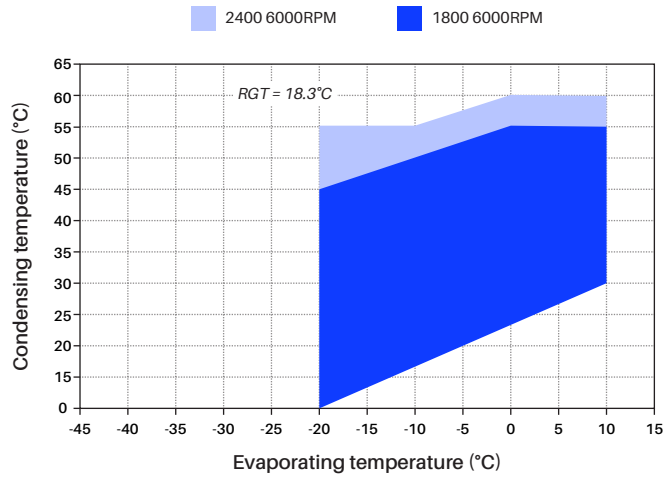


Bill of material

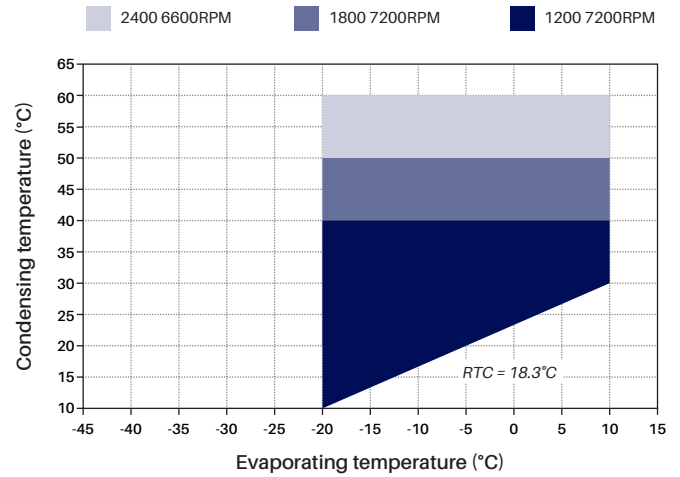
Application	Model Name	Displacement cc/rev	Vapor Injection	Motor Code	BOM Code	Connection Type	Oil Sight Glass	IP Grade
Medium Temperature	ZBW030DE	30	Yes	4x9 5x9	573	Stub tube	Yes	IP21
	ZBW038DE	38						
	ZBV046HE	46	No	4x9 5x9	558			
	ZBW046HE		Yes					
	ZBV062QE	62	No	4x9 5x9	558			
	ZBW062QE		Yes					
	ZBV080QE	80	No	4x9 5x9	558			
	ZBW080QE		Yes					
Low Temperature	ZFW030DE	30	Yes	4x9 5x9	573	Stub tube	Yes	IP21
	ZFW038DE	38						
	ZFW046HE	46	Yes	4x9 5x9	558			
	ZFW062QE	62						
	ZFW080QE	80						

Medium temperature

ZBW030, ZBW038

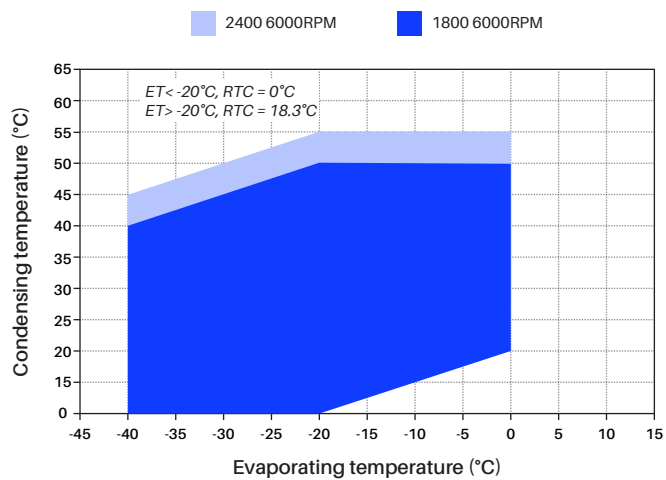


ZBV/ZBW046, ZBV/ZBW062, ZBV/ZBW080

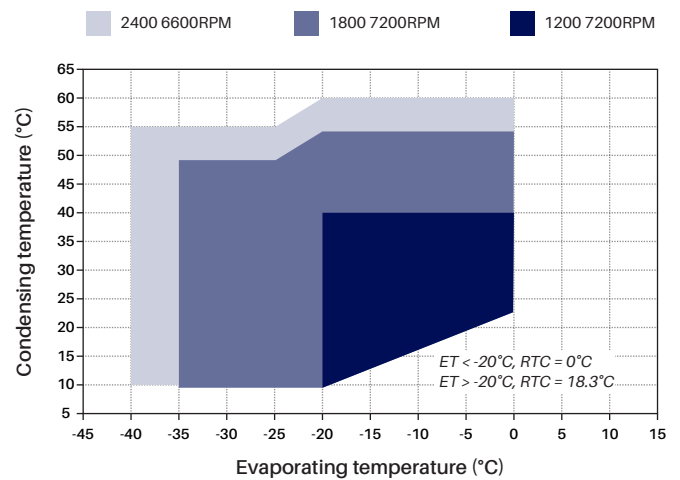


Low temperature

ZFW030, ZFW038

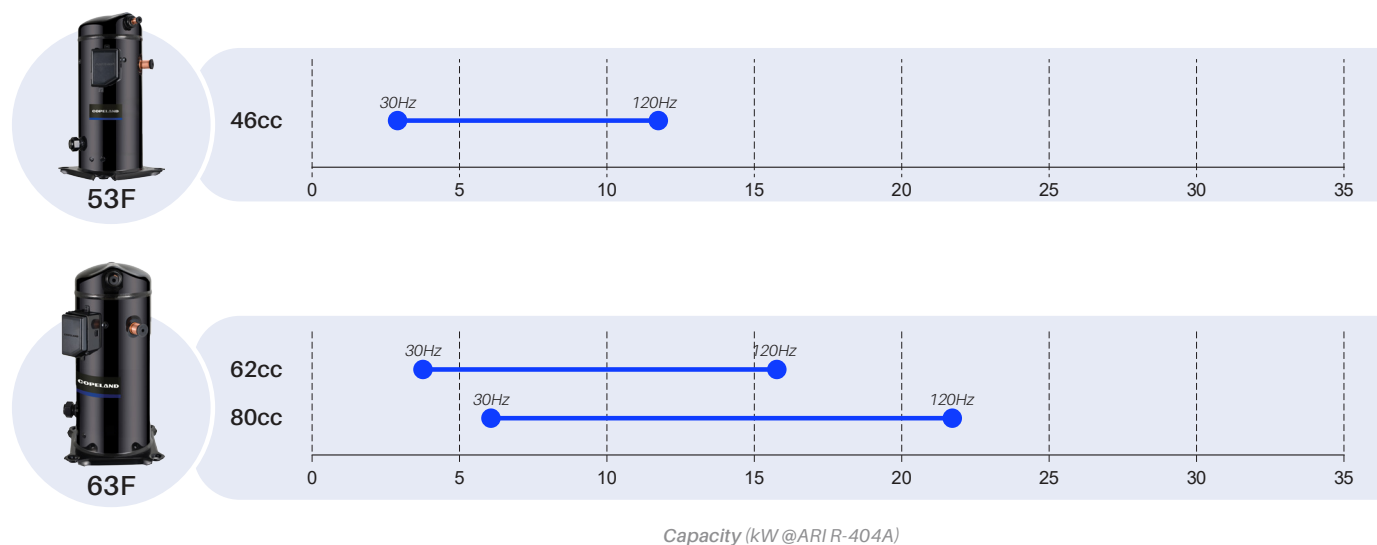


ZFW046, ZFW062, ZFW080

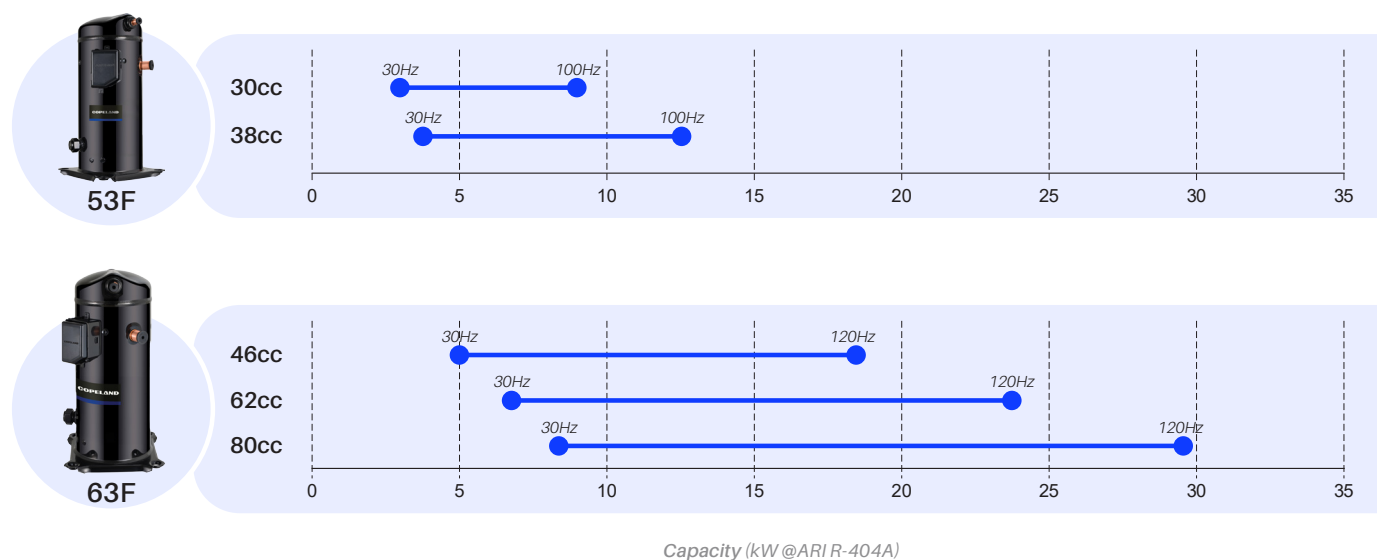


COPELAND VARIABLE SPEED SCROLL COMPRESSOR CAPACITY RANGE

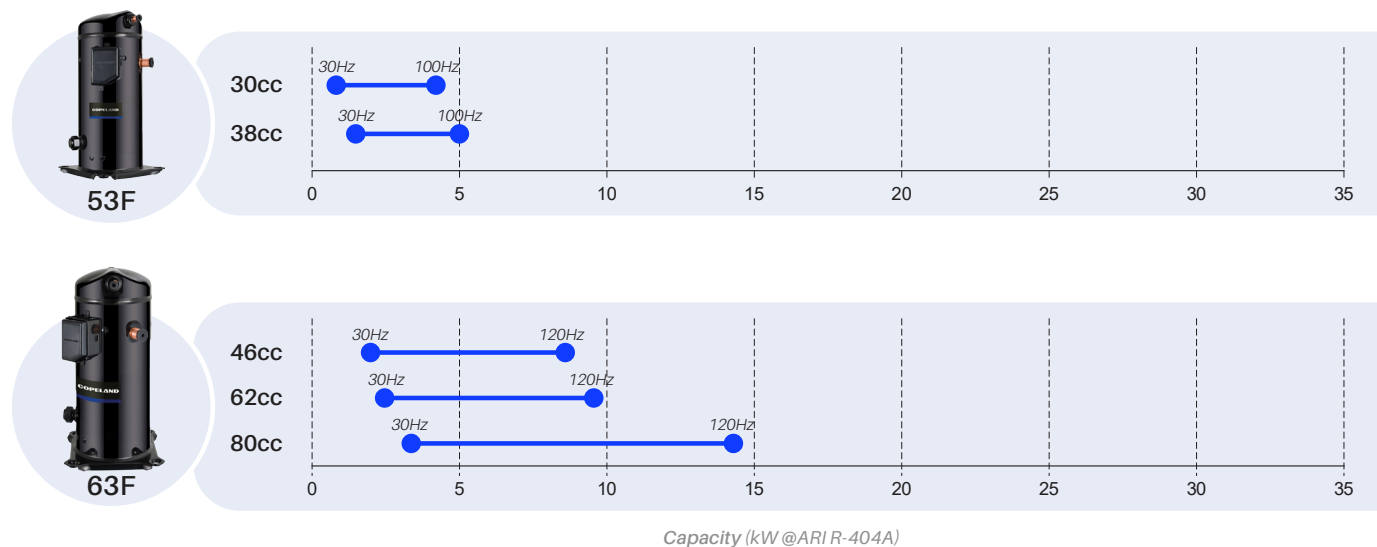
ZBV (Medium temperature application)



ZBW (Medium temperature application)



ZFW (Low temperature application)



ZBW030DE-4X9, ZBW030DE-5X9

ZBW030DE R-404A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	-	-	2.51	2.89	3.29	3.70	4.12
		45	1.84	2.21	2.61	3.03	3.46	3.91	4.38
		40	1.90	2.29	2.70	3.15	3.62	4.11	4.62
		35	1.95	2.35	2.79	3.27	3.77	4.30	4.85
		30	2.00	2.42	2.88	3.38	3.91	4.48	5.07
		25	2.05	2.48	2.96	3.48	4.05	-	-
		20	2.09	2.53	3.03	3.58	-	-	-
		15	2.13	2.58	-	-	-	-	-
10		2.16	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	-	-	1.15	1.18	1.24	1.33	1.48
		45	1.03	1.04	1.05	1.08	1.14	1.24	1.38
		40	0.93	0.94	0.95	0.98	1.04	1.13	1.28
		35	0.83	0.84	0.85	0.87	0.93	1.02	1.17
		30	0.74	0.74	0.75	0.77	0.82	0.92	1.06
		25	0.66	0.65	0.65	0.67	0.72	-	-
		20	0.58	0.57	0.57	0.58	-	-	-
	15	0.52	0.50	-	-	-	-	-	
10	0.47	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	7.85	8.88	9.96
		55	4.35	5.21	6.14	7.12	8.15	9.24	10.36
		50	4.50	5.39	6.35	7.37	8.45	9.58	10.76
		45	4.64	5.56	6.55	7.61	8.73	9.91	11.15
		40	4.78	5.73	6.75	7.84	9.01	10.24	11.53
		35	4.92	5.89	6.94	8.07	9.28	10.56	11.90
		30	5.06	6.05	7.13	8.29	9.54	10.86	12.26
		25	5.19	6.20	7.31	8.51	9.79	-	-
		20	5.32	6.35	7.49	8.72	-	-	-
		15	5.44	6.50	-	-	-	-	-
10		5.57	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	3.39	3.50	3.65
		55	2.94	2.97	3.01	3.06	3.14	3.24	3.39
		50	2.69	2.72	2.76	2.81	2.88	2.98	3.12
		45	2.45	2.48	2.51	2.55	2.62	2.72	2.86
		40	2.21	2.23	2.26	2.30	2.36	2.46	2.59
		35	1.99	2.00	2.02	2.06	2.11	2.20	2.33
		30	1.78	1.79	1.80	1.83	1.87	1.96	2.08
		25	1.58	1.58	1.59	1.61	1.65	-	-
		20	1.41	1.40	1.40	1.41	-	-	-
	15	1.26	1.24	-	-	-	-	-	
10	1.13	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	10.50	11.90	13.37
		55	5.81	6.94	8.17	9.48	10.86	12.33	13.86
		50	6.00	7.17	8.44	9.79	11.22	12.74	14.33
		45	6.19	7.40	8.70	10.09	11.57	13.14	14.79
		40	6.38	7.62	8.95	10.39	11.92	13.54	15.25
		35	6.57	7.83	9.20	10.68	12.25	13.92	15.69
		30	6.75	8.04	9.44	10.96	12.58	14.30	16.12
		25	6.93	8.25	9.68	11.23	12.90	-	-
		20	7.11	8.45	9.91	11.50	-	-	-
		15	7.28	8.64	-	-	-	-	-
10		7.45	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	4.47	4.59	4.74
		55	3.85	3.91	3.97	4.03	4.12	4.23	4.38
		50	3.52	3.57	3.63	3.68	3.76	3.87	4.02
		45	3.20	3.25	3.29	3.34	3.42	3.52	3.66
		40	2.89	2.93	2.97	3.01	3.08	3.18	3.31
		35	2.60	2.63	2.66	2.70	2.76	2.84	2.97
		30	2.33	2.35	2.37	2.40	2.45	2.52	2.64
		25	2.08	2.09	2.10	2.12	2.15	-	-
		20	1.85	1.85	1.85	1.86	-	-	-
	15	1.66	1.64	-	-	-	-	-	
10	1.49	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBW038DE-4X9, ZBW038DE-5X9

