

TerraMAX[®] LOW VOLTAGE GENERAL INDUSTRIAL MOTOR BROCHURE

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TerraMAX[®] LOW VOLTAGE MOTOR

INTRODUCTION

Marathon[®] Motors unveils TerraMAX general purpose motors for the IEC^{®*} industry. Bringing more than 100 years motor experience in the TerraMAX series which consists of SCA(IE2), TCA(IE3) & QCA(IE4) models, which are designed to meet all the world class IEC environment demands on low voltage motor platform, these motors deliver premium efficiency in the true sense of its performance and ever-changing requirements of the myriad of industry applications.

TerraMAX motors provide the performance, quality and long lasting reliability of the IEC motors market along with tough and robust features to cater demanding applications requirements of the industry.

TerraMAX motors are designed and built for IEC construction with premium efficiency for the global Industry. Our global design team with experience of more than 100 years in motor design noted the requirements of all global customers along with their perspectives across regions of IEC motor world and produced unique new motor platform – Marathon TerraMAX cast iron motors for the market.

Stock, Non-stock and Build-up models

Please contact your local sales person to get more information on models that are readily available in stock. For non-stock and build-up models minimum quantity may be applicable for each region.

Warranty

Our world class manufacturing process and quality systems ensure that the MarathonTerraMAX series motor warrants to be free from defects in material and workmanship. Please refer out terms and conditions of sales for warranty terms.

STORAGE PROCEDURES

When the motor is not for immediate use, store as follows:

- Clean and dry location.
- Avoid locations with large temperature swings that will result in condensation.
- Motors must be covered to eliminate airborne dust and dirt build up on the motor.
- If the storage location exhibits high vibration, place isolation pads under motor to minimize damage to motor bearings.

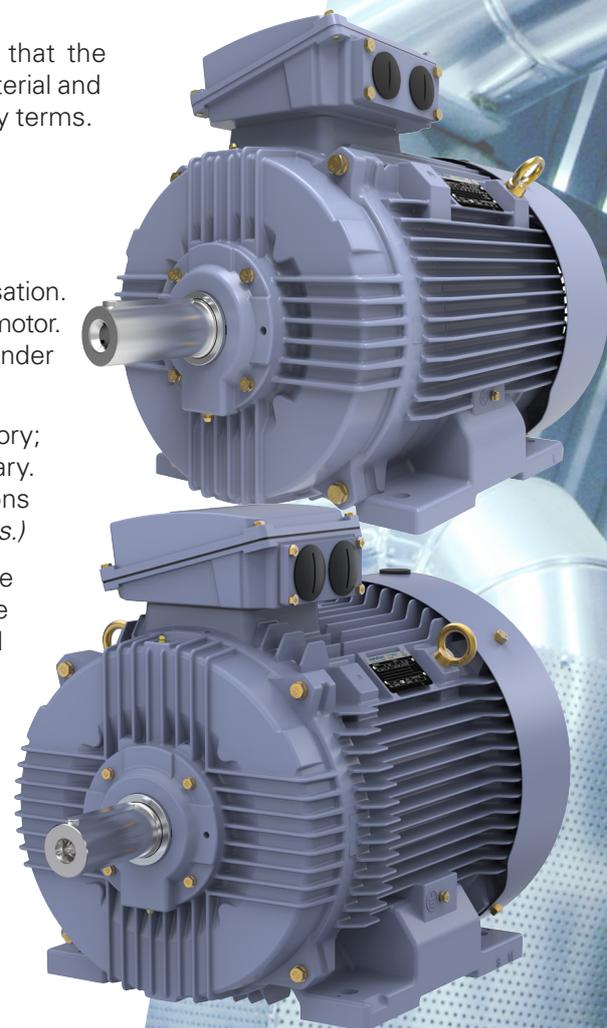
A. Bearing Lubrication: Bearings are grease packed at the factory; relubrication upon receipt of motor or while in storage is not necessary. If stored more than one year, add grease per Lubrication Instructions before start-up. *(See section 7.5 of TerraMAX IOM Manual for more details.)*

B. Shaft Rotation: Rotate the motor shaft 5 - 10 rotations every three months to distribute the grease in the bearings. This will reduce the chance for corrosion to form on the bearing rolling elements and raceways. **NOTE:** Shaft seals and bearing seals may add drag.

C. Damp or Humid Storage Locations: Treat unpainted flanges, shafts, and fittings with a rust inhibitor. Apply appropriate power to the motor's space heaters (if so equipped) or utilize a trickle heating system to minimize condensation on motor windings.

D. Motor Winding: Stator winding should be insulation resistance tested once every two-month period to ensure that the integrity of the winding insulation has been maintained. If winding resistance to ground is less than 1.5 Meg-ohms, consult the local authorized service shop before energizing the motor.

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OVERVIEW AND STANDARDS

Marathon® TerraMAX® series motors are based on the TerraMAX low voltage motor platform and therefore hold the promise of performance, quality and long lasting reliability to all customers.

The power range of these motors covers 0.75kW to 375kW in voltages ranging from 200V to 690V for 50Hz & 60Hz operation. The motors meet the IE2, IE3 & IE4 (or Premium) efficiency requirements as per IEC 60034-30:2008 when tested to the latest test standard IEC 60034-2-1:2014

Marathon TerraMAX motors dimensionally confirm to IEC 60034 (AS/NZS 1359). IEC product ranges are built using cast iron frame construction from IEC 80-355.

PRODUCT SUMMARY

	SCA(IE2)	TCA(IE3)	QCA(IE4)
Output	0.75 - 375 kW	0.75 - 375 kW	0.75 – 315 kW
Pole	2 - 8P		
Enclosure	Totally enclosed fan cooled		
Mounting	Foot, flange and foot-flange		
Frame	80 - 355		
Voltage*	200 - 690 V		
Frequency	50Hz, 60Hz, variable frequency		
Protection	IP55		
Insulation	Class F		
Design Ambient	40°C		
Working range	-20°C to 60°C		
Vibration	Class A (precision on request)		
Duty	S1 to S9 duty class		

STANDARDS

The TerraMAX motors generally comply to the list of standards indicated in the table below. Any deviation to the standard in terms of performance or dimension will indicated in respective tables on subsequent pages related to motor performance or dimensions.

	SCA(IE2)	TCA(IE3)	QCA(IE4)
Efficiency	60034-30-1		
Dimension	60072-1		
Cooling	60034-6		
Term. marking	60034-8		
Noise level	60034-9		
Vib. level	60034-14		
Protection	60034-5		
Test method	60034-2-1		

KEY REGIONS – EFFICIENCY STANDARDS

The motors also comply with the specific regional standard listed below for test efficiency.

Australia / New Zealand	AS/NZS 1359.102.3 method A MEPS (table A3) as per AS 1359.5
Brazil	NBR 17094-1: 2008
Canada	CSA C390-10
China	GB/T 1032: 2005
India	IS: 12615: 2011
USA	IEEE 112B & CSA C390-10

FORMULAE AND CONVERSION FACTORS

Torque	lb-ft = 0.7376 x N-m
Power	HP = 1.341 x kW
Temperature	°C = (°F – 32) x 5/9
Torque (kg-m)	974 x kW / RPM
Torque (lb-ft)	5252 x HP / RPM
Brake torque	(5252 x HP / RPM) x SF (SF=1.4) SF=2 to 2.5 for crane & hoists

MECHANICAL DESIGN

Standard shaft end - 1	7							
		B8	IM2071	IM2171	IM2171			
	6							
		B7	IM2061	IM2161	IM2161			
	5							
		B6	IM2051	IM2151	IM2151			
	3							
		V6	V36	V36	V36	V3	V19	V19
	1							
		V5	V15	V15	V15	V1	V18	V18
IV	0							
		B3	B35	B34A	B34B	B5	B14A	B14B
III								
II		IM10	IM20	IM21	IM21	IM30	IM36	IM36
I		IM1 FOOT	IM2 FOOT AND FLANGE		IM3 FLANGE			

MOUNTING

Motors are available in the configurations as per the table. Contact Regal for any other mounting.

NOTE:

- Vertical motor with shaft down to be specified with or without canopy.
- No exposure to direct sunlight.
- Specified mounting to be mentioned when ordering motors. Actual motor mounting may influence protection class and bearing design.

MATERIAL AND CONSTRUCTION

Stator frame	Cast iron with integral foot
Endshield	Cast iron
Terminal box	Cast iron
Fan	Polypropylene
Fan cover	MS fabricated
Fasteners	Corrosion protected

FRAME CONSTRUCTION

Marathon®TerraMAX® low voltage general series motors are built from high grade cast iron with minimum 200MPa tensile strength.

The motor frame is designed using the latest analytical tools followed by validation. The integral foot construction ensures that the alignment of the drive shaft and motor feet remain secured under all working conditions, including the starting and maximum power output demands. The fins on the body are designed to dissipate the optimum amount of heat with the lowest airflow over the body corresponding to higher pole count, resulting in lower windage loss and therefore higher efficiency. The spacing between the fins is also optimized to prevent accumulation and build-up of dirt.

SHAFT

Marathon TerraMAX low voltage general series motors are manufactured with a AISI 1045 (C45) tensile strength shaft material. The design is suitable to provide strength and rigidity during operation. Bearing journals are ground to ensure an accurate bearing fit and positioning. Full key is provided with each motor.

Custom shaft extension run out, concentricity and perpendicularity to the face of standard flange mount motors comply with normal grade tolerance as specified in IEC 60072 and IEC 60034. Precision grade tolerance is available upon specific request. Non-standard dimensions and shaft material is provided on specific request.

Shaft made of special steel (i.e.EN24, EN57 or stainless steel grades) are also available on request to suit the requirements of application.

SHAFT DIMENSIONS

DIA mm	TOL µm	LEN mm	KEY mm	SEAT mm
19	9 / -4	40	6x6x32	15.5
24	9 / -4	50	8x7x40	20
28	9 / -4	60	8x7x50	24
38	18 / 2	80	10x8x70	33
42	18 / 2	110	12x8x100	37
48	18 / 2	110	14x9x100	42.5
55	30 / 11	110	16x10x100	49
60	30 / 11	140	18x11x125	53
65	30 / 11	140	18x11x125	58
75	30 / 11	140	20x12x125	67.5
80	30 / 11	170	22x14x160	71
95	35 / 13	170	25x14x140	86

All general industry motors from IEC®* 200 and above are fitted with shaft-locking arrangement to prevent false brinelling during transportation. The motors should always be transported or stored with this clamp arrangement and tensioned periodically to avoid bearing damage.

Once the motor reaches its final destination and is ready for installation, the shaft-locking arrangement must be removed before the motor is run no-load to confirm that the bearings are in good condition. After this initial run, normal installation can continue with pulley or coupling.

ENDSHIELDS/ END-BRACKET

The motor end-shields are made from the same grade of cast iron as the stator frame. These are ribbed to provide a high level of cooling for the bearings. The depth of the end-shield is maintained to ensure they remain sturdy under high stress during starting duty and maximum output condition. The design ensures that the end-shield withstands the radial and axial forces encountered for most of the general applications.

ROTOR

The rotor is of squirrel cage design and constructed from diecast aluminum, dynamically balanced for smooth operation.

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PAINT

- The standard motor paint color is RAL 5014 (Pigeon Blue).
- Motor coating for non-special anti-corrosion requirements.
- Motor coating for motors installed indoor and in general outdoor areas (max. temperature <150°C) with no industry gas concentration.

Tropical 'TH' coating to be used for the motors installed outdoor areas of tropical & humid environment with high humidity and temperature (max temperature <150 degree C) and sunshine exposure as well as in areas with chemical gas pollution, but not with severe industry gas concentration. Special paint system can be provided on request to suit stringent requirements for motors in corrosive environments such as acid, salt water and extreme climatic conditions.

Anticorrosion requirement	Thickness of primer (μm)	Primer Material	Thickness of intermediate coat (μm)	Intermediate coat Material	Thickness of top coat (μm)	Top coat Material	Total thickness (μm)
[Universal] Suitable for both indoor & outdoor installation Medium anti-corrosion protection	30-50	iron red epoxy resin ester	n/a	n/a	20-50	polyurethane paint	70-100
[TH] Installation in tropical and humid environment	35-50	epoxy zinc rich primer	35-50	epoxy mio barrier paint	30-50		120-150

DEGREE OF PROTECTION

Marathon®TerraMAX® general motor are rated to IP55 degree of protection, indicating a Dust-protected enclosure and protection against water jets shall not enter the enclosure in harmful quantities). Enclosure designation also complies with IEC®* 60529 and AS 60529.

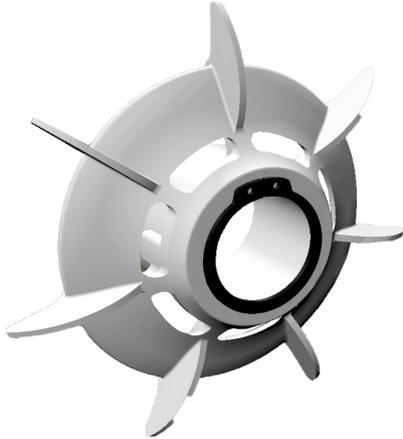
Enclosure type	Degree of protection	Protection against mechanical particles		Protection against water
		Accidental contact	Solid foreign particles	
Open circuit cooled (ODP)	IP23	contact with fingers	solid body > 12mm diameter	water spray < 60° to vertical
Totally Enclosed Fan Cooled (TEFC)	IP44	contact with tools / object	against solid body > 1mm diameter	splashing water, all directions
	IP54	complete protection against accidental contacts	harmful dust deposits	water jet from all directions
	IP55			non-heavy seas, strong jets
	IP56			heavy seas, strong jets
	IP65		ingress of dust	water jet from all directions
	IP67			submersion (time & pressure)
	IP68			continued submersion as per manufacturer

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COOLING

Marathon® TerraMAX® general series motors are fitted with a patented low noise bi-directional fan. With its unique design modelled on a shark fin profile, the fan is designed to minimize air turbulence within the fan cover and allow smooth airflow.

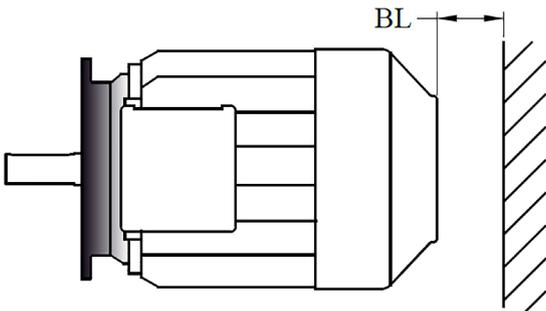
Picture shown at the right side is for illustration purpose only. Actual product may vary due to product enhancement.



Low noise Bi-directional fan

The fan and fan cover are designed to eliminate the need for special acoustic control to meet noise level in accordance with IEC®* 60034-9. For special applications such as low speed operation with a variable speed drive or for applications with frequent start and stop, a separately driven cooling fan can be fitted as optional feature.

During installation, care needs to be taken to not hinder the air flow to the inlet of the fan cover. In accordance with standard practice, the minimum axial distance between the fan cover mesh and the closest barrier is about half the motor shaft height, which allows sufficient cool air and prevents recirculation. Applications that do not meet these requirements should be referred to the technical support team.



Frame size	BL - mm
80 - 100	50
112 - 132	65
160 - 180	90
200 - 250	125
280	155
355	255

NOISE

The cooling system comprising of fan and fan cover, as discussed in the previous section, is designed for optimal air flow with minimum losses and streamlined airflow. This enables the fan to maintain low noise levels.

*Sound pressure level (50 Hz) - dB(A)

Frame	2P	4P	6P	8P
80	56	54	-	-
90	63	54	51	-
100	63	55	55	52
112	64	58	58	56
132	64	61	59	58
160	71	64	61	59
180	72	64	62	60
200	73	65	62	61
225	75	65	63	61
250	75	68	65	63
280	76	68	66	64
315	83	69	66	64
355	90	82	70	65

*Sound pressure level (60 Hz) - dB(A)

Frames	2P	4P	6P	8P
80	60	58	-	-
90	63	54	51	-
100	63	55	55	52
112	68	62	62	60
132 (210)	68	65	64	62
160 (250)	75	68	65	64
180 (280)	76	68	66	64
200 (320)	77	69	66	65
225 (360)	79	69	67	65
250 (400)	79	72	69	67
280 (445)	80	72	70	68
315 (449)	87	73	70	68
355	94	86	74	69

*Sound pressure level taken at 1m distance from the motor at no load condition

BALANCING

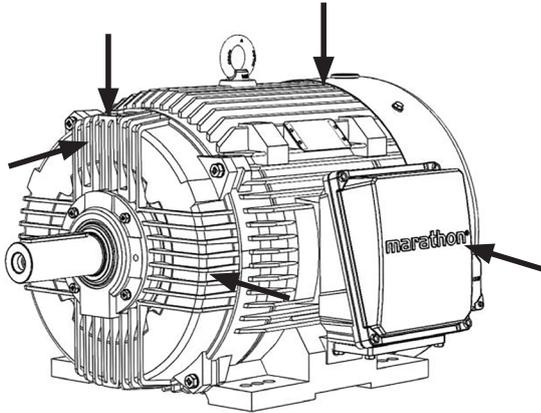
All TerraMAX® motors have rotors balanced separately from the external cooling fan, so that the fan can be removed or changed without altering the balance of the rotor. All rotors are balanced with a half key to fine tolerances (G2.5). Balancing to G1 tolerances is available on request.

