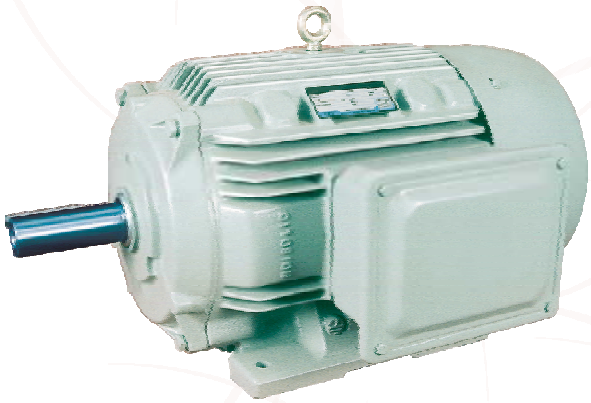
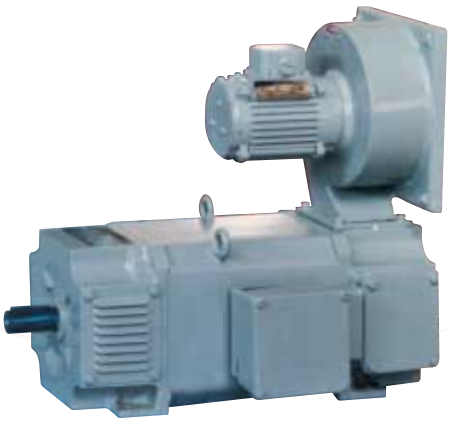
Smart solutions.
Strong relationships.

LT Motors
AC Generators
DC Motors
Drives

Cat No.: LTM / Cat / 01 / Dec. 2009





AVANTHA
GROUP COMPANY

ISO 9001
BUREAU VERITAS
Certification

AFAQ
UKAS ENVIRONMENTAL MANAGEMENT
022

AFAQ
OHSAS 18001

Crompton Greaves (CG) is part of the US 3 bn Avantha Group, a conglomerate with an impressive global footprint.

Since its inception CG has been synonymous with electricity. CG's India operations were established in 1937, and since then the company has retained its leadership position in the management and application of electrical energy.

Today, Crompton Greaves India's largest private sector enterprise. It has diversified extensively and is engaged in designing, manufacturing and marketing technologically advanced electrical products and services related to power generation, transmission and distribution, besides executing turnkey projects. The company is customer-centric in its focus and is the single largest source for a wide variety of electrical equipments and products.

With several international acquisitions, Crompton Greaves is fast emerging as a first choice global supplier for high quality equipment through its three business groups viz

Power Systems :

- Transformer
- Switchgear
- Power Quality
- Engineering Projects

Industrial Systems :

- Motors
- Alternators
- Drives
- Railway Signalling
- Stampings

Consumer Products :

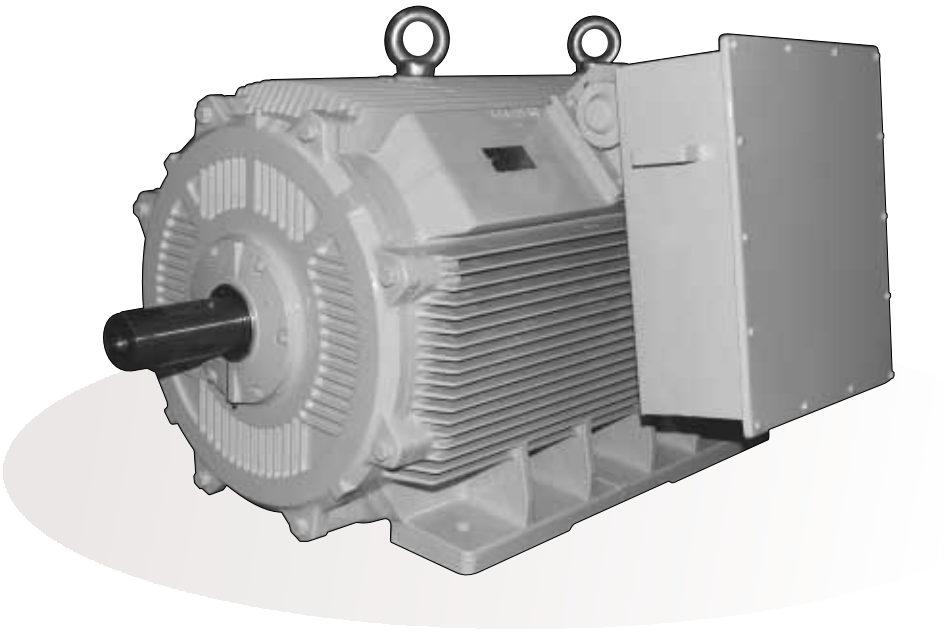
- Fans
- Appliances
- Lighting
- Integrated Security Solutions & Home Automation
- Pumps

L T Motors division, for the past seven decades has lead the industry in India developing motors that deliver greater performance and reliability while using less electricity.

The motors are manufactured at the Crompton Greaves State-of-the-art plant at Ahmednagar, consistently ensuring conformance to International standards for energy conservation and environment preservation.

INDEX

TEFC Motors



0.18 kW to 450 kW
From 63 to 400 Frame
Frame 450 under development

EFF Level 2

ENERGY EFFICIENT MOTORS LEVEL 2

TEFC CAGE MOTORS

- Energy Efficiency level 2 as per IS:12615
- Energy Efficiency as per CEMEP Standards prevalent in Europe
- Sleek and compact design, Improved aesthetics
- 'V' seal arrangement up to 355 frame - Easier assembly of bearing housing
- Integral bearing cover with endshield up to 225 frame
- Larger terminal box for accommodating bigger Aluminium cables
- Sophisticated CNC Machines, Most Advanced Manufacturing Technology & Test Plant - Improved reliability.

STANDARD SPECIFICATIONS

RANGE	0.18 kW to 400 kW (FRAME 63 to 400) Multi speed options are also available
VOLTAGE	415 V +/- 10 %
FREQUENCY	50 Hz +/- 5 %
COMBINED VARIATION	+/- 10 % (ABSOLUTE SUM)
INSULATION	Class 'F' (Temp. rise limited to class 'B') as standard
MOUNTING	Horizontal foot mounting (B3) as per IS :1231.
AMBIENT / TEMPERATURE RISE	50^{0} C / 70^{0} C
DEGREE OF PROTECTION	IP55 AS PER IS: 4691

BEARINGS & TERMINAL BOX DETAILS

BEARING SIZE CHART

FRAME SIZE	DE BEARING	NDE BEARING
SD63	6201ZZ	6201ZZ
SD71	6203ZZ	6203ZZ
SD/ND80	6204ZZ	6204ZZ
SD/ND90S/L	6205ZZ	6205ZZ
SD100L	6206ZZ	6206ZZ
ND100L	6206ZZ	6205ZZ @
SD/ND112M	6306ZZ	6205ZZ @
ND/NC132 S/M	6308ZZ	6208ZZ
SD132 S/M	6308ZZ	6305ZZ
ND160M/L	6309 2RS	6209 2RS
ND180M	6310 2RS	6210 2RS
ND200L	6312 2RS	6212 2RS
ND225M	6313 2RS	6213 2RS
ND250M - 2P	6314	6314
ND250M 4P UP	6314	6314
ND280S/M 2P	6314	6314
ND280S/M 4P & UP	6318	6318
ND315S/M/L/LX 2 P	6315	6315
ND315S/M/L/LX 4P & UP	6319	6319
ND355S/M/L/LX 2P	6316	6316
ND355S/M/L 4P UP	6321	6321
ND355LX 4P UP	6322	6322
ND400LX 2P	6318	6318
ND400LX 4P UP	6322	6322
DW132	6308	6208

@ For single shaft extension. For double shaft extension-Bearing Size-6206 ZZ.

TERMINAL BOX :

TEFC FRAME	MAXIMUM CABLE SIZE		NO. OF MAIN TERMINALS	TERMINAL STUD SIZE		BSC ENTRY	
	DOL	STAR/DELTA		MAIN	EARTH	NOS.	SIZE
SD63-SD71	4CX4mm^2	-	6	M5	M4	1	¾”
SD80 *	4CX4mm^2	-	6	M5	M4	2	¾”
ND80	4CX4mm^2	-	3	M5	M4	1	¾”
ND90S-ND132M	4CX10mm^2	4CX10mm^2	6 #	M6	M5	DOL-1 S/D-2	1”
SD90S-SD100L	4CX10mm^2	-	6	M6	M5	1	1”
NC132S/M	4CX10mm^2	4CX10mm^2	6	M6	M5	DOL-1 S/D-2	1”
ND160-ND200	3CX50mm^2	2X3 C X35mm^2	6	M6	M8	2	1”
ND225 TO ND280	3CX120mm^2	2X3C X95mm^2	6	M8	M12$	2	1 ½”
ND315S/M/L	3CX300mm^2	2X3 C X 240mm^2	6	M12	M12	2	2”
ND355L/LX	3C x 400 mm^2	2 x 3C x 300 mm^2	6	M16	M12	2	2.5”

* INTEGRAL TERMINAL BOX
\# 3 LEADS UPTO 2.2 kW2 P/4P & 1.5 kW 6P/8P and below, 6 leads for 2.2 kW 6P/8P & above (For ND Frame only)
$ M12 FOR 250/280 FRAME & M8 FOR ND225 FRAME

NOISE & VIBRATION LEVELS

NOISE LEVEL

The noise level of the motors is restricted to the levels specified in IS 12065. Table below gives the noise level as per IS 12065 **Limiting Mean Sound Power Level L_W in dB (A) for Airborne noise emitted by Rotating Electrical Machines.**

Protective Enclosure		IP 44	IP 44	IP 44	IP 44	IP 44	IP 44
Rating kW (or kVA)		Rated Speed (rev. /min.)					
ABOVE	UPTO	960 & below	961 to 1320	1321 to 1900	1901 to 2360	2361 to 3150	3151 to 3750
		Sound Power Level dB (A)					
-	1.1	76	79	80	83	84	88
1.1	2.2	79	80	83	87	89	91
2.2	5.5	82	84	87	92	93	95
5.5	11	85	88	91	96	97	100
11	22	89	93	96	98	101	103
22	37	91	95	97	100	103	105
37	55	92	97	99	103	105	107
55	110	96	101	104	105	107	109
110	220	100	104	106	108	110	112
220	630	102	106	109	111	112	114

Note 1: IP 44 corresponds generally to totally enclosed fan-cooled, closed air circuit air-cooled & similar enclosure (see Is-4691)

VIBRATION.

The motor is said to be in state of vibration if any part of it experiences displacement in any direction. Standard motors comply with normal class of vibration depending on severity as per IS 12075. “Measurement & evaluation of vibration of Rotating Electrical Machines”. The limits of vibration levels are given below.

VIBRATION LEVELS :

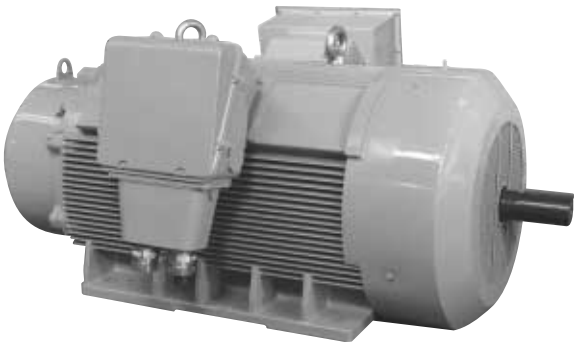
LIMITS OF VIBRATION SEVERITY IN ROTATING ELECTRICAL MACHINES
MEASURED IN STATE OF FREE SUSPENSION *

Shaft height H, mm	56 to 132		160 to 225		225	
Range of speed	600 to 1500	Above 1500 & Upto 3000	600 to 1500	Above 1500 & Upto 3000	600 to 1500	Above 1500 & Upto 3000
Class of vibration Severity	RMS Value of Vibration Velocity, mm/s					
Normal	1.8	1.8	1.8	2.8	2.8	4.5
Precision A	0.71	0.71	0.71	1.12	-	-
Precision B	0.45	0.45	0.45	0.71	-	-
Precision C	0.28	0.28	0.28	0.45	-	-

* The vibration may be determined in rigid mounting condition but the value of vibration severity shall be agreed by a special agreement between the manufacturer & the user.

SPECIAL DESIGNS OFFERED

ELECTRICAL	MECHANICAL
Non Standard Voltage And Frequency Variation	Non Standard Mounting Dimensions
Duel Voltage (1:2 or 1:$\sqrt{3}$ Ratio) Triple Voltage (1: $\sqrt{3}$: 2 Ratio)	Special shaft Extension
Inverter fed Supplies And AC Variable Speed drives	Double shaft Extension
Multispeed Motors Upto 4 different speeds Motors	Separately Ventilated
Energy Efficient Motors	Low Vibration & Noise Level
High Slip Motors	Shock Grade Motors
Motors For Frequent starts/stops/reversals (e.g. crane duty)	Motors for Hazardous areas
Torque Motors	Motors For Dust Laden Atmosphere
High Frequency Motors	Brake Motors
Textiles Motors	Canopy for horizontal mounting motors
10,12,16,18,24,32 Pole Motors	Special Bearings like Thrust Bearings
Special Performance Requirements	Tacho Mounting
Class H insulated Motors	Non Standard Paint Shade and Painting Procedure for required Dry Film Thickness
Motors With Service Factor	Fabricated Steel Enclosure Alternate Terminal Box Position
Slipring Motors with Bar-wound rotors for Frames 280 to 400	Special Shaft Material
Motors for operation on Variable Frequency Drive - Refer note on next Pages	Stainless Steel/ Brass Hardware Accessories like Resistance Temperature Detectors, Bearing Temperature Detectors, Thermocouples, Plug & Socket
	Custom Size Fabricated terminal box & Terminal Arrangements.



Operating instructions for motors used with variable frequency drives.

Motor terminal voltage transients

Modern drives use power transistors that switch at very high rates. To achieve this, the devices have very fast turn on times that result in voltage pulses with high dv/dt. When such a drive is used with a squirrel cage induction motor, the pulses, in combination with the cable and motor impedance, generate high peak voltages at the motor terminals. These peak voltages are repetitive. They occur continuously and reduce motor insulation system life.

Due to space and surface charge creation within the insulation components, the electric stress is not only defined by the instantaneous voltage itself but also by the peak voltages.

When used with drives, maximum repetitive voltage peaks at motor terminals can be 3.1 times the rated RMS voltage with a rise time not less than 0.1 micro sec. For 415 volt motor, these peaks will be of the order of 415 x 3.1 = 1286.5 volts.

Fundamental contributors to peak voltages

It is difficult to determine if a particular drive and cable will cause peak voltages in excess of the motor's insulation capability. There are six fundamental issues that determine the amount of peak voltage that will exist at the motor's terminals: pulse rise time, cable length, minimum time between pulses, minimum pulse duration, transition type (single or double), and the use of multiple motors.

Pulse Rise Time

A certain amount of time is required for the voltage at the drive terminals to transition from low to high. This is called the rise time. A shorter rise time will cause the peak voltage at the motor's terminals to reach a higher value for a given cable length between the motor and the drive.

Cable Length between Drive and the Motor

Distance from the drive to the motor is also important. All motor cables have line-to-line and line-to ground capacitance. Longer the cable, greater the capacitance. Some types of cables, such as shielded cable or cables in metal conduit, have greater capacitance. Spikes occur at the motor terminals because of the charging current in the cable capacitance. Higher voltage (415 V) and higher capacitance (long cables) result in higher spikes. Voltage spikes caused by long cable lengths can potentially shorten the life of the motor.

With modern IGBT drives, the peak voltage begins to occur with a cable length of a few meters and can reach 2 times the control DC bus voltage at a length less than 20 meters. In same cases, however, very long cables (in excess of 130 meters, for example) can result in a situation where the peak voltage dose not decay quickly enough. In this case, the peak voltage can be more than 2 times the control DC bus voltage.

Minimum Time between Pulses and Minimum Pulse Duration

An adjustable frequency drive creates, average voltage changes by varying the width of the pulses it produces and the time between them. The peak voltage is potentially at its worst, when time between pulses is at the minimum for the drive and the length of the pulse duration is at the minimum. The minimum time between pulses is most likely to occur at high peak or high output voltages and during transient conditions, such as acceleration and deceleration. Minimum pulse width is most likely to occur at low output voltages. If the time between pulses or the minimum pulse duration is less than three times the resonant period of the cable (0.2 to 2 µs for industrial cable), higher peak voltages will occur. The only way to be sure this condition does not exist in any particular drive is by measuring the pulses directly or by contacting the manufacturer of the drive.

Transition Type

Each of a drive's three output phases is capable of being switched. Generally, only one of the three phases is switched at any given instant. This situation is called a single transition. Some drives will switch two phases simultaneously. This is referred to, as a double transition. The result is a line-to-line polarity reversal with twice the voltage excursion as that of single transition. This causes higher peak voltage at the motor's terminals. Some drives perform double transitions only during transient conditions such as acceleration and deceleration. Double transitions are generally found in old drives and are not widely used today. The only way to be sure a drive does not perform double transitions is by measuring the pulses directly or by contacting the manufacturer of the drive.

Multiple Motor

If more than one motor is connected to a drive, there can be higher peak voltage due to reflections from each motor. The situation is made worse when there is a long length of cable between the drive and the common connection of motors.

Switching Frequency

Many PWM drives provide for convenient user adjustment of the switching frequency. This frequency can be adjusted over a range as broad as 500 Hz to 20 kHz. The choice of switching frequency is significant because it defines the number of peak voltages that will be occurring at the motor in a certain amount of time. The higher the switching frequency, the greater the number of peak voltages and their magnitude that will be stressing the motor's insulation system.

Temperature rise

When a motor is used with a variable frequency drive supply, it results in higher winding temperature rise as compared to the temperature rise with fundamental sine wave supply. This is due to additional harmonic losses generated due to harmonics present in the output of drive supply.

All CGL motors are supplied with class F insulation system and class B temperature rise limits for sine wave supply. Hence, with VFD supply, temperature rise will be within class F limits.

However, all consultants specify that the temperature rise of the motor winding is to be restricted to class B limits, with drive supply, even though the motor is wound with class F insulation system.

When we want to meet above condition, the motor needs to be derated. This is to be done at preorder stage.

Earthing for the motor

The output earth conductor to be used as equipment earth point for the motor. Please note, the earthed metal conduit carrying the output power conductors does not provide an adequate earthing for the motor. A separate earth conductor for motor is necessary.

The earth conductor of the drive and motor must be separately grounded. These are not to be loop earthed or connected in series.

Service factor for motors used with drives

Service factor is not applicable for the motors used with drive supply. All customers and specifically compressor manufacturers, should note this point.

To have satisfactory operation of the drive and motor, we recommend

Pulse rise time of the drive to be 0.1 microsec or more.

- Locate drive in such a way that cable length between drive and motor will not exceed 10 meters.
- Use appropriate filters, at drive output, wherever above condition of cable length cannot be met. The filters can be output reactor / dv/dt filter/ sinusoidal filter / motor termination unit.
- Cable length between drive and filter must be less than 3 meters.
- Switching frequency to be 5 kHz (Check for magnetic noise required)
- As far as possible, use integrated drive and motor combination. When using multiple motors on single drive, output chokes recommended.
- All parameters needed for setting the converter must be taken from the motor rating plates. The most often needed parameters are:
  - Motor nominal voltage
  - Motor nominal current
  - Motor nominal frequency
  - Motor nominal speed
  - Motor nominal power
- Voltage THD of the drive output shall be less than 5% to avoid excessive temperature rise beyond class F limits.
- Temperature rise for F class motor will be F class. Alternately, to restrict the temperature rise to class B limits, derate the motor by 12 to 15%.
- Insulated bearing recommended for frames 315 & above. Customers are requested to give specific confirmation on this point, since it attracts special price.
- Proper earthing for the motor and drive

EFF Level 2

PERFORMANCE FIGURES OF TEFC SCR MOTORS EFF LEVEL 2 FOR 50°/70°C

OUTPUT		POLE	FRAME SIZE	FL RPM	FLC AMPS.	FLT Kg-m	EFFICIENCY (%)			POWER FACTOR			DOL STG.		POT % FLT	GD.^{2} KGM.^{2}	NET WT. kG
kW	HP						FL	3/4 LOAD	1/2 LOAD	FL	3/4 LOAD	1/2 LOAD	STG.T % FLT	STG.C % FLC			
0.18	0.25	2	SD63	2700	0.56	0.06	64.0	60.0	52.0	0.70	0.62	0.52	250	500	300	0.001	5.6
		4	SD63	1330	0.58	0.13	64.0	60.0	54.0	0.68	0.63	0.54	200	500	275	0.003	5.6
		6	SD71	900	0.64	0.19	60.0	55.0	48.0	0.65	0.55	0.45	170	400	225	0.004	7.0
0.25	0.33	2	SD63	2700	0.64	0.09	68.0	67.0	63.0	0.79	0.72	0.60	250	500	300	0.001	5.6
		4	SD71	1350	0.79	0.18	68.0	66.0	62.0	0.65	0.60	0.53	200	500	250	0.004	7.0
0.37	0.5	2	SD71	2820	1.00	0.13	70.5	66.0	60.0	0.73	0.70	0.63	275	500	300	0.002	7.0
		4	SD71	1400	1.20	0.26	68.0	66.0	62.0	0.63	0.58	0.51	200	500	275	0.004	7.0
0.55	0.75	2	SD71	2800	1.50	0.19	72.0	70.0	65.0	0.79	0.74	0.68	275	500	300	0.003	10
0.37	0.50	6	SD / ND80	910	1.13	0.40	65.0	63.0	59.0	0.70	0.63	0.50	200	400	250	0.011	17
		8	SD / ND90S	680	1.41	0.53	64.0	60.0	54.0	0.57	0.50	0.40	170	400	225	0.015	22
0.55	0.75	4	SD / ND80	1410	1.44	0.38	73.0	72.0	69.0	0.73	0.67	0.54	200	500	275	0.007	17
		6	SD / ND80	910	1.56	0.59	69.0	66.0	60.0	0.71	0.63	0.50	200	400	250	0.011	17
		8	SD / ND90L	680	1.79	0.79	68.0	65.0	60.0	0.63	0.54	0.40	150	400	225	0.021	22
0.75	1.00	2	SD / ND80	2820	1.72	0.26	75.0	73.0	68.0	0.81	0.73	0.60	250	600	300	0.003	17
		4	SD / ND80	1410	1.81	0.52	77.0	74.0	69.0	0.75	0.68	0.58	200	500	275	0.007	17
		6	SD / ND90S	935	1.99	0.78	73.0	71.0	65.0	0.72	0.65	0.55	200	500	250	0.015	22
		8	SD / ND100L	700	2.62	1.04	70.0	67.0	62.0	0.57	0.51	0.42	175	400	225	0.030	32
1.10	1.50	2	SD / ND80	2820	2.42	0.38	78.0	76.0	71.0	0.81	0.75	0.65	225	600	300	0.004	17
		4	SD / ND90S	1415	2.55	0.76	78.0	76.0	74.0	0.77	0.72	0.64	200	500	275	0.014	22
		6	SD / ND90L	935	2.80	1.15	76.0	73.0	67.0	0.72	0.66	0.54	200	500	250	0.021	25
		8	SD / ND100L	700	3.54	1.53	72.0	69.0	65.0	0.60	0.55	0.44	175	400	225	0.034	35
1.50	2.00	2	SD / ND90S	2830	3.18	0.52	80.0	79.0	77.0	0.82	0.77	0.70	250	600	300	0.006	22
		4	SD / ND90L	1415	3.30	1.03	80.0	79.0	77.0	0.79	0.75	0.68	200	550	275	0.019	25
		6	SD / ND100L	935	3.72	1.56	78.0	76.0	73.0	0.72	0.66	0.56	200	500	250	0.030	32
		8	SD / ND112M	700	4.04	2.09	76.0	74.0	71.0	0.68	0.60	0.48	190	400	225	0.057	45
2.20	3.00	2	SD / ND90L	2830	4.61	0.76	81.0	80.0	77.0	0.82	0.76	0.68	250	600	300	0.008	25
		4	SD / ND100L	1430	4.61	1.50	82.0	81.0	78.0	0.81	0.76	0.66	200	600	275	0.030	32
		6	SD / ND112M	935	5.10	2.29	80.0	79.0	75.0	0.75	0.68	0.58	200	500	250	0.048	45
		8	SD / ND132S	710	5.38	3.02	78.0	77.0	74.0	0.73	0.65	0.52	180	450	225	0.174	68
3.70	5.00	2	SD / ND100L	2840	7.25	1.27	84.5	83.5	82.0	0.84	0.80	0.74	250	600	300	0.022	36
		4	SD / ND112M	1430	7.39	2.52	85.0	85.0	83.0	0.82	0.77	0.68	200	600	275	0.052	45
		6	SD / ND132S	940	7.90	3.83	82.5	82.0	80.0	0.79	0.73	0.64	200	550	250	0.174	68
		8	SD / ND132M	710	8.59	5.08	81.0	80.0	78.0	0.74	0.67	0.56	180	450	225	0.214	79
5.50	7.50	2#	ND112M	2880	10.23	1.86	85.0	84.5	82.0	0.88	0.85	0.80	250	650	300	0.034	45
		2	SD / ND132S	2865	10.23	1.87	86.0	85.0	84.0	0.87	0.82	0.78	225	600	300	0.034	42
		4	SD / ND132S	1450	10.35	3.69	86.0	85.0	83.0	0.86	0.82	0.75	225	600	275	0.131	68
		6*	SD / ND132M	950	11.39	5.64	84.0	83.0	81.0	0.80	0.75	0.68	200	550	250	0.214	79
7.50	10.00	2	SD / ND132S	2880	13.55	2.54	87.5	87.0	86.0	0.88	0.85	0.80	250	650	300	0.062	68
		4	SD / ND132M	1455	13.79	5.02	87.0	86.0	84.0	0.87	0.84	0.76	225	600	275	0.161	79
9.30	12.50	2*	ND132M	2890	16.52	3.13	88.0	87.0	85.0	0.89	0.85	0.80	250	700	300	0.076	79.0
		4#	ND132M	1460	17.50	6.25	87.0	87.0	85.5	0.85	0.80	0.73	200	600	275	0.310	82.0

NOTE : 1) EFFICIENCY FIGURES ARE AS PER EFF2 CLASS OF IS 12615-2004

2) ALL PERFORMANCE FIGURES ARE SUBJECT TO TOLERANCES AS PER IS 325 : 1996

* FOR 45 / 75 ^{0}C ONLY

** 40/80 ^{0}C

\# WITH CLASS F RISE (95^0)

EFF Level 2

PERFORMANCE FIGURES OF TEFC SCR MOTORS FOR 50°/70°

OUTPUT		POLE	FRAME SIZE	FL RPM	FLC AMPS.	FLT Kg-m	EFFICIENCY (%)			POWER FACTOR			DOL STG.		POT % FLT	GD.^{2} KGM.^{2}	NET WT. kG
kW	HP						FL	3/4 LOAD	1/2 LOAD	FL	3/4 LOAD	1/2 LOAD	STG.T % FLT	STG.C % FLC			
3.7	5.0	8	ND160M	710	8	5.08	83.0	83.0	81.0	0.74	0.70	0.62	150	500	225	0.46	120
5.5	7.5	6	ND160M	970	11	5.52	86.0	86.0	84.0	0.80	0.76	0.68	200	550	250	0.46	120
		8	ND160M	710	12	7.55	85.0	85.0	83.0	0.74	0.70	0.62	150	500	225	0.46	120
7.5	10.0	6	ND160M	970	15	7.53	87.5	87.0	85.0	0.80	0.76	0.68	175	500	225	0.46	120
		8	ND160L	710	16	10.29	85.0	85.0	83.0	0.76	0.72	0.64	150	500	225	0.64	146
9.3	12.5	2	ND160M	2920	17	3.10	88.0	87.0	85.0	0.88	0.86	0.78	250	600	300	0.13	125
		4	ND160M	1460	17	6.20	88.5	88.5	86.5	0.84	0.81	0.73	175	500	225	0.31	125
		6	ND160L	970	18	9.29	87.5	87.0	84.0	0.80	0.76	0.68	200	550	250	0.59	148
		8	ND180M	720	20	12.58	86.0	86.0	84.0	0.74	0.70	0.60	175	500	225	0.99	174
11	15	2	ND160M	2920	20	3.67	88.5	88.0	86.0	0.88	0.86	0.78	250	600	300	0.13	120
		4	ND160M	1460	21	7.34	89.0	89.0	86.0	0.82	0.79	0.70	200	500	250	0.36	120
		6	ND160L	975	22	10.99	88.0	87.5	86.0	0.80	0.76	0.68	200	550	250	0.64	146
		8	ND180L	720	24	14.88	87.0	87.0	85.0	0.74	0.70	0.60	175	500	225	1.16	205
15	20	2	ND160M	2920	26	5.00	89.5	89.5	87.5	0.88	0.86	0.79	250	650	300	0.17	120
		4*	ND160L	1460	27	10.01	90.0	90.0	88.0	0.85	0.83	0.75	200	500	250	0.47	146
		6	ND180L	975	29	14.98	90.0	90.0	88.0	0.79	0.73	0.66	250	600	300	1.16	205
		8	ND200L	725	33	20.15	88.5	88.5	86.5	0.71	0.65	0.55	225	500	275	2.14	270
18.5	25	2	ND160L	2920	32	6.17	90.0	90.0	88.0	0.88	0.86	0.79	250	650	300	0.21	146
		4	ND180M	1475	33	12.22	91.5	91.5	90.0	0.84	0.80	0.72	200	500	250	0.81	170
		6	ND200L	975	34	18.48	91.1	91.1	89.9	0.84	0.80	0.70	200	550	250	1.69	270
		8	ND225S	725	39	24.85	89.0	89.0	87.0	0.75	0.71	0.63	175	500	225	3.24	345
22	30	2	ND180M	2940	40	7.29	91.0	91.0	89.0	0.84	0.80	0.74	175	500	225	0.44	164
		4	ND180L	1475	40	14.53	92.0	92.0	90.0	0.84	0.80	0.72	200	500	250	0.95	205
		6	ND200L	975	40	21.98	91.5	91.5	90.1	0.84	0.80	0.70	200	500	250	2.04	270
		8	ND225M	725	46	29.56	89.0	89.0	87.0	0.75	0.71	0.63	175	500	225	3.61	375
30	40	2	ND200L	2950	52	9.91	91.5	91.0	89.0	0.87	0.84	0.80	200	600	250	0.80	270
		4	ND200L	1475	53	19.81	92.0	92.0	90.5	0.86	0.82	0.76	225	600	275	1.62	270
		6	ND225M	980	53	29.82	92.0	92.0	90.5	0.85	0.81	0.72	200	550	250	3.61	375
		8	ND250M	735	61	39.76	91.0	90.5	88.5	0.75	0.71	0.63	175	550	225	4.82	465
37	50	2	ND200L	2960	64	12.22	92.5	92.0	90.0	0.87	0.84	0.80	200	500	250	0.89	270
		4	ND225S	1475	63	24.43	92.5	92.5	91.6	0.89	0.86	0.78	200	600	250	2.64	345
		6	ND250M	980	66	36.77	93.0	93.0	92.0	0.84	0.80	0.72	225	600	275	4.82	465
		8	ND280S	735	75	49.03	91.5	91.5	89.5	0.75	0.71	0.63	200	500	250	8.01	600
45	60	2	ND225M	2955	72	14.83	92.5	92.0	90.0	0.94	0.92	0.88	225	650	275	1.87	375
		4	ND225M	1475	76	29.72	93.0	93.0	91.5	0.89	0.86	0.78	200	600	250	3.13	375
		6	ND280S	980	79	44.72	93.0	93.0	91.0	0.85	0.81	0.73	225	600	275	8.01	600
		8	ND280M	725	91	60.46	92.0	92.0	90.5	0.75	0.71	0.63	175	500	225	9.89	630
55	75	2	ND250M	2955	88	18.13	93.0	92.5	90.5	0.94	0.92	0.88	200	600	250	2.79	465
		4	ND250M	1475	92	36.32	93.5	93.5	92.0	0.89	0.86	0.82	200	600	250	3.45	465
		6	ND280M	980	95	54.66	93.5	93.5	92.0	0.86	0.82	0.74	200	650	250	9.89	630
		8	ND315S	740	113.0	72.39	93.0	93.0	91.5	0.73	0.66	0.56	200	550	250	14.1	900
75.0	100.0	2	ND280S	2970	124	24.55	93.6	93.5	92.0	0.90	0.86	0.78	200	600	250	7.14	600
		4	ND280S	1480	123	49.36	94.0	94.0	92.5	0.90	0.88	0.82	200	600	250	7.21	600
		6	ND315S	987	134.0	74.01	93.5	93.0	91.0	0.83	0.76	0.64	200	600	250	14.1	900
		8	ND315M	740	153.0	98.72	93.5	93.5	91.5	0.73	0.66	0.56	200	550	250	19.0	950

