

Copeland™ Scroll
ZBW/ZFW Variable Speed Compressors
for Refrigeration Solutions



COPELAND™


EMERSON™



Copeland™ scroll ZBW/ZFW variable speed solutions

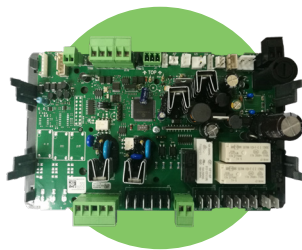
Emerson variable speed solutions were developed for our partners with specific requirements for variable capacity medium temperature and low temperature applications, such as convenient stores, supermarkets, process chilling and cold rooms.

The solution offering includes variable speed compressors, drives & controllers, as well as system components like EXVs, economizers, pressure transducers & temperature sensors tailored to the customer requirements.

With expertise of scroll compressor engineering and manufacturing combined with variable speed technology, Emerson provides a total integrated solution with value in matched and tuned drives, CoreSense diagnostics and vapor injection technology for a variety of Cold Chain applications.



ZBW/ZFW variable speed compressor & drive



CoreSense controller



System components (Optional)

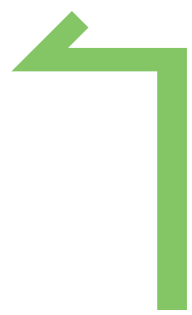


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Features and benefits

Variable speed advantage



Modulated capacity
high efficiency at part load



Low noise
operation



Accurate temperature
control for food safety



Wide input range
minimizes grid impact

Emerson variable speed solutions features



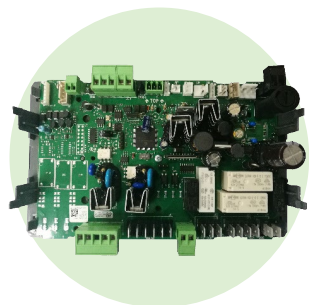
Drive

- Optimized for Copeland™ scroll compressors with customized parameter settings
- Plug and play compressor compatibility
- Built-in compressor protection further enhances reliability



ZBW/ZFW Variable speed compressor

- Wide operating envelope
- Robust design for refrigeration
- Enhanced vapor injection
- Highly efficient scroll & BPM motor



CoreSense controller

- Compressor envelope control
- Premium control algorithm for annual base energy savings
- Monitors operating conditions
- Compressor / power-supply / system protection
- System self-diagnostics for prolonged system operation
- Communication & intelligent store solution








System components

- Accurate pressure and temperature control
- Qualified for high reliability
- Optimized selection per customized needs

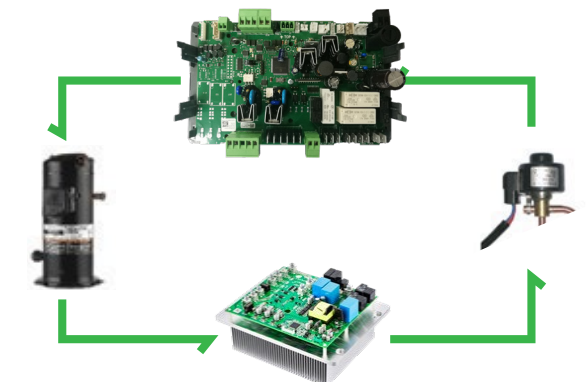


Emerson integrated solutions to meet customer needs

Customer pain points	Emerson 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 Emerson 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 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

