

# PRODUCT SPECIFICATION

COMPRESSOR MODEL

**CR24K6M-TFD-XXX  
(@50Hz)**

BILL OF MATERIALS

**101, 102, 103**

**Emerson Climate Technologies (India) Limited**  
Karad Dhebewadi Road  
Karad - 415 110  
INDIA

Note: Sales compressor drawing number and compressor model name are the same.

SC1				01	F45-0212-0146 EN No.	A3 29.02.2012
Prepared by	Checked by	Verified by	Approved by	Page No.	<b>CR24K6M-TFD-XXX(@50Hz)</b> DOCUMENT No.	

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MODEL : CR24K6M-TFD-XXX

## A) MODEL DESCRIPTION

<b>Model Name</b>	<b>CR24K6M-TFD-XXX</b>
<b>Compressor Type</b>	Reciprocating, Connecting Rod Type
<b>Application Group</b>	High Temperature (HBP)
<b>Evaporating Temperature Range</b>	(-)23.3 °C To 12.8 °C Or (-)10 °F To 55 °F
<b>Refrigerant</b>	R-22
<b>Rated Voltage</b>	380 - 420 V, 50 Hz, 3 Phase
<b>Compressor Cooling</b>	Fan : 400 ft <sup>3</sup> / minute
<b>Typical Application</b>	Air - Conditioning, Heat Pump
<b>*Certifications &amp; Approvals</b>	UL (File No. SA12060)

\* The Electrical Accessories are provided for reference and not included in the scope of Certification.

## B) PERFORMANCE SPECIFICATION @ RATED CONDITION

Parameter	Unit	ARI
Cooling Capacity	Btu / hr	19,900
	kcal / hr	5,015
	W	5,832
	Nominal HP	1.99
Input Power	W	1,975
Input Current	A	3.6
EER = $\frac{\text{Cooling Capacity}}{\text{Input Power}}$	Btu / W-hr	10.08
	kcal / W-hr	2.54
	W / W	2.95

Note: Above Performance Parameters are Nominal Values & subject to  $\pm$  5% variation.

## C) RATING CONDITIONS

Parameter	Unit	ARI
Evaporating Temperature	°C (°F)	7.2 $\pm$ 0.5 (45)
Condensing Temperature	°C (°F)	54.4 $\pm$ 1 (130)
Ambient Temperature	°C (°F)	35 $\pm$ 1 (95)
Sub-cooled Liquid Temperature	°C (°F)	46 $\pm$ 1 (115)
Return Gas Temperature	°C (°F)	18.3 $\pm$ 1 (65)
Test Voltage	V	380

SC1				02	F45-0212-0146 EN No.	A3 29.02.2012
Prepared by	Checked by	Verified by	Approved by	Page No.	<b>CR24K6M-TFD-XXX(@50Hz)</b> DOCUMENT No.	

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# PRODUCT SPECIFICATION

MODEL : CR24K6M-TFD-XXX

## D) MECHANICAL SPECIFICATIONS

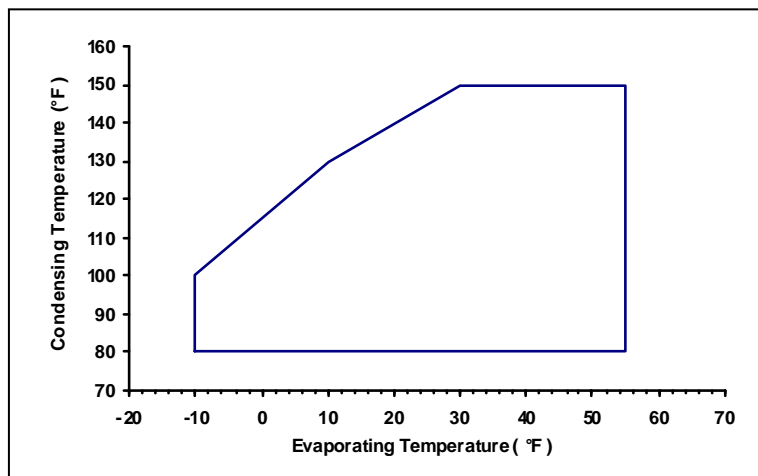
Parameter	Unit	Value
Number of Cylinders	Number	Two (2)
Displacement	cm <sup>3</sup> (inch <sup>3</sup> ) / rev	44.28 (2.702)
Net Weight	kg	29.5
Approximate Shipping Weight	kg	30.0
Oil Charge	cm <sup>3</sup> (Oz)	1,330 (45)
Oil Type	Refrigeration Grade	Mineral
IPRV (Pressure Differential)	kg/cm <sup>2</sup> (psig)	31.64 / 38.67 (450 / 550)
** Crank - case Heater	W @ V	35 @ 240 For CR24K6M-TFD-102 35 @ 480 For CR24K6M-TFD-103

\*\* Recommended only for Heat Pump Application.