NOTE : 1) EFFICIENCY FIGURES ARE AS PER EFF2 CLASS OF IS 12615-2004

2) ALL PERFORMANCE FIGURES ARE SUBJECT TO TOLERANCES AS PER IS 325 : 1996

* FOR 45 / 75 ^{0}C ONLY

** 40/80 ^{0}C

\# WITH CLASS F RISE (95^0)

EFF Level 2

PERFORMANCE FIGURES OF TEFC SCR MOTORS FOR 50°/70°

OUTPUT		POLE	FRAME SIZE	FL RPM	FLC AMPS.	FLT Kg-m	EFFICIENCY (%)			POWER FACTOR			DOL STG.		POT % FLT	GD.^{2} KGM.^{2}	NET WT. kG
kW	HP						FL	3/4 LOAD	1/2 LOAD	FL	3/4 LOAD	1/2 LOAD	STG.T % FLT	STG.C % FLC			
90	120	2	ND280M	2970	148	29.46	94.0	94.0	92.5	0.90	0.86	0.78	200	600	250	8.18	630
		4	ND280M	1480	147	59.21	94.5	94.5	92.5	0.90	0.88	0.82	225	600	275	8.26	630
		6	ND315M	987	156.0	88.79	94.2	94.2	92.5	0.85	0.80	0.70	200	600	250	17.0	950
		8	ND315L	740	180.0	118.43	94.0	94.0	92.0	0.74	0.70	0.60	150	500	225	25.3	1160
110	150	2	ND315S	2965	173.0	36.13	94.0	94.0	92.5	0.94	0.90	0.82	175	600	225	6.6	900
		4	ND315S	1485	176.0	72.13	94.5	94.5	92.0	0.92	0.88	0.80	225	600	275	11.6	900
		6	ND315M	987	188.0	108.52	94.5	94.5	93.0	0.86	0.82	0.74	200	600	250	19.0	950
		8	ND315LX	740	220.0	144.75	94.0	94.0	92.0	0.74	0.70	0.60	150	500	225	29.9	1160
132	180	2	ND315M	2965	207.0	43.35	94.5	94.5	92.5	0.94	0.90	0.82	175	600	225	8.0	950
		4	ND315M	1490	225.0	86.26	95.0	95.0	93.5	0.86	0.82	0.74	225	600	275	14.0	950
		6	ND315L	990	225.0	129.83	95.0	94.5	93.0	0.86	0.82	0.74	200	600	250	25.3	1160
		8	ND315LX	740	263.0	173.70	94.5	94.5	92.5	0.74	0.70	0.60	150	500	225	31.8	1160
150	200	4**	ND315M	1489	255	98.03	95.0	94.0	92.5	0.86	0.82	0.74	160	600	225	15.61	950
160	215	2	ND315LX	2975	249.0	52.37	95.0	94.5	92.5	0.94	0.92	0.90	175	600	225	12.4	1130
		4	ND315LX	1488	260.0	104.70	95.3	95.3	94.0	0.90	0.86	0.78	175	600	225	19.0	1160
		6	ND315LX	990	272.0	157.37	95.0	94.5	93.0	0.86	0.82	0.74	200	600	225	29.9	1160
		8	ND355LX	740	317.0	210.54	95.0	94.0	92.0	0.74	0.70	0.60	150	500	225	36.8	2140
180	240	2	ND315L	2975	280	58.92	95.0	94.5	92.5	0.94	0.92	0.88	225	650	275	13.90	1160
		4	ND315L	1488	292	117.79	95.3	94.8	93.8	0.90	0.88	0.84	175	600	225	21.10	1160
		6	ND355L	990	306	177.05	95.1	95.1	93.5	0.86	0.82	0.76	200	600	250	33.16	2150
		8	ND355LX	742	340	236.22	94.5	94.5	92.0	0.78	0.74	0.66	125	400	225	58.10	2100
200	270	2	ND315LX	2970	310	65.46	95.5	94.5	93.0	0.94	0.92	0.88	175	600	225	16.40	1160
		4	ND315LX	1488	324	130.88	95.5	95.2	94.0	0.90	0.88	0.84	175	600	225	25.00	1160
		6	ND355LX	990	349	196.72	95.0	95.0	93.5	0.84	0.81	0.72	130	500	225	29.70	2150
		8	ND355LX	742	377.0	262.47	94.5	94.5	92.5	0.78	0.74	0.66	125	400	225	58.1	2150
225	300	2**	ND355L	2970	349	73.79	95.5	94.8	93.3	0.94	0.92	0.88	225	600	275	18.40	2150
		4**	ND355L	1489	360	147.24	95.5	94.8	93.4	0.91	0.89	0.85	175	600	225	26.70	2150
		6	ND355LX	991	390	221.31	95.5	95.0	94.0	0.84	0.80	0.70	130	500	225	31.70	2150
		8**	ND355LX	742	423.0	295.28	94.8	94.5	92.5	0.78	0.74	0.66	125	400	225	58.1	2150
250	335	2	ND355LX	2970	387	81.97	95.5	94.8	93.3	0.94	0.92	0.88	150	650	225	27.70	2150
		4	ND355LX	1488	395	163.93	95.7	95.2	93.8	0.92	0.88	0.84	150	600	225	29.60	2150
		6	ND355LX	990	434	245.90	95.5	95.0	94.0	0.84	0.80	0.70	130	500	225	35.60	2150
		8	ND400LX	744	458	327.20	95.0	94.4	92.5	0.80	0.77	0.70	120	400	225	81.80	3200
275	370	2	ND355LX	2980	435	91.49	95.5	94.8	93.3	0.92	0.90	0.86	150	600	225	27.37	2150
		4	ND355LX	1490	440	183.60	95.5	95.0	93.3	0.91	0.88	0.81	140	650	225	31.56	2150
		6	ND355LX	990	477	275.41	95.5	95.0	94.0	0.84	0.80	0.74	160	500	225	39.52	2150
		8	ND400LX	744	503	367.05	95.0	94.4	93.4	0.80	0.77	0.69	120	400	225	81.80	3200
315	425	2	ND355LX	2980	499	102.93	95.5	94.8	92.5	0.92	0.90	0.86	175	600	225	29.60	2150
		4	ND355LX	1490	502	205.86	96.0	95.1	93.6	0.91	0.88	0.82	140	650	225	35.50	2150
		6	ND355LX	995	532	308.58	95.8	95.4	94.0	0.86	0.82	0.77	150	500	225	42.40	2150
		8*	ND400LX	744	588	412.28	95.5	95.0	94.0	0.78	0.75	0.66	120	400	225	97.60	3200
335	452	2**	ND355LX	2980	530	109.49	95.5	94.8	92.5	0.92	0.90	0.88	175	600	225	29.79	2150
		4	ND355LX	1493	534	218.55	96.0	95.4	93.8	0.91	0.88	0.82	150	600	200	38.06	2150
360	483	4	ND355LX	1492	567	235.01	96.0	95.6	94.0	0.92	0.90	0.88	150	600	225	38.06	2150
		6	ND400LX	995	609	352.40	95.6	94.6	93.1	0.86	0.82	0.72	140	550	225	81.80	3200

NOTE : 1) EFFICIENCY FIGURES ARE AS PER EFF2 CLASS OF IS 12615-2004

2) ALL PERFORMANCE FIGURES ARE SUBJECT TO TOLERANCES AS PER IS 325 : 1996

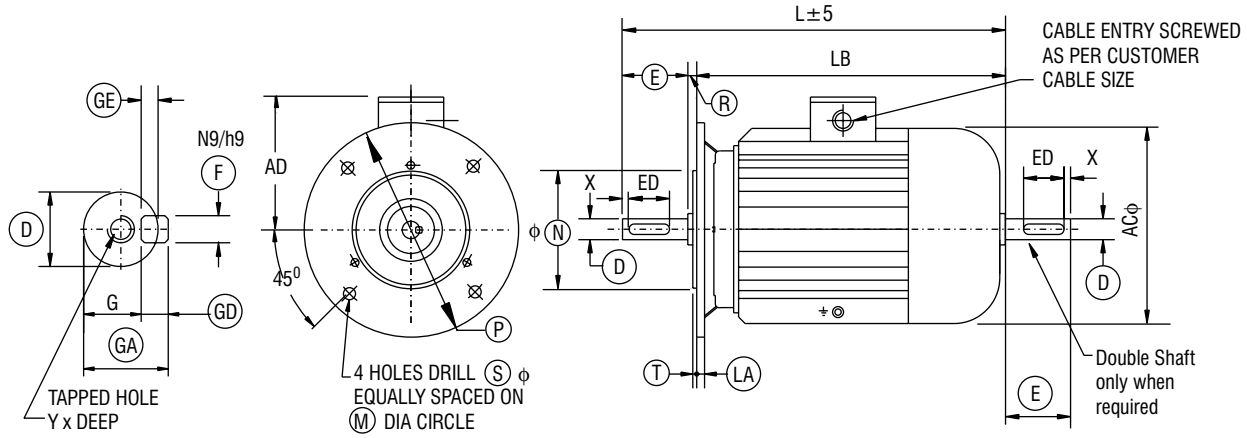
* FOR 45 / 75 ^{0}C ONLY

** 40/80 ^{0}C

\# WITH CLASS F RISE (95^0)

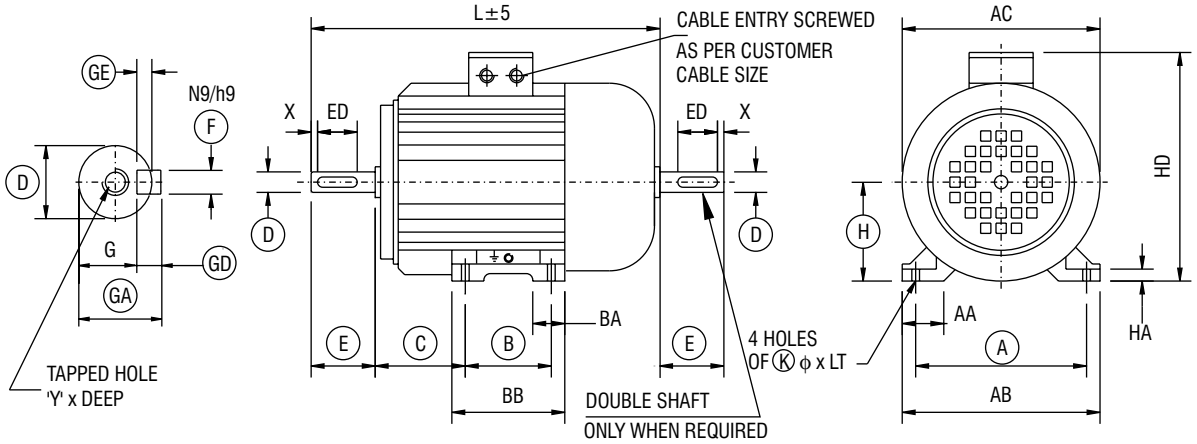
Frame 450 under development. Refer enquiries to Division

OUTLINE DIMENSIONS OF AC SCR TEFC FLANGE MOUNTED ALUMINIUM BODY METRIC MOTORS



FRAME	FLANGE FIXING							SHAFT AND KEY									'Y'xDEEP	OVERALL (MAX)			
SIZE	M	N	P	R	S	T	LA	D	E	ED	F	G	GA	GD	GE	X		AC	L	LB	AD
SD63	115	95	140	0	10	3	9	11	23	18	4	8.5	12.5	4	2.5	2.5	M4x10	125	220	197	100
SD71	130	110	160	0	10	3.5	9	14	30	25	5	11	16	5	3	2.5	M5x12.5	145	250	220	100
SD80	165	130	200	0	12	3.5	10	19	40	27	6	15.5	21.5	6	3.5	-	M6x16	165	285	245	120
SD90S	165	130	200	0	12	3.5	10	24	50	36	8	20	27	7	4	-	M8x19	180	310	260	140
SD90L																			335	285	
SD100L	215	180	250	0	15	4	11	28	60	44	8	24	31	7	4	-	M10x22	200	360	300	150
SD112M																		222	380	320	158
SD132S	265	230	300	0	15	4	10	19	40	27	6	15.5	21.5	6	3.5	-	M6x16	165	285	245	120
SD132M	165	130	200	0	15	4	10	19	40	27	6	15.5	21.5	6	3.5	-	M6x16	165	285	245	120

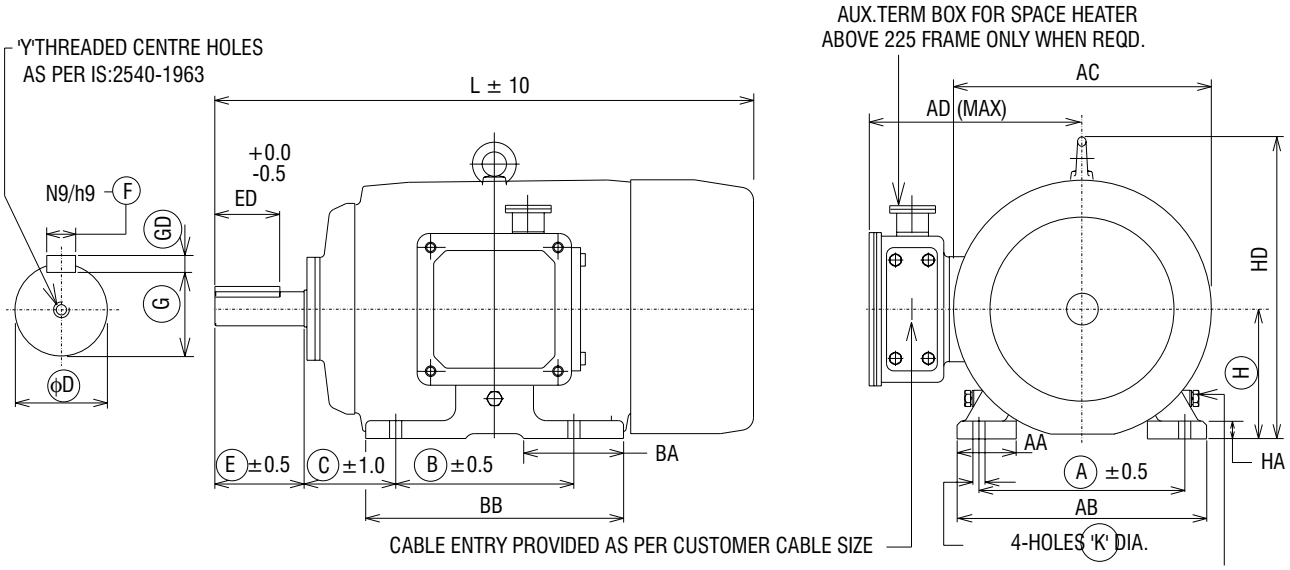
OUTLINE DIMENSIONS OF AC SCR TEFC FOOT MOUNTED ALUMINIUM BODY METRIC MOTORS



FRAME	FOOT FIXING											SHAFT AND KEY									YxDEEP	OVERALL (MAX)		
SIZE	A	B	C	H	AA	AB	BA	BB	HA	K	LT	D	E	ED	F	G	GA	GD	GE	X		AC	L	HD
SD63	100	80	40	63	25.5	122	30	96	9	7	-	11	23	18	4	8.5	12.5	4	2.5	2.5	M4 x10	125	210	160
SD71	112	90	45	71	30	136	30	110	9	7	-	14	30	25	5	11	16	5	3	2.5	M5x12.5	145	250	170
SD80	125	100	50	80	28	152	35	125	11	10	14	19	40	27	6	15.5	21.5	6	3.5	-	M6x16	165	285	200
SD90S	140	100	56	90	40	170	30	126	13	10	15	24	50	36	8	20	27	7	4	-	M8x19	180	310	226
SD90L		125						151															335	
SD100L	160	140	63	100	48	192	35	170	13	12	16	28	60	44	8	24	31	7	4	-	M10x22	200	360	245
SD112M	190	140	70	112	50	222	35	170	13	12	16	28	60	44	8	24	31	7	4	-	M10x22	222	380	270
SD132S	216	140	89	132	52	252	55	178	13	12	16	38	80	60	10	33	41	8	5	-	M12x28	260	475	310
SD132M		178						216																

EFF Level 2

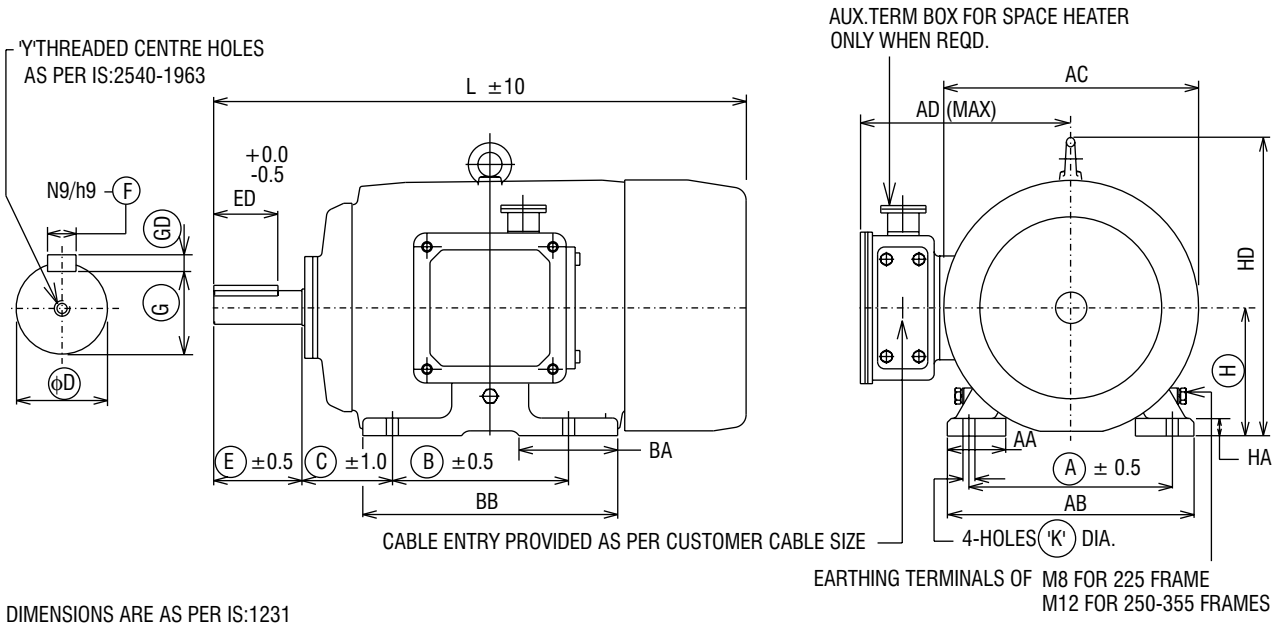
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FOOT MOUNTED INDUCTION MOTORS (4 POLE & UP ALL FRAMES & 2 POLE & UP, UPTO ND200L FRAME)



RINGED DIMENSIONS ARE AS PER IS:1231
ALL DIMENSIONS ARE IN mm

Frame	A	B	C	H	AA	AB	BA	BB	K	D	E	ED	F	GD	G	Y	AD	AC	L	HD	HA
ND80	125	100	50	80.0 / 79.7	35	152	45	124	10.0 / 10.5	19.009/ 18.996	40	27	6.00 / 5.97	6.00 / 5.91	15.5 / 15.3	M6X16	134	170	285	165	11
ND90S	140	100	56	90.0 / 89.7	35	168	40	127	10.0 / 10.5	24.009/ 23.996	50	36	8.00 / 7.964	7.00 / 6.91	20.0 / 19.8	M8X19	150	195	310	185	13
ND90L	140	125	56	90.0 / 89.7	35	168	52	152	10.0 / 10.5	24.009/ 23.996	50	36	8.00 / 7.964	7.00 / 6.91	20.0 / 19.8	M8X19	150	195	335	185	13
ND100L	160	140	63	100.0 / 99.7	36	192	45	170	12.0/ 12.5	28.009/ 27.996	60	44	8.00 / 7.957	7.0 / 6.91	24.0 / 23.8	M10X22	160	215	380	250	13
ND112M	190	140	70	112.0 / 111.7	36	222	60	170	12.0/ 12.5	28.009/ 27.996	60	44	8.00 / 7.957	7.0 / 6.91	24.0 / 23.8	M10X22	170	235	405	275	13
ND132S	216	140	89	132.0 / 131.7	48	254	54	178	12.0/ 12.5	38.018/ 38.002	80	60	10.0 / 9.957	8.0 / 7.91	33.0 / 32.8	M12X28	190	275	470	320	16
ND132M	216	178	89	132.0 / 131.7	48	254	54	216	12.0/ 12.5	38.018/ 38.002	80	60	10.0 / 9.957	8.0 / 7.91	33.0 / 32.8	M12X28	190	275	510	320	16
ND160M	254	210	108	160.0 / 159.5	73	308	76	254	15.5 / 15.0	42.018/ 42.002	110	80	12.00 / 11.957	8.00 / 7.91	37.0 / 36.8	M16X32	325	318	605	376	22
ND160L	254	254	108	160.0 / 159.5	73	308	101	298	15.5 / 15.0	42.018/ 42.002	110	80	12.00 / 11.957	8.00 / 7.91	37.0 / 36.8	M16X32	325	318	650	376	22
ND180M	279	241	121	180 / 179.5	84	348	85	286	15.5 / 15.0	48.018/ 48.002	110	80	14.00 / 13.957	9.00 / 8.91	42.5 / 42.3	M16X32	345	352	677	418	22
ND180L	279	279	121	180 / 179.5	84	348	106	323	15.5 / 15.0	48.018/ 48.002	110	80	14.00 / 13.957	9.00 / 8.91	42.5 / 42.3	M16X32	345	352	715	418	22
ND200L	318	305	133	200.0 / 199.5	66	381	115	356	19.5 / 19.0	55.030/ 55.011	110	80	16.00 / 15.957	10.00 / 9.91	49.0 / 48.8	M20X40	430	428	790	480	25
ND225S	356	286	149	225.0 / 224.5	70	425	102	340	19.5 / 19.0	60.030/ 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	455	470	840	534	25
ND225M	356	311	149	225.0 / 224.5	70	425	102	375	19.5 / 19.0	60.030/ 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	455	470	865	534	25
ND250S	406	311	168	250.0 / 249.5	80	483	140	419	24.5 / 24.0	65.030/ 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	485	500	940	598	32
ND250M	406	349	168	250.0 / 249.5	80	483	140	419	24.5 / 24.0	65.030/ 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	485	500	940	598	32
ND280S	457	368	190	280.0 / 279.0	100	538	137	440	24.5 / 24.0	75.030/ 75.011	140	110	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20X40	530	536	1035	642	35
ND280M	457	419	190	280.0 / 279.0	100	538	162	487	24.5 / 24.0	75.030/ 75.011	140	110	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20X40	530	536	1085	642	35
ND315S	508	406	216	315.0 / 314.0	110	597	138	485	28.5 / 28.0	80.030/ 80.011	170	140	22.00 / 21.948	14.00 / 13.91	71.0 / 70.8	M20X40	530	590	1180	725	35
ND315M	508	457	216	315.0 / 314.0	110	597	164	533	28.5 / 28.0	80.030/ 80.011	170	140	22.00 / 21.948	14.00 / 13.91	71.0 / 70.8	M20X40	530	590	1230	725	35
ND315L	508	508	216	315.0 / 314.0	110	610	204	655	28.5 / 28.0	90.035/ 90.013	170	140	25.00 / 24.948	14.00 / 13.91	81.0 / 80.8	M24X50	570	655	1295	755	38
ND315LX	508	508	216	315.0 / 314.0	110	610	235	740	28.5 / 28.0	90.035/ 90.013	170	140	25.00 / 24.948	14.00 / 13.91	81.0 / 80.8	M24X50	570	655	1390	755	38
ND355S	610	510	254	355.0 / 354.0	110	710	253	745	28.5 / 28.0	100.035/ 100.013	210	160	28.00 / 27.948	16.00 / 15.89	90.0 / 89.8	M24X50	560	672	1513	780	40
ND355M	610	560	254	355.0 / 354.0	110	710	253	745	28.5 / 28.0	100.035/ 100.013	210	160	28.00 / 27.948	16.00 / 15.89	90.0 / 89.8	M24X50	560	672	1513	780	40
ND355L	610	630	254	355.0 / 354.0	110	710	253	745	28.5 / 28.0	100.035/ 100.013	210	160	28.00 / 27.948	16.00 / 15.89	90.0 / 89.8	M24X50	560	672	1513	780	40

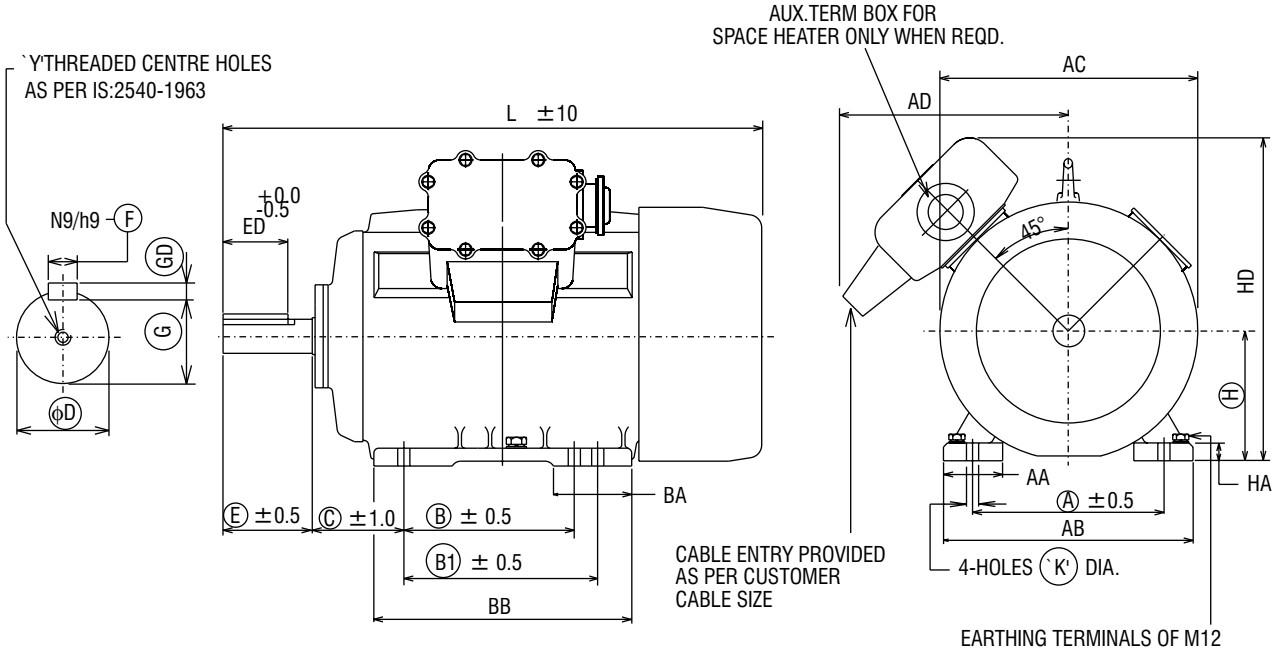
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FOOT MOUNTED INDUCTION MOTORS (2 POLE)



RINGED DIMENSIONS ARE AS PER IS:1231
ALL DIMENSIONS ARE IN mm

Frame	A	B	C	H	AA	AB	BA	BB	K	D	E	ED	F	GD	G	Y	AD	AC	L	HD	HA
ND225S	356	286	149	225.0 / 224.5	70	425	102	340	19.5 / 19.0	55.030/ 55.011	110	80	16.00 / 15.957	10.00 / 9.91	49.0 / 48.8	M20X40	455	470	810	534	25
ND225M	356	311	149	225.0 / 224.5	70	425	102	375	19.5 / 19.0	55.030/ 55.011	110	80	16.00 / 15.957	10.00 / 9.91	49.0 / 48.8	M20X40	455	470	825	534	25
ND250S	406	311	168	250.0 / 249.5	80	483	140	419	24.5 / 24.0	60.030/ 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	485	500	940	598	32
ND250M	406	349	168	250.0 / 249.5	80	483	140	419	24.5 / 24.0	60.030/ 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	485	500	940	598	32
ND280S	457	368	190	280.0 / 279.0	100	538	137	440	24.5 / 24.0	65.030/ 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	530	536	1035	642	35
ND280M	457	419	190	280.0 / 279.0	100	538	162	487	24.5 / 24.0	65.030/ 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	530	536	1085	642	35
ND315S	508	406	216	315.0 / 314.0	110	597	138	485	28.5 / 28.0	65.030/ 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	530	590	1150	725	35
ND315M	508	457	216	315.0 / 314.0	110	597	164	533	28.5 / 28.0	65.030/ 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	530	590	1200	725	35
ND315L	508	508	216	315.0 / 314.0	110	610	204	655	28.5 / 28.0	70.030/ 70.011	140	110	20.00 / 19.948	12.00 / 11.91	62.5 / 62.3	M20X40	570	655	1265	755	38
ND315LX	508	508	216	315.0 / 314.0	110	610	235	740	28.5 / 28.0	70.030/ 70.011	140	110	20.00 / 19.948	12.00 / 11.91	62.5 / 62.3	M20X40	570	655	1360	755	38
ND355S	610	510	254	355.0 / 354.0	110	710	253	745	28.5 / 28.0	75.030/ 75.011	170	140	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20X40	560	672	1473	780	40
ND355M	610	560	254	355.0 / 354.0	110	710	253	745	28.5 / 28.0	75.030/ 75.011	170	140	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20X40	560	672	1473	780	40
ND355L	610	630	254	355.0 / 354.0	110	710	253	745	28.5 / 28.0	75.030/ 75.011	170	140	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20X40	560	672	1473	780	40

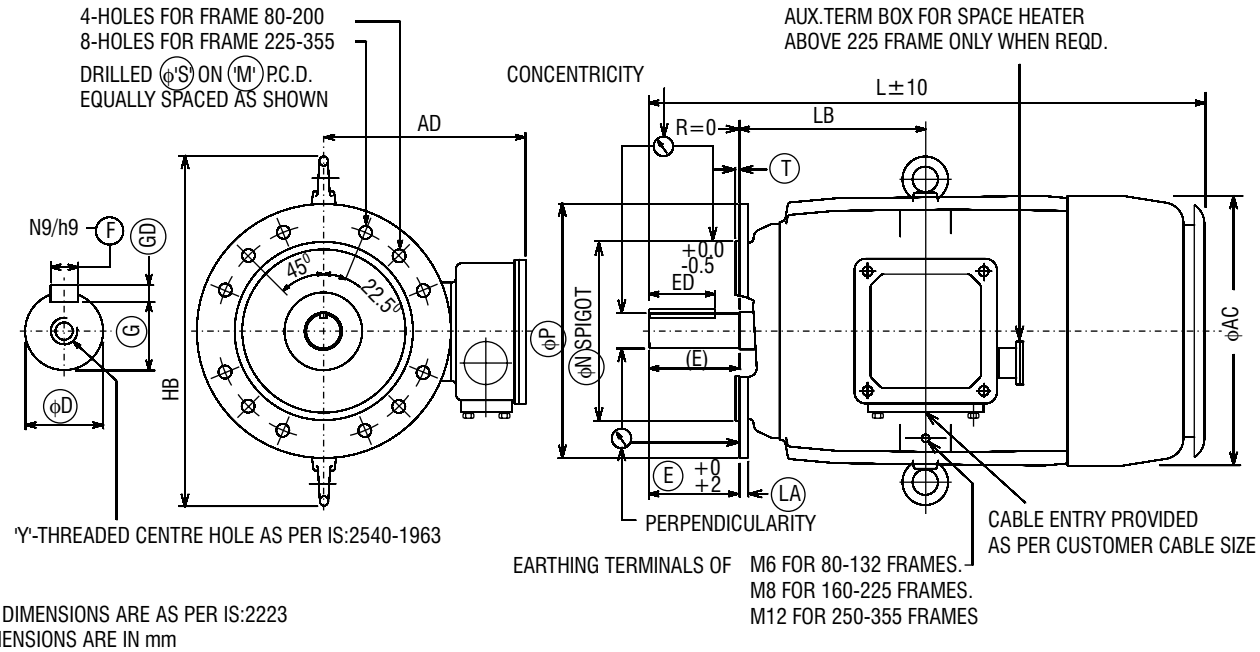
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FOOT MOUNTED TB ON RHS INDUCTION MOTORS (FRAME ND355LX)