ZBW038DE R-404A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	-	-	3.21	3.71	4.21	4.73	5.25
		45	2.39	2.86	3.36	3.89	4.44	5.01	5.59
		40	2.47	2.96	3.50	4.06	4.66	5.28	5.92
		35	2.55	3.06	3.62	4.22	4.86	5.53	6.23
		30	2.61	3.15	3.74	4.37	5.05	5.77	6.53
		25	2.67	3.23	3.84	4.51	5.23	-	-
		20	2.73	3.30	3.94	4.64	-	-	-
		15	2.77	3.36	-	-	-	-	-
10		2.81	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	-	-	1.47	1.51	1.59	1.70	1.87
		45	1.32	1.33	1.35	1.39	1.47	1.58	1.75
		40	1.19	1.20	1.22	1.26	1.33	1.45	1.61
		35	1.07	1.07	1.09	1.12	1.19	1.30	1.46
		30	0.94	0.94	0.95	0.98	1.04	1.15	1.30
		25	0.83	0.82	0.83	0.85	0.90	-	-
		20	0.73	0.72	0.71	0.73	-	-	-
	15	0.65	0.63	-	-	-	-	-	
10	0.60	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	10.04	11.38	12.79
		55	5.54	6.64	7.83	9.09	10.43	11.85	13.33
		50	5.74	6.88	8.11	9.42	10.82	12.30	13.86
		45	5.93	7.10	8.38	9.74	11.20	12.74	14.37
		40	6.12	7.33	8.64	10.06	11.57	13.18	14.87
		35	6.30	7.54	8.90	10.36	11.93	13.60	15.36
		30	6.48	7.75	9.14	10.65	12.28	14.01	15.84
		25	6.65	7.96	9.39	10.94	12.61	-	-
		20	6.82	8.15	9.62	11.22	-	-	-
		15	6.98	8.34	-	-	-	-	-
10		7.14	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	4.34	4.49	4.69
		55	3.71	3.78	3.84	3.92	4.03	4.18	4.37
		50	3.41	3.47	3.53	3.60	3.71	3.85	4.04
		45	3.10	3.15	3.21	3.28	3.38	3.51	3.69
		40	2.79	2.84	2.89	2.95	3.04	3.17	3.35
		35	2.50	2.54	2.58	2.64	2.72	2.84	3.00
		30	2.23	2.26	2.29	2.34	2.41	2.51	2.67
		25	1.98	2.00	2.02	2.05	2.11	-	-
		20	1.77	1.77	1.78	1.80	-	-	-
	15	1.59	1.58	-	-	-	-	-	
10	1.45	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	13.68	15.57	17.55
		55	7.47	8.96	10.58	12.32	14.17	16.13	18.19
		50	7.73	9.27	10.94	12.73	14.64	16.68	18.82
		45	7.99	9.57	11.29	13.14	15.12	17.22	19.44
		40	8.25	9.87	11.63	13.54	15.58	17.75	20.05
		35	8.50	10.16	11.97	13.93	16.03	18.27	20.65
		30	8.75	10.44	12.30	14.31	16.48	18.78	21.23
		25	8.99	10.73	12.63	14.69	16.91	-	-
		20	9.23	11.00	12.95	15.06	-	-	-
		15	9.47	11.27	-	-	-	-	-
10		9.70	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	5.74	5.91	6.12
		55	4.88	4.97	5.06	5.17	5.30	5.46	5.67
		50	4.46	4.55	4.63	4.73	4.85	5.00	5.21
		45	4.05	4.13	4.20	4.29	4.40	4.55	4.74
		40	3.65	3.72	3.79	3.87	3.97	4.10	4.29
		35	3.27	3.33	3.39	3.45	3.55	3.67	3.84
		30	2.92	2.97	3.01	3.07	3.14	3.26	3.41
		25	2.61	2.64	2.67	2.71	2.77	-	-
		20	2.33	2.34	2.36	2.39	-	-	-
	15	2.10	2.10	-	-	-	-	-	
10	1.92	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBV046HE-4X9, ZBV046HE-5X9

ZBV046HE R-404A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	1.94	2.35	2.82	3.35	3.95	4.61	5.34
		45	2.06	2.52	3.04	3.63	4.28	5.00	5.78
		40	2.19	2.69	3.26	3.89	4.59	5.35	6.18
		35	2.35	2.88	3.48	4.14	4.87	5.66	6.52
		30	2.53	3.08	3.70	4.38	5.12	5.93	6.81
		25	2.74	3.29	3.91	4.60	5.35	-	-
		20	2.97	3.52	4.13	4.81	-	-	-
		15	3.22	3.75	-	-	-	-	-
10		3.49	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	1.29	1.36	1.42	1.48	1.52	1.58	1.62
		45	1.16	1.21	1.27	1.32	1.38	1.43	1.48
		40	1.04	1.08	1.14	1.19	1.25	1.31	1.37
		35	0.94	0.98	1.03	1.08	1.14	1.20	1.28
		30	0.87	0.90	0.94	0.99	1.04	1.12	1.20
		25	0.80	0.82	0.86	0.91	0.97	-	-
		20	0.75	0.76	0.79	0.84	-	-	-
	15	0.71	0.71	-	-	-	-	-	
10	0.68	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	4.10	4.90	5.85	6.97	8.26	9.70	11.30
		55	4.54	5.45	6.53	7.77	9.17	10.75	12.45
		50	4.96	5.98	7.17	8.51	10.00	11.70	13.55
		45	5.36	6.48	7.76	9.20	10.80	12.55	14.50
		40	5.75	6.95	8.31	9.84	11.50	13.35	15.40
		35	6.12	7.39	8.82	10.40	12.15	14.10	16.15
		30	6.47	7.80	9.29	10.95	12.75	14.75	16.85
		25	6.81	8.18	9.71	11.40	13.25	-	-
		20	7.13	8.53	10.10	11.85	-	-	-
		15	7.43	8.85	-	-	-	-	-
10		7.71	-	-	-	-	-	-	
P (kW)		60	3.80	3.95	4.14	4.37	4.63	4.93	5.26
		55	3.53	3.68	3.87	4.10	4.37	4.67	5.02
		50	3.29	3.43	3.62	3.85	4.13	4.45	4.81
		45	3.07	3.21	3.40	3.63	3.92	4.25	4.62
		40	2.87	3.01	3.20	3.44	3.73	4.07	4.46
		35	2.69	2.83	3.01	3.26	3.55	3.90	4.31
		30	2.53	2.66	2.85	3.10	3.40	3.76	4.18
		25	2.38	2.51	2.70	2.95	3.26	-	-
		20	2.25	2.37	2.56	2.81	-	-	-
	15	2.12	2.24	-	-	-	-	-	
10	2.01	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	5.39	6.48	7.79	9.32	11.05	13.05	15.20
		55	6.00	7.24	8.69	10.35	12.25	14.35	16.65
		50	6.58	7.95	9.53	11.35	13.35	15.60	18.00
		45	7.12	8.60	10.30	12.20	14.35	16.70	19.25
		40	7.62	9.21	11.00	13.05	15.25	17.70	20.40
		35	8.08	9.76	11.65	13.75	16.10	18.65	21.40
		30	8.50	10.25	12.25	14.40	16.85	19.45	22.30
		25	8.88	10.70	12.75	15.00	17.50	-	-
		20	9.22	11.10	13.20	15.50	-	-	-
		15	9.52	11.45	-	-	-	-	-
10		9.79	-	-	-	-	-	-	
P (kW)		60	5.19	5.47	5.81	6.21	6.68	7.21	7.80
		55	4.87	5.15	5.50	5.91	6.38	6.93	7.53
		50	4.58	4.86	5.21	5.63	6.11	6.67	7.29
		45	4.32	4.59	4.94	5.37	5.86	6.43	7.08
		40	4.07	4.35	4.70	5.13	5.64	6.22	6.88
		35	3.85	4.12	4.48	4.92	5.43	6.03	6.71
		30	3.64	3.92	4.27	4.72	5.24	5.85	6.55
		25	3.45	3.72	4.08	4.53	5.07	-	-
		20	3.27	3.54	3.90	4.36	-	-	-
	15	3.10	3.37	-	-	-	-	-	
10	2.93	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBW046HE-4X9, ZBW046HE-5X9

ZBW046HE R-404A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	3.25	3.86	4.51	5.17	5.83	6.44	6.99
		45	3.26	3.90	4.59	5.30	5.99	6.64	7.22
		40	3.29	3.95	4.66	5.39	6.10	6.77	7.37
		35	3.34	4.01	4.72	5.44	6.16	6.83	7.44
		30	3.41	4.06	4.76	5.47	6.17	6.83	7.43
		25	3.50	4.12	4.79	5.47	6.14	-	-
		20	3.61	4.18	4.80	5.44	-	-	-
		15	3.74	4.25	-	-	-	-	-
10		3.89	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	1.68	1.74	1.77	1.80	1.82	1.82	1.81
		45	1.50	1.54	1.57	1.59	1.60	1.60	1.58
		40	1.34	1.37	1.39	1.40	1.40	1.39	1.37
		35	1.20	1.22	1.24	1.24	1.23	1.22	1.18
		30	1.08	1.10	1.10	1.10	1.08	1.06	1.02
		25	0.98	0.99	0.99	0.98	0.96	-	-
		20	0.91	0.91	0.90	0.89	-	-	-
	15	0.86	0.85	-	-	-	-	-	
10	0.83	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	6.78	8.17	9.69	11.30	13.00	14.75	16.55
		55	7.14	8.60	10.20	11.90	13.65	15.45	17.30
		50	7.43	8.95	10.60	12.35	14.15	16.05	17.95
		45	7.68	9.23	10.90	12.70	14.55	16.45	18.40
		40	7.88	9.45	11.15	12.95	14.85	16.75	18.75
		35	8.02	9.59	11.30	13.10	15.00	16.95	18.90
		30	8.11	9.67	11.35	13.15	15.05	16.95	18.90
		25	8.15	9.68	11.35	13.10	14.95	-	-
		20	8.14	9.62	11.25	12.95	-	-	-
		15	8.07	9.49	-	-	-	-	-
10		7.95	-	-	-	-	-	-	
P (kW)		60	4.60	4.81	5.02	5.24	5.47	5.71	5.96
		55	4.22	4.41	4.62	4.83	5.06	5.29	5.53
		50	3.87	4.06	4.26	4.46	4.68	4.90	5.14
		45	3.56	3.74	3.93	4.13	4.33	4.55	4.78
		40	3.28	3.45	3.64	3.83	4.03	4.24	4.46
		35	3.04	3.21	3.38	3.56	3.76	3.96	4.17
		30	2.84	2.99	3.16	3.34	3.52	3.72	3.92
		25	2.67	2.82	2.98	3.15	3.33	-	-
		20	2.54	2.68	2.83	2.99	-	-	-
	15	2.44	2.58	-	-	-	-	-	
10	2.38	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	8.59	10.40	12.40	14.55	16.85	19.20	21.70
		55	9.15	11.05	13.10	15.35	17.70	20.10	22.70
		50	9.63	11.55	13.70	15.95	18.35	20.90	23.40
		45	10.00	12.00	14.15	16.45	18.90	21.40	24.10
		40	10.30	12.30	14.45	16.80	19.25	21.80	24.50
		35	10.50	12.50	14.65	17.00	19.45	22.00	24.70
		30	10.60	12.60	14.75	17.05	19.50	22.10	24.70
		25	10.60	12.55	14.70	17.00	19.40	-	-
		20	10.50	12.45	14.50	16.75	-	-	-
		15	10.35	12.20	-	-	-	-	-
10		10.10	-	-	-	-	-	-	
P (kW)		60	6.23	6.56	6.91	7.28	7.67	8.08	8.51
		55	5.76	6.08	6.42	6.79	7.17	7.57	7.99
		50	5.34	5.65	5.98	6.34	6.71	7.11	7.52
		45	4.96	5.26	5.59	5.93	6.30	6.69	7.09
		40	4.62	4.91	5.23	5.57	5.93	6.31	6.71
		35	4.32	4.61	4.92	5.25	5.60	5.98	6.37
		30	4.07	4.35	4.65	4.98	5.32	5.69	6.07
		25	3.86	4.14	4.43	4.75	5.08	-	-
		20	3.70	3.96	4.25	4.56	-	-	-
	15	3.57	3.83	-	-	-	-	-	
10	3.50	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBV062QE-4X9, ZBV062QE-5X9

ZBV062QE R-404A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	1.86	2.44	3.25	4.21	5.22	6.19	7.04
		45	2.19	2.84	3.72	4.76	5.85	6.90	7.83
		40	2.54	3.22	4.15	5.22	6.36	7.47	8.45
		35	2.89	3.57	4.51	5.60	6.75	7.88	8.88
		30	3.22	3.88	4.79	5.86	6.99	8.10	9.10
		25	3.51	4.11	4.97	5.98	7.07	-	-
		20	3.75	4.26	5.03	5.96	-	-	-
		15	3.92	4.30	-	-	-	-	-
10		3.99	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	1.80	1.92	1.97	1.97	1.96	1.97	2.04
		45	1.68	1.78	1.80	1.80	1.78	1.78	1.85
		40	1.54	1.62	1.64	1.62	1.60	1.61	1.68
		35	1.38	1.46	1.48	1.46	1.44	1.46	1.54
		30	1.23	1.30	1.32	1.30	1.30	1.32	1.42
		25	1.06	1.15	1.17	1.17	1.18	-	-
		20	0.92	1.01	1.04	1.06	-	-	-
	15	0.78	0.89	-	-	-	-	-	
10	0.66	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	6.02	6.59	7.65	9.11	10.90	12.85	14.95
		55	6.21	7.04	8.37	10.10	12.15	14.40	16.75
		50	6.53	7.58	9.14	11.10	13.35	15.85	18.45
		45	6.94	8.19	9.94	12.10	14.60	17.30	20.10
		40	7.43	8.85	10.75	13.10	15.75	18.60	21.60
		35	7.99	9.53	11.60	14.05	16.85	19.85	23.00
		30	8.59	10.25	12.40	14.95	17.85	21.00	24.20
		25	9.21	10.90	13.15	15.80	18.75	-	-
		20	9.84	11.60	13.85	16.55	-	-	-
		15	10.45	12.20	-	-	-	-	-
10		11.05	-	-	-	-	-	-	
P (kW)		60	5.29	5.61	5.83	5.99	6.13	6.28	6.46
		55	4.90	5.19	5.39	5.54	5.66	5.80	5.98
		50	4.52	4.79	4.98	5.11	5.23	5.36	5.54
		45	4.16	4.42	4.59	4.72	4.84	4.97	5.16
		40	3.82	4.07	4.24	4.37	4.49	4.64	4.83
		35	3.51	3.76	3.93	4.07	4.20	4.35	4.57
		30	3.23	3.48	3.67	3.82	3.96	4.14	4.37
		25	2.99	3.25	3.45	3.62	3.79	-	-
		20	2.79	3.07	3.29	3.48	-	-	-
	15	2.65	2.95	-	-	-	-	-	
10	2.56	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	7.50	8.20	9.53	11.40	13.75	16.40	19.35
		55	7.91	8.94	10.60	12.80	15.50	18.50	21.80
		50	8.48	9.81	11.75	14.30	17.25	20.60	24.20
		45	9.18	10.75	13.00	15.80	19.05	22.60	26.50
		40	10.00	11.80	14.30	17.30	20.80	24.60	28.80
		35	10.90	12.95	15.60	18.85	22.50	26.60	30.90
		30	11.90	14.10	16.95	20.30	24.20	28.40	33.00
		25	12.95	15.25	18.25	21.80	25.80	-	-
		20	14.05	16.45	19.55	23.20	-	-	-
		15	15.15	17.65	-	-	-	-	-
10		16.25	-	-	-	-	-	-	
P (kW)		60	7.08	7.52	7.86	8.14	8.39	8.64	8.93
		55	6.56	6.97	7.29	7.56	7.80	8.04	8.33
		50	6.06	6.46	6.77	7.03	7.26	7.51	7.80
		45	5.60	5.99	6.30	6.55	6.79	7.04	7.34
		40	5.19	5.57	5.88	6.14	6.38	6.65	6.96
		35	4.82	5.21	5.52	5.79	6.05	6.33	6.66
		30	4.51	4.90	5.23	5.51	5.79	6.09	6.45
		25	4.26	4.67	5.01	5.32	5.62	-	-
		20	4.07	4.50	4.87	5.20	-	-	-
	15	3.95	4.41	-	-	-	-	-	
10	3.91	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBW062QE-4X9, ZBW062QE-5X9

ZBW062QE R-404A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	3.71	4.57	5.53	6.56	7.63	8.70	9.73
		45	3.79	4.67	5.65	6.70	7.79	8.88	9.93
		40	3.94	4.81	5.79	6.84	7.92	9.00	10.05
		35	4.17	5.02	5.97	6.99	8.04	9.09	10.11
		30	4.50	5.30	6.19	7.16	8.15	9.15	10.11
		25	4.94	5.66	6.47	7.36	8.28	-	-
		20	5.50	6.11	6.82	7.60	-	-	-
		15	6.19	6.67	-	-	-	-	-
10		7.01	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	2.29	2.40	2.47	2.50	2.52	2.53	2.53
		45	2.05	2.14	2.20	2.23	2.24	2.24	2.24
		40	1.84	1.91	1.96	1.98	1.98	1.97	1.97
		35	1.65	1.71	1.74	1.75	1.75	1.74	1.73
		30	1.49	1.54	1.56	1.55	1.54	1.53	1.53
		25	1.35	1.39	1.39	1.38	1.37	-	-
		20	1.25	1.27	1.26	1.24	-	-	-
	15	1.17	1.17	-	-	-	-	-	
10	1.11	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	8.94	10.69	12.67	14.83	17.14	19.56	22.06
		55	9.27	11.14	13.22	15.50	17.92	20.45	23.07
		50	9.56	11.52	13.69	16.05	18.56	21.18	23.89
		45	9.83	11.84	14.08	16.50	19.08	21.76	24.53
		40	10.07	12.13	14.41	16.87	19.48	22.20	25.00
		35	10.31	12.38	14.67	17.15	19.77	22.51	25.32
		30	10.56	12.62	14.90	17.36	19.97	22.70	25.50
		25	10.83	12.85	15.09	17.52	20.09	-	-
		20	11.12	13.08	15.26	17.63	-	-	-
		15	11.45	13.33	-	-	-	-	-
10		11.84	-	-	-	-	-	-	
P (kW)		60	6.50	6.69	6.88	7.08	7.29	7.54	7.82
		55	5.93	6.11	6.30	6.49	6.71	6.96	7.25
		50	5.41	5.59	5.77	5.96	6.18	6.44	6.73
		45	4.94	5.11	5.29	5.48	5.70	5.96	6.26
		40	4.52	4.69	4.86	5.05	5.28	5.54	5.85
		35	4.15	4.31	4.48	4.68	4.90	5.17	5.49
		30	3.84	3.99	4.16	4.35	4.58	4.85	5.18
		25	3.57	3.72	3.88	4.08	4.31	-	-
		20	3.36	3.50	3.66	3.86	-	-	-
	15	3.20	3.33	-	-	-	-	-	
10	3.09	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	11.31	13.62	16.22	19.07	22.13	25.37	28.75
		55	11.92	14.37	17.10	20.09	23.28	26.66	30.18
		50	12.44	15.00	17.85	20.94	24.25	27.74	31.37
		45	12.88	15.53	18.46	21.65	25.04	28.61	32.33
		40	13.26	15.97	18.96	22.21	25.66	29.30	33.08
		35	13.58	16.33	19.36	22.64	26.13	29.81	33.62
		30	13.85	16.62	19.66	22.95	26.46	30.14	33.97
		25	14.10	16.85	19.88	23.16	26.65	-	-
		20	14.32	17.03	20.03	23.27	-	-	-
		15	14.53	17.18	-	-	-	-	-
10		14.75	-	-	-	-	-	-	
P (kW)		60	8.64	8.96	9.30	9.68	10.10	10.58	11.12
		55	7.95	8.27	8.61	8.99	9.42	9.91	10.46
		50	7.32	7.64	7.99	8.37	8.81	9.30	9.86
		45	6.76	7.08	7.42	7.81	8.26	8.76	9.33
		40	6.26	6.58	6.93	7.32	7.77	8.28	8.87
		35	5.83	6.14	6.49	6.89	7.35	7.87	8.47
		30	5.46	5.77	6.13	6.53	6.99	7.53	8.14
		25	5.16	5.47	5.82	6.23	6.71	-	-
		20	4.92	5.23	5.59	6.01	-	-	-
	15	4.75	5.06	-	-	-	-	-	
10	4.64	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBV080QE-4X9, ZBV080QE-5X9

