

PRODUCT SPECIFICATION

COMPRESSOR MODEL

CS33KQME-TFD-XXXXX

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

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

DVM				01	F45-0419-0074 EN No.	A3 30.04.2019
Prepared by	Checked by	Verified by	Approved by	Page No.	CS33KQME-TFD-XXXXX DOCUMENT No.	

PRODUCT SPECIFICATION**MODEL: CS33KQME-TFD-XXXXX****A) MODEL DESCRIPTION**

Model Name	CS33KQME-TFD-XXXXX
Compressor Type	Reciprocating, Connecting Rod Type
Application Group	Medium Temperature with R-404A High Temperature with R-134a
Evaporating Temperature Range	(-)31.7 °C To (-)1.1 °C Or (-)25 °F To 30 °F for R-404A (-)23.3 °C To 12.8 °C Or (-)10 °F To 55 °F for R-134a
Refrigerant	R-404A, R-134a
Rated Voltage & Circuit	380-420 V, 50 Hz, 3 Phase 460 V, 60 Hz, 3 Phase
Compressor Cooling	Fan: 400 ft ³ / minute
Typical Application	Cold Room Application

B) PERFORMANCE SPECIFICATION @ RATED CONDITION

Specification	Unit	R-404A				R-134a	
		ARI- MBP		EN12900		ARI-HBP	
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz
Cooling Capacity	Btu / hr	27469	31435	28965	33147	29948	34141
	kcal / hr	6922	7921	7299	8353	7547	8603
	W	8050	9213	8489	9714	8777	10006
Input Power	W	4300	4846	4160	4735	3273	3665
Input Current	A	7.59	7.25	7.50	7.45	6.1	5.9
EER = $\frac{\text{Cooling Capacity}}{\text{Input Power}}$	Btu / W-hr	6.39	6.49	6.96	7.00	9.15	9.32
	kcal / W-hr	1.61	1.63	1.75	1.76	2.31	2.35
	W / W	1.87	1.90	2.04	2.05	2.68	2.73

Note: Above Performance Parameters are Nominal Values & subject to $\pm 5\%$ variation.**C) RATING CONDITIONS**

Parameter	Unit	ARI-MBP	EN12900	ARI-HBP
Evaporating Temperature	°C (°F)	-6.7 (20)	-10(14)	7.2 (45)
Condensing Temperature	°C (°F)	48.9 (120)	45 (113)	54.4 (130)
Ambient Temperature	°C (°F)	35 (95)	35 (95)	35 (95)
Sub cooled Liquid Temp.	°C (°F)	48.9 (120)	45 (113)	54.4 (130)
Return Gas Temperature	°C (°F)	4.4 (40)	20 (68)	18.3 (65)
Test Voltage	V	380 @ 50Hz 460 @ 60Hz	380 @ 50Hz 460 @ 60Hz	380 @ 50Hz 460 @ 60Hz

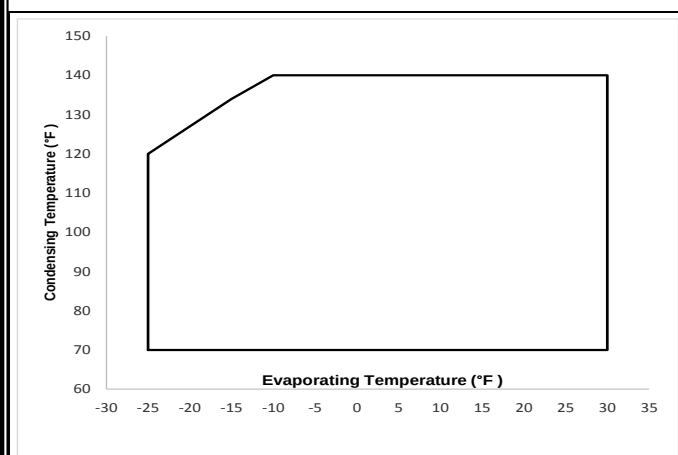
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PRODUCT SPECIFICATION**MODEL : CS33KQME-TFD-XXXXX****D) MECHANICAL SPECIFICATIONS**