RINGED DIMENSIONS ARE AS PER IS:1231
ALL DIMENSIONS ARE IN mm

Frame	A	B	C	H	AA	AB	BA	BB	K	D	E	ED	F	GD	G	Y	AD	AC	L	HD	HA
2 POLE																					
ND355LX	610	630	254	355.0 / 354.0	110	710	250	850	28.5 / 28.0	75.030/ 75.011	170	140	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20X40	720	720	1540	950	40
4 POLE & UP																					
ND355LX	610	630	254	355.0 / 354.0	110	710	250	850	28.5 / 28.0	100.035/ 100.013	210	160	28.00 / 27.948	16.00 / 15.89	90.0 / 89.8	M24x50	720	720	1580	950	40

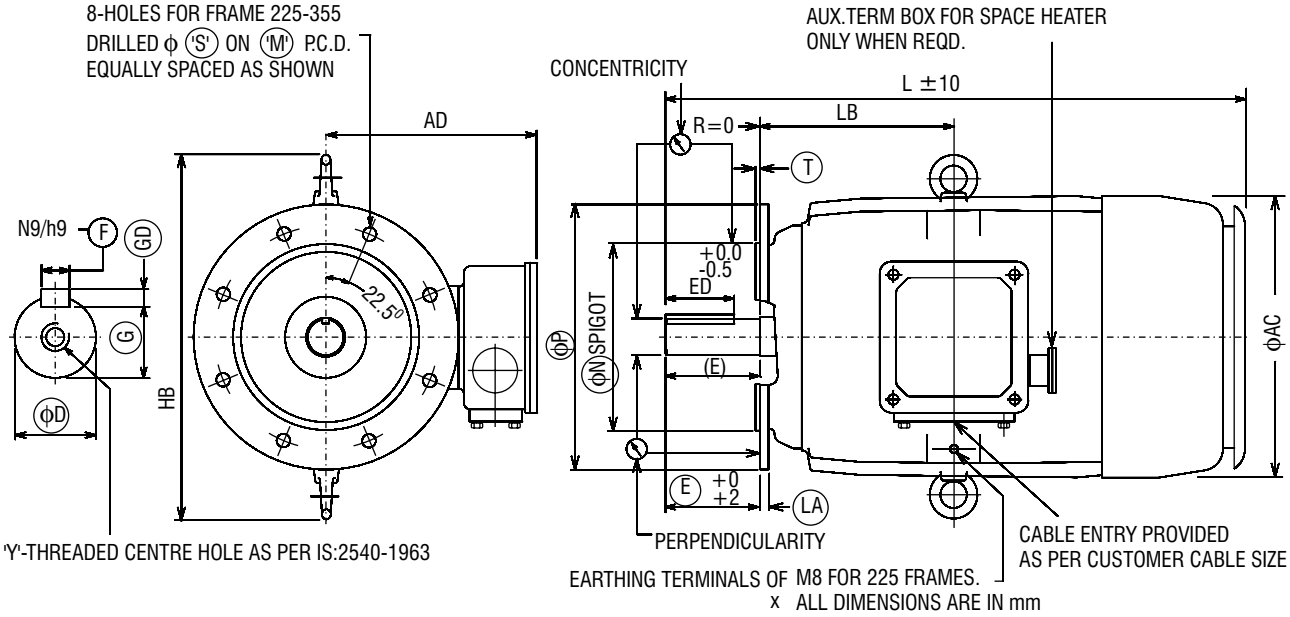
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FLANGE MOUNTED INDUCTION MOTORS (4 POLE & UP ALL FRAMES & 2 POLE & UP, UPTO ND200L FRAME)



RINGED DIMENSIONS ARE AS PER IS:2223
ALL DIMENSIONS ARE IN mm

Frame	D	E	ED	F	GD	G	Y	AD	AC	L	MTol	NTol	P	S	T	LA	LB	HB
ND80	19.009 / 18.996	40	27	6.00 / 5.97	6.00 / 5.91	15.5 / 15.3	M6X16	134	170	325	165.3 / 164.7	130.014 / 129.989	200	12	3.5	10	100	260
ND90S	24.009 / 23.996	50	36	8.00 / 7.964	7.00 / 6.91	20.0 / 19.8	M8X19	150	195	375	165.3 / 164.7	130.014/ 129.989	200	12	3.5	10	122	280
ND90L	24.009 / 23.996	50	36	8.00 / 7.964	7.00 / 6.91	20.0 / 19.8	M8X19	150	195	400	165.3 / 164.7	130.014/ 129.989	200	12	3.5	10	137	280
ND100L	28.009 / 27.996	60	44	8.00 / 7.957	7.0 / 6.91	24.0 / 23.8	M10X22	160	215	440	215.3 / 214.7	180.016/ 179.987	250	15	4	11	137	300
ND112M	28.009 / 27.996	60	44	8.00 / 7.957	7.0 / 6.91	24.0 / 23.8	M10X22	170	235	465	215.3 / 214.7	180.016/ 179.987	250	15	4	11	140	320
ND132S	38.018 / 38.002	80	60	10.0 / 9.957	8.0 / 7.91	33.0 / 32.8	M12X28	190	275	542	265.3 / 264.7	230.016 /229.987	300	15	4	14	158	380
ND132M	38.018 / 38.002	80	60	10.0 / 9.957	8.0 / 7.91	33.0 / 32.8	M12X28	190	275	580	265.3 / 264.7	230.016/ 229.987	300	15	4	14	177	380
ND160M	42.018 / 42.002	110	80	12.00 / 11.957	8.00 / 7.91	37.0 / 36.8	M16X32	325	318	660	300.5/ 299.5	250.016/ 249.987	350	19	5	18	213	421
ND160L	42.018 / 42.002	110	80	12.00 / 11.957	8.00 / 7.91	37.0 / 36.8	M16X32	325	318	705	300.5/ 299.5	250.016/ 249.987	350	19	5	18	235	421
ND180M	48.018 / 48.002	110	80	14.00 / 13.957	9.00 / 8.91	42.5 / 42.3	M16X32	345	352	750	300.5/ 299.5	250.016/ 249.987	350	19	5	18	242	478
ND180L	48.018 / 48.002	110	80	14.00 / 13.957	9.00 / 8.91	42.5 / 42.3	M16X32	345	352	790	300.5/ 299.5	250.016/ 249.987	350	19	5	18	260	478
ND200L	55.030 / 55.011	110	80	16.00 / 15.957	10.00 / 9.91	49.0 / 48.8	M20X40	430	428	830	350.5 / 349.5	300.018/ 299.982	400	19	5	18	285	557
ND225S	60.030 / 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	455	470	895	400.5 / 399.5	350.018/ 349.982	450	19	5	19	305	618
ND225M	60.030 / 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	455	470	895	400.5 / 399.5	350.018/ 349.982	450	19	5	19	305	618
ND250S	65.030 / 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	485	500	1020	500.5 / 499.5	450.020/ 449.980	550	19	5	22	342	688
ND250M	60.030 / 60.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	485	500	1020	500.5 / 499.5	450.020/ 449.980	550	19	5	22	342	688
ND280S	75.030 / 75.011	140	110	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20X40	530	536	1170	500.5 / 499.5	450.020/ 449.980	550	19	5	22	400	722
ND280M	75.030 / 75.011	140	110	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20X40	530	536	1170	500.5 / 499.5	450.020/ 449.980	550	19	5	22	400	722
ND315S	80.030 / 80.011	170	140	22.00 / 21.948	14.00 / 13.91	71.0 / 70.8	M20X40	530	590	1325	601.0 / 599.0	550.022/ 549.978	660	24	6	25	445	812
ND315M	80.030 / 80.011	170	140	22.00 / 21.948	14.00 / 13.91	71.0 / 70.8	M20X40	530	590	1325	601.0 / 599.0	550.022/ 549.978	660	24	6	25	445	812
ND315L	90.035 / 90.013	170	140	25.00 / 24.948	14.00 / 13.91	81.0 / 80.8	M24X50	570	655	1495	601.0 / 599.0	550.022/ 549.978	660	24	6	25	531	880
ND315LX	90.035 / 90.013	170	140	25.00 / 24.948	14.00 / 13.91	81.0 / 80.8	M24X50	570	655	1495	601.0 / 599.0	550.022/ 549.978	660	24	6	25	531	880
ND355S	100.035/ 100.013	210	160	28.00 / 27.948	16.00 / 15.89	90.0 / 89.8	M24X50	570	672	1650	741.0/ 739.0	680.025/ 679.975	800	24	6	28	570	900
ND355M	100.035/ 100.013	210	160	28.00 / 27.948	16.00 / 15.89	90.0 / 89.8	M24X50	570	672	1650	741.0/ 739.0	680.025/ 679.975	800	24	6	28	570	900
ND355L	100.035/ 100.013	210	160	28.00 / 27.948	16.00 / 15.89	90.0 / 89.8	M24X50	570	672	1650	741.0/ 739.0	680.025/ 679.975	800	24	6	28	570	900

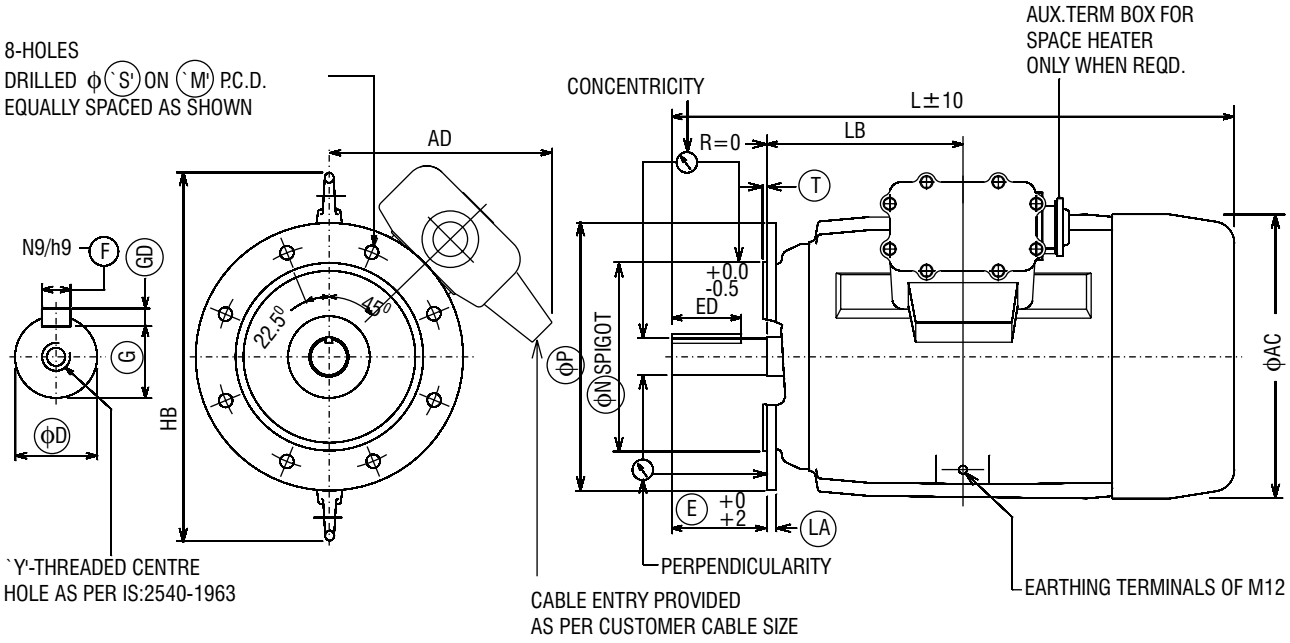
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FLANGE MOUNTED INDUCTION MOTORS (2 POLE)



RINGED DIMENSIONS ARE AS PER IS:2223
ALL DIMENSIONS ARE IN mm

Frame	D	E	ED	F	GD	G	Y	AD	AC	L	MTol	NTol	P	S	T	LA	LB	HB
2 POLE																		
ND225S	55.030 / 55.011	110	80	16.00 / 15.957	10.0 / 9.91	49.0 / 48.8	M20X40	455	470	865	400.5 / 399.5	350.018/ 349.982	450	19	5	19	305	618
ND225M	55.030 / 55.011	110	80	16.00 / 15.957	10.0 / 9.91	49.0 / 48.8	M20X40	455	470	865	400.5 / 399.5	350.018/ 349.982	450	19	5	19	305	618
ND250S	60.030 / 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	485	500	1020	500.5 / 499.5	450.020/ 449.980	550	19	5	22	343	688
ND250M	60.030 / 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	485	500	1020	500.5 / 499.5	450.020/ 449.980	550	19	5	22	343	688
ND280S	65.030 / 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	530	536	1170	500.5 / 499.5	450.020/ 449.980	550	19	5	22	400	722
ND280M	65.030 / 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	530	536	1170	500.5 / 499.5	450.020/ 449.980	550	19	5	22	400	722
ND315S	65.030 / 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	530	590	1295	601.0 / 599.0	550.022/ 549.978	660	24	6	25	445	812
ND315M	65.030 / 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	530	590	1295	601.0 / 599.0	550.022/ 549.978	660	24	6	25	445	812
ND315L	70.030 / 70.011	140	110	20.00 / 19.948	12.00 / 11.91	62.5 / 62.3	M20X40	570	655	1460	601.0 / 599.0	550.022/ 549.948	660	24	6	25	530	880
ND315LX	70.030 / 70.011	140	110	20.00 / 19.948	12.00 / 11.91	62.5 / 62.3	M20X40	570	655	1460	601.0 / 599.0	550.022/ 549.948	660	24	6	25	530	880
ND355S	75.030 / 75.011	170	140	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20X40	720	720	1610	741.0/ 739.0	680.025/ 679.975	800	24	6	28	570	900
ND355M	75.030 / 75.011	170	140	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20X40	720	720	1610	741.0/ 739.0	680.025/ 679.975	800	24	6	28	570	900
ND355L	75.030 / 75.011	170	140	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20X40	720	720	1610	741.0/ 739.0	680.025/ 679.975	800	24	6	28	570	900

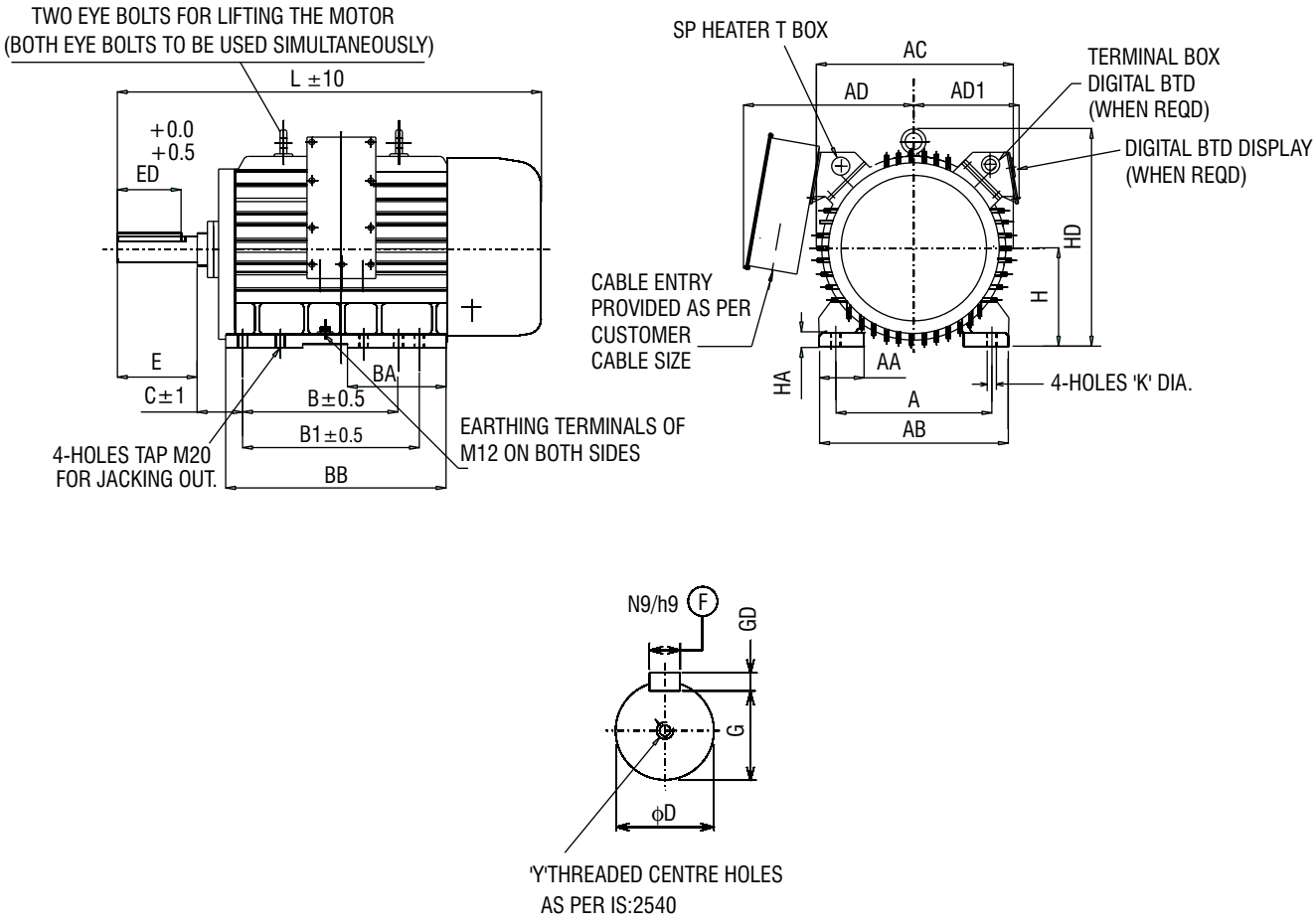
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FLANGE MOUNTED INDUCTION MOTORS (FRAME ND355LX)



RINGED DIMENSIONS ARE AS PER IS:2223
ALL DIMENSIONS ARE IN mm

Frame	D	E	ED	F	GD	G	Y	AD	AC	L	MTol	NTol	P	S	T	LA	LB	HB
2 POLE																		
ND355LX	75.030/ 75.011	170	140	20.00/ 19.948	12.00/ 11.91	67.5/ 67.3	M20X40	720	720	1540	741.0/ 739.0	680.025/ 679.975	800	24	6	28	570	900
4 POLE & UP																		
ND355LX	100.035/ 100.013	210	160	28.00/ 27.948	16.00/ 15.89	90.0/ 89.8	M24X50	720	720	1580	741.0/ 739.0	680.025/ 679.975	800	24	6	28	570	900

DIMENSION DRAWING FOR 3 PHASE TEFC SQUIRREL CAGE FOOT MOUNTED INDUCTION MOTORS (FRAME : ND400 LX)



ALL DIMENSIONS ARE IN mm

FRAME	FOOT FIXING										SHAFT AND KEY *							OVERALL					
SIZE	A	B	B1	C	H TOL	AA	AB	BA	BB	K TOL	D TOL	E	ED	F TOL	GD TOL	G	Y	AD	AD1	AC	L	HD	HA
ND400LX 4P & UP	686	800	900	280	400 399	195	845	400	1057	35.0 34.5	100.035 100.013	210	160	28.00 27.948	16.00 15.89	90.0 89.8	M24x50	800	521	875	1855	980	45

MACHINES RUNNING AT 3000 RPM HAVE SMALLER SHAFTS AS SHOWN HERE	FRAME	D TOL	E	ED	F TOL	GD TOL	G	L
	ND400LX 2 POLE	85.035 85.013	170	140	22.00 21.95	14.00 13.91	76.0 75.8	1870

PERFORMANCE FIGURES OF TEFC SLIPRING MOTORS FOR 45°C / 75°C

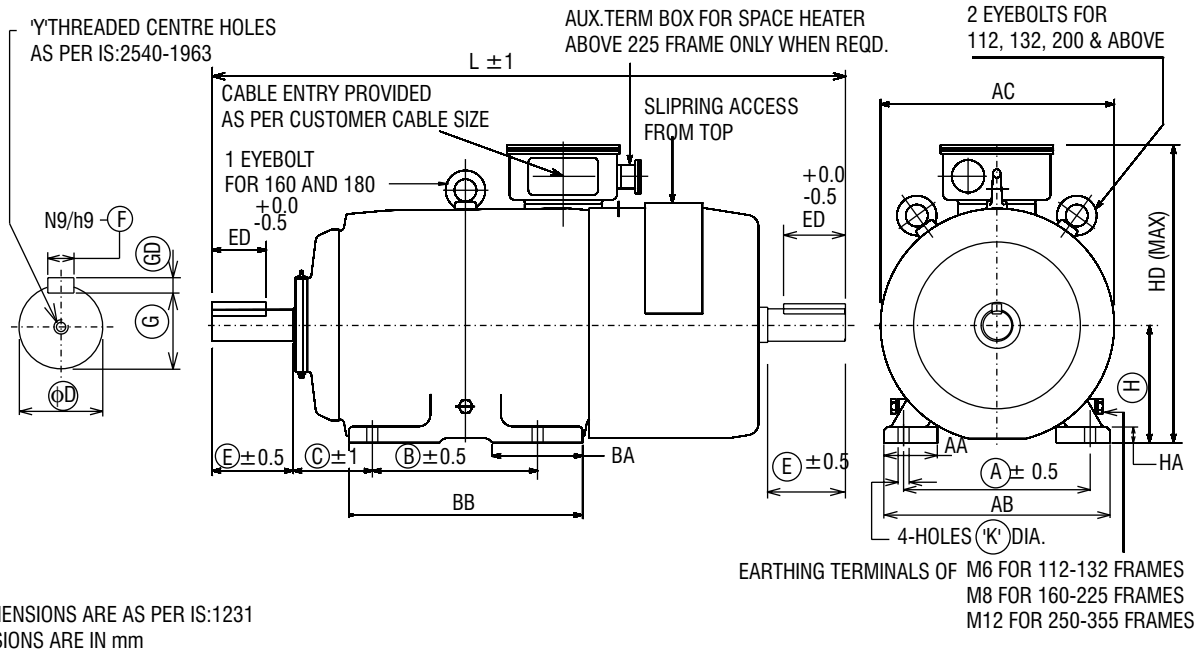
OUTPUT		POLE	FRAME SIZE	FL RPM	FLC AMPS.	EFFICIENCY (%)			POWER FACTOR			OC ROTOR VOLTS	ROTOR CURRENT AMPS	GD.^{2} KGM.^{2}	NET WT. kg.
kW	HP					FL	3/4 LOAD	1/2 LOAD	FL	3/4 LOAD	1/2 LOAD				
3.0	4.0	8	NDW160M	690	8.0	80.0	79.0	77.0	0.68	0.64	0.56	230	8.0	0.58	141
3.7	5.0	8	NDW160M	710	9.0	81.0	80.0	78.0	0.68	0.64	0.56	230	10.0	0.58	141
5.5	7.5	6 8	NDW160M NDW160L	940 710	12.0 14.0	83.0 82.0	82.0 81.0	80.0 79.0	0.76 0.68	0.74 0.64	0.66 0.56	180 360	18.5 10.0	0.58 0.80	141 165
7.5	10.0	4 6 8	NDW160M NDW160L NDW180L	1440 940 710	15.0 17.0 18.0	83.0 83.0 84.0	82.0 82.0 83.0	80.0 80.0 81.0	0.84 0.76 0.68	0.80 0.72 0.64	0.72 0.64 0.56	350 260 350	13.0 19.0 13.0	0.48 0.77 1.58	141 165 235
9.3	12.5	4 6 8	NDW160L NDW180M NDW200L	1440 950 725	18.0 18.0 22.0	84.0 86.0 86.0	83.0 85.0 85.0	81.0 83.0 83.0	0.84 0.82 0.68	0.80 0.78 0.64	0.72 0.70 0.76	350 230 300	16.0 24.0 19.5	0.35 1.33 2.68	165 205 313
11.0	15.0	4 6 8	NDW160L NDW180L NDW200L	1440 950 725	22.0 22.0 26.0	84.0 86.0 87.0	83.0 85.0 86.0	81.0 83.0 84.0	0.84 0.82 0.68	0.80 0.78 0.64	0.72 0.70 0.56	350 230 300	19.0 28.5 23.0	0.35 1.58 2.68	165 235 313
15.0	20.0	4 6 8	NDW180L NDW200L NDW225M	1445 970 730	28.0 29.0 34.0	88.0 89.0 87.0	87.0 88.0 86.0	85.0 86.0 84.0	0.84 0.82 0.70	0.80 0.78 0.66	0.72 0.70 0.58	350 295 350	27.0 31.0 27.0	1.26 2.68 3.06	235 313 410
18.5	25.0	4 6 8	NDW200L NDW225M NDW225M	1470 970 730	34.0 35.0 42.0	89.0 89.0 88.0	88.0 88.0 87.0	86.0 86.0 85.0	0.84 0.82 0.70	0.80 0.78 0.66	0.72 0.70 0.58	300 310 360	36.0 37.0 32.0	2.18 2.87 3.63	313 410 410
22.0	30.0	4 6 8	NDW200L NDW225M NDW250M	1470 970 730	40.0 42.0 45.0	89.0 89.0 91.0	88.0 88.0 90.0	86.0 86.0 88.0	0.85 0.82 0.74	0.81 0.78 0.70	0.73 0.70 0.62	390 350 250	33.0 40.0 55.0	2.34 3.25 6.81	313 410 513
30.0	40.0	4 6 8	NDW225M NDW250M NDW280S	1470 975 735	55.0 56.0 62.0	89.0 91.0 91.0	88.0 90.0 90.0	86.0 88.0 88.0	0.85 0.82 0.74	0.81 0.78 0.70	0.73 0.70 0.62	380 320 440	47.0 56.0 43.0	2.96 6.81 12.89	410 513 650
37.0	50.0	4 6 8	NDW250M NDW280S NDW280M	1475 980 735	67.0 67.0 76.0	91.0 91.0 91.0	91.0 90.0 90.0	89.0 88.0 88.0	0.85 0.84 0.74	0.81 0.80 0.70	0.73 0.72 0.62	425 410 520	52.0 57.0 45.0	4.96 12.89 15.14	513 650 720
45.0	60.0	4 6 8	NDW250M NDW280M NDW315S	1475 980 735	82.0 80.0 93.0	90.0 91.5 91.0	89.0 91.0 90.0	87.0 89.0 88.0	0.85 0.85 0.74	0.81 0.81 0.70	0.73 0.73 0.62	445 320 320	60.0 87.0 88.0	5.70 15.14 21.66	513 720 950
55.0	75.0	4 6 8	NDW280S NDW315S NDW315M	1480 980 735	97.0 98.0 112.0	91.5 92.0 91.0	91.0 91.0 90.0	89.0 89.0 88.0	0.86 0.85 0.75	0.82 0.81 0.71	0.74 0.73 0.63	460 535 320	73.0 62.0 108.0	10.61 22.00 24.16	650 950 1000
75.0	100.0	4 6 8	NDW280M NDW315M NDW315LX	1480 980 730	130.0 132.0 155.0	92.5 93.0 91.0	92.0 92.0 90.0	90.0 90.0 88.0	0.87 0.85 0.74	0.83 0.81 0.67	0.75 0.73 0.56	490 470 357	92.0 96.0 128.0	12.45 24.16 28.00	720 1000 1000
90.0	120.0	4 6 8	NDW315S NDW315LX NDW315LX	1480 985 735	157.0 169.0 185.0	92.5 92.5 91.5	92.0 92.0 90.5	90.0 90.0 88.0	0.86 0.84 0.74	0.82 0.80 0.67	0.74 0.70 0.56	505 357 410	106.0 140.0 133.0	18.22 24.26 33.20	950 1220 1220
110.0	150.0	4 6 8	NDW315M NDW315LX NDW355LX	1485 985 740	192.0 191.0 224.0	92.5 93.0 92.5	92.0 92.0 92.0	90.0 90.0 90.0	0.86 0.86 0.74	0.82 0.82 0.70	0.74 0.74 0.60	500 410 410	132.0 160.0 170.0	20.21 28.00 42.60	1000 1220 1260
125.0	175.0	4 6 8	NDW315LX NDW315LX NDW355LX	1480 985 740	217.0 211.0 261.0	93.0 93.8 92.5	92.0 93.0 91.5	90.0 91.0 89.0	0.86 0.88 0.72	0.82 0.84 0.66	0.70 0.70 0.54	345 345 460	215.0 214.0 170.0	18.90 33.20 47.80	1220 1220 1260
132.0	180.0	4 6 8	NDW315LX NDW315LX NDW355LX	1480 985 740	230.0 222.0 268.0	93.0 94.0 92.5	92.0 93.0 91.5	90.0 91.0 89.0	0.86 0.88 0.74	0.82 0.84 0.68	0.70 0.70 0.56	345 345 460	227.0 225.0 180.0	18.90 33.20 47.80	1220 1220 1260
150.0	200.0	4 6 8	NDW315LX NDW355LX NDW355LX	1480 988 740	260.0 263.0 292.0	93.5 94.5 93.0	92.5 94.0 92.3	91.0 92.0 90.5	0.86 0.84 0.77	0.82 0.78 0.72	0.70 0.66 0.60	440 400 530	202.0 235.0 174.0	23.60 38.20 57.20	1220 1260 1260
160.0	215.0	4 6 8	NDW315LX NDW355LX NDW355LX	1480 988 740.0	277.0 280.0 311.0	93.5 94.5 93.0	92.5 94.0 92.3	91.0 92.0 90.5	0.86 0.84 0.77	0.82 0.78 0.72	0.70 0.66 0.60	440 400 530.0	215.0 250.0 185.0	23.60 39.60 57.2	1220 1260 1260

PERFORMANCE FIGURES OF TEFC SR MOTORS FOR 45°C / 75°C

OUTPUT		POLE	FRAME SIZE	FL RPM	FLC AMPS.	EFFICIENCY (%)			POWER FACTOR			OC ROTOR VOLTS	ROTOR CURRENT AMPS	GD.^{2} KGM.^{2}	NET WT. kg.
kW	HP					FL	3/4 LOAD	1/2 LOAD	FL	3/4 LOAD	1/2 LOAD				
180.0	240.0	4	NDW355L	1485.0	317.0	94.0	93.0	91.0	0.84	0.78	0.66	500.0	232.0	25.0	1220
		6	NDW355LX	988.0	315.0	94.7	94.0	92.0	0.84	0.78	0.66	450.0	250.0	44.5	1260
		8	NDW400LX	743.0	357.0	93.5	92.5	90.0	0.75	0.70	0.58	450.0	246.0	87.8	3200
200.0	270.0	4	NDW355L	1485.0	351.0	94.5	93.5	91.5	0.84	0.78	0.66	540.0	239.0	26.6	1260
		6*	NDW355LX	988.0	358.0	94.7	94.0	92.0	0.82	0.76	0.64	480.0	260.0	44.5	1260
		8	NDW400LX	742.0	385.0	93.8	92.8	90.5	0.77	0.72	0.60	450.0	273.0	87.8	3200
225.0	300.0	4	NDW355LX	1485	394.0	94.5	94.0	92.5	0.84	0.80	0.70	510	275.0	29.60	1260
		6	NDW400LX	991	397.0	93.8	93.0	91.0	0.84	0.79	0.70	440	320.0	76.60	3200
		8	NDW400LX	742	444.0	93.8	92.8	90.5	0.75	0.68	0.56	510	270.0	94.60	3200
250.0	335.0	4	NDW355LX	1485	449.0	94.5	94.0	92.5	0.82	0.76	0.65	570	275.0	31.60	1260
		6	NDW400LX	991	434.0	94.2	93.5	91.5	0.85	0.80	0.72	440	355.0	76.60	3200
275.0	370.0	4	NDW355LX	1485	486.0	94.8	94.0	92.5	0.83	0.77	0.66	630	275.0	35.50	1260
		6	NDW400LX	992	479.0	94.0	93.2	91.0	0.85	0.80	0.70	475	363.0	81.80	3200
315.0	422.0	4	NDW400LX	1491	549.0	95.0	94.5	93.0	0.84	0.79	0.70	580	328.0	56.40	3200
		6*	NDW400LX	993	560.0	94.3	93.5	91.5	0.83	0.78	0.70	570	345.0	94.60	3200
350.0	470.0	4	NDW400LX	1491	593.0	95.5	95.0	93.5	0.86	0.81	0.71	645	345.0	63.40	3200

FL = Full Load; FLC = Full Load Current; OC = Open Circuit
NOTE : All performance figures are subject to tolerances as per IS 325 - 1996
* ROTOR WITH CLASS F TEMPERATURE RISE