## E) ELECTRICAL SPECIFICATIONS

Parameter	Unit	Value
Operating Voltage Range	V	342 To 462
Motor Circuit	---	Three Phase
Electrical Accessories	---	
➤ Start Capacitor	μF @ VAC	N/A
➤ Run Capacitor	μF @ VAC	N/A
➤ Relay	---	N/A
➤ Over Load Protector	---	Internal
Lock Rotor Ampere ( LRA )	A	28 @ 420 V
Maximum Continuous Current ( MCC )	A	5.5
High Potential Test	(kV/second/mA)	2.3 / 1 / 5.5 ± 0.5

## F) OPERATING ENVELOP @ 380 V, 50 Hz, 3 Phase



SC1				03	F45-0212-0146 EN No.	A3 29.02.2012
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## G) PERFORMANCE TABLES

Superheating	11 °C ( 20 °F )	Voltage	380 V, 50 Hz, 3 Phase
Sub - cooling	8.3 °C ( 15 °F)	Compressor Cooling	400 ft <sup>3</sup> / minute
Ambient Temperature	35 °C ( 95 °F )	-	-

## H) COOLING CAPACITY (Btu / hr)

Condensing Temperature		Evaporating Temperature									Coefficients	
											c1	c2
°C		-23.3	-17.8	-12.2	-6.7	-1.1	4.4	7.2	10.0	12.8	c3	1.34E+04
	(°F)	-10	0	10	20	30	40	45	50	55	c4	4.23E+02
37.8	100	3200	6800	10150	14300	18400	23800	26600	30000	33500	c5	2.83E+01
43.3	110	-	5400	8800	12400	16600	21750	24500	27500	30750	c6	4.96E+00
48.9	120	-	-	7300	11100	14750	19700	22400	25000	28000	c7	-1.49E+00
54.4	130	-	-	5700	9600	13100	17400	19900	22500	25400	c8	-1.22E+00
60.0	140	-	-	-	7600	11400	15300	17800	20200	22800	c9	3.64E-02
65.6	150	-	-	-	6200	9600	13250	15500	17800	20200	c10	-4.37E-02

## J) INPUT POWER (W)

Condensing Temperature		Evaporating Temperature									Coefficients	
											c1	c2
°C		-23.3	-17.8	-12.2	-6.7	-1.1	4.4	7.2	10.0	12.8	c3	8.25E+03
	(°F)	-10	0	10	20	30	40	45	50	55	c4	-7.38E+01
37.8	100	795	955	1120	1285	1445	1500	1530	1565	1605	c5	-1.66E+02
43.3	110	-	970	1140	1335	1515	1645	1690	1735	1775	c6	-4.33E-01
48.9	120	-	-	1160	1430	1585	1740	1815	1880	1950	c7	1.58E+00
54.4	130	-	-	1260	1490	1715	1900	1975	2070	2145	c8	-1.30E-03
60.0	140	-	-	-	1635	1765	1945	2120	2205	2245	c9	3.85E-03
65.6	150	-	-	-	1705	1880	2040	2150	2235	2350	c10	-6.70E-03

## K) INPUT CURRENT (A)

Condensing Temperature		Evaporating Temperature									Coefficients	
											c1	c2
°C		-23.3	-17.8	-12.2	-6.7	-1.1	4.4	7.2	10.0	12.8	c3	1.03E+00
	(°F)	-10	0	10	20	30	40	45	50	55	c4	-1.18E-01
37.8	100	2.1	2.3	2.5	2.6	2.7	2.9	3.0	3.1	3.2	c5	4.59E-02
43.3	110	-	2.3	2.5	2.7	2.9	3.1	3.2	3.4	3.5	c6	-1.65E-05
48.9	120	-	-	2.6	2.8	3.1	3.3	3.3	3.6	3.7	c7	2.08E-03
54.4	130	-	-	2.7	3.0	3.1	3.4	3.6	3.8	3.9	c8	-5.34E-04
60.0	140	-	-	-	3.2	3.3	3.7	3.8	3.9	4.0	c9	2.56E-06
65.6	150	-	-	-	3.3	3.4	3.8	4.0	4.1	4.1	c10	-1.45E-06