ZBV080QE R-404A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	3.29	3.98	4.77	5.67	6.68	7.81	9.04
		45	3.48	4.26	5.15	6.14	7.25	8.47	9.79
		40	3.71	4.56	5.52	6.59	7.77	9.06	10.45
		35	3.98	4.88	5.89	7.01	8.25	9.59	11.05
		30	4.29	5.22	6.26	7.41	8.68	10.05	11.55
		25	4.64	5.58	6.63	7.79	9.06	-	-
		20	5.03	5.95	6.99	8.14	-	-	-
		15	5.45	6.35	-	-	-	-	-
10		5.92	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	2.23	2.35	2.45	2.55	2.64	2.73	2.81
		45	2.00	2.09	2.19	2.29	2.38	2.48	2.57
		40	1.80	1.88	1.97	2.06	2.16	2.26	2.37
		35	1.64	1.70	1.78	1.87	1.97	2.08	2.21
		30	1.50	1.55	1.62	1.70	1.81	1.93	2.07
		25	1.39	1.42	1.48	1.56	1.68	-	-
		20	1.30	1.32	1.37	1.45	-	-	-
	15	1.23	1.23	-	-	-	-	-	
10	1.16	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	6.95	8.29	9.91	11.80	14.00	16.40	19.15
		55	7.69	9.24	11.05	13.15	15.55	18.20	21.10
		50	8.40	10.15	12.15	14.40	16.95	19.80	22.90
		45	9.08	10.95	13.15	15.60	18.30	21.30	24.60
		40	9.74	11.75	14.05	16.65	19.50	22.60	26.00
		35	10.35	12.50	14.95	17.65	20.60	23.90	27.40
		30	10.95	13.20	15.75	18.55	21.60	24.90	28.60
		25	11.55	13.85	16.45	19.30	22.50	-	-
		20	12.05	14.45	17.10	20.00	-	-	-
		15	12.60	15.00	-	-	-	-	-
10		13.05	-	-	-	-	-	-	
P (kW)		60	6.57	6.84	7.17	7.56	8.01	8.52	9.10
		55	6.11	6.37	6.69	7.09	7.55	8.09	8.69
		50	5.69	5.94	6.27	6.67	7.14	7.70	8.32
		45	5.31	5.55	5.88	6.29	6.78	7.35	8.00
		40	4.97	5.20	5.53	5.94	6.45	7.03	7.71
		35	4.66	4.89	5.22	5.64	6.15	6.75	7.45
		30	4.38	4.60	4.93	5.36	5.88	6.51	7.23
		25	4.12	4.34	4.67	5.10	5.64	-	-
		20	3.89	4.10	4.43	4.87	-	-	-
	15	3.67	3.88	-	-	-	-	-	
10	3.47	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	9.12	11.00	13.20	15.80	18.75	22.10	25.70
		55	10.15	12.25	14.70	17.55	20.70	24.30	28.20
		50	11.15	13.45	16.15	19.20	22.60	26.40	30.50
		45	12.05	14.55	17.45	20.70	24.30	28.30	32.60
		40	12.90	15.60	18.65	22.10	25.90	30.00	34.50
		35	13.70	16.50	19.75	23.30	27.30	31.60	36.20
		30	14.40	17.35	20.70	24.40	28.50	32.90	37.80
		25	15.05	18.15	21.60	25.40	29.60	-	-
		20	15.60	18.80	22.30	26.30	-	-	-
		15	16.15	19.40	-	-	-	-	-
10		16.55	-	-	-	-	-	-	
P (kW)		60	8.98	9.46	10.05	10.75	11.55	12.50	13.50
		55	8.43	8.91	9.51	10.20	11.05	12.00	13.05
		50	7.93	8.41	9.01	9.73	10.55	11.55	12.60
		45	7.47	7.95	8.55	9.29	10.15	11.15	12.25
		40	7.05	7.53	8.14	8.88	9.76	10.75	11.90
		35	6.66	7.14	7.75	8.51	9.40	10.45	11.60
		30	6.30	6.78	7.40	8.16	9.07	10.15	11.35
		25	5.97	6.44	7.07	7.84	8.77	-	-
		20	5.65	6.13	6.76	7.54	-	-	-
	15	5.36	5.83	-	-	-	-	-	
10	5.07	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBW080QE-4X9, ZBW080QE-5X9

ZBW080QE R-404A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	5.26	6.25	7.31	8.39	9.45	10.45	11.34
		45	5.28	6.33	7.45	8.59	9.71	10.76	11.71
		40	5.33	6.41	7.56	8.73	9.88	10.97	11.96
		35	5.41	6.50	7.65	8.83	9.99	11.08	12.07
		30	5.52	6.59	7.72	8.87	10.01	11.08	12.04
		25	5.67	6.68	7.76	8.87	9.95	-	-
		20	5.85	6.79	7.79	8.81	-	-	-
		15	6.06	6.89	-	-	-	-	-
10		6.30	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	2.84	2.92	2.98	3.03	3.06	3.06	3.05
		45	2.52	2.59	2.64	2.68	2.69	2.68	2.66
		40	2.25	2.31	2.34	2.36	2.36	2.34	2.31
		35	2.01	2.06	2.08	2.09	2.08	2.04	1.99
		30	1.81	1.84	1.86	1.85	1.83	1.78	1.72
		25	1.65	1.67	1.67	1.65	1.61	-	-
		20	1.53	1.54	1.52	1.49	-	-	-
	15	1.45	1.44	-	-	-	-	-	
10	1.40	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	11.00	13.25	15.71	18.35	21.10	23.94	26.81
		55	11.57	13.94	16.51	19.26	22.13	25.08	28.08
		50	12.05	14.51	17.18	20.01	22.97	26.01	29.09
		45	12.46	14.97	17.70	20.59	23.61	26.71	29.85
		40	12.77	15.32	18.08	21.01	24.06	27.19	30.36
		35	13.00	15.56	18.32	21.25	24.31	27.45	30.62
		30	13.15	15.68	18.42	21.33	24.37	27.48	30.63
		25	13.21	15.69	18.38	21.24	24.23	-	-
		20	13.19	15.59	18.21	20.99	-	-	-
		15	13.09	15.38	-	-	-	-	-
10		12.90	-	-	-	-	-	-	
P (kW)		60	7.75	8.10	8.45	8.83	9.22	9.62	10.04
		55	7.10	7.43	7.78	8.14	8.52	8.91	9.32
		50	6.52	6.84	7.17	7.52	7.88	8.26	8.65
		45	5.99	6.30	6.62	6.95	7.30	7.67	8.05
		40	5.53	5.82	6.13	6.45	6.79	7.14	7.51
		35	5.12	5.40	5.70	6.01	6.33	6.67	7.03
		30	4.78	5.04	5.33	5.62	5.94	6.26	6.61
		25	4.49	4.75	5.02	5.30	5.60	-	-
		20	4.27	4.51	4.77	5.04	-	-	-
	15	4.11	4.34	-	-	-	-	-	
10	4.01	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	13.93	16.88	20.12	23.60	27.30	31.15	35.12
		55	14.84	17.91	21.26	24.86	28.67	32.64	36.73
		50	15.61	18.76	22.20	25.89	29.79	33.85	38.02
		45	16.22	19.43	22.94	26.69	30.64	34.76	39.00
		40	16.69	19.93	23.47	27.25	31.24	35.39	39.66
		35	17.00	20.25	23.79	27.58	31.57	35.73	40.00
		30	17.17	20.40	23.91	27.68	31.65	35.78	40.03
		25	17.19	20.36	23.83	27.54	-	-	-
		20	17.05	20.15	23.54	-	-	-	-
		15	16.77	19.76	-	-	-	-	-
10		16.34	-	-	-	-	-	-	
P (kW)		60	10.50	11.05	11.64	12.26	12.92	13.61	14.33
		55	9.71	10.25	10.82	11.43	12.07	12.75	13.46
		50	8.99	9.52	10.08	10.68	11.31	11.97	12.67
		45	8.35	8.86	9.41	9.99	10.61	11.26	11.95
		40	7.78	8.28	8.81	9.38	9.99	10.63	11.30
		35	7.28	7.77	8.29	8.85	9.44	10.07	10.73
		30	6.85	7.33	7.84	8.39	8.97	9.58	10.23
		25	6.50	6.97	7.46	8.00	-	-	-
		20	6.23	6.68	7.16	-	-	-	-
	15	6.02	6.46	-	-	-	-	-	
10	5.89	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBW030DE-4X9, ZBW030DE-5X9

ZBW030DE R-448A/ R-449A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	-	-	2.11	2.43	2.76	3.12	3.48
		45	1.55	1.85	2.17	2.52	2.89	3.29	3.70
		40	1.58	1.90	2.25	2.63	3.04	3.47	3.94
		35	1.63	1.97	2.34	2.75	3.19	3.67	4.18
		30	1.69	2.04	2.44	2.87	3.35	3.87	4.42
		25	1.74	2.11	2.53	2.99	3.50	-	-
		20	1.79	2.17	2.60	3.09	-	-	-
		15	1.81	2.21	-	-	-	-	-
10		1.81	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	-	-	1.01	1.03	1.04	1.05	1.05
		45	0.90	0.92	0.94	0.95	0.96	0.97	0.97
		40	0.82	0.84	0.85	0.86	0.87	0.87	0.87
		35	0.74	0.75	0.76	0.77	0.77	0.77	0.77
		30	0.65	0.66	0.67	0.68	0.68	0.67	0.67
		25	0.57	0.58	0.59	0.59	0.59	-	-
		20	0.50	0.51	0.51	0.51	-	-	-
	15	0.46	0.46	-	-	-	-	-	
10	0.44	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	6.61	7.49	8.42
		55	3.64	4.34	5.11	5.93	6.81	7.74	8.72
		50	3.72	4.46	5.26	6.12	7.04	8.02	9.06
		45	3.83	4.60	5.42	6.32	7.28	8.31	9.41
		40	3.96	4.75	5.61	6.54	7.54	8.62	9.77
		35	4.10	4.91	5.79	6.76	7.81	8.93	10.14
		30	4.23	5.06	5.98	6.98	8.07	9.24	10.50
		25	4.36	5.21	6.16	7.20	8.32	-	-
		20	4.47	5.35	6.32	7.39	-	-	-
		15	4.56	5.46	-	-	-	-	-
10		4.63	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	2.87	2.88	2.88
		55	2.54	2.59	2.63	2.66	2.67	2.68	2.67
		50	2.35	2.39	2.43	2.45	2.46	2.45	2.44
		45	2.15	2.19	2.21	2.23	2.23	2.22	2.20
		40	1.94	1.97	2.00	2.01	2.00	1.99	1.96
		35	1.74	1.77	1.78	1.79	1.78	1.76	1.73
		30	1.55	1.57	1.58	1.58	1.57	1.54	1.50
		25	1.38	1.39	1.40	1.39	1.37	-	-
		20	1.23	1.24	1.24	1.22	-	-	-
	15	1.11	1.11	-	-	-	-	-	
10	1.03	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	8.97	10.20	11.50
		55	4.88	5.85	6.90	8.03	9.23	10.52	11.88
		50	5.02	6.02	7.10	8.27	9.53	10.87	12.29
		45	5.18	6.21	7.33	8.54	9.84	11.23	12.71
		40	5.36	6.41	7.56	8.81	10.16	11.60	13.14
		35	5.53	6.61	7.80	9.09	10.48	11.98	13.57
		30	5.71	6.82	8.03	9.36	10.80	12.34	14.00
		25	5.87	7.01	8.26	9.62	11.10	-	-
		20	6.02	7.18	8.46	9.86	-	-	-
		15	6.15	7.33	-	-	-	-	-
10		6.24	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	3.80	3.81	3.80
		55	3.35	3.41	3.46	3.49	3.51	3.51	3.49
		50	3.08	3.13	3.18	3.20	3.21	3.20	3.18
		45	2.80	2.85	2.89	2.90	2.90	2.89	2.86
		40	2.53	2.57	2.60	2.61	2.60	2.58	2.54
		35	2.27	2.31	2.32	2.33	2.31	2.28	2.24
		30	2.03	2.05	2.06	2.06	2.04	2.00	1.95
		25	1.81	1.83	1.83	1.82	1.79	-	-
		20	1.62	1.63	1.62	1.60	-	-	-
	15	1.46	1.47	-	-	-	-	-	
10	1.35	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBW038DE-4X9, ZBW038DE-5X9

ZBW038DE R-448A/ R-449A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	-	-	2.71	3.11	3.54	3.99	4.46
		45	1.99	2.38	2.79	3.24	3.71	4.21	4.74
		40	2.05	2.45	2.90	3.38	3.89	4.44	5.03
		35	2.11	2.54	3.01	3.53	4.08	4.69	5.33
		30	2.18	2.63	3.13	3.68	4.28	4.93	5.62
		25	2.25	2.71	3.24	3.82	4.46	-	-
		20	2.30	2.79	3.33	3.95	-	-	-
		15	2.33	2.83	-	-	-	-	-
10		2.33	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	-	-	1.30	1.32	1.34	1.35	1.35
		45	1.14	1.17	1.19	1.21	1.23	1.23	1.24
		40	1.03	1.06	1.08	1.10	1.11	1.11	1.11
		35	0.92	0.95	0.96	0.98	0.98	0.99	0.98
		30	0.82	0.84	0.85	0.86	0.86	0.86	0.86
		25	0.72	0.74	0.75	0.75	0.76	-	-
		20	0.64	0.65	0.66	0.66	-	-	-
	15	0.58	0.59	-	-	-	-	-	
10	0.56	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	8.55	9.71	10.94
		55	4.67	5.59	6.59	7.66	8.81	10.03	11.33
		50	4.79	5.75	6.78	7.90	9.10	10.39	11.76
		45	4.94	5.92	7.00	8.16	9.42	10.76	12.19
		40	5.10	6.12	7.23	8.44	9.74	11.15	12.64
		35	5.27	6.32	7.46	8.72	10.07	11.53	13.09
		30	5.44	6.51	7.69	8.99	10.39	11.91	13.53
		25	5.60	6.70	7.91	9.25	10.70	-	-
		20	5.74	6.86	8.11	9.48	-	-	-
		15	5.86	7.00	-	-	-	-	-
10		5.93	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	3.68	3.70	3.71
		55	3.21	3.28	3.34	3.38	3.41	3.43	3.43
		50	2.96	3.02	3.07	3.11	3.14	3.15	3.14
		45	2.70	2.76	2.80	2.83	2.85	2.86	2.85
		40	2.45	2.50	2.54	2.56	2.57	2.57	2.55
		35	2.20	2.25	2.28	2.29	2.30	2.29	2.27
		30	1.97	2.01	2.03	2.04	2.04	2.03	2.00
		25	1.76	1.79	1.81	1.81	1.81	-	-
		20	1.58	1.60	1.61	1.61	-	-	-
	15	1.43	1.44	-	-	-	-	-	
10	1.32	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	11.62	13.26	14.99
		55	6.28	7.54	8.91	10.39	11.97	13.67	15.48
		50	6.47	7.76	9.18	10.70	12.35	14.11	15.99
		45	6.68	8.01	9.46	11.04	12.74	14.57	16.51
		40	6.90	8.26	9.76	11.39	13.14	15.03	17.05
		35	7.13	8.52	10.06	11.73	13.54	15.49	17.58
		30	7.35	8.78	10.35	12.07	13.93	15.94	18.09
		25	7.56	9.01	10.63	12.39	14.31	-	-
		20	7.74	9.23	10.88	12.69	-	-	-
		15	7.90	9.41	-	-	-	-	-
10		8.01	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	4.87	4.90	4.91
		55	4.24	4.33	4.40	4.46	4.50	4.52	4.52
		50	3.89	3.97	4.04	4.08	4.11	4.13	4.12
		45	3.54	3.61	3.67	3.71	3.73	3.74	3.72
		40	3.20	3.27	3.32	3.35	3.36	3.36	3.34
		35	2.87	2.93	2.97	3.00	3.00	2.99	2.96
		30	2.57	2.62	2.65	2.67	2.67	2.65	2.61
		25	2.29	2.33	2.36	2.37	2.36	-	-
		20	2.05	2.08	2.10	2.10	-	-	-
	15	1.85	1.87	-	-	-	-	-	
10	1.69	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBV046HE-4X9, ZBV046HE-5X9