Emerson integrated solutions team

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



Value for customers



Market-leading
system performance



Trusted Emerson brand
with decades of cold chain
solutions



Helping customers
respond quickly to
market demands



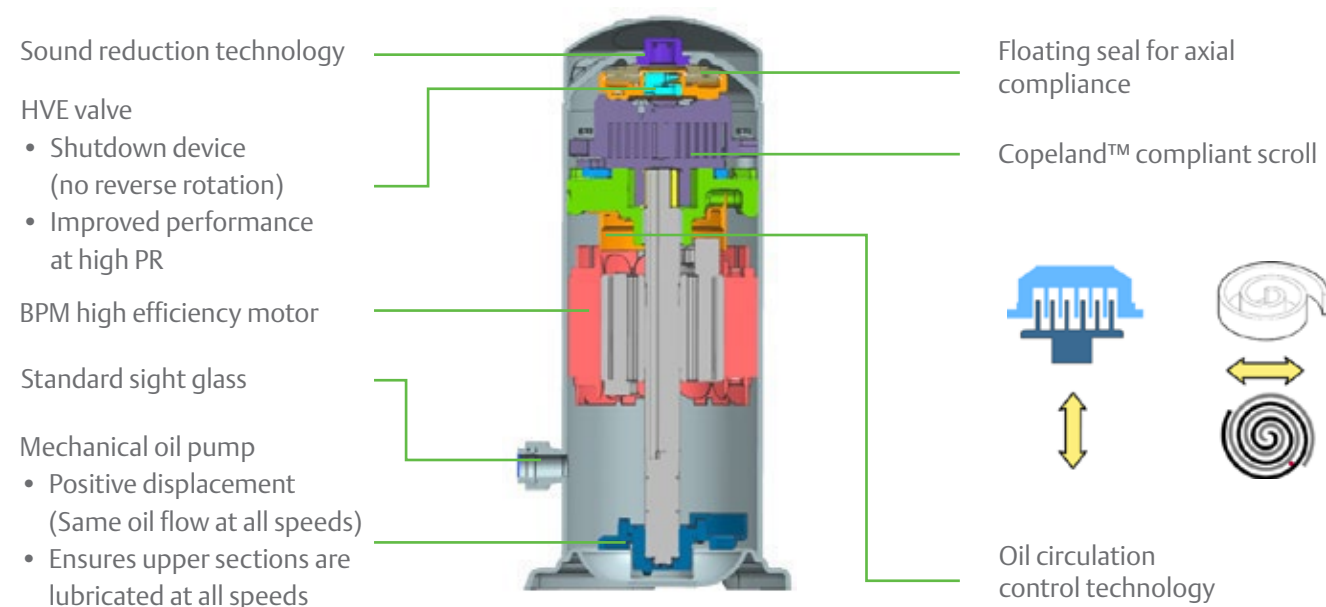
Higher unit reliability



On-site monitoring
continuously tracks
real-time performance



ZBW/ZFW variable speed compressor key design features

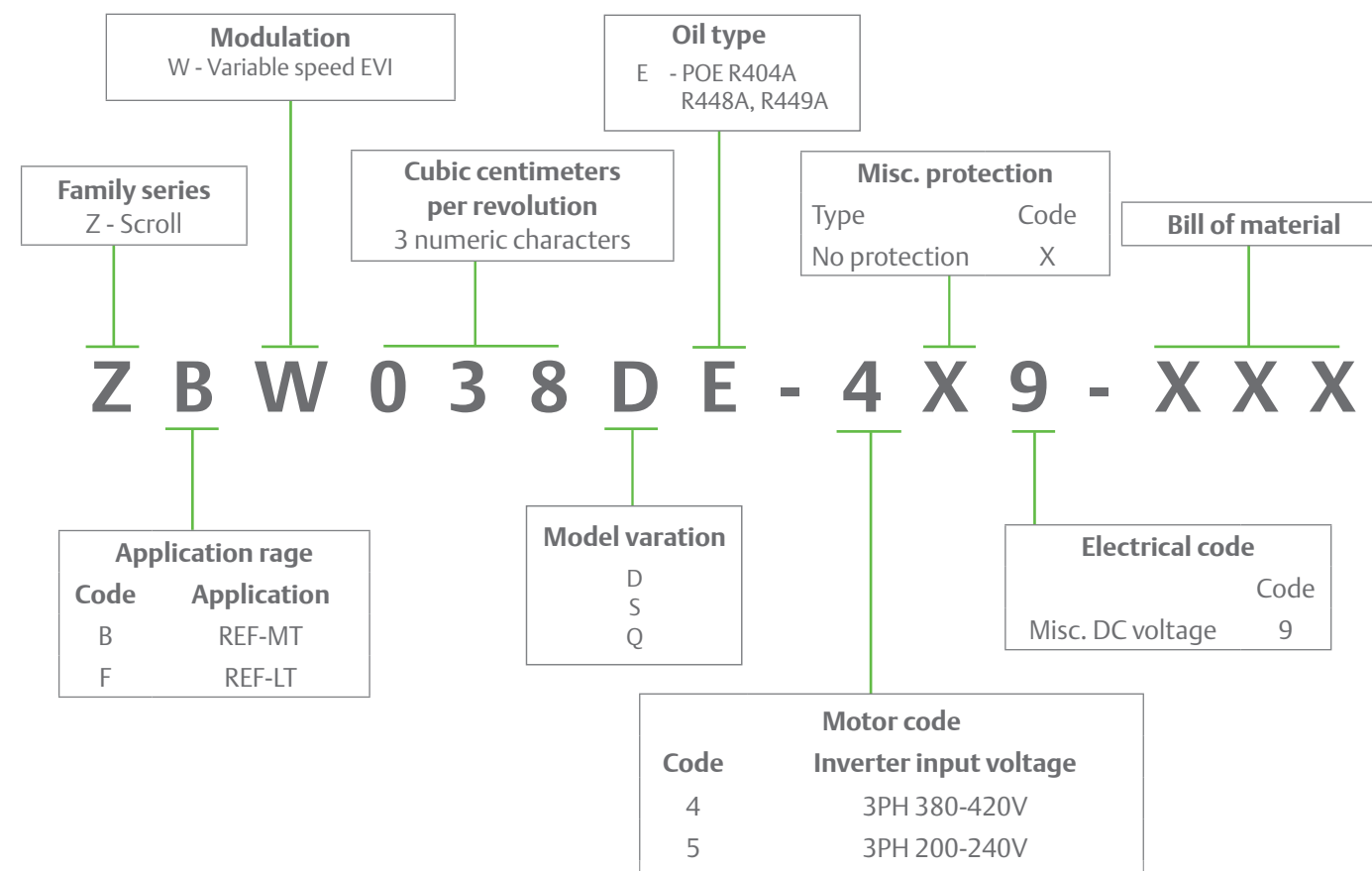


Drive

- Optimum combination of compressor and drive, delivering maximum efficiency
- Best in class built-in protection & control for reliable operation
- Meets system EN60335 standard without component UL/VDE



Nomenclature



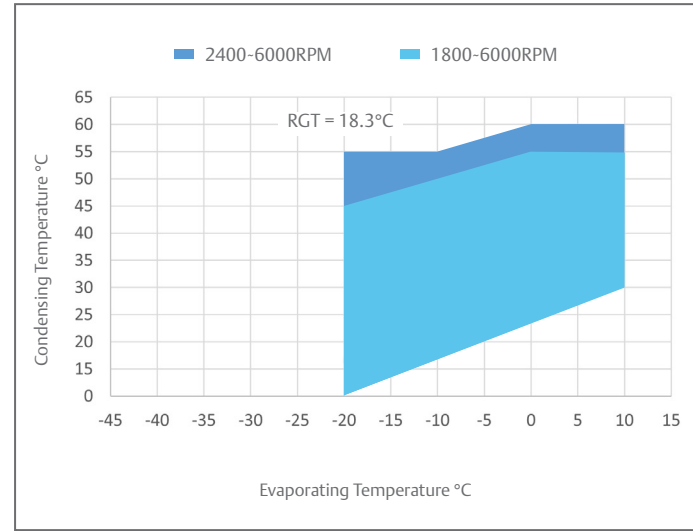
Bill of material

Compressor model	Motor code	BOM code	Stub tube connection	Rota-lock connection	Oil sight glass
Medium temperature with vapor injection					
ZBW030DE	4X9, 5X9	573	v		v
ZBW038DE	4X9, 5X9	573	v		v
ZBW050SE	4X9, 5X9	558	v		v
ZBW080QE	4X9, 5X9	558	v		v
ZBW080QE	4X9, 5X9	559		v	v
Low temperature with vapor injection					
ZFW030DE	4X9, 5X9	573	v		v
ZFW038DE	4X9, 5X9	573	v		v
ZFW050SE	4X9, 5X9	558	v		v
ZFW080QE	4X9, 5X9	558	v		v
ZFW080QE	4X9, 5X9	559		v	v