VIBRATION & ITS SENSORS

TerraMAX motors comply with the limits of vibration severity as mentioned in IEC®* 60034-14. Values relate to rotating machinery measured in soft suspension.

Frame	Vibration (mm/s)
80-132	1.6
160-280 (250-355)	2.2
315-355	2.8

VIBRATION SENSORS



Provision for fitting vibration sensors for condition monitoring is available on all Marathon® TerraMAX® general motors.

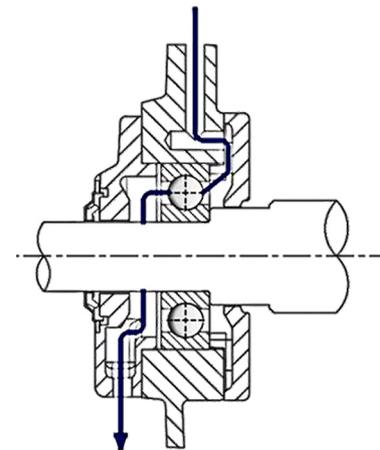
BEARING AND LUBRICATION

All TerraMAX general purpose motors have high quality bearings made from vacuum degassed steel. The standard bearings in the range are selected to provide long operating life, quieter running and high load carrying capacity.

NU type roller bearings are optional. All other bearings are deep groove ball bearings as shown in the table within this section.

TerraMAX General Purpose Motors Bearing list

IEC	DE STD	DE OPT	NDE STD
80	6204ZZ		6204ZZ
90	6205ZZ		6205ZZ
100	6206ZZ		6206ZZ
112	6306ZZ		6206ZZ
132	6308ZZ		6208ZZ
160	6309ZZ	6309 / NU309	6209ZZ
180	6311ZZ	6311 / NU311	6211ZZ
200	6312	NU312	6212
225	6313	NU313	6213
250, 2P	6314	---	6314
250, 4-8P	6314	NU314	6314
280, 2P	6314	---	6314
280, 4-8P	6317	NU317	6317
315, 2P	6316	---	6316
315, 4-8P	6319	NU319	6319
355, 2P	6317	---	6317
355, 4-8P	6322	NU322	6322



GREASE PATH

The drive end bearing is locked to prevent axial movement. Motors in IEC 80-180 have shielded bearings. IEC 355 & above frames use angular contact bearings for V1 mounting.

The bearings are pre-lubricated with a lithium base grease. All motors with IEC 200 frame and above are fitted with grease nipples and have a flush-through pressure grease relief path, which allows the bearing to be re-lubricated without stopping the motor.

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MARATHON® TERRAMAX® SERIES MOTORS – BEARING SIZE AND RE-LUBRICATION DATA

For motor frames 160 to 355 and above, in applications with increased radial force, ball bearings can be substituted for cylindrical roller bearings at the drive end, in accordance with the bearings table on this page.

The tables on this page and subsequent pages give the relubrication details for bearing used for TerraMAX® general purpose motors.

IEC®* Frame Size	Ball bearing						Roller bearing		
	Drive end bearing			Non-drive end bearing			Drive end bearing		
	Brg No	Relubrication		Brg No	Relubrication		Brg No	Relubrication	
Qty		Interval	Qty		Interval	Qty		Interval	
3000 R/MIN = 2 POLES									
160	6309	15	5000	6209	13	5000			
180	6311	20	4000	6211	18	4000			
200	6312	22	3000	6212	20	3000			
225	6313	24	3000	6213	22	3000			
250	6314	26	2000	6314	26	2000			
280	6314	26	2000	6314	26	2000			
315	6316	38	1500	6316	38	1500			
355	6317	38	1500	6317	38	1500			
355	6319	45	1000	6317	38	1500			
1500 R/MIN = 4 POLES									
160	6309	15	12000	6209	13	12000	NU309	15	6000
180	6311	20	10000	6211	18	10000	NU311	20	5000
200	6312	22	9000	6212	20	9000	NU312	22	4500
225	6313	24	9000	6213	22	9000	NU313	24	4500
250	6314	26	8000	6314	26	8000	NU314	26	4000
280	6317	38	4000	6317	38	4000	NU317	38	2000
315	6319	45	3000	6319	45	3000	NU319	45	1500
355	6322	60	3000	6322	60	3000	NU322	60	1500
1000 R/MIN = 6 POLES									
160	6309	15	16000	6209	13	16000	NU309	15	8000
180	6311	20	14000	6211	18	14000	NU311	20	7000
200	6312	22	12000	6212	20	12000	NU312	22	6000
225	6313	24	12000	6213	22	12000	NU313	24	6000
250	6314	26	10000	6314	26	10000	NU314	26	5000
280	6317	38	7000	6317	38	7000	NU317	38	3500
315	6319	45	5000	6319	45	5000	NU319	45	2500
355	6322	60	5000	6322	60	5000	NU322	60	2500
750 R/MIN = 8 POLES									
160	6309	15	16000	6209	13	16000	NU309	15	8000
180	6311	20	14000	6211	18	14000	NU311	20	7000
200	6312	22	12000	6212	20	12000	NU312	22	6000
225	6313	24	12000	6213	22	12000	NU313	24	6000
250	6314	26	10000	6314	26	10000	NU314	26	5000
280	6317	38	7000	6317	38	7000	NU317	38	3500
315	6319	45	5000	6319	45	5000	NU319	45	2500
355	6322	60	5000	6322	60	5000	NU322	60	2500

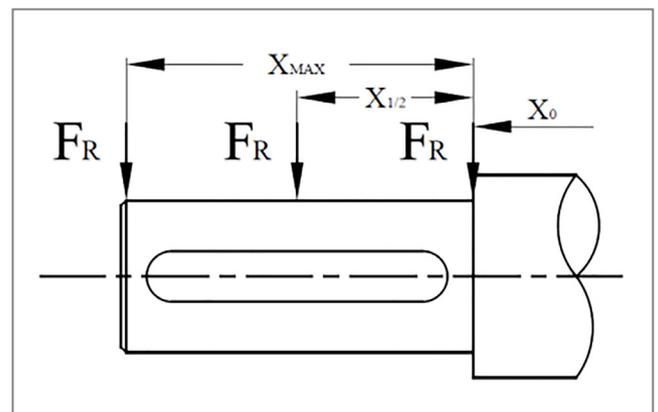
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**STANDARD BALL BEARING
MAXIMUM RADIAL FORCES FR [N]**

Size	Poles	Xo	X1/2	Xmax
80	2	500	450	410
	4	500	450	410
90	2	570	500	450
	4	570	510	460
	6	790	710	640
100	2	940	840	750
	4	920	820	740
	6	1240	1100	990
	8	1360	1200	1080
112	2	1550	1390	1250
	4	1540	1380	1240
	6	1810	1610	1460
	8	2000	1780	1610
132	2	2230	1980	1780
	4	2250	2000	1800
	6	2620	2330	2100
	8	2920	2600	2340
160	2	2730	2420	2170
	4	2760	2440	2190
	6	3330	2950	2650
	8	3700	3280	2940
180	2	3880	3510	3200
	4	3870	3500	3180
	6	4600	4160	3790
	8	5100	4600	4200
200	2	4000	3620	3310
	4	4290	3880	3540
	6	5040	4560	4160
	8	5510	4990	4560
225	2	4530	4120	3790
	4	4790	4250	3820
	6	5600	4980	4480
	8	6270	5570	5010
250	2	4810	4320	3920
	4	5100	5520	5010
	6	6110	5500	4990
	8	6620	5950	5400
280	2	3620	3290	3040
	4	5660	4590	4170
	6	7250	6550	5960
	8	7580	6840	6230
315	2	5890	5460	5090
	4	6440	5900	5450
	6	8000	7330	6760
	8	8570	7870	7260
355	2	5570	5210	4900
	4	8180	7600	7090
	6	9310	8650	8070
	8	10540	9760	9140

**ROLLER BEARING
MAXIMUM RADIAL FORCES FR [N]**

Size	Poles	Xo	X1/2	Xmax
160	4	7370	6530	5860
	6	8500	7530	6750
	8	9280	8220	7400
180	4	10500	9490	8660
	6	12000	10870	9920
	8	13110	11870	10830
200	4	11180	10120	9230
	6	12730	11520	10530
	8	13840	12530	11450
225	4	13530	12030	10870
	6	15410	13730	12370
	8	16890	15040	13550
250	4	14820	13330	12100
	6	16980	15270	13860
	8	18390	16540	15020
280	4	21150	19150	17480
	6	24560	22160	20190
	8	26330	23760	21660
315	4	24340	22290	20590
	6	28090	25720	23740
	8	30360	27820	25680
355	4	33220	30810	28780
	6	37360	34730	32410
	8	40970	38080	35560

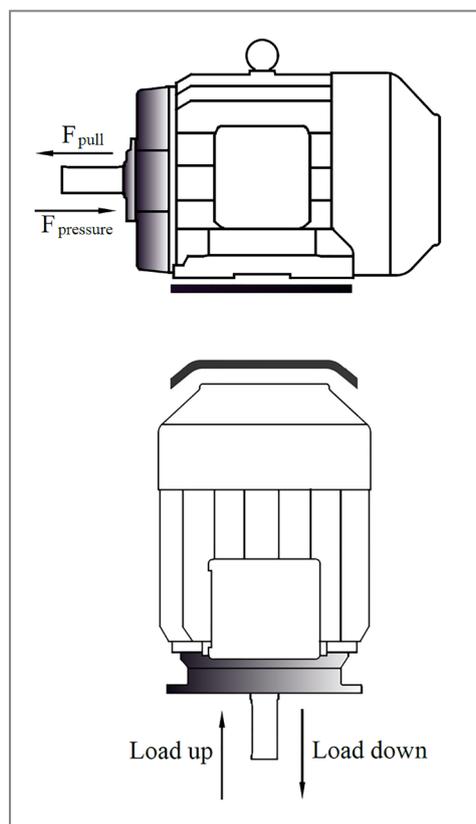


- The table shows the Permissible Radial Forces in (N), assuming zero axial force and standard ball bearing.
- The values are based on normal conditions at 50Hz and calculated at 20K working hours for 2 pole motors and 40K hours for 4, 6 and 8 pole motors.
- Reduce the values by 10% for 60Hz speeds.

STANDARD BALL BEARING AT DE/ NDE - MAXIMUM AXIAL FORCES Fr [N]

Size	Poles	B3 Fpressure	B3 Fpull	V1 Load up	V1 Load down
80	2	780	240	820	220
	4	790	250	840	220
90	2	830	270	890	230
	4	830	270	910	230
100	6	950	390	1030	340
	2	1090	430	1170	390
	4	1080	420	1230	330
100	6	1250	590	1370	520
	8	1370	710	1530	610
	2	1440	780	1550	720
112	4	1440	780	1600	680
	6	1680	1020	1810	940
	8	1870	1210	1990	1120
132	2	2020	1140	2210	1030
	4	2030	1150	2340	960
	6	2360	1480	2680	1290
132	8	2640	1760	2920	1590
	2	2420	1480	2860	1190
	4	2430	1490	3040	1110
160	6	2900	1960	3510	1580
	8	3240	2300	3880	1900
	2	3180	2120	3720	1780
180	4	3180	2120	3930	1640
	6	3770	2710	4590	2200
	8	4220	3160	5090	2630
200	2	3430	2310	4240	1790
	4	3570	2450	4520	1850
	6	4210	3090	5330	2390
200	8	4680	3560	6050	2720
	2	3770	2630	4780	1980
	4	3890	2750	5200	1900
225	6	4590	3450	6060	2540
	8	5180	4040	6840	3030
	2	4100	2900	5320	2130
250	4	4240	3040	6130	1810
	6	5070	3870	6970	2680
	8	5610	4410	8070	2880
280	2	3480	2280	5890	710
	4	4760	3320	8530	850
	6	5920	4480	9860	1960
280	8	6410	4970	10160	2590
	2	4690	3410	8380	1000
	4	5500	3540	10350	2300
315	6	6650	4690	12180	3520
	8	7300	5340	14170	3670
	2	4650	3210	10220	n/a
355	4	7150	4010	15040	1200
	6	8200	5060	16670	2430
	8	9210	6070	18230	3560

Grey Shaded - valid for 20K hours of bearing life.



- The table shows the Permissible Radial Forces in (N), assuming zero axial force and standard ball bearing or roller bearings when higher radial forces are required.
- The values are based on normal conditions at 50Hz and calculated at 20K working hours for 2 pole motors and 40K hours for 4, 6 and 8 pole motors.
- Reduce the values by 10% for 60Hz speeds.
- Valid for 20K hours of bearing life.

ELECTRICAL DESIGN

Marathon® TerraMAX® general purpose motors are high efficiency (IE2-SCA), premium efficiency (IE3-TCA) and super premium efficiency (IE4-QCA) motors, specifically designed for heavy duty applications in the general industry. The electrical performance of the motors is designed to meet the stringent requirements of general industry applications and achieve a design life of approximately 20 years.

VOLTAGE AND FREQUENCY

Motors can be designed for 200V to 690V and for 50Hz or 60Hz supply frequency, based on the standard supply conditions in the region. The motor can also be operated at alternate voltage other than the standard voltage. However, in such cases the rated performance values should be multiplied by factors in the table below to get more realistic performance data. The example below shows performance at alternate voltage for a 400V/50Hz motor.

V (f)	RPM	O/P	I	FLT	LRT	BDT
380 (50)	1	0.95	1	0.95	0.90	0.90
400 (50)	1	1	1	1	1	1
415 (50)	1	1	1	1	1.08	1.08
440 (50)	1	1	1	1	1.18	1.18
415 (60)	1.2	1	1	0.83	0.74	0.74
440 (60)	1.2	1.05	1	0.87	0.83	0.83
460 (60)	1.2	1.1	1	0.91	0.91	0.91
480 (60)	1.2	1.15	1	0.96	0.99	0.99

For critical applications, data should be confirmed.

DIRECTION OF ROTATION

All general duty motors are capable of operation in either direction of rotation. To reverse the direction of rotation interchange any two of the phase connections. For details on the terminal connection, refer to the specific section in this brochure.

The unique fan design modelled on the shark fin profile provides the required cooling at low noise in either direction of rotation. The standard direction of rotation is clockwise when viewed from driving end (DE).

SERVICE FACTOR

Marathon TerraMAX motors are suitable to operate with 1.15 service factor at 40° ambient for standard frame output relationships as per IEC®* 60034. The temperature rise on service factor duty would be limited to class F rise.

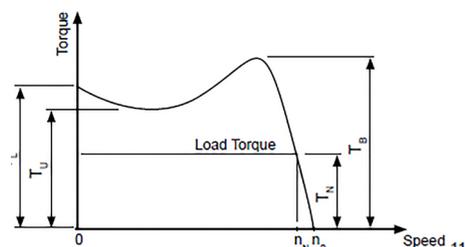
For higher output in standard frames with service factor, contact Regal. Please see rear page for the contact details.

TORQUE CHARACTERISTICS

Where:

$$T_N = \frac{9550 \times P_N}{n_N}$$

T_N = full load torque (Nm) P_N = full load power (kW)
 n_N = full load speed (r/min) T_L = locked rotor torque
 T_U = pull-up torque T_B = break down torque
 n_s = synchronous speed



Output torque of the motor is very critical for any general duty motor. A typical torque-speed characteristics is shown in the above figure. All Marathon TerraMAX low voltage motors exceed the minimum starting torque requirements for design N as specified in IEC 60034-12. The full load torque can be calculated with the formula indicated.

TEMPERATURE

Rated output power specified in the performance data tables apply for standard ambient conditions of 40°C up to 1000m above sea level. Where temperature differs from the standard, multiplication factors in the table below should be used.