ZBV046HE R-448A/ R-449A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	1.78	2.18	2.67	3.23	3.88	4.60	5.41
		45	1.85	2.32	2.86	3.49	4.20	4.99	5.86
		40	1.94	2.46	3.06	3.74	4.49	5.33	6.25
		35	2.07	2.62	3.25	3.96	4.76	5.63	6.59
		30	2.22	2.79	3.44	4.18	4.99	5.89	6.87
		25	2.40	2.98	3.64	4.38	5.20	-	-
		20	2.60	3.17	3.83	4.56	-	-	-
		15	2.83	3.38	-	-	-	-	-
10		3.08	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	1.22	1.30	1.36	1.42	1.46	1.50	1.52
		45	1.08	1.14	1.20	1.26	1.31	1.35	1.39
		40	0.97	1.02	1.08	1.12	1.18	1.23	1.28
		35	0.87	0.92	0.96	1.01	1.06	1.12	1.18
		30	0.80	0.83	0.86	0.91	0.97	1.03	1.10
		25	0.73	0.75	0.78	0.83	0.89	-	-
		20	0.68	0.69	0.72	0.76	-	-	-
	15	0.64	0.64	-	-	-	-	-	
10	0.61	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	3.80	4.58	5.55	6.73	8.11	9.70	11.50
		55	4.16	5.07	6.18	7.49	9.01	10.70	12.65
		50	4.51	5.54	6.76	8.20	9.83	11.65	13.70
		45	4.84	5.97	7.30	8.84	10.60	12.50	14.65
		40	5.15	6.37	7.80	9.42	11.25	13.30	15.50
		35	5.45	6.75	8.25	9.95	11.85	13.95	16.30
		30	5.72	7.09	8.65	10.40	12.40	14.55	16.95
		25	5.99	7.40	9.01	10.85	12.85	-	-
		20	6.23	7.68	9.33	11.20	-	-	-
		15	6.46	7.93	-	-	-	-	-
10		6.67	-	-	-	-	-	-	
P (kW)		60	3.68	3.81	3.98	4.19	4.43	4.71	5.02
		55	3.39	3.52	3.69	3.91	4.16	4.45	4.78
		50	3.14	3.26	3.44	3.65	3.91	4.22	4.57
		45	2.91	3.03	3.20	3.42	3.69	4.02	4.39
		40	2.70	2.82	2.99	3.21	3.50	3.83	4.22
		35	2.51	2.62	2.79	3.03	3.32	3.67	4.08
		30	2.34	2.44	2.62	2.85	3.16	3.52	3.95
		25	2.18	2.28	2.46	2.70	3.01	-	-
		20	2.03	2.13	2.31	2.55	-	-	-
	15	1.90	2.00	-	-	-	-	-	
10	1.77	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	4.98	6.05	7.40	9.01	10.90	13.05	15.45
		55	5.51	6.74	8.24	10.00	12.05	14.35	16.95
		50	5.99	7.36	9.00	10.90	13.10	15.55	18.25
		45	6.43	7.93	9.70	11.75	14.05	16.65	19.50
		40	6.84	8.45	10.35	12.50	14.90	17.60	20.60
		35	7.20	8.91	10.90	13.15	15.70	18.45	21.50
		30	7.52	9.32	11.40	13.75	16.35	19.20	22.40
		25	7.80	9.67	11.80	14.25	16.90	-	-
		20	8.03	9.97	12.15	14.65	-	-	-
		15	8.23	10.20	-	-	-	-	-
10		8.39	-	-	-	-	-	-	
P (kW)		60	5.01	5.26	5.57	5.96	6.40	6.92	7.50
		55	4.68	4.92	5.24	5.63	6.10	6.63	7.24
		50	4.37	4.61	4.94	5.34	5.82	6.37	7.00
		45	4.08	4.33	4.66	5.07	5.56	6.13	6.79
		40	3.82	4.07	4.40	4.82	5.32	5.92	6.59
		35	3.58	3.83	4.16	4.59	5.11	5.72	6.42
		30	3.35	3.60	3.94	4.38	4.91	5.54	6.27
		25	3.14	3.39	3.73	4.18	4.73	-	-
		20	2.94	3.19	3.54	4.00	-	-	-
	15	2.76	3.00	-	-	-	-	-	
10	2.57	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBW046HE-4X9, ZBW046HE-5X9

ZBW046HE R-448A/ R-449A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	3.04	3.68	4.39	5.14	5.92	6.70	7.48
		45	3.10	3.78	4.52	5.30	6.11	6.94	7.75
		40	3.14	3.83	4.59	5.39	6.22	7.05	7.88
		35	3.16	3.85	4.60	5.40	6.22	7.05	7.87
		30	3.16	3.83	4.55	5.32	6.12	6.93	7.73
		25	3.15	3.77	4.45	5.17	5.93	-	-
		20	3.11	3.67	4.29	4.95	-	-	-
		15	3.06	3.53	-	-	-	-	-
10		2.99	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	1.55	1.59	1.62	1.65	1.66	1.66	1.66
		45	1.37	1.40	1.44	1.45	1.46	1.46	1.44
		40	1.22	1.25	1.27	1.28	1.28	1.27	1.25
		35	1.08	1.11	1.12	1.13	1.12	1.10	1.08
		30	0.98	0.99	1.01	1.00	0.99	0.97	0.94
		25	0.89	0.90	0.90	0.89	0.88	-	-
		20	0.82	0.82	0.82	0.81	-	-	-
	15	0.77	0.77	-	-	-	-	-	
10	0.73	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	6.59	8.01	9.61	11.40	13.30	15.35	17.50
		55	6.86	8.37	10.05	11.90	13.90	16.05	18.30
		50	7.09	8.67	10.45	12.35	14.40	16.60	18.95
		45	7.28	8.91	10.70	12.70	14.80	17.05	19.40
		40	7.43	9.09	10.90	12.90	15.05	17.35	19.75
		35	7.54	9.21	11.05	13.05	15.20	17.50	19.90
		30	7.62	9.27	11.10	13.10	15.25	17.55	19.90
		25	7.66	9.28	11.10	13.05	15.15	-	-
		20	7.65	9.23	11.00	12.90	-	-	-
		15	7.61	9.12	-	-	-	-	-
10		7.54	-	-	-	-	-	-	
P (kW)		60	4.33	4.52	4.71	4.91	5.11	5.33	5.55
		55	3.93	4.11	4.30	4.49	4.69	4.90	5.12
		50	3.58	3.75	3.93	4.11	4.31	4.51	4.72
		45	3.26	3.43	3.60	3.78	3.97	4.17	4.37
		40	2.99	3.15	3.31	3.49	3.67	3.86	4.06
		35	2.75	2.90	3.06	3.23	3.41	3.59	3.79
		30	2.55	2.70	2.85	3.01	3.19	3.36	3.55
		25	2.39	2.53	2.67	2.83	2.99	-	-
		20	2.25	2.39	2.53	2.68	-	-	-
	15	2.15	2.28	-	-	-	-	-	
10	2.08	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	8.47	10.35	12.45	14.75	17.30	20.10	23.00
		55	8.84	10.80	13.00	15.40	18.05	20.90	23.90
		50	9.15	11.20	13.45	15.95	18.70	21.60	24.70
		45	9.41	11.50	13.85	16.40	19.15	22.10	25.30
		40	9.63	11.75	14.10	16.70	19.55	22.50	25.70
		35	9.79	11.95	14.30	16.95	19.75	22.80	26.00
		30	9.91	12.05	14.45	17.05	19.85	22.90	26.10
		25	9.97	12.10	14.45	17.05	19.85	-	-
		20	9.99	12.05	14.40	16.95	-	-	-
		15	9.96	11.95	-	-	-	-	-
10		9.88	-	-	-	-	-	-	
P (kW)		60	5.87	6.16	6.48	6.81	7.16	7.53	7.92
		55	5.38	5.67	5.98	6.30	6.65	7.01	7.39
		50	4.94	5.22	5.53	5.85	6.19	6.54	6.92
		45	4.55	4.83	5.12	5.44	5.77	6.12	6.49
		40	4.21	4.48	4.77	5.08	5.41	5.75	6.11
		35	3.91	4.18	4.46	4.77	5.09	5.43	5.78
		30	3.66	3.92	4.20	4.50	4.81	5.14	5.49
		25	3.45	3.71	3.98	4.27	4.58	-	-
		20	3.28	3.53	3.80	4.08	-	-	-
	15	3.15	3.40	-	-	-	-	-	
10	3.06	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBV062QE-4X9, ZBV062QE-5X9

ZBV062QE R-448A/ R-449A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	2.42	2.82	3.47	4.33	5.35	6.49	7.70
		45	2.52	2.96	3.68	4.61	5.72	6.96	8.29
		40	2.74	3.20	3.94	4.92	6.08	7.39	8.80
		35	3.06	3.50	4.24	5.22	6.40	7.74	9.19
		30	3.45	3.84	4.53	5.48	6.65	7.98	9.44
		25	3.88	4.17	4.79	5.68	6.79	-	-
		20	4.31	4.48	4.98	5.77	-	-	-
		15	4.73	4.74	-	-	-	-	-
10		5.09	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	1.56	1.78	1.90	1.92	1.92	1.90	1.91
		45	1.42	1.63	1.72	1.74	1.72	1.70	1.71
		40	1.28	1.46	1.55	1.56	1.54	1.52	1.54
		35	1.12	1.30	1.38	1.39	1.37	1.36	1.39
		30	0.94	1.12	1.21	1.23	1.22	1.23	1.28
		25	0.77	0.96	1.05	1.08	1.10	-	-
		20	0.61	0.80	0.91	0.97	-	-	-
	15	0.45	0.67	-	-	-	-	-	
10	0.30	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	5.64	6.49	7.79	9.50	11.55	13.95	16.60
		55	5.88	6.89	8.37	10.25	12.55	15.15	18.00
		50	6.23	7.37	8.99	11.05	13.50	16.25	19.35
		45	6.67	7.90	9.62	11.80	14.35	17.30	20.50
		40	7.16	8.45	10.25	12.50	15.15	18.20	21.50
		35	7.68	8.99	10.80	13.10	15.85	18.95	22.40
		30	8.19	9.48	11.30	13.60	16.35	19.50	23.00
		25	8.66	9.91	11.70	14.00	16.70	-	-
		20	9.07	10.25	11.95	14.20	-	-	-
		15	9.39	10.45	-	-	-	-	-
10		9.58	-	-	-	-	-	-	
P (kW)		60	4.82	5.26	5.58	5.80	5.96	6.10	6.25
		55	4.42	4.84	5.13	5.32	5.47	5.59	5.74
		50	4.03	4.43	4.70	4.88	5.02	5.14	5.28
		45	3.67	4.05	4.30	4.48	4.61	4.73	4.88
		40	3.32	3.69	3.95	4.13	4.26	4.39	4.54
		35	3.01	3.38	3.64	3.82	3.96	4.10	4.28
		30	2.73	3.10	3.37	3.57	3.73	3.89	4.09
		25	2.49	2.88	3.16	3.38	3.56	-	-
		20	2.30	2.71	3.01	3.25	-	-	-
	15	2.17	2.59	-	-	-	-	-	
10	2.08	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	7.32	8.51	10.25	12.55	15.35	18.60	22.20
		55	7.78	9.15	11.10	13.65	16.65	20.10	24.00
		50	8.32	9.84	11.95	14.65	17.85	21.50	25.60
		45	8.89	10.55	12.80	15.60	18.95	22.80	27.10
		40	9.49	11.20	13.55	16.50	19.95	23.90	28.30
		35	10.05	11.85	14.25	17.25	20.80	24.80	29.30
		30	10.60	12.35	14.80	17.85	21.40	25.50	30.10
		25	11.05	12.80	15.20	18.25	21.80	-	-
		20	11.40	13.10	15.45	18.45	-	-	-
		15	11.60	13.20	-	-	-	-	-
10		11.65	-	-	-	-	-	-	
P (kW)		60	6.46	7.04	7.49	7.83	8.12	8.37	8.64
		55	5.92	6.47	6.90	7.22	7.49	7.74	8.00
		50	5.41	5.95	6.36	6.67	6.94	7.18	7.44
		45	4.95	5.47	5.87	6.19	6.45	6.70	6.96
		40	4.53	5.05	5.45	5.77	6.04	6.29	6.58
		35	4.17	4.69	5.09	5.42	5.70	5.98	6.28
		30	3.87	4.39	4.81	5.15	5.46	5.76	6.09
		25	3.63	4.17	4.61	4.97	5.30	-	-
		20	3.46	4.02	4.49	4.88	-	-	-
	15	3.37	3.96	-	-	-	-	-	
10	3.35	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBW062QE-4X9, ZBW062QE-5X9

ZBW062QE R-448A/ R-449A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	2.24	2.91	3.68	4.56	5.55	6.66	7.87
		45	2.45	3.14	3.93	4.83	5.85	6.98	8.22
		40	2.61	3.31	4.12	5.04	6.08	7.23	8.50
		35	2.72	3.43	4.25	5.19	6.25	7.42	8.71
		30	2.80	3.51	4.34	5.29	6.36	7.55	8.87
		25	2.84	3.56	4.40	5.36	6.44	-	-
		20	2.86	3.58	4.42	5.39	-	-	-
		15	2.87	3.59	-	-	-	-	-
10		2.87	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	1.74	1.80	1.84	1.90	1.96	2.05	2.16
		45	1.56	1.61	1.66	1.70	1.76	1.84	1.94
		40	1.41	1.45	1.49	1.53	1.58	1.64	1.72
		35	1.27	1.30	1.33	1.36	1.40	1.45	1.52
		30	1.12	1.15	1.17	1.18	1.21	1.25	1.30
		25	0.96	0.98	0.99	0.99	1.00	-	-
		20	0.78	0.78	0.77	0.76	-	-	-
	15	0.55	0.54	-	-	-	-	-	
10	0.27	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	8.14	9.86	11.80	14.00	16.45	19.10	22.00
		55	8.45	10.20	12.15	14.40	16.85	19.55	22.50
		50	8.69	10.45	12.45	14.70	17.15	19.90	22.90
		45	8.88	10.65	12.65	14.95	17.45	20.20	23.20
		40	9.01	10.80	12.85	15.10	17.65	20.40	23.40
		35	9.09	10.90	12.95	15.25	17.75	20.60	23.60
		30	9.14	10.95	13.00	15.30	17.85	20.70	23.70
		25	9.17	11.00	13.05	15.35	17.90	-	-
		20	9.17	11.00	13.05	15.35	-	-	-
		15	9.17	10.95	-	-	-	-	-
10		9.16	-	-	-	-	-	-	
P (kW)		60	5.67	5.82	6.01	6.24	6.51	6.83	7.21
		55	5.14	5.30	5.48	5.71	5.97	6.29	6.65
		50	4.67	4.82	5.01	5.22	5.48	5.79	6.15
		45	4.24	4.39	4.57	4.78	5.03	5.33	5.67
		40	3.85	3.99	4.16	4.36	4.60	4.88	5.22
		35	3.47	3.61	3.77	3.96	4.18	4.45	4.77
		30	3.10	3.22	3.37	3.55	3.76	4.01	4.31
		25	2.71	2.83	2.97	3.13	3.32	-	-
		20	2.31	2.41	2.53	2.68	-	-	-
	15	1.88	1.96	-	-	-	-	-	
10	1.38	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	11.25	13.70	16.45	19.50	22.90	26.60	30.60
		55	11.60	14.10	16.90	19.95	23.40	27.10	31.10
		50	11.95	14.40	17.20	20.30	23.80	27.50	31.60
		45	12.20	14.70	17.50	20.60	24.10	27.90	31.90
		40	12.40	14.90	17.75	20.90	24.40	28.10	32.20
		35	12.55	15.05	17.90	21.10	24.60	28.40	32.50
		30	12.65	15.20	18.05	21.20	24.70	28.50	32.70
		25	12.75	15.30	18.15	21.30	24.80	-	-
		20	12.85	15.40	18.25	21.40	-	-	-
		15	12.90	15.45	-	-	-	-	-
10		13.00	-	-	-	-	-	-	
P (kW)		60	7.35	7.67	8.04	8.46	8.94	9.49	10.10
		55	6.76	7.08	7.45	7.86	8.34	8.88	9.49
		50	6.23	6.55	6.91	7.32	7.79	8.32	8.91
		45	5.75	6.06	6.42	6.82	7.28	7.80	8.38
		40	5.30	5.61	5.95	6.35	6.79	7.30	7.87
		35	4.88	5.17	5.51	5.89	6.32	6.81	7.36
		30	4.46	4.74	5.07	5.44	5.85	6.32	6.86
		25	4.03	4.31	4.62	4.97	5.37	-	-
		20	3.59	3.85	4.14	4.48	-	-	-
	15	3.12	3.36	-	-	-	-	-	
10	2.60	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBV080QE-4X9, ZBV080QE-5X9

ZBV080QE R-448A/ R-449A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	2.98	3.65	4.46	5.41	6.49	7.70	9.05
		45	3.09	3.87	4.79	5.84	7.03	8.35	9.80
		40	3.26	4.12	5.12	6.25	7.52	8.92	10.45
		35	3.46	4.38	5.44	6.63	7.96	9.42	11.00
		30	3.71	4.67	5.76	6.99	8.35	9.85	11.50
		25	4.01	4.98	6.08	7.32	8.70	-	-
		20	4.35	5.31	6.40	7.63	-	-	-
		15	4.73	5.66	-	-	-	-	-
10		5.16	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	2.00	2.12	2.23	2.33	2.40	2.46	2.50
		45	1.78	1.88	1.98	2.07	2.15	2.22	2.28
		40	1.59	1.68	1.76	1.85	1.93	2.01	2.09
		35	1.44	1.50	1.58	1.66	1.74	1.84	1.94
		30	1.30	1.36	1.42	1.50	1.59	1.70	1.82
		25	1.20	1.24	1.28	1.36	1.46	-	-
		20	1.12	1.14	1.18	1.25	-	-	-
	15	1.06	1.04	-	-	-	-	-	
10	1.00	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	6.36	7.66	9.29	11.25	13.55	16.20	19.20
		55	6.97	8.48	10.35	12.55	15.05	17.95	21.10
		50	7.54	9.26	11.30	13.70	16.45	19.50	22.90
		45	8.10	9.99	12.20	14.80	17.70	20.90	24.50
		40	8.62	10.65	13.05	15.75	18.85	22.20	26.00
		35	9.11	11.30	13.80	16.65	19.85	23.40	27.20
		30	9.58	11.85	14.50	17.45	20.70	24.40	28.30
		25	10.00	12.40	15.10	18.10	21.50	-	-
		20	10.40	12.85	15.60	18.70	-	-	-
		15	10.80	13.25	-	-	-	-	-
10		11.15	-	-	-	-	-	-	
P (kW)		60	6.03	6.25	6.53	6.87	7.27	7.72	8.24
		55	5.57	5.78	6.06	6.41	6.82	7.30	7.85
		50	5.15	5.36	5.64	5.99	6.42	6.93	7.51
		45	4.77	4.97	5.25	5.61	6.06	6.59	7.20
		40	4.43	4.62	4.90	5.27	5.74	6.29	6.93
		35	4.12	4.30	4.58	4.96	5.44	6.02	6.70
		30	3.83	4.01	4.29	4.68	5.18	5.78	6.49
		25	3.58	3.75	4.03	4.43	4.94	-	-
		20	3.34	3.50	3.78	4.19	-	-	-
	15	3.11	3.27	-	-	-	-	-	
10	2.90	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	8.33	10.15	12.40	15.05	18.20	21.80	25.90
		55	9.21	11.25	13.80	16.75	20.10	24.00	28.30
		50	10.00	12.30	15.05	18.25	21.90	26.00	30.60
		45	10.75	13.25	16.25	19.65	23.50	27.80	32.60
		40	11.45	14.15	17.30	20.90	24.90	29.50	34.40
		35	12.05	14.90	18.25	22.00	26.20	30.90	36.00
		30	12.60	15.60	19.05	23.00	27.30	32.20	37.40
		25	13.05	16.20	19.75	23.80	28.30	-	-
		20	13.45	16.70	20.40	24.50	-	-	-
		15	13.75	17.10	-	-	-	-	-
10		14.05	-	-	-	-	-	-	
P (kW)		60	8.22	8.63	9.14	9.77	10.50	11.35	12.30
		55	7.67	8.08	8.60	9.24	10.00	10.90	11.90
		50	7.17	7.57	8.10	8.76	9.54	10.45	11.50
		45	6.70	7.10	7.64	8.32	9.12	10.05	11.15
		40	6.27	6.67	7.22	7.91	8.74	9.71	10.80
		35	5.87	6.28	6.83	7.53	8.38	9.38	10.55
		30	5.50	5.91	6.47	7.18	8.06	9.09	10.30
		25	5.16	5.56	6.13	6.86	7.76	-	-
		20	4.83	5.23	5.81	6.56	-	-	-
	15	4.52	4.92	-	-	-	-	-	
10	4.22	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZBW080QE-4X9, ZBW080QE-5X9