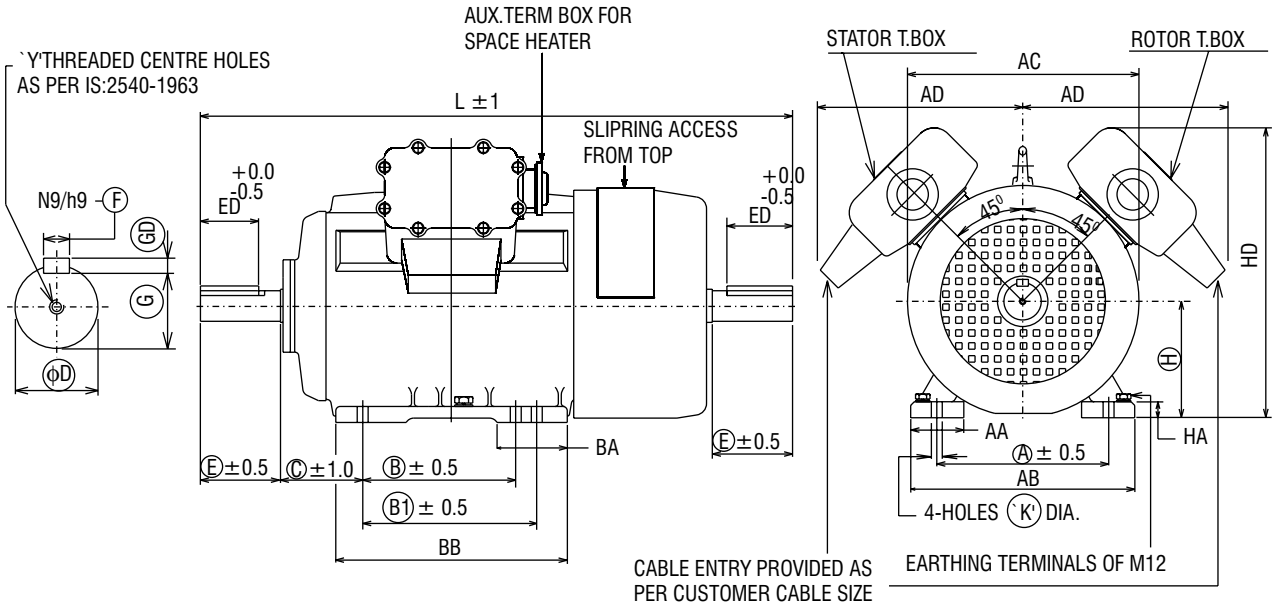
OUTLINE DIMENSION DRAWING FOR 3 PHASE SLIP RING TEFC FOOT MOUNTED TB ON TOP SINGEL/DOUBLE SHAFT INDUCTION MOTORS



RINGED DIMENSIONS ARE AS PER IS:1231
ALL DIMENSIONS ARE IN mm

Frame	A	B	C	H	AA	AB	BA	BB	K	D	E	ED	F	GD	G	Y	AC	L	HD	HA
4 POLE & UP																				
NDW112M	190	140	70	112.0 / 111.5	36	222	50	170	12.5 / 12.0	28.018/ 28.002	60	44	8.00 / 7.964	7.00 / 6.91	24.0 / 23.8	M10X22	235	608	322	13
DW132S	216	140	89	132.0 / 131.5	48	254	54	178	12.5 / 12.0	38.018/ 38.002	80	60	10.00 / 9.964	8.00 / 7.91	33.0 / 32.8	M12x28	320	680	385	16
DW132M	216	178	89	132.0 / 131.5	48	254	54	216	12.5 / 12.0	38.018/ 38.002	80	60	10.00 / 9.964	8.00 / 7.91	33.0 / 32.8	M12x28	320	720	385	16
NDW160M	254	210	108	160.0 / 159.5	73	308	76	254	15.5/ 15.0	42.018/ 42.002	110	80	12.00/ 11.97	8.00/ 7.91	37.0/ 36.8	M16x32	318	904	435	22
NDW160L	254	254	108	160.0 / 159.5	73	308	99	298	15.5 / 15.0	42.018/ 42.002	110	80	12.00 / 11.957	8.00 / 7.91	37.0 / 36.8	M16x32	318	948	435	22
NDW180L	279	279	121	180.0 / 179.5	84	348	114	323	15.5 / 15.0	48.018/ 48.002	110	80	14.00 / 13.957	9.00 / 8.91	42.5 / 42.3	M16x32	370	1030	475	22
NDW200L	318	305	133	200.0 / 199.5	66	381	115	356	19.5 / 19.0	55.030/ 55.011	110	80	16.00 / 15.957	10.00 / 9.91	49.0 / 48.8	M20x40	428	1072	545	25
NDW225S	356	286	149	225.0 / 224.5	70	425	102	375	19.5 / 19.0	60.030/ 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20x40	470	1227	600	25
NDW225M	356	311	149	225.0 / 224.5	70	425	102	375	19.5 / 19.0	60.030/ 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20x40	470	1227	600	25
NDW250S	406	311	168	250.0/ 249.5	80	483	135	419	24.5/ 24.0	65.030/ 65.011	140	110	18.00/ 17.957	11.00/ 10.91	58.0/ 57.8	M20x40	500	1298	730	32
NDW250M	406	349	168	250.0 / 249.5	80	483	135	419	24.5 / 24.0	65.030/ 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20x40	500	1298	730	32
NDW280S	457	368	190	280.0 / 279.0	100	538	167	487	24.5 / 24.0	75.030/ 75.011	140	110	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20x40	540	1431	810	35
NDW280M	457	419	190	280.0 / 279.0	100	538	167	487	24.5 / 24.0	75.030/ 75.011	140	110	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20x40	536	1431	810	35
NDW315S	508	406	216	315.0 / 314.0	110	597	164	533	28.5 / 28.0	80.030/ 80.011	170	140	22.00 / 21.948	14.00 / 13.91	71.0 / 70.8	M20x40	590	1595	845	38
NDW315M	508	457	216	315.0 / 314.0	110	597	164	533	28.5 / 28.0	80.030/ 80.011	170	140	22.00 / 21.948	14.00 / 13.91	71.0 / 70.8	M20x40	590	1595	845	38
NDW315LX	508	508	216	315.0 / 314.0	110	610	235	740	28.5 / 28.0	90.035/ 90.013	170	140	25.00 / 24.948	14.00 / 13.91	81.0 / 80.8	M24x50	655	1750	885	40
NDW355S	610	500	254	355.0 / 354.0	110	710	253	745	28.5 / 28.0	100.035/ 100.013	210	160	28.00 / 27.948	16.00 / 15.89	90.0 / 89.8	M24x50	672	1960	950	40
NDW355M	610	560	254	355.0 / 354.0	110	710	253	745	28.5 / 28.0	100.035/ 100.013	210	160	28.00 / 27.948	16.00 / 15.89	90.0 / 89.8	M24x50	672	1960	950	40
NDW355L	610	630	254	355.0 / 354.0	110	710	253	745	28.5 / 28.0	100.035/ 100.013	210	160	28.00 / 27.948	16.00 / 15.89	90.0 / 89.8	M24x50	672	1960	950	40

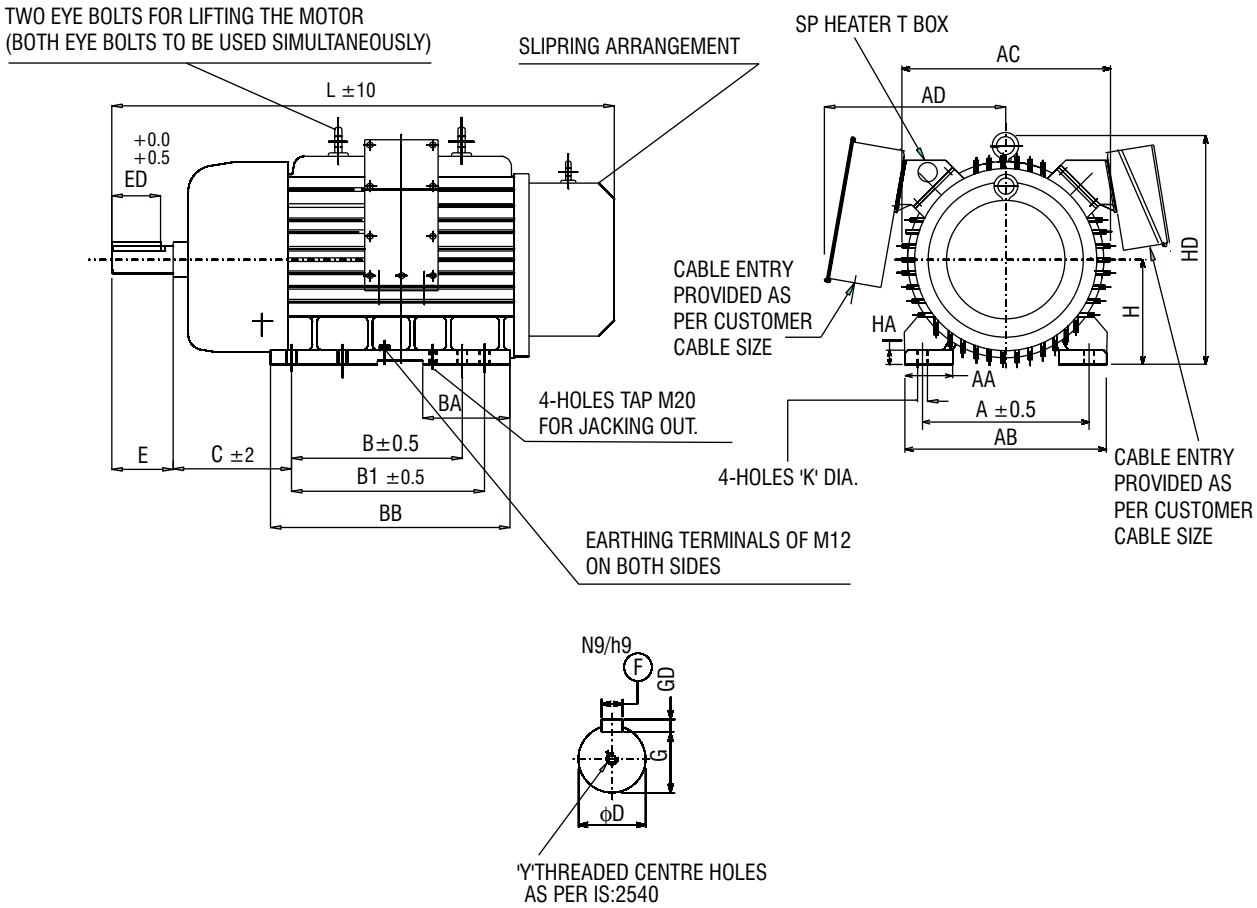
OUTLINE DIMENSION DRAWING FOR 3 PHASE SLIP RING TEFC FOOT MOUNTED TB ON TOP SINGLE/DOUBLE SHAFT INDUCTION MOTORS (FRAME:NDW355LX)



RINGED DIMENSIONS ARE AS PER IS:1231
ALL DIMENSIONS ARE IN mm

Frame	A	B	C	H	AA	AB	BA	BB	K	D	E	ED	F	GD	G	Y	AD	AC	L	HD	HA
4 POLE & UP																					
NDW355LX	610	630	254	355.0/ 354.0	110	710	250	850	28.5/ 28.0	100.035/ 100.013	210	160	28.00/ 27.948	16.00/ 15.89	90.0/ 89.8	M24x50	720	720	2045	950	40

DIMENSION DRAWING FOR 3 PHASE TEFC SLIPRING FOOT MOUNTED INDUCTION MOTORS (FRAME : ND400 LX)



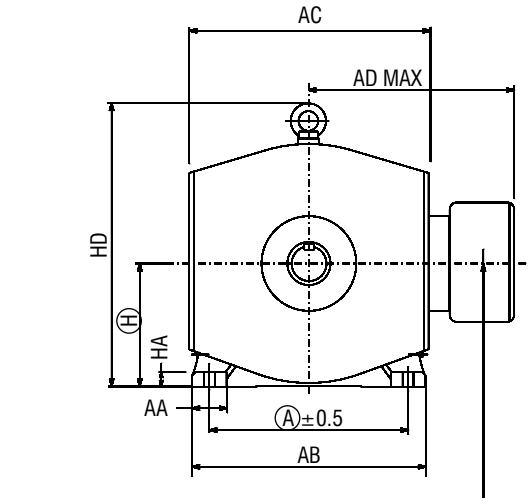
ALL DIMENSIONS ARE IN mm

FRAME	FOOT FIXING										SHAFT AND KEY *							OVERALL				
SIZE	A	B	B1	C	H	AA	AB	BA	BB	K	D	E	ED	F	GD	G	Y	AD	AC	L	HD	HA
NDW400LX	686	800	900	450	400 399	195	845	400	1057	35.0 34.5	100.035 100.013	210	160	28.00 27.948	16.00 15.89	90.0 89.8	M24x50	800	860	2180	1060	45

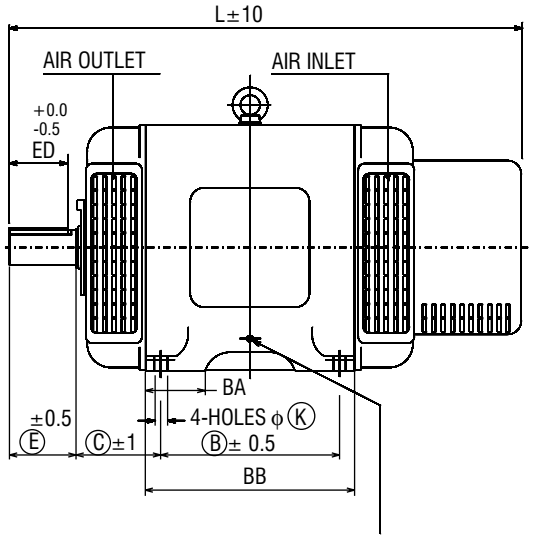
PERFORMANCE FIGURES OF SPDP SLIPRING MOTORS FOR 45°C / 75°C

OUTPUT		POLE	FRAME SIZE	FL RPM	FLC Amp	EFFICIENCY (%)			POWER FACTOR			OC Rotor Volts	Rotor Curr. Amp	GD.^{2} kGm^2	POT %FLT	WT. kg.
kW	HP					FL	3/4 Load	1/2 Load	FL	3/4 Load	1/2 Load					
3.7	5.0	8	CW160M	700	10	78.0	77.0	75.0	0.68	0.64	0.56	230	9	0.51	270	130
5.5	7.5	6 8	CW160M CW160L	935 700	14 14	80.0 80.0	79.0 79.0	77.0 77.0	0.72 0.68	0.68 0.64	0.60 0.56	280 235	13 15	0.51 0.65	270 270	130 150
7.5	10.0	4 6 8	CW160M CW160L CW180M	1410 935 705	16 17 19	82.0 83.0 82.0	81.0 82.0 81.0	79.0 80.0 79.0	0.82 0.72 0.68	0.78 0.68 0.64	0.70 0.60 0.56	375 260 350	12 19 13	0.41 0.65 1.14	270 270 270	130 150 200
9.3	12.5	4 6 8	CW160L CW180M CW180L	1420 940 705	19 19 24	83.0 83.0 82.0	82.0 82.0 81.0	80.0 80.0 79.0	0.82 0.82 0.68	0.78 0.78 0.64	0.70 0.70 0.56	380 300 345	16 20 17	0.53 1.14 1.45	280 260 270	150 200 220
11.0	15.0	4 6 8	CW160L CW180M CW180L	1420 940 705	22 23 27	84.0 83.0 82.0	82.0 82.0 81.0	80.0 80.0 79.0	0.82 0.82 0.70	0.78 0.78 0.66	0.70 0.70 0.58	390 500 345	18 14 20	0.53 1.14 1.45	280 260 270	150 200 220
15.0	20.0	4 6 8	CW180M CW180L CW200M	1420 945 720	31 31 35	83.0 83.0 84.0	82.0 82.0 83.0	80.0 80.0 81.0	0.82 0.82 0.71	0.78 0.78 0.67	0.70 0.70 0.59	390 510 240	23 18 40	0.53 1.33 2.20	280 260 210	150 220 275
18.5	25.0	4 6 8	CW180M CW200M CW200L	1420 960 720	36 38 43	84.0 86.0 84.0	83.0 85.0 83.0	81.0 83.0 81.0	0.86 0.78 0.72	0.80 0.74 0.68	0.72 0.66 0.60	480 515 235	23 23 50	0.91 2.20 2.20	290 260 220	200 275 299
22.0	30.0	4 6 8	CW180L CW200L CW225M	1420 965 720	42 46 49	86.0 86.0 86.0	85.0 85.0 85.0	83.0 83.0 83.0	0.84 0.78 0.73	0.80 0.74 0.69	0.72 0.66 0.61	480 485 235	28 28 60	1.16 2.30 3.35	300 280 210	220 299 380
30.0	40.0	4 6 8	CW200M CW225M CW225M	1440 965 720	57 60 65	87.0 88.0 87.0	86.0 87.0 86.0	84.0 85.0 84.0	0.84 0.78 0.74	0.80 0.74 0.70	0.72 0.66 0.62	470 536 235	39 35 80	1.79 3.35 3.35	300 260 210	275 380 380
37.0	50.0	4 6 8	CW200L CW225M CW250S	1440 970 720	70 74 79	87.0 89.0 89.0	86.0 88.0 88.0	84.0 86.0 86.0	0.84 0.78 0.74	0.80 0.74 0.70	0.72 0.66 0.62	430 536 465	52 42 50	2.11 3.35 5.70	320 260 240	299 390 455
45.0	60.0	4 6 8	CW225M CW250S CW250M	1450 970 725	82 88 95	89.0 89.0 89.0	88.0 88.0 88.0	86.0 86.0 86.0	0.85 0.80 0.74	0.81 0.76 0.70	0.73 0.68 0.62	576 507 480	49 53 59	2.65 5.70 6.66	320 230 250	380 455 525
55.0	75.0	4 6 8	CW225M CW250M CW280S	1460 975 730	102 104 109	89.0 90.0 90.0	88.0 89.0 89.0	86.0 87.0 87.0	0.84 0.82 0.78	0.80 0.78 0.74	0.72 0.70 0.66	576 515 425	59 65 79	2.65 6.66 10.65	320 250 260	380 525 635
75.0	100.0	4 6 8	CW250S CW280S CW280M	1460 975 730	135 134 149	90.5 91.5 90.0	90.0 91.0 89.0	88.0 89.0 87.0	0.84 0.85 0.78	0.80 0.81 0.74	0.72 0.73 0.66	505 300 535	88 154 83	4.77 10.09 13.44	240 280 260	455 635 750
90.0	120.0	4 6 8	CW250MX CW280M CW315S	1460 975 730	158 160 180	92.0 92.0 91.5	91.0 91.0 91.0	89.0 89.0 89.0	0.86 0.85 0.76	0.82 0.81 0.72	0.74 0.73 0.64	500 360 490	110 160 112	7.15 13.44 19.16	280 280 250	695 750 870
110.0	150.0	4 6 8	CW280M CW315S CW315MX	1455 973 730	198 196 218	91.0 92.0 91.0	90.0 91.5 91.0	88.5 90.0 89.0	0.85 0.85 0.77	0.80 0.82 0.73	0.70 0.76 0.65	250 290 350	275 250 190	9.23 17.50 21.66	280 275 250	635 870 980
132.0	175.0	4 6 8	CW280MX CW315MX CW355L	1460 975 740	227 234 265	92.0 92.5 93.5	92.0 92.0 92.5	91.0 91.0 90.5	0.88 0.85 0.74	0.84 0.82 0.67	0.72 0.76 0.55	300 345 410	275 250 200	11.07 20.83 40.30	300 275 300	750 980 1200
160.0	215.0	4 6 8	CW315M CW315MX CW355L	1470 980 740	279 299 326	94.0 93.0 93.6	93.5 92.5 92.7	92.5 91.0 91.0	0.85 0.80 0.73	0.80 0.75 0.66	0.70 0.68 0.54	420 470 490	230 225 203	14.64 26.66 47.80	300 350 300	870 980 1200
180.0	240.0	4 6 8	CW315MX CW355L CW355L	1470 980 740	306 319 361	93.0 93.5 93.8	92.5 92.5 93.0	91.0 91.0 91.5	0.88 0.84 0.74	0.85 0.79 0.67	0.78 0.69 0.55	465 380 525	206 300 213	17.43 36.30 51.00	300 300 300	980 1200 1200
200.0	270.0	4 6 8	CW315MX CW355L CW355L	1475 975 740	342 346 411	93.5 93.5 94.0	93.0 92.5 93.5	91.0 91.0 92.0	0.87 0.86 0.72	0.84 0.81 0.65	0.76 0.72 0.52	580 380 560	225 330 222	20.91 36.30 53.90	350 300 275	980 1200 1200
225.0	300.0	4 6	CW315MX CW355L	1475 980	378 396	94.0 94.0	93.5 93.0	92.0 91.0	0.88 0.84	0.85 0.79	0.78 0.69	580 425	250 330	22.20 38.70	300 300	980 1200
250.0	335.0	4 6	CW355L CW355L	1480 980	440 440	94.0 94.0	93.5 93.0	92.0 91.0	0.84 0.84	0.80 0.80	0.72 0.70	510 450	305 350	28.00 40.70	300 300	1200 1200

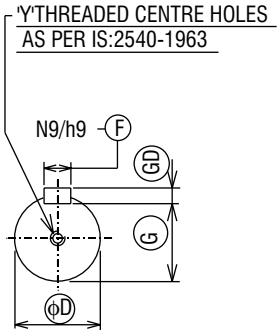
OUTLINE DIMENSION DRAWING FOR 3 PHASE SPDP SLIPRING FOOT MOUNTED INDUCTION MOTORS.



CABLE ENTRY PROVIDED AS PER CUSTOMER CABLE SIZE



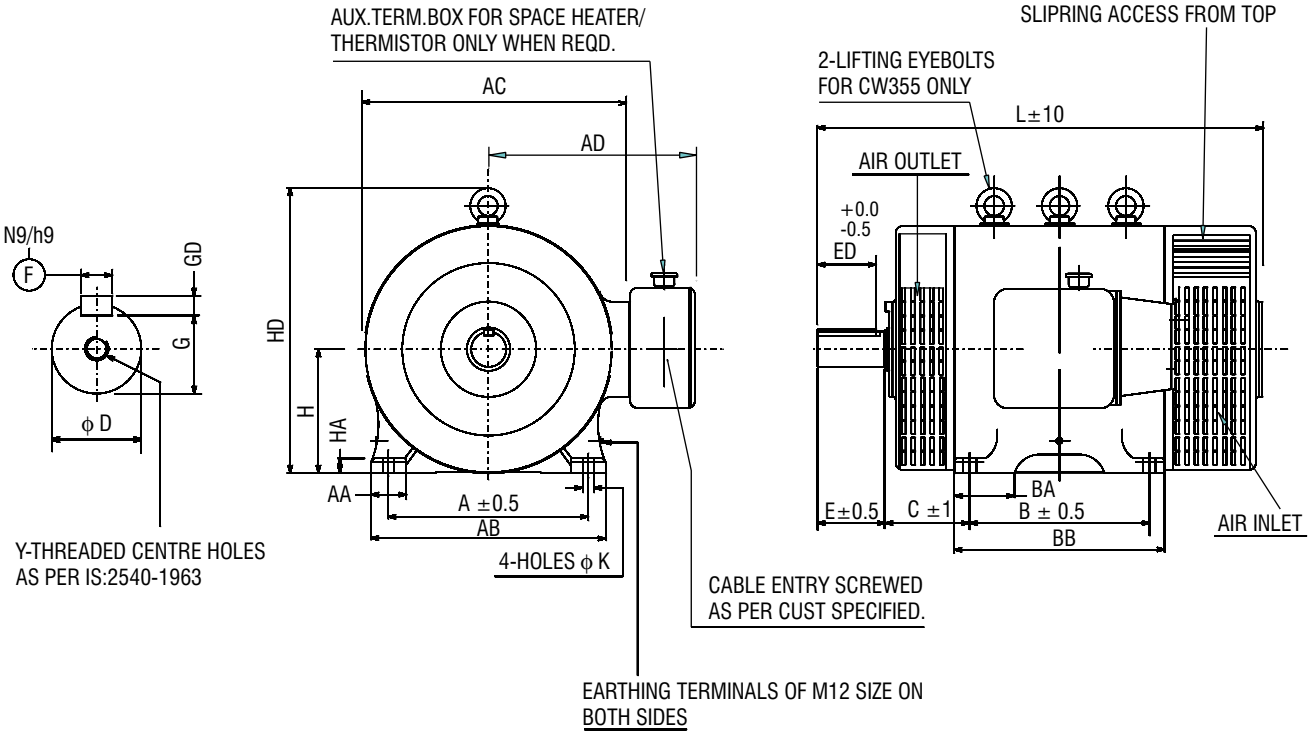
EARTHING TERMINALS OF M8 SIZE ON BOTH SIDES



ALL DIMENSIONS ARE IN mm.

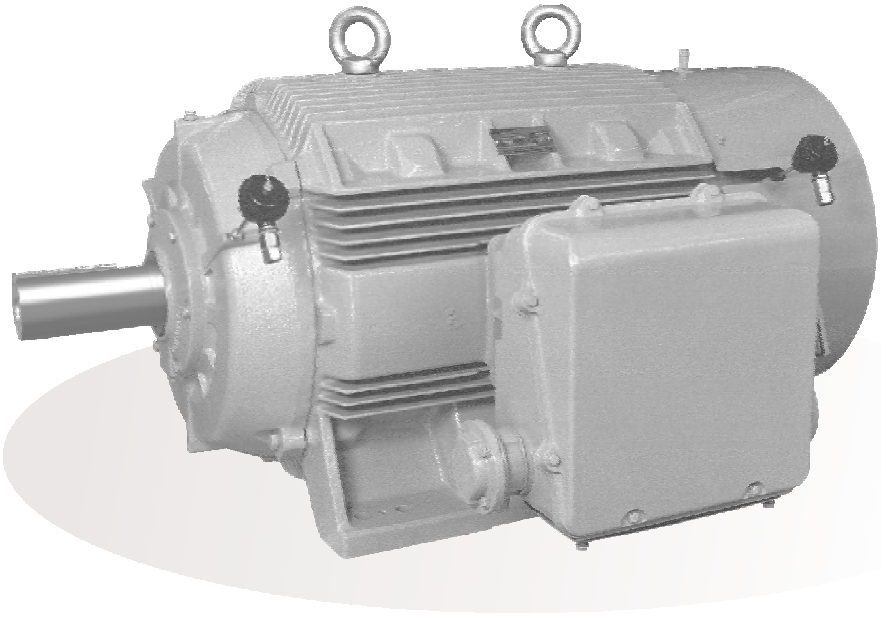
FRAME SIZE	FOOT FIXING									SHAFT & KEY							OVERALL				
	A	B	C	H TOL.	AA	AB	BA	BB	K TOL.	D TOL.	E	ED	F TOL.	GD TOL.	G	Y	AD	AC	L	HD	HA
CW160M	254	210	108	160.0	54	298	76	254	15.5	48.018	110	80	14.0	9.00	42.5	M16x32	290	390	680	395	22
CW160L		254		159.7				298	15.0	48.002			13.957	8.91	42.3				724		
CW180M	279	241	121	180.0	60	337	95	285	15.5	55.030	110	80	16.0	10.00	49.0	M20x40	335	420	802	445	22
CW180L		279		179.7				323	15.0	55.011			15.957	09.91	48.8				840		
CW200M	318	267	133	200.0	65	381	105	318	19.5	60.030	140	110	18.0	11.00	53.0	M20x40	398	460	877	498	25
CW200L		305		199.5				355	19.0	60.011			17.957	10.91	52.8				915		
CW225M	356	311	149	225.0 224.5	70	426	125	427	19.5 19.0	65.030 65.011	140	110	18.0 17.957	11.00 10.91	58.0 57.8	M20x40	398	450	1000	520	25

OUTLINE DIMENSION DRAWING FOR 3 PHASE SPDP INTERNAL SLIPRING FOOT MOUNTED INDUCTION MOTORS.



FRAME	FOOT FIXING									SHAFT & KEY							OVERALL				
SIZE	A	B	C	H	AA	AB	BA	BB	K	D	E	ED	F	GD	G	Y	AD	AC	'L'	HD	HA
CW250S	406	311	168	250	80	483	127	381	24.5	75.030	140	110	20.00	12.00	67.5	M20x40	428	500	970	605	28
CW250M		349		249.5				419	24.0	75.011			19.948	11.91	67.3				1005		
CW250MX																			1110		
CW280S	457	368	190	280.0	83	540	146	438	24.5	80.030	170	140	22.00	14.00	71.0	M20x40	515	560	1050	663	35
CW280M		419		279.0				489	24.0	80.011			21.948	13.91	70.8				1121		
CW280MX																			1225		
CW315S	508	406	216	315.0	89	597	184	533	28.0	90.035	170	140	25.00	14.00	81.0	M24x50	576	630	1240	734	38
CW315M		457		314.0			153		28.5	90.013			24.948	13.91	80.8				1370		
CW315MX																					
CW355M	610	560	254	355	89	730	250	860	28.5	100.035	210	160	28.000	16.00	90.0	M24x50	600	780	1670	827	40
CW355L		630		354					28.0	100.013			27.948	15.89	89.8						

Energy Efficient Motors - Level I



0.37 kW to 225 kW
From 80 to 355 Frame

ENERGY EFFICIENT MOTORS LEVEL 1

Crompton Greaves has now developed a complete family of high efficiency motors confirming to Eff level 1 standards of IEEMA : 19-2000 and other applicable standards in Europe and rest of the world.

These motors are available in TEFC construction for use in safe areas and also in flameproof enclosure for use in Hazardous areas.

SPECIAL DESIGN FEATURES :

Higher efficiencies are achieved by following special features :

- Low loss special grade of thinner laminations. This reduces the Iron loss even at partial loads.
- Thicker conductors and more copper contents reduce copper loss due to lower resistance.
- Longer core length, reduced and uniform air gap between stator and rotor to reduce stray losses .
- Special design of fan and fan cover to reduce windage losses.

BENEFITS :

Improved efficiency is available from 60 % to 100 % load. The eff curve is almost flat resulting in higher energy savings as in most of the cases the motor is not always fully loaded .

The special design features also result in lower operating temperatures which enhance the life of motor and reduce the maintenance costs.

These motors have inherently low noise and vibration and help in conservation of environment .

Crompton Greaves energy efficient motors offer an additional feature which no other manufacturer offers.

These motors are with highest power factor in the industry due the special exclusive designs available with Crompton Greaves.

The higher power factor reduces the currents in the cables supplying power to motor and this reduces cable loss, improving the system efficiency sometimes by even 2 %.

Sometimes this allows even a lower cable size saving tremendously on capital costs. Saving is also made by reducing capacitors required to improve power factor.

MANUFACTURING RANGE :

Efficiency Level 1

- 0.37 kW to 160 kW
- Frame sizes : 71 to 315 for TEFC
  80 to 315 for Flame proof
- The entire range is available in IEC frames sizes (metric range) and also in NEMA frames

CONFORM TO FOLLOWING STANDARDS :

- IEEMA : 19-2000
- IS 12615
- IS 325-1996 & IEC 60034
- NEMA EPACT EFFICIENCY VALUES (for NEMA motors)

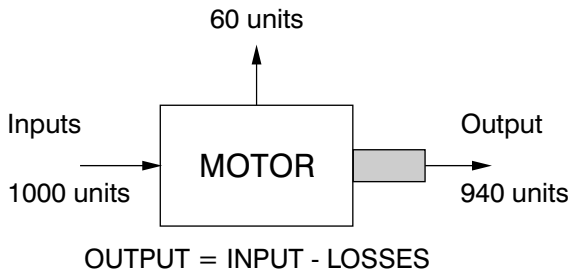
IEEMA 19-2000 standard covers kW ratings only up to 160kW. However we are offering energy efficient motors up to 450 kW.

IMPORTANCE OF ENERGY EFFICIENCY :

Growing cost of energy calls for power saving at each possible step of manufacturing. Electric motor driven systems used in industrial processes consume more than 70 percent of electricity used in industry, hence best possible technology is being applied for achieving highest possible efficiency values.

EFFICIENCY MEASUREMENT OF AN ELECTRIC MOTOR

The efficiency of an electric motor is determined by the amount of useful power it produces compared to the amount of energy required to operate it. The figure below illustrates how a Crompton Greaves Energy efficient motor effectively turns 1000 units of electrical power into mechanical power.



Since motor efficiency is commonly expressed as a percentage. Efficiency in this case would be 94%.