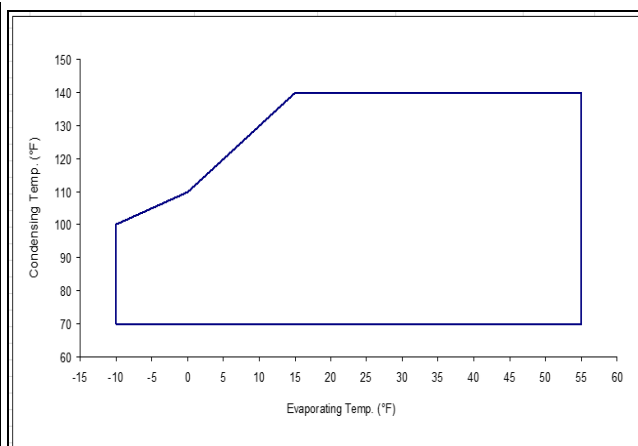
Parameter	Unit	Value
Number of Cylinders	Number	Two (2)
Displacement	cm ³ (inch ³) / rev	101.92 (6.220)
Net Weight	kg	36.2
Approximate Shipping Weight	kg	37.5
Oil Charge	cm ³ (Oz)	1,330 (45)
Oil Type	Refrigeration Grade	POE
IPRV (Pressure Differential)	kg/cm ² (psig)	31.65 / 38.68 (450 / 550)
Crank - case Heater	W @ V	40 @ 480 & 40 @ 240 As Per BoM

E) ELECTRICAL SPECIFICATIONS

Parameter	Unit	Value
Operating Voltage Range	V	342 To 462, 50Hz 361 To 506, 60 Hz
Motor Circuit	---	Three Phase
Electrical Accessories	---	
➤ Start Capacitor	μF @ V AC	N/A
➤ Run Capacitor	μF @ V AC	N/A
➤ Relay	---	N/A
➤ Over Load Protector	---	Internal
Locked Rotor Ampere (LRA)	A	55, 420 V @ 50Hz 50, 460V @ 60Hz
Maximum Continuous Current (MCC)	A	16
High Potential Test	(kV / second / mA)	2.3 / 1 / 5.5 ± 0.5

F) OPERATING ENVELOPE 50Hz & 60Hz

R-404A



R-134a

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PRODUCT SPECIFICATION**MODEL : CS33KQME-TFD-XXXXX****G) PERFORMANCE TABLES**

Return Gas Temp.	4.4 °C (40 °F)	Voltage	380V, 50 Hz, 3 Phase
Sub - cooling	0 °C (0 °F)	Compressor Cooling	400 ft3 / minute
Ambient Temperature	35 °C (95 °F)	Refrigerant	R-404A

H) COOLING CAPACITY (Btu / h)

Condensing Temperature		Evaporating Temperature											Coefficients	
°C		-31.7	-26.1	-23.3	-20.6	-17.8	-15.0	-12.2	-9.4	-6.7	-3.9	-1.1	c1	8590.578916945100
	(°F)	-25	-15	-10	-5	0	5	10	15	20	25	30	c2	794.993653981322
21.1	70	12789	18573	21786	25254	29009	33082	37503	42304	47516	53169	59295	c3	901.446824732748
26.7	80	11678	17132	20172	23462	27033	30916	35143	39744	44750	50193	56104	c4	7.100544514689
32.2	90	10149	15184	18006	21074	24417	28067	32055	36412	41169	46357	52007	c5	2.907830380202
37.8	100	8395	12923	15484	18285	21356	24728	28433	32502	36965	41854	47200	c6	-10.980516329048
43.3	110	6613	10545	12800	15290	18044	21094	24472	28208	32333	36879	41876	c7	0.041399944419
48.9	120	4995	8244	10149	12283	14676	17361	20367	23726	27469	31627	36231	c8	-0.010703081542
54.4	130	-	6214	7724	9458	11447	13721	16311	19250	22566	26292	30459	c9	-0.044248284757
60.0	140	-	-	5721	7012	8551	10370	12501	14973	17819	21070	24755	c10	0.032425606909

J) INPUT POWER (W)