ZBW080QE R-448A/ R-449A		CT (°C)	ET (°C)						
			-20	-15	-10	-5	0	5	10
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	4.70	5.69	6.78	7.94	9.14	10.35	11.56
		45	4.79	5.84	6.98	8.19	9.45	10.71	11.97
		40	4.85	5.92	7.09	8.32	9.60	10.89	12.18
		35	4.88	5.95	7.11	8.34	9.60	10.89	12.16
		30	4.89	5.92	7.04	8.23	9.46	10.70	11.94
		25	4.86	5.82	6.87	7.99	9.16	-	-
		20	4.81	5.67	6.62	7.64	-	-	-
		15	4.73	5.46	-	-	-	-	-
10		4.62	-	-	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-
		50	2.54	2.61	2.67	2.70	2.72	2.73	2.72
		45	2.24	2.31	2.35	2.38	2.39	2.38	2.36
		40	1.99	2.04	2.08	2.09	2.09	2.08	2.05
		35	1.78	1.82	1.84	1.85	1.84	1.81	1.77
		30	1.60	1.63	1.64	1.64	1.62	1.59	1.53
		25	1.46	1.48	1.48	1.47	1.44	-	-
		20	1.34	1.35	1.35	1.32	-	-	-
	15	1.26	1.26	-	-	-	-	-	
10	1.19	-	-	-	-	-	-		
Q (kW)	@ 75Hz	60	10.18	12.38	14.85	17.58	20.53	23.69	27.01
		55	10.59	12.93	15.54	18.40	21.49	24.78	28.25
		50	10.95	13.39	16.11	19.08	22.27	25.67	29.24
		45	11.24	13.76	16.55	19.60	22.87	26.34	29.98
		40	11.48	14.04	16.87	19.96	23.28	26.80	30.49
		35	11.65	14.23	17.08	20.18	23.51	27.04	30.74
		30	11.77	14.33	17.16	20.25	23.56	27.07	30.76
		25	11.83	14.34	17.12	20.16	23.43	-	-
		20	11.82	14.25	16.96	19.93	-	-	-
		15	11.76	14.08	-	-	-	-	-
10		11.64	-	-	-	-	-	-	
P (kW)		60	7.11	7.41	7.72	8.05	8.39	8.74	9.11
		55	6.45	6.74	7.04	7.36	7.69	8.03	8.39
		50	5.87	6.15	6.44	6.75	7.07	7.40	7.75
		45	5.35	5.62	5.90	6.20	6.51	6.83	7.17
		40	4.90	5.16	5.43	5.72	6.02	6.33	6.66
		35	4.51	4.76	5.03	5.30	5.59	5.89	6.21
		30	4.18	4.42	4.68	4.94	5.22	5.52	5.82
		25	3.91	4.14	4.39	4.64	4.91	-	-
		20	3.69	3.91	4.15	4.39	-	-	-
	15	3.53	3.74	-	-	-	-	-	
10	3.41	-	-	-	-	-	-		
Q (kW)	@ 100Hz	60	13.09	15.96	19.21	22.82	26.75	30.99	35.50
		55	13.65	16.67	20.07	23.83	27.91	32.29	36.95
		50	14.13	17.27	20.79	24.66	28.86	33.37	38.14
		45	14.54	17.77	21.37	25.33	29.62	34.21	39.07
		40	14.87	18.15	21.82	25.83	30.18	34.82	39.74
		35	15.13	18.43	22.12	26.16	30.53	35.21	40.15
		30	15.31	18.61	22.29	26.33	30.69	35.36	40.30
		25	15.41	18.67	22.32	26.32	30.65	-	-
		20	15.43	18.63	22.22	26.15	-	-	-
		15	15.38	18.49	-	-	-	-	-
10		15.26	-	-	-	-	-	-	
P (kW)		60	9.62	10.11	10.62	11.17	11.75	12.35	12.99
		55	8.82	9.29	9.80	10.34	10.90	11.50	12.13
		50	8.10	8.56	9.06	9.59	10.14	10.73	11.35
		45	7.46	7.92	8.40	8.92	9.47	10.04	10.65
		40	6.90	7.35	7.82	8.33	8.87	9.43	10.03
		35	6.41	6.85	7.32	7.81	8.34	8.90	9.48
		30	6.00	6.43	6.89	7.37	7.89	8.43	9.01
		25	5.66	6.08	6.52	7.00	7.51	-	-
		20	5.39	5.79	6.23	6.69	-	-	-
	15	5.17	5.57	-	-	-	-	-	
10	5.02	-	-	-	-	-	-		

Note:

1. Return gas temperature 18.3°C
2. Power data does not include power of drive

ZFW030DE-4X9, ZFW030DE-5X9

ZFW030DE R-404A		CT (°C)	ET (°C)								
			-40	-35	-30	-25	-20	-15	-10	-5	0
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	1.78	2.13	2.51	2.89	3.29
		45	0.71	0.94	1.20	1.51	1.84	2.21	2.61	3.03	3.46
		40	0.76	0.98	1.24	1.55	1.90	2.29	2.70	3.15	3.62
		35	0.80	1.01	1.28	1.59	1.95	2.35	2.79	3.27	3.77
		30	0.85	1.05	1.31	1.63	2.00	2.42	2.88	3.38	3.91
		25	0.89	1.09	1.35	1.67	2.05	2.48	2.96	3.48	-
		20	0.94	1.12	1.38	1.70	2.09	2.53	3.03	-	-
		15	0.99	1.16	1.41	1.74	2.13	2.58	-	-	-
10		1.03	1.20	1.44	1.76	2.16	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	1.13	1.13	1.15	1.18	1.24
		45	0.89	0.96	1.00	1.02	1.03	1.04	1.05	1.08	1.14
		40	0.79	0.87	0.91	0.93	0.93	0.94	0.95	0.98	1.04
		35	0.70	0.78	0.81	0.83	0.83	0.84	0.85	0.87	0.93
		30	0.62	0.69	0.73	0.74	0.74	0.74	0.75	0.77	0.82
		25	0.56	0.62	0.65	0.66	0.66	0.65	0.65	0.67	-
		20	0.50	0.56	0.59	0.59	0.58	0.57	0.57	-	-
	15	0.47	0.52	0.54	0.53	0.52	0.50	-	-	-	
10	0.45	0.50	0.51	0.50	0.47	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	4.20	5.03	5.92	6.86	7.85
		55	1.58	2.16	2.82	3.55	4.35	5.21	6.14	7.12	8.15
		50	1.67	2.26	2.93	3.68	4.50	5.39	6.35	7.37	8.45
		45	1.77	2.36	3.04	3.80	4.64	5.56	6.55	7.61	8.73
		40	1.86	2.46	3.15	3.92	4.78	5.73	6.75	7.84	9.01
		35	1.96	2.56	3.25	4.04	4.92	5.89	6.94	8.07	9.28
		30	2.06	2.66	3.36	4.16	5.06	6.05	7.13	8.29	9.54
		25	2.16	2.76	3.46	4.28	5.19	6.20	7.31	8.51	-
		20	2.26	2.86	3.57	4.39	5.32	6.35	7.49	-	-
		15	2.37	2.96	3.67	4.50	5.44	6.50	-	-	-
10		2.47	3.06	3.77	4.61	5.57	-	-	-	-	
P (kW)		60	-	-	-	-	3.19	3.23	3.27	3.32	3.39
		55	2.60	2.73	2.83	2.89	2.94	2.97	3.01	3.06	3.14
		50	2.37	2.50	2.59	2.65	2.69	2.72	2.76	2.81	2.88
		45	2.14	2.27	2.35	2.41	2.45	2.48	2.51	2.55	2.62
		40	1.93	2.05	2.13	2.18	2.21	2.23	2.26	2.30	2.36
		35	1.73	1.84	1.91	1.96	1.99	2.00	2.02	2.06	2.11
		30	1.55	1.65	1.72	1.76	1.78	1.79	1.80	1.83	1.87
		25	1.39	1.48	1.54	1.57	1.58	1.58	1.59	1.61	-
		20	1.25	1.34	1.39	1.41	1.41	1.40	1.40	-	-
	15	1.14	1.22	1.26	1.27	1.26	1.24	-	-	-	
10	1.07	1.13	1.16	1.15	1.13	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	5.61	6.71	7.90	9.16	10.50
		55	2.19	2.94	3.80	4.76	5.81	6.94	8.17	9.48	10.86
		50	2.31	3.07	3.95	4.92	6.00	7.17	8.44	9.79	11.22
		45	2.43	3.21	4.10	5.09	6.19	7.40	8.70	10.09	11.57
		40	2.56	3.34	4.24	5.26	6.38	7.62	8.95	10.39	11.92
		35	2.68	3.47	4.39	5.42	6.57	7.83	9.20	10.68	12.25
		30	2.81	3.61	4.53	5.58	6.75	8.04	9.44	10.96	12.58
		25	2.94	3.74	4.68	5.74	6.93	8.25	9.68	11.23	-
		20	3.07	3.88	4.82	5.90	7.11	8.45	9.91	-	-
		15	3.21	4.01	4.96	6.05	7.28	8.64	-	-	-
10		3.34	4.14	5.10	6.20	7.45	-	-	-	-	
P (kW)		60	-	-	-	-	4.19	4.25	4.31	4.38	4.47
		55	3.40	3.57	3.69	3.78	3.85	3.91	3.97	4.03	4.12
		50	3.09	3.25	3.37	3.46	3.52	3.57	3.63	3.68	3.76
		45	2.80	2.95	3.06	3.14	3.20	3.25	3.29	3.34	3.42
		40	2.52	2.67	2.77	2.84	2.89	2.93	2.97	3.01	3.08
		35	2.26	2.40	2.50	2.56	2.60	2.63	2.66	2.70	2.76
		30	2.03	2.16	2.24	2.30	2.33	2.35	2.37	2.40	2.45
		25	1.82	1.94	2.01	2.06	2.08	2.09	2.10	2.12	-
		20	1.64	1.75	1.81	1.84	1.85	1.85	-	-	-
	15	1.50	1.59	1.64	1.66	1.66	1.64	-	-	-	
10	1.39	1.47	1.50	1.51	1.49	-	-	-	-		

Note:

1. Return gas temperature 0°C at evaporating temperature below -20°C
2. Return gas temperature 18.3°C at evaporating temperature above -20°C
3. Power data does not include power of drive

ZFW038DE-4X9, ZFW038DE-5X9

ZFW038DE R-404A		CT (°C)	ET (°C)								
			-40	-35	-30	-25	-20	-15	-10	-5	0
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	2.29	2.74	3.21	3.71	4.21
		45	-	-	1.55	1.95	2.39	2.86	3.36	3.89	4.44
		40	0.97	1.26	1.62	2.02	2.47	2.96	3.50	4.06	4.66
		35	1.03	1.32	1.67	2.08	2.55	3.06	3.62	4.22	4.86
		30	1.09	1.37	1.72	2.14	-	3.15	3.74	4.37	5.05
		25	1.15	1.42	1.77	2.19	2.67	3.23	3.84	4.51	-
		20	1.21	1.46	1.81	2.23	2.73	3.30	3.94	-	-
		15	1.26	1.50	1.84	2.26	2.77	3.36	-	-	-
10		1.31	1.54	1.87	2.29	2.81	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	1.43	1.44	1.47	1.51	1.59
		45	-	-	1.27	1.30	1.32	1.33	1.35	1.39	1.47
		40	1.00	1.09	1.15	1.18	1.19	1.20	1.22	1.26	1.33
		35	0.88	0.97	1.03	1.05	1.07	1.07	1.09	1.12	1.19
		30	0.78	0.86	0.91	0.93	0.94	0.94	0.95	0.98	1.04
		25	0.69	0.77	0.81	0.83	0.83	0.82	0.83	0.85	-
		20	0.62	0.69	0.73	0.73	0.73	0.72	0.71	-	-
	15	0.58	0.64	0.67	0.67	0.65	0.63	-	-	-	
10	0.57	0.63	0.64	0.63	0.60	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	5.34	6.40	7.54	8.76	10.04
		55	-	-	-	-	5.54	6.64	7.83	9.09	10.43
		50	-	-	3.76	4.70	5.74	6.88	8.11	9.42	10.82
		45	2.33	3.06	3.91	4.86	5.93	7.10	8.38	9.74	11.20
		40	2.45	3.19	4.05	5.03	6.12	7.33	8.64	10.06	11.57
		35	2.58	3.32	4.19	5.18	6.30	7.54	8.90	10.36	11.93
		30	2.70	3.44	4.32	5.34	6.48	7.75	9.14	10.65	12.28
		25	2.82	3.57	4.45	5.49	6.65	7.96	9.39	10.94	-
		20	2.95	3.69	4.59	5.63	6.82	8.15	9.62	-	-
		15	3.07	3.81	4.71	5.77	6.98	8.34	-	-	-
10		3.19	3.93	4.84	5.91	7.14	-	-	-	-	
P (kW)		60	-	-	-	-	4.01	4.08	4.15	4.23	4.34
		55	-	-	-	-	3.71	3.78	3.84	3.92	4.03
		50	-	-	3.25	3.34	3.41	3.47	3.53	3.60	3.71
		45	2.68	2.84	2.95	3.03	3.10	3.15	3.21	3.28	3.38
		40	2.40	2.55	2.66	2.74	2.79	2.84	2.89	2.95	3.04
		35	2.14	2.29	2.39	2.46	2.50	2.54	2.58	2.64	2.72
		30	1.91	2.04	2.13	2.19	2.23	2.26	2.29	2.34	2.41
		25	1.70	1.83	1.91	1.95	1.98	2.00	2.02	2.05	-
		20	1.54	1.65	1.72	1.75	1.77	1.77	1.78	-	-
	15	1.41	1.51	1.56	1.59	1.59	1.58	-	-	-	
10	1.34	1.42	1.46	1.47	1.45	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	7.21	8.65	10.22	11.90	13.68
		55	-	-	-	-	7.47	8.96	10.58	12.32	14.17
		50	-	-	5.07	6.33	7.73	9.27	10.94	12.73	14.64
		45	3.14	4.12	5.26	6.55	7.99	9.57	11.29	13.14	15.12
		40	3.30	4.30	5.46	6.78	8.25	9.87	11.63	13.54	15.58
		35	3.47	4.48	5.65	6.99	8.50	10.16	11.97	13.93	16.03
		30	3.64	4.65	5.85	7.21	8.75	10.44	12.30	14.31	16.48
		25	3.80	4.83	6.04	7.43	8.99	10.73	12.63	14.69	-
		20	3.97	5.00	6.23	7.64	9.23	11.00	12.95	-	-
		15	4.14	5.18	6.42	7.85	9.47	11.27	-	-	-
10		4.31	5.35	6.60	8.05	9.70	-	-	-	-	
P (kW)		60	-	-	-	-	5.30	5.40	5.49	5.61	5.74
		55	-	-	-	-	4.88	4.97	5.06	5.17	5.30
		50	-	-	4.24	4.36	4.46	4.55	4.63	4.73	4.85
		45	3.51	3.70	3.85	3.96	4.05	4.13	4.20	4.29	4.40
		40	3.15	3.33	3.47	3.57	3.65	3.72	3.79	3.87	3.97
		35	2.81	2.98	3.11	3.20	3.27	3.33	3.39	3.45	3.55
		30	2.51	2.67	2.79	2.87	2.92	2.97	3.01	3.07	3.14
		25	2.24	2.39	2.50	2.56	2.61	2.64	2.67	2.71	-
		20	2.03	2.16	2.25	2.30	2.33	2.34	2.36	-	-
	15	1.86	1.98	2.05	2.09	2.10	2.10	-	-	-	
10	1.75	1.85	1.91	1.93	1.92	-	-	-	-		

Note:

1. Return gas temperature 0°C at evaporating temperature below -20°C
2. Return gas temperature 18.3°C at evaporating temperature above -20°C
3. Power data does not include power of drive