Ambient Temperature	Temperature Factor
30°C	1.06
35°C	1.03
40°C	1.00
45°C	0.97
50°C	0.93
55°C	0.88
60°C	0.82

Effective power = rated power x temperature factor

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DUTY

Standard general duty motors are suitable for S1 Duty operation. Motors can be designed for other duty cycles, supplied as Build-up option. The working cycle of equipment can be classified into duty types in accordance with the table below, according to IEC^{®*} 60034-1.

The outputs in the subsequent tables in the brochure are based on S1 duty at rated output. It is recommended to determine the duty cycle of the equipment for proper selection of the motor for the application.

N = Duration of operation under rated load

F = Duration of electrical braking

D = Duration of acceleration

V = Duration of operation on no load

R = Duration of rest and de-energized period

To determine the correct motor size for duty cycles other than S1, contact Regal. Please see rear page for the contact details.

Duty	Description	Cyclic duty factor	Typical application
S1	Continuous running duty	-	Pump, blower, fan
S2	Short time duty	-	Sluice gates, capstan
S3	Intermittent periodic duty	$N/(N+R)$	Wire drawing m/c
S4	Intermittent periodic duty with starting	$(D+N)/(D+N+R)$	Hoists, cranes
S5	Intermittent periodic duty with starting and electric braking	$(D+N+F)/(D+N+F+R)$	Hoists, rolling mills
S6	Continuous with intermittent periodic loading	$N/(N+V)$	Conveyors
S7	Continuous duty with starting and braking	-	Machine tools
S8	Continuous periodic duty related load speed changes	Combination of CDF	
S9	Duty with non-periodic load and speed variations	-	
S10	Duty with discrete constant loads an speed	-	

CDF = Cyclic Duty Factor

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TERMINAL BOX

Cast iron diagonally split terminal boxes are provided on TCA & QCA Marathon[®] TerraMAX[®] general purpose motors. SCA motor have sheet metal terminal box till 250 Frame & Above 250 Frame its Cast Iron terminal box. Motors are supplied with top mounted terminal boxes. Optionally, side mounted terminal boxes are available on request.

The terminal box is designed to accommodate fitting of standard cables. The bigger dimensions also allow aluminum cables to be terminated using bi-metallic lugs. For frames 80 to 355, the gland entry is drilled and tapped with standard metric threads as per the accompanying table. A removable gland plate is fitted to all terminal boxes for frame IEC 200 and above.

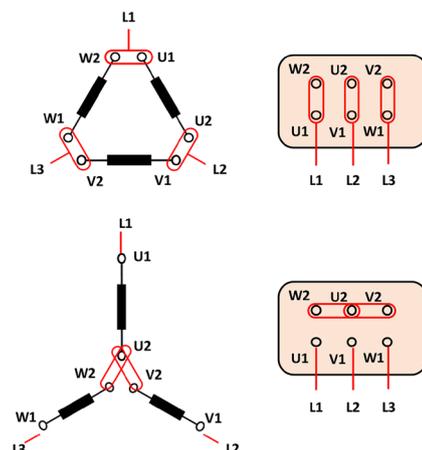
For frame IEC 80-132, the terminal box can be rotated in 180° increments. In case of frame size IEC 160 and above, the terminal box can rotate in 90° increments. The terminal box is supplied with the conduit entry facing left looking from DE side.

IEC Frame	Qty	Entry Pitch Size
80 - 100	2	M20 X 1.5
112 - 132	2	M25 X 1.5
160 - 180	2	M32 X 1.5
200 - 225	2	M40 X 1.5
250 - 280	2	M50 X 1.5
315	2	M63 X 1.5
355	4	M63 X 1.5

WINDING AND CONNECTIONS

The winding of the motors consists of modified polyester enamel covered copper wire suitable for the class of insulation and starting duty requirement of the motor to withstand high starting current.

All motors 3kW and below are connected in star configuration while motors over 3kW are wired in delta configuration. Standard connection has 6 leads in the terminal box with connecting links to facilitate different starting methods based on the application suitability. Some of the terminal connections are indicated below.



MOTOR STARTING

All Marathon® TerraMAX® motors are suitable for starting by DOL, Star/Delta starter or electronic soft starter. Motors are suitable for all standard methods of starting. It is imperative however to ensure that the starting torque and current limitations of each starting method be considered along with the motor performance curves to finalize the suitable starting method for a given application. DOL starting – Direct on Line starting or starting across the line is the simplest method of starting. The limitation of this method is higher starting current and sudden starting jerk due to high starting torque. In specific applications this may result in stresses on the coupling and drive application.

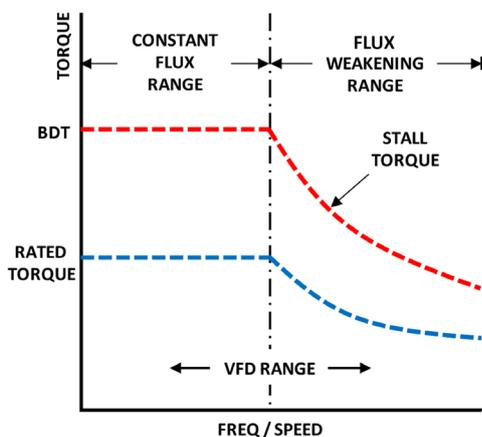
Star-Delta starting – in cases where the starting current needs to be limited due to supply conditions star-delta starting may be used. The current reduced to about 30% and torque to about 25% of the value on DOL. The connection switches to delta when rated speed is achieved.

Soft starter starting – this is the more commonly used method when smooth starting is required. This is achieved by limiting the starting current and thereby limiting the torque. Gradual increase of the current accelerates the load to full speed over a longer starting period.

OPERATION WITH VARIABLE SPEED DRIVES

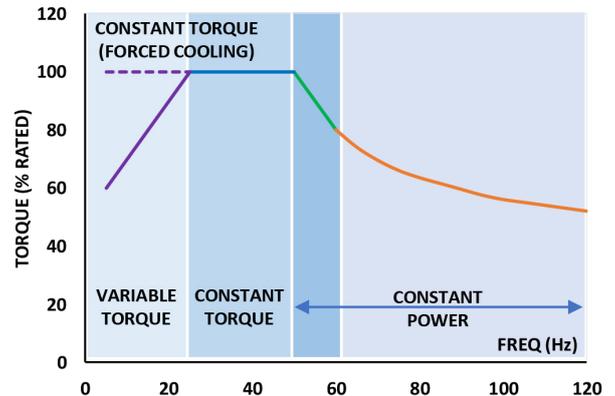
Variable voltage variable frequency (VVVF) drives are primarily recognized for their ability to manipulate power from a constant 3 phase 50/60Hz supply converting it to variable voltage and variable frequency power. This enables the speed of the motor to be matched to its load in a flexible and energy efficient manner. The only way of producing starting torque equal to full load torque with full load current is by using VVVF drives. The functionally flexible VVVF drive is also commonly used to reduce energy consumption on fans, pumps and compressors and offer a simple and repeatable method for changing speeds and flow rates.

An example of a motor speed/torque characteristic on a VSD is shown below:



Below rated frequency, the motor is in constant torque range. Above rated frequency the motor is in constant power range.

When operating with a VVVF drive the TerraMAX® motor, care must be taken to ensure appropriate motor cooling is provided at low speed. The load-ability curve for TerraMAX motors is shown below. Where the low speed load requirement of the application is beyond the curve then forced cooling may be required.



The switching characteristics of the power semiconductor devices of a VVVF can lead to peak voltages in excess of rated voltage of the motor with short rise times and generates common-mode voltage which lead to currents flowing within the motor and shaft voltages. An insulated end shield on the non-drive end and a shaft earthing device make the TerraMAX motor suitable for operation on a VVVF. This is recommended for motors 315 frame and above.

INSULATION AND VARNISH

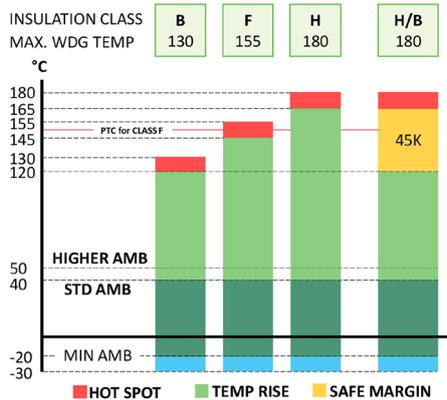
Various insulation materials are used in electric motors and each has its own function.

- Wire insulation
- Slot and phase insulation materials (insulation between the winding and the stator lamination pack and phase insulation between the windings heads).
- Winding impregnation.
- Insulating sleeve used to cover wire/lead connections.
- Insulation of winding leads (between the winding and the terminal board).

The maximum permissible temperature rise of the winding is determined based on the thermal class temperature limits. The temperature of the winding increases as a result of the copper and iron losses in the electric motor during operation. The winding temperature rise is determined through measuring the winding resistance, which increases with increasing temperature. To allow for any hot spots in winding lower temperature limits are specified for the insulation materials.

Marathon® motors include an offering of class F insulation with winding temperature rise in accordance with the class B (max 80K). This means that the motors have a temperature reserve of 25K. This reserve can be utilised for short-term overload, a higher ambient temperature (above 40°C), for supply voltage/frequency fluctuation etc.

These materials are specified in thermal classes referenced as Y-A-E-B-F-H-C. Every thermal class has its own temperature limit. Each material of a specific class needs to retain its mechanical and electrical properties within the temperature limit.



Due to their conservative design many sizes in the range of motors have temperature rises considerably less than 80K and therefore provide even greater safety margins.

THERMAL PROTECTION - THERMISTORS

All general purpose TerraMAX® motors are fitted with one PTC thermistor per phase, selected for a tripping temperature of 150°C. For IEC®* frame 80 to 355, the thermistors are terminated within the main terminal box.

THERMAL PROTECTION – RTDs

An additional method of monitoring temperature is to fit 3 wire PT100 Resistance Temperature Detectors (RTDs). RTDs are terminated in main/auxiliary terminal box affixed to the main terminal box. Bearing RTDs are optional from 200 frame and above.

ANTI-CONDENSATION HEATERS

All general purpose TerraMAX motors has optional fittermnt for anit-condensation heaters. These heaters are suitable for 220 - 250V operation and can be supplied connected for 380 - 440V operation for specific orders. The heaters are terminated in the auxiliary terminal box towards the left.

THERMAL WITHSTAND TIME

The starting time of the motor is dependent on the load torque, inertia and motor torque. Due to high starting current there are limitations on the number of hot or cold starts that a motor can withstand and the time within which a motor should attain rated speed such that the current drops to rated value. It is therefore required to determine the starting time of critical application in the design stage itself and ensure that it is well within the thermal withstand time of the motor in hot and cold conditions respectively.

Minimum Stall Time Frame Wise		
Frame	HOT (sec)	COLD (sec)
80	7	15
90	6	10
100	7	15
112	7	15
132	10	20
160	7	15
180	12	25
200	15	30
225	15	30
250	15	30
280	15	30
315	15	30
355	12	25

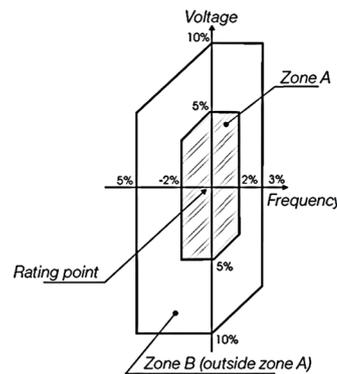
TOLERANCE ON ELECTRICAL PERFORMANCE

Electrical performance of a motor is subject to tolerance as per IEC 60034-1 (AS NZS 60034-1), to account for the variation in material, processes and supply conditions.

	≤ 150kW	> 150KW
Efficiency	-15% (1-η)	-10% (1-η)
Power factor	-1/6 (1- cosΦ)	
Locked rotor amp	+20% of the current	
Locked rotor torque	[-15% +25%] of the torque	
Pull up torque	-15% of the value	
Moment of inertia	±10% of the value	
Noise level	+3 dB(A)	

	< 1kW	≥ 1KW
Slip	±30%	±20%

Voltage and frequency variations are classified as Zone A or Zone B as per IEC 60034-1 as indicated in the figure below.



As per IEC 60034-1 an electric motor must be suitable to deliver torque contiguously in zone A. However, under this condition the motor may operate at a temperature rise above its rated value, due to power supply variations. The motor must also deliver required torque in zone B. However, there would significant performance changes and the temperature rise will he higher than zone A. Long term operation in zone B is not recommended.

