

# Copeland

F-series scroll condensing units - 50Hz



Product Catalogue



# Pioneering technologies for best-in-class products

Copeland is a world leading provider of heating, ventilation, air conditioning and refrigeration solutions for residential, commercial and industrial applications, supporting the industry with advanced technology, technical support and training services.

For more than 80 years, we have been introducing innovative technology to the market, from the first semi-hermetic and hermetic compressors in the 1940s and 1950s to the high efficiency Discus™ semi-hermetic, scroll compressors in the 1980s and 1990s, to the new Stream™ semi-hermetic and the Copeland™ variable speed scroll compressor technology of today.

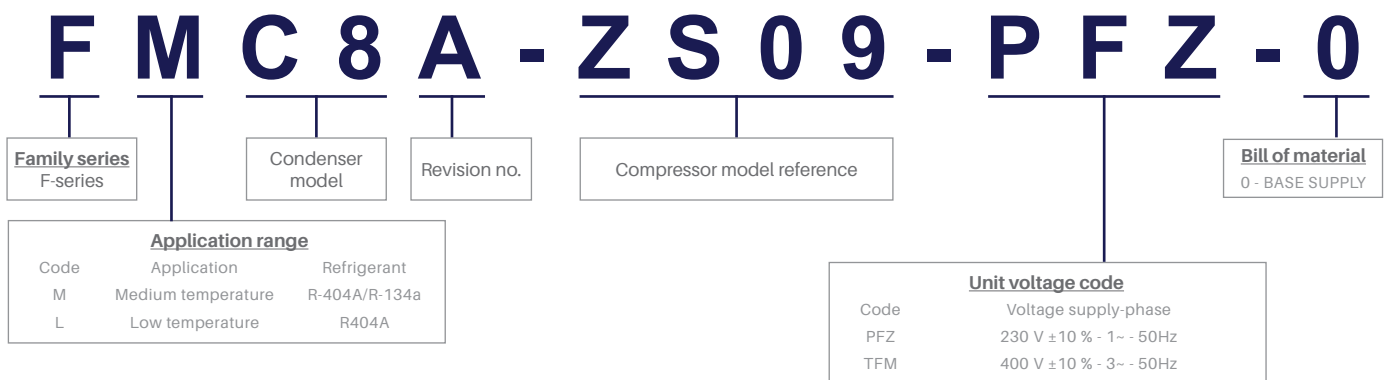
Copeland’s world class facility at Jabel Ali Free Zone in Dubai, has been serving customers in the Middle-East & Africa region since 2003. The facility offers a complete range of refrigeration application solutions, from small condensing units to multi-compressor refrigeration racks. The Dubai facility extends its after sale services to provide the region with application engineering support, training and education, design services, and parts distribution.

## Key features of scroll units

- Compact design
- Optimal layout of components for easy serviceability
- Energy efficient silent fans
- Condenser coils options available for both mid and high ambient conditions
- Liquid receiver, HP/LP switch as standard feature and crankcase heater as standard feature
- Local availability
- Pre-wired electrical junction box
- Copeland Scroll™ compressor
  - Proven reliability
  - Lower sound levels and pulsations
  - Dual compliance for superior efficiency and better liquid handling



## Nomenclature



## Scroll compressor features

### Dual compliance

Compliance means sealing between the orbiting and fixed scroll involutes. Dual compliance means the sealing is on both the axial and radial directions. This prevents refrigerant leak back across successive scroll pressure pockets. Compliance design also allows the scroll involutes to separate in both the radial and axial directions. This allows debris or liquid refrigerant to pass through the scroll involutes without damaging the compressor. Benefits of dual compliance are:

- Increased efficiency
- Better liquid handling capability
- Better handling of debris

### Scroll wear-in

The scroll involutes of Copeland Scroll™ compressor wear-in, rather than wear-out. So unlike in other compressor technologies among similar categories, there is no constant degradation of performance with time due to wear-out.

### Lower sound, vibration and pulsation

The compression process in a scroll set is symmetrical and continuous. This inherently reduces the sound, vibration and pulsation. This eliminates the need for use of vibration absorbers and suction or discharge mufflers in most of the applications. Further, ZB scroll compressors are engineered to produce smooth sound spectrum which improves the quality of sound.

### Unloaded start

The scroll sets separate at the instant of compressor shutdown. This allows the scroll set internal pressures to equalize on compressor stops. In addition to this, the scroll sets are not engaged at the instant of starting. Scroll sets engage only after few milliseconds of startup. This allows easier startup of ZB scroll compressors. Due to this design feature, typically a start assist kit is not required even on single phase compressors.

### DU bearings

A space age bearing material comprising of porous bronze with PTFE-lead overlay. These bearings are used in ZB scroll compressors in the scroll drive and main bearings. DU bearings work with exceptionally low friction between the load bearing surfaces. In addition, DU bearings can operate safely for a short time with loss of lubrication. This situations could happen on compressor applications due to oil pump out during a flooded start or heavy oil dilution after a defrost cycle.