ZFW046HE-4X9, ZFW046HE-5X9

ZFW046HE R-404A		CT (°C)	ET (°C)								
			-40	-35	-30	-25	-20	-15	-10	-5	0
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	3.25	3.86	4.51	5.17	5.84
		45	1.61	1.82	2.19	2.68	3.26	3.90	4.59	5.30	5.99
		40	1.56	1.80	2.18	2.69	3.29	3.95	4.66	5.39	6.10
		35	1.60	1.84	2.23	2.73	3.34	4.01	4.72	5.44	6.17
		30	1.72	1.95	2.32	2.82	3.41	4.06	4.76	5.47	6.18
		25	1.94	2.13	2.48	2.94	3.50	4.12	4.79	5.47	-
		20	2.24	2.39	2.68	3.10	3.61	4.18	4.80	5.44	-
		15	2.63	2.71	2.94	3.29	3.74	4.25	-	-	-
10		3.11	3.11	3.26	3.53	3.89	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	1.68	1.74	1.77	1.80	1.81
		45	1.22	1.30	1.38	1.44	1.50	1.54	1.57	1.59	1.59
		40	1.08	1.16	1.23	1.29	1.34	1.37	1.39	1.40	1.40
		35	0.97	1.04	1.10	1.16	1.20	1.22	1.24	1.24	1.23
		30	0.89	0.95	1.01	1.04	1.08	1.10	1.10	1.10	1.08
		25	0.82	0.88	0.92	0.96	0.98	0.99	0.99	0.98	-
		20	0.78	0.83	0.87	0.89	0.91	0.91	0.90	0.89	-
	15	0.76	0.80	0.83	0.85	0.86	0.85	-	-	-	
10	0.76	0.80	0.82	0.83	0.83	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	6.78	8.17	9.69	11.30	13.03
		55	3.13	3.80	4.71	5.83	7.14	8.60	10.20	11.90	13.67
		50	3.21	3.94	4.90	6.08	7.43	8.95	10.60	12.35	14.19
		45	3.31	4.08	5.08	6.29	7.68	9.23	10.90	12.70	14.58
		40	3.43	4.21	5.23	6.46	7.88	9.45	11.15	12.95	14.86
		35	3.56	4.34	5.37	6.60	8.02	9.59	11.30	13.10	15.01
		30	3.70	4.48	5.49	6.71	8.11	9.67	11.35	13.15	15.05
		25	3.87	4.61	5.59	6.78	8.15	9.68	11.35	13.10	-
		20	4.05	4.74	5.67	6.81	8.14	9.62	11.25	12.95	-
		15	4.24	4.87	5.74	6.81	8.07	9.49	-	-	-
10		4.45	5.00	5.78	6.78	7.95	-	-	-	-	
P (kW)		60	-	-	-	-	4.60	4.81	5.02	5.24	5.47
		55	3.52	3.68	3.85	4.03	4.22	4.41	4.62	4.83	5.05
		50	3.21	3.36	3.52	3.69	3.87	4.06	4.25	4.46	4.68
		45	2.92	3.07	3.22	3.38	3.56	3.74	3.93	4.13	4.33
		40	2.68	2.81	2.96	3.12	3.28	3.45	3.64	3.83	4.02
		35	2.47	2.60	2.74	2.88	3.04	3.21	3.38	3.56	3.76
		30	2.29	2.42	2.55	2.69	2.84	2.99	3.16	3.34	3.52
		25	2.16	2.27	2.39	2.53	2.67	2.82	2.98	3.15	-
		20	2.05	2.16	2.28	2.40	2.54	2.68	2.83	2.99	-
	15	1.99	2.09	2.20	2.31	2.44	2.58	-	-	-	
10	1.96	2.05	2.15	2.26	2.38	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	8.59	10.40	12.40	14.55	16.86
		55	3.93	4.83	6.02	7.47	9.15	11.05	13.10	15.35	17.71
		50	4.18	5.14	6.38	7.89	9.63	11.55	13.70	15.95	18.40
		45	4.41	5.41	6.69	8.23	10.00	12.00	14.15	16.45	18.92
		40	4.62	5.63	6.94	8.50	10.30	12.30	14.45	16.80	19.29
		35	4.80	5.82	7.13	8.69	10.50	12.50	14.65	17.00	19.50
		30	4.96	5.97	7.26	8.81	10.60	12.60	14.75	17.05	19.55
		25	5.10	6.07	7.33	8.85	10.60	12.55	14.70	17.00	-
		20	5.21	6.13	7.34	8.81	10.50	12.45	14.50	16.75	-
		15	5.29	6.15	7.30	8.71	10.35	12.20	-	-	-
10		5.36	6.13	7.20	8.52	10.10	-	-	-	-	
P (kW)		60	-	-	-	-	6.23	6.56	6.91	7.28	7.66
		55	4.69	4.92	5.18	5.46	5.76	6.08	6.42	6.79	7.16
		50	4.29	4.52	4.77	5.05	5.34	5.65	5.98	6.34	6.71
		45	3.94	4.16	4.41	4.67	4.96	5.26	5.59	5.93	6.29
		40	3.63	3.85	4.08	4.34	4.62	4.91	5.23	5.57	5.93
		35	3.36	3.57	3.80	4.05	4.32	4.61	4.92	5.25	5.60
		30	3.14	3.34	3.56	3.81	4.07	4.35	4.65	4.98	5.32
		25	2.96	3.16	3.37	3.61	3.86	4.14	4.43	4.75	-
		20	2.83	3.02	3.22	3.45	3.70	3.96	4.25	4.56	-
	15	2.74	2.92	3.11	3.33	3.57	3.83	-	-	-	
10	2.69	2.86	3.05	3.26	3.50	-	-	-	-		

Note:

1. Return gas temperature 0°C at evaporating temperature below -20°C
2. Return gas temperature 18.3°C at evaporating temperature above -20°C
3. Power data does not include power of drive

ZFW062QE-4X9, ZFW062QE-5X9

ZFW062QE R-404A		CT (°C)	ET (°C)								
			-40	-35	-30	-25	-20	-15	-10	-5	0
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	3.71	4.57	5.53	6.56	7.63
		45	-	2.13	2.49	3.05	3.79	4.67	5.65	6.70	7.79
		40	-	2.29	2.64	3.20	3.94	4.81	5.79	6.84	7.92
		35	-	2.62	2.94	3.47	4.17	5.02	5.97	6.99	8.04
		30	-	3.11	3.37	3.85	4.50	5.30	6.19	7.16	8.15
		25	-	3.78	3.97	4.37	4.94	5.66	6.47	7.36	-
		20	-	4.65	4.73	5.03	5.50	6.11	6.82	-	-
		15	-	5.72	5.68	5.84	6.19	6.67	-	-	-
10		-	7.00	6.81	6.82	7.01	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	2.29	2.40	2.47	2.50	2.52
		45	-	1.44	1.71	1.91	2.05	2.14	2.20	2.23	2.24
		40	-	1.29	1.53	1.71	1.84	1.91	1.96	1.98	1.98
		35	-	1.17	1.39	1.54	1.65	1.71	1.74	1.75	1.75
		30	-	1.07	1.26	1.40	1.49	1.54	1.56	1.55	1.54
		25	-	0.99	1.17	1.28	1.35	1.39	1.39	1.38	-
		20	-	0.94	1.09	1.19	1.25	1.27	1.26	-	-
	15	-	0.92	1.05	1.13	1.17	1.17	-	-	-	
10	-	0.93	1.03	1.09	1.11	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	8.94	10.69	12.67	14.83	17.14
		55	4.72	5.35	6.34	7.66	9.27	11.14	13.22	15.50	17.92
		50	4.66	5.38	6.46	7.86	9.56	11.52	13.69	16.05	18.56
		45	4.66	5.45	6.59	8.06	9.83	11.84	14.08	16.50	19.08
		40	4.75	5.58	6.76	8.27	10.07	12.13	14.41	16.87	19.48
		35	4.93	5.77	6.97	8.50	10.31	12.38	14.67	17.15	19.77
		30	5.22	6.05	7.24	8.76	10.56	12.62	14.90	17.36	19.97
		25	5.63	6.42	7.58	9.06	10.83	12.85	15.09	17.52	-
		20	6.16	6.90	7.99	9.41	11.12	13.08	15.26	-	-
		15	6.84	7.49	8.50	9.83	11.45	13.33	-	-	-
10		7.66	8.20	9.10	10.32	11.84	-	-	-	-	
P (kW)		60	-	-	-	-	6.50	6.69	6.88	7.08	7.29
		55	5.02	5.29	5.53	5.74	5.93	6.11	6.30	6.49	6.71
		50	4.56	4.81	5.03	5.23	5.41	5.59	5.77	5.96	6.18
		45	4.15	4.38	4.59	4.77	4.94	5.11	5.29	5.48	5.70
		40	3.78	4.00	4.19	4.36	4.52	4.69	4.86	5.05	5.28
		35	3.47	3.67	3.84	4.00	4.15	4.31	4.48	4.68	4.90
		30	3.20	3.38	3.54	3.69	3.84	3.99	4.16	4.35	4.58
		25	2.98	3.15	3.30	3.43	3.57	3.72	3.88	4.08	-
		20	2.81	2.97	3.10	3.23	3.36	3.50	3.66	-	-
	15	2.70	2.83	2.96	3.07	3.20	3.33	-	-	-	
10	2.63	2.75	2.86	2.97	3.09	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	11.31	13.62	16.22	19.07	22.13
		55	5.68	6.63	8.02	9.79	11.92	14.37	17.10	20.09	23.28
		50	5.74	6.82	8.31	10.20	12.44	15.00	17.85	20.94	24.25
		45	5.83	6.99	8.58	10.55	12.88	15.53	18.46	21.65	25.04
		40	5.96	7.18	8.83	10.87	13.26	15.97	18.96	22.21	25.66
		35	6.13	7.39	9.07	11.15	13.58	16.33	19.36	22.64	26.13
		30	6.35	7.62	9.32	11.41	13.85	16.62	19.66	22.95	26.46
		25	6.64	7.90	9.59	11.67	14.10	16.85	19.88	23.16	-
		20	7.01	8.23	9.89	11.93	14.32	17.03	20.03	-	-
		15	7.46	8.63	10.22	12.20	14.53	17.18	-	-	-
10		8.02	9.10	10.61	12.50	14.75	-	-	-	-	
P (kW)		60	-	-	-	-	8.64	8.96	9.30	9.68	10.10
		55	6.76	7.06	7.36	7.65	7.95	8.27	8.61	8.99	9.42
		50	6.17	6.46	6.74	7.03	7.32	7.64	7.99	8.37	8.81
		45	5.64	5.92	6.19	6.47	6.76	7.08	7.42	7.81	8.26
		40	5.18	5.44	5.71	5.98	6.26	6.58	6.93	7.32	7.77
		35	4.77	5.03	5.28	5.55	5.83	6.14	6.49	6.89	7.35
		30	4.43	4.68	4.92	5.18	5.46	5.77	6.13	6.53	6.99
		25	4.16	4.39	4.63	4.88	5.16	5.47	5.82	6.23	-
		20	3.95	4.17	4.40	4.64	4.92	5.23	5.59	-	-
	15	3.80	4.01	4.23	4.47	4.75	5.06	-	-	-	
10	3.72	3.92	4.13	4.37	4.64	-	-	-	-		

Note:

1. Return gas temperature 0°C at evaporating temperature below -20°C
2. Return gas temperature 18.3°C at evaporating temperature above -20°C
3. Power data does not include power of drive

ZFW080QE-4X9, ZFW080QE-5X9

ZFW080QE R-404A		CT (°C)	ET (°C)								
			-40	-35	-30	-25	-20	-15	-10	-5	0
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	5.26	6.25	7.31	8.39	9.45
		45	-	2.96	3.55	4.34	5.28	6.33	7.45	8.59	9.71
		40	-	2.91	3.54	4.36	5.33	6.41	7.56	8.73	9.88
		35	-	2.98	3.61	4.43	5.41	6.50	7.65	8.83	9.99
		30	-	3.16	3.77	4.57	5.52	6.59	7.72	8.87	10.01
		25	-	3.46	4.01	4.77	5.67	6.68	7.76	8.87	-
		20	-	3.87	4.35	5.02	5.85	6.79	7.79	-	-
		15	-	4.40	4.77	5.34	6.06	6.89	-	-	-
10		-	5.05	5.28	5.72	6.30	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	2.84	2.92	2.98	3.03	3.06
		45	-	2.20	2.33	2.43	2.52	2.59	2.64	2.68	2.69
		40	-	1.96	2.08	2.17	2.25	2.31	2.34	2.36	2.36
		35	-	1.76	1.86	1.95	2.01	2.06	2.08	2.09	2.08
		30	-	1.60	1.69	1.76	1.81	1.84	1.86	1.85	1.83
		25	-	1.48	1.56	1.61	1.65	1.67	1.67	1.65	-
		20	-	1.39	1.46	1.50	1.53	1.54	1.52	-	-
	15	-	1.35	1.40	1.43	1.45	1.44	-	-	-	
10	-	1.34	1.38	1.40	1.40	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	11.00	13.25	15.71	18.35	21.10
		55	5.07	6.17	7.64	9.46	11.57	13.94	16.51	19.26	22.13
		50	5.21	6.39	7.95	9.85	12.05	14.51	17.18	20.01	22.97
		45	5.37	6.61	8.23	10.19	12.46	14.97	17.70	20.59	23.61
		40	5.56	6.83	8.48	10.48	12.77	15.32	18.08	21.01	24.06
		35	5.77	7.04	8.70	10.71	13.00	15.56	18.32	21.25	24.31
		30	6.01	7.26	8.90	10.88	13.15	15.68	18.42	21.33	24.37
		25	6.27	7.47	9.06	10.99	13.21	15.69	18.38	21.24	-
		20	6.56	7.69	9.20	11.05	13.19	15.59	18.21	-	-
		15	6.88	7.90	9.30	11.05	13.09	15.38	-	-	-
10		7.22	8.11	9.38	10.99	12.90	-	-	-	-	
P (kW)		60	-	-	-	-	7.75	8.10	8.45	8.83	9.22
		55	5.94	6.21	6.49	6.79	7.10	7.43	7.78	8.14	8.52
		50	5.40	5.66	5.93	6.22	6.52	6.84	7.17	7.52	7.88
		45	4.92	5.17	5.43	5.70	5.99	6.30	6.62	6.95	7.30
		40	4.51	4.74	4.99	5.25	5.53	5.82	6.13	6.45	6.79
		35	4.16	4.37	4.61	4.86	5.12	5.40	5.70	6.01	6.33
		30	3.86	4.07	4.29	4.53	4.78	5.04	5.33	5.62	5.94
		25	3.63	3.82	4.03	4.26	4.49	4.75	5.02	5.30	-
		20	3.46	3.64	3.84	4.05	4.27	4.51	4.77	-	-
	15	3.35	3.52	3.70	3.90	4.11	4.34	-	-	-	
10	3.30	3.45	3.62	3.81	4.01	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	13.93	16.88	20.12	23.60	27.30
		55	6.37	7.83	9.76	12.11	14.84	17.91	21.26	24.86	28.67
		50	6.78	8.33	10.35	12.79	15.61	18.76	22.20	25.89	29.79
		45	7.15	8.77	10.85	13.34	16.22	19.43	22.94	26.69	30.64
		40	7.49	9.14	11.25	13.78	16.69	19.93	23.47	27.25	31.24
		35	7.79	9.44	11.55	14.09	17.00	20.25	23.79	27.58	31.57
		30	8.04	9.67	11.76	14.28	17.17	20.40	23.91	27.68	31.65
		25	8.26	9.84	11.88	14.35	17.19	20.36	23.83	27.54	-
		20	8.44	9.94	11.91	14.29	17.05	20.15	23.54	-	-
		15	8.58	9.98	11.84	14.11	16.77	19.76	-	-	-
10		8.68	9.95	11.67	13.82	16.34	-	-	-	-	
P (kW)		60	-	-	-	-	10.50	11.05	11.64	12.26	12.92
		55	7.89	8.30	8.73	9.20	9.71	10.25	10.82	11.43	12.07
		50	7.23	7.62	8.04	8.50	8.99	9.52	10.08	10.68	11.31
		45	6.63	7.01	7.42	7.87	8.35	8.86	9.41	9.99	10.61
		40	6.11	6.48	6.88	7.31	7.78	8.28	8.81	9.38	9.99
		35	5.67	6.02	6.40	6.82	7.28	7.77	8.29	8.85	9.44
		30	5.29	5.63	6.01	6.41	6.85	7.33	7.84	8.39	8.97
		25	4.99	5.32	5.68	6.07	6.50	6.97	7.46	8.00	-
		20	4.77	5.08	5.43	5.81	6.23	6.68	7.16	-	-
	15	4.61	4.91	5.25	5.62	6.02	6.46	-	-	-	
10	4.53	4.82	5.14	5.50	5.89	-	-	-	-		

Note:

1. Return gas temperature 0°C at evaporating temperature below -20°C
2. Return gas temperature 18.3°C at evaporating temperature above -20°C
3. Power data does not include power of drive