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marathon[®]
Motors

TerraMAX[®] MOTORS SCA(IE2) SERIES PERFORMANCE DATA



PERFORMANCE DATA - SCA(IE2) SERIES MOTORS

Model No.	Frame	Rated (kW)	Speed (RPM)	50 Hz Supply									Moment of Inertia (kgm ²)	Weight (kg)	
				Full Load Amp			Power factor	Efficiency			Starting Current (I _{LR} /I _{RATED})	Starting Torque (T _{LR} /T _{RATED})			Breakdown Torque (T _{BD} /T _{RATED})
				380V	400V	415V		100%	75%	50%					
2 POLE MOTORS															
SCAP751A.1.G.....	80M	0.75	2825	1.8	1.7	1.6	0.83	77.4	77.4	75.8	6.3	2.7	2.8	0.0008	16.0
SCA1P11A.1.G.....	80M	1.1	2825	2.5	2.4	2.3	0.84	79.6	79.6	78.8	6.3	2.6	2.8	0.0010	17.0
SCA1P51A.1.G.....	90S	1.5	2869	3.3	3.1	3.0	0.86	81.3	81.3	80.2	6.6	3.0	3.1	0.0018	23.1
SCA2P21A.1.G.....	90L	2.2	2868	4.6	4.3	4.2	0.88	83.2	83.2	83.0	7.2	3.5	3.2	0.0023	27.0
SCA0031A.1.G.....	100L	3.0	2879	6.1	5.8	5.5	0.89	84.6	84.6	84.4	7.5	3.3	3.2	0.0032	36
SCA3P71A.1.G.....	100L	3.7	2874	-	-	6.5	0.92	85.5	85.5	86.6	7.0	3.4	3.2	0.0044	42
SCA0041A.1.G.....	112M	4.0	2864	7.6	7.2	7.0	0.93	85.8	85.8	88.0	6.7	2.7	2.9	0.0050	45
SCA5P51A.1.G.....	132S	5.5	2908	10.3	9.8	9.5	0.93	87.0	87.0	88.0	7.7	2.5	3.1	0.0140	70
SCA7P51A.1.G.....	132S	7.5	2906	13.8	13.1	12.6	0.94	88.1	88.1	88.8	7.8	2.5	3.1	0.0155	74
SCA0111A.1.G.....	160M	11	2940	21.0	20.0	19.2	0.89	89.4	89.4	88.2	7.5	2.4	2.9	0.0430	117
SCA0151A.1.G.....	160M	15	2940	28.4	26.9	26.0	0.89	90.3	90.3	89.1	7.5	2.6	3.0	0.0520	127
SCA18P1A.1.G.....	160L	18.5	2940	34	33	31	0.90	90.9	90.9	89.8	7.5	2.9	3.1	0.0650	149
SCA0221A.1.G.....	180M	22	2946	40	38	36	0.92	91.3	91.3	91.8	7.2	2.4	3.2	0.0928	196
SCA0331A.1.G.....	200L	30	2953	55	52	50	0.90	92.0	92.0	91.5	6.3	1.9	3.0	0.1687	258
SCA0371A.1.G.....	200L	37	2953	68	64	62	0.90	92.5	92.5	92.2	6.5	2.0	3.1	0.1867	273
SCA0451A.1.G.....	225M	45	2968	82	78	75	0.90	92.9	92.9	93.2	6.5	1.9	3.0	0.3376	383
SCA0551A.1.G.....	250M	55	2973	101	96	92	0.89	93.2	93.2	92.8	6.7	1.9	3.2	0.4602	477
SCA0751A.1.G.....	280S	75	2978	135	128	124	0.90	93.8	93.8	93.1	7.2	2.0	3.4	0.7438	609
SCA0901A.1.G.....	280M	90	2979	161	153	148	0.90	94.1	94.1	93.6	7.6	2.3	3.5	0.8662	677
SCA1101A.1.G.....	315S	110	2980	197	187	180	0.90	94.3	94.3	92.4	6.4	1.8	3.1	1.9330	908
SCA1321A.1.G.....	315M	132	2980	233	221	213	0.91	94.6	94.6	93.0	6.3	1.8	3.0	2.1620	960
SCA1601A.1.G.....	315L	160	2980	282	268	258	0.91	94.8	94.8	93.7	6.2	1.8	2.9	2.3720	1058
SCA2001A.1.G.....	315L	200	2984	352	334	322	0.91	95.0	95.0	94.4	7.3	2.3	3.4	3.0910	1231
SCA2501A.1.G.....	355M	250	2983	444	422	407	0.90	95.0	95.0	94.2	6.9	2.0	3.3	4.0730	1717
SCA3151A.1.G.....	355L	315	2984	560	532	513	0.90	95.0	95.0	94.9	7.0	2.1	3.3	4.7430	1856
SCA3551A.1.G.....	355L	355	2987	638	606	584	0.89	95.0	95.0	95.0	8.6	2.8	3.9	5.7960	2083
SCA3751A.1.G.....	355L	375	2986	666	633	610	0.90	95.0	95.0	95.2	8.1	2.6	3.7	5.7960	2083
4 POLE MOTORS															
SCAP752A.1.G.....	80M	0.75	1415	1.9	1.8	1.7	0.75	79.6	79.6	77.2	5.8	3.1	3.3	0.0020	15.0
SCA1P12A.1.G.....	90S	1.1	1438	2.6	2.4	2.4	0.80	81.4	81.4	78.7	6.1	2.6	2.5	0.0034	24.6
SCA1P52A.1.G.....	90L	1.5	1434	3.4	3.3	3.2	0.80	82.8	82.8	80.1	6.1	2.8	2.5	0.0039	27.4
SCA2P22A.1.G.....	100L	2.2	1441	4.9	4.7	4.5	0.81	84.3	84.3	82.3	6.4	2.7	3.0	0.0062	35
SCA0032A.1.G.....	100L	3.0	1434	6.3	6.0	5.8	0.84	85.5	85.5	85.3	6.4	2.8	3.0	0.0074	38
SCA3P72A.1.G.....	112M	3.7	1445	-	-	6.9	0.87	86.3	86.3	87.3	6.0	2.3	2.6	0.0145	48
SCA0042A.1.G.....	112M	4.0	1450	8.4	7.9	7.7	0.84	86.6	86.6	86.5	7.3	2.7	3.0	0.0145	48
SCA5P52A.1.G.....	132S	5.5	1444	11.1	10.5	10.1	0.86	87.7	87.7	89.0	7.1	2.7	3.0	0.0228	75
SCA7P52A.1.G.....	132M	7.5	1451	15.3	14.5	14.0	0.84	88.7	88.7	88.9	8.3	3.4	3.5	0.0270	84
SCA0112A.1.G.....	160M	11	1465	22.2	21.0	20.3	0.84	89.8	89.8	88.4	6.8	2.3	2.7	0.0900	122
SCA0152A.1.G.....	160L	15	1465	29.6	28.1	27.1	0.85	90.6	90.6	89.3	6.5	2.4	2.6	0.1180	140
SCA18P2A.1.G.....	180M	18.5	1469	35	34	32	0.87	91.2	91.2	91.7	6.2	2.2	2.7	0.1433	193
SCA0222A.1.G.....	180L	22	1471	42	40	39	0.86	91.6	91.6	91.8	6.8	2.5	3.0	0.1694	215
SCA0332A.1.G.....	200L	30	1471	58	55	53	0.85	92.3	92.3	93.0	6.2	2.2	2.8	0.2616	269
SCA0372A.1.G.....	225S	37	1477	70	66	64	0.87	92.7	92.7	93.6	6.2	2.0	2.7	0.5062	344
SCA0452A.1.G.....	225M	45	1475	84	80	77	0.87	93.1	93.1	94.0	6.2	2.1	2.7	0.5637	369
SCA0552A.1.G.....	250M	55	1482	104	99	95	0.86	93.5	93.5	93.9	6.8	2.3	2.8	0.7712	484
SCA0752A.1.G.....	280S	75	1483	138	131	126	0.88	94.0	94.0	94.0	5.8	1.8	2.6	1.6330	648
SCA0902A.1.G.....	280M	90	1485	167	159	153	0.87	94.2	94.2	94.2	6.8	2.2	3.0	1.8420	721
SCA1102A.1.G.....	315S	110	1485	201	191	184	0.88	94.5	94.5	94.9	5.7	1.6	2.6	2.9320	886
SCA1322A.1.G.....	315M	132	1486	241	229	220	0.88	94.7	94.7	95.1	6.2	1.8	2.8	3.2420	937
SCA1602A.1.G.....	315L	160	1487	291	277	267	0.88	94.9	94.9	95.5	6.3	1.9	2.8	3.9770	1086
SCA2002A.1.G.....	315L	200	1486	359	341	329	0.89	95.1	95.1	95.9	6.1	1.9	2.6	5.0620	1243
SCA2502A.1.G.....	355M	250	1490	449	426	411	0.89	95.1	95.1	95.7	6.5	1.9	2.5	8.4430	1728
SCA3152A.1.G.....	355L	315	1489	565	537	518	0.89	95.1	95.1	96.1	6.2	1.8	2.3	9.2130	1813
SCA3552A.1.G.....	355L	355	1490	630	599	577	0.90	95.1	95.1	96.2	6.9	2.1	2.5	10.945	1978
SCA3752A.1.G.....	355L	375	1490	666	632	610	0.90	95.1	95.1	96.3	6.6	2.1	2.4	11.138	2003

Blue Shaded: For sale by Regal operations in India only. Performance per IS:12615
For 60Hz frequency-contact regional sales person

PERFORMANCE DATA - SCA(IE2) SERIES MOTORS

Model No.	Frame	Rated (kW)	Speed (RPM)	50 Hz Supply										Moment of Inertia (kgm ²)	Weight (kg)
				Full Load Amp			Power factor	Efficiency			Starting Current (I _{LR} /I _{RATED})	Starting Torque (T _{LR} /T _{RATED})	Breakdown Torque (T _{BD} /T _{RATED})		
				380V	400V	415V		100%	75%	50%					
6 POLE MOTORS															
SCAP753A.1..G.....	90S	0.75	913	1.9	1.9	1.8	0.77	75.9	75.9	75.1	3.9	2.2	2.2	0.0036	22.9
SCA1P13A.1..G.....	90L	1.1	912	2.8	2.7	2.6	0.76	78.1	78.1	77.5	4.1	2.4	2.4	0.0048	27.0
SCA1P53A.1..G.....	100L	1.5	931	3.7	3.5	3.4	0.77	79.8	79.8	79.0	4.8	2.7	2.7	0.0058	37
SCA2P23A.1..G.....	112M	2.2	962	5.2	5.0	4.8	0.78	81.8	81.8	80.2	6.0	2.3	2.6	0.0180	44
SCA0033A.1..G.....	132S	3.0	957	7.0	6.7	6.4	0.78	83.3	83.3	83.6	6.1	2.5	2.8	0.0211	69
SCA3P73A.1..G.....	132S	3.7	955	-	-	7.9	0.77	84.3	84.3	85.3	6.0	2.6	2.8	0.0256	76
SCA0043A.1..G.....	132M	4.0	953	9.1	8.6	8.3	0.79	84.6	84.6	85.1	6.0	2.6	2.7	0.0256	78
SCA5P53A.1..G.....	132M	5.5	956	12.6	12.0	11.6	0.77	86.0	86.0	85.3	6.7	3.1	3.2	0.0332	90
SCA7P53A.1..G.....	160M	7.5	970	17.0	16.1	15.5	0.77	87.2	87.2	86.2	5.9	2.4	3.6	0.1140	119
SCA0113A.1..G.....	160L	11	970	24.2	22.9	22.1	0.78	88.7	88.7	87.3	5.8	2.4	3.4	0.1530	139
SCA0153A.1..G.....	180L	15	974	31	29.4	28.4	0.82	89.7	89.7	89.4	5.3	2.0	2.3	0.1992	201
SCA18P3A.1..G.....	200L	18.5	977	37	36	34	0.83	90.4	90.4	90.9	5.1	1.7	2.1	0.3254	249
SCA0223A.1..G.....	200L	22	977	44	42	41	0.83	90.9	90.9	91.4	5.3	1.8	2.2	0.3694	266
SCA0303A.1..G.....	225M	30	983	60	57	55	0.83	91.7	91.7	92.6	5.6	2.0	2.3	0.7554	375
SCA0373A.1..G.....	250M	37	987	73	69	66	0.84	92.2	92.2	92.2	6.7	2.3	2.9	1.0661	474
SCA0453A.1..G.....	280S	45	984	86	81	79	0.86	92.7	92.7	93.6	5.7	2.0	2.4	1.9403	616
SCA0553A.1..G.....	280M	55	984	104	99	96	0.86	93.1	93.1	93.9	5.7	2.0	2.3	2.2355	677
SCA0753A.1..G.....	315S	75	989	147	139	134	0.83	93.7	93.7	94.4	5.1	1.6	2.2	3.3734	822
SCA0903A.1..G.....	315M	90	990	175	167	160	0.83	94.0	94.0	94.7	5.2	1.7	2.2	3.9282	888
SCA1103A.1..G.....	315L	110	990	211	200	193	0.84	94.3	94.3	95.0	5.4	1.8	2.2	4.7728	1012
SCA1323A.1..G.....	315L	132	990	252	240	231	0.84	94.6	94.6	95.2	5.5	1.9	2.2	5.4662	1080
SCA1603A.1..G.....	355M	160	991	298	283	273	0.86	94.8	94.8	95.5	6.1	1.9	2.5	8.5699	1609
SCA2003A.1..G.....	355M	200	991	372	353	341	0.86	95.0	95.0	95.8	6.0	1.9	2.4	9.9148	1724
SCA2503A.1..G.....	355L	250	991	460	437	421	0.87	95.0	95.0	95.7	6.1	2.0	2.4	11.708	1867
SCA2803A.1..G.....	355L	280	990	515	489	471	0.87	95.0	95.0	95.6	6.1	2.0	2.4	12.717	1959
8 POLE MOTORS															
SCAP754A.1..G.....	100L	0.75	723	2.6	2.5	2.4	0.66	66.2	66.2	66.2	4.7	1.8	2.7	0.0149	36
SCA1P14A.1..G.....	100L	1.1	722	3.6	3.4	3.3	0.66	70.8	70.8	70.8	4.9	2.0	2.7	0.0172	39
SCA1P54A.1..G.....	112M	1.5	718	4.7	4.4	4.3	0.66	74.1	74.1	72.5	4.4	2.0	2.4	0.0200	52
SCA2P24A.1..G.....	132S	2.2	709	6.2	5.9	5.7	0.69	77.6	77.6	76.9	4.0	1.9	2.2	0.0640	79
SCA0034A.1..G.....	132M	3.0	706	8.3	7.8	7.6	0.69	80.0	80.0	79.5	4.1	2.0	2.3	0.0764	90
SCA3P74A.1..G.....	160 M	3.7	715	-	-	9.0	0.70	81.4	81.4	81.4	6.0	1.9	2.1	0.0890	102
SCA0044A.1..G.....	160M	4.0	715	10.6	10.1	9.7	0.70	81.9	81.9	81.4	6.0	1.9	2.1	0.0890	102
SCA5P54A.1..G.....	160M	5.5	720	13.9	13.2	12.7	0.72	83.8	83.8	83.3	6.0	2.0	2.1	0.1090	115
SCA7P54A.1..G.....	160L	7.5	720	18.3	17.4	16.8	0.73	85.3	85.3	84.6	6.0	2.0	2.1	0.1450	135
SCA0114A.1..G.....	180L	11	723	27.5	26.1	25.2	0.70	86.9	86.9	86.8	4.5	2.0	2.1	0.3646	236
SCA0154A.1..G.....	200L	15	730	35	34	32	0.73	88.0	88.0	89.0	6.1	1.9	3.0	0.7327	300
SCA18P4A.1..G.....	225S	18.5	737	45	42	41	0.71	88.6	88.6	89.1	4.7	1.9	2.4	1.0860	403
SCA0224A.1..G.....	225M	22	736	51	48	46	0.74	89.1	89.1	89.7	4.3	1.7	2.1	1.1910	426
SCA0304A.1..G.....	250M	30	738	66	63	60	0.77	89.8	89.8	90.8	4.9	1.9	2.3	2.1620	552
SCA0374A.1..G.....	280S	37	738	84	80	77	0.74	90.3	90.3	92.6	4.6	1.9	2.3	3.2580	691
SCA0454A.1..G.....	280M	45	738	94	90	86	0.80	90.7	90.7	93.1	4.7	1.9	2.1	3.5330	743
SCA0554A.1..G.....	315S	55	742	128	121	117	0.72	91.0	91.0	91.3	4.3	1.8	2.0	3.7900	853
SCA0754A.1..G.....	315M	75	743	170	162	156	0.73	91.6	91.6	92.1	4.4	1.9	2.0	4.8300	959
SCA0904A.1..G.....	315L	90	743	201	191	184	0.74	91.9	91.9	92.5	4.5	1.9	2.0	5.6620	1042
SCA1104A.1..G.....	355M	110	743	229	218	210	0.79	92.3	92.3	93.8	5.8	1.6	2.7	7.8320	1545
SCA1324A.1..G.....	355M	132	743	271	257	248	0.8	92.6	92.6	94.2	5.9	1.6	2.6	8.9260	1636
SCA1504A.1..G.....	355M	150	742	299	284	274	0.82	92.9	92.9	94.7	5.5	1.5	2.4	9.9100	1727
SCA1604A.1..G.....	355M	160	743	327	310	299	0.80	93.0	93.0	94.4	6.1	1.8	2.7	10.566	1783
SCA1854A.1..G.....	355M	185	743	372	353	341	0.81	93.3	93.3	94.7	6.1	1.8	2.7	12.097	1916
SCA2004A.1..G.....	355L	200	742	392	372	359	0.83	93.5	93.5	95.1	5.8	1.7	2.5	13.190	2011
SCA2204A.1..G.....	355L	220	743	431	409	394	0.83	93.5	93.5	95.1	5.9	1.7	2.5	14.721	2140

Blue Shaded: For sale by Regal operations in India only. Performance per IS:12615
For 60Hz frequency-contact regional sales person