EFF Level 1

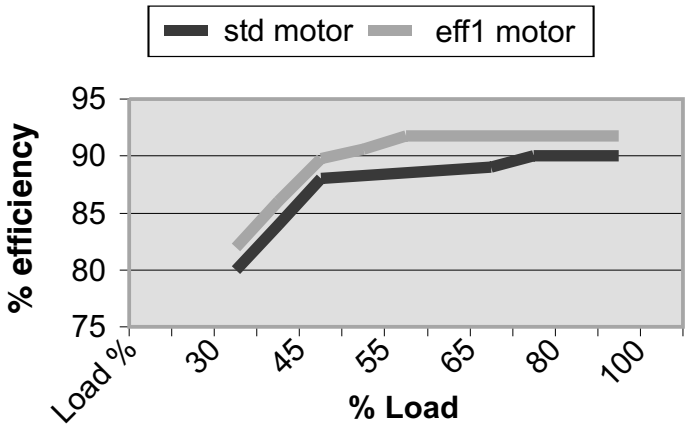
APPLICATIONS :

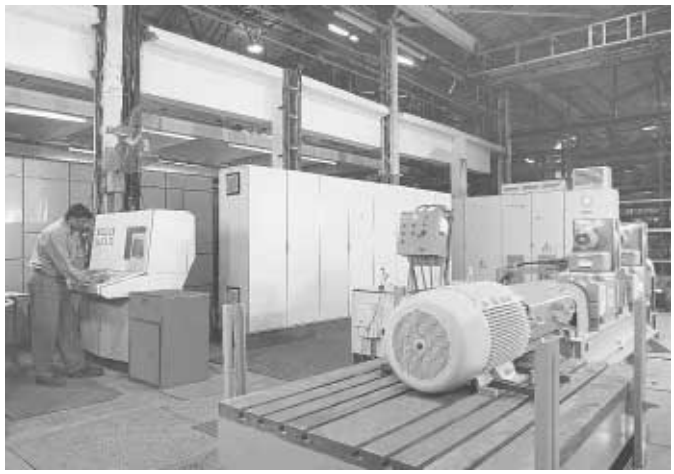
The benefits of using these motors are maximum in continuous duty applications like Blowers, Compressors, Fans, Exhausters Pumps etc.

BEST PERFORMANCE EVEN AT PARTIAL LOADS :

In many applications the load factor of the motor will range between 60% to 80%. The efficiency curve of standard motor is drooping in nature i.e there is a sharp fall in efficiency at partial loads. But the energy efficient motors have a flat efficiency curve and hence the fall in efficiency is marginal. Thus energy saving is significant even in part loads.

15 kW 4 pole efficency pattern





INTERNATIONAL APPROVALS & CERTIFICATES

CSA INTERNATIONAL

C US

UKAS QUALITY MANAGEMENT 008

CSA

ELECTRICAL EQUIPMENT EECS CERTIFICATION SERVICE

CE

Ex BASEEFA

ASSESSING COST EFFECTIVENESS OF ENERGY EFFICIENT MOTORS :

Savings :

Savings are calculated as follows :-

kW - out put of motor in kW

E1 - efficiency of standard motor

E2 - efficiency of energy efficient motor

$$X = \left(\frac{kW}{E1} - \frac{kW}{E2} \right)$$

$$\text{Savings} = X * \left(\text{working Hour's} \right) * \left(\text{working days} \right) * \left(\text{tariff} \right)$$

EXAMPLE

3.7 kW 4 pole motor in frame ND112M

Std motor eff 2: 85 % eff1 88.3 %

Price eff2 : Rs 7215/- eff1: Rs 9380/-

Working hours 16 per day, working days 300 in a year, power rate Rs 4.50 per kWH

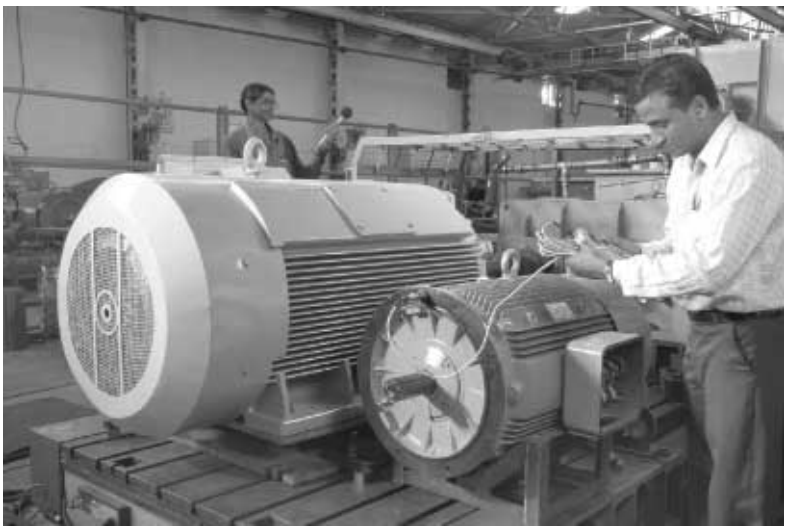
X = 0.1626

RS Savings = 0.1626X16X300X4.5

= 3514 /- RS per year

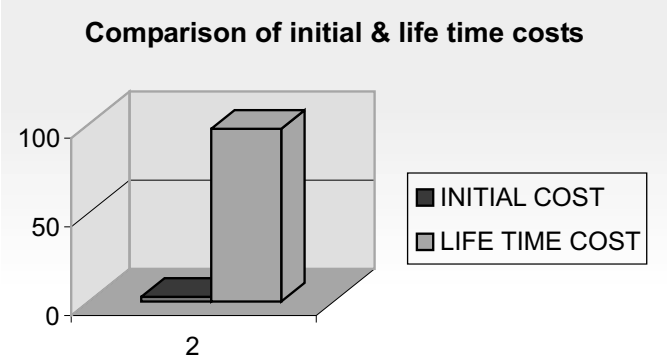
Extra investment RS 2615/-

Payback period = 9 months



Energy cost for a 15 years usage at Rs 4.50 / kWH is staggering 14.10 lacs as compared to buying cost of Rs 7215/-. Also the energy kWH rate is likely to only go up in future.

If we compare initial purchase price of the motor with the cost of energy it uses over it working lifetime, the initial cost represents less than two percent of its lifetime cost in most of the cases .



So it makes a great deal of sense to choose an eff1 level motor whenever a motor is needed to drive any applications.

Combining this with usual Crompton greaves motors reliability, wide service network (over 180 service points all over India), the wise choice is Crompton greaves EFF1 motor.

EFF Level 1

PERFORMANCE FIGURES OF TEFC SCR MOTORS FOR 50°/70°- EFF LEVEL 1

OUTPUT		POLE	FRAME SIZE	FL RPM	FLC AMPS.	FLT Kg-m	EFFICIENCY (%)			POWER FACTOR			DOL STG.		POT % FLT	GD.^{2} KGM.^{2}	NET WT. kG
kW	HP						FL	3/4 LOAD	1/2 LOAD	FL	3/4 LOAD	1/2 LOAD	STG.T % FLT	STG.C % FLC			
0.37	0.50	6	ND80	910	1.14	0.40	69.4	67.0	64.0	0.65	0.60	0.50	200	500	250	0.011	17
0.55	0.75	4	ND80	1410	1.38	0.38	78.0	76.0	73.0	0.71	0.65	0.54	200	600	275	0.007	17
		6	ND80	910	1.56	0.59	72.0	70.0	65.0	0.68	0.63	0.50	200	500	250	0.011	17
0.75	1.00	2	ND80	2820	1.67	0.26	77.0	75.0	70.0	0.81	0.73	0.60	250	650	300	0.003	17
		4	ND80	1410	1.69	0.52	82.5	81.0	75.0	0.75	0.70	0.64	200	550	275	0.007	17
		6	ND90S	935	2.19	0.78	74.6	73.0	70.0	0.64	0.54	0.42	180	500	250	0.018	22
1.10	1.50	2	ND80	2820	2.28	0.38	82.8	81.5	78.0	0.81	0.75	0.67	225	650	275	0.004	17
		4	ND90S	1425	2.40	0.75	83.8	83.0	80.0	0.76	0.69	0.59	200	600	275	0.018	22
		6	ND90L	935	3.19	1.15	77.3	76.5	74.0	0.62	0.52	0.40	180	500	250	0.023	25
1.50	2.00	2	ND90S	2830	3.10	0.52	84.1	83.5	82.0	0.80	0.74	0.64	250	650	300	0.006	22
		4	ND90L	1425	3.23	1.03	85.0	84.0	82.0	0.76	0.70	0.60	200	600	275	0.023	25
		6	ND100L	935	3.75	1.56	79.6	78.0	76.0	0.70	0.62	0.50	200	550	250	0.037	35
2.20	3.00	2	ND90L	2860	4.36	0.75	85.6	85.0	83.0	0.82	0.74	0.66	250	700	300	0.008	25
		4	ND100L	1440	4.92	1.49	86.4	85.0	82.0	0.72	0.65	0.52	200	650	275	0.037	35
		6	ND112M	935	5.48	2.29	82.2	81.0	79.0	0.68	0.60	0.50	180	550	250	0.048	45
3.70	5.00	2	ND100L	2850	7.10	1.26	87.5	86.0	83.0	0.83	0.77	0.68	250	650	300	0.022	36
		4	ND112M	1440	7.30	2.50	88.3	87.0	86.0	0.80	0.74	0.62	200	650	275	0.052	45
		6	ND132S	940	7.90	3.83	85.1	84.5	83.0	0.77	0.73	0.62	200	600	250	0.185	68
5.50	7.50	2	ND132S	2865	10.20	1.87	88.6	88.0	86.0	0.85	0.81	0.76	225	700	300	0.062	42
		4	ND132S	1445	10.70	3.71	89.2	88.0	86.0	0.80	0.75	0.68	225	650	275	0.141	68
		6#	ND132M	940	11.30	5.70	86.8	85.5	84.0	0.78	0.74	0.62	200	600	250	0.227	79
7.50	10.00	2	ND132S	2865	13.60	2.55	89.5	88.0	86.0	0.86	0.82	0.75	250	700	300	0.062	68
		4	ND132M	1445	14.10	5.06	90.1	89.0	87.0	0.82	0.75	0.65	200	650	275	0.171	79
3.70	5.00	8	ND160M	710	8	5	83.0	83.0	81.0	0.74	0.70	0.62	150	700	225	0.46	120
5.50	7.5	8	ND160M	710	12	8	85.1	85.1	83.1	0.74	0.70	0.62	150	700	225	0.46	120
7.50	10.00	6	ND160M	970	15	8	88.1	88.1	86.1	0.80	0.75	0.65	175	500	225	0.46	120
		8	ND160L	710	16	10	86.4	86.4	84.4	0.76	0.72	0.64	150	600	225	0.64	146
9.3	12.5	2	ND160M	2930	16	3	90.0	90.0	88.0	0.88	0.85	0.78	250	700	300	0.13	125
		4	ND160M	1470	17	6	90.5	90.5	88.5	0.85	0.81	0.70	225	600	275	0.31	125
		6	ND160L	970	18	9	89.3	89.3	87.3	0.80	0.75	0.65	175	500	225	0.59	148
		8	ND180M	720	20	13	87.3	87.3	85.0	0.74	0.70	0.60	150	500	225	0.99	174
11	15	2	ND160M	2925	19	4	90.5	90.5	88.0	0.90	0.86	0.78	200	650	250	0.13	120
		4	ND160M	1470	20	7	91.0	91.0	89.0	0.85	0.81	0.70	225	600	275	0.36	120
		6	ND160L	975	21	11	89.7	89.7	86.0	0.80	0.75	0.65	200	600	250	0.64	146
		8	ND180L	720	24	15	88.1	88.1	86.1	0.74	0.70	0.60	150	500	225	1.16	205
15	20	2	ND160M	2920	26	5	91.3	91.3	89.0	0.88	0.85	0.78	250	700	300	0.17	120
		4*	ND160L	1470	26	10	91.8	91.8	89.8	0.88	0.85	0.77	200	600	250	0.47	146
		6	ND180L	975	29	15	90.5	90.5	88.5	0.79	0.76	0.66	225	700	275	1.16	205
		8	ND200L	725	33	20	89.0	89.0	87.0	0.71	0.65	0.55	225	600	275	2.14	270
18.5	25.0	2	ND160L	2920	32	6	91.8	91.8	89.0	0.88	0.85	0.78	250	700	300	0.21	146
		4	ND180M	1475	33	12	92.2	92.2	90.2	0.85	0.80	0.72	175	600	225	0.81	170
		6	ND200L	975	34	18	91.3	91.3	89.3	0.84	0.80	0.72	200	600	250	1.69	270
		8	ND225S	730	38	25	89.8	89.8	87.8	0.75	0.71	0.63	175	500	225	3.24	345
22	30	2	ND180M	2940	40	7	92.2	92.2	90.2	0.84	0.80	0.74	175	700	225	0.44	164
		4	ND180L	1475	39	15	92.6	92.6	90.6	0.85	0.80	0.72	175	600	225	0.95	205
		6	ND200L	975	40	22	91.8	91.8	89.8	0.84	0.80	0.72	200	600	250	2.04	270
		8	ND225M	730	45	29	90.2	90.2	88.0	0.75	0.71	0.63	175	500	225	3.61	375
30	40	2	ND200L	2950	52	10	92.9	92.9	90.9	0.87	0.84	0.80	150	700	225	0.80	270
		4	ND200L	1470	51	20	93.2	93.2	91.2	0.88	0.82	0.76	225	600	275	1.62	270
		6	ND225M	980	53	30	92.6	92.6	90.6	0.85	0.81	0.72	200	600	250	3.61	375
		8	ND250M	735	61	40	91.5	91.5	89.5	0.75	0.71	0.63	175	700	225	4.82	465

EFF Level 1

PERFORMANCE FIGURES OF TEFC SCR MOTORS FOR 50°/70°- EFF LEVEL 1

OUTPUT		POLE	FRAME SIZE	FL RPM	FLC AMPS.	FLT Kg-m	EFFICIENCY (%)			POWER FACTOR			DOL STG.		POT % FLT	GD.^{2} KGM.^{2}	NET WT. kG
kW	HP						FL	3/4 LOAD	1/2 LOAD	FL	3/4 LOAD	1/2 LOAD	STG.T % FLT	STG.C % FLC			
37	50	2	ND200L	2955	63	12	93.3	93.3	91.0	0.87	0.84	0.80	150	700	225	0.89	270
		4	ND225S	1475	68	24	93.6	93.6	91.0	0.81	0.76	0.70	250	600	300	2.64	345
		6	ND250MX	980	66	37	93.0	93.0	91.5	0.84	0.80	0.72	225	600	275	4.82	465
		8	ND280S	735	75	49	91.9	91.9	89.9	0.75	0.71	0.63	200	700	250	8.01	600
45	60	2	ND225M	2960	73	15	93.7	93.7	91.7	0.92	0.88	0.82	250	700	300	1.87	375
		4	ND225M	1475	81	30	93.9	93.9	92.0	0.82	0.78	0.70	250	600	300	3.13	375
		6	ND280S	980	79	45	93.4	93.4	91.4	0.85	0.81	0.73	225	700	275	8.01	600
		8	ND280M	725	90	60	92.4	92.4	90.4	0.75	0.71	0.63	175	700	225	9.89	630
55	75	2	ND250MX	2960	87	18	94.0	94.0	92.0	0.94	0.92	0.88	200	700	250	2.79	465
		4	ND250MX	1485	92	36	94.2	94.2	92.2	0.88	0.84	0.76	175	600	225	3.45	465
		6	ND280M	980	101	55	93.8	93.8	91.8	0.81	0.78	0.74	200	700	250	9.89	630
		8	ND315S	742	116	72	92.8	92.8	90.0	0.71	0.67	0.58	175	500	225	14.12	900
75	100	2	ND280S	2960	119	25	94.6	94.6	92.6	0.93	0.9	0.86	200	700	250	7.14	600
		4	ND280S	1480	122	49	94.7	94.7	92.7	0.90	0.88	0.84	200	700	250	7.21	600
		6	ND315S	987	134	74	94.2	94.2	92.2	0.83	0.76	0.64	200	600	250	14.12	900
		8	ND315M	742	153	98	93.5	93.5	91.5	0.73	0.66	0.56	200	500	250	18.98	950
90	120	2	ND280M	2975	146	29	95.0	95.0	93.0	0.90	0.86	0.78	225	700	275	8.18	630
		4	ND280M	1480	146	59	95.0	95.0	93.0	0.90	0.88	0.84	225	700	275	8.26	630
		6	ND315M	987	156	89	94.5	94.5	92.5	0.85	0.80	0.70	200	600	250	17.00	950
		8	ND315L	742	175	118	94.0	94.0	92.0	0.76	0.72	0.62	150	500	225	29.85	1160
110	150	2	ND315S	2965	171	36	95.0	95.0	93.0	0.94	0.92	0.84	200	700	250	6.63	900
		4	ND315S	1485	175	72	95.2	95.2	93.5	0.92	0.88	0.86	200	650	250	11.62	900
		6	ND315M	987	188	109	94.6	94.6	92.6	0.86	0.82	0.74	200	600	250	18.98	950
		8	ND315LX	742	214	144	94.3	94.3	92.3	0.76	0.72	0.62	150	500	225	29.85	1160
132	180	2	ND315M	2970	205	43	95.3	95.3	93.3	0.94	0.92	0.84	175	700	225	7.97	950
		4	ND315M	1490	214	86	95.5	95.5	93.5	0.90	0.86	0.78	225	700	275	13.98	950
		6	ND315L	990	225	130	94.9	94.9	92.8	0.86	0.82	0.74	200	600	250	29.85	1160
		8	ND315LX	742	255	173	94.7	94.7	92.7	0.76	0.72	0.62	150	500	225	29.85	1160
160	215	2	ND315LX	2980	248	52	95.5	95.5	93.5	0.94	0.92	0.90	175	700	225	16.37	1130
		4	ND315LX	1488	255	105	95.8	95.8	93.8	0.91	0.88	0.78	200	650	250	24.97	1160
		6	ND315LX	990	272	157	95.1	95.1	93.0	0.86	0.82	0.74	200	600	250	29.85	1160
		8	ND355LX	743	304	210	95.0	95.0	93.0	0.77	0.73	0.63	140	500	225	45.43	2100
180	240	2	ND315LX	2975	279	59	95.5	95.5	93.5	0.94	0.92	0.90	225	650	275	13.9	1160
		4	ND315LX	1488	287	118	95.8	95.8	93.8	0.91	0.88	0.84	200	650	250	21.1	1160
		6	ND355L	990	306	177	95.1	95.1	93.5	0.86	0.82	0.76	200	600	250	33.50	2150
		8	ND355LX	743	338	236	95.0	95.0	93.5	0.78	0.74	0.62	120	400	225	51.1	2100
200	270	2	ND315LX	2975	309	65	95.8	95.5	94.0	0.94	0.92	0.88	225	700	270	16.4	1160
		4	ND315LX	1488	319	131	95.8	95.6	94.7	0.91	0.88	0.84	200	650	250	25	1160
		6	ND355LX	991	347	197	95.6	95.3	94.2	0.84	0.80	0.72	130	500	225	29.7	2150
		8	ND355LX	743	366	262	95.0	95.0	94.0	0.80	0.76	0.70	120	400	175	58.1	2150
225	300	2**	ND355LX	2975	355	74	95.8	95.0	93.5	0.92	0.90	0.84	150	650	225	18.4	2150
		4	ND355LX	1488	355	147	95.8	95.8	93.8	0.92	0.88	0.80	150	600	225	28	2150
		6	ND355LX	991	390	221	95.6	95.3	94.2	0.84	0.80	0.70	125	500	250	31.7	2150
		8**	ND355LX	743	422	295	95.0	95.0	93.5	0.78	0.74	0.62	120	400	225	58.1	2150

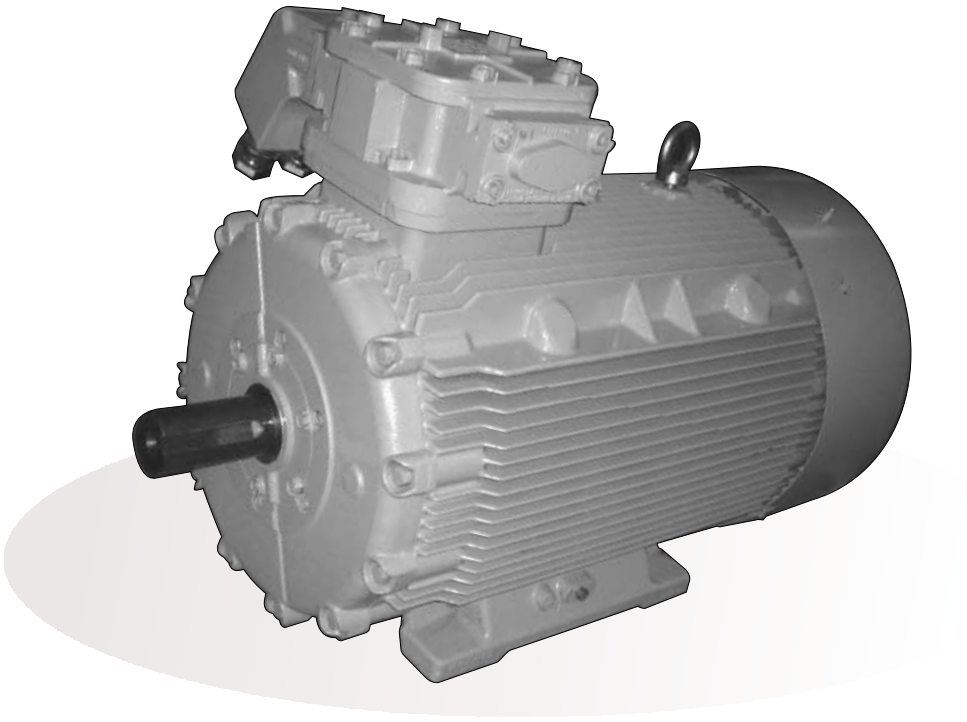
ALL PERFORMANCE FIGURES ARE SUBJECT TO TOLERANCES AS PER IS 325-1996
EFFICIENCY FIGURES ARE AS PER EFF1 CLASS OF IS12615-2004.

** 40/80

* 45/75

class F rise 50/95^{0}C

Flame Proof Motors



0.18 kW to 335 kW
From 80 to 355 Frame

THE WIDEST AVAILABLE RANGE

SQUIRREL CAGE MOTORS

0.37 kw to 355 kw (Frames E 80 to E 355 LX)

SLIP RING MOTORS

22 kw to 160 kw
(Frames EW 250 M to EW 315 L)

STANDARD SPECIFICATIONS

- **VOLTAGE** : 415 ± 10%
  Other Voltage class (220 V - 660 V) available on request.
- **FREQUENCY** : 50 ± 5%
  25 HZ to 60 HZ available on request.
- Combined variation : ± 10 % (absolute sum)
- **INSULATION** : Class F
  Class 'H' can be given on request.
- **RATING/DUTY** : Continuous (S1)
  Intermittent duties available on request.
- **MOUNTING** : Horizontal foot mounting (B3)
  Other mountings available on request.
- **PAINT** : Epoxy anticorrosive painted surface (Standard shade 631 as per IS - 5)
- **AMBIENT / TEMPERATURE RISE** :
  45^0C/75^0C. Higher Amb. upto 60^0C on request.
- **TEMPERATURE CLASS : T4**
- **DEGREE OF PROTECTION** :
  IP 54 - E80 - E132 M
  E225 M to E355 LX
  (IP55 with canopy can be offered.)
  IP55 - Frame E 160L to E 200 L.
- ERTL / CCOE (PESO) / DGMS approvals as a standard feature. For BASEEFA approval please contact nearest branch office/works.

APPLICABLE STANDARDS

Enclosure -	IS 2148 EN 50018
Performance -	IS325 BS 5000 (Part 10) IEC60034 -1
Performance for Mines	IS 3682
Dimensions - Foot -	IS 1231 IEC60072-1
Flange -	IS2223 BS4999 Part 414

INDUSTRIAL APPLICATIONS

- Coal Mines.
- Petro Chemicals & Chemicals.
- Oil Mines & Rigs.
- Fertilizers.
- Solvent extraction plants.
- Paints & Varnish Industry.
- LPG Bottling plants.
- Agro Chemicals.
- Drugs & Pharmaceuticals.
- General Industry.

SPECIAL PURPOSE MOTORS FOR

1. Longwall mining equipment.
2. High pressure mine ventilation fans with plug & socket arrangement.
3. Auxiliary mine ventilation fans with rod mounting / flange mounting.
4. Belt conveyors and armoured face/ chain conveyors.
5. Side dump loaders, load haul dumpers
6. Haulages (squirel cage and slipring motors).
7. Dewatering pumps.
8. Sucker rod pumps.
9. Mud agitators & mud pumps.
10. Slurry extraction pumps.
11. Air compressors & blowers.

SPECIAL DESIGN FEATURES AVAILABLE

1. Dual voltage (550/1100V) with 9 terminal connections as per NCB 625
2. Non standard voltage and frequency variation
3. Dual voltage (1:2 or 1: $\sqrt{3}$ ratio)
   Tripple voltage (1:$\sqrt{3}$: 2 ratio)
4. Energy efficient motors
   High slip motors
   Motors for frequent starts/stops/reversals
5. 10,12,16,18,24,32 pole motors
6. Special performance requirements
7. Class H insulated motors
8. Low vibration and noise level

9. Special Bearings
10. Tacho mounting
11. Special shaft material
12. Canopy
13. Plug & socket arrangement (30 to 300 Amps, 650 & 1100V) for underground equipments.
14. Flange/foot cum flange /rod mounting.
15. Special RV/RA for slipring motors.
16. Space heaters, thermisters.
17. Multispeed motors.
18. Double /taper/non standard shaft extention
19. Non standard paint shade
20. Motors for use with variable frequency inverter supply

TERMINAL BOX AND TERMINAL ARRANGEMENT

- Cast iron construction, forming a separate flame proof enclosure capable of containing internal explosions.
- Standard position on right hand side viewed from driving end side except in frames E 80, E/EW 315 L & E 355 LX where it is on top.
- Terminal box on top on specific request.
- New terminal box with spigotted cover & gland plate/sealing box in frames E 160 to 355 LX with following advantages.

- Inherently IP 55.
- Spaciously designed for accommodating bigger cables.
- Double decker terminal arrangement for easy termination of two cables.
- Anti loosening terminal arrangement

- For slipring motors, separate terminal box for stator & rotor terminations provided. Stator terminal box is on left hand side while rotor terminal box is on right hand side, viewed from driving end.
- Conduit plate is provided as standard while sealing box provided for group I gases.
- Separate terminal box for auxiliary terminals (space heaters, thermisters) for frame 225 and above on request.

TERMINAL STUD

- Fully non hygroscopic thermosetting moulded glass filled compound.
- Increased clearances & creepages.
- Anti loosening arrangement.
- Metallic bush insert to take tightening pressure. Eliminates breakage of insulation (E160-315LX frames)

BEARING CHART

FRAME	DE	NDE
E80	6304-2Z	6304-2Z
E90	6205-2Z	6205-2Z
E100	6206-2Z	6206-2Z
E112	6306-2Z	6306-2Z
E132	6308-2Z	6208-2Z
E160	6309-2RS	6309-2RS
E180	6310-2RS	6310-2RS
E200	6312-2RS	6312-2RS
E225	6313-2RS	6313-2RS
E250-2P	6315	6315
E/EW250-4P UP	6315	6315
E280-2P	6315	6315
E/EW280-4P UP	6318	6318
E315-2P	6315	6315
E/EW315-4P UP	6319	6319
E355LX-2p	6316	6316
E355LX-4p UP	6322	6322

STATUTORY APPROVALS

COUNTRY	STATUTORY AUTHORITY / SCOPE	FLAME PROOF NOTATION /MARK	
INDIA	ERTL KOLKATA / TESTING		STANDARD
	DGMS DHANBAD / APPROVING	FLP DGMS Gr I	
	CCE NAGPUR / APPROVING		
	DGFAS & L I MUMBAI / APPROVING		
	BIS / LICENCE	ISI IS:2148 Ex	
UK.	BASEEFA / CERTIFICATE & LICENCE	Baseefa Ex	OPTIONAL Requirement to be specified at the time of enquiry / order
	ATEX CE MARK / LICENCE	CE 1180 II 2 G EEx d II B T4*	

FLAMEPROOF MOTORS FOR **GROUP IIC** ATMOSPHERE

A complete range of Crompton Greaves flameproof squirrel cage motors for gas group IIC is now available for Indian Industries as an import substitute. The motors are manufactured as per the most stringent requirements for IIC atmosphere. The motors are duly tested at ERTL.

For more details, please contact our nearest branch office / works.

	ERTL	DGMS	CCE	DGFAS & LI	GROUP SUITABILITY	BASEEFA* ATEX	BASEEFA* IECEx'd'
E 80		—			IIA, IIB ONLY	√	---
E 90L					I, II A, II B.	√	---
E100L E112 M, E 132 M.					I, IIA, IIB	√	√
E160L, E 180 L, E200 L					I, IIA, IIB	√	√
E225 S, E 225 M E250 M					I, II A, IIB.	√	√
E280 M E315 M/L					I, IIA, IIB.	√	√
E355LX		—		—	IIA, IIB.		

AVAILABLE Pending for approval.

* STANDARD Temperature class T4. Other classes available on request.

* For IIA, IIB Gas Groups

CMRI	:	CENTRAL MINING RESEARCH INSTITUTE, DHANBAD.
DGMS	:	DIRECTORATE GENERAL OF MINES SAFETY, DHANBAD.
CCE	:	CHIEF CONTROLLER OF EXPLOSIVES, NAGPUR.
DGFAS & LI	:	DIRECTORATE GENERAL FACTORY ADVICE SERVICE & LABOUR INSTITUTE, MUMBAI.
BIS	:	BUREAU OF INDIAN STANDARDS, NEW DELHI.
BASEEFA	:	BRITISH APPROVALS SERVICE FOR ELECTRICAL EQUIPMENT IN FLAMMABLE ATMOSPHERES, UK.
ATEX	:	EUROPEAN DIRECTIVE
ERTL	:	ELECTRONIC REGIONAL TEST LABORATORY

NOTE:* Motors as per UK based standards can be supplied against specific enquiries.

CABLE TERMINATION

CABLE SIZE REFERENCE CHART

FRAME SIZE	MAX. CABLE SIZE				TERMINAL STUD			
	GROUP I - COPPER inch²		GROUP II - AL. mm²		MAIN		EARTH	AUX.
	DOL	STAR/DELTA	DOL	STAR/DELTA	NOS.	SIZE	SIZE	SIZE
E 80	NA	NA	4	NA	3	M6	M6	NA
E 90L TO E 132 M	0.25	2 X 0.06	10	2 X 6	6	M6	M6	NA
					3	M6		M6
E 160L TO E 200 L	0.25	2 X 0.06	50 (95 WITH ADAPTOR)	2 X 50	6	M8	M8	M6
E225S TO E315M	0.25	2 X 0.25	185	2 X 120	6	M10	M8	M6
E 315 L & E355	0.25	2X0.25 Double Sealing Box 2X0.06 Single Sealing Box	2 x 3C x 240 Double Sealing Box	2 x 240 Double Sealing Box	6	M14	M8	M8
					3	M16		
EW250 M STATOR ROTOR	0.25	NA	185 95	NA	3 3	M10 M8	M8	M6
EW280-EW 315 M STATOR ROTOR	0.25	NA	185 185	NA	3 3	M10 M10	M8	M6
EW 315 L STATOR ROTOR	0.25	NA	240 185	NA	3 3	M16 M10	M8	M8

NA -Not Available

Note : Motors upto & including 2.2 kw are with 3 leads. 3.7 kw & above are with 6 leads.

Following alternative methods of electrical connections/ cable entry can be provided:

1. CMRI / ERTL approved double compression glands.
2. For group I areas, cable clamps for single/double armoured cable with single/double cone arrangement.
3. Plug and socket arrangement (suitable for 1100 or 650 V) for PATC cables for group I areas. (E 160 L- E 355 LX)
4. Sealing box with entry thread for solid drawn conduit arrangement.