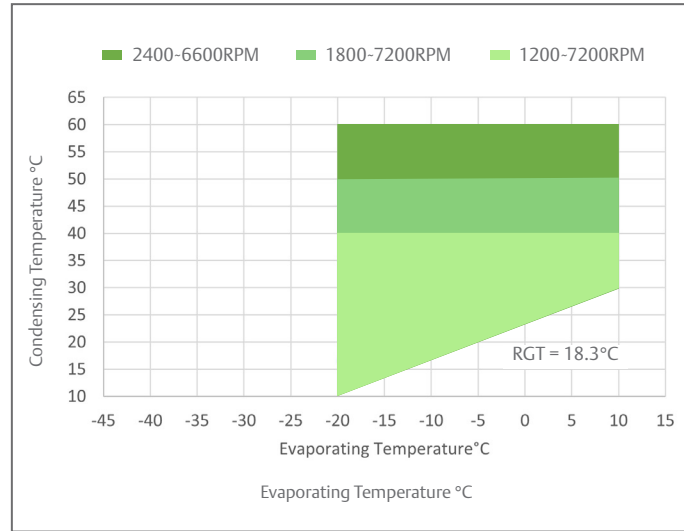
Operating envelopes

Medium temperature

ZBW030, ZBW038, ZBW050

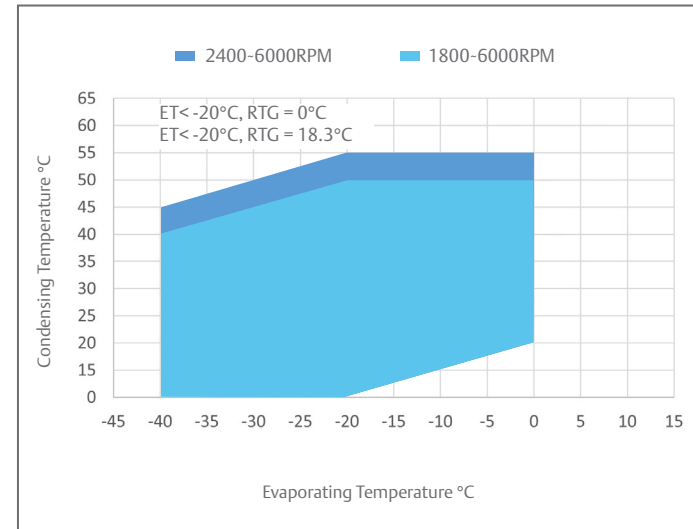


ZBW080

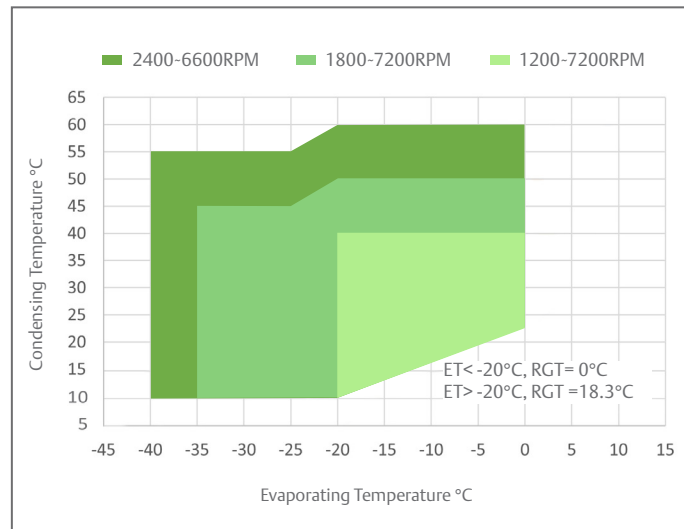


Low temperature

ZFW030, ZFW038, ZFW050



ZFW080



Performance data

ZBW Medium temperature capacity and power (kW)
ZBW030DE-4X9, ZBW030DE-5X9

R404A

Condensing Temperature °C	Evaporating temperature °C						
	-20	-15	-10	-5	0	5	10
Q (kW)	60						
	55				3.3	3.8	4.3
	50			2.5	2.9	3.4	3.9
	45	1.9	2.2	2.6	3.0	3.5	4.1
	40	1.9	2.3	2.7	3.2	3.7	4.3
	35	2.0	2.4	2.8	3.3	3.8	4.4
	30	2.1	2.4	2.9	3.4	3.9	4.6
	25	2.1	2.5	3.0	3.5	4.1	
	20	2.2	2.6	3.0	3.6		
	15	2.2	2.6				
P (kW)	60						
	55					1.3	1.3
	50					1.2	1.2
	45	1.0	1.0	1.2	1.2	1.1	1.1
	40	0.9	0.9	1.0	1.0	1.0	1.0
	35	0.8	0.8	0.8	0.9	0.9	0.9
	30	0.7	0.7	0.8	0.8	0.8	0.8
	25	0.6	0.6	0.7	0.7	0.7	
	20	0.6	0.6	0.6	0.6		
	15	0.5	0.5				
Q (kW)	60				7.9	9.1	10.4
	55	4.4	5.2	6.1	7.1	8.2	9.4
	50	4.5	5.4	6.3	7.3	8.5	9.8
	45	4.7	5.5	6.5	7.6	8.8	10.2
	40	4.8	5.7	6.7	7.9	9.2	10.6
	35	5.0	5.9	7.0	8.2	9.5	11.1
	30	5.2	6.1	7.2	8.4	9.9	11.5
	25	5.3	6.3	7.4	8.7	10.2	
	20	5.4	6.4	7.6	8.9		
	15	5.5	6.5				
P (kW)	60						
	55					3.3	3.3
	50	2.9	2.9	3.0	3.0	3.1	3.1
	45	2.4	2.5	2.5	2.6	2.6	2.7
	40	2.2	2.2	2.3	2.3	2.4	2.4
	35	1.9	2.0	2.0	2.1	2.1	2.2
	30	1.7	1.7	1.8	1.8	1.9	1.9
	25	1.5	1.5	1.6	1.6	1.7	
	20	1.3	1.4	1.4	1.4		
	15	1.2	1.2				
Q (kW)	60				10.7	12.2	14.0
	55	6.0	7.1	8.2	9.6	11.0	12.7
	50	6.1	7.2	8.5	9.9	11.5	13.2
	45	6.3	7.5	8.8	10.3	11.9	13.8
	40	6.5	7.7	9.1	10.6	12.4	14.4
	35	6.7	8.0	9.4	11.0	12.9	14.9
	30	7.0	8.2	9.7	11.4	13.3	15.5
	25	7.1	8.5	10.0	11.7	13.7	
	20	7.3	8.7	10.3	12.1		
	15	7.4	8.8				
P (kW)	60						
	55	3.7	3.8	3.9	4.0	4.0	4.1
	50	3.5	3.5	3.6	3.7	3.7	3.8
	45	3.2	3.2	3.3	3.4	3.4	3.5
	40	2.8	2.9	3.0	3.0	3.1	3.2
	35	2.5	2.6	2.6	2.7	2.8	2.9
	30	2.2	2.3	2.3	2.4	2.5	2.5
	25	2.0	2.0	2.1	2.1	2.2	
	20	1.7	1.8	1.8	1.9		
	15	1.5	1.6				