marathon[®]
Motors

TerraMAX[®] MOTORS TCA(IE3) SERIES PERFORMANCE DATA



PERFORMANCE DATA - TCA(IE3) SERIES MOTORS

Model No.	Frame	Rated (kW)	Speed (RPM)	50 Hz Supply										Moment of Inertia (kgm ²)	Weight (kg)
				Full Load Amp			Power factor	Efficiency			Starting Current (I _{LR} /I _{RATED})	Starting Torque (T _{LR} /T _{RATED})	Breakdown Torque (T _{BD} /T _{RATED})		
				380V	400V	415V		100%	75%	50%					
2 POLE MOTORS															
TCAP751A.1..G.....	80M	0.75	2880	1.7	1.6	1.6	0.83	80.7	80.7	75.6	6.5	3.0	3.3	0.0013	18.5
TCA1P11A.1..G.....	80M	1.1	2878	2.4	2.3	2.2	0.84	82.7	82.7	79.3	6.8	3.2	3.3	0.0016	20.0
TCA1P51A.1..G.....	90S	1.5	2888	3.2	3.0	2.9	0.85	84.2	84.2	81.8	7.5	3.5	3.5	0.0021	24.5
TCA2P21A.1..G.....	90L	2.2	2889	4.4	4.2	4.0	0.88	85.9	85.9	84.7	8.1	3.8	3.6	0.0029	28.0
TCA0031A.1..G.....	100L	3	2889	5.8	5.5	5.3	0.90	87.1	87.1	86.6	7.9	3.2	3.6	0.0042	38
TCA3P71A.1..G.....	100L	3.7	2880	-	-	6.3	0.93	87.8	87.8	88.4	7.7	3.3	3.5	0.0058	45
TCA0041A.1..G.....	112M	4	2921	7.7	7.3	7.0	0.90	88.1	88.1	88.1	8.6	2.7	3.7	0.0101	47
TCA5P51A.1..G.....	132S	5.5	2936	10.5	10.0	9.6	0.89	89.2	89.2	87.7	7.7	2.4	3.6	0.0184	75
TCA7P51A.1..G.....	132S	7.5	2934	14.1	13.4	12.9	0.90	90.1	90.1	89.3	7.8	2.6	3.6	0.0214	81
TCA0111A.1..G.....	160M	11	2955	20.6	19.6	18.9	0.89	91.2	91.2	89.7	7.9	2.3	3.7	0.0626	135
TCA0151A.1..G.....	160M	15	2956	27.9	26.5	25.5	0.89	91.9	91.9	90.9	8.4	2.6	3.9	0.0754	148
TCA18P1A.1..G.....	160L	18.5	2953	33	32	31	0.91	92.4	92.4	91.9	8.1	2.6	3.6	0.0928	172
TCA0221A.1..G.....	180M	22	2961	41	39	38	0.87	92.7	92.7	91.3	7.4	2.2	3.6	0.1399	207
TCA0301A.1..G.....	200L	30	2973	57	55	53	0.85	93.3	93.3	91.6	7.4	2.1	3.7	0.2430	266
TCA0371A.1..G.....	200L	37	2974	70	66	64	0.86	93.7	93.7	92.5	7.8	2.4	3.8	0.2934	296
TCA0451A.1..G.....	225M	45	2978	84	79	77	0.87	94.0	94.0	92.7	8.0	2.2	3.9	0.4264	399
TCA0551A.1..G.....	250M	55	2977	100	95	91	0.89	94.3	94.3	93.0	7.0	1.9	3.4	0.6214	489
TCA0751A.1..G.....	280S	75	2983	137	130	125	0.88	94.7	94.7	93.2	7.9	2.1	3.8	1.079	669
TCA0901A.1..G.....	280M	90	2982	162	154	148	0.89	95.0	95.0	93.9	7.6	2.1	3.6	1.181	723
TCA1101A.1..G.....	315S	110	2983	199	190	183	0.88	95.2	95.2	92.7	7.2	2.0	3.6	2.227	975
TCA1321A.1..G.....	315M	132	2984	236	224	216	0.89	95.4	95.4	93.3	7.4	2.2	3.7	2.424	1025
TCA1601A.1..G.....	315L	160	2983	286	271	262	0.89	95.6	95.6	94.0	7.3	2.2	3.6	2.764	1151
TCA2001A.1..G.....	315L	200	2984	356	339	326	0.89	95.8	95.8	94.6	7.3	2.3	3.6	3.091	1231
TCA2501A.1..G.....	355M	250	2983	441	419	403	0.90	95.8	95.8	94.2	6.9	2.0	3.3	4.073	1717
TCA3151A.1..G.....	355L	315	2984	555	527	508	0.90	95.8	95.8	94.9	7.0	2.1	3.3	4.743	1856
TCA3551A.1..G.....	355L	355	2987	633	601	579	0.89	95.8	95.8	95.0	8.6	2.8	4.0	5.796	2082
TCA3751A.1..G.....	355L	375	2986	661	628	605	0.90	95.8	95.8	95.2	8.1	2.6	3.7	5.796	2082
4 POLE MOTORS															
TCAP752A.1..G.....	80M	0.75	1446	1.8	1.7	1.7	0.75	82.5	82.5	77.6	6.6	3.0	3.0	0.0031	21.5
TCA1P12A.1..G.....	90S	1.1	1450	2.6	2.5	2.4	0.77	84.1	84.1	79.1	6.8	2.9	3.4	0.0045	24.5
TCA1P52A.1..G.....	90L	1.5	1448	3.5	3.3	3.2	0.77	85.3	85.3	80.3	7.0	3.0	3.4	0.0052	26.0
TCA2P22A.1..G.....	100L	2.2	1456	4.6	4.4	4.2	0.84	86.7	86.7	85.1	7.0	2.3	2.9	0.0115	39
TCA0032A.1..G.....	100L	3	1458	6.2	5.9	5.7	0.84	87.7	87.7	86.2	7.7	2.6	3.1	0.0145	44
TCA3P72A.1..G.....	112M	3.7	1460	-	-	7.1	0.82	88.4	88.4	87.7	7.5	1.8	2.8	0.0192	54
TCA0042A.1..G.....	112M	4	1457	8.3	7.9	7.6	0.83	88.6	88.6	88.1	8.4	3.2	3.6	0.0192	54
TCA5P52A.1..G.....	132S	5.5	1468	11.1	10.5	10.2	0.84	89.6	89.6	89.7	6.7	2.3	2.7	0.0446	83
TCA7P52A.1..G.....	132M	7.5	1470	15.2	14.4	13.9	0.83	90.4	90.4	90.4	7.5	2.8	3.0	0.0550	93
TCA0112A.1..G.....	160M	11	1475	21.8	20.7	19.9	0.84	91.4	91.4	90.6	7.3	2.5	3.3	0.1200	147
TCA0152A.1..G.....	160L	15	1476	29.1	27.7	26.7	0.85	92.1	92.1	91.6	7.6	2.7	3.4	0.1597	178
TCA18P2A.1..G.....	180M	18.5	1477	37	35	33	0.83	92.6	92.6	92.2	7.3	2.5	3.3	0.2209	218
TCA0222A.1..G.....	180L	22	1478	44	42	40	0.82	93.0	93.0	92.5	7.5	2.7	3.5	0.2415	237
TCA0302A.1..G.....	200L	30	1479	57	54	52	0.85	93.6	93.6	93.6	6.6	2.2	2.9	0.4488	271
TCA0372A.1..G.....	225S	37	1484	70	67	64	0.85	93.9	93.9	94.0	7.3	2.4	3.1	0.6683	381
TCA0452A.1..G.....	225M	45	1483	85	81	78	0.85	94.2	94.2	94.2	7.2	2.4	3.0	0.7130	394
TCA0552A.1..G.....	250M	55	1487	103	98	94	0.86	94.6	94.6	94.0	7.2	2.2	3.4	1.397	535
TCA0752A.1..G.....	280S	75	1489	138	131	126	0.87	95.0	95.0	94.0	6.4	2.3	2.7	2.230	713
TCA0902A.1..G.....	280M	90	1489	165	157	151	0.87	95.2	95.2	94.5	6.4	2.4	2.7	2.384	755
TCA1102A.1..G.....	315S	110	1487	199	189	182	0.88	95.4	95.4	95.0	6.5	1.9	2.9	3.448	962
TCA1322A.1..G.....	315M	132	1488	238	226	218	0.88	95.6	95.6	95.2	6.8	2.1	3.0	3.758	1016
TCA1602A.1..G.....	315L	160	1488	288	274	264	0.88	95.8	95.8	95.6	6.9	2.2	3.1	4.442	1157
TCA2002A.1..G.....	315L	200	1488	356	338	326	0.89	96.0	96.0	95.8	6.9	2.2	3.0	5.062	1246
TCA2502A.1..G.....	355M	250	1490	445	422	407	0.89	96.0	96.0	95.8	6.5	1.9	2.5	8.443	1743
TCA3152A.1..G.....	355L	315	1489	554	526	507	0.90	96.0	96.0	96.2	6.2	1.8	2.3	10.176	1914
TCA3552A.1..G.....	355L	355	1490	624	593	572	0.90	96.0	96.0	96.2	6.9	2.1	2.5	10.945	1979
TCA3752A.1..G.....	355L	375	1490	659	626	604	0.90	96.0	96.0	96.3	6.6	2.1	2.4	11.138	2004

Blue Shaded: For sale by Regal operations in India only. Performance per IS:12615
For 60Hz frequency-contact regional sales person

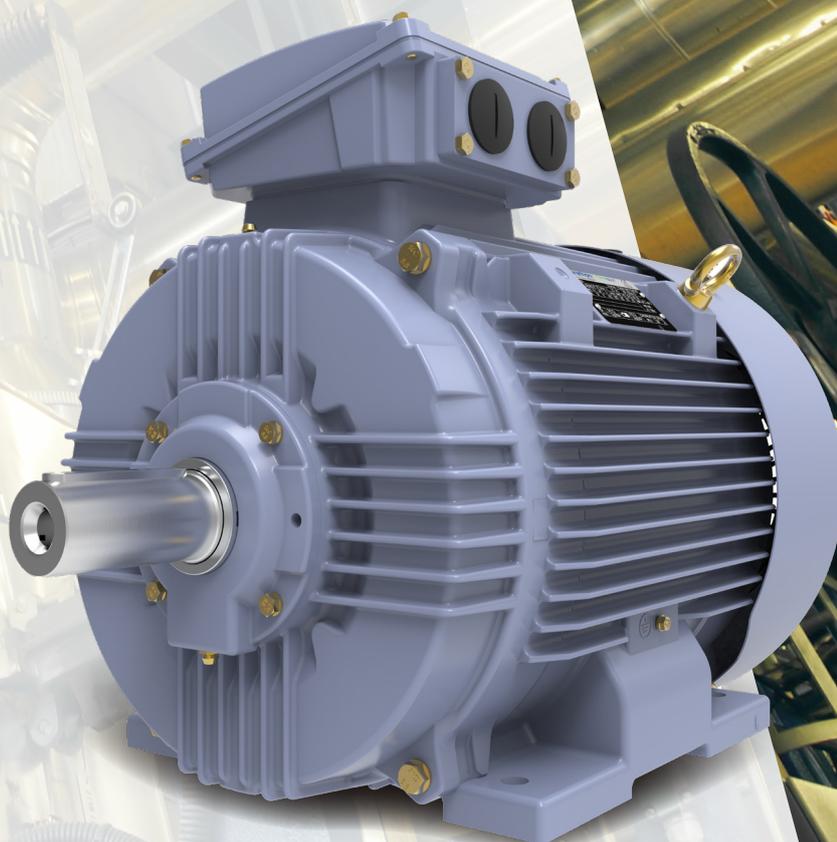
PERFORMANCE DATA -TCA(IE3) SERIES MOTORS

Model No.	Frame	Rated (kW)	Speed (RPM)	50 Hz Supply										Moment of Inertia (kgm ²)	Weight (kg)	
				Full Load Amp			Power factor	Efficiency			Starting Current (I _{LR} /I _{RATED})	Starting Torque (T _{LR} /T _{RATED})	Breakdown Torque (T _{BD} /T _{RATED})			
				380V	400V	415V		100%	75%	50%						
6 POLE MOTORS																
TCAP753A.1.G.....	90S	0.75	946	2.3	2.1	2.1	0.64	78.9	78.9	71.1	4.8	3.0	3.1	0.0036	24.5	
TCA1P13A.1.G.....	90L	1.1	941	3.1	3.0	2.9	0.66	81.0	81.0	74.8	4.8	3.0	3.0	0.0046	27.0	
TCA1P53A.1.G.....	100L	1.5	966	3.7	3.5	3.4	0.74	82.5	82.5	77.8	5.9	2.2	2.7	0.0143	36	
TCA2P23A.1.G.....	112M	2.2	958	5.4	5.2	5.0	0.73	84.3	84.3	82.4	5.9	2.5	2.8	0.0158	47	
TCA0033A.1.G.....	132S	3	973	7.5	7.1	6.9	0.71	85.6	85.6	84.3	5.5	2.0	2.6	0.0390	67	
TCA3P73A.1.G.....	132S	3.7	973	-	-	7.8	0.76	86.5	86.5	86.7	5.6	2.0	2.5	0.0494	74	
TCA0043A.1.G.....	132M	4	973	9.5	9.0	8.7	0.74	86.8	86.8	85.9	5.6	2.1	2.6	0.0494	74	
TCA5P53A.1.G.....	132M	5.5	973	12.5	11.9	11.4	0.76	88.0	88.0	88.0	5.9	2.2	2.6	0.0660	85	
TCA7P53A.1.G.....	160M	7.5	976	16.0	15.2	14.6	0.80	89.1	89.1	88.7	5.3	1.8	2.4	0.1355	135	
TCA0113A.1.G.....	160L	11	977	23.4	22.3	21.5	0.79	90.3	90.3	89.6	5.6	2.0	2.6	0.1811	163	
TCA0153A.1.G.....	180L	15	982	32	30	29.3	0.78	91.2	91.2	90.7	6.1	2.1	2.7	0.3035	221	
TCA18P3A.1.G.....	200L	18.5	984	38	36	35	0.80	91.7	91.7	91.6	5.8	2.0	2.4	0.5179	256	
TCA0223A.1.G.....	200L	22	984	45	43	41	0.80	92.2	92.2	92.1	6.0	2.1	2.5	0.6070	277	
TCA0303A.1.G.....	225M	30	987	59	56	54	0.83	92.9	92.9	91.9	6.8	2.2	2.9	0.9206	377	
TCA0373A.1.G.....	250M	37	987	73	70	67	0.82	93.3	93.3	92.8	6.8	2.4	2.9	1.608	488	
TCA0453A.1.G.....	280S	45	989	90	86	82	0.81	93.7	93.7	92.9	6.1	1.9	2.6	2.238	593	
TCA0553A.1.G.....	280M	55	989	107	102	98	0.83	94.1	94.1	93.7	6.2	1.9	2.5	2.673	616	
TCA0753A.1.G.....	315S	75	989	149	141	136	0.81	94.6	94.6	94.4	5.1	1.6	2.2	3.373	822	
TCA0903A.1.G.....	315M	90	990	176	167	161	0.82	94.9	94.9	94.7	5.2	1.7	2.2	3.928	888	
TCA1103A.1.G.....	315L	110	990	214	204	196	0.82	95.1	95.1	95.0	5.4	1.8	2.2	4.773	1013	
TCA1323A.1.G.....	315L	132	990	253	241	232	0.83	95.4	95.4	95.2	5.4	1.9	2.2	5.466	1084	
TCA1603A.1.G.....	355M	160	991	303	288	277	0.84	95.6	95.6	95.6	6.1	1.9	2.5	8.570	1618	
TCA2003A.1.G.....	355M	200	991	373	355	342	0.85	95.8	95.8	95.9	6.0	1.9	2.5	9.915	1735	
TCA2503A.1.G.....	355L	250	991	466	443	427	0.85	95.8	95.8	95.9	6.1	2.0	2.5	11.708	1889	
8 POLE MOTORS																
TCAP754A.1.G.....	100L	0.75	723	2.3	2.2	2.1	0.66	75.0	75.0	69.5	4.8	1.8	2.7	0.0149	36	
TCA1P14A.1.G.....	100L	1.1	721	3.2	3.0	2.9	0.67	77.7	77.7	72.9	4.8	1.9	2.7	0.0172	38	
TCA1P54A.1.G.....	112M	1.5	715	4.2	4.0	3.9	0.68	79.7	79.7	77.8	4.7	1.9	2.4	0.0200	53	
TCA2P24A.1.G.....	132S	2.2	723	5.8	5.5	5.3	0.70	81.9	81.9	81.3	4.4	1.8	2.3	0.0453	70	
TCA0034A.1.G.....	132M	3	724	7.9	7.5	7.2	0.69	83.5	83.5	82.9	4.7	2.0	2.5	0.0577	79	
TCA3P74A.1.G.....	160M	3.7	732	-	-	8.8	0.69	84.5	84.5	85.4	5.5	1.8	2.5	0.1312	134	
TCA0044A.1.G.....	160M	4	730	10.4	9.9	9.5	0.69	84.8	84.8	85.5	5.3	1.8	2.4	0.1312	134	
TCA5P54A.1.G.....	160M	5.5	729	13.5	12.8	12.3	0.72	86.2	86.2	87.0	5.3	1.7	2.3	0.1674	149	
TCA7P54A.1.G.....	160L	7.5	728	18.1	17.2	16.6	0.72	87.3	87.3	87.8	5.4	1.8	2.3	0.2040	173	
TCA0114A.1.G.....	180L	11	730	25.8	24.5	23.7	0.73	88.6	88.6	89.5	6.5	1.8	3.0	0.3337	229	
TCA0154A.1.G.....	200L	15	739	36	34	33	0.71	89.6	89.6	89.0	5.5	2.0	2.6	0.7327	312	
TCA18P4A.1.G.....	225S	18.5	738	41	38	37	0.77	90.1	90.1	90.5	5.2	1.7	2.3	0.8781	372	
TCA0224A.1.G.....	225M	22	738	47	45	43	0.78	90.6	90.6	91.1	5.2	1.7	2.3	1.045	375	
TCA0304A.1.G.....	250M	30	739	63	60	58	0.79	91.3	91.3	92.8	5.3	1.9	2.3	2.162	564	
TCA0374A.1.G.....	280S	37	742	79	75	72	0.78	91.8	91.8	92.0	6.0	2.1	2.4	3.258	720	
TCA0454A.1.G.....	280M	45	742	96	91	88	0.77	92.2	92.2	92.6	5.9	2.1	2.4	3.533	768	
TCA0554A.1.G.....	315S	55	742	125	119	115	0.72	92.5	92.5	91.4	4.7	1.8	2.1	3.790	887	
TCA0754A.1.G.....	315S	75	743	168	159	154	0.73	93.1	93.1	92.1	4.8	1.9	2.1	4.830	898	
TCA0904A.1.G.....	315S	90	743	201	191	184	0.73	93.4	93.4	92.6	4.9	1.9	2.1	5.662	914	
TCA1104A.1.G.....	355M	110	743	220	209	202	0.81	93.7	93.7	94.2	6.0	1.5	2.5	7.832	1548	
TCA1324A.1.G.....	355M	132	742	260	247	238	0.82	94.0	94.0	94.5	6.0	1.5	2.4	8.926	1640	
TCA1504A.1.G.....	355M	150	742	295	280	270	0.82	94.2	94.2	94.7	6.0	1.5	2.4	9.910	1731	
TCA1604A.1.G.....	355M	160	742	314	299	288	0.82	94.3	94.3	94.8	6.2	1.6	2.5	10.566	1787	
TCA2004A.1.G.....	355L	200	742	387	368	354	0.83	94.6	94.6	95.0	6.3	1.7	2.5	13.190	2010	