Condensing Temperature		Evaporating Temperature											Coefficients	
°C		-31.7	-26.1	-23.3	-20.6	-17.8	-15.0	-12.2	-9.4	-6.7	-3.9	-1.1	c1	6038.078206148960
	(°F)	-25	-15	-10	-5	0	5	10	15	20	25	30	c2	43.001984418655
21.1	70	2116	2593	2809	3009	3194	3365	3520	3660	3786	3897	3993	c3	-96.300986223455
26.7	80	2089	2590	2815	3023	3214	3389	3547	3688	3812	3921	4013	c4	-0.064182697213
32.2	90	2097	2627	2864	3082	3282	3463	3626	3770	3897	4005	4095	c5	-0.288427996381
37.8	100	2120	2684	2935	3166	3377	3567	3738	3889	4019	4130	4222	c6	1.025265030416
43.3	110	2138	2741	3009	3255	3480	3683	3863	4023	4160	4277	4371	c7	0.000118343130
48.9	120	2140	2778	3066	3331	3571	3789	3982	4153	4300	4424	4525	c8	-0.003385445529
54.4	130	-	2780	3087	3372	3631	3866	4075	4259	4419	4553	4663	c9	0.002597596546
60.0	140	-	-	3090	3373	3640	3895	4122	4323	4497	4644	4765	c10	-0.003283820234

Note: 1. Nominal Performance Values ($\pm 5\%$) 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.

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PRODUCT SPECIFICATION**MODEL : CS33KQME-TFD-XXXXX****N) PERFORMANCE TABLES**

Return Gas Temp.	4.4 °C (40 °F)	Voltage	460V, 60 Hz, 3 Phase
Sub - cooling	0 °C (0 °F)	Compressor Cooling	400 ft3 / minute
Ambient Temperature	35 °C (95 °F)	Refrigerant	R-404A

P) COOLING CAPACITY (Btu / h)

Condensing Temperature		Evaporating Temperature											Coefficients	
°C		-31.7	-26.1	-23.3	-20.6	-17.8	-15.0	-12.2	-9.4	-6.7	-3.9	-1.1	c1	9832.161439377000
	(°F)	-25	-15	-10	-5	0	5	10	15	20	25	30	c2	909.782320585102
21.1	70	14635	21254	24931	28901	33198	37858	42918	48412	54376	60845	67856	c3	1031.566067985450
26.7	80	13364	19605	23084	26849	30936	35380	40217	45482	51212	57440	64204	c4	8.125453702558
32.2	90	11614	17376	20606	24116	27942	32119	36683	41669	47113	53050	59516	c5	3.327571688442
37.8	100	9607	14789	17720	20925	24439	28298	32538	37194	42302	47897	54014	c6	-12.565630203334
43.3	110	7568	12068	14649	17497	20649	24140	28005	32281	37002	42204	47922	c7	0.047379372885
48.9	120	5717	9434	11614	14056	16795	19867	23307	27151	31435	36193	41462	c8	-0.012246424330
54.4	130	---	7111	8840	10824	13100	15702	18667	22029	25824	30089	34857	c9	-0.050636828575
60.0	140	---	---	6548	8024	9786	11868	14306	17135	20392	24112	28329	c10	0.037106578579

Q) INPUT POWER (W)

Condensing Temperature		Evaporating Temperature											Coefficients	
°C		-31.7	-26.1	-23.3	-20.6	-17.8	-15.0	-12.2	-9.4	-6.7	-3.9	-1.1	c1	6806.225760661820
	(°F)	-25	-15	-10	-5	0	5	10	15	20	25	30	c2	48.435794447714
21.1	70	2385	2923	3166	3391	3600	3792	3967	4125	4266	4391	4500	c3	-108.565875691495
26.7	80	2355	2919	3173	3407	3622	3819	3997	4156	4296	4418	4522	c4	-0.072271195026
32.2	90	2363	2961	3227	3473	3698	3903	4086	4249	4392	4514	4615	c5	-0.324558484128
37.8	100	2389	3024	3308	3568	3806	4020	4213	4382	4530	4655	4758	c6	1.155726747463
43.3	110	2409	3089	3391	3669	3922	4150	4354	4533	4689	4820	4926	c7	0.000135190679
48.9	120	2415	3131	3455	3753	4025	4270	4488	4680	4846	4986	5100	c8	-0.003816756944
54.4	130	---	3150	3479	3800	4092	4357	4593	4800	4980	5131	5255	c9	0.002925289797
60.0	140	---	---	3490	3810	4103	4389	4645	4872	5068	5234	5370	c10	-0.003701389101

Note: 1. Nominal Performance Values ($\pm 5\%$) 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.