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

		Condensing Temperature °C	Evaporating temperature °C						
			-20	-15	-10	-5	0	5	10
Q (kW)	60	30 Hz					4.2	4.8	5.6
	55						4.4	5.0	5.8
	50				3.2	3.8	4.4	5.0	5.8
	45		2.4	2.9	3.3	3.9	4.5	5.3	6.1
	40		2.5	2.9	3.5	4.1	4.7	5.5	6.3
	35		2.6	3.0	3.6	4.2	4.9	5.7	6.6
	30		2.6	3.1	3.7	4.3	5.1	5.9	6.8
	25		2.7	3.2	3.8	4.5	5.2		
	20		2.8	3.3	3.9	4.6			
	15		2.8	3.4					
10	2.9								
P (kW)	60	30 Hz					1.7	1.7	1.7
	55						1.5	1.6	1.6
	50				1.5	1.5	1.5	1.6	1.6
	45		1.3	1.3	1.4	1.4	1.4	1.4	1.5
	40		1.2	1.2	1.2	1.2	1.3	1.3	1.3
	35		1.0	1.1	1.1	1.1	1.1	1.2	1.2
	30		0.9	0.9	1.0	1.0	1.0	1.0	1.1
	25		0.8	0.8	0.8	0.9	0.9		
	20		0.7	0.7	0.8	0.8			
	15		0.6	0.7					
10	0.6								
Q (kW)	60	75 Hz					10.1	11.6	13.3
	55		5.7	6.7	7.8	9.1	10.5	12.1	13.9
	50		5.8	6.9	8.1	9.4	10.9	12.6	14.5
	45		6.0	7.1	8.4	9.8	11.4	13.1	15.2
	40		6.2	7.4	8.7	10.1	11.8	13.7	15.8
	35		6.4	7.6	9.0	10.5	12.2	14.2	16.4
	30		6.6	7.9	9.3	10.9	12.7	14.7	17.1
	25		6.8	8.1	9.5	11.2	13.1		
	20		7.0	8.3	9.8	11.5			
	15		7.1	8.4					
10	7.1								
P (kW)	60	75 Hz					4.2	4.3	4.3
	55		3.7	3.7	3.8	3.9	3.9	4.0	4.1
	50		3.4	3.5	3.5	3.6	3.7	3.7	3.8
	45		3.1	3.2	3.2	3.3	3.4	3.4	3.5
	40		2.8	2.8	2.9	3.0	3.0	3.1	3.1
	35		2.5	2.5	2.6	2.7	2.7	2.8	2.8
	30		2.2	2.2	2.3	2.4	2.4	2.5	2.5
	25		1.9	2.0	2.0	2.1	2.1		
	20		1.7	1.7	1.8	1.8			
	15		1.5	1.6					
10	1.4								
Q (kW)	60	100 Hz					13.7	15.7	18.0
	55		7.7	9.1	10.6	12.3	14.2	16.3	18.8
	50		7.9	9.3	10.9	12.7	14.7	17.0	19.6
	45		8.1	9.6	11.3	13.2	15.3	17.7	20.5
	40		8.4	9.9	11.7	13.7	15.9	18.5	21.3
	35		8.7	10.3	12.1	14.2	16.5	19.2	22.2
	30		8.9	10.6	12.5	14.7	17.1	19.9	23.0
	25		9.2	10.9	12.9	15.1	17.7		
	20		9.4	11.2	13.2	15.5			
	15		9.5	11.3					
10	9.6								
P (kW)	60	100 Hz					5.5	5.6	5.6
	55		4.8	4.9	5.0	5.1	5.2	5.2	5.3
	50		4.4	4.5	4.6	4.7	4.8	4.9	4.9
	45		4.0	4.1	4.2	4.3	4.4	4.5	4.5
	40		3.6	3.7	3.8	3.9	4.0	4.0	4.1
	35		3.2	3.3	3.4	3.5	3.6	3.6	3.7
	30		2.9	2.9	3.0	3.1	3.2	3.2	3.3
	25		2.5	2.6	2.6	2.7	2.8		
	20		2.2	2.3	2.3	2.4			
	15		2.0	2.0					
10	1.8								

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

		Condensing Temperature °C	Evaporating temperature °C							
			-20	-15	-10	-5	0	5	10	
Q (kW)	60	30 Hz						5.6	6.4	7.2
	55						5.7	6.5	7.4	
	50				4.3	4.9	5.7	6.5	7.4	
	45		3.2	3.7	4.3	5.0	5.8	6.6	7.5	
	40		3.2	3.8	4.4	5.2	5.9	6.8	7.7	
	35		3.3	3.9	4.5	5.3	6.0	6.9	7.8	
	30		3.4	4.0	4.6	5.3	6.1	7.0	7.9	
	25		3.4	4.0	4.6	5.4	6.1			
	20		3.5	4.0	4.7	5.4				
	15		3.5	4.1						
10	3.5									
P (kW)	60	30 Hz					2.1	2.1	2.1	
	55						1.8	1.8	1.9	
	50				1.8	1.8	1.9	1.9	1.9	
	45		1.6	1.6	1.6	1.6	1.7	1.7	1.7	
	40		1.4	1.4	1.4	1.5	1.5	1.5	1.5	
	35		1.2	1.3	1.3	1.3	1.3	1.4	1.4	
	30		1.1	1.1	1.1	1.1	1.2	1.2	1.2	
	25		1.0	1.0	1.0	1.1	1.1			
	20		0.9	0.9	0.9	0.9				
	15		0.8	0.9						
10	0.7									
Q (kW)	60	75 Hz					12.9	14.7	16.7	
	55		7.2	8.5	10.0	11.7	13.5	15.4	17.5	
	50		7.6	8.9	10.4	12.1	14.0	16.1	18.3	
	45		7.8	9.1	10.7	12.5	14.5	16.7	19.0	
	40		7.9	9.3	11.0	12.9	15.0	17.3	19.8	
	35		8.1	9.6	11.3	13.3	15.6	18.0	20.7	
	30		8.3	9.9	11.7	13.8	16.2	18.8	21.7	
	25		8.6	10.3	12.2	14.5	17.0			
	20		9.1	10.9	12.9	15.3				
	15		9.8	11.6						
10	10.7									
P (kW)	60	75 Hz					5.6	5.7	5.7	
	55		4.5	4.7	4.8	5.0	5.1	5.2	5.2	
	50		4.1	4.3	4.4	4.5	4.6	4.7	4.7	
	45		3.8	3.9	4.0	4.1	4.2	4.2	4.3	
	40		3.4	3.6	3.7	3.7	3.8	3.8	3.9	
	35		3.1	3.2	3.3	3.4	3.4	3.5	3.5	
	30		2.8	3.0	3.1	3.1	3.1	3.2	3.3	
	25		2.6	2.7	2.8	2.9	2.9			
	20		2.5	2.6	2.7	2.7				
	15		2.4	2.5						
10	2.3									
Q (kW)	60	100 Hz					16.8	19.2	21.8	
	55		9.7	11.4	13.4	15.4	17.7	20.3	23.1	
	50		10.0	11.9	13.9	16.1	18.5	21.2	24.2	
	45		10.3	12.2	14.3	16.6	19.2	22.1	25.3	
	40		10.6	12.5	14.7	17.1	19.8	22.9	26.4	
	35		10.9	12.8	15.1	17.6	20.5	23.8	27.5	
	30		11.2	13.2	15.5	18.2	21.2	24.7	28.6	
	25		11.6	13.7	16.1	18.8	22.0			
	20		12.2	14.3	16.8	19.7				
	15		13.0	15.1						
10	14.0									
P (kW)	60	100 Hz					7.7	7.9	8.0	
	55		6.0	6.2	6.5	6.8	7.0	7.2	7.3	
	50		5.6	5.7	6.0	6.2	6.5	6.6	6.7	
	45		5.1	5.3	5.5	5.7	5.9	6.1	6.2	
	40		4.7	4.9	5.1	5.3	5.5	5.7	5.7	
	35		4.4	4.5	4.8	4.9	5.1	5.2	5.3	
	30		4.0	4.2	4.4	4.5	4.7	4.8	4.9	
	25		3.7	3.9	4.1	4.2	4.3			
	20		3.3	3.5	3.7	3.8				
	15		3.0	3.4						
10	2.8									