**Note:** All specifications in this catalogue are subject to change without notice.

# Performance data

## Medium temperature

# R404A

Model (no. of fans)	Ambient temperature (°C)	Capacity evaporating temperature (°C)							Power evaporating temperature (°C)						
		-20	-15	-10	-5	0	5	7	-20	-15	-10	-5	0	5	7
FMC8-ZS09-PFZ 1	27	1.65	2.00	2.40	2.83	3.30	3.79	3.99	0.96	1.00	1.05	1.09	1.13	1.14	1.14
	32	1.52	1.85	2.22	2.63	3.06	3.51	3.69	1.03	1.08	1.14	1.19	1.23	1.25	1.25
	38	1.38	1.68	2.02	2.38	2.77	3.17	3.34	1.13	1.19	1.26	1.32	1.37	1.40	1.40
	43	1.28	1.55	1.86	2.19	2.54	2.90	3.05	1.22	1.29	1.37	1.44	1.50	1.54	1.54
	46		1.49	1.77	2.08	2.41	2.74	2.88		1.36	1.44	1.52	1.59	1.63	1.63
FMC8-ZS09-TFM 1	27	1.66	2.00	2.39	2.81	3.28	3.78	4.00	0.96	1.01	1.06	1.10	1.14	1.18	1.19
	32	1.55	1.87	2.22	2.62	3.05	3.52	3.72	1.04	1.09	1.14	1.19	1.24	1.28	1.29
	38	1.41	1.70	2.02	2.37	2.76	3.19	3.37	1.14	1.20	1.26	1.31	1.36	1.41	1.42
	43	1.29	1.55	1.84	2.16	2.52	2.90	3.07	1.24	1.30	1.36	1.42	1.47	1.52	1.54
	46		1.46	1.73	2.03	2.36	2.73	2.88		1.37	1.43	1.49	1.54	1.59	1.61
FMD8-ZS11-PFZ 1	27	1.93	2.35	2.82	3.32	3.87	4.44	4.67	1.13	1.18	1.24	1.30	1.34	1.35	1.35
	32	1.78	2.17	2.61	3.08	3.58	4.11	4.33	1.22	1.28	1.35	1.41	1.46	1.48	1.48
	38	1.62	1.97	2.37	2.79	3.24	3.72	3.91	1.34	1.42	1.50	1.57	1.63	1.66	1.66
	43	1.50	1.82	2.18	2.56	2.97	3.39	3.57	1.46	1.55	1.65	1.73	1.80	1.83	1.84
	46		1.74	2.08	2.44	2.82	3.21			1.65	1.75	1.84	1.91	1.95	
FMD8-ZS11-TFM 1	27	1.99	2.40	2.86	3.37	3.93	4.53	4.79	1.12	1.18	1.23	1.27	1.31	1.34	1.35
	32	1.86	2.24	2.67	3.14	3.65	4.21	4.45	1.21	1.28	1.34	1.39	1.43	1.46	1.47
	38	1.69	2.04	2.42	2.85	3.31	3.82	4.03	1.34	1.41	1.48	1.53	1.58	1.62	1.63
	43	1.55	1.86	2.21	2.59	3.01	3.48	3.67	1.45	1.54	1.61	1.67	1.72	1.76	1.77
	46		1.75	2.07	2.43	2.83	3.27			1.61	1.69	1.76	1.81	1.85	
FMH7-ZB15-TFM 1	27	2.64	3.20	3.83	4.51	5.24	6.03	6.35	1.57	1.60	1.61	1.63	1.66	1.70	1.73
	32	2.39	2.92	3.50	4.12	4.80	5.52	5.82	1.79	1.81	1.82	1.83	1.85	1.89	1.91
	38	2.06	2.55	3.08	3.64	4.24	4.89	5.15	2.12	2.12	2.12	2.11	2.12	2.15	2.16
	43	1.76	2.22	2.70	3.21	3.76	4.34	4.58	2.46	2.44	2.42	2.40	2.39	2.40	2.41
	46	1.57	2.01	2.46	2.95	3.46	4.00	4.22	2.70	2.67	2.63	2.6	2.58	2.57	2.58
FMH8-ZB19-TFM 1	27	3.32	3.98	4.73	5.54	6.44	7.40	7.81	1.91	1.96	2.01	2.07	2.13	2.20	2.22
	32	3.08	3.69	4.38	5.13	5.95	6.84	7.22	2.12	2.17	2.22	2.28	2.34	2.41	2.43
	38	2.77	3.32	3.93	4.61	5.34	6.15	6.48	2.40	2.45	2.51	2.57	2.63	2.69	2.72
	43	2.49	2.99	3.54	4.15	4.82	5.54	5.85	2.67	2.72	2.78	2.84	2.89	2.96	2.98
	46	2.32	2.78	3.30	3.87	4.49	5.17		2.85	2.90	2.96	3.01	3.07	3.13	
FMM8-ZB21-TFM 1	27	4.01	4.82	5.73	6.73	7.82	9.01	9.51	2.22	2.28	2.33	2.4	2.47	2.54	2.57
	32	3.72	4.47	5.31	6.23	7.24	8.34	8.80	2.46	2.52	2.58	2.65	2.71	2.79	2.82
	38	3.35	4.03	4.78	5.61	6.52	7.50	7.92	2.80	2.86	2.92	2.99	3.05	3.12	3.15
	43	3.02	3.64	4.31	5.06	5.88	6.78	7.16	3.12	3.18	3.24	3.30	3.37	3.44	3.47
	46	2.82	3.39	4.02	4.72	5.49	6.33	6.69	3.33	3.39	3.45	3.51	3.58	3.64	3.67
FMM8-ZB26-TFM 1	27	4.60	5.51	6.53	7.64	8.84	10.14	10.69	2.63	2.71	2.79	2.88	2.97	3.07	3.11
	32	4.26	5.10	6.03	7.05	8.16	9.36	9.86	2.92	3.00	3.09	3.18	3.27	3.37	3.41
	38	3.82	4.57	5.41	6.32	7.31	8.38	8.84	3.33	3.41	3.49	3.58	3.68	3.78	3.82
	43	3.43	4.11	4.86	5.68	6.57	7.54	7.95	3.71	3.79	3.88	3.97	4.06	4.16	4.19
	46		3.82	4.52	5.28	6.12				4.05	4.13	4.22	4.31		
FMR6-ZB29-TFM 2	27	5.40	6.49	7.70	9.03	10.48	12.05	12.71	2.88	2.96	3.05	3.14	3.23	3.33	3.38
	32	5.01	6.01	7.13	8.36	9.69	11.14	11.75	3.21	3.29	3.38	3.47	3.57	3.67	3.71
	38	4.51	5.41	6.41	7.51	8.71	10.01	10.56	3.66	3.74	3.83	3.92	4.02	4.12	4.16
	43	4.06	4.88	5.78	6.77	7.85	9.03	9.54	4.08	4.17	4.26	4.35	4.44	4.54	4.58
	46	3.78	4.54	5.38	6.31	7.32	8.43		4.37	4.45	4.54	4.63	4.72	4.81	
FMR7-ZB38-TFM 2	27	6.78	8.14	9.65	11.31	13.11	15.06	15.88	3.86	3.96	4.07	4.19	4.32	4.45	4.51
	32	6.29	7.54	8.93	10.46	12.12	13.92	14.67	4.27	4.38	4.49	4.61	4.74	4.88	4.93
	38	5.65	6.78	8.02	9.39	10.88	12.49	13.17	4.84	4.95	5.07	5.19	5.32	5.45	5.50
	43	5.08	6.10	7.22	8.45	9.80	11.26	11.88	5.39	5.50	5.61	5.73	5.86	5.98	6.04
	46	4.73	5.68	6.72	7.87	9.13			5.74	5.86	5.97	6.09	6.21		

Note: Operating conditions : 20°C suction gas return temperature and 0 K subcooling