Blue Shaded: For sale by Regal operations in India only. Performance per IS:12615
For 60Hz frequency-contact regional sales person

marathon[®]
Motors

**TerraMAX[®] MOTORS
QCA(IE4) SERIES
PERFORMANCE DATA**



PERFORMANCE DATA - QCA(IE4) SERIES MOTORS

Model No.	Frame	Rated (kW)	Speed (rpm)	50 Hz Supply									Starting Current (I _{LR} /I _{RATED})	Starting Torque (T _{LR} /T _{RATED})	Breakdown Torque (T _{BD} /T _{RATED})	Moment of Inertia (kgm ²)	Weight (kg)
				Full Load Amp			Power factor	Efficiency									
				380V	400V	415V		100%	75%	50%							
2 POLE MOTORS																	
QCAP751A.1.G.....	80M	0.75	2885	1.6	1.5	1.5	0.84	83.5	83.5	80.6	7.2	3.5	3.9	0.0016	20.5		
QCA1P11A.1.G.....	80M	1.1	2891	2.3	2.2	2.1	0.84	85.2	85.2	82.3	7.8	4.1	4.0	0.0018	21.5		
QCA1P51A.1.G.....	90S	1.5	2907	3.2	3.0	2.9	0.83	86.5	86.5	83.5	8.7	4.3	4.4	0.0024	26.0		
QCA2P21A.1.G.....	90L	2.2	2902	4.4	4.2	4.0	0.86	88.0	88.0	86.3	9.1	4.6	4.4	0.0030	29.0		
QCA0031A.1.G.....	100L	3.0	2917	5.8	5.5	5.3	0.88	89.1	89.1	88.2	10.2	4.6	5.0	0.0052	43		
QCA3P71A.1.G.....	100L	3.7	2897	-	-	6.3	0.91	89.7	89.7	89.7	8.9	4.1	4.3	0.0058	46		
QCA0041A.1.G.....	112M	4.0	2932	7.4	7.0	6.8	0.91	90.0	90.0	89.9	9.9	3.3	4.6	0.0126	53		
QCA5P51A.1.G.....	132S	5.5	2945	10.4	9.9	9.6	0.88	90.9	90.9	88.9	8.6	2.9	4.3	0.0199	80		
QCA7P51A.1.G.....	132S	7.5	2943	14.0	13.3	12.8	0.89	91.7	91.7	90.3	8.8	3.1	4.3	0.0252	89		
QCA0111A.1.G.....	160M	11	2960	20.3	19.3	18.6	0.89	92.6	92.6	90.8	8.8	2.8	4.3	0.0839	158		
QCA0151A.1.G.....	160M	15	2961	27.4	26.1	25.1	0.89	93.3	93.3	92.1	9.2	3.0	4.4	0.0966	171		
QCA18P1A.1.G.....	160L	18.5	2958	33	32	31	0.90	93.7	93.7	92.8	8.8	3.0	4.2	0.1077	188		
QCA0221A.1.G.....	180M	22	2963	40	38	37	0.89	94.0	94.0	92.5	7.4	2.2	3.6	0.1801	247		
QCA0301A.1.G.....	200L	30	2974	55	53	51	0.87	94.5	94.5	92.8	7.2	2.1	3.6	0.3060	307		
QCA0371A.1.G.....	200L	37	2973	67	64	62	0.88	94.8	94.8	93.4	7.4	2.2	3.6	0.3502	333		
QCA0451A.1.G.....	225M	45	2981	85	80	78	0.85	95.0	95.0	93.2	8.7	2.6	4.4	0.4855	435		
QCA0551A.1.G.....	250M	55	2981	99	94	90	0.89	95.3	95.3	93.8	7.9	2.3	3.9	0.7846	564		
QCA0751A.1.G.....	280S	75	2984	132	126	121	0.90	95.6	95.6	94.2	8.0	2.3	3.9	1.3925	787		
QCA0901A.1.G.....	280M	90	2982	157	149	144	0.91	95.8	95.8	94.8	7.5	2.2	3.6	1.5530	856		
QCA1101A.1.G.....	315S	110	2983	198	188	181	0.88	96.0	96.0	94.3	6.9	2.0	3.5	2.3582	1028		
QCA1321A.1.G.....	315M	132	2984	237	225	217	0.88	96.2	96.2	94.7	7.1	2.1	3.6	2.5544	1073		
QCA1601A.1.G.....	315L	160	2984	284	269	260	0.89	96.3	96.3	95.2	7.1	2.1	3.5	2.8294	1182		
QCA2001A.1.G.....	315L	200	2984	354	336	324	0.89	96.5	96.5	95.7	7.0	2.2	3.5	3.2219	1278		
QCA2501A.1.G.....	355M	250	2987	442	420	405	0.89	96.5	96.5	94.5	8.3	2.6	4.0	5.1256	1965		
QCA3151A.1.G.....	355L	315	2989	564	535	516	0.88	96.5	96.5	95.0	9.1	3.0	4.3	5.9870	2147		
4 POLE MOTORS																	
QCAP752A.1.G.....	80M	0.75	1447	1.8	1.7	1.6	0.74	85.7	85.7	82.1	6.3	2.9	3.2	0.0030	24.5		
QCA1P12A.1.G.....	90S	1.1	1451	2.5	2.4	2.3	0.77	87.2	87.2	84.5	7.1	3.0	3.6	0.0052	29.5		
QCA1P52A.1.G.....	90L	1.5	1457	3.5	3.4	3.2	0.73	88.2	88.2	84.8	8.1	3.8	4.2	0.0063	33		
QCA2P22A.1.G.....	100L	2.2	1462	4.9	4.6	4.4	0.77	89.5	89.5	87.7	8.0	3.0	3.7	0.0125	41		
QCA0032A.1.G.....	100L	3.0	1466	6.5	6.2	6.0	0.77	90.4	90.4	88.2	9.2	3.7	4.3	0.0169	49		
QCA3P72A.1.G.....	112M	3.7	1459	-	-	6.8	0.83	90.9	90.9	90.6	8.3	3.1	3.6	0.0249	64		
QCA0042A.1.G.....	112M	4.0	1462	8.2	7.8	7.5	0.81	91.1	91.1	90.4	9.3	3.7	4.2	0.0249	64		
QCA5P52A.1.G.....	132S	5.5	1470	11.5	10.9	10.5	0.79	91.9	91.9	91.1	6.9	2.5	3.1	0.0476	87		
QCA7P52A.1.G.....	132M	7.5	1472	16.0	15.2	14.6	0.77	92.6	92.6	91.5	7.5	3.0	3.4	0.0579	97		
QCA0112A.1.G.....	160M	11	1479	22.4	21.3	20.5	0.80	93.3	93.3	91.2	8.2	3.1	4.0	0.1331	157		
QCA0152A.1.G.....	160L	15	1479	29.6	28.1	27.1	0.82	93.9	93.9	92.1	8.5	3.2	4.1	0.1792	192		
QCA18P2A.1.G.....	180M	18.5	1479	36	34	33	0.83	94.2	94.2	93.0	7.6	2.6	3.6	0.2410	231		
QCA0222A.1.G.....	180L	22	1481	44	42	40	0.80	94.5	94.5	93.0	8.2	3.0	4.0	0.2767	257		
QCA0302A.1.G.....	200L	30	1485	58	55	53	0.83	94.9	94.9	94.1	9.2	3.3	4.1	0.5982	317		
QCA0372A.1.G.....	225S	37	1486	71	68	65	0.83	95.2	95.2	94.5	8.4	2.9	3.7	0.7702	414		
QCA0452A.1.G.....	225M	45	1486	86	82	79	0.83	95.4	95.4	94.7	8.4	3.0	3.6	0.8148	427		
QCA0552A.1.G.....	250M	55	1489	104	99	95	0.84	95.7	95.7	94.5	8.0	2.5	3.9	1.6850	598		
QCA0752A.1.G.....	280S	75	1491	138	131	126	0.86	96.0	96.0	94.8	6.8	2.5	3.0	2.6005	785		
QCA0902A.1.G.....	280M	90	1490	164	155	150	0.87	96.1	96.1	95.1	6.6	2.5	2.8	2.8284	837		
QCA1102A.1.G.....	315S	110	1491	207	196	189	0.84	96.3	96.3	94.7	8.1	2.6	3.9	4.0682	1063		
QCA1322A.1.G.....	315M	132	1490	242	230	222	0.86	96.4	96.4	95.4	7.8	2.5	3.6	4.3265	1103		
QCA1602A.1.G.....	315L	160	1490	289	275	265	0.87	96.6	96.6	95.9	7.9	2.5	3.6	5.3723	1298		
QCA2002A.1.G.....	315L	200	1489	357	339	327	0.88	96.7	96.7	96.2	7.2	2.3	3.3	5.4756	1317		
QCA2502A.1.G.....	355M	250	1491	452	429	413	0.87	96.7	96.7	96.1	7.4	2.2	2.9	9.5981	1873		
QCA3152A.1.G.....	355L	315	1490	569	540	521	0.87	96.7	96.7	96.5	6.4	1.9	2.5	9.9830	1914		

Blue Shaded: For sale by Regal operations in India only. Performance per IS:12615
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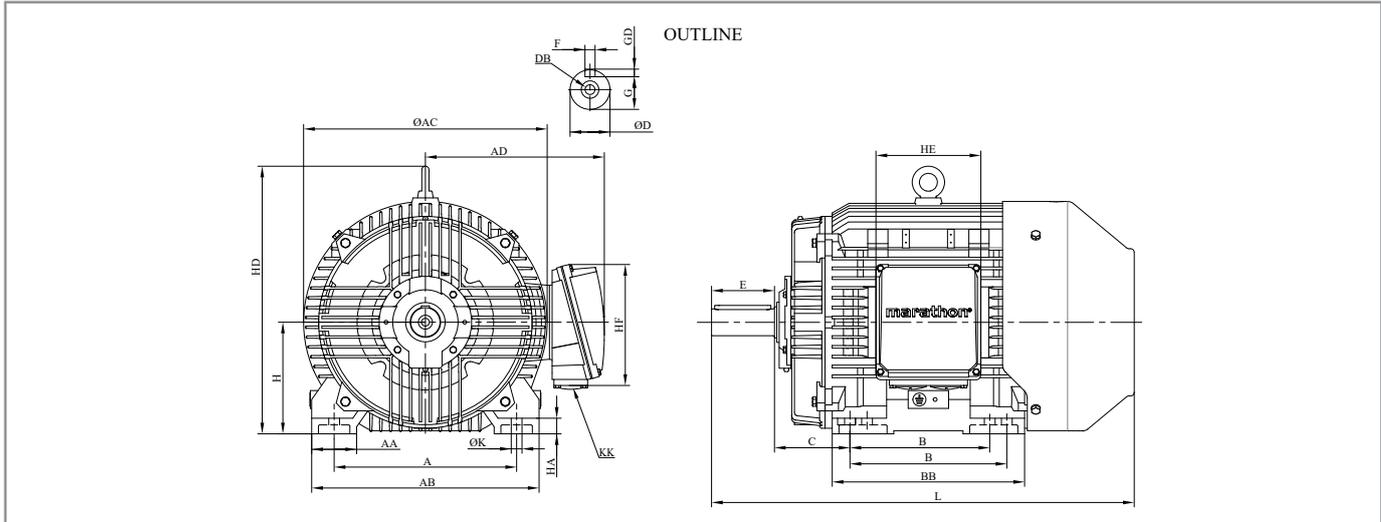
PERFORMANCE DATA - QCA(IE4) SERIES MOTORS

Model No.	Frame	Rated (kW)	Speed (rpm)	50 Hz Supply									Moment of Inertia (kgm ²)	Weight (kg)	
				Full Load Amp			Power factor	Efficiency			Starting Current (I _{LR} /I _{RATED})	Starting Torque (T _{LR} /T _{RATED})			Breakdown Torque (T _{Bd} /T _{RATED})
				380V	400V	415V		100%	75%	50%					
6 POLE MOTORS															
QCAP753A.1.G.....	90S	0.75	949	2.0	1.9	1.8	0.69	82.7	82.7	78.8	5.3	3.0	3.2	0.0052	29.0
QCA1P13A.1.G.....	90L	1.1	948	2.9	2.7	2.6	0.69	84.5	84.5	81.2	5.5	3.2	3.3	0.0068	34
QCA1P53A.1.G.....	100L	1.5	972	3.5	3.4	3.2	0.75	85.9	85.9	81.8	6.9	2.4	3.3	0.0241	47
QCA2P23A.1.G.....	112M	2.2	969	5.4	5.1	4.9	0.71	87.4	87.4	84.2	7.6	3.3	3.7	0.0226	57
QCA0033A.1.G.....	132S	3.0	976	6.9	6.5	6.3	0.75	88.6	88.6	87.3	6.1	2.1	2.7	0.0536	77
QCA3P73A.1.G.....	132S	3.7	983	-	-	8.7	0.66	89.3	89.7	87.6	7.7	2.3	3.2	0.0660	86
QCA0043A.1.G.....	132M	4.0	978	9.2	8.7	8.4	0.74	89.5	89.5	88.0	6.6	2.4	3.0	0.0660	86
QCA5P53A.1.G.....	132M	5.5	979	12.6	12.0	11.6	0.73	90.5	90.5	88.5	7.1	2.7	3.3	0.0868	100
QCA7P53A.1.G.....	160M	7.5	981	16.0	15.2	14.7	0.78	91.3	91.3	89.2	6.4	2.2	3.0	0.1626	149
QCA9P33A.1.G.....	160L	9.3	983	20.0	19.0	18.3	0.77	91.9	91.9	89.6	6.9	2.5	3.3	0.2127	177
QCA0113A.1.G.....	160L	11	984	23.8	22.6	21.8	0.76	92.3	92.3	89.7	7.7	3.1	3.5	0.2398	190
QCA0153A.1.G.....	180L	15	987	32	31	30	0.76	92.9	92.9	90.6	7.8	2.9	3.5	0.4279	268
QCA18P3A.1.G.....	200L	18.5	986	38	36	35	0.79	93.4	93.4	92.3	6.5	2.3	2.8	0.6664	293
QCA0223A.1.G.....	200L	22	986	45	42	41	0.80	93.7	93.7	92.8	6.5	2.2	2.7	0.7703	319
QCA0303A.1.G.....	225M	30	989	60	57	55	0.81	94.2	94.2	92.4	8.0	2.7	3.5	1.2532	447
QCA0373A.1.G.....	250M	37	988	73	70	67	0.81	94.5	94.5	93.4	7.3	2.7	3.2	1.9403	519
QCA0453A.1.G.....	280S	45	991	88	84	81	0.82	94.8	94.8	93.3	7.1	2.3	3.0	2.7750	671
QCA0553A.1.G.....	280M	55	991	106	101	97	0.83	95.1	95.1	93.8	7.2	2.3	3.0	3.2641	743
QCA0753A.1.G.....	315S	75	991	147	140	135	0.81	95.4	95.4	94.5	5.9	1.9	2.5	3.9975	890
QCA0903A.1.G.....	315M	90	992	179	170	164	0.80	95.6	95.6	94.6	6.1	2.1	2.6	4.6216	963
QCA1103A.1.G.....	315L	110	992	213	202	195	0.82	95.8	95.8	95.0	6.2	2.2	2.6	5.6743	1110
QCA1323A.1.G.....	315L	132	992	261	248	239	0.80	96.0	96.0	95.0	6.6	2.4	2.8	6.5064	1197
QCA1603A.1.G.....	355M	160	992	304	289	279	0.83	96.2	96.2	95.5	6.7	2.1	2.8	9.9148	1737
QCA2003A.1.G.....	355M	200	992	380	361	348	0.83	96.3	96.3	95.7	6.9	2.2	2.9	11.596	1877
QCA2503A.1.G.....	355L	250	993	469	445	429	0.84	96.5	96.5	95.7	7.3	2.4	3.0	15.070	2180
8 POLE MOTORS															
QCAP754A.1.G.....	100L	0.75	723	2.2	2.1	2.0	0.65	78.4	78.4	70.9	5.0	2.0	2.9	0.0149	36
QCA1P14A.1.G.....	100L	1.1	725	3.2	3.0	2.9	0.65	80.8	80.8	73.8	5.3	2.2	3.0	0.0194	41
QCA1P54A.1.G.....	112M	1.5	719	4.2	4.0	3.8	0.66	82.6	82.6	78.3	5.2	2.2	2.7	0.0222	56
QCA2P24A.1.G.....	132S	2.2	726	5.8	5.5	5.3	0.68	84.5	84.5	81.3	4.7	2.0	2.5	0.0494	71
QCA0034A.1.G.....	132M	3.0	725	7.6	7.2	6.9	0.7	85.9	85.9	83.9	4.8	2.0	2.5	0.0640	83
QCA3P74A.1.G.....	160M	3.7	732	-	-	9.0	0.66	86.8	86.8	84.3	5.7	2.0	2.7	0.1310	133
QCA0044A.1.G.....	160M	4.0	730	10.1	9.6	9.3	0.69	87.1	87.1	84.8	5.3	1.8	2.4	0.1312	133
QCA5P54A.1.G.....	160M	5.5	729	13.1	12.5	12.0	0.72	88.3	88.3	87.0	5.3	1.7	2.3	0.1674	150
QCA7P54A.1.G.....	160L	7.5	731	18.8	17.8	17.2	0.68	89.3	89.3	87.0	6.1	2.3	2.7	0.2176	180
QCA0114A.1.G.....	180L	11	732	26.0	24.7	23.8	0.71	90.4	90.4	89.1	7.0	2.0	3.3	0.3337	228
QCA0154A.1.G.....	200L	15	738	36	34	33	0.7	91.2	91.2	88.7	5.4	2.0	2.6	0.6753	307
QCA18P4A.1.G.....	225S	18.5	739	40	38	36	0.77	91.7	91.7	90.1	5.4	1.8	2.4	0.8781	366
QCA0224A.1.G.....	225M	22	738	46	44	42	0.79	92.1	92.1	91.0	5.2	1.7	2.3	1.0453	404
QCA0304A.1.G.....	250M	30	738	62	59	57	0.79	92.7	92.7	92.3	5.1	1.8	2.2	1.7558	499
QCA0374A.1.G.....	280S	37	741	79	75	73	0.76	93.1	93.1	91.5	5.6	2.0	2.3	2.7750	661
QCA0454A.1.G.....	280M	45	741	96	92	88	0.76	93.4	93.4	92.2	5.4	1.9	2.2	3.1030	718
QCA0554A.1.G.....	315S	55	743	121	114	110	0.74	93.7	93.7	91.7	5.0	1.9	2.1	4.1362	893
QCA0754A.1.G.....	315M	75	743	159	151	146	0.76	94.2	94.2	92.6	5.0	1.9	2.1	5.2457	1010
QCA0904A.1.G.....	315L	90	743	191	181	175	0.76	94.4	94.4	92.9	5.2	2.0	2.1	6.2165	1107
QCA1104A.1.G.....	355M	110	743	218	207	200	0.81	94.7	94.7	94.1	6.0	1.5	2.5	7.8323	1549
QCA1324A.1.G.....	355M	132	742	255	242	233	0.83	94.9	94.9	94.5	6.0	1.5	2.4	8.9257	1646
QCA1604A.1.G.....	355M	160	742	312	296	285	0.82	95.1	95.1	94.8	6.2	1.6	2.5	10.566	1795
QCA200A.1.G.....	355L	200	743	384	365	351	0.83	95.4	95.4	95.0	6.7	1.8	2.6	13.868	2082