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PRODUCT SPECIFICATION**MODEL : CS33KQME-TFD-XXXXX****K) PERFORMANCE TABLES**

Return Gas Temp.	18.33°C (65°F)	Voltage	380V, 50 Hz, 3 Phase
Sub - cooling	0 °C (0 °F)	Compressor Cooling	400 ft3 / minute
Ambient Temperature	35 °C (95 °F)	Refrigerant	R-134a

L) COOLING CAPACITY (Btu / h)

Condensing Temperature		Evaporating Temperature									Coefficients	
°C		-23.3	-17.8	-15.0	-12.2	-6.7	-1.1	4.4	7.2	12.8	c1	18449.148302339100
	(°F)	-10	0	5	10	20	30	40	45	55	c2	936.346194199921
21.1	70	10689	14435	17054	20121	27444	36104	45799	50940	61622	c3	15.687300007440
26.7	80	10036	13255	15606	18401	25174	33271	42392	47242	57332	c4	10.104885973366
32.2	90	9266	11988	14086	16626	22878	30444	39021	43595	53124	c5	-7.647027658518
37.8	100	8398	10654	12515	14815	20578	27643	35707	40020	49020	c6	-1.292858421849
43.3	110	---	9276	10915	12990	18295	24889	32472	36540	45041	c7	-0.050240406250
48.9	120	---	---	9307	11173	16050	22205	29338	33176	41208	c8	-0.005833912504
54.4	130	---	---	---	9384	13865	19612	26324	29948	37542	c9	0.015420991186
60.0	140	---	---	---	---	11761	17131	23454	26878	34066	c10	0.003564911698

M) INPUT POWER (W)

Condensing Temperature		Evaporating Temperature									Coefficients	
°C		-23.3	-17.8	-15.0	-12.2	-6.7	-1.1	4.4	7.2	12.8	c1	609.237487366188
	(°F)	-10	0	5	10	20	30	40	45	55	c2	24.754341221055
21.1	70	1353	1499	1597	1704	1927	2128	2265	2296	2260	c3	15.178487690071
26.7	80	1415	1567	1670	1785	2028	2254	2424	2474	2481	c4	0.063685103278
32.2	90	1449	1612	1723	1847	2114	2371	2578	2650	2704	c5	-0.257644694512
37.8	100	1452	1630	1752	1888	2183	2476	2725	2821	2927	c6	-0.001598080511
43.3	110	---	1620	1754	1904	2233	2566	2862	2983	3146	c7	-0.006845210358
48.9	120	---	---	1726	1893	2260	2638	2985	3135	3359	c8	0.003330726594
54.4	130	---	---	---	1851	2261	2689	3093	3273	3563	c9	0.002346627394
60.0	140	---	---	---	---	2234	2716	3181	3394	3755	c10	-0.000480770172

Note: 1. Nominal Performance Values ($\pm 5\%$) 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.

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PRODUCT SPECIFICATION**MODEL : CS33KQME-TFD-XXXXX****K) PERFORMANCE TABLES**

Return Gas Temp.	18.33°C (65°F)	Voltage	380V, 60 Hz, 3 Phase
Sub - cooling	0 °C (0 °F)	Compressor Cooling	400 ft3 / minute
Ambient Temperature	35 °C (95 °F)	Refrigerant	R-134a

L) COOLING CAPACITY (Btu / h)

Condensing Temperature		Evaporating Temperature									Coefficients	
°C		-23.3	-17.8	-15.0	-12.2	-6.7	-1.1	4.4	7.2	12.8	c1	21028.063077077200
	(°F)	-10	0	5	10	20	30	40	45	55	c2	1067.397128988920
21.1	70	12185	16456	19442	22937	31286	41158	52211	58072	70249	c3	17.999271436261
26.7	80	11441	15111	17791	20978	28698	37929	48327	53856	65359	c4	11.520165565350
32.2	90	10563	13666	16058	18953	26081	34706	44484	49698	60562	c5	-8.717067751897
37.8	100	9574	12146	14267	16889	23459	31513	40706	45623	55883	c6	-1.474951704536
43.3	110	---	10575	12443	14808	20856	28374	37019	41656	51346	c7	-0.057272675816
48.9	120	---	---	10610	12737	18297	25314	33445	37820	46977	c8	-0.006657899655
54.4	130	---	---	---	10698	15806	22358	30010	34141	42798	c9	0.017578800371
60.0	140	---	---	---	---	13408	19529	26737	30641	38835	c10	0.004067333142

M) INPUT POWER (W)