1. At 3K Subcooling, capacity increases by approximately 5%

2. Stated power values are inclusive of fan power

# Performance data

Medium temperature

# R404A

Model (no. of fans)	Ambient temperature (°C)	Capacity evaporating temperature (°C)							Power evaporating temperature (°C)						
		-20	-15	-10	-5	0	5	7	-20	-15	-10	-5	0	5	7
FMS9-ZB45-TFM 2	27	8.00	9.61	11.4	13.38	15.54	17.87	18.85	4.26	4.37	4.49	4.62	4.75	4.90	4.96
	32	7.42	8.91	10.57	12.39	14.38	16.53	17.44	4.73	4.84	4.96	5.09	5.23	5.37	5.43
	38	6.68	8.02	9.51	11.14	12.93	14.87	15.68	5.36	5.48	5.60	5.73	5.87	6.01	6.07
	43	6.03	7.24	8.58	10.05	11.67	13.43	14.17	5.97	6.09	6.21	6.34	6.47	6.61	6.67
	46	5.61	6.75	8.00	9.38	10.89	12.54	13.24	6.37	6.49	6.61	6.74	6.86	7.00	7.05
FMS9-ZB48-TFM 2	27	8.70	10.43	12.35	14.45	16.74	19.20	20.23	4.72	4.85	5.00	5.16	5.32	5.50	5.57
	32	8.06	9.66	11.42	13.36	15.47	17.74	18.69	5.24	5.38	5.53	5.69	5.85	6.03	6.10
	38	7.24	8.67	10.25	11.99	13.87	15.91	16.77	5.95	6.10	6.25	6.41	6.57	6.75	6.82
	43	6.51	7.80	9.23	10.78	12.49	14.33	15.11	6.63	6.78	6.93	7.08	7.25	7.41	7.48
	46	6.05	7.26	8.59	10.04	11.63			7.08	7.22	7.37	7.53	7.68		
FMV9-ZB57-TFM 2	27	10.30	12.30	14.55	17.00	19.65	22.50	23.70	5.05	5.38	5.72	6.06	6.40	6.74	6.87
	32	9.65	11.50	13.55	15.80	18.25	20.80	21.90	5.46	5.81	6.17	6.53	6.89	7.24	7.38
	38	8.81	10.50	12.30	14.30	16.45	18.75	19.70	5.99	6.37	6.76	7.14	7.52	7.88	8.02
	43	8.08	9.58	11.20	13.00	14.90	16.95	17.80	6.48	6.89	7.29	7.69	8.07	8.45	8.59
	46	7.61	9.00	10.50	12.15	13.90			6.80	7.21	7.63	8.03	8.42		
FMV6-ZB66-TFM 2	27	12.07	14.51	17.22	20.22	23.51	27.08	28.59	6.31	6.50	6.72	6.95	7.21	7.49	7.61
	32	11.23	13.51	16.02	18.79	21.82	25.11	26.50	6.94	7.13	7.34	7.56	7.82	8.09	8.20
	38	10.13	12.22	14.51	17.00	19.72	22.68	23.93	7.80	7.99	8.20	8.41	8.65	8.90	9.01
	43	9.14	11.08	13.17	15.44	17.91	20.59	21.72	8.64	8.83	9.02	9.23	9.45	9.68	9.78
	46	8.51	10.35	12.33	14.47	16.79	19.30	20.37	9.20	9.38	9.57	9.77	9.97	10.2	10.29
FMV6-ZB76-TFM 2	27	13.88	16.73	19.89	23.34	27.05	31.02	32.67	7.35	7.64	7.94	8.27	8.61	8.96	9.11
	32	12.87	15.55	18.49	21.69	25.12	28.77	30.28	8.10	8.38	8.69	9.01	9.35	9.71	9.85
	38	11.55	14.02	16.70	19.59	22.67	25.95	27.31	9.15	9.41	9.71	10.02	10.36	10.70	10.83
	43	10.34	12.63	15.09	17.72	20.52	23.48	24.72	10.16	10.4	10.68	10.98	11.29	11.62	11.75
	46	9.55	11.74	14.07	16.55	19.18	21.96		10.83	11.06	11.32	11.60	11.91	12.22	

Note: Operating conditions : 20°C suction gas return temperature and 0 K subcooling

1. At 3K Subcooling, capacity increases by approximately 5%
2. Stated power values are inclusive of fan power



# Performance data

## Medium temperature

# R134a

Model (no. of fans)	Ambient temperature (°C)	Capacity evaporating temperature (°C)							Power evaporating temperature (°C)						
		-20	-15	-10	-5	0	5	7	-20	-15	-10	-5	0	5	7
FMC8-ZS09-PFZ 1	27	1.20	1.49	1.81	2.18	2.60	2.78	3.08	0.60	0.63	0.66	0.68	0.70	0.71	0.72
	32	1.15	1.42	1.73	2.08	2.48	2.65	2.93	0.65	0.68	0.71	0.74	0.77	0.78	0.80
	38	1.09	1.34	1.62	1.95	2.33	2.49	2.75	0.71	0.74	0.78	0.81	0.85	0.86	0.89
	43	1.03	1.26	1.53	1.84	2.20	2.35	2.60	0.76	0.80	0.84	0.88	0.92	0.94	0.96
	46	0.93	1.22	1.48	1.77	2.11	2.26	2.50	0.80	0.84	0.88	0.92	0.96	0.98	1.01
FMC8-ZS09-TFM 1	27	1.20	1.49	1.81	2.18	2.60	2.78	3.08	0.60	0.63	0.66	0.68	0.70	0.71	0.72
	32	1.15	1.42	1.73	2.08	2.48	2.65	2.93	0.65	0.68	0.71	0.74	0.77	0.78	0.80
	38	1.09	1.34	1.62	1.95	2.33	2.49	2.75	0.71	0.74	0.78	0.81	0.85	0.86	0.89
	43	1.03	1.26	1.53	1.84	2.20	2.35	2.60	0.76	0.80	0.84	0.88	0.92	0.94	0.96
	46	0.93	1.22	1.48	1.77	2.11	2.26	2.50	0.80	0.84	0.88	0.92	0.96	0.98	1.01
FMD8-ZS11-TFM 1	27	1.44	1.78	2.16	2.60	3.11	3.32	3.67	0.70	0.73	0.76	0.79	0.82	0.83	0.84
	32	1.37	1.69	2.06	2.48	2.96	3.17	3.50	0.75	0.79	0.82	0.86	0.89	0.91	0.93
	38	1.30	1.60	1.94	2.33	2.78	2.97	3.29	0.82	0.86	0.91	0.95	0.99	1.01	1.04
	43	1.23	1.51	1.83	2.20	2.62	2.81	3.10	0.89	0.93	0.98	1.03	1.08	1.10	1.13
	46	1.12	1.45	1.76	2.12	2.52	2.70	2.99	0.93	0.98	1.03	1.08	1.13	1.15	1.18
FMD8-ZS11-PFZ 1	27	1.44	1.78	2.16	2.60	3.11	3.32	3.67	0.70	0.73	0.76	0.79	0.82	0.83	0.84
	32	1.37	1.69	2.06	2.48	2.96	3.17	3.50	0.75	0.79	0.82	0.86	0.89	0.91	0.93
	38	1.30	1.60	1.94	2.33	2.78	2.97	3.29	0.82	0.86	0.91	0.95	0.99	1.01	1.04
	43	1.23	1.51	1.83	2.20	2.62	2.81	3.10	0.89	0.93	0.98	1.03	1.08	1.10	1.13
	46	1.12	1.45	1.76	2.12	2.52	2.70	2.99	0.93	0.98	1.03	1.08	1.13	1.15	1.18
FMH7-ZB15-TFM 1	27	1.83	2.36	2.90	3.52	4.22	4.53	5.01	0.90	0.92	0.95	0.98	1.01	1.03	1.05
	32	1.73	2.24	2.76	3.35	4.02	4.31	4.77	0.99	1.01	1.04	1.07	1.11	1.12	1.15
	38	1.60	2.02	2.58	3.14	3.76	4.04	4.46	1.10	1.13	1.16	1.20	1.23	1.25	1.28
	43	1.49	1.89	2.36	2.95	3.54	3.80	4.20	1.21	1.24	1.27	1.31	1.35	1.37	1.40
	46		1.81	2.26	2.84	3.41	3.66	4.04		1.31	1.35	1.39	1.43	1.45	1.48
FMH8-ZB19-TFM 1	27	2.12	2.72	3.35	4.07	4.89	5.24	5.80	1.13	1.16	1.18	1.22	1.26	1.27	1.30
	32	2.00	2.59	3.19	3.88	4.65	4.99	5.52	1.23	1.26	1.29	1.32	1.36	1.38	1.41
	38	1.85	2.34	2.98	3.63	4.36	4.68	5.18	1.36	1.39	1.43	1.47	1.51	1.53	1.56
	43	1.73	2.19	2.73	3.42	4.11	4.40	4.87	1.48	1.52	1.56	1.60	1.65	1.67	1.70
	46		2.09	2.61	3.29	3.95	4.24	4.69		1.60	1.64	1.69	1.74	1.76	1.79
FMM8-ZB21-TFM 1	27	2.68	3.44	4.24	5.15	6.19	6.64	7.35	1.33	1.36	1.40	1.43	1.48	1.50	1.53
	32	2.53	3.27	4.03	4.91	5.89	6.32	7.00	1.45	1.49	1.52	1.57	1.61	1.63	1.67
	38	2.34	2.96	3.78	4.60	5.52	5.92	6.56	1.62	1.65	1.70	1.74	1.79	1.81	1.85
	43	2.18	2.77	3.45	4.33	5.20	5.58	6.18	1.77	1.81	1.85	1.90	1.96	1.98	2.02
	46		2.65	3.31	4.17	5.01	5.37	5.95		1.91	1.96	2.01	2.07	2.09	2.13
FMM8-ZB26-TFM 1	27	3.07	3.94	4.85	5.89	7.06	7.56	8.36	1.51	1.54	1.59	1.64	1.70	1.72	1.76
	32	2.89	3.64	4.61	5.60	6.71	7.19	7.95	1.65	1.68	1.73	1.79	1.85	1.88	1.92
	38	2.68	3.38	4.31	5.24	6.28	6.73	7.44	1.83	1.88	1.93	1.99	2.06	2.09	2.13
	43	2.50	3.16	3.94	4.93	5.91	6.34	7.01	2.01	2.06	2.11	2.18	2.25	2.28	2.33
	46		3.02	3.77	4.74	5.69	6.10	6.74		2.17	2.23	2.31	2.38	2.41	2.46
FMR6-ZB29-TFM 2	27	3.61	4.60	5.63	6.82	8.17	8.76	9.70	1.66	1.70	1.75	1.81	1.87	1.90	1.94
	32	3.38	4.36	5.34	6.48	7.76	8.33	9.22	1.84	1.88	1.93	1.99	2.05	2.08	2.12
	38	3.11	3.92	4.99	6.05	7.26	7.79	8.63	2.07	2.11	2.17	2.23	2.29	2.32	2.37
	43	2.88	3.65	4.55	5.69	6.83	7.33	8.12	2.28	2.33	2.38	2.45	2.52	2.55	2.59
	46		3.49	4.36	5.47	6.57	7.05	7.81		2.47	2.53	2.59	2.66	2.69	2.74
FMR7-ZB38-TFM 2	27	4.44	5.75	7.08	8.59	10.3	11.04	12.22	2.26	2.33	2.39	2.47	2.55	2.59	2.66
	32	4.19	5.47	6.74	8.18	9.80	10.51	11.63	2.45	2.53	2.60	2.68	2.77	2.81	2.88
	38	3.88	4.95	6.32	7.67	9.19	9.85	10.90	2.72	2.80	2.88	2.96	3.06	3.10	3.17
	43	3.62	4.64	5.79	7.23	8.67	9.29	10.27	2.98	3.06	3.14	3.23	3.33	3.37	3.45
	46		4.44	5.55	6.96	8.34	8.94	9.89		3.23	3.31	3.41	3.51	3.55	3.63