SHIPPING SPECIFICATIONS

FOOT MOUNTING MOTORS					FLANGE MOUNTING MOTORS				
FRAME SIZE	NET WT. KG	GROSS WT. KG	DIMENSIONS LxBxH mm	VOL. CU.M.	FRAME SIZE	NET WT. KG	GROSS WT. KG	DIMENSIONS LxBxH mm	VOL. CU.M.
E80	23	27	345 X 220 X 335	0.025	E80	25	30	345 X 220 X 335	0.025
E90L	40	56	467 X 477 X 319	0.071	E90L	42	70	528 X 362 X 672	0.128
E100L	54	74	507 X 507 X 368	0.095	E100L	56	89	582 X 422 X 687	0.169
E112M	73	102	590 X 532 X 427	0.134	E112M	76	109	582 X 422 X 687	0.169
E132M	110	143	622 X 575 X 427	0.153	E132M	113	156	628 X 472 X 732	0.216
E160L	188	259	875 X 705 X 427	0.36	E160L	215	333	960 X 815 X 815	0.64
E180L	256	362	1025 X 825 X 700	0.59	E180L	260	378	960 X 815 X 815	0.64
E200L	263	369	1025 X 825 X 700	0.59	E200L	300	442	1065 X 885 X 840	0.79
E225S	330	382	1150 X 845 X 710	0.69	E225S	365	510	1065 X 885 X 840	0.79
E225M	400	449	1150 X 845 X 710	0.69	E225M	435	577	1065 X 885 X 840	0.79
E250M	680	818	1300 X 915 X 745	0.89	E250M	705	935	990 X 900 X 1245	1.11
E280M	966	1180	1500 X 1065 X 850	1.36	E280M	1000	1270	1070 X 1070 X 1430	1.64
E315M	1136	1389	1600 X 1170 X 925	1.73	E315M	1180	1508	1280 X 1210 X 1545	2.39
E315L	1752	2105	1830 X 1270 X 1156	2.69	E315L	1800	2214	1850 X 1450 X 1275	3.42
EW250M	740	1015	1730 X 1170 X 865	1.75	EW250M	-		-	-
EW280M	1105	1460	2160 X 1220 X 1010	2.66	EW280M	-	-	-	-
EW315M	1300	1645	2160 X 1220 X 1010	2.66	EW315M	-	-	-	-
EW315L	1900	2430	2565 X 1245 X 1120	3.58	EW315L	-	-	-	-
E355LX	2150	2500	2565 X 1245 X 1120	3.58		-	-	-	-

PERFORMANCE FIGURES OF FLP SCR MOTORS FOR 45 AMBIENT 75 DEGREE RISE

OUTPUT		POLE	FRAME SIZE	FL RPM	FLC AMPS.	EFFICIENCY			POWER FACTOR			DOL STG.		GD SQ. KGM.^{2}	NET WT KG
KW	HP					FL	3/4 LOAD	1/2 LOAD	FL	3/4 LOAD	1/2 LOAD	STG.T %FLT	STG.C %FLC		
0.18	0.25	2	E80	2850	0.54	64.0	61.0	55.0	0.72	0.68	0.61	250	650	0.003	23
		4	E80	1400	0.55	68.0	64.0	59.0	0.67	0.63	0.57	200	500	0.007	23
		6	E80	950	0.70	58.0	52.0	45.0	0.62	0.52	0.44	220	450	0.011	23
		8	E90L	680	0.84	57.0	52.0	46.0	0.52	0.46	0.40	180	400	0.024	35
0.25	0.33	2	E80	2850	0.68	68.0	64.0	57.0	0.75	0.70	0.62	250	600	0.003	23
		4	E80	1400	0.71	70.0	66.0	59.0	0.70	0.64	0.58	200	500	0.007	23
		6	E80	930	0.89	60.0	54.0	48.0	0.65	0.54	0.48	200	400	0.011	23
		8	E90L	670	1.17	57.0	52.0	46.0	0.52	0.46	0.40	180	400	0.024	38
0.37	0.50	2	E80	2820	0.87	72.0	69.0	63.0	0.82	0.76	0.65	250	550	0.003	23
		4	E80	1410	0.97	72.0	69.0	65.0	0.74	0.7	0.64	225	500	0.007	23
		6	E80	910	1.13	65.0	63.0	59.0	0.7	0.63	0.5	200	400	0.011	23
		8	E90L	680	1.41	64.0	62.0	58.0	0.57	0.5	0.4	170	400	0.024	35
0.55	0.75	2	E80	2820	1.29	73.0	72.0	68.0	0.81	0.73	0.62	250	600	0.003	23
		4	E80	1410	1.32	77.0	74.0	69.0	0.75	0.68	0.58	200	500	0.007	23
		6	E80	910	1.56	69.0	66.0	60.0	0.71	0.63	0.5	200	400	0.011	23
		8	E90L	685	1.69	72.0	68.0	62.0	0.63	0.55	0.42	170	400	0.034	38
0.75	1.00	2	E80	2820	1.72	75.0	73.0	68.0	0.81	0.73	0.6	250	600	0.003	23
		4	E80	1410	1.81	77.0	74.0	69.0	0.75	0.68	0.58	200	500	0.007	23
		6	E90L	925	2.07	72.0	68.0	61.0	0.7	0.62	0.52	180	500	0.024	35
		8	E100L	700	2.26	71.0	67.0	61.0	0.65	0.58	0.45	175	400	0.038	49
1.10	1.50	2	E90L	2830	2.31	78.0	76.0	73.0	0.85	0.79	0.7	230	600	0.010	36
		4	E90L	1415	2.62	77.0	75.0	71.0	0.76	0.7	0.6	200	500	0.018	35
		6	E90L	925	2.95	74.0	69.0	62.0	0.70	0.62	0.52	200	500	0.034	38
		8	E100L	700	3.27	72.0	68.0	61.0	0.65	0.58	0.45	175	400	0.050	51
1.50	2.00	2	E90L	2850	3.11	79.0	77.0	73.0	0.85	0.79	0.7	230	600	0.010	36
		4	E90L	1415	3.34	80.0	79.0	77.0	0.78	0.72	0.65	200	550	0.025	38
		6	E100L	945	3.53	80.0	77.0	71.0	0.74	0.66	0.54	200	500	0.038	49
		8	E112M	715	4.04	76.0	72.0	65.0	0.68	0.6	0.5	170	450	0.130	61
2.20	3.00	2	E90L	2850	4.29	82.0	81.0	79.0	0.87	0.83	0.74	230	600	0.014	39
		4	E100L	1430	4.55	82.0	81.0	78.0	0.82	0.78	0.7	200	600	0.040	49
		6	E112M	945	5.10	80.0	79.0	77.0	0.75	0.7	0.6	200	500	0.106	60
		8	E132M	715	5.38	79.0	78.0	76.0	0.72	0.65	0.55	180	400	0.300	93
3.70	5.00	2	E100L	2850	7.13	84.0	83.0	81.0	0.86	0.82	0.75	250	600	0.029	53
		4	E112M	1430	7.57	84.0	82.0	79.0	0.81	0.78	0.73	200	600	0.099	63
		6	E132M	945	7.57	85.0	84.0	82.0	0.8	0.76	0.72	200	550	0.205	94
		8	E132M	700	8.71	81.0	79.5	77.0	0.73	0.66	0.57	180	400	0.340	98
5.50	7.50	2	E112M	2900	10.38	85.7	84.0	81.0	0.86	0.82	0.76	250	650	0.045	64
		4	E132M	1450	10.59	86.0	85.0	83.0	0.84	0.8	0.71	200	600	0.227	93
		6	E132M	945	11.11	85.0	84.0	82.0	0.81	0.77	0.73	200	500	0.330	98
		8	E160L	710	12.00	85.0	85.0	83.0	0.74	0.7	0.62	150	500	0.460	120
7.50	10.00	2	E132M	2900	13.63	87.0	85.0	82.0	0.88	0.85	0.8	250	650	0.108	98
		4	E132M	1450	14.28	87.0	86.0	85.0	0.84	0.8	0.71	200	600	0.269	98
		6	E160L	970	11.00	87.5	87.0	85.0	0.8	0.76	0.68	175	500	0.46	120
		8	E160L	710	12.00	85.0	85.0	83.0	0.76	0.72	0.64	150	500	0.64	146
9.3	12.5	2	E160L	2920	17	88.0	87.0	85.0	0.88	0.86	0.78	250	600	0.13	260
		4	E160L	1460	17	88.5	88.5	86.5	0.84	0.81	0.73	175	500	0.31	260
		6	E160L	970	18	87.5	87.0	84.0	0.80	0.76	0.68	200	550	0.59	260
		8	E180L	720	20	86.0	86.0	84.0	0.74	0.70	0.60	175	500	0.99	260
11.0	15.0	2	E160L	2920	20	88.5	88.0	86.0	0.88	0.86	0.78	250	600	0.13	260
		4	E160L	1460	21	89.0	89.0	86.0	0.82	0.79	0.70	200	500	0.36	260
		6	E160L	975	22	88.0	87.5	86.0	0.80	0.76	0.68	200	550	0.64	260
		8	E180L	720	24	87.0	87.0	85.0	0.74	0.70	0.60	175	500	1.16	285
15.0	20.0	2	E160L	2920	26	89.5	89.5	87.5	0.88	0.86	0.79	250	650	0.17	260
		4	E160L	1460	27	90.0	90.0	88.0	0.85	0.83	0.75	200	500	0.47	260
		6	E180L	975	29	90.0	90.0	88.0	0.79	0.73	0.66	250	600	1.16	285
		8	E200L	725	33	88.5	88.5	86.5	0.71	0.65	0.55	225	500	2.14	310

PERFORMANCE FIGURES OF FLP SCR MOTORS FOR 45 AMBIENT 75 DEGREE RISE

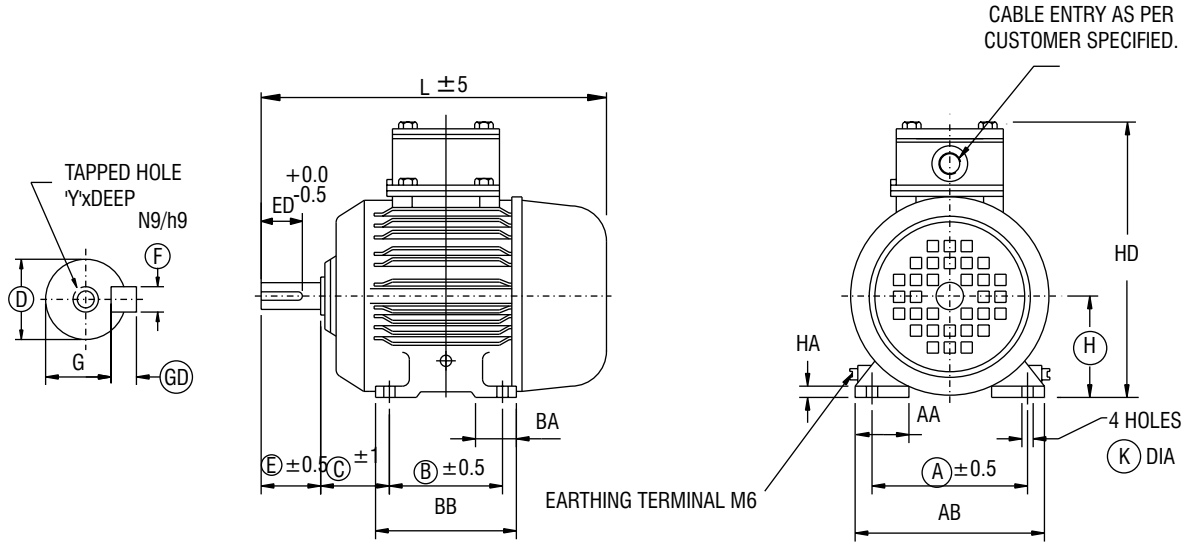
OUTPUT		POLE	FRAME SIZE	FL RPM	FLC AMPS.	EFFICIENCY			POWER FACTOR			DOL STG.		GD SQ. KGM.^{2}	NET WT KG
KW	HP					FL	3/4 LOAD	1/2 LOAD	FL	3/4 LOAD	1/2 LOAD	STG.T %FLT	STG.C %FLC		
18.5	25.0	2	E160L	2920	32	90.0	90.0	88.0	0.88	0.86	0.79	250	650	0.21	260
		4	E180L	1475	34	91.0	91.0	90.0	0.84	0.80	0.72	200	500	0.81	285
		6	E200L	975	34	91.1	91.1	89.9	0.84	0.80	0.70	200	550	1.69	310
		8	E225S	725	39	89.0	88.5	87.0	0.75	0.71	0.63	150	500	3.30	330
22.0	30.0	2	E180L	2940	40	91.0	91.0	89.0	0.84	0.80	0.74	175	500	0.44	285
		4	E180L	1475	40	92.0	92.0	90.0	0.84	0.80	0.72	200	500	0.95	285
		6	E200L	975	40	91.5	91.5	90.1	0.84	0.80	0.70	200	500	2.04	310
		8	E225M	725	46	89.0	88.5	87.0	0.75	0.71	0.63	175	500	3.90	400
30.0	40.0	2	E200L	2950	52	91.5	91.0	89.0	0.87	0.84	0.80	200	600	0.80	310
		4	E200L	1475	53	92.0	92.0	90.5	0.86	0.82	0.76	225	600	1.62	310
		6	E225M	980	53	91.5	91.0	89.5	0.86	0.84	0.80	200	600	3.70	400
		8	E250M	735	63	90.5	87.0	88.5	0.73	0.69	0.61	175	550	7.49	680
37.0	50.0	2	E200L	2960	64	92.5	91.5	89.0	0.87	0.84	0.80	200	500	0.89	270
		4	E225S	1480	63	92.5	92.0	90.5	0.89	0.85	0.77	250	600	2.70	330
		6	E250M	975	65	92.0	91.5	90.0	0.86	0.82	0.74	200	600	7.51	680
		8	E280M	740	75	91.5	91.0	89.5	0.75	0.71	0.63	200	500	14.15	966
45.0	60.0	2	E225M	2955	72	92.5	90.0	88.0	0.94	0.90	0.82	200	650	1.50	400
		4	E225M	1480	76	93.0	92.5	91.0	0.89	0.85	0.77	250	600	3.20	400
		6	E280M	987	78	93.0	92.5	91.0	0.86	0.82	0.74	200	600	14.15	966
		8	E280M	740	91	92.0	91.5	90.0	0.75	0.71	0.63	200	600	14.15	966
55.0	75.0	2	E250M	2980	89	93.0	92.0	90.0	0.92	0.88	0.80	200	600	6.22	680
		4	E250M	1480	93	93.0	92.5	91.0	0.88	0.84	0.76	225	600	6.26	680
		6	E280M	987	96	93.0	92.5	91.0	0.86	0.82	0.74	200	600	14.15	966
		8	E315M	742	108	93.5	93.0	91.0	0.76	0.72	0.62	150	500	24.20	1136
75.0	100.0	2	E280M	2970	121	93.6	93.0	92.0	0.92	0.90	0.86	175	600	7.25	966
		4	E280M	1488	123	93.6	93.0	91.5	0.91	0.88	0.80	200	600	11.60	966
		6	E315M	990	130	93.5	93.0	91.5	0.86	0.82	0.74	200	600	24.20	1136
		8	E315M	742	148	93.0	92.5	91.0	0.76	0.72	0.62	150	500	24.20	1136
90.0	120.0	2	E280M	2970	142	94.0	93.5	91.5	0.94	0.90	0.82	175	600	7.25	966
		4	E280M	1488	147	93.9	93.3	91.8	0.91	0.88	0.84	200	600	11.60	966
		6	E315M	990	155	93.8	93.3	91.8	0.86	0.82	0.74	200	600	24.20	1136
		8	E315L	742	176	93.5	93.0	91.5	0.76	0.72	0.62	150	500	33.33	1752
110.0	150.0	2	E315M	2980	173	94.0	93.0	91.5	0.94	0.90	0.82	175	600	10.76	1136
		4	E315M	1488	180	94.5	93.5	92.0	0.90	0.86	0.78	175	600	20.30	1136
		6	E315L	990	189	94.0	93.5	92.0	0.86	0.82	0.74	200	600	40.00	1752
		8	E315L	742	210	93.5	93.0	91.5	0.78	0.74	0.66	150	500	40.00	1752
132.0	180.0	2	E315M	2980	207	94.5	93.0	91.5	0.94	0.90	0.82	175	600	10.76	1136
		4	E315M	1488	215	94.7	93.5	92.0	0.90	0.86	0.78	175	600	20.30	1136
		6	E315L	990	227	94.0	93.5	92.0	0.86	0.82	0.74	200	600	33.33	1752
		8	E355LX	740	263	94.5	94.5	92.5	0.74	0.70	0.60	150	500	31.80	2500
160.0	215.0	2	E315L	2980	250	94.8	93.5	92.0	0.94	0.90	0.82	175	600	16.37	1752
		4	E315L	1490	260	95.0	94.0	92.5	0.90	0.86	0.78	175	600	24.97	1752
		6	E315L	990	274	94.5	94.0	92.5	0.86	0.82	0.74	200	600	40.00	1752
		8	E355LX	743	304	95.0	94.0	92.0	0.77	0.73	0.63	140	500	36.80	2500
180.0	240.0	2	E315L	2980	280	95.0	94.5	92.5	0.94	0.90	0.82	175	600	16.37	1752
		4	E315L	1488	292	95.3	95.3	94.0	0.90	0.88	0.84	175	600	24.97	1752
		6	E355LX	990	307	95.0	94.5	93.0	0.86	0.82	0.76	140	500	33.50	2500
		8	E355LX	743	335	94.5	94.5	92.0	0.79	0.75	0.67	125	400	51.10	2500
200.0	270.0	2	E315L	2980	317	94.5	94.0	92.5	0.93	0.90	0.82	175	600	16.37	1752
		4	E315L	1488	324	94.5	94.0	92.5	0.91	0.88	0.84	200	650	31.10	1752
		6	E355LX	990	349	95.0	95.0	93.5	0.84	0.81	0.72	130	500	29.70	2500
		8	E355LX	743	371	95.0	95.0	94.0	0.79	0.75	0.66	110	400	58.10	2500
225.0	300.0	2	E355LX	2975	352	95.5	95.5	94.0	0.93	0.90	0.84	150	600	18.40	2500
		4	E355LX	1488	356	95.5	95.5	93.5	0.92	0.88	0.84	150	600	28.00	2500
		6	E355LX	991	390	95.5	95.0	94.0	0.84	0.80	0.70	130	500	31.70	2500

PERFORMANCE FIGURES OF FLP SCR MOTORS FOR 45 AMBIENT 75 DEGREE RISE

OUTPUT		POLE	FRAME SIZE	FL RPM	FLC AMPS.	EFFICIENCY			POWER FACTOR			DOL STG.		GD SQ. KGM.^{2}	NET WT KG
KW	HP					FL	3/4 LOAD	1/2 LOAD	FL	3/4 LOAD	1/2 LOAD	STG.T %FLT	STG.C %FLC		
250.0	335.0	2	E355LX	2970	387	95.5	94.8	93.3	0.94	0.92	0.88	150	650	27.70	2500
		4	E355LX	1488	395	95.7	95.2	93.8	0.92	0.88	0.84	150	600	29.60	2500
		6	E355LX	990	434	95.5	95.0	94.0	0.84	0.80	0.70	130	500	35.60	2500
275.0	370.0	2	E355LX	2980	435	95.5	94.8	93.3	0.92	0.90	0.86	150	600	27.70	2500
		4	E355LX	1490	440	95.5	95.0	93.3	0.91	0.88	0.81	140	650	31.60	2500
		6	E355LX	990	477	95.5	95.0	94.0	0.84	0.80	0.74	160	500	39.80	2500
315.0	425.0	2	E355LX	2980	499	95.5	94.8	92.5	0.92	0.90	0.86	175	600	29.60	2500
		4	E355LX	1490	502	96.0	95.1	93.6	0.91	0.88	0.82	140	650	35.50	2500
335.0	452.0	2**	E355LX	2980	530	95.5	94.8	92.5	0.92	0.90	0.88	175	600	29.60	2500
		4	E355LX	1490	534	96.0	95.4	93.8	0.91	0.88	0.82	175	600	39.70	2500

FL = Full Load; FLC = Full Load Current; FLT = Full Load Torque
SGT. T = Starting Torque; SGT. C = Starting Current
NOTE : All performance figures are subject to tolerances as per IS 325 - 1996
**40/80

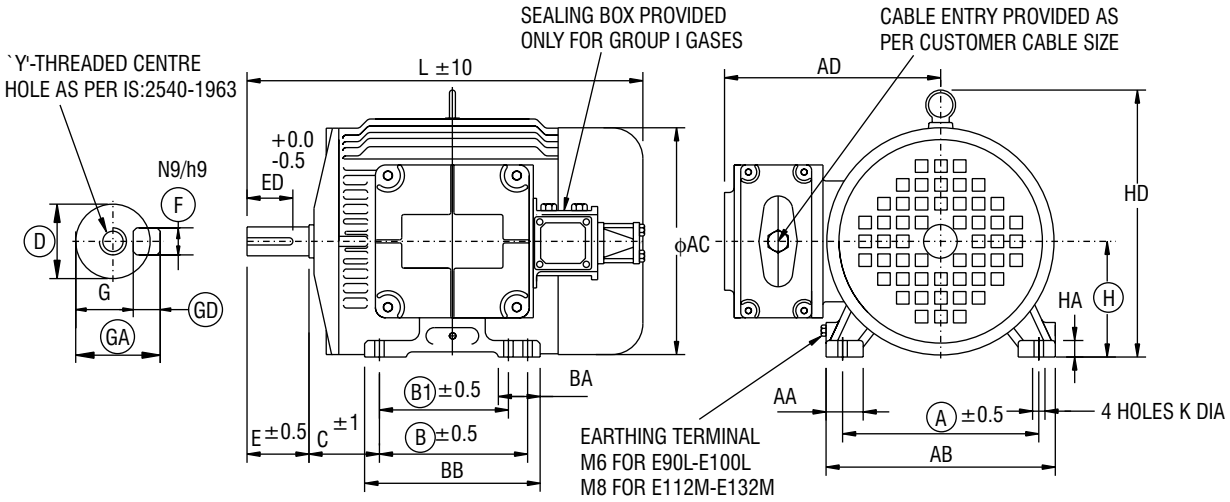
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FOOT MOUNTED TB ON TOP FLAME PROOF INDUCTION MOTORS (FRAME:E80)



RINGED DIMENSIONS ARE AS PER IS:1231
ALL DIMENSIONS ARE IN mm

Frame	A	B	C	H	AA	AB	BA	BB	K	D	E	ED	F	GD	G	Y	AC	L	HD	HA
E80	125	100	50	80.0 / 79.5	28	152	25	124	10.0 / 10.5	19.009/ 18.996	40	27	6.00 / 5.97	6.00 / 5.97	15.5 / 15.3	M6X16	165	274	268	11

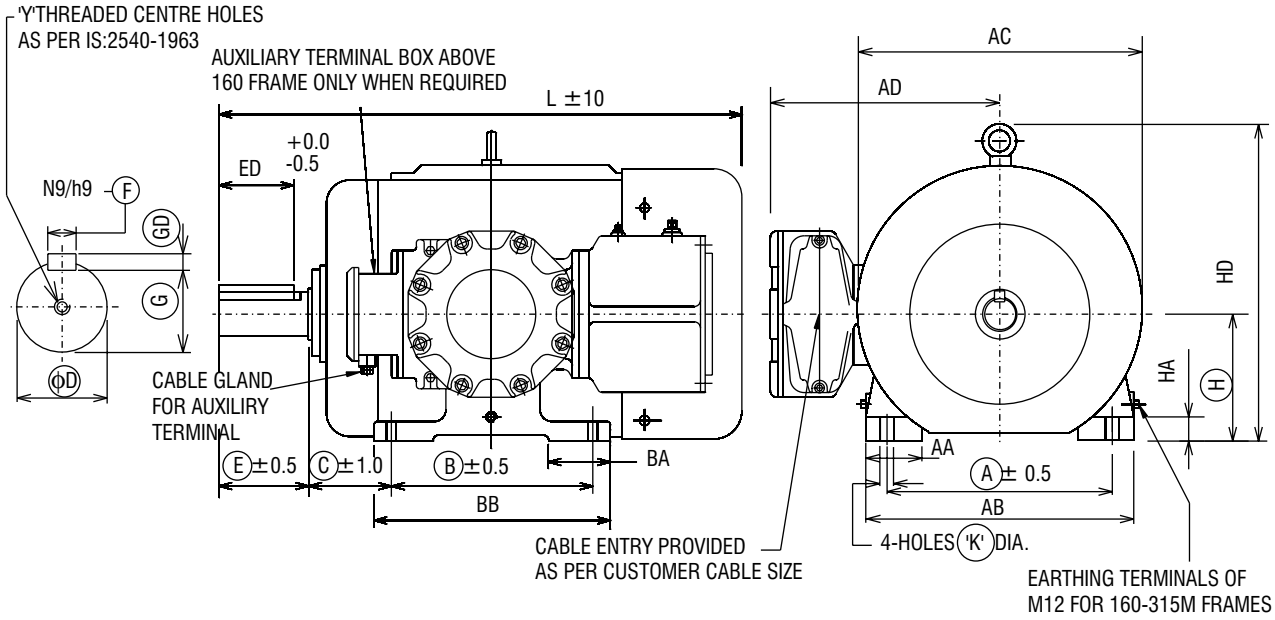
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FOOT MOUNTED TB ON RHS FLAME PROOF INDUCTION MOTORS



RINGED DIMENSIONS ARE AS PER IS:1231
ALL DIMENSIONS ARE IN mm

Frame	A	B	C	H	AA	AB	BA	BB	K	D	E	ED	F	GD	G	Y	AD	AC	L	HD	HA
E90L	140	125	56	90.0 / 89.7	35	168	45	152	10.5/ 10.0	24.009/ 23.996	50	36	8.00 / 7.957	7.00 / 6.91	20.0 / 19.8	M8x19	240	210	335	195	13
E100L	160	140	63	100.0 / 99.7	38	198	51	170	12.5/ 12.0	28.009/ 27.996	60	44	8.00 / 7.957	7.0 / 6.91	24.0 / 23.8	M10X22	255	240	380	220	13
E112M	190	140	70	112.0 / 111.7	38	228	60	171	12.5/ 12.0	28.009/ 27.996	60	44	8.00 / 7.957	7.0 / 6.91	24.0 / 23.8	M10X22	265	270	400	245	14
E132M	216	178	89	132.0 / 131.7	48	254	64	216	12.5/ 12.0	38.018/ 38.002	80	60	10.0 / 9.957	8.0 / 7.91	33.0 / 32.8	M12X28	285	320	500	290	16

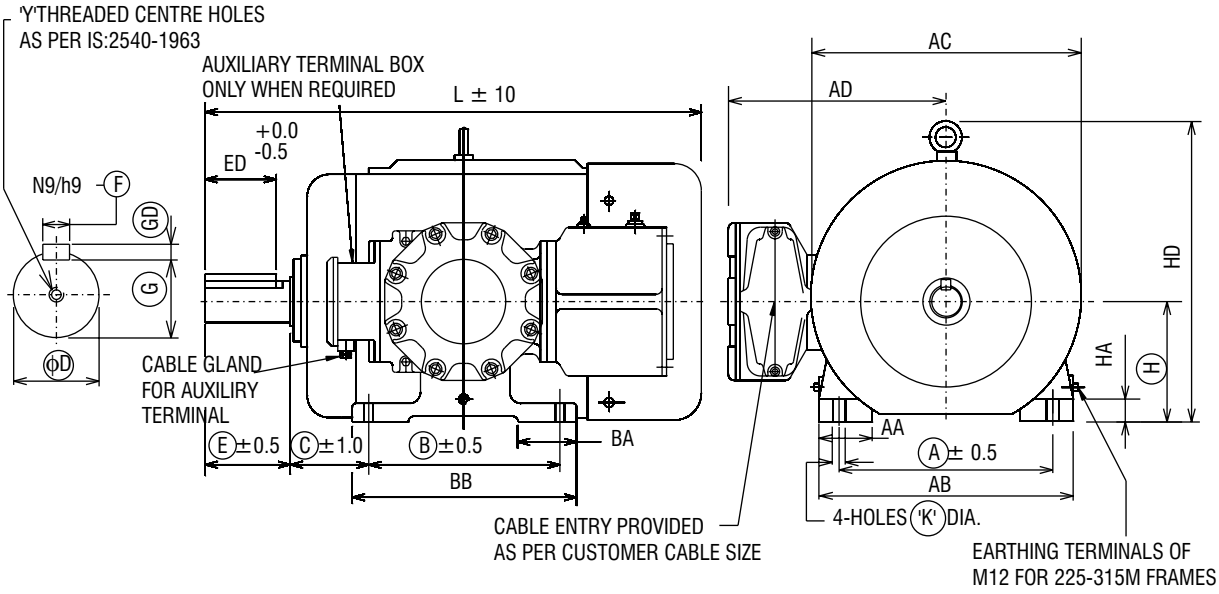
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FOOT MOUNTED TB RHS FLAME PROOF INDUCTION MOTORS (4 POLE & UP FOR ALL FRAMES 2 POLE & UP TO ND200L FRAMES)



RINGED DIMENSIONS ARE AS PER IS:1231
ALL DIMENSIONS ARE IN mm

Frame	A	B	B1	C	H	AA	AB	BA	BB	K	D	E	ED	F	GD	G	Y	AD	AC	L	HD	HA
4 POLE & UP																						
E160L	254	254	210	108	160.0 / 159.7	54	298	101	298	15.5 / 15.0	42.018 / 42.002	110	80	12.00 / 11.957	8.00 / 7.91	37.0 / 36.8	M16X32	345	320	655	376	22
E180L	279	279	241	121	180 / 179.7	60	337	107	323	15.5 / 15.0	48.018 / 48.002	110	80	14.00 / 13.957	9.00 / 8.91	42.5 / 42.3	M16X32	362	370	725	418	22
E200L	318	305	-	133	200.0 / 199.5	66	381	105	356	19.5 / 19.0	55.030 / 55.011	110	80	16.00 / 15.957	10.00 / 9.91	49.0 / 48.8	M20X40	400	435	790	480	25
E225S	356	286	-	149	225.0 / 224.5	70	425	114	349	19.5 / 19.0	60.030 / 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	402	490	832	525	25
E225M	356	311	-	149	225.0 / 224.5	70	425	114	375	19.5 / 19.0	60.030 / 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	402	490	857	525	25
E250M	406	349	-	168	250.0 / 249.5	90	483	160	419	24.5 / 24.0	65.030 / 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	440	560	977	605	32
E280M	457	419	368	190	280.0 / 279.0	95	540	155	489	24.5 / 24.0	75.030 / 75.011	140	110	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M20X40	476	620	1094	660	38
E315M	508	457	-	216	315.0 / 314.0	100	597	190	533	28.5 / 28.0	80.030 / 80.011	170	140	22.00 / 21.948	14.00 / 13.91	71.0 / 70.8	M20X40	516	705	1220	775	38

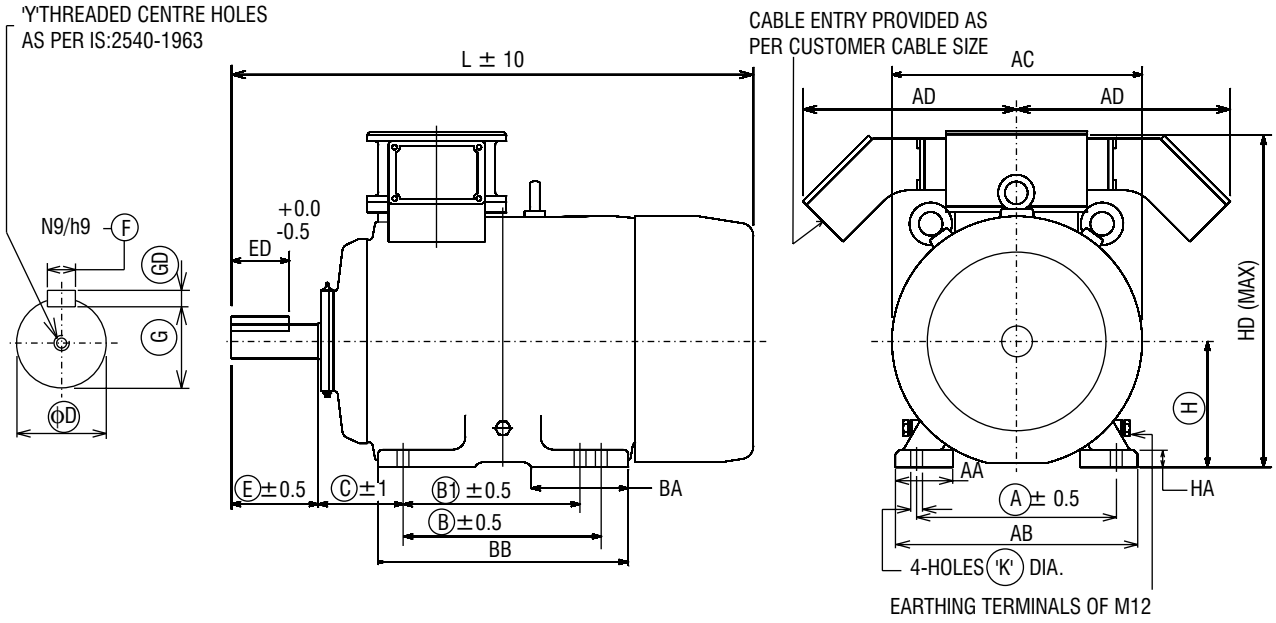
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FOOT MOUNTED TB RHS FLAME PROOF INDUCTION MOTORS (FOR 2 POLE)