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

Condensing Temp (°C)		Evaporating Temperature (°C)						
		-20	-15	-10	-5	0	5	10
Q (kW)	60							
	55							
	50	5.3	6.3	7.3	8.4	9.4	10.4	11.3
	45	5.3	6.3	7.4	8.6	9.7	10.8	11.7
	40	5.3	6.4	7.6	8.7	9.9	11.0	12.0
	35	5.4	6.5	7.7	8.8	10.0	11.1	12.1
	30	5.5	6.6	7.7	8.9	10.0	11.1	12.0
	25	5.7	6.7	7.8	8.9	10.0		
	20	5.8	6.8	7.8	8.8			
	15	6.1	6.9					
10	6.3							
P (kW)	60							
	55							
	50	2.8	2.9	3.0	3.0	3.1	3.1	3.1
	45	2.5	2.6	2.6	2.7	2.7	2.7	2.7
	40	2.2	2.3	2.3	2.4	2.4	2.3	2.3
	35	2.0	2.1	2.1	2.1	2.1	2.0	2.0
	30	1.8	1.8	1.9	1.9	1.8	1.8	1.7
	25	1.7	1.7	1.7	1.7	1.6		
	20	1.5	1.5	1.5	1.5			
	15	1.4	1.4					
10	1.4							
Q (kW)	60	11.0	13.3	15.7	18.3	21.1	23.9	26.8
	55	11.6	13.9	16.5	19.3	22.1	25.1	28.1
	50	12.1	14.5	17.2	20.0	23.0	26.0	29.1
	45	12.5	15.0	17.7	20.6	23.6	26.7	29.9
	40	12.8	15.3	18.1	21.0	24.1	27.2	30.4
	35	13.0	15.6	18.3	21.3	24.3	27.4	30.6
	30	13.2	15.7	18.4	21.3	24.4	27.5	30.6
	25	13.2	15.7	18.4	21.2	24.2		
	20	13.2	15.6	18.2	21.0			
	15	13.1	15.4					
10	12.9							
P (kW)	60	7.8	8.1	8.5	8.8	9.2	9.6	10.0
	55	7.1	7.4	7.8	8.1	8.5	8.9	9.3
	50	6.5	6.8	7.2	7.5	7.9	8.3	8.7
	45	6.0	6.3	6.6	7.0	7.3	7.7	8.1
	40	5.5	5.8	6.1	6.4	6.8	7.1	7.5
	35	5.1	5.4	5.7	6.0	6.3	6.7	7.0
	30	4.8	5.0	5.3	5.6	5.9	6.3	6.6
	25	4.5	4.7	5.0	5.3	5.6		
	20	4.3	4.5	4.8	5.0			
	15	4.1	4.3					
10	4.0							
Q (kW)	60	13.9	16.9	20.1	23.6	27.3	31.2	35.1
	55	14.8	17.9	21.3	24.9	28.7	32.6	36.7
	50	15.6	18.8	22.2	25.9	29.8	33.8	38.0
	45	16.2	19.4	22.9	26.7	30.6	34.8	39.0
	40	16.7	19.9	23.5	27.3	31.2	35.4	39.7
	35	17.0	20.3	23.8	27.6	31.6	35.7	40.0
	30	17.2	20.4	23.9	27.7	31.6	35.8	40.0
	25	17.2	20.4	23.8	27.5			
	20	17.1	20.2	23.5				
	15	16.8	19.8					
10	16.3							
P (kW)	60	10.5	11.1	11.6	12.3	12.9	13.6	14.3
	55	9.7	10.2	10.8	11.4	12.1	12.8	13.5
	50	9.0	9.5	10.1	10.7	11.3	12.0	12.7
	45	8.3	8.9	9.4	10.0	10.6	11.3	11.9
	40	7.8	8.3	8.8	9.4	10.0	10.6	11.3
	35	7.3	7.8	8.3	8.8	9.4	10.1	10.7
	30	6.9	7.3	7.8	8.4	9.0	9.6	10.2
	25	6.5	7.0	7.5	8.0			
	20	6.2	6.7	7.2				
	15	6.0	6.5					
10	5.9							