Blue Shaded: For sale by Regal operations in India only. Performance per IS:12615
For 60Hz frequency-contact regional sales person

DIMENSIONAL DRAWINGS

IEC®* MOTORS, FOOT MOUNTED (B3 STB)



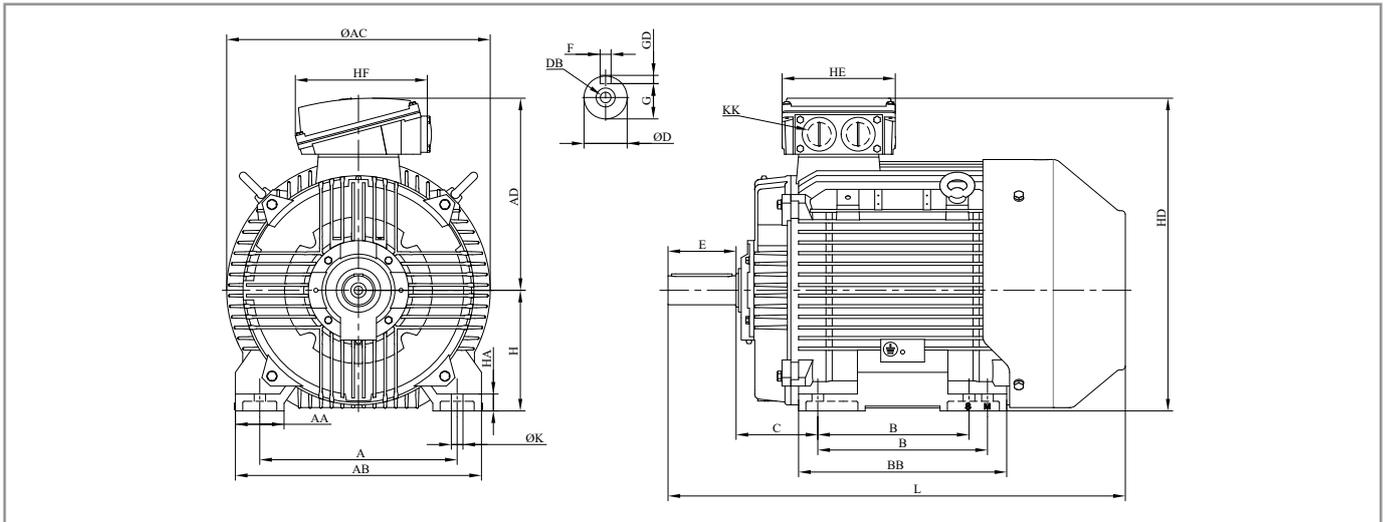
Frame	Pole	A	AA	AB	AC	AD	B	BB	C	D	DB	E	F	GD	G	H	HA	HD	HE	HF	K	KK	L
80M	All	125	30	152	182	163	100	125	50	19	M6	40	6	6	15.5	80	9	174	131	150	10	M20	281
90S	All	140	35	165	199	171	100	125	56	24	M8	50	8	7	20	90	9	190	131	150	10	M20	307
90L	All	140	35	165	199	171	100/125	150	56	24	M8	50	8	7	20	90	9	190	131	150	10	M20	332
100L	All	160	32	192	229	185	140	170	63	28	M10	60	8	7	24	100	13	254	131	150	12	M20	398
112M	All	190	38	222	256	197	114/140	170	70	28	M10	60	8	7	24	112	12	276	131	150	12	M25	399
132S	All	216	40	255	295	232	140	172	89	38	M12	80	10	8	33	132	13	322	161	180	12	M25	465
132M	All	216	40	255	295	232	140/178	210	89	38	M12	80	10	8	33	132	13	322	161	180	12	M25	503
160M	All	254	65	315	352	260	210	244	108	42	M16	110	12	8	37	160	22	388	177	196	14.5	M32	622
160L	All	254	65	315	352	260	210/254	288	108	42	M16	110	12	8	37	160	22	388	177	196	14.5	M32	666
180M	All	279	75	354	399	282	241	322	121	48	M16	110	14	9	42.5	180	30	447	177	196	14.5	M32	712
180L	All	279	75	354	399	282	241/279	360	121	48	M16	110	14	9	42.5	180	28	447	177	196	14.5	M32	750
200L	All	318	80	398	446	330	305/267	361	133	55	M20	110	16	10	49	200	23	492	203	241	18.5	M40	769
225S	4-8	356	90	446	491	355	286	380	149	60	M20	140	18	11	53	225	29	546	203	241	18.5	M40	837
225M	2	356	90	446	491	355	286/311	405	149	55	M20	110	16	10	49	225	29	546	203	241	18.5	M40	832
225M	4-8	356	90	446	491	355	286/311	405	149	60	M20	140	18	11	53	225	29	546	203	241	18.5	M40	862
250M	2	406	100	506	542	398	311/349	428	168	60	M20	140	18	11	53	250	35	600	233	271	24	M50	941
250M	4-8	406	100	506	542	398	311/349	428	65	M20	140	18	11	58	250	35	600	233	271	24	M50	941	
280S	2	457	100	557	595	422	368	519	190	65	M20	140	18	11	58	280	38	680	233	271	24	M50	1060
280S	4-8	457	100	557	595	422	368	519	190	75	M20	140	20	12	67.5	280	38	680	233	271	24	M50	1060
280M	2	457	100	557	595	452	368/419	570	190	65	M20	140	18	11	58	280	38	680	233	271	24	M50	1111
280M	4-8	457	100	557	595	452	368/419	570	190	75	M20	140	20	12	67.5	280	38	680	233	271	24	M50	1111
315M	2	508	120	628	652	539	406/457	607	216	65	M20	140	18	11	58	315	48.5	736	352	436	28	M63	1176
315M	4-8	508	120	628	652	539	406/457	607	216	80	M20	170	22	14	71	315	48.5	736	352	436	28	M63	1206
315L	2	508	120	628	652	539	457/508	718	216	65	M20	140	18	11	58	315	48.5	736	352	436	28	M63	1287
315L	4-8	508	120	628	652	539	457/508	718	216	80	M20	170	22	14	71	315	48.5	736	352	436	28	M63	1317
355L	2	610	120	730	762	656	560/630	796	254	75	M24	140	20	12	67.5	355	48	864	423	535	28	M63	1512
355L	4-8	610	120	730	762	656	560/630	796	254	95	M24	170	25	14	86	355	48	864	423	535	28	M63	1542

Note: All dimensions in mm.

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DIMENSIONAL DRAWINGS

IEC®* MOTORS, FOOT MOUNTED (B3 TB TOP)



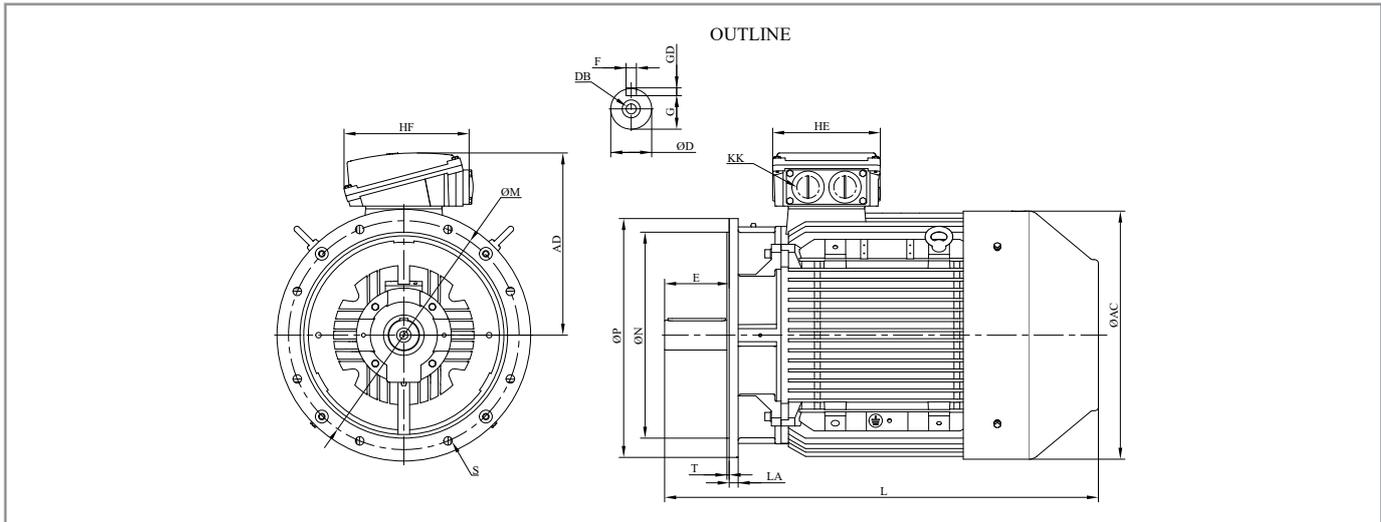
Frame	Pole	A	AA	AB	AC	AD	B	BB	C	D	DB	E	F	GD	G	H	HA	HD	HE	HF	K	KK	L
80M	All	125	30	152	182	162	100	125	50	19	M6	40	6	6	15.5	80	9	241	122	157	10	M20	281
90S	All	140	35	165	199	170	100	125	56	24	M8	50	8	7	20	90	9	259	122	157	10	M20	307
90L	All	140	35	165	199	170	100/125	150	56	24	M8	50	8	7	20	90	9	259	122	157	10	M20	332
100L	All	160	32	192	229	183	140	170	63	28	M10	60	8	7	24	100	13	283	122	157	12	M20	398
112M	All	190	38	222	256	194	140	170	70	28	M10	60	8	7	24	112	12	306	122	157	12	M25	399
132S	All	216	40	255	295	227	140	172	89	38	M12	80	10	8	33	132	13	359	146	195	12	M25	465
132M	All	216	40	255	295	227	140/178	210	89	38	M12	80	10	8	33	132	13	359	146	195	12	M25	503
160M	All	254	65	315	352	260	210	244	108	42	M16	110	12	8	37	160	22	420	177	196	14.5	M32	622
160L	All	254	65	315	352	260	210/254	288	108	42	M16	110	12	8	37	160	22	420	177	196	14.5	M32	666
180M	All	279	75	354	399	282	241	322	121	48	M16	110	14	9	42.5	180	28	462	177	196	14.5	M32	712
180L	All	279	75	354	399	282	241/279	360	121	48	M16	110	14	9	42.5	180	28	462	177	196	14.5	M32	750
200L	All	318	80	398	446	330	305	361	133	55	M20	110	16	10	49	200	26	530	203	241	18.5	M40	769
225S	4-8	356	90	446	491	355	286	380	149	60	M20	140	18	11	53	225	28	580	203	241	18.5	M40	837
225M	2	356	90	446	491	355	286/311	405	149	55	M20	110	16	10	49	225	28	580	203	241	18.5	M40	832
225M	4-8	356	90	446	491	355	286/311	405	149	60	M20	140	18	11	53	225	28	580	203	241	18.5	M40	862
250M	2	406	100	506	542	398	311/349	428	168	60	M20	140	18	11	53	250	35	648	233	271	24	M50	941
250M	4-8	406	100	506	542	398	311/349	428	168	65	M20	140	18	11	58	250	35	648	233	271	24	M50	941
280S	2	457	100	557	595	422	368	519	190	65	M20	140	18	11	58	280	37.5	702	233	271	24	M50	1060
280S	4-8	457	100	557	595	422	368	519	190	75	M20	140	20	12	67.5	280	37.5	702	233	271	24	M50	1060
280M	2	457	100	557	595	422	368/419	570	190	65	M20	140	18	11	58	280	37.5	702	233	271	24	M50	1111
280M	4-8	457	100	557	595	422	368/419	570	190	75	M20	140	20	12	67.5	280	37.5	702	233	271	24	M50	1111
315M	2	508	120	628	652	519	406/457	607	216	65	M20	140	18	11	58	315	48.5	834	352	436	28	M63	1176
315M	4-8	508	120	628	652	519	406/457	607	216	80	M20	170	22	14	71	315	48.5	834	352	436	28	M63	1206
315L	2	508	120	628	652	519	457/508	718	216	65	M20	140	18	11	58	315	48.5	834	352	436	28	M63	1287
315L	4-8	508	120	628	652	519	457/508	718	216	80	M20	170	22	14	71	315	48.5	834	352	436	28	M63	1317
355L	2	610	120	730	762	643	560/630	770	254	75	M24	140	20	12	67.5	355	48	998	423	535	28	M63	1512
355L	4-8	610	120	730	762	643	560/630	770	254	95	M24	170	25	14	86	355	48	998	423	535	28	M63	1542

Note: All dimensions in mm.