Note: Operating conditions : 20°C suction gas return temperature and 0 K subcooling

1. At 3K Subcooling, capacity increases by approximately 5%
2. Stated power values are inclusive of fan power

11K suction superheat

# Performance data

## Medium temperature

# R134a

Model (no. of fans)	Ambient temperature (°C)	Capacity evaporating temperature (°C)							Power evaporating temperature (°C)						
		-20	-15	-10	-5	0	5	7	-20	-15	-10	-5	0	5	7
FMS9-ZB45-TFM 2	27	5.40	6.93	8.54	10.38	12.45	13.33	14.71	2.52	2.59	2.66	2.75	2.84	2.87	2.93
	32	5.08	6.57	8.11	9.88	11.85	12.69	14.01	2.75	2.83	2.91	3.00	3.09	3.14	3.20
	38	4.68	5.91	7.57	9.24	11.09	11.88	13.12	3.07	3.15	3.24	3.34	3.44	3.48	3.55
	43	4.34	5.50	6.90	8.68	10.43	11.18	12.35	3.37	3.45	3.54	3.65	3.76	3.81	3.88
	46		5.25	6.60	8.33	10.02	10.74	11.87		3.65	3.74	3.86	3.97	4.02	4.09
FMS9-ZB48-TFM 2	27	6.05	7.72	9.44	11.39	13.58	14.53	16.02	2.89	2.97	3.05	3.14	3.26	3.32	3.42
	32	5.71	7.13	8.97	10.83	12.91	13.81	15.22	3.16	3.24	3.34	3.44	3.57	3.63	3.73
	38	5.29	6.63	8.40	10.14	12.08	12.92	14.24	3.55	3.63	3.74	3.84	3.98	4.04	4.14
	43	4.92	6.20	7.67	9.54	11.38	12.16	13.40	3.91	4.00	4.10	4.22	4.36	4.42	4.53
	46		5.93	7.36	8.99	10.94	11.70	12.89		4.25	4.35	4.46	4.61	4.68	4.78
FMV9-ZB57-TFM 1	27	6.60	8.53	10.50	12.80	15.35	16.45	18.25	3.16	3.34	3.51	3.66	3.80	3.85	3.92
	32	6.20	7.86	9.99	12.15	14.60	15.65	17.35	3.40	3.59	3.78	3.96	4.13	4.19	4.28
	38	5.73	7.29	9.34	11.40	13.70	14.70	16.30	3.71	3.91	4.13	4.33	4.53	4.61	4.73
	43	5.32	6.81	8.53	10.70	12.90	13.85	15.40	4.00	4.21	4.43	4.66	4.88	4.97	5.11
	46		6.51	8.18	10.30	12.45	13.35	14.85		4.40	4.62	4.87	5.10	5.20	5.34
FMV6-ZB66-TFM 1	27	8.61	11.07	13.65	16.62	19.97	21.42	23.7	3.92	4.01	4.14	4.30	4.45	4.51	4.58
	32	8.07	10.46	12.93	15.78	19.00	20.39	22.59	4.28	4.38	4.51	4.67	4.82	4.88	4.95
	38	7.41	9.39	12.04	14.73	17.78	19.11	21.20	4.74	4.85	5.00	5.17	5.32	5.38	5.45
	43	6.86	8.72	10.96	13.83	16.74	18.00	19.99	5.16	5.28	5.44	5.62	5.78	5.84	5.91
	46		8.32	10.48	13.28	16.10	17.32	19.26		5.56	5.72	5.91	6.08	6.13	6.21
FMV6-ZB76-TFM 1	27	9.95	12.81	15.79	19.19	23.01	24.66	27.25	4.52	4.65	4.82	5.02	5.21	5.28	5.37
	32	9.32	11.75	14.93	18.19	21.86	23.44	25.94	4.95	5.07	5.26	5.46	5.65	5.72	5.81
	38	8.57	10.83	13.88	16.95	20.43	21.93	24.30	5.50	5.63	5.83	6.04	6.24	6.31	6.40
	43	7.95	10.06	12.61	15.89	19.19	20.62	22.89	6.00	6.14	6.33	6.57	6.78	6.85	6.95
	46		9.60	12.04	15.24	18.44	19.83	22.02		6.46	6.66	6.90	7.12	7.20	7.30