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

Performance data

ZFW Medium temperature capacity and power (kW)
 ZFW030DE-4X9, ZFW030DE-5X9

R404A

Condensing Temperature °C		Evaporating temperature °C								
		-40	-35	-30	-25	-20	-15	-10	-5	0
Q (kW)	60									
	55									
	50				1.4	1.7	2.1	2.5	2.9	3.4
	45		1.0	1.2	1.5	1.8	2.2	2.6	3.0	3.5
	40	0.8	1.0	1.3	1.5	1.8	2.3	2.7	3.2	3.7
	35	0.8	1.0	1.3	1.6	1.9	2.4	2.8	3.3	3.8
	30	0.9	1.1	1.3	1.6	2.0	2.4	2.9	3.4	3.9
	25	0.9	1.1	1.4	1.7	2.0	2.5	3.0	3.5	4.1
	20	1.0	1.2	1.4	1.7	2.1	2.6	3.0	3.6	4.2
	15	1.0	1.2	1.5	1.7	2.1	2.6	3.1		
10	1.0	1.2	1.5	1.8	2.1					
P (kW)	60									
	55									
	50				1.1	1.2	1.1	1.2	1.2	1.2
	45		0.9	1.0	1.0	1.1	1.0	1.1	1.1	1.1
	40	0.8	0.8	0.9	0.9	1.0	0.9	1.0	1.0	1.0
	35	0.7	0.8	0.8	0.8	0.9	0.8	0.8	0.9	0.9
	30	0.6	0.7	0.7	0.8	0.8	0.7	0.8	0.8	0.8
	25	0.6	0.6	0.7	0.7	0.7	0.6	0.7	0.7	0.7
	20	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	15	0.5	0.5	0.6	0.6	0.6	0.5	0.5		
10	0.4	0.5	0.5	0.5	0.6					
Q (kW)	60									
	55				3.5	4.2	5.2	6.1	7.1	8.2
	50		2.3	2.9	3.6	4.3	5.4	6.3	7.3	8.5
	45	1.8	2.4	3.0	3.7	4.4	5.5	6.5	7.6	8.8
	40	1.9	2.5	3.1	3.8	4.6	5.7	6.7	7.9	9.2
	35	2.0	2.6	3.2	3.9	4.7	5.9	7.0	8.2	9.5
	30	2.2	2.7	3.4	4.1	4.9	6.1	7.2	8.4	9.9
	25	2.3	2.8	3.5	4.2	5.0	6.3	7.4	8.7	10.2
	20	2.4	2.9	3.6	4.3	5.1	6.4	7.6	8.9	10.5
	15	2.5	3.0	3.6	4.4	5.2	6.5	7.7		
10	2.5	3.0	3.7	4.4	5.2					
P (kW)	60									
	55				3.0	3.1	2.9	3.0	3.0	3.1
	50		2.5	2.6	2.7	2.8	2.7	2.7	2.8	2.9
	45	2.1	2.2	2.4	2.5	2.5	2.5	2.5	2.6	2.6
	40	1.9	2.0	2.1	2.2	2.3	2.2	2.3	2.3	2.4
	35	1.7	1.8	1.9	2.0	2.0	2.0	2.1	2.1	2.1
	30	1.5	1.6	1.7	1.8	1.8	1.7	1.8	1.8	1.9
	25	1.3	1.5	1.6	1.6	1.7	1.5	1.6	1.6	1.7
	20	1.2	1.3	1.4	1.5	1.5	1.4	1.4	1.4	1.5
	15	1.1	1.2	1.3	1.4	1.4	1.2	1.3		
10	1.0	1.2	1.2	1.3	1.3					
Q (kW)	60									
	55				4.7	5.7	7.1	8.2	9.6	11.0
	50		3.1	3.9	4.8	5.8	7.2	8.5	9.9	11.5
	45	2.4	3.2	4.1	5.0	6.0	7.5	8.8	10.3	11.9
	40	2.6	3.4	4.2	5.2	6.2	7.7	9.1	10.6	12.4
	35	2.7	3.5	4.4	5.3	6.4	8.0	9.4	11.0	12.9
	30	2.9	3.7	4.5	5.5	6.6	8.2	9.7	11.4	13.3
	25	3.1	3.8	4.7	5.7	6.8	8.5	10.0	11.7	13.7
	20	3.2	4.0	4.8	5.8	6.9	8.7	10.3	12.1	14.1
	15	3.3	4.1	4.9	5.9	7.0	8.8	10.4		
10	3.4	4.1	4.9	5.9	7.1					
P (kW)	60									
	55				3.9	4.0	3.8	3.9	4.0	4.0
	50		3.3	3.4	3.6	3.6	3.5	3.6	3.7	3.7
	45	2.8	2.9	3.1	3.2	3.3	3.2	3.3	3.4	3.4
	40	2.5	2.6	2.8	2.9	3.0	2.9	3.0	3.0	3.1
	35	2.2	2.4	2.5	2.6	2.7	2.6	2.6	2.7	2.8
	30	2.0	2.1	2.3	2.4	2.4	2.3	2.3	2.4	2.5
	25	1.8	1.9	2.0	2.1	2.2	2.0	2.1	2.1	2.2
	20	1.6	1.7	1.9	1.9	2.0	1.8	1.8	1.9	1.9
	15	1.5	1.6	1.7	1.8	1.9	1.6	1.6	1.6	1.6
10	1.4	1.5	1.6	1.7	1.8					