ZFW030DE-4X9, ZFW030DE-5X9

ZFW030DE R-448A/ R-449A		CT (°C)	ET (°C)								
			-40	-35	-30	-25	-20	-15	-10	-5	0
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	1.53	1.81	2.11	2.43	2.76
		45	-	-	1.02	1.27	1.55	1.85	2.17	2.52	2.89
		40	0.62	0.82	1.04	1.30	1.58	1.90	2.25	2.63	3.04
		35	0.66	0.85	1.07	1.34	1.63	1.97	2.34	2.75	3.19
		30	0.71	0.89	1.11	1.38	1.69	2.04	2.44	2.87	3.35
		25	0.76	0.93	1.15	1.42	1.74	2.11	2.53	2.99	-
		20	0.81	0.97	1.18	1.46	1.79	2.17	2.60	-	-
		15	0.84	0.99	1.20	1.47	1.81	2.21	-	-	-
10		0.84	0.98	1.19	1.47	1.81	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	0.96	0.99	1.01	1.03	1.04
		45	-	-	0.85	0.87	0.90	0.92	0.94	0.95	0.96
		40	0.71	0.75	0.77	0.80	0.82	0.84	0.85	0.86	0.87
		35	0.64	0.67	0.70	0.72	0.74	0.75	0.76	0.77	0.77
		30	0.57	0.59	0.62	0.63	0.65	0.66	0.67	0.68	0.68
		25	0.50	0.52	0.54	0.56	0.57	0.58	0.59	0.59	-
		20	0.45	0.47	0.48	0.49	0.50	0.51	0.51	-	-
	15	0.42	0.43	0.44	0.45	0.46	0.46	-	-	-	
10	0.41	0.42	0.43	0.43	0.44	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	3.58	4.26	4.99	5.78	6.61
		55	-	-	-	-	3.64	4.34	5.11	5.93	6.81
		50	-	-	2.44	3.05	3.72	4.46	5.26	6.12	7.04
		45	1.48	1.97	2.52	3.14	3.83	4.60	5.42	6.32	7.28
		40	1.57	2.06	2.62	3.25	3.96	4.75	5.61	6.54	7.54
		35	1.67	2.16	2.72	3.37	4.10	4.91	5.79	6.76	7.81
		30	1.78	2.26	2.83	3.49	4.23	5.06	5.98	6.98	8.07
		25	1.88	2.36	2.93	3.60	4.36	5.21	6.16	7.20	-
		20	1.96	2.44	3.02	3.70	4.47	5.35	6.32	-	-
		15	2.03	2.51	3.09	3.77	4.56	5.46	-	-	-
10		2.07	2.55	3.13	3.82	4.63	-	-	-	-	
P (kW)		60	-	-	-	-	2.72	2.78	2.82	2.85	2.87
		55	-	-	-	-	2.54	2.59	2.63	2.66	2.67
		50	-	-	2.22	2.29	2.35	2.39	2.43	2.45	2.46
		45	1.88	1.96	2.04	2.10	2.15	2.19	2.21	2.23	2.23
		40	1.70	1.78	1.84	1.90	1.94	1.97	2.00	2.01	2.00
		35	1.52	1.59	1.65	1.70	1.74	1.77	1.78	1.79	1.78
		30	1.36	1.42	1.48	1.52	1.55	1.57	1.58	1.58	1.57
		25	1.21	1.27	1.32	1.35	1.38	1.39	1.40	1.39	-
		20	1.09	1.14	1.18	1.21	1.23	1.24	1.24	-	-
	15	0.99	1.04	1.07	1.10	1.11	1.11	-	-	-	
10	0.94	0.98	1.01	1.02	1.03	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	4.77	5.71	6.72	7.81	8.97
		55	-	-	-	-	4.88	5.85	6.90	8.03	9.23
		50	-	-	3.29	4.11	5.02	6.02	7.10	8.27	9.53
		45	2.02	2.67	3.41	4.25	5.18	6.21	7.33	8.54	9.84
		40	2.14	2.79	3.55	4.40	5.36	6.41	7.56	8.81	10.16
		35	2.26	2.92	3.69	4.56	5.53	6.61	7.80	9.09	10.48
		30	2.39	3.05	3.83	4.71	5.71	6.82	8.03	9.36	10.80
		25	2.52	3.18	3.96	4.86	5.87	7.01	8.26	9.62	-
		20	2.63	3.29	4.08	4.99	6.02	7.18	8.46	-	-
		15	2.71	3.38	4.17	5.09	6.15	7.33	-	-	-
10		2.77	3.43	4.23	5.17	6.24	-	-	-	-	
P (kW)		60	-	-	-	-	3.61	3.68	3.74	3.78	3.80
		55	-	-	-	-	3.35	3.41	3.46	3.49	3.51
		50	-	-	2.92	3.01	3.08	3.13	3.18	3.20	3.21
		45	2.45	2.56	2.66	2.74	2.80	2.85	2.89	2.90	2.90
		40	2.21	2.31	2.40	2.48	2.53	2.57	2.60	2.61	2.60
		35	1.98	2.08	2.16	2.22	2.27	2.31	2.32	2.33	2.31
		30	1.77	1.86	1.93	1.99	2.03	2.05	2.06	2.06	2.04
		25	1.58	1.66	1.72	1.77	1.81	1.83	1.83	1.82	-
		20	1.42	1.49	1.55	1.59	1.62	1.63	1.62	-	-
	15	1.30	1.36	1.41	1.44	1.46	1.47	-	-	-	
10	1.22	1.28	1.32	1.34	1.35	-	-	-	-		

Note:

1. Return gas temperature 0°C at evaporating temperature below -20°C
2. Return gas temperature 18.3°C at evaporating temperature above -20°C
3. Power data does not include power of drive

ZFW038DE-4X9, ZFW038DE-5X9

ZFW038DE R-448A/ R-449A		CT (°C)	ET (°C)								
			-40	-35	-30	-25	-20	-15	-10	-5	0
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	4.79	5.75	6.78	7.90	9.10
		45	-	-	3.25	4.05	4.94	5.92	7.00	8.16	9.42
		40	2.04	2.65	3.37	4.19	5.10	6.12	7.23	8.44	9.74
		35	2.16	2.78	3.51	4.34	5.27	6.32	7.46	8.72	10.07
		30	2.29	2.91	3.64	4.49	5.44	6.51	7.69	8.99	10.39
		25	2.42	3.03	3.77	4.63	5.60	6.70	7.91	9.25	-
		20	2.53	3.14	3.88	4.75	5.74	6.86	8.11	-	-
		15	2.62	3.23	3.97	4.85	5.86	7.00	-	-	-
10		2.68	3.28	4.02	4.91	5.93	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	2.96	3.02	3.07	3.11	3.14
		45	-	-	2.55	2.63	2.70	2.76	2.80	2.83	2.85
		40	2.12	2.22	2.31	2.39	2.45	2.50	2.54	2.56	2.57
		35	1.90	2.00	2.08	2.15	2.20	2.25	2.28	2.29	2.30
		30	1.70	1.78	1.86	1.92	1.97	2.01	2.03	2.04	2.04
		25	1.51	1.59	1.66	1.72	1.76	1.79	1.81	1.81	-
		20	1.36	1.43	1.49	1.54	1.58	1.60	1.61	-	-
	15	1.24	1.30	1.36	1.40	1.43	1.44	-	-	-	
10	1.15	1.21	1.26	1.30	1.32	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	4.58	5.47	6.43	7.45	8.55
		55	-	-	-	-	4.67	5.59	6.59	7.66	8.81
		50	-	-	3.14	3.92	4.79	5.75	6.78	7.90	9.10
		45	1.92	2.54	3.25	4.05	4.94	5.92	7.00	8.16	9.42
		40	2.04	2.65	3.37	4.19	5.10	6.12	7.23	8.44	9.74
		35	2.16	2.78	3.51	4.34	5.27	6.32	7.46	8.72	10.07
		30	2.29	2.91	3.64	4.49	5.44	6.51	7.69	8.99	10.39
		25	2.42	3.03	3.77	4.63	5.60	6.70	7.91	9.25	-
		20	2.53	3.14	3.88	4.75	5.74	6.86	8.11	-	-
		15	2.62	3.23	3.97	4.85	5.86	7.00	-	-	-
10		2.68	3.28	4.02	4.91	5.93	-	-	-	-	
P (kW)		60	-	-	-	-	3.45	3.53	3.59	3.64	3.68
		55	-	-	-	-	3.21	3.28	3.34	3.38	3.41
		50	-	-	2.80	2.88	2.96	3.02	3.07	3.11	3.14
		45	2.35	2.46	2.55	2.63	2.70	2.76	2.80	2.83	2.85
		40	2.12	2.22	2.31	2.39	2.45	2.50	2.54	2.56	2.57
		35	1.90	2.00	2.08	2.15	2.20	2.25	2.28	2.29	2.30
		30	1.70	1.78	1.86	1.92	1.97	2.01	2.03	2.04	2.04
		25	1.51	1.59	1.66	1.72	1.76	1.79	1.81	1.81	-
		20	1.36	1.43	1.49	1.54	1.58	1.60	1.61	-	-
	15	1.24	1.30	1.36	1.40	1.43	1.44	-	-	-	
10	1.15	1.21	1.26	1.30	1.32	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	6.13	7.35	8.67	10.10	11.62
		55	-	-	-	-	6.28	7.54	8.91	10.39	11.97
		50	-	-	4.24	5.29	6.47	7.76	9.18	10.70	12.35
		45	2.61	3.44	4.39	5.47	6.68	8.01	9.46	11.04	12.74
		40	2.77	3.60	4.57	5.67	6.90	8.26	9.76	11.39	13.14
		35	2.93	3.77	4.75	5.87	7.13	8.52	10.06	11.73	13.54
		30	3.10	3.94	4.93	6.06	7.35	8.78	10.35	12.07	13.93
		25	3.26	4.10	5.10	6.25	7.56	9.01	10.63	12.39	-
		20	3.40	4.24	5.25	6.41	7.74	9.23	10.88	-	-
		15	3.51	4.35	5.37	6.55	7.90	9.41	-	-	-
10		3.59	4.43	5.45	6.64	8.01	-	-	-	-	
P (kW)		60	-	-	-	-	4.58	4.68	4.76	4.83	4.87
		55	-	-	-	-	4.24	4.33	4.40	4.46	4.50
		50	-	-	3.67	3.78	3.89	3.97	4.04	4.08	4.11
		45	3.06	3.21	3.34	3.45	3.54	3.61	3.67	3.71	3.73
		40	2.76	2.89	3.01	3.11	3.20	3.27	3.32	3.35	3.36
		35	2.47	2.59	2.70	2.80	2.87	2.93	2.97	3.00	3.00
		30	2.20	2.31	2.42	2.50	2.57	2.62	2.65	2.67	2.67
		25	1.95	2.06	2.16	2.23	2.29	2.33	2.36	2.37	-
		20	1.75	1.85	1.93	2.00	2.05	2.08	2.10	-	-
	15	1.58	1.67	1.75	1.81	1.85	1.87	-	-	-	
10	1.46	1.54	1.61	1.66	1.69	-	-	-	-		

Note:

1. Return gas temperature 0°C at evaporating temperature below -20°C
2. Return gas temperature 18.3°C at evaporating temperature above -20°C
3. Power data does not include power of drive

ZFW046HE-4X9, ZFW046HE-5X9

ZFW046HE R-448A/ R-449A		CT (°C)	ET (°C)								
			-40	-35	-30	-25	-20	-15	-10	-5	0
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	3.04	3.68	4.39	5.14	5.92
		45	1.34	1.60	2.00	2.50	3.10	3.78	4.52	5.30	6.12
		40	1.32	1.60	2.01	2.53	3.14	3.83	4.59	5.39	6.22
		35	1.36	1.64	2.04	2.55	3.16	3.85	4.60	5.40	6.23
		30	1.46	1.71	2.09	2.58	3.16	3.83	4.55	5.32	6.13
		25	1.62	1.83	2.16	2.61	3.15	3.77	4.45	5.17	-
		20	1.85	1.99	2.26	2.64	3.11	3.67	4.29	4.95	-
		15	2.13	2.19	2.37	2.67	3.06	3.53	-	-	-
10		2.48	2.43	2.51	2.70	2.99	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	1.55	1.59	1.62	1.65	1.66
		45	1.12	1.20	1.27	1.32	1.37	1.40	1.44	1.45	1.45
		40	0.99	1.06	1.12	1.18	1.22	1.25	1.27	1.28	1.28
		35	0.88	0.95	1.01	1.05	1.08	1.11	1.12	1.13	1.12
		30	0.80	0.86	0.91	0.95	0.98	0.99	1.01	1.00	0.99
		25	0.74	0.79	0.83	0.86	0.89	0.90	0.90	0.89	-
		20	0.69	0.74	0.78	0.80	0.82	0.82	0.82	0.81	-
	15	0.66	0.70	0.74	0.76	0.77	0.77	-	-	-	
10	0.65	0.69	0.71	0.72	0.73	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	6.59	8.01	9.61	11.40	13.31
		55	2.96	3.58	4.45	5.54	6.86	8.37	10.05	11.90	13.94
		50	2.92	3.60	4.54	5.70	7.09	8.67	10.45	12.35	14.44
		45	2.91	3.65	4.63	5.85	7.28	8.91	10.70	12.70	14.83
		40	2.95	3.71	4.73	5.97	7.43	9.09	10.90	12.90	15.09
		35	3.03	3.80	4.82	6.07	7.54	9.21	11.05	13.05	15.24
		30	3.14	3.91	4.92	6.16	7.62	9.27	11.10	13.10	15.28
		25	3.30	4.04	5.02	6.23	7.66	9.28	11.10	13.05	-
		20	3.51	4.19	5.12	6.28	7.65	9.23	11.00	12.90	-
		15	3.75	4.36	5.22	6.31	7.61	9.12	-	-	-
10		4.03	4.55	5.32	6.32	7.54	-	-	-	-	
P (kW)		60	-	-	-	-	4.33	4.52	4.71	4.91	5.11
		55	3.30	3.45	3.60	3.76	3.93	4.11	4.30	4.49	4.69
		50	2.97	3.11	3.26	3.41	3.58	3.75	3.93	4.11	4.31
		45	2.68	2.82	2.96	3.11	3.26	3.43	3.60	3.78	3.97
		40	2.43	2.56	2.69	2.84	2.99	3.15	3.31	3.49	3.67
		35	2.22	2.34	2.47	2.61	2.75	2.90	3.06	3.23	3.41
		30	2.05	2.16	2.28	2.41	2.55	2.70	2.85	3.01	3.18
		25	1.90	2.01	2.13	2.25	2.39	2.53	2.67	2.83	-
		20	1.80	1.90	2.01	2.13	2.25	2.39	2.53	2.68	-
	15	1.72	1.82	1.92	2.03	2.15	2.28	-	-	-	
10	1.67	1.76	1.86	1.96	2.08	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	8.47	10.35	12.45	14.75	17.35
		55	3.82	4.62	5.73	7.14	8.84	10.80	13.00	15.40	18.09
		50	3.83	4.70	5.89	7.38	9.15	11.20	13.45	15.95	18.71
		45	3.87	4.80	6.04	7.59	9.41	11.50	13.85	16.40	19.20
		40	3.94	4.90	6.19	7.77	9.63	11.75	14.10	16.70	19.57
		35	4.03	5.02	6.32	7.91	9.79	11.95	14.30	16.95	19.79
		30	4.16	5.14	6.44	8.03	9.91	12.05	14.45	17.05	19.90
		25	4.32	5.28	6.55	8.12	9.97	12.10	14.45	17.05	-
		20	4.51	5.43	6.66	8.18	9.99	12.05	14.40	16.95	-
		15	4.73	5.58	6.75	8.21	9.96	11.95	-	-	-
10		4.98	5.75	6.83	8.22	9.88	-	-	-	-	
P (kW)		60	-	-	-	-	5.87	6.16	6.48	6.81	7.16
		55	4.39	4.61	4.85	5.10	5.38	5.67	5.98	6.30	6.65
		50	3.98	4.19	4.42	4.67	4.94	5.22	5.53	5.85	6.18
		45	3.61	3.82	4.04	4.29	4.55	4.83	5.12	5.44	5.77
		40	3.30	3.50	3.72	3.95	4.21	4.48	4.77	5.08	5.40
		35	3.03	3.22	3.43	3.66	3.91	4.18	4.46	4.77	5.08
		30	2.80	2.99	3.19	3.42	3.66	3.92	4.20	4.50	4.81
		25	2.62	2.80	3.00	3.22	3.45	3.71	3.98	4.27	-
		20	2.47	2.65	2.84	3.05	3.28	3.53	3.80	4.08	-
	15	2.37	2.54	2.73	2.93	3.15	3.40	-	-	-	
10	2.30	2.46	2.65	2.84	3.06	-	-	-	-		

Note:

1. Return gas temperature 0°C at evaporating temperature below -20°C
2. Return gas temperature 18.3°C at evaporating temperature above -20°C
3. Power data does not include power of drive

ZFW062QE-4X9, ZFW062QE-5X9

ZFW062QE R-448A/ R-449A		CT (°C)	ET (°C)								
			-40	-35	-30	-25	-20	-15	-10	-5	0
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	2.24	2.90	3.68	4.56	5.55
		45	-	1.04	1.40	1.88	2.45	3.13	3.93	4.83	5.85
		40	-	1.18	1.54	2.02	2.61	3.30	4.11	5.04	6.07
		35	-	1.27	1.64	2.12	2.72	3.43	4.25	5.19	6.24
		30	-	1.33	1.70	2.19	2.79	3.51	4.34	5.29	6.36
		25	-	1.38	1.75	2.23	2.84	3.56	4.39	5.35	-
		20	-	1.42	1.78	2.26	2.86	3.58	4.42	5.39	-
		15	-	1.44	1.80	2.27	2.87	3.58	-	-	-
10		-	1.48	1.82	2.28	2.87	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	1.74	1.78	1.83	1.88	1.96
		45	-	1.35	1.44	1.50	1.56	1.60	1.64	1.69	1.76
		40	-	1.20	1.29	1.36	1.40	1.44	1.48	1.52	1.58
		35	-	1.07	1.16	1.22	1.26	1.30	1.32	1.36	1.39
		30	-	0.94	1.02	1.08	1.12	1.14	1.16	1.18	1.21
		25	-	0.81	0.88	0.93	0.96	0.98	0.98	0.99	-
		20	-	0.65	0.72	0.76	0.78	0.78	0.77	0.76	-
	15	-	0.46	0.52	0.55	0.55	0.54	-	-	-	
10	-	0.21	0.26	0.28	0.27	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	8.14	9.86	11.80	14.00	16.42
		55	3.78	4.60	5.65	6.93	8.45	10.20	12.20	14.40	16.84
		50	3.97	4.80	5.86	7.16	8.69	10.45	12.45	14.70	17.17
		45	4.11	4.95	6.02	7.33	8.87	10.65	12.65	14.95	17.43
		40	4.22	5.06	6.13	7.45	9.00	10.80	12.85	15.10	17.62
		35	4.29	5.13	6.21	7.53	9.09	10.90	12.95	15.25	17.76
		30	4.34	5.18	6.26	7.58	9.14	10.95	13.00	15.30	17.85
		25	4.38	5.21	6.29	7.60	9.17	11.00	13.05	15.35	-
		20	4.42	5.24	6.30	7.61	9.17	11.00	13.05	15.35	-
		15	4.45	5.26	6.31	7.61	9.17	10.95	-	-	-
10		4.50	5.29	6.32	7.61	9.16	-	-	-	-	
P (kW)		60	-	-	-	-	5.64	5.80	5.99	6.22	6.51
		55	4.67	4.77	4.87	4.99	5.12	5.28	5.46	5.69	5.97
		50	4.19	4.30	4.40	4.52	4.65	4.81	4.99	5.21	5.48
		45	3.77	3.87	3.98	4.10	4.23	4.38	4.56	4.77	5.03
		40	3.38	3.49	3.60	3.71	3.84	3.98	4.15	4.35	4.60
		35	3.02	3.13	3.23	3.34	3.46	3.60	3.76	3.95	4.18
		30	2.67	2.78	2.88	2.98	3.09	3.22	3.37	3.55	3.76
		25	2.33	2.42	2.52	2.61	2.71	2.83	2.96	3.13	-
		20	1.96	2.05	2.14	2.22	2.31	2.41	2.53	2.68	-
	15	1.57	1.66	1.72	1.80	1.88	1.96	-	-	-	
10	1.14	1.21	1.27	1.33	1.39	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	11.25	13.70	16.45	19.55	22.89
		55	4.73	6.00	7.57	9.44	11.60	14.10	16.90	20.00	23.36
		50	5.00	6.27	7.85	9.74	11.95	14.45	17.25	20.40	23.76
		45	5.21	6.50	8.08	9.98	12.20	14.70	17.50	20.70	24.09
		40	5.39	6.68	8.27	10.15	12.40	14.90	17.75	20.90	24.35
		35	5.55	6.83	8.42	10.35	12.55	15.10	17.95	21.10	24.55
		30	5.68	6.95	8.55	10.45	12.65	15.20	18.05	21.20	24.71
		25	5.80	7.07	8.65	10.55	12.75	15.30	18.15	21.40	-
		20	5.91	7.17	8.74	10.65	12.85	15.40	18.25	21.40	-
		15	6.03	7.27	8.83	10.70	12.95	15.45	-	-	-
10		6.16	7.38	8.93	10.80	13.00	-	-	-	-	
P (kW)		60	-	-	-	-	7.33	7.65	8.02	8.44	8.94
		55	5.80	6.00	6.22	6.47	6.75	7.07	7.43	7.85	8.34
		50	5.27	5.47	5.69	5.94	6.22	6.54	6.90	7.31	7.79
		45	4.79	5.00	5.22	5.47	5.74	6.05	6.41	6.81	7.28
		40	4.36	4.56	4.78	5.03	5.30	5.60	5.95	6.34	6.79
		35	3.95	4.16	4.37	4.61	4.87	5.17	5.51	5.89	6.32
		30	3.56	3.76	3.97	4.20	4.46	4.75	5.07	5.43	5.85
		25	3.17	3.37	3.57	3.79	4.04	4.31	4.62	4.97	-
		20	2.77	2.96	3.16	3.37	3.60	3.86	4.15	4.48	-
	15	2.35	2.53	2.71	2.91	3.12	3.37	-	-	-	
10	1.89	2.05	2.22	2.41	2.61	-	-	-	-		