Note: Operating conditions : 20°C suction gas return temperature and 0 K subcooling

1. At 3K Subcooling, capacity increases by approximately 5%
2. Stated power values are inclusive of fan power

11K suction superheat



# Performance data

## Low temperature

# R404A

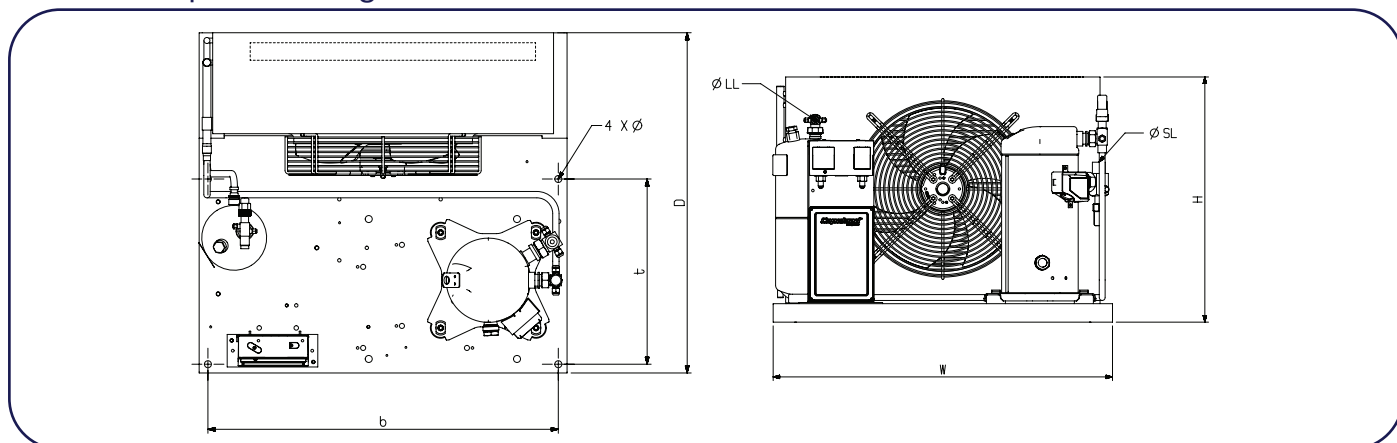
Model (no. of fans)	Ambient temperature (°C)	Capacity evaporating temperature (°C)							Power evaporating temperature (°C)						
		-20	-15	-10	-5	0	5	7	-20	-15	-10	-5	0	5	7
FLD8-ZF06-TFM 1	27	1.21	1.52	1.86	2.24	2.67	3.14	3.67	1.28	1.34	1.42	1.50	1.60	1.71	1.84
	32	1.14	1.44	1.75	2.11	2.50	2.93	3.40	1.41	1.48	1.56	1.65	1.74	1.86	1.99
	38	1.05	1.32	1.61	1.93	2.27	2.65	3.07	1.62	1.69	1.77	1.86	1.96	2.08	2.21
	43	0.96	1.22	1.48	1.77	2.07	2.40	2.77	1.83	1.90	1.98	2.08	2.18	2.30	2.44
	46	0.90	1.14	1.40	1.66	1.94	2.25	2.58	1.97	2.05	2.13	2.23	2.33	2.45	2.59
FLH7-ZF09-TFM 1	27	1.66	2.08	2.56	3.10	3.70	4.36	5.09	1.67	1.72	1.79	1.88	1.99	2.12	2.27
	32	1.56	1.96	2.40	2.90	3.45	4.06	4.73	1.84	1.88	1.95	2.03	2.14	2.27	2.42
	38	1.44	1.80	2.19	2.64	3.13	3.67	4.27	2.07	2.10	2.16	2.24	2.35	2.47	2.62
	43	1.32	1.65	2.01	2.41	2.85	3.33	3.86	2.28	2.31	2.37	2.44	2.54	2.67	2.81
	46	1.25	1.56	1.89	2.26	2.67	3.12	3.61	2.43	2.45	2.50	2.57	2.67	2.79	2.93
FLH8-ZF11-TFM 1	27	2.10	2.62	3.21	3.86	4.59	5.40	6.30	2.16	2.21	2.30	2.41	2.54	2.70	2.89
	32	1.98	2.47	3.01	3.61	4.28	5.02	5.84	2.33	2.39	2.47	2.58	2.72	2.88	3.07
	38	1.81	2.26	2.75	3.28	3.88	4.54	5.27	2.56	2.62	2.71	2.82	2.96	3.12	3.31
	43	1.66	2.06	2.50	2.99	3.52	4.11	4.76	2.77	2.84	2.92	3.04	3.18	3.34	3.53
	46	1.55	1.94	2.35	2.80	3.29	3.84	4.44	2.91	2.97	3.06	3.18	3.32	3.49	3.68
FLM8-ZF13-TFM 1	27	2.38	3.02	3.74	4.56	5.46	6.46	7.55	2.21	2.30	2.42	2.56	2.72	2.90	3.10
	32	2.24	2.83	3.49	4.24	5.08	6.00	7.01	2.41	2.51	2.63	2.77	2.94	3.12	3.33
	38	2.09	2.60	3.18	3.85	4.59	5.41	6.32	2.69	2.80	2.93	3.07	3.24	3.43	3.64
	43	1.96	2.40	2.91	3.50	4.16	4.90	5.71	2.97	3.08	3.21	3.36	3.53	3.72	3.93
	46	1.89	2.28	2.75	3.28	3.89	4.57	5.34	3.15	3.27	3.40	3.55	3.72	3.91	4.12
FLR6-ZF15-TFM 2	27	2.92	3.73	4.63	5.63	6.74	7.98	9.34	2.54	2.70	2.88	3.09	3.31	3.57	3.85
	32	2.75	3.49	4.32	5.24	6.26	7.39	8.64	2.78	2.95	3.14	3.35	3.59	3.85	4.14
	38	2.55	3.20	3.93	4.74	5.65	6.65	7.76	3.10	3.29	3.50	3.72	3.96	4.23	4.52
	43	2.39	2.97	3.60	4.31	5.11	6.00	6.99	3.40	3.61	3.83	4.06	4.31	4.58	4.87
	46	2.30	2.83	3.40	4.05	4.78	5.60	6.51	3.60	3.82	4.04	4.28	4.53	4.80	5.10
FLR7-ZF18-TFM 2	27	3.60	4.52	5.55	6.71	8.02	9.49	11.13	3.38	3.53	3.70	3.90	4.13	4.38	4.67
	32	3.40	4.26	5.21	6.28	7.49	8.84	10.34	3.63	3.79	3.97	4.18	4.41	4.67	4.96
	38	3.13	3.91	4.77	5.73	6.81	8.01	9.35	3.98	4.14	4.34	4.55	4.79	5.05	5.34
	43	2.88	3.60	4.38	5.24	6.20	7.28	8.49	4.30	4.48	4.68	4.90	5.14	5.41	5.70
	46	2.72	3.40	4.13	4.93	5.83	6.83	7.96	4.51	4.69	4.90	5.12	5.37	5.64	5.93
FLS9-ZF25-TFM 2	27	4.47	5.58	6.92	8.44	10.11	11.90	13.76	3.59	3.94	4.26	4.59	4.96	5.41	5.95
	32	4.22	5.24	6.48	7.89	9.44	11.10	12.83	3.79	4.18	4.54	4.91	5.31	5.78	6.34
	38	3.93	4.84	5.94	7.21	8.61	10.11	11.67	4.03	4.48	4.89	5.30	5.75	6.25	6.85
	43	3.71	4.50	5.49	6.63	7.90	9.26		4.24	4.74	5.20	5.65	6.13	6.67	
	46	3.58	4.31	5.22	6.29				4.36	4.89	5.38	5.86			
FLV6-ZF34-TFM 2	27	5.94	7.54	9.35	11.39	13.68	16.26	19.12	5.05	5.35	5.69	6.05	6.44	6.86	7.32
	32	5.58	7.10	8.79	10.69	12.81	15.19	17.83	5.38	5.72	6.08	6.46	6.87	7.31	7.77
	38	5.12	6.53	8.07	9.79	11.70	13.83	16.21	5.82	6.20	6.60	7.02	7.45	7.91	8.38
	43	4.71	6.02	7.43	8.98	10.71	12.63	14.78	6.22	6.64	7.08	7.52	7.98	8.45	8.94
	46	4.45	5.69	7.02	8.47	10.08	11.88		6.47	6.93	7.38	7.85	8.32	8.81	
FLV6-ZF41-TFM 2	27	7.39	9.29	11.40	13.76	16.41	19.36	22.63	6.06	6.49	6.95	7.45	7.98	8.55	9.16
	32	6.96	8.76	10.73	12.91	15.33	18.04	21.04	6.50	6.96	7.44	7.96	8.51	9.09	9.72
	38	6.39	8.06	9.85	11.81	13.98	16.38	19.05	7.06	7.56	8.08	8.62	9.20	9.80	10.43
	43	5.86	7.42	9.06	10.83	12.77	14.93	17.32	7.56	8.10	8.65	9.22	9.81	10.43	11.07
	46	5.50	7.00	8.55	10.21	12.02			7.88	8.44	9.01	9.59	10.20		