RINGED DIMENSIONS ARE AS PER IS:1231
ALL DIMENSIONS ARE IN mm

Frame	A	B	B1	C	H	AA	AB	BA	BB	K	D	E	ED	F	GD	G	Y	AD	AC	L	HD	HA
E225S	356	286	-	149	225.0 / 224.5	70	425	114	349	19.5 / 19.0	55.030 / 55.011	110	80	16.00 / 15.957	10.0 / 9.91	49.0 / 48.8	M20X40	402	490	802	525	25
E225M	356	311	-	149	225.0 / 224.5	70	425	114	375	19.5 / 19.0	55.030 / 55.011	110	80	16.00 / 15.957	10.0 / 9.91	49.0 / 48.8	M20X40	402	490	827	525	25
E250M	406	349	311	168	250.0 / 249.5	90	483	160	419	24.5 / 24.0	60.030 / 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	440	560	977	605	32
E280M	457	419	368	190	280.0 / 279.0	95	540	155	489	24.5 / 24.0	65.030 / 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	476	620	1094	660	38
E315M	508	457	-	216	315.0 / 314.0	100	597	190	533	28.5 / 28.0	65.030 / 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	516	705	1190	775	38

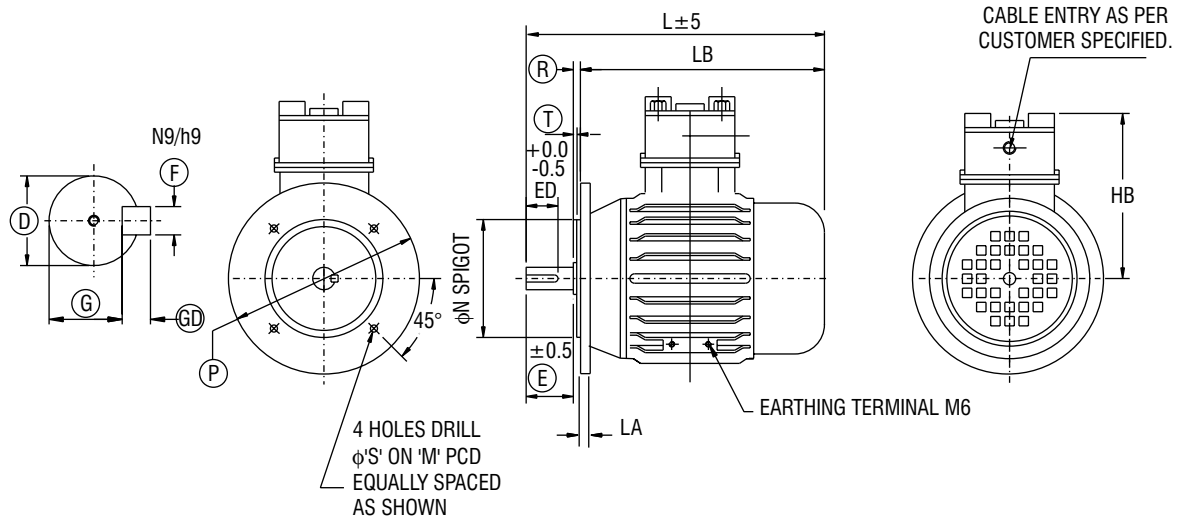
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FOOT MOUNTED FLAME PROOF TB ON TOP INDUCTION MOTORS (FRAME E315L & E355LX)



RINGED DIMENSIONS ARE AS PER IS:1231
ALL DIMENSIONS ARE IN mm

Frame	A	B	B1	C	H	AA	AB	BA	BB	K	D	E	ED	F	GD	G	Y	AC	L	HD	HA	AD
2 POLE																						
E315L	508	508	-	216	315.0 / 314.0	100	610	204	655	28.5 / 28.0	70.030 / 70.011	140	110	20.0 / 19.948	12.0 / 11.91	62.5 / 62.3	M20X40	655	1350	875	38	480
E355LX	610	630	560	254	355.0 / 354.0	110	710	250	880	28.5 / 28.0	75.030 / 75.011	170	140	20.00 / 19.948	12.00 / 11.91	67.5 / 67.3	M24x50	720	1540	1005	40	600
4 POLE & UP																						
E315L	508	508	-	216	315.0 / 314.0	100	610	204	655	28.5 / 28.0	90.035 / 90.013	170	140	25.0 / 24.948	14.00 / 13.91	81.0 / 80.08	M24X50	655	1380	875	38	480
E355LX	610	630	560	254	355.0 / 354.0	110	710	290	880	28.5 / 28.0	100.035/ 100.013	210	160	28.00 / 27.948	16.00 / 15.89	90.0 / 89.8	M24x50	720	1580	1005	40	600

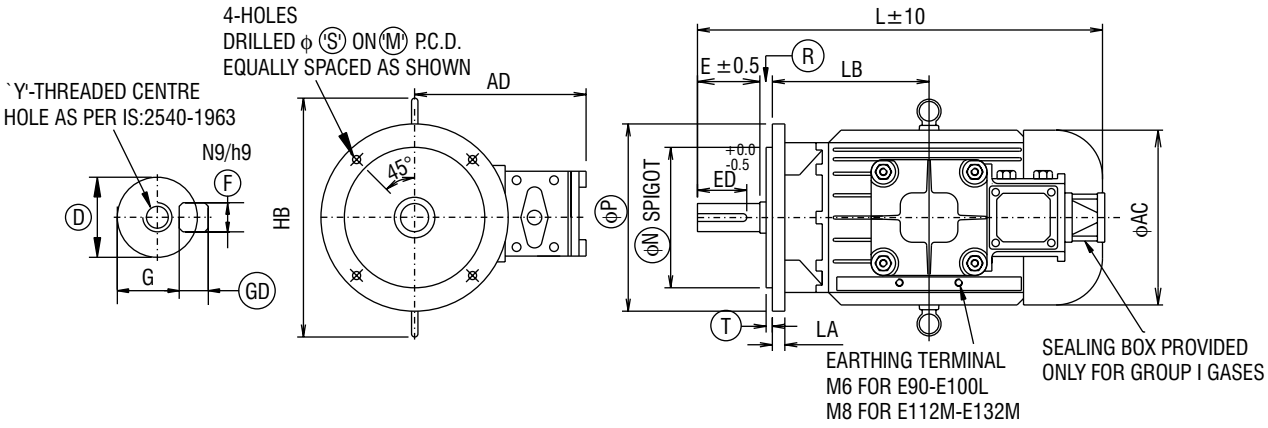
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FLANGE MOUNTED FLAME PROOF INDUCTION MOTORS (FRAME:E80)



RINGED DIMENSIONS ARE AS PER IS:2223
ALL DIMENSIONS ARE IN mm

Frame	D	E	ED	F	GD	G	Y	AD	AC	L	MTol	NTol	P	S	T	LA	LB	HB
E80	19.009 / 18.996	40	27	6.00 / 5.97	6.00 / 5.97	15.5 / 15.3	M6X16	205	165	274	165.3 / 164.7	130.014/ 129.989	200	12	3.5	10	245	188

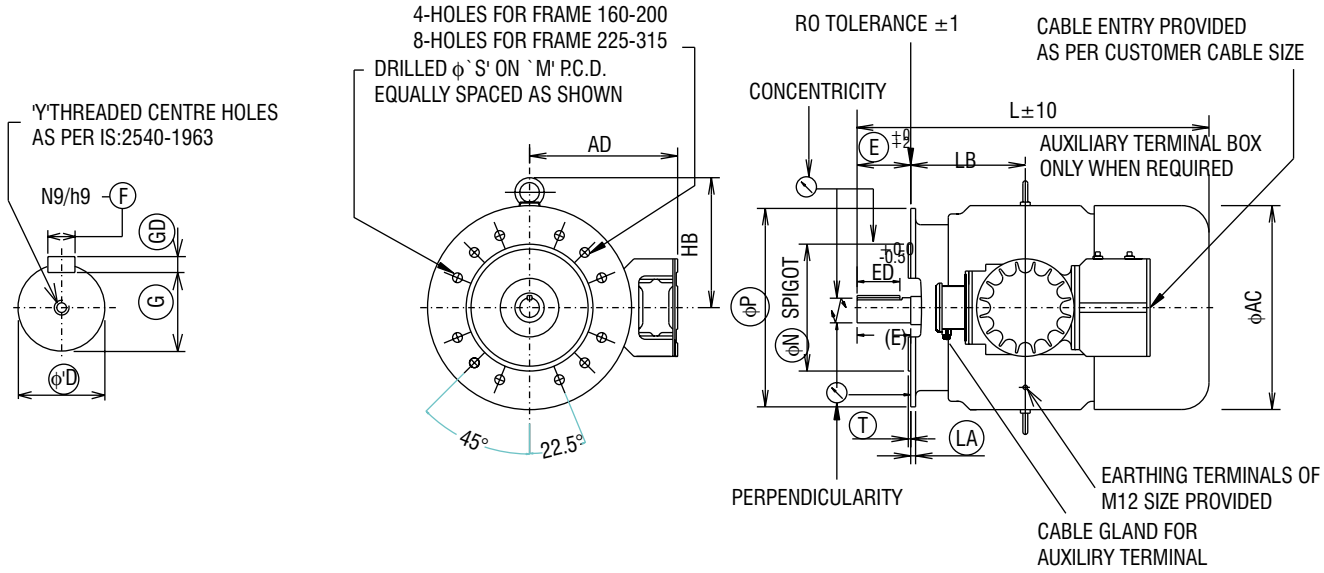
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FLANGE MOUNTED FLAME PROOF INDUCTION MOTORS



RINGED DIMENSIONS ARE AS PER IS:2223
ALL DIMENSIONS ARE IN mm

Frame	D	E	ED	F	GD	G	Y	AD	AC	L	MTol	NTol	P	S	T	LA	LB	HB
E90L	24.009 / 23.996	50	36	8.00 / 7.957	7.00 / 6.91	20.0 / 19.8	M8x19	240	210	380	165.3 / 164.7	130.014/ 129.989	200	12	3.5	10	137	300
E100L	28.009 / 27.996	60	44	8.00 / 7.957	7.0 / 6.91	24.0 / 23.8	M10X22	255	240	415	215.3 / 214.7	180.016/ 179.987	250	15	4	11	320	330
E112M	28.009 / 27.996	60	44	8.00 / 7.957	7.0 / 6.91	24.0 / 23.8	M10X22	270	270	425	215.3 / 214.7	180.016/ 179.987	250	15	4	11	345	350
E132M	38.018 / 37.996	80	60	10.0 / 9.957	8.0 / 7.91	33.0 / 32.8	M12X28	290	320	520	265.3 / 264.7	230.016/ 229.987	300	15	4	13	177	440

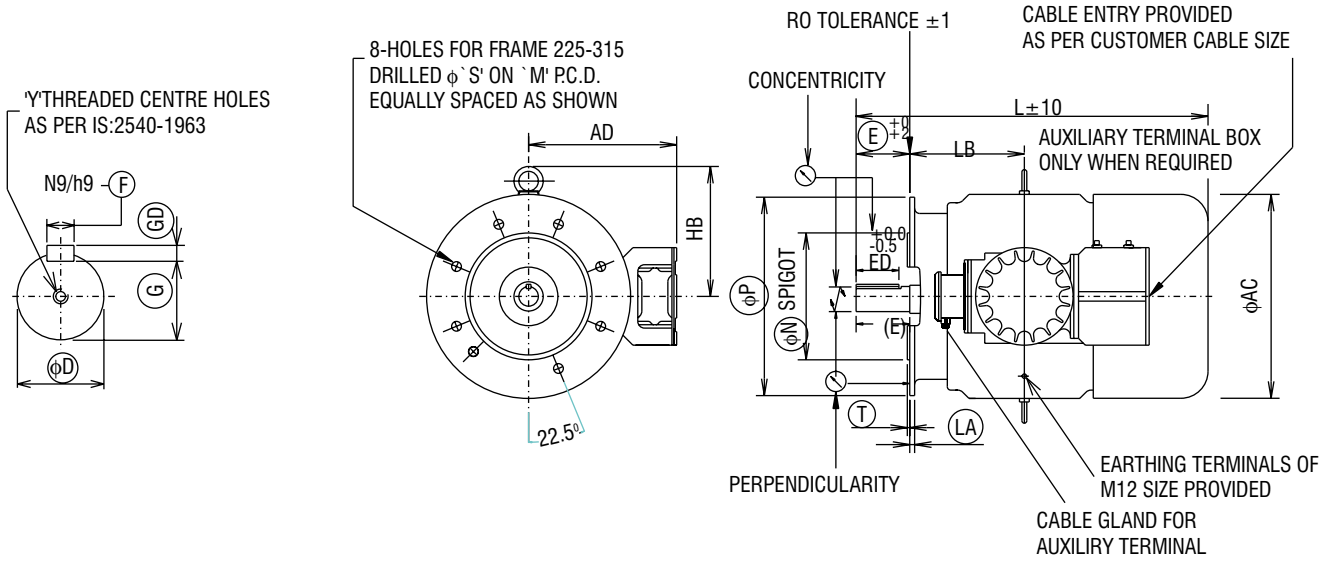
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FLANGE MOUNTED FLAME PROOF INDUCTION MOTORS (4 POLE & UP FOR ALL FRAMES & 2 POLE & UPTO ND200L)



RINGED DIMENSIONS ARE AS PER IS:2223
ALL DIMENSIONS ARE IN mm

Frame	D	E	ED	F	GD	G	Y	AD	AC	L	MTol	NTol	P	S	T	LA	LB	HB
E160L	42.018 / 42.002	110	80	12.00 / 11.957	8.00 / 7.91	37.0 / 36.8	M16X32	345	320	655	300.5/ 299.5	250.016 / 249.987	350	19	5	18	235	220
E180L	48.018 / 48.002	110	80	14.00 / 13.957	9.00 / 8.91	42.5 / 42.3	M16X32	362	370	750	300.5 / 299.5	250.016 / 249.987	350	19	5	18	261	245
E200L	55.030 / 55.011	110	80	16.00 / 15.957	10.00 / 9.91	49.0 / 48.8	M20X40	400	435	790	350.5 / 349.5	300.016 / 299.984	400	19	5	18	286	280
E225S	60.030 / 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	402	490	832	400.5 / 399.5	350.018 / 349.982	450	19	5	19	292	300
E225M	60.030 / 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	402	490	857	400.5 / 399.5	350.018 / 349.982	450	19	5	19	305	300
E250M	65.030 / 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	440	560	977	500.5 / 499.5	450.020 / 449.980	550	19	5	22	343	355
E280M	75.030 / 75.011	140	110	20.00 / 19.48	12.00 / 11.91	67.5 / 67.3	M20X40	476	620	1094	500.5 / 499.5	450.020 / 449.980	550	19	5	22	400	380
E315M	80.030 / 80.011	170	140	22.00 / 21.948	14.00 / 13.91	71.0 / 70.8	M20X40	516	705	1220	601.0 / 599.0	550.022 / 549.978	660	24	6	25	445	460

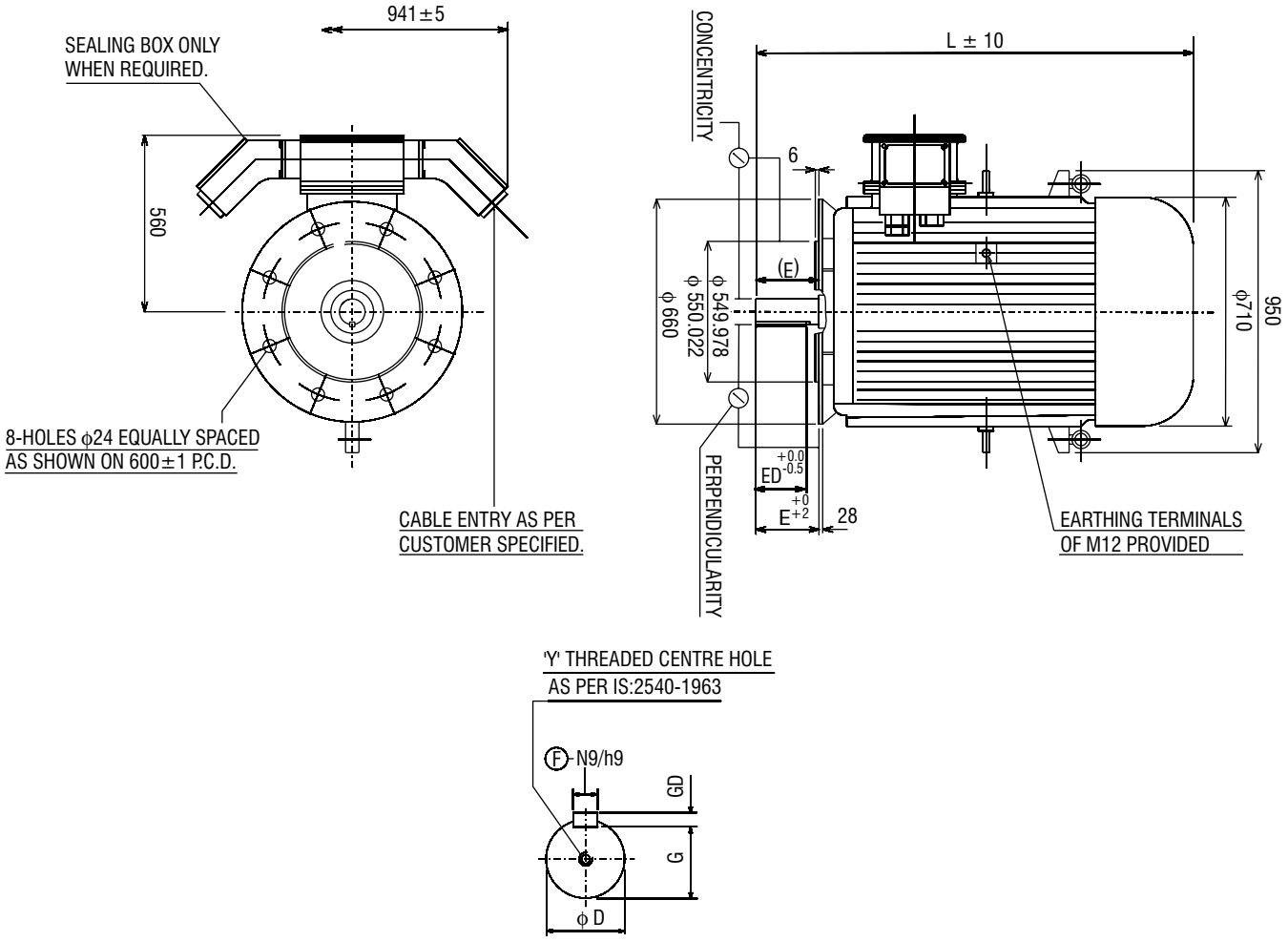
OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FLANGE MOUNTED FLAME PROOF INDUCTION MOTORS (2 POLE)



RINGED DIMENSIONS ARE AS PER IS:2223
ALL DIMENSIONS ARE IN mm

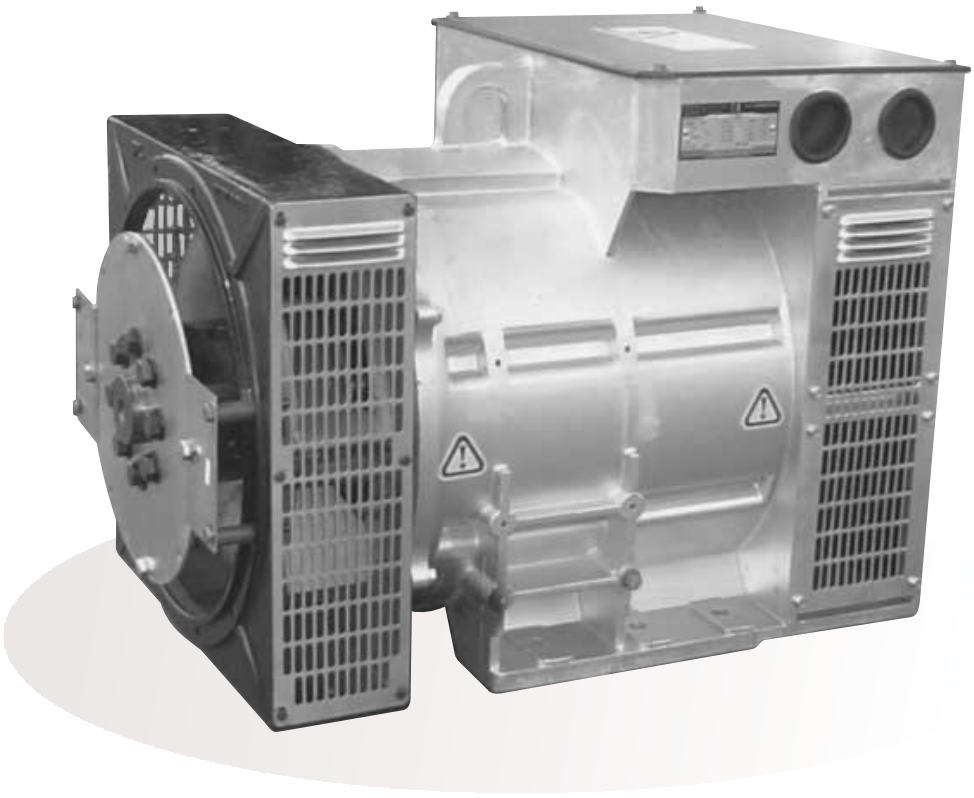
Frame	D	E	ED	F	GD	G	Y	AD	AC	L	MTol	NTol	P	S	T	LA	LB	HB
E225S	55.030 / 55.011	110	80	16.00 / 15.957	10.0 / 9.91	49.0 / 48.8	M20X40	402	490	802	400.5 / 399.5	350.018 / 349.982	450	19	5	19	292	300
E225M	55.030 / 55.011	110	80	16.00 / 15.957	10.0 / 9.91	49.0 / 48.8	M20X40	402	490	827	400.5 / 399.5	350.018 / 349.982	450	19	5	19	305	300
E250M	60.030 / 60.011	140	110	18.00 / 17.957	11.00 / 10.91	53.0 / 52.8	M20X40	440	560	977	500.5 / 499.5	450.020 / 449.980	550	19	5	22	343	355
E280M	65.030 / 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	476	620	1094	500.5 / 499.5	450.020 / 449.980	550	19	5	22	400	380
E315M	65.030 / 65.011	140	110	18.00 / 17.957	11.00 / 10.91	58.0 / 57.8	M20X40	516	705	1190	601.0 / 599.0	550.022 / 549.978	660	24	6	25	445	460

OUTLINE DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FLANGE MOUNTED FLAME PROOF INDUCTION MOTOR.(FRAME : E315L)



POLE	SHAFT AND KEY							
	D TOL.	E	ED	F TOL.	GD TOL.	G	Y	L
4P & UP	90.035/90.013	170	140	25.0/24.948	14.0/13.91	81.0/80.8	M24x50	1492
2	70.030/70.011	140	110	20.0/19.948	12.0/11.91	62.5/62.3	M20x40	1462

AC Generators



5 kVA to 625 kVA
From 132 to 355 Frame

AC Generators

Crompton Greaves AC Generators are state-of-the-art, self-excited, self-regulated and dependable source of power.

A modern integrated manufacturing facility for rotating machines, ISO 9001 certified by BVQI UK, with structured TQM and 6 SIGMA implementation and SAP/R3 enabled, also houses dedicated plant for AC Generators deploying superior techniques and processes in each specialized field of design, material specifications and procurement, CNC machining, assembly, testing & packing.... with stringent quality standards predominating throughout.

These generators incorporate advanced European Technology and are designed for optimum performance using high-end software solutions. With well-qualified engineers and technocrats, backed by a strong R & D Team, Crompton Greaves have fully harnessed long experience in design and software to offer a range of innovative, reliable and efficient AC Generators.

SPECIFICATIONS AND OPTIONAL FEATURES :

Specifications	Standard	Optional
Rated Voltage	415 V - 3 PH & 230 V - 1 PH	380, 400 - 3 Ph & 220 V - 1 Ph (Only for 160 & 200 Frame ratings i.e. 15-100 kVA) (For other ratings in consultation with Works)
Terminals	6 Leads	12 lead reconnectable only for 160 & 200 Frame Brushless alternators i.e. 15 to 100 kVA.
Voltage Regulation	± 1% (Brushless) ± 5% (Slipring)	Nil
Speed	1500 RPM	1800 RPM in consultation with Works
Direction of rotation	CW from drive end	Nil
Phase Sequence	UVW	Nil
Overspeed	1.2 times normal speed for 2 min.	Nil
Insulation Class	Class 'H' with Class 'H' Temperature rise	For Temperature rise restrictions to other class of insulation, refer to works
Type of Mounting	B3 & B2	For availability of different SAE Housings & Coupling Disc refer Table below.
Degree of Protection	IP23	Nil
Duty Rating	Continuous (S1)	Nil
Short circuit withstand capability	3 Times FLC for 3 Sec	Nil
10% Overload	1 Hour in 6 Hours	Nil
Parallel Operation Provision	>45 kVA	< 45 kVA
Harmonic Distortion Factor at NL L-L	Three Phase < 3% Single Phase < 5%	Nil
Max Unbalanced Load	Max 25%	Nil
TVD (AT FL 0.8 PF)	15-20%	Please refer for better TVD
TVR (AT FL 0.8 PF)	18-20%	Please refer for better TVR

AC Generators

SPECIAL FEATURES

- Ease of maintenance with integrated components and outboard Exciter/Rotating Rectifier.
- A reliable long life with superior class 'H' insulation.
- Higher motor starting capability.
- Compact, light and sturdy die cast aluminum stator for frames upto 250, offer superior finish.
- Specially designed compact slipring and brush assembly.
- High thyristor load withstand capability for Cell-Phone and Telecom applications.
- Short circuit withstand capability.
- Wide range of coupling discs / adaptor for single bearing construction suitable for wide range of Engine makers.

APPLICATIONS

- Industries
- Telecom, Cell-Phone Towers
- Defense
- Agriculture
- Marine.
- Hotels, Hospitals, Commercial & Residential Complexes, Petrol pumps
- Construction sites, Stone Crushers & hot Mixing plants.
- Trailer mounted mobile sets for rental markets

RANGE :

Brushless AC Generators :

- 5 kVA to 625 kVA, in 3 phase, 415 V, 50 Hz, 0.8 pf (lag) Single or double bearing.
- 5 kVA to 40 kVA in single phase, 230 V, 50 Hz, 0.8 pf (lag) Single & double bearing

Slip-Ring AC Generators :

- 5 kVA to 82.5 kVA, in 3 phase, 415 V, 50 Hz, 0.8 pf (lag) Single or double bearing.
- 5 kVA to 20 kVA in single phase, 230 V, 50 Hz, 0.8 pf (lag) Single & double bearing
- 2 Pole Alternators (both Slipring and Brushless) are available on request.

OPERATING IN DIFFERENT ENVIRONMENTS

- For use of the AC Generator at altitudes higher than 1000 m. above the sea level, it is necessary to derate by a factor of 4% for every 500 m above 1000 m
- If the ambient temperature exceeds 40 deg. C, the derating factor to be incorporated is 4% for every 5 deg. C of increase.

STANDARDS COMPLIANCE

- IEC : 34
- BS : 5000 (Part 99)
- EN : 50081
- IS : 4722 & 13364 (Part I & II) with CE mark for brushless designs.

MECHANICAL FEATURES

- Aluminium frame die - cast stator upto 250 and steel stator for higher frames.
- Sturdy cast iron endshields fixed on to the stator frame by high tensile screws.
- High quality steel shafts are amply designed to take care of overload and short circuit stressed conditions.
- Sturdy, dynamically balanced rotors are designed for withstanding the runaway engine speed and are with continuous damper cage for high performance under arduous conditions of parallel operations.
- Aluminum fans for effective cooling extends the winding life.
- Screens or louvered covers on all openings for safety.
- Easy mount SAE adaptors are offered with single bearing AC Generators to simplify coupling with popular engines.

AUTOMATIC VOLTAGE REGULATOR (AVR)

Model	Frame
SR 7/3	132 & 160 Frame
SR 7/6	200 & 250 Frame
UVR 7	250L & Above
SR 7/5	For Slipring (on request)

- Under Speed Protection with LED indicator.
- Over Excitation Protection with LED indicator
- 2 Phase sensing with Senseloss LED Indicator
- Designed for Thyristor load without additional filter circuits.
- Moulded construction for protection against shocks, vibrations and adverse atmospheric conditions.
- Parallel operation facility for SR 7/6 and UVR 7.

UNDER SPEED PROTECTION (with AVR)

Protects both the AC Generator and V/f sensitive loads. The AVR has provision for setting the frequency below which voltage dropping occurs linear to speed. This feature also enables the prime mover to recover the speed faster during motor starting

WINDING AND INSULATION SYSTEM

The armature coils of the stator main winding are made from dual coated, class 'H' copper wires, Single/Double Layer concentric fractional pitched winding offers simplicity, reduced overhangs, neat look while reducing voltage distortion and superior capability to cope with non-linear loads. The auxiliary winding in stator provides power to the AVR, improving the motor starting capability of the AC Generator.

The insulation system is class 'H'. All wound components are impregnated in an unsaturated polyester resin of 200 class temperature. The impregnation provides much needed rigidity and protection against the harsh environment, typical for the AC Generators applications

RADIO INTERFERENCE

The AC Generators are having negligible Radio Frequency Interference and meets in general the limits permitted by VDE 0875 (N)

WAVE FORMS

A.C. Generators are designed to give an excellent output wave-form. The total harmonic content of line-to-line voltage wave-form on no load is less than 5% as per the limits specified by IEC/IS Standards.

OVERLOADS

A.C. Generators are capable of delivering an overload of 10% for one hour after every six hours of running.

MOTOR STARTING DUTY

Each kVA of AC Generator is capable of starting 1 HP of Induction Motor with use of auxiliary winding except for Submersible Pump & Lift Duty applications. (Upto 200 frame slipring type only)

VIBRATION AND NOISE

CNC machining with close tolerances and repeat Accuracy for uniform air - gap and rotor dynamic balancing for low vibrations ensure efficient, smooth and silent performance.