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

Condensing Temp (°C)		Evaporating Temperature (°C)								
		-40	-35	-30	-25	-20	-15	-10	-5	0
Q (kW)	60									
	55									
	50					5.3	6.3	7.3	8.4	9.4
	45		3.0	3.6	4.3	5.3	6.3	7.4	8.6	9.7
	40		2.9	3.5	4.4	5.3	6.4	7.6	8.7	9.9
	35		3.0	3.6	4.4	5.4	6.5	7.7	8.8	10.0
	30		3.2	3.8	4.6	5.5	6.6	7.7	8.9	10.0
	25		3.5	4.0	4.8	5.7	6.7	7.8	8.9	
	20		3.9	4.4	5.0	5.8	6.8	7.8		
	15		4.4	4.8	5.3	6.1	6.9			
10		5.0	5.3	5.7	6.3					
P (kW)	60									
	55									
	50					2.8	2.9	3.0	3.0	3.1
	45		2.2	2.3	2.4	2.5	2.6	2.6	2.7	2.7
	40		2.0	2.1	2.2	2.2	2.3	2.3	2.4	2.4
	35		1.8	1.9	1.9	2.0	2.1	2.1	2.1	2.1
	30		1.6	1.7	1.8	1.8	1.8	1.9	1.9	1.8
	25		1.5	1.6	1.6	1.7	1.7	1.7	1.7	
	20		1.4	1.5	1.5	1.5	1.5	1.5		
	15		1.3	1.4	1.4	1.4	1.4			
10		1.3	1.4	1.4						
Q (kW)	60					11.0	13.3	15.7	18.3	21.1
	55	5.1	6.2	7.6	9.5	11.6	13.9	16.5	19.3	22.1
	50	5.2	6.4	8.0	9.9	12.1	14.5	17.2	20.0	23.0
	45	5.4	6.6	8.2	10.2	12.5	15.0	17.7	20.6	23.6
	40	5.6	6.8	8.5	10.5	12.8	15.3	18.1	21.0	24.1
	35	5.8	7.0	8.7	10.7	13.0	15.6	18.3	21.3	24.3
	30	6.0	7.3	8.9	10.9	13.2	15.7	18.4	21.3	24.4
	25	6.3	7.5	9.1	11.0	13.2	15.7	18.4	21.2	
	20	6.6	7.7	9.2	11.0	13.2	15.6	18.2		
	15	6.9	7.9	9.3	11.0	13.1	15.4			
10	7.2	8.1	9.4	11.0	12.9					
P (kW)	60					7.8	8.1	8.5	8.8	9.2
	55	5.9	6.2	6.5	6.8	7.1	7.4	7.8	8.1	8.5
	50	5.4	5.7	5.9	6.2	6.5	6.8	7.2	7.5	7.9
	45	4.9	5.2	5.4	5.7	6.0	6.3	6.6	7.0	7.3
	40	4.5	4.7	5.0	5.2	5.5	5.8	6.1	6.4	6.8
	35	4.2	4.4	4.6	4.9	5.1	5.4	5.7	6.0	6.3
	30	3.9	4.1	4.3	4.5	4.8	5.0	5.3	5.6	5.9
	25	3.6	3.8	4.0	4.3	4.5	4.7	5.0	5.3	
	20	3.5	3.6	3.8	4.0	4.3	4.5	4.8		
	15	3.3	3.5	3.7	3.9	4.1	4.3			
10	3.3	3.5	3.6	3.8	4.0					
Q (kW)	60					13.9	16.9	20.1	23.6	27.3
	55	6.4	7.8	9.8	12.1	14.8	17.9	21.3	24.9	28.7
	50	6.8	8.3	10.4	12.8	15.6	18.8	22.2	25.9	29.8
	45	7.2	8.8	10.8	13.3	16.2	19.4	22.9	26.7	30.6
	40	7.5	9.1	11.2	13.8	16.7	19.9	23.5	27.3	31.2
	35	7.8	9.4	11.6	14.1	17.0	20.3	23.8	27.6	31.6
	30	8.0	9.7	11.8	14.3	17.2	20.4	23.9	27.7	31.6
	25	8.3	9.8	11.9	14.3	17.2	20.4	23.8	27.5	
	20	8.4	9.9	11.9	14.3	17.1	20.2	23.5		
	15	8.6	10.0	11.8	14.1	16.8	19.8			
10	8.7	9.9	11.7	13.8	16.3					
P (kW)	60					10.5	11.1	11.6	12.3	12.9
	55	7.9	8.3	8.7	9.2	9.7	10.2	10.8	11.4	12.1
	50	7.2	7.6	8.0	8.5	9.0	9.5	10.1	10.7	11.3
	45	6.6	7.0	7.4	7.9	8.3	8.9	9.4	10.0	10.6
	40	6.1	6.5	6.9	7.3	7.8	8.3	8.8	9.4	10.0
	35	5.7	6.0	6.4	6.8	7.3	7.8	8.3	8.8	9.4
	30	5.3	5.6	6.0	6.4	6.9	7.3	7.8	8.4	9.0
	25	5.0	5.3	5.7	6.1	6.5	7.0	7.5	8.0	
	20	4.8	5.1	5.4	5.8	6.2	6.7	7.2		
	15	4.6	4.9	5.2	5.6	6.0	6.5			
10	4.5	4.8	5.1	5.5	5.9					

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

Technical Data

Medium Temperature

Compressor Model			R404A			
			ZBW030DE	ZBW038DE	ZBW050SE	ZBW080QE
Displacement	cc/rev	29.5	38.3	47.7	80.0	
Refrigerant		R404A/R448A/R449A	R404A/R448A/R449A	R404A/R448A/R449A	R404A/R448A/R449A	
Motor Type		BPM	BPM	BPM	BPM	
Voltage	4X9	380V/3ph	380V/3ph	380V/3ph	380V/3ph	
Winding Resistance at 25°C	4X9	Ohm	0.46	0.52	0.31	
Voltage	5X9		220V/3ph	220V/3ph	220V/3ph	
Winding Resistance at 25°C	5X9	Ohm	0.46	0.34	0.25	
Oil Type			POE 32-3MAF	POE 32-3MAF	POE 32-3MAF	
Oil Quantity (initial)	L		1.63	1.63	1.60	
Oil Quantity (re-charge)	L		1.50	1.50	1.48	
Sound Power	@75Hz	dBA	75	75	77	
Connection Size	Type		Brazing connection	Brazing connection	Brazing connection	
	Suction	inch	3/4"	3/4"	7/8"	
	Discharge	inch	1/2"	1/2"	1/2"	
	Injection	inch	3/8"	3/8"	3/8"	
Outline Dimension	Length	mm	195	195	239	
	Width	mm	225	225	229	
	Height	mm	425	425	349	
Net Weight	kg		21.3	24.1	26.5	
Terminal Box IP Grade			IP21	IP21	IP21	
Mounting Kits			527-0239-00	527-0239-00	527-0267-00	
Mounting Size	mm		3×Φ11.2	3×Φ11.2	4×Φ19	

Low Temperature

Compressor Model			R404A			
			ZFW030DE	ZFW038DE	ZFW050SE	ZFW080QE
Displacement	cc/rev	29.5	38.3	47.7	80	
Refrigerant		R404A/R448A/R449A	R404A/R448A/R449A	R404A/R448A/R449A	R404A/R448A/R449A	
Motor Type		BPM	BPM	BPM	BPM	
Voltage	4X9	380V/3ph	380V/3ph	380V/3ph	380V/3ph	
Winding Resistance at 25°C	4X9	Ohm	0.46	0.52	0.31	
Voltage	5X9		220V/3ph	220V/3ph	220V/3ph	
Winding Resistance at 25°C	5X9	Ohm	0.46	0.34	0.25	
Oil Type			POE 32-3MAF	POE 32-3MAF	POE	
Oil Quantity (initial)	L		1.63	1.63	1.60	
Oil Quantity (re-charge)	L		1.50	1.50	1.48	
Sound Power	@75Hz	dBA	75	75	77	
Connection Size	Type		Brazing connection	Brazing connection	Brazing connection	
	Suction	inch	3/4"	3/4"	7/8"	
	Discharge	inch	1/2"	1/2"	1/2"	
	Injection	inch	3/8"	3/8"	3/8"	
Outline Dimension	Length	mm	195	195	239	
	Width	mm	225	225	229	
	Height	mm	425	425	349	
Net Weight	kg		21.3	24.1	26.5	
Terminal Box IP Grade			IP21	IP21	IP21	
Mounting Kits			527-0239-00	527-0239-00	527-0267-00	
Mounting Size	mm		3×Φ11.2	3×Φ11.2	4×Φ19	

Matched Drive

The matched drive options and related component part numbers are listed in the following tables. Please contact your local Emerson sales office for more information on Drives.