## L) MASS FLOW RATE (lbs / hr)

Condensing Temperature		Evaporating Temperature									Coefficients	
											c1	c2
°C		-23.3	-17.8	-12.2	-6.7	-1.1	4.4	7.2	10.0	12.8	c3	9.69E+01
	(°F)	-10	0	10	20	30	40	45	50	55	c4	3.87E+00
37.8	100	45	93	137	191	242	309	343	385	427	c5	1.55E+00
43.3	110	-	77	124	172	227	294	329	367	408	c6	4.25E-02
48.9	120	-	-	108	161	211	278	314	349	388	c7	-6.41E-04
54.4	130	-	-	88	146	197	257	292	328	368	c8	-1.86E-02
60.0	140	-	-	-	122	180	238	275	310	347	c9	4.52E-04
65.6	150	-	-	-	105	160	218	253	288	325	c10	-3.99E-04

Note: 1. Nominal Performance Values ( ± 5% ) based on 24 h of 'run in'. Subject to change without notice.

2. Compressor is intended to be operated in the range of condensing & evaporating temperatures where performance values are specified in above tables.

SC1				04	F45-0212-0146 EN No.	A3 29.02.2012
Prepared by	Checked by	Verified by	Approved by	Page No.	CR24K6M-TFD-XXX(@50Hz) DOCUMENT No.	

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## M) MECHANICAL SPECIFICATIONS

Parameter	Unit	Value
Cylinder Bore Diameter	cm (inch)	4.21 (1.656)
Crank - Shaft Eccentricity	cm (inch)	0.796 (0.313)
Crank - Shaft Stroke	cm (inch)	1.593 (0.627)
Approximate Internal Free Volume (Without Oil)	cm <sup>3</sup> (inch <sup>3</sup> )	6,700 (409)
Maximum Residual Moisture	mg	300
Maximum Internal Solid Residue / Impurities	mg	40

## N) ELECTRICAL SPECIFICATIONS

Parameter	Unit	Value	
Motor Type	---	2 Pole, Induction, Three Phase	
Nominal Motor Speed	rpm	2,900	
Nominal Motor Winding Resistance (@ 25 °C)	Main	Ω	7.3 To 8.5
	Aux.	Ω	-----
Nominal Motor Output Power	kW	1.85	
Max. Allowable Motor Winding Temp.	°F (°C)	266 (130) B Class Insulation	
Relay			
Type	---	N/A	
Make - Part Number	---	N/A	
Pick Up (Maximum)	V	N/A	
Drop Out (Minimum)	V	N/A	
Maximum Voltage Rating of Coils	V	N/A	
Over Load Protector			
Type	---	Internal	
Part Number		34HM-200-6	
Disc Opening Temperature	°F (°C)	212 To 230 (100 To 110)	
Disc Closing Temperature	°F (°C)	126 To 158 (52 To 70)	
1 <sup>st</sup> Cycle Trip Current	A	18	
1 <sup>st</sup> Cycle Trip On Time	second	2 To 10	
Terminal Fused Cluster	---	¼" Quick connector	
Copper Wire Material	---	Hermetic Grade Round Enameled	
Copper Wire Enamel Designation & Construction	---	H Class, Dual Coated	

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SC1				05	F45-0212-0146 EN No.	A3 29.02.2012
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## P) SOUND & VIBRATION SPECIFICATIONS

Parameter	Unit	Value
Bare Compressor Sound	dBA	72.0 Maximum
Bare Compressor Vibration	µm	120.0 Maximum
Compressor Discharge Pulse	psi	3.0 Maximum

## Q) TEST CONDITIONS

Parameter	Voltage	Suction Pressure	Discharge Pressure	Top Shell Temperature	Ambient Temperature
Unit	V	kg/cm <sup>2</sup> (psig)	kg/cm <sup>2</sup> (psig)	°C (°F)	°C (°F)
Test					
Overload (High Load)	380	6.50 (92.43)	30 (426.6)	--	55 (131)
Blocked Fan	380	6.33 (90)	28.12 (400)	--	--
Low Voltage Start: Equalised	342	11.9 ± 0.5 (169)	11.9 ± 0.5 (169)	62 (143.6)	--
Low Voltage Run	342	6.50 (92.43)	30 (426.6)	--	55 (131)

Note: Above test conditions are only for reference. Refer operating envelop and maximum allowable discharge line temperature for safe operation of compressor.

## R) REFERENCE APPLICATION DETAIL CONDITIONS

Parameter	Unit	Value
Maximum Allowable Ambient Temperature	°C (°F)	55 (131)
Maximum Discharge Line Temperature	°C (°F)	129.4 (265)
Maximum Return Gas Temperature	°C (°F)	27 (80.6)

Note: Application Details are the guidelines for safe operation of compressor.

SC1				06	F45-0212-0146 EN No.	A3 29.02.2012
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