Condensing Temperature		Evaporating Temperature									Coefficients	
°C		-23.3	-17.8	-15.0	-12.2	-6.7	-1.1	4.4	7.2	12.8	c1	679.958485260891
	(°F)	-10	0	5	10	20	30	40	45	55	c2	27.729122092701
21.1	70	1516	1679	1788	1908	2159	2383	2536	2572	2531	c3	17.080077426646
26.7	80	1585	1755	1871	1999	2271	2525	2715	2771	2779	c4	0.071389470957
32.2	90	1623	1805	1930	2069	2368	2656	2888	2968	3028	c5	-0.288415728218
37.8	100	1627	1826	1962	2114	2445	2773	3052	3159	3278	c6	-0.002713556404
43.3	110	---	1814	1964	2132	2501	2874	3205	3341	3524	c7	-0.007675445521
48.9	120	---	---	1933	2120	2531	2954	3344	3511	3762	c8	0.003736595881
54.4	130	---	---	---	2073	2533	3012	3464	3665	3991	c9	0.002625284802
60.0	140	---	---	---	---	2503	3042	3562	3801	4206	c10	-0.000534892603

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.

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PRODUCT SPECIFICATION**MODEL : CS33KQME-TFD-XXXXX****R) MECHANICAL SPECIFICATIONS**

Parameter	Unit	Value
Cylinder Bore Diameter	cm (inch)	4.98 (1.960)
Crank - Shaft Eccentricity	cm (inch)	1.30 (0.511)
Crank - Shaft Stroke	cm (inch)	2.60 (1.23)
Approximate Internal Free Volume (Without Oil)	cm ³ (inch ³)	7000 (427)
Maximum Residual Moisture	mg	300
Maximum Internal Solid Residue / Impurities	mg	40

S) ELECTRICAL SPECIFICATIONS

Parameter	Unit	Value
Motor Type	---	2 Pole, Induction, Three Phase
Nominal Motor Speed	rpm	2,900 @ 50Hz 3,500 @ 60Hz
Nominal Motor Winding Resistance (@ 25 °C)	Main	Ω 2.76 To 3.08
	Aux.	Ω ---
Nominal Motor Output Power	kW	4.2
Max. Allowable Motor Winding Temp.	°F (°C)	266 (130) B Class Insulation
Relay		
Type	---	N/A
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		37HM-527-14
Disc Opening Temperature	°F (°C)	230 To 248 (110 To 120)
Disc Closing Temperature	°F (°C)	152 To 158 (52 To 70)
1 st Cycle Trip Current	A	37
1 st Cycle Trip On Time	second	2 To 10
Terminal Fused Cluster	---	Screw Type Connector
Wire Material	---	Hermetic Grade Round Enameled
Wire Enamel Designation & Construction	---	H Class, Dual Coated

SPECIFICATION

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PRODUCT SPECIFICATION**MODEL: CS33KQME-TFD-XXXXX****T) PERFORMANCE SPECIFICATIONS**

Parameter	Unit	Value
Bare Compressor Sound	dBA	86.0 Maximum
Bare Compressor Vibration	µm	160.0 Maximum
Compressor Discharge Pulse	psi	10.0 Maximum

U) TEST CONDITIONS for R-404A

Parameter	Voltage	Suction Pressure	Discharge Pressure	Top Shell Temperature	Ambient Temperature
Unit Test	V	kg/cm ² (psig)	kg/cm ² (psig)	°C (°F)	°C (°F)
Overload (High Load)	462, 50Hz 506, 60Hz	5.13 (73)	31.70 (451)	--	46 (115)
Blocked Fan	380, 50Hz 460, 60Hz	6.7 (95)	30.58 (435)	--	35(95)
Low Voltage Start: Unequalised	342, 50Hz 361, 60Hz	8 (114)	25.3(360)	65(149)	--
Equalised	342, 50Hz 361, 60Hz	14.3 (203)	14.3(203)	65(149)	--
Low Voltage Run	342, 50Hz 361, 60Hz	5.13 (73)	31.70 (451)	--	46 (115)

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

V) REFERENCE APPLICATION DETAIL CONDITIONS

Parameter	Unit	Value
Maximum Allowable Ambient Temperature	°C (°F)	46 (115)
Maximum Discharge Line Temperature	°C (°F)	135 (275)
Maximum Return Gas Temperature	°C (°F)	43 (109)

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

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