Note: Operating conditions : 20°C suction gas return temperature and 0 K subcooling

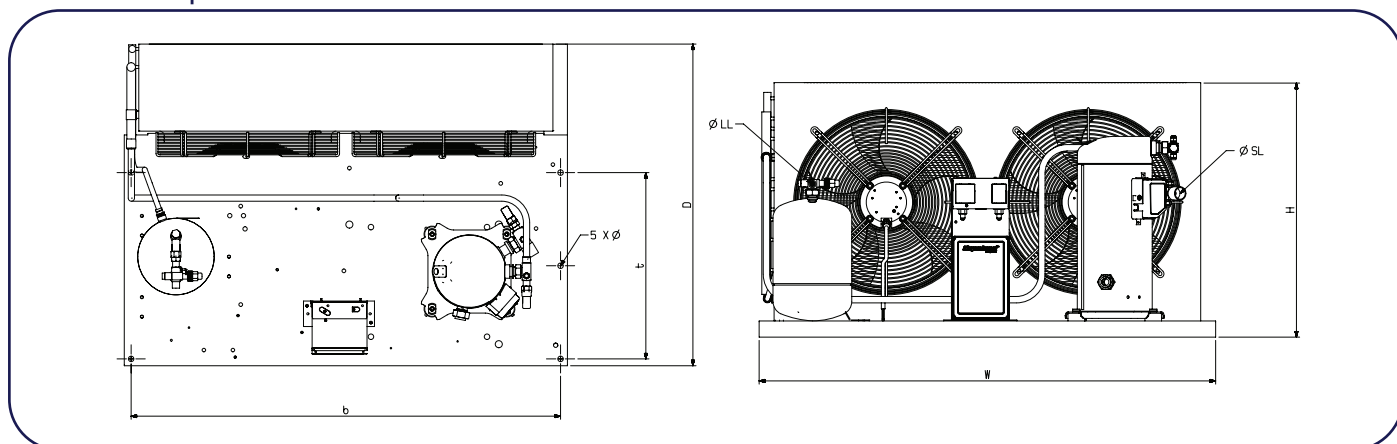
1. At 3K Subcooling, capacity increases by approximately 5%
2. Stated power values are inclusive of fan power