Note:

1. Return gas temperature 0°C at evaporating temperature below -20°C
2. Return gas temperature 18.3°C at evaporating temperature above -20°C
3. Power data does not include power of drive

ZFW080QE-4X9, ZFW080QE-5X9

ZFW080QE R-448A/ R-449A		CT (°C)	ET (°C)								
			-40	-35	-30	-25	-20	-15	-10	-5	0
Q (kW)	@ 30Hz	60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	4.70	5.69	6.78	7.94	9.14
		45	-	2.48	3.08	3.86	4.79	5.84	6.98	8.19	9.45
		40	-	2.47	3.10	3.90	4.85	5.92	7.09	8.32	9.60
		35	-	2.53	3.15	3.94	4.88	5.95	7.11	8.34	9.60
		30	-	2.64	3.23	3.98	4.89	5.92	7.04	8.23	9.46
		25	-	2.83	3.34	4.03	4.86	5.82	6.87	7.99	-
		20	-	3.07	3.49	4.07	4.81	5.67	6.62	-	-
		15	-	3.38	3.66	4.12	4.73	5.46	-	-	-
10		-	3.75	3.87	4.17	4.62	-	-	-	-	
P (kW)		60	-	-	-	-	-	-	-	-	-
		55	-	-	-	-	-	-	-	-	-
		50	-	-	-	-	2.54	2.61	2.67	2.70	2.72
		45	-	1.96	2.07	2.17	2.24	2.31	2.35	2.38	2.39
		40	-	1.74	1.84	1.92	1.99	2.04	2.08	2.09	2.09
		35	-	1.56	1.65	1.72	1.78	1.82	1.84	1.85	1.84
		30	-	1.41	1.49	1.55	1.60	1.63	1.64	1.64	1.62
		25	-	1.30	1.37	1.42	1.46	1.48	1.48	1.47	-
		20	-	1.21	1.27	1.32	1.34	1.35	1.35	-	-
	15	-	1.16	1.21	1.24	1.26	1.26	-	-	-	
10	-	1.12	1.16	1.19	1.19	-	-	-	-		
Q (kW)	@ 75Hz	60	-	-	-	-	10.18	12.38	14.85	17.58	20.53
		55	4.57	5.53	6.87	8.57	10.59	12.93	15.54	18.40	21.49
		50	4.50	5.56	7.01	8.81	10.95	13.39	16.11	19.08	22.27
		45	4.50	5.63	7.15	9.03	11.24	13.76	16.55	19.60	22.87
		40	4.55	5.73	7.30	9.22	11.48	14.04	16.87	19.96	23.28
		35	4.67	5.87	7.45	9.38	11.65	14.23	17.08	20.18	23.51
		30	4.86	6.04	7.60	9.52	11.77	14.33	17.16	20.25	23.56
		25	5.10	6.24	7.75	9.62	11.83	14.34	17.12	20.16	-
		20	5.42	6.47	7.90	9.70	11.82	14.25	16.96	-	-
		15	5.79	6.73	8.06	9.75	11.76	14.08	-	-	-
10		6.23	7.03	8.22	9.76	11.64	-	-	-	-	
P (kW)		60	-	-	-	-	7.11	7.41	7.72	8.05	8.39
		55	5.42	5.66	5.91	6.17	6.45	6.74	7.04	7.36	7.69
		50	4.87	5.10	5.34	5.60	5.87	6.15	6.44	6.75	7.07
		45	4.40	4.62	4.85	5.09	5.35	5.62	5.90	6.20	6.51
		40	3.99	4.20	4.42	4.65	4.90	5.16	5.43	5.72	6.02
		35	3.64	3.84	4.05	4.28	4.51	4.76	5.03	5.30	5.59
		30	3.36	3.54	3.74	3.96	4.18	4.42	4.68	4.94	5.22
		25	3.12	3.30	3.49	3.70	3.91	4.14	4.39	4.64	-
		20	2.95	3.11	3.29	3.49	3.69	3.91	4.15	-	-
	15	2.82	2.98	3.15	3.33	3.53	3.74	-	-	-	
10	2.74	2.89	3.05	3.22	3.41	-	-	-	-		
Q (kW)	@ 100Hz	60	-	-	-	-	13.09	15.96	19.21	22.82	26.75
		55	5.90	7.14	8.86	11.04	13.65	16.67	20.07	23.83	27.91
		50	5.92	7.27	9.10	11.40	14.13	17.27	20.79	24.66	28.86
		45	5.98	7.41	9.34	11.72	14.54	17.77	21.37	25.33	29.62
		40	6.08	7.58	9.56	12.00	14.87	18.15	21.82	25.83	30.18
		35	6.23	7.75	9.76	12.23	15.13	18.43	22.12	26.16	30.53
		30	6.43	7.95	9.95	12.41	15.31	18.61	22.29	26.33	30.69
		25	6.68	8.16	10.12	12.55	15.41	18.67	22.32	26.32	-
		20	6.97	8.38	10.28	12.64	15.43	18.63	22.22	-	-
		15	7.31	8.62	10.43	12.69	15.38	18.49	-	-	-
10		7.69	8.88	10.56	12.69	15.26	-	-	-	-	
P (kW)		60	-	-	-	-	9.62	10.11	10.62	11.17	11.75
		55	7.20	7.56	7.95	8.37	8.82	9.29	9.80	10.34	10.90
		50	6.52	6.87	7.25	7.66	8.10	8.56	9.06	9.59	10.14
		45	5.93	6.26	6.63	7.03	7.46	7.92	8.40	8.92	9.47
		40	5.41	5.74	6.09	6.48	6.90	7.35	7.82	8.33	8.87
		35	4.96	5.28	5.63	6.01	6.41	6.85	7.32	7.81	8.34
		30	4.59	4.90	5.24	5.61	6.00	6.43	6.89	7.37	7.89
		25	4.29	4.59	4.92	5.27	5.66	6.08	6.52	7.00	-
		20	4.06	4.34	4.66	5.01	5.39	5.79	6.23	-	-
	15	3.88	4.16	4.47	4.81	5.17	5.57	-	-	-	
10	3.77	4.04	4.34	4.66	5.02	-	-	-	-		

Note:

1. Return gas temperature 0°C at evaporating temperature below -20°C
2. Return gas temperature 18.3°C at evaporating temperature above -20°C
3. Power data does not include power of drive

Medium temperature

Compressor Model			ZBW030DE	ZBW038DE	ZBV/ZBW046HE	ZBV/ZBW062QE	ZBV/ZBW080QE
Displacement	cc/rev		30	38	46	62	80
Refrigerant			R-404A/R-448A/R-449A				
Motor Type			BPM				
Voltage	4X9		380V/3ph				
Winding Resistance at 25°C		Ohm	0.460	0.521	0.576	0.380	0.263
Voltage	5X9		220V/3ph				
Winding Resistance at 25°C		Ohm	0.460	0.338	0.157	0.080	0.080
Oil Type			POE 32-3MAF				
Oil Quantity (initial)			1.63	1.63	1.18	1.89	1.89
Sound Power	@75Hz	dBA	75	75	75	80	80
Connection Size	Type		Brazing connection				
	Suction	inch	3/4	3/4	3/4	7/8	7/8
	Discharge		1/2	1/2	1/2	5/8	5/8
	Injection		3/8	3/8	NA / 1/2	NA / 3/8	NA / 3/8
Outline Dimension	Length	mm	195	195	201	246	246
	Width		225	225	231	246	246
	Height		425	425	393	426	426
Net Weight		kg	21.3	24.1	18.9	30.3	32.2
Terminal Box IP Grade			IP21				
Mounting Kits			527-0239-00	527-0239-00	527-0239-00	527-0239-01	527-0239-01

Low temperature

Compressor Model			ZFW030DE	ZFW038DE	ZFW046HE	ZFW062QE	ZFW080QE
Displacement	cc/rev		30	38	46	62	80
Refrigerant			R-404A/R-448A/R-449A				
Motor Type			BPM				
Voltage	4X9		380V/3ph				
Winding Resistance at 25°C		Ohm	0.460	0.521	0.576	0.380	0.263
Voltage	5X9		220V/3ph				
Winding Resistance at 25°C		Ohm	0.460	0.338	0.157	0.080	0.080
Oil Type			POE 32-3MAF				
Oil Quantity (initial)			1.63	1.63	1.18	1.89	1.89
Sound Power	@75Hz	dBA	75	75	75	80	80
Connection Size	Type		Brazing connection				
	Suction	inch	3/4	3/4	3/4	7/8	7/8
	Discharge		1/2	1/2	1/2	5/8	5/8
	Injection		3/8	3/8	1/2	3/8	3/8
Outline Dimension	Length	mm	195	195	201	246	246
	Width		225	225	231	246	246
	Height		425	425	393	426	426
Net Weight		kg	21.3	24.1	18.9	30.3	32.2
Terminal Box IP Grade			IP21				
Mounting Kits			527-0239-00	527-0239-00	527-0239-00	527-0239-01	527-0239-01

Ref variable speed compressor + drive combination

Application	Voltage	Comp	EVD Drive
MT Medium Pressure Refrigerants	3PH, 380V	ZBW030DE-4X9-573	EVD2110B-D1-111
		ZBW038DE-4X9-573	EVD2110B-D1-111
		ZBV046HE-4X9-558	EVD2110B-D1-111
		ZBW046HE-4X9-558	EVD2110B-D1-111
		ZBW050SE-4X9-558	EVD2110B-D1-111
		ZBV062QE-4X9-558	EVD2110B-D1-111
		ZBW062QE-4X9-558	EVD2110B-D1-111
		ZBV080QE-4X9-558	EVD2150B-D1-111
		ZBW080QE-4X9-558	EVD2150B-D1-111
	3PH, 220V	ZBW030DE-5X9-573	EVD1080B-J8-111
		ZBW038DE-5X9-573	EVD1080B-J8-111
		ZBV046HE-5X9-558	EVD1080B-J8-111
		ZBW046HE-5X9-558	EVD1080B-J8-111
		ZBW050SE-5X9-558	EVD1080B-J8-111
		ZBV062QE-5X9-558	EVD1110B-J8-111
		ZBW062QE-5X9-558	EVD1110B-J8-111
		ZBV080QE-5X9-558	EVD3150B-J8-111
		ZBW080QE-5X9-558	EVD3150B-J8-111
LT Medium Pressure Refrigerants	3PH, 380V	ZFW030DE-4X9-573	EVD2110B-D1-111
		ZFW038DE-4X9-573	EVD2110B-D1-111
		ZFW046HE-4X9-558	EVD2110B-D1-111
		ZFW050SE-4X9-558	EVD2110B-D1-111
		ZFW062QE-4X9-558	EVD2110B-D1-111
		ZFW080QE-4X9-558	EVD2150B-D1-111
	3PH, 220V	ZFW030DE-5X9-573	EVD1080B-J8-111
		ZFW038DE-5X9-573	EVD1080B-J8-111
		ZFW046HE-5X9-558	EVD1080B-J8-111
		ZFW050SE-5X9-558	EVD1080B-J8-111
		ZFW062QE-5X9-558	EVD1110B-J8-111
		ZFW080QE-5X9-558	EVD3150B-J8-111

Drive components

Drive Board	EVD1080B-J8-111	1
Capacitor Board	143-0088-00	1
Filter Board	143-0085-00	1
Choke	037-0094-00	1

Drive Board	EVD1110B-J8-111	1
Capacitor Board	143-0086-00	1
Filter Board	143-0085-00	1
Choke	037-0089-00	1

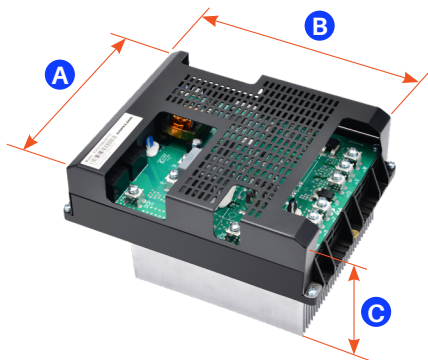
Drive Board	EVD2110B-D1-111	1
Capacitor Board	143-0094-00	1
Filter Board	143-0091-00	1
Choke	037-0094-00	1

Drive Board	EVD2150B-D1-111	1
Capacitor Board	143-0092-00	1
Filter Board	143-0091-00	1
Choke	037-0093-00	1

Drive Board	EVD3080B-C8-111	1
Capacitor Board	NA	NA
Filter Board	143-0097-00	1
Choke	037-0096-00	1

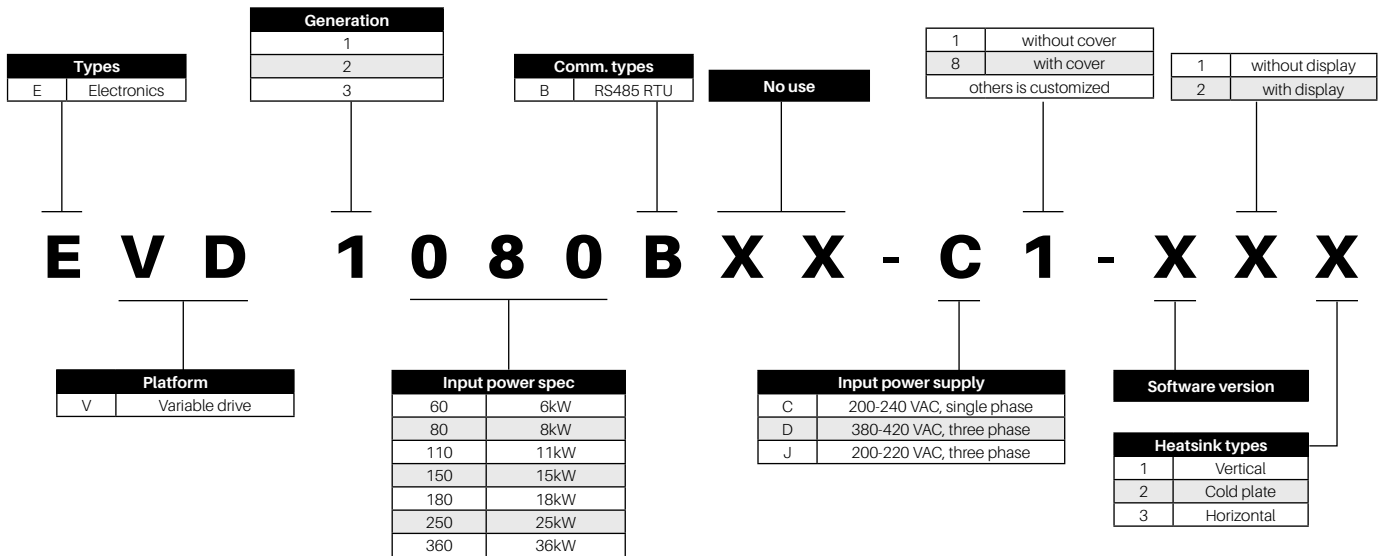
Drive Board	EVD3150B-J8-111	1
Capacitor Board	NA	NA
Filter Board	143-0137-00	1
Choke	037-0124-00	1

Dimensional detail



Dimension (mm)		
A	EVD1	195
	EVD2	195
	EVD3	178
B	EVD1	259
	EVD2	252
	EVD3	270
C	EVD1	125
	EVD2	124
	EVD3	139

Inverter drive nomenclature



Notes

[illegible]



About Copeland

Copeland is a global leader in sustainable heating, cooling, refrigeration and industrial solutions. We help commercial, industrial, refrigeration and residential customers reduce their carbon emissions and improve energy efficiency. We address issues like climate change, growing populations, electricity demands and complex global supply chains with innovations that advance the energy transition, accelerate the adoption of climate friendly low GWP (Global Warming Potential) and natural refrigerants, and safeguard the world's most critical goods through an efficient and sustainable cold chain. We have over 18,000 employees, with feet on the ground in 50 countries - a global presence that makes it possible to serve customers wherever they are in the world and meet challenges with scale and speed. Our industry-leading brands and diversified portfolio deliver innovation and technology proven in over 200 million installations worldwide. Together, we create sustainable solutions that improve lives and protect the planet today and for future generations.



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