The tables on this page show the drive information for **ZBW medium temperature compressors**.

ZBW038DE-4X9-573				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen2)	
Name	P/N	Number	P/N	Number
Compressor	ZBW038DE-4X9-573	1	ZBW038DE-4X9-573	1
Drive Board	EVD1110B-D3-111/113	1	EVD2080B-D1-111/113	1
Capacitor Board	143-0066-00	1	143-0094-00	1
Filter Board	143-0065-00	1	143-0091-00	1
Choke	037-0068-00	1	037-0094-00	1

ZBW080QE-4X9-558/559				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen 2)	
Name	P/N	Number	P/N	Number
Compressor			ZBW080QE-4X9-558/559	1
Drive Board			EVD2150B-D3-111/113	1
Capacitor Board			143-0092-00	1
Filter Board			143-0091-00	1
Choke			037-0093-00	1

ZBW038DE-5X9-573				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen2)	
Name	P/N	Number	P/N	Number
Compressor	ZBW038DE-5X9-573	1		
Drive Board	EVD1080B-J8-111	1		
Capacitor Board	143-0088-00	1		
Filter Board	143-0085-00	1		
Choke	037-0094-00	1		

ZBW030DE-4X9-573				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen2)	
Name	P/N	Number	P/N	Number
Compressor	ZBW030DE-4X9-573	1	ZBW030DE-4X9-573	1
Drive Board	EVD1080B-D3-111/113	1	EVD2080B-D1-111/113	1
Capacitor Board	143-0066-00	1	143-0094-00	1
Filter Board	143-0065-00	1	143-0091-00	1
Choke	037-0068-00	1	037-0094-00	1

ZBW050SE-4X9-558				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen2)	
Name	P/N	Number	P/N	Number
Compressor	ZBW050SE-4X9-558	1	ZBW050SE-4X9-558	1
Drive Board	EVD1110B-D3-111/113	1	EVD2110B-D3-111/113	1
Capacitor Board	143-0066-00	1	143-0094-00	1
Filter Board	143-0065-00	1	143-0091-00	1
Choke	037-0068-00	1	037-0094-00	1

ZBW030DE-5X9-573				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen2)	
Name	P/N	Number	P/N	Number
Compressor	ZBW030DE-5X9-573	1		
Drive Board	EVD1080B-J8-111	1		
Capacitor Board	143-0088-00	1		
Filter Board	143-0085-00	1		
Choke	037-0094-00	1		

ZBW050SE-5X9-558				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen2)	
Name	P/N	Number	P/N	Number
Compressor	ZBW050SE-5X9-558	1		
Drive Board	EVD1080B-J8-111	1		
Capacitor Board	143-0088-00	1		
Filter Board	143-0085-00	1		
Choke	037-0094-00	1		

The tables on this page show the drive information for **ZFW low temperature compressors**.

ZFW038DE-4X9-573				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen2)	
Name	P/N	Number	P/N	Number
Compressor	ZFW038DE-4X9-573	1	ZFW038DE-4X9-573	1
Drive Board	EVD1110B-D3-111/113	1	EVD2080B-D1-111/113	1
Capacitor Board	143-0066-00	1	143-0094-00	1
Filter Board	143-0065-00	1	143-0091-00	1
Choke	037-0068-00	1	037-0094-00	1

ZFW080QE-4X9-558/559				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen 2)	
Name	P/N	Number	P/N	Number
Compressor			ZFW080QE-4X9-558/559	1
Drive Board			EVD2150B-D3-111/113	1
Capacitor Board			143-0092-00	1
Filter Board			143-0091-00	1
Choke			037-0093-00	1

ZFW038DE-5X9-573				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen2)	
Name	P/N	Number	P/N	Number
Compressor	ZFW038DE-5X9-573	1		
Drive Board	EVD1080B-J8-111	1		
Capacitor Board	143-0088-00	1		
Filter Board	143-0085-00	1		
Choke	037-0094-00	1		

ZFW030DE-4X9-573				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen2)	
Name	P/N	Number	P/N	Number
Compressor	ZFW030DE-4X9-573	1	ZFW030DE-4X9-573	1
Drive Board	EVD1080B-D3-111/113	1	EVD2080B-D1-111/113	1
Capacitor Board	143-0066-00	1	143-0094-00	1
Filter Board	143-0065-00	1	143-0091-00	1
Choke	037-0068-00	1	037-0094-00	1

ZFW050SE-4X9-558				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen2)	
Name	P/N	Number	P/N	Number
Compressor	ZFW050SE-4X9-558	1	ZFW050SE-4X9-558	1
Drive Board	EVD1110B-D3-111/113	1	EVD2110B-D3-111/113	1
Capacitor Board	143-0066-00	1	143-0094-00	1
Filter Board	143-0065-00	1	143-0091-00	1
Choke	037-0068-00	1	037-0094-00	1

ZFW030DE-5X9-573				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen2)	
Name	P/N	Number	P/N	Number
Compressor	ZFW030DE-5X9-573	1		
Drive Board	EVD1080B-J8-111	1		
Capacitor Board	143-0088-00	1		
Filter Board	143-0085-00	1		
Choke	037-0094-00	1		

ZFW050SE-5X9-558				
Drive Option	EVD Drive (Gen 1)		EVD Drive (Gen2)	
Name	P/N	Number	P/N	Number
Compressor	ZFW050SE-5X9-558	1		
Drive Board	EVD1080B-J8-111	1		
Capacitor Board	143-0088-00	1		
Filter Board	143-0085-00	1		
Choke	037-0094-00	1		

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