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DIMENSIONAL DRAWINGS

IEC®* MOTORS, FLANGE MOUNTED (B5)



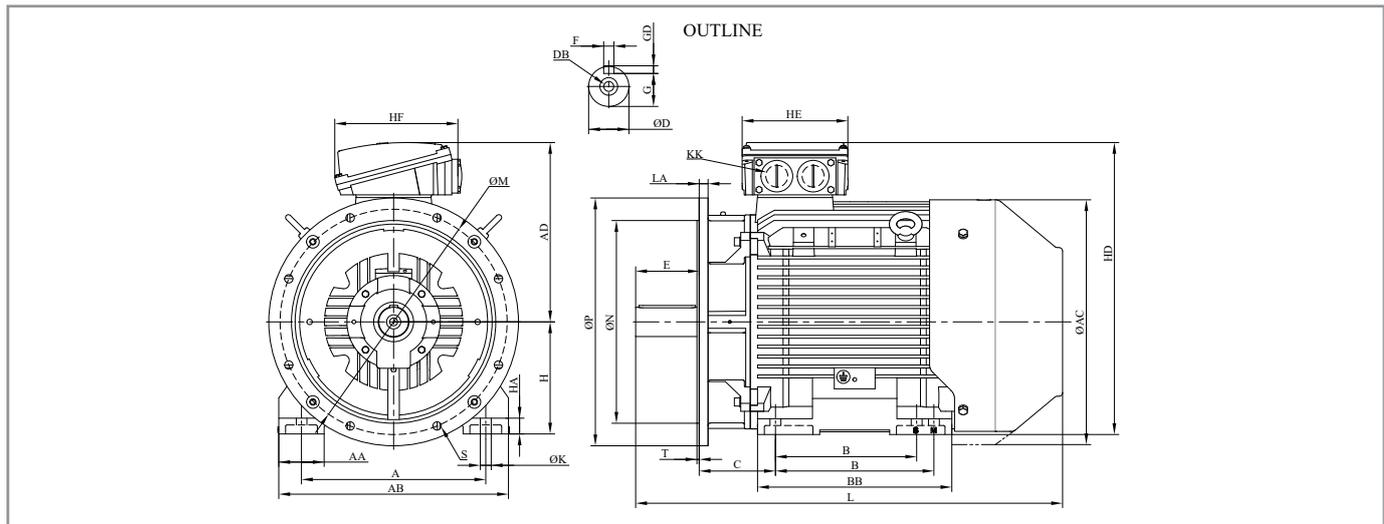
Frame	Pole	AC	AD	D	DB	E	F	GD	G	HE	HF	KK	L	LA	M	N	P	S	T
80M	All	182	162	19	M6	40	6	6	15.5	122	157	M20	281	8	165	130	200	12	3.5
90S	All	199	170	24	M8	50	8	7	20	122	157	M20	307	8	165	130	200	12	3.5
90L	All	199	170	24	M8	50	8	7	20	122	157	M20	332	8	165	130	200	12	3.5
100L	All	229	183	28	M10	60	8	7	24	122	157	M20	398	11	215	180	250	14.5	4
112M	All	256	194	28	M10	60	8	7	24	122	157	M25	399	11	215	180	250	14.5	4
132S	All	295	227	38	M12	80	10	8	33	146	195	M25	465	12	265	230	300	14.5	4
132M	All	295	227	38	M12	80	10	8	33	146	195	M25	503	12	265	230	300	14.5	4
160M	All	352	260	42	M16	110	12	8	37	177	196	M32	622	16	300	250	350	18.5	5
160L	All	352	260	42	M16	110	12	8	37	177	196	M32	666	16	300	250	350	18.5	5
180M	All	399	282	48	M16	110	14	9	42.5	177	196	M32	712	16	300	250	350	18.5	5
180L	All	399	282	48	M16	110	14	9	42.5	177	196	M32	750	16	300	250	350	18.5	5
200L	All	446	330	55	M20	110	16	10	49	203	241	M40	769	18	350	300	400	18.5	5
225S	4-8	491	355	60	M20	140	18	11	53	203	241	M40	837	18	400	350	450	18.5	5
225M	2	491	355	55	M20	110	16	10	49	203	241	M40	832	18	400	350	450	18.5	5
225M	4-8	491	355	60	M20	140	18	11	53	203	241	M40	862	18	400	350	450	18.5	5
250M	2P	542	398	60	M20	140	18	11	53	233	271	M50	941	19.5	500	450	550	18.5	5
250M	4-8	542	398	65	M20	140	18	11	58	233	271	M50	941	19.5	500	450	550	18.5	5
280S	2	595	422	65	M20	140	18	11	58	233	271	M50	1060	18	500	450	550	18.5	5
280S	4-8	595	422	75	M20	140	20	12	67.5	233	271	M50	1060	18	500	450	550	18.5	5
280M	2	595	422	65	M20	140	18	11	58	233	271	M50	1111	18	500	450	550	18.5	5
280M	4-8	595	422	75	M20	140	20	12	67.5	233	271	M50	1111	18	500	450	550	18.5	5
315M	2	652	519	65	M20	140	18	11	58	352	436	M63	1176	22	600	550	660	24	6
315M	4-8	652	519	80	M20	170	22	14	71	352	436	M63	1206	22	600	550	660	24	6
315L	2	652	519	65	M20	140	18	11	58	352	436	M63	1287	22	600	550	660	24	6
315L	4-8	652	519	80	M20	170	22	14	71	352	436	M63	1317	22	600	550	660	24	6
355L	2	762	643	75	M24	140	20	12	67.5	423	535	M63	1512	22	740	680	800	24	6
355L	4-8	762	643	95	M24	170	25	14	86	423	535	M63	1542	22	740	680	800	24	6

Note: All dimensions in mm.

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DIMENSIONAL DRAWINGS

IEC®* MOTORS, FOOT & FLANGE MOUNTED (B35 TB TOP)



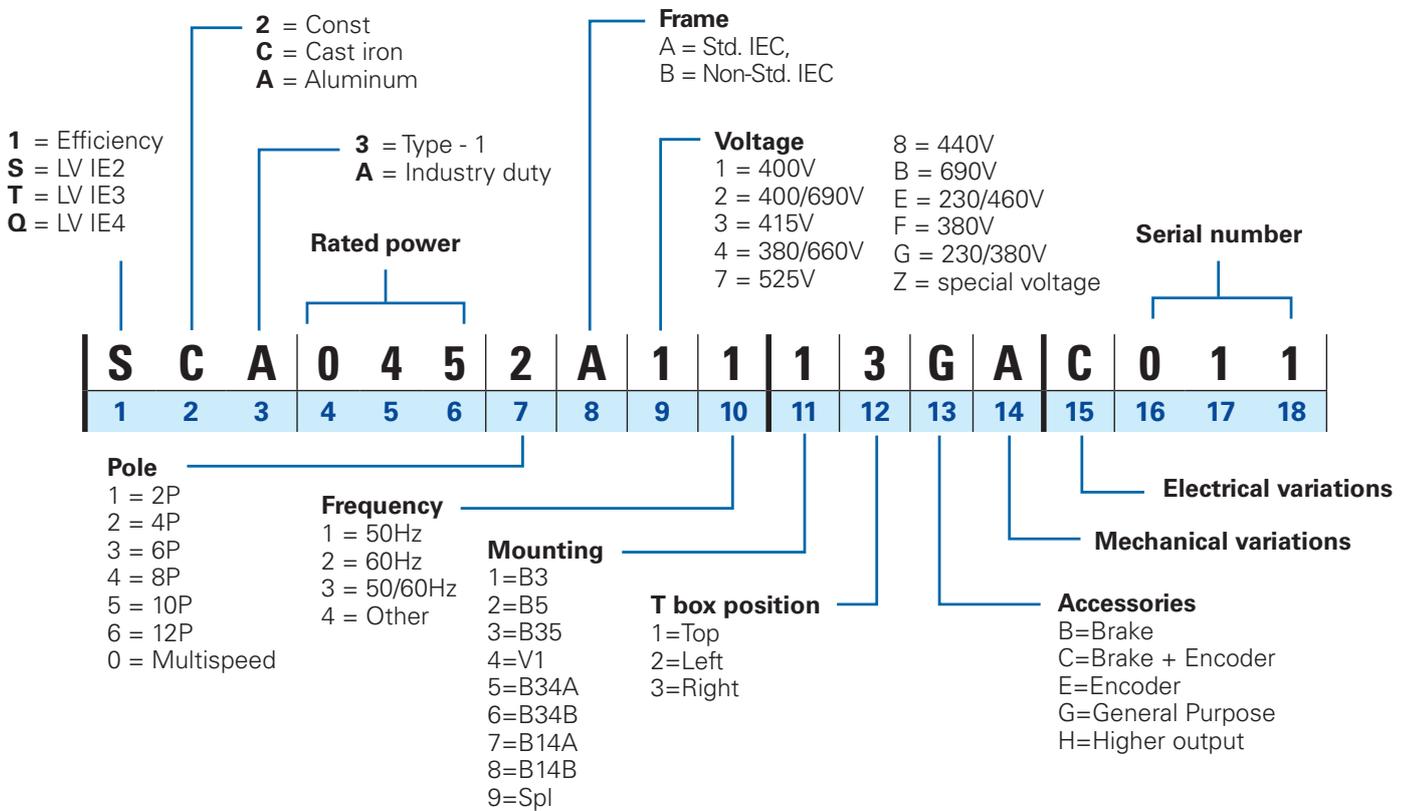
Frame Pole	A	AA	AB	AC	AD	B	BB	C	D	DB	E	F	GD	G	H	HA	HD	HE	HF	K	KK	L	LA	M	N	P	S	T
80M All	125	30	152	182	162	100	125	50	19	M6	40	6	6	15.5	80	9	241	122	157	10	M20	281	8	165	130	200	12	3.5
90S All	140	35	165	199	170	100	125	56	24	M8	50	8	7	20	90	9	259	122	157	10	M20	307	8	165	130	200	12	3.5
90L All	140	35	165	199	170	100/125	150	56	24	M8	50	8	7	20	90	9	259	122	157	10	M20	332	8	165	130	200	12	3.5
100L All	160	32	192	229	183	140	170	63	28	M10	60	8	7	24	100	13	283	122	157	12	M20	398	11	215	180	250	14.5	4
112M All	190	38	222	256	194	140	170	70	28	M10	60	8	7	24	112	12	306	122	157	12	M25	399	11	215	180	250	14.5	4
132S All	216	40	255	295	227	140	172	89	38	M12	80	10	8	33	132	13	359	146	195	12	M25	465	12	265	230	300	14.5	4
132M All	216	40	255	295	227	140/178	210	89	38	M12	80	10	8	33	132	13	359	146	195	12	M25	503	12	265	230	300	14.5	4
160M All	254	65	315	352	260	210	244	108	42	M16	110	12	8	37	160	22	420	177	196	14.5	M32	622	16	300	250	350	18.5	5
160L All	254	65	315	352	260	210/254	288	108	42	M16	110	12	8	37	160	22	420	177	196	14.5	M32	666	16	300	250	350	18.5	5
180M All	279	75	354	399	282	241	322	121	48	M16	110	14	9	42.5	180	28	462	177	196	14.5	M32	712	16	300	250	350	18.5	5
180L All	279	75	354	399	282	241/279	360	121	48	M16	110	14	9	42.5	180	28	462	177	196	14.5	M32	750	16	300	250	350	18.5	5
200L All	318	80	398	446	330	305	361	133	55	M20	110	16	10	49	200	26	530	203	241	18.5	M40	769	18	350	300	400	18.5	5
225S 4-8	356	90	446	491	355	286	380	149	60	M20	140	18	11	53	225	28	580	203	241	18.5	M40	837	18	400	350	450	18.5	5
225M 2	356	90	446	491	355	286/311	405	149	55	M20	110	16	10	49	225	28	580	203	241	18.5	M40	832	18	400	350	450	18.5	5
225M 4-8	356	90	446	491	355	286/311	405	149	60	M20	140	18	11	53	225	28	580	203	241	18.5	M40	862	18	400	350	450	18.5	5
250M 2	406	100	506	542	398	311/349	428	168	60	M20	140	18	11	53	250	35	648	233	271	24	M50	941	19.5	500	450	550	18.5	5
250M 4-8	406	100	506	542	398	311/349	428	168	65	M20	140	18	11	58	250	35	648	233	271	24	M50	941	19.5	500	450	550	18.5	5
280S 2	457	100	557	595	422	368	519	190	65	M20	140	18	11	58	280	37.5	702	233	271	24	M50	1060	18	500	450	550	18.5	5
280S 4-8	457	100	557	595	422	368	519	190	75	M20	140	20	12	67.5	280	37.5	702	233	271	24	M50	1060	18	500	450	550	18.5	5
280M 2	457	100	557	595	422	368/419	570	190	65	M20	140	18	11	58	280	37.5	702	233	271	24	M50	1111	18	500	450	550	18.5	5
280M 4-8	457	100	557	595	422	368/419	570	190	75	M20	140	20	12	67.5	280	37.5	702	233	271	24	M50	1111	18	500	450	550	18.5	5
315M 2	508	120	628	652	519	406/457	607	216	65	M20	140	18	11	58	315	48.5	834	352	436	28	M63	1176	22	600	550	660	24	6
315M 4-8	508	120	628	652	519	406/457	607	216	80	M20	170	22	14	71	315	48.5	834	352	436	28	M63	1206	22	600	550	660	24	6
315L 2	508	120	628	652	519	457/508	718	216	65	M20	140	18	11	58	315	48.5	834	352	436	28	M63	1287	22	600	550	660	24	6
315L 4-8	508	120	628	652	519	457/508	718	216	80	M20	170	22	14	71	315	48.5	834	352	436	28	M63	1317	22	600	550	660	24	6
355L 2	610	120	730	762	643	560/630	770	254	75	M24	140	20	12	67.5	355	48	998	423	535	28	M63	1512	22	740	680	800	24	6
355L 4-8	610	120	730	762	643	560/630	770	254	95	M24	170	25	14	86	355	48	998	423	535	28	M63	1542	22	740	680	800	24	6

Note: All dimensions in mm.

*IEC is a trademark of International Electrotechnical Commission and is not owned or under the control of Regal Beloit Corporation.

PART NUMBER LOGIC

Marathon® TerraMAX® motor configuration confirms to IEC®* frame, designed for 400/690V, 50Hz 3kW and above, 230V/400V 50Hz for ratings below 3kW, terminal box mounted on top side viewed from DE. Product code specified as per below should be used while placing the order.



Contact Regal for details on the standard configuration of the SCA(IE2) / TCA(IE3) / QCA(IE4) series motors in your region. Please see rear page for the contact details.

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MODIFICATIONS AND OPTIONS

MARATHON® TERRAMAX® MOTORS – MODIFICATIONS AND OPTIONS

Modifications & options	80-132	160-180	200-225	250-280	315-355
Protection IP55	●	●	●	●	●
Protection IP66	○	○	○	○	○
Cooling IC 411	●	●	●	●	●
Cooling IC 416	○	○	○	○	○
Duty – S1 Cont.	●	●	●	●	●
Duty – Other	○	○	○	○	○
Balancing – G1	○	○	○	○	○
DE Ball Brg. (2-8P)	●	●	●	●	●
DE Roller Brg (4-8P)	NA	○	○	○	○
NDE Insulated Brg.	NA	○	○	○	○
Vibration Stud (Provision for SPM Mounting)	○	○	○	○	○
EN8 Shaft	●	●	●	●	●
EN24/SS	○	○	○	○	○
Shaft Grounding Ring	NA	○	○	○	○
Rain Canopy (Vertical)	○	○	○	○	○
Brake Fitment	○	○	NA	NA	NA
Special Paint Shade	○	○	○	○	○
Special Paint Specs	○	○	○	○	○
Special Volt and Freq	○	○	○	○	○
PTC / Phase	○	○	○	○	○
220-250V Heater	○	○	○	○	○
380-440V Heater	○	○	○	○	○
3 Wire RTD – Winding	NA	NA	← Optional in auxiliary terminal box →		
3 Wire RTD – Bearing	NA	← Optional in auxiliary terminal box →			
Ambient -20°C to 40°C (50°C for India)	●	●	●	●	●
Special Ambient	○	○	○	○	○
Shaft Encoder	○	○	○	○	○
Flying leads	○	○	○	○	○
Side T Box	○	○	○	○	○

- – Standard feature
- – Optional Feature
- NA – Not Applicable

Contact Regal for details on the standard configuration of the TCA/SCA/QCA motors in your region.
Please see rear page for the contact details.

NOTES:

marathon®

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APPLICATION CONSIDERATIONS

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