# Dimensional diagram

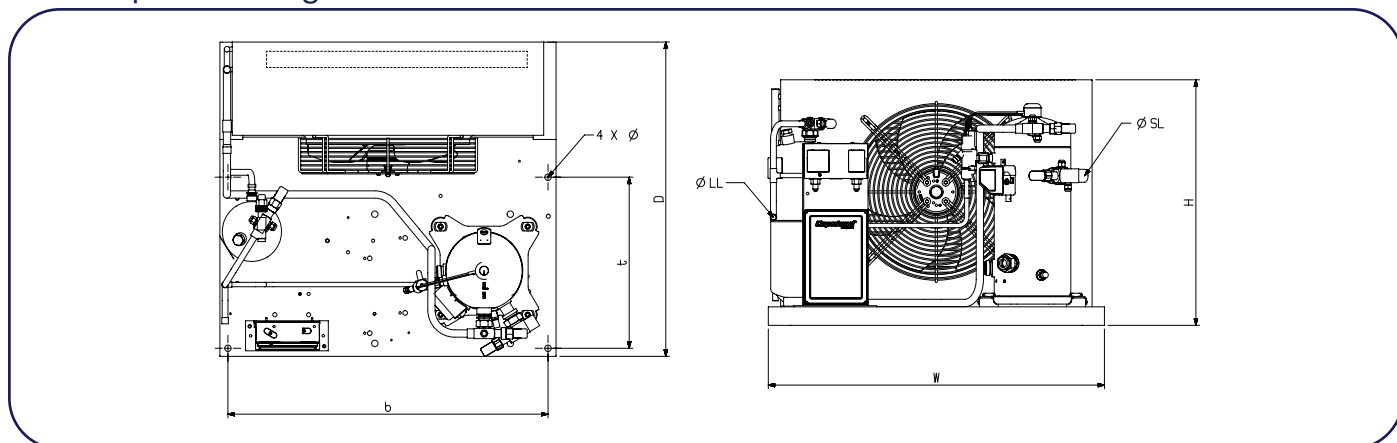
## Medium temperature single fan model



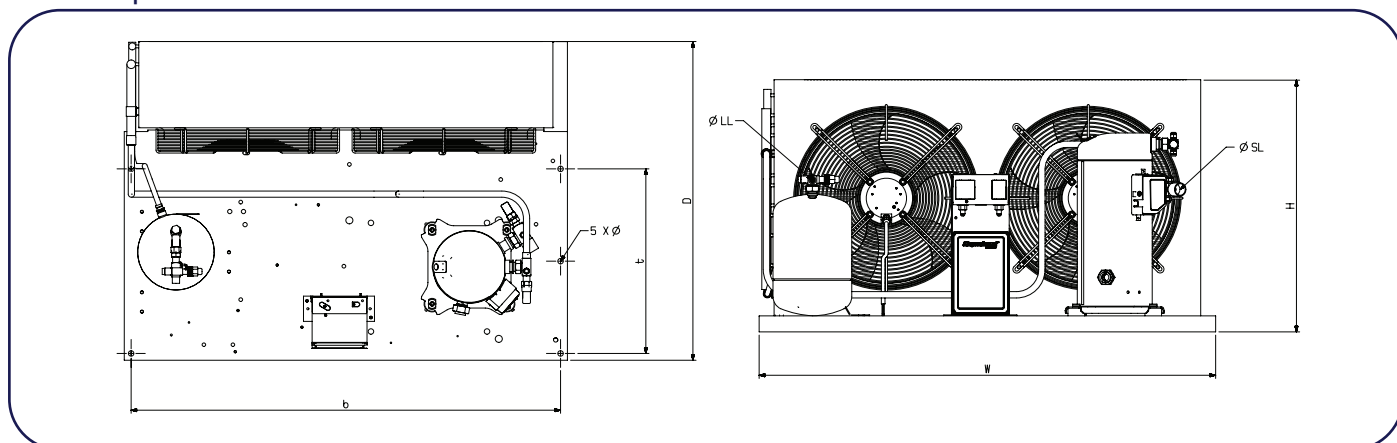
## Medium temperature double fan model



## Low temperature single fan model



## Low temperature double fan model



# Mechanical data

## Medium temperature

Model	Compressor Model	Receiver Capacity (l)	Air Flow (m <sup>3</sup> /s)	Depth/Width [ D/W ] (mm)	Height [ H ] (mm)	Base Mounting Ø [ b/t ] (mm)	Suction Ø [ SL ] (")	Liquid Ø [ LL ] (")	Net Weight (kg)	Gross Weight (kg)
FMC8-ZS09-PFZ	ZS09KAE-PFJ-600	3.3	0.46	570/560	445	530 x 330 (11)	5/8"	1/2"	45	55
FMC8-ZS09-TFM	ZS09KAE-TFD-600	3.3	0.46	570/560	445	530 x 330 (11)	5/8"	1/2"	45	55
FMD8-ZS11-PFZ	ZS11KAE-PFJ-600	3.9	0.51	570/560	445	530 x 330 (11)	5/8"	1/2"	45	55
FMD8-ZS11-TFM	ZS11KAE-TFD-600	3.9	0.51	570/560	445	530 x 330 (11)	5/8"	1/2"	45	55
FMH7-ZB15-TFM	ZB15KQE-TFD-559	3.9	0.67	680/735	531	700 x 370 (14)	3/4"	1/2"	64	79
FMH8-ZB19-TFM	ZB19KQE-TFD-559	7.9	1.00	680/735	531	700 x 370 (14)	3/4"	1/2"	66	81
FMM8-ZB21-TFM	ZB21KQE-TFD-559	7.9	0.92	730/735	708	700 x 390 (14)	3/4"	1/2"	76	93
FMM8-ZB26-TFM	ZB26KQE-TFD-559	7.9	0.92	730/735	708	700 x 390 (14)	7/8"	1/2"	75	92
FMR6-ZB29-TFM	ZB29KQE-TFD-559	7.9	1.29	820/1130	630	1095 x 475 (14)	7/8"	1/2"	95	135
FMR7-ZB38-TFM	ZB38KQE-TFD-559	7.9	1.97	820/1130	630	1095 x 475 (14)	1 1/8"	1/2"	103	143
FMS9-ZB45-TFM	ZB45KQE-TFD-559	11.7	1.94	820/1130	706	1095 x 475 (14)	1 1/8"	5/8"	118	158
FMS9-ZB48-TFM	ZB48KQE-TFD-559	11.7	1.94	820/1130	706	1095 x 475 (14)	1 1/8"	5/8"	117	157
FMV9-ZB57-TFM	ZB57KQE-TFD-559	11.7	2.18	820/1330	832	1295 x 475 (14)	1 1/8"	5/8"	128	208
FMV6-ZB66-TFM	ZB66KQE-TFD-551	15.8	2.97	820/1330	832	1295 x 475 (14)	1 3/8"	3/4"	167	247
FMV6-ZB76-TFM	ZB76KQE-TFD-551	15.8	2.97	820/1330	832	1295 x 475 (14)	1 3/8"	3/4"	168	248

## Low temperature

Model	Compressor Model	Receiver Capacity (l)	Air Flow (m <sup>3</sup> /s)	Depth/Width [ D/W ] (mm)	Height [ H ] (mm)	Base Mounting Ø [ b/t ] (mm)	Suction Ø [ SL ] (")	Liquid Ø [ LL ] (")	Net Weight (kg)	Gross Weight (kg)
FLD8-ZF06-TFM	ZF06KQE-TFD-551	3.9	0.51	570/560	445	530 x 330 (11)	3/4"	1/2"	48	58
FLH7-ZF09-TFM	ZF09KQE-TFD-551	3.9	0.67	680/735	531	700 x 370 (14)	3/4"	1/2"	66	81
FLH8-ZF11-TFM	ZF11KQE-TFD-551	7.9	1.00	680/735	531	700 x 370 (14)	7/8"	1/2"	67	82
FLM8-ZF13-TFM	ZF13KQE-TFD-551	7.9	0.92	730/735	708	700 x 390 (14)	7/8"	1/2"	85	102
FLR6-ZF15-TFM	ZF15KQE-TFD-551	7.9	1.29	820/1130	630	1095 x 475 (14)	1 1/8"	1/2"	105	145
FLR7-ZF18-TFM	ZF18KQE-TFD-551	7.9	1.97	820/1130	630	1095 x 475 (14)	1 1/8"	1/2"	107	147
FLS9-ZF25-TFM	ZF25KQE-TFD-551	11.7	1.94	820/1130	706	1095 x 475 (14)	1 1/8"	5/8"	119	159
FLV6-ZF34-TFM	ZF34KQE-TFD-564	11.7	2.97	820/1330	832	1295 x 475 (14)	1 3/8"	5/8"	167	247
FLV6-ZF41-TFM	ZF41KQE-TFD-564	15.8	2.97	820/1330	832	1295 x 475 (14)	1 3/8"	5/8"	171	251

# Electrical data

## Medium temperature

Condensing Unit Model	Compressor Model	Compressor Maximum Operating Current (A)	Compressor Locked Rotor Current (A)	Condenser Fan (Qty x Model)	Condenser Fan Current for each fan 230V/1/50Hz (A)
FMC8-ZS09-PFZ	ZS09KAE-PFJ-600	7.20	45	1 x 121	0.60
FMC8-ZS09-TFM	ZS09KAE-TFD-600	3.00	27	1 x 121	0.60
FMD8-ZS11-PFZ	ZS11KAE-PFJ-600	8.70	45	1 x 121	0.60
FMD8-ZS11-TFM	ZS11KAE-TFD-600	3.30	27	1 x 121	0.60
FMH7-ZB15-TFM	ZB15KQE-TFD-559	4.90	26	1 x 121	0.60
FMH8-ZB19-TFM	ZB19KQE-TFD-559	6.50	32	1 x 271	1.15
FMM8-ZB21-TFM	ZB21KQE-TFD-559	7.15	40	1 x 271	1.15
FMM8-ZB26-TFM	ZB26KQE-TFD-559	8.85	46	1 x 271	1.15
FMR6-ZB29-TFM	ZB29KQE-TFD-559	10.00	50	2 x 121	0.60
FMR7-ZB38-TFM	ZB38KQE-TFD-559	12.80	65.5	2 x 271	1.15
FMS9-ZB45-TFM	ZB45KQE-TFD-559	13.10	74	2 x 271	1.15
FMS9-ZB48-TFM	ZB48KQE-TFD-559	14.00	101	2 x 271	1.15
FMV9-ZB57-TFM	ZB57KQE-TFD-559	15.90	102	2 x 271	1.15
FMV6-ZB66-TFM	ZB66KQE-TFD-551	17.50	111	2 x 611	1.85
FMV6-ZB76-TFM	ZB76KQE-TFD-551	20.40	118	2 x 611	1.85

## Low temperature

Condensing Unit Model	Compressor Model	Compressor Maximum Operating Current (A)	Compressor Locked Rotor Current (A)	Condenser Fan (Qty x Model)	Condenser Fan Current for each fan 230V/1/50Hz (A)
FLD8-ZF06-TFM	ZF06KQE-TFD-551	5.0	26	1 x 121	0.60
FLH7-ZF09-TFM	ZF09KQE-TFD-551	6.0	40	1 x 121	0.60
FLH8-ZF11-TFM	ZF11KQE-TFD-551	7.1	46	1 x 271	1.15
FLM8-ZF13-TFM	ZF13KQE-TFD-551	8.0	51.5	1 x 271	1.15
FLR6-ZF15-TFM	ZF15KQE-TFD-551	10.0	64	2 x 121	0.60
FLR7-ZF18-TFM	ZF18KQE-TFD-551	12.5	74	2 x 271	1.15
FLS9-ZF25-TFM	ZF25KQE-TFD-551	13.7	102	2 x 271	1.15
FLV6-ZF34-TFM	ZF34KQE-TFD-564	25.0	100	2 x 611	1.85
FLV6-ZF41-TFM	ZF41KQE-TFD-564	29.0	118	2 x 611	1.85

# Container fitment

Condensing unit model	20 ft. container	40 ft. container
FMC8-ZS09-PFZ	72 units	153 units
FMC8-ZS09-TFM	72 units	153 units
FMD8-ZS11-PFZ	72 units	153 units
FMD8-ZS11-TFM	72 units	153 units
FMH7-ZB15-TFM	60 units	126 units
FMH8-ZB19-TFM	60 units	126 units
FMM8-ZB21-TFM	24 units	56 units
FMM8-ZB26-TFM	24 units	56 units
FMR6-ZB29-TFM	24 units	56 units
FMR7-ZB38-TFM	24 units	56 units
FMS9-ZB45-TFM	24 units	56 units
FMS9-ZB48-TFM	24 units	56 units
FMV9-ZB57-TFM	16 units	32 units
FMV6-ZB66-TFM	16 units	32 units
FMV6-ZB76-TFM	16 units	32 units
FLD8-ZF06-TFM	72 units	153 units
FLH7-ZF09-TFM	60 units	126 units
FLH8-ZF11-TFM	60 units	126 units
FLM8-ZF13-TFM	24 units	56 units
FLR6-ZF15-TFM	24 units	56 units
FLR7-ZF18-TFM	24 units	56 units
FLS9-ZF25-TFM	24 units	56 units
FLV6-ZF34-TFM	16 units	32 units
FLV6-ZF41-TFM	16 units	32 units

## Application guidelines

### Vibration absorber

Wherever Vibration absorber is used, please ensure that this is connected in parallel to compressor crankshaft. Connecting in other orientations could restrict the compressor movement and might lead to increased vibration and lead to refrigerant leakage.

### Condensing unit on rubber pads

Please ensure that the condensing units are mounted on the rubber pads and not mounted directly on the concrete platform or welded directly on any frame.

### Auto cycling HP cutout

As our condensing units are provided with Auto reset HP cutout, please ensure that the controller used in the system takes care of short cycling through HP cutout. Frequent cycling leads to oil getting pumped out of the compressor as sufficient time is not available for the oil return.

### Continuous pump down cycle

Wherever pump down cycle is provided, please ensure that this is of one time pump down cycle. In case of continuous pump down, any minor leakage in the liquid line solenoid valve or system with larger refrigerant charge might lead to frequent cycling of compressor during thermostat OFF cycle.

### HP / LP cutout adjustment

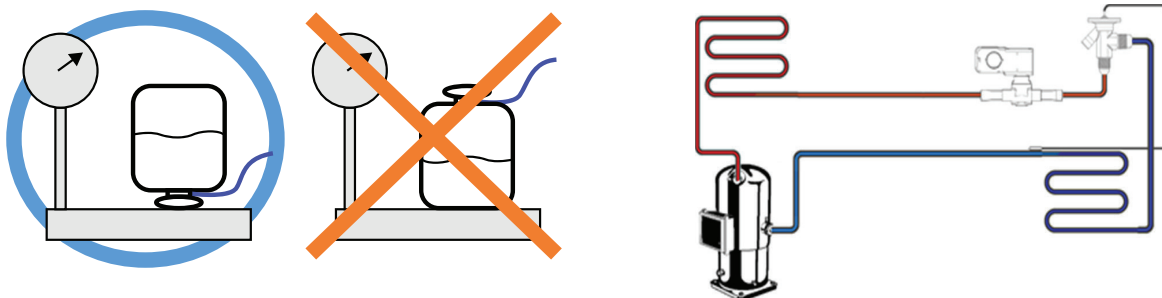
Our HP / LP cutout is with the factory default values. Please ensure that these are adjusted as per the application requirement. The adjustment stopper needs to be removed before the adjustment and to be fitted back in to the switch for proper operation of the cutouts.

### Reverse rotation

- Scroll compressors pump in one direction only
- Identification of incorrect rotation
  - Low current
  - More noise
  - Balanced suction & discharge pressure
- Correct by interchanging any two phases
- Short term reverse rotation will not damage the compressor

### Refrigerant charging

- Pre-charging must be with liquid refrigerant through the liquid line or the liquid receiver. At least 70% of the refrigerant to be pre charged in the system before starting the compressor.
- Additional charge to be added as controlled liquid in the suction side. Please don't bypass the HP/LP cutout during charging process.







## About Copeland

Copeland, a global provider of sustainable climate solutions, combines category-leading brands in compression, controls, software and monitoring for heating, cooling and refrigeration. With best-in-class engineering and design and the broadest portfolio of modulated solutions, we're not just setting the standard for compressor leadership; we're pioneering its evolution. Combining our technology with our smart energy management solutions, we can regulate, track and optimize conditions to help protect temperature-sensitive goods over land and sea, while delivering comfort in any space. Through energy-efficient products, regulation-ready solutions and expertise, we're revolutionizing the next generation of climate technology for the better. For more information, visit [copeland.com](https://copeland.com).

## Contact list

### Saudi Arabia

P.O. Box 34332 - 3620 2nd Industrial City, 67 St. Dammam, Saudi Arabia

Toll Free: 8008 443 426 | Tel: +966 3 8147560 | Fax: +966 3 8147570

### United Arab Emirates

Jebel Ali Free Zone  
P.O. Box 26382, Dubai  
United Arab Emirates  
Toll Free: 8000 441 3428  
Tel: +971 4 8118100  
Fax: +971 4 8865465

### South Africa

11 Quark Crescent, Linbro  
Business Park Sandton 2065,  
South Africa  
Toll Free: 0800 980 3711  
Tel: +27 11 451 3700  
Fax: +27 11 451 3800

### Egypt

P.O.Box 11799  
11 Mustafa Refaat Street  
Sheraton, Heliopolis  
Cairo, Egypt  
Tel: +20 2 226 5854