TERMINATION

- Integral Terminal Box is provided for higher reliability.
- Top Terminal Box with side cable entry ensures wiring flexibility.
- Spacious terminal box accommodates all types, including aluminum cables

STANDARD SAE HOUSING & COUPLING DISC COMBINATION :

Frame	SAE5	SAE4	SAE3	SAE2	SAE1	SAE1/2	SAE0
132	●	●	●	●			
160	●	●	●	●			
200		●	●	●	●		
250			●	●	●		
315			●	●	●	●	
355					●	●	●
C.Disc	6.5", 7.5"	6.5", 7.5"	10", 11.5"	10", 11.5"	11.5", 14"	11.5", 14"	14", 18"

PERFORMANCE

Slipring AC Generators - Voltage Reg. ± 5%			
kVA	Frame (G2S/ G1S)	% Efficiency	
		FL	3/4 FL
3 PH, 415V, 50 Hz, 4 Pole, 1500 RPM, 0.8 pf			
5	132MR	80.8	81.6
6.5	132MR	81	82
7.5	132MA	82.5	83.5
10	132MC	83.8	84.5
12.5	132MD	84	85
15	160S1B	85	86
20	160SC	85	85.5
25	160M2A	86	86.6
30	160M2R	87	87.5
32.5	160M2R	87.5	88
35	200SE	88	88.4
40	200SE	88	89
45	200SB	89	89.5
50	200SB	88.1	89.2
55	200SB	89	89.5
63	200SD	89.2	90.1
75	200MB	90.9	92
82.5	200MD	90.3	91.2

Slipring AC Generators - Voltage Reg. ± 5%			
1 Phase, 230V, 50 Hz, 4 Pole, 1500RPM, 0.8pf			
5	132MA	76	78
6	132MC	78	79
7.5	132MD	79	80
10	160S1B	80	82.3
12.5	160SC	79.5	80.5
15	160M2A	80	81
20	200SE	81.5	82

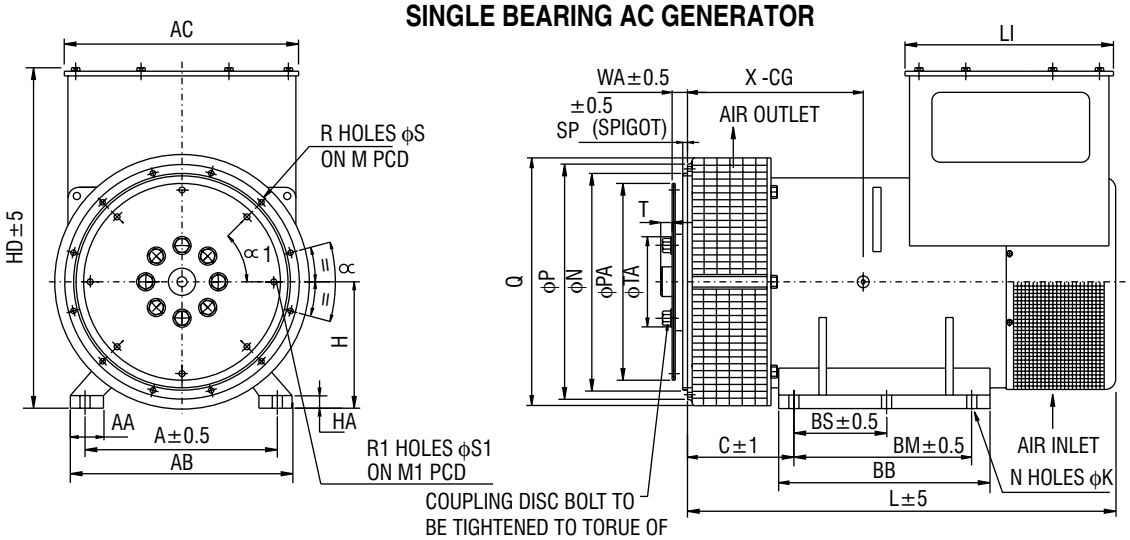
Brushless AC Generators - Voltage Reg. ± 1%			
1 Phase, 230V, 50 Hz, 4 Pole,1500 RPM, 0.8pf			
5	132MA	74.5	75.2
7.5	132MD	76.5	77
10	160S1B	78	78.5
12.5	160SB	79.5	80.5
15	160SC	80	81
20	160M2R	81	81.5
25	200SF	82	82.5
30	200SB	82.5	83.2
35	200SC	85.5	86.2
40	200SD	86	86.7

Brushless AC Generators - Voltage Reg. ± 1%			
kVA	Frame (G2R/ G1R)	% Efficiency	
		FL	3/4 FL
3 PH, 415V, 50 Hz, 4 Pole, 1500 RPM, 0.8 pf			
5	132MR	80.4	81.3
7.5	132MA	82.5	83
10	132MC	83.8	84.5
12.5	160S1A	81	81.2
15	160S1B	83.5	84.5
20	160SB	85.5	86.1
25	160SC	86.9	87.5
30	160M2A	88.5	89
32.5	160M2R	88.2	88.9
35	200SE	87.9	88.4
40	200SE	88.1	88.8
45	200SA	89	89.7
50	200SB	88.5	89.2
55	200SB	89.5	90.2
63	200SC	90.6	90.9
75	200MB	90.9	92
82.5	200MD	90.5	91.2
90	200MDX	91.5	92
100	250SB	90.8	91.2
110	250SD	92.5	93
125	250SD	92.3	92.8
140	250MA	92.3	92.8
150	250MB	92.3	92.9
160	250MB	92.5	93
180	250LB	92.9	93.6
200	250LD	93.1	93.7
225	315SE	93.3	93.8
250	315SE	93.2	93.9
275	315SA	93.4	93.2
285	315SA	93.6	93.7
300	315SB	94.1	93.8
320	315SB	94	94.1
350	315MB	94	93.8
380	315MB	94.2	94.1
400	355SB	94.4	94.6
437.5	355SB	94.1	94.7
475	335SC	94.2	94.9
500	355SE	94.4	95
550	355ME	94.6	95.1
625	355MA	94.9	95.4

Note: 1. The efficiency figures are subject to the tolerance as per IS: 13364 (Part II & I).

2. Continuous development of products entitles us to change specification details without notice.

REPRESENTATIVE OUT-LINE DIMENSION DRAWING FOR SINGLE BEARING AC GENERATOR



G1R:-BRUSHLESS TYPE SINGLE BRG. ALTERNATOR
G1S:-SLIPRING TYPE SINGLE BRG. ALTERNATOR

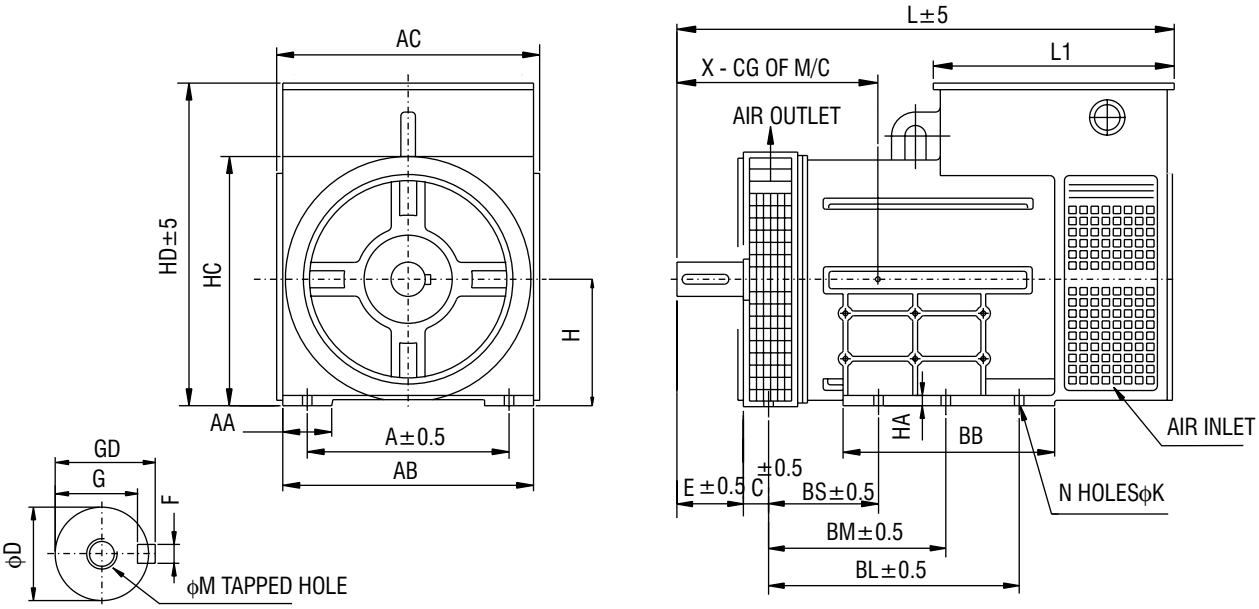
DIMENSIONS in Milimeters

FRAME	M/C WT.(Kg)		A	AA	AB	AC	BB	BS	BM	C	SP	T	TA	H	HA	HD		N	ϕK	L		L1	X
	G1R	G1S														G1R	G1S			G1R	G1S		
132 MR	70	70	206	56	256	272	122	-	56	380	5	12	165	132.0 131.5	12	365		4	12	550	520	296	284
132 MA	77	77																					299
132 MC	86	86																					322
132 MD	94	94																					339
160 S1A	112	--	254/279	60	340	297	335	40	70	145	5	17	62	160.0 159.5	16	385	430	6	15	462		262	175
160 S1B	122	122																					190
160 S2C	132	--					350										--			507			200
160 SB	131	--	270	70	340	350	196	30	95	263	5	17	52	160.0 159.0	16	418		6	15	548		300	190
160 SC	141	132																					200
160 MC	132	--					225	95	--									4		567			225
160 M2A	154	145					277	110	--											617			270
160 M2R	164	--																					280
200 SE	162	152	340	75	410	424	220	--	120/125	238	5	17	62	200.0 199.5	20	510		4	19	590		350	200
200 SF	169	--																					205
200 SA	213	--					225			363		12	165							716			280
200 SB	232	219																					300
200 SC	246	--																					315
200 SD	260	247																					330
200 MB	296	--					325	110	230/235	353								6		816			345
200 MD	335	322																					370
250 SB	350	--	420	90	510	530	305	116	216	SAE 2,3=308	6	18	165	250.0 249.5	20	625		6	19	750		376	315
250 SD	411									SAE 1=322.2													330
250 MA	441									SAE 2,3=378										820			370
250 MB	480									SAE 1=392.2													400
250 LB	506									SAE 2,3=458										900			415
250 LD	550									SAE 1=472.2													435
315 SE	719	--	508	75	570	640	525	228.5	457	242	6	21	237	315.00 314.50	20	850		6	28	975		415	380
315 SA	853																			1080			460
315 SB	953																						480
315 MB	1029																			1180			520
355 SB	1114	--	610	75	670	685	570	250	500	297	6	21	237	355.0 354.5	20	940		6	28	1135		560	445
355 SC	1287																			1240			570
355 SE	1353																						590
355 ME	1587																			1340			580
355 MA	1607																						620

SAE No	FLANGE								COUPLING DISC SAE
	ϕ N	ϕ P	M	Q		R	ϕ S	∝	
				315	355				
5	314.3	356	333.4	-	-	8	11	45°	6.5"-7.5"
4	362	405	381.0	-	-	12	11	30°	6.5"-7.5"-10"
3	409.6	450	428.6	-	-	12	11	30°	10"-11.5"
2	447.7	490	466.7	620	-	12	11	30°	10-11.5"
1	511.18	553	530.4	620	708	12	12.5	30°	11.5"-14"
1/2	584.1	648	619.0	680	715	12	14	30°	14"-18"
0	647.7	712	679.5	-	715	12*	14	22.5°	14"-18"

SAE No	COUPLING DISC					
	ϕ PA	M1	R1	ϕ S1	∝1	WA
6 1/2"	215.9	200.0	6	9	60°	30.2
7 1/2"	241.3	222.3	8	9	45°	30.2
10"	314.32	295.3	8	11	45°	53.8
11 1/2"	352.42	333.4	8	11	45°	39.6
14"	466.72	438.2	8	13.5	45°	25.4
18"	571.4	543.0	6	16.7	60°	15.87

REPRESENTATIVE OUT-LINE DIMENSION DRAWING FOR DOUBLE BEARING AC GENERATOR



G2R:-BRUSHLESS TYPE DOUBLE BRG. ALTERNATOR
G2S:-SLIPRING TYPE DOUBLE BRG. ALTERNATOR

DIMENSIONS in Milimeters

FRAME	M/C WT.(Kg)		A	AA	AB	AC	BB	BS	BM	BL	C	ϕD	E	F	G	GD	H	HA	HC	HD		N	ϕK	L		L1	ϕM	X
	G2R	G2S																		G2R	G2S			G2R	G2S			
132 MR	70	70	206	56	256	272	122	316	372	--	45	ϕ38.018 ϕ38.002	80	10	33.0 32.8	41.0 40.8	132.0 131.5	12	260	365		6	12	611	581	296	M12	284
132 MA	77	77																										299
132 MC	86	86																										322
132 MD	94	94																										339
160 S1A	112	--	254	60	340	297	335	79	119	149	66	ϕ48.018 ϕ48.002	110	14	42.5 42.3	51.5 51.3	160.0 159.5	16	323	385	430	8	15	570		262	M16	335
160 S1B	122	122	279																									350
160 SB	131	--	270	70	340	350	196	197	227	292	66	ϕ48.018 ϕ48.002	110	14	42.5 42.3	51.5 51.3	160.0 159.5	16	323	418		8	15	658		300	M16	350
160 SC	141	132																										360
160 MC	152	--					225		292	--												6		677				380
160 M2A	154	145					277		307	--														727				380
160 M2R	164	--																										390
200 SE	162	152	340	75	410	424	220	155	275	-	57	ϕ60.030 ϕ60.011	140	18	53.0 52.8	64.0 63.8	200.0 199.5	20	403	510		6	19	705		350	M20	335
200 SF	169	--							280																			340
200 SA	213	--					225	280	400	-														830				400
200 SB	232	219							405																			420
200 SC	246	--																										435
200 SD	260	247																										450
200 MB	296	--					325	270	380	500												8		930				495
200 MD	335	322								505																		520
250 SB	350	--	420	90	510	530	305	225	341	441	66	ϕ70.030 ϕ70.011	140	20	62.5 62.3	74.5 74.3	250.0 249.5	20	510	625		8	19	885		376	M20	425
250 SD	411																											450
250 MA	441							295	411	511														955				465
250 MB	480																											520
250 LB	506							375	491	591														1035				535
250 LD	550																											555
315 SE	719	--	508	75	570	640	525	228.5	457	-	216	ϕ80.030 ϕ80.011	170	22	71.0 70.8	85.0 84.7	315.00 314.50	20	620	850		6	28	1150		415	M20	380
315 SA	853																							1220				460
315 SB	953																											480
315 MB	1029																							1320				520
355 SB	1114	--	610	75	670	685	570	250	500	-	254	ϕ95.035 ϕ95.013	170	25	86.0 85.8	100 99.8	355.00 354.50	20	706	940		6	28	1255		560	M24	555
355 SC	1287																							1360				660
355 SE	1353																											690
355 ME	1587																							1460				710
355 MA	1607																											750

High Speed Brushless Alternators (5 kVA - 30 kVA)

Rating Chart :

2 Pole, 3000 RPM Brushless Alternator

Voltage Regulation ±1%, IP21/23, B3 Mounting, 40 Deg. C Amb.

Brushless Alternator : 1 Phase, 230V

kVA	FRAME SIZE	EFFICIENCY	
		75%	100%
5.0	G2R 132MR/2	73.3	72.3
6.0	G2R 132MA/2	76.2	75.1
7.5	G2R 132MC/2	78.1	77.2
10.0	G2R 160S1A/2	79.0	78.3
12.5	G2R 160SB/2	79.1	78.5
15.0	G2R 160SC/2	79.8	79.3

Rating Chart :

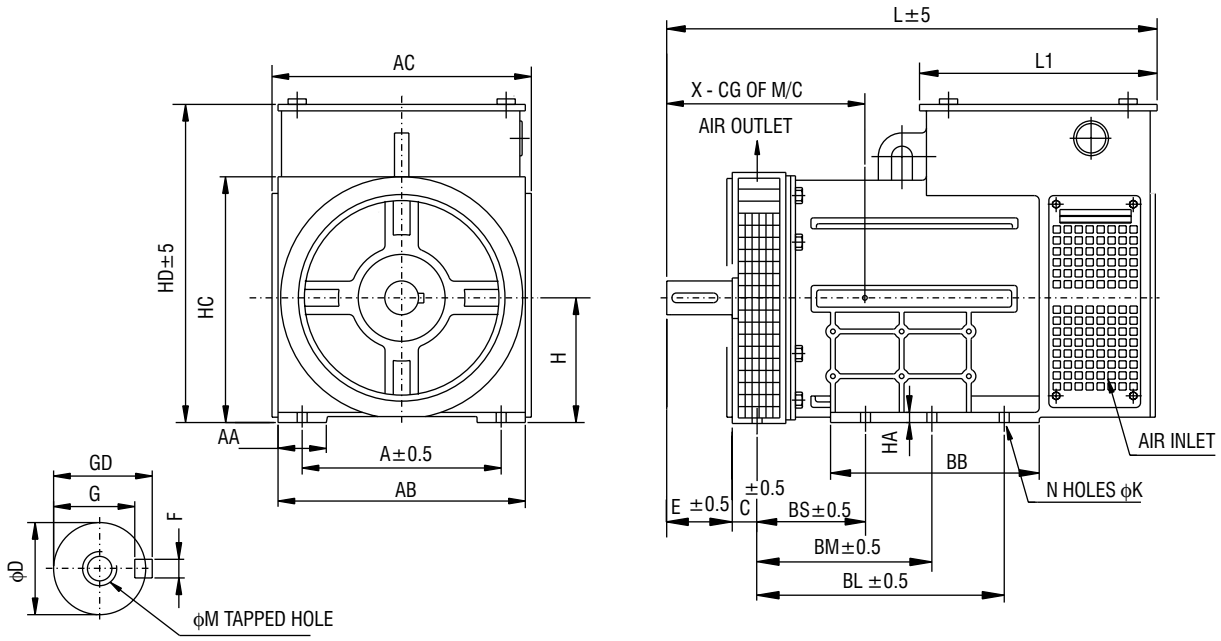
2 Pole, 3000 RPM Brushless Alternator

Voltage Regulation ±2.5%, IP21/23, B3 Mounting, 40 Deg. C Amb.

Brushless Alternator : 3 Phase, 415V

kVA	FRAME SIZE	EFFICIENCY	
		75%	100%
5.0	G2R 132MR/2	76.0	75.6
7.5	G2R 132MA/2	79.2	78.1
10.0	G2R 132MC/2	80.2	81.9
12.5	G2R 132MD/2	82.2	81.8
15.0	G2R 160S1A/2	84.5	84.0
20.0	G2R 160SB/2	85.8	85.2
25.0	G2R 160SC/2	87.2	86.5
30.0	G2R 160M2A/2	87.4	86.8

REPRESENTATIVE OUT-LINE DIMENSION DRAWING FOR DOUBLE BEARING AC GENERATOR (2 POLE, BRUSHLESS)



DIMENSIONS in Milimeters

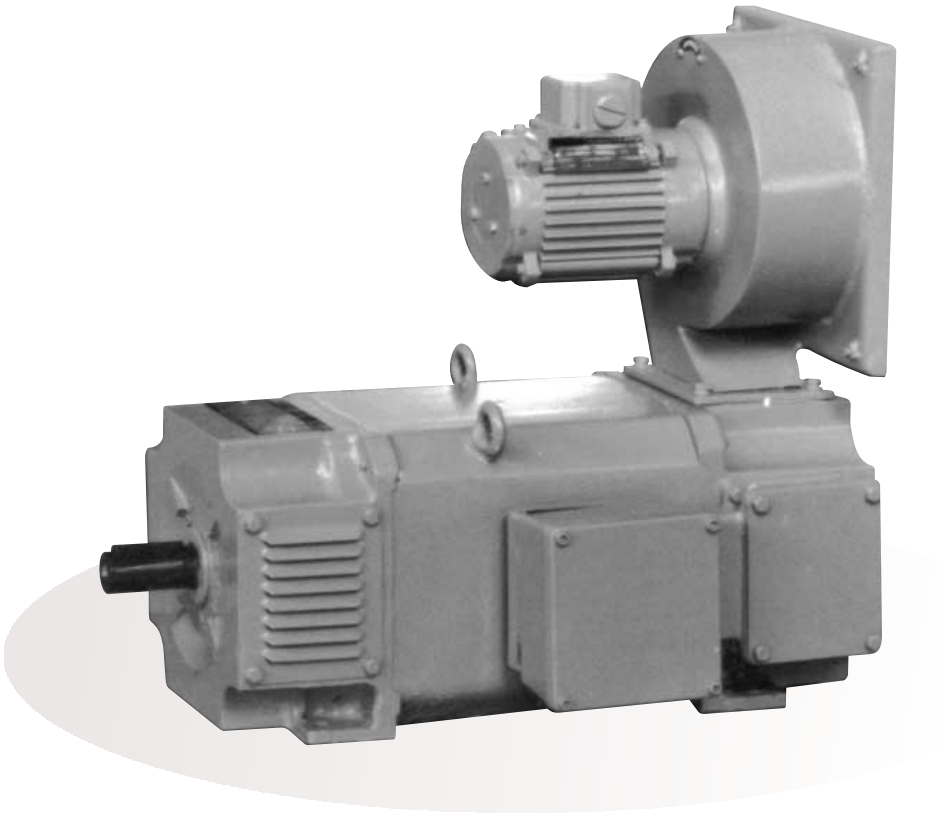
FRAME	WT. (KG)	A	AA	AB	AC	BB	BS	BM	BL	C	ϕD	E	F	G	GD	H	HA	HC	HD	N	ϕK	L	L1	ϕM	X
132 MR	70	206	56	256	272	122	316	372	--	45	ϕ38.018 ϕ38.002	80	10	33.0 32.8	41.0 40.8	132.0 131.5	12	260	365	6	12	611	296	M12	284
132 MA	77																								299
132 MC	86																								322
132 MD	94																								339
160 S1A	112	254/279	60	340	297	335	79	119	149	66	ϕ48.018 ϕ48.002	110	14	42.5 42.3	51.5 51.3	160.0 159.5	16	323	385	8	15	570	260	M16	335
160 SB	131	270	70	340	350	196	197	227	292	66	ϕ48.018 ϕ48.002	110	14	42.5 42.3	51.5 51.3	160.0 159.5	16	323	418	8	15	658	300	M16	350
160 SC	141																								360
160 M2A	154					277		307												6		727			380

NOTE :- Option in Single Bearing Alternator

FRAME	FLANGE SAE NO.	DISC SAE NO.
132/160/160S1	2	10" - 11.5"
	3	
	4	6.5" - 7.5"
	5	

Note : Continuous development of products entitles us to change specification details without notice.

DC Motors



2.5 kW to 550 kW
From 100 to 315 Frame

DC Motors

INTRODUCTION

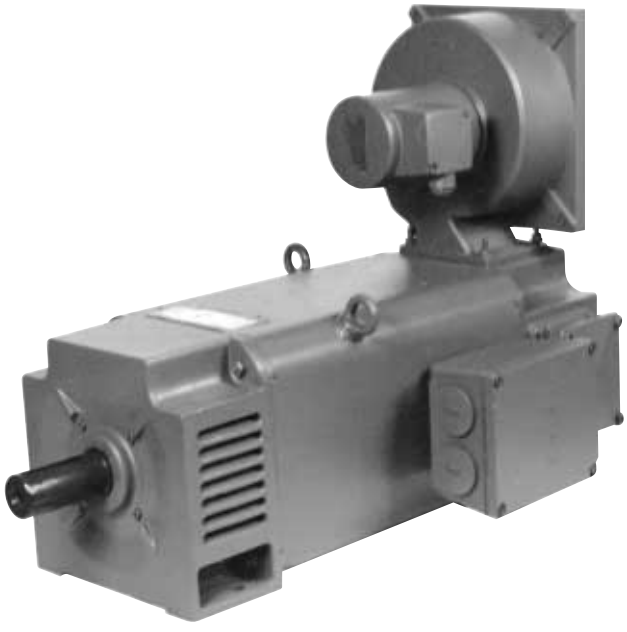
Crompton Greaves Ltd, a name synonymous with rotating machines have DC Motors Technology inherited from SIEMENS, Germany, the pioneer and world leader in DC Motors. Today, Crompton Greaves offers an entire range of world class DC Motors.

The motors are manufactured at Crompton Greaves Ltd. Ahmednagar factory, an ISO accredited set up having state - of - the - art manufacturing facilities. The high quality standards maintained in manufacturing and testing give superior electrical and mechanical features - making the motors most suitable for operating in tropical environments.

The Ahmednagar factory - manufacturing DC Motors

SPECIAL FEATURES

- Fully laminated yoke construction offering excellent commutation - suitable for 6 pulse thyristor power supply
- Skewed Rotor construction - ensuring low noise
- Vacuum pressure impregnation for armature winding - ensuring high insulation strength
- High dynamic response



Laminated Yoke DC Motor manufactured at Ahmednagar

- Compact, low weight and highly energy efficient
- Larger size of bearings - for longer life and trouble free operations
- Constant / uniform pressure brush holders
- Easy fitting and retro-fitting of filters

APPLICATIONS

- Plastic Extruders
- Printing Machines
- Steel Rolling Mills and Wire Rod Mills
- Sugar Industry
- Textile Mills
- Apron Feeders
- Machine Tools
- Rubber Industry
- Cement Mills
- Cable Industry
- Paper Mills
- Material Handling

Aux Mill Duty DC Motors as per IPSS/AISE Standards are also manufactured

SPECIFICATIONS

Laminated Yoke Construction Range :

Output : 2.5 kW to 550 kW

Frames : ASBG 100 to ASBG 315

DESIGN PARAMETERS	STANDARD	OPTIONAL
ARMATURE VOLTAGE	440 V	MAX. 470 V UPTO FRAME 132, MAX. 600 V ABOVE FRAME 160
FIELD VOLTAGE	220 V	MAX. UPTO 500 V
EXCITATION TYPE	SHUNT	SERIES, COMPOUND
INSULATION	CLASS 'F' UPTO 132 CLASS 'H' ABOVE 160	CLASS 'H'
TYPE OF MOUNTING	B3	B35, V1, V3
DEGREE OF PROTECTION	IP 23	IP 54 WITH IC 37 (HEAT EXCHANGER)
ARRANGEMENT OF T. BOX	RHS FROM DE SIDE	ANY OTHER ARRANGEMENT
TACHO MTG. PROVISION	DTG 4000	ANY OTHER
TYPE OF MOUNTING OF BLOWER	TOP ON NDE SIDE	ANY OTHER LOCATION
AIR FLOW DIRECTION	FROM NDE TO DE	FROM DE TO NDE
AIR FILTER	NIL	DRY TYPE FILTER (RECOMMENDED FOR DUSTY ENVIRONMENT)
AIR FLOW SWITCH	NIL	VENTCAPTOR AIR FLOW MONITOR
BEARINGS	BALL BEARINGS	ROLLER BEARING ON DE SIDE
SHAFT END	WITH KEYWAY, BALANCING WITH FULL KEY	DOUBLE SHAFT EXTENSION WITHOUT TACHO MOUNTING ARRANGEMENT
SPACE HEATER	NIL	230 V, 1 PH
THERMISTER	NIL	FOR TRIP. FOR ALARM AND TRIP
PAINT FINISH	631 OF IS:5	PRIMER ONLY / ANY OTHER SHADE

BRUSH LIFETIME

FRAME	TIME IN Hrs.
Upto 160	15000
180	14000
200	12500
225	11000
250	11000
280	11000

BRUSH MATERIAL, COMMUTATION :
Practically sparkless commutation with converter feeding, even under overload conditions is achieved. As a result, the brushes have an extremely long life.

FORCED COOLING DETAILS

FRAME	COOLING AIR FLOW IN m^3/sec	REQUIRED PRESSURE HEAD IN miliBar
ASBG 100	0.06	5
ASBG 112	0.07	5
ASBG 132	0.09	5
ASBG 160	0.20	13
ASBG 180	0.30	13
ASBG 200	0.35	13
ASBG 225	0.50	16
ASBG 250	0.60	16
ASBG 280	0.75	16

The blowers of DC Motors have three phase motors with wide range of winding and supply voltages. The blower motors are selected strictly in accordance with the air quantity required and ensures cool running of motors under the specified operating loads / overloads. The terminal box of blower motors are easily assessible.

FILTER MOUNTING :
A dry type air filter can be mounted or retro-fitted on all the DC Motors without derating.

NOISE LEVEL

FRAME	MEASURING SURFACE SOUND PRESSURE LEVEL IN dB(A)*
100	<70 dB
112	<70 dB
132	<70 dB
160	<75 dB
180	<75 dB
200	<75 dB
225	<85 dB
250	<85 dB
280	<85 dB

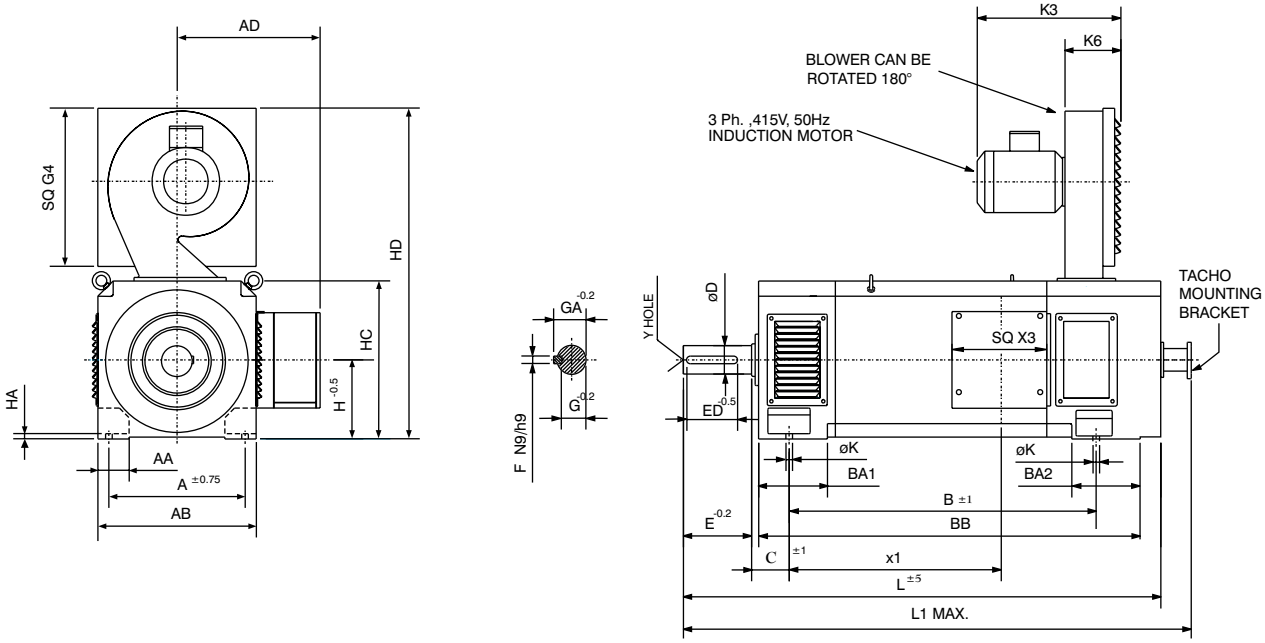
The noise levels of the motors have been calculated in accordance with DIN EN 21 680 and are well below the values permitted by EN 60034 - 9.
They have been achieved both by means of design measures and by optimising the magnetic circuit and the separately driven fans.

**** At No Load, with blower ON, with thyristor supply***

TECHNICAL DATA

RATED OUTPUT IN KW AT 1500 RPM	FRAME	RATED TORQUE IN Nm	RATED ARM. CURRENT	EFFICI-ENCY	FIELD POWER IN watt	MAX. FIELD WEAKENING SPEED	MAX. SAFE MECH. SPEED	MOMENT OF INERTIA IN kg-m^2	WEIGHT IN kg
2.5	ASBG100S	16	7.7	67	330	3350	5000	0.016	50
3.7	ASBG100M	24	11.2	70	330	3250	5000	0.02	61
5.5	ASBG100L	35	16	74	440	3100	5000	0.025	76
7.5	ASBG112M	48	21	78	363	3750	4500	0.042	115
11	ASBG132S	70	31	77	616	2400	4500	0.09	125
15	ASBG132M	95	41	80	616	2400	4500	0.11	145
18.5	ASBG132L	118	48.2	83	968	2200	4500	0.14	170
22.5	ASBG132L	143	59	84	968	2200	4500	0.14	170
30	ASBG160A	191	78	83	1694	3000	4000	0.29	290
40	ASBG160S	255	105	84	1232	2350	4000	0.32	320
56	ASBG160M	356	147	85	1254	1950	4000	0.38	365
60	ASBG160L	382	158	85	1474	3000	4000	0.46	428
70	ASBG180S	446	176	88	2310	3400	3500	0.6	460
80	ASBG180S	509	201	88	2310	3300	3500	0.7	520
100	ASBG180M	637	253	88	2376	3300	3500	0.7	520
115	ASBG200S	732	291	88	2420	2800	3000	1.2	610
125	ASBG200M	796	312	89	2640	3500	3000	1.3	690
135	ASBG200M	859	337	89	2640	3300	3000	1.3	690
150	ASBG200M	955	374	90	2640	3100	3000	1.3	690
158	ASBG200M	1006	394	90	2640	3100	3000	1.3	690
160	ASBG225S	1018	400	89	2860	2460	3000	2.2	880
180	ASBG225S	1146	441	91	2860	2650	3000	2.5	990
210	ASBG225M	1337	513	92	3190	2320	3000	2.5	990
225	ASBG225M	1432	552	91	3190	2320	3000	2.5	990
235	ASBG250S	1496	571	92	3300	2250	2500	3.6	1160
270	ASBG250S	1719	658	92	3300	2025	2500	3.6	1160
280	ASBG250S	1782	682	92	3300	1980	2500	3.6	1160
295	ASBG250S	1878	719	92	3300	1980	2500	3.6	1160
325	ASBG250M	2069	790	93	3520	1990	2500	4.2	1320
400	ASBG280S	2546	965	93	4752	1710	2500	6.4	1560
450	ASBG280M	2864	1080	94	4180	1710	2500	7.5	1780

DIMENSIONS



FRAME		SHAFT EXTENSION DETAILS							FOOT HOLE DIMENSIONS										OVERALL DIMENSIONS						BLOWER DIMENSIONS		
	H	D	F	G	GA	E	ED	Y	A	AA	AB	B	BA1	BA2	BB	C	HA	K	AD	HC	HD	X1	L	L1	K3	K6	G4
ASBG 100S	100	28	8	24	31	60	50	M10X24	160	40	198	257	60	60	290	63	9	12	190	200	445	120	460	535	235	100	220
ASBG 100M												305			340							170	505	580			
ASBG 100L												369			405							230	570	650			
ASBG 112S	112	38	10	33	41	80	70	M12X28	190	40	220	340	100	60	420	70	10	12	220	222	470	230	585	655	235	100	220
ASBG 112M												400			480							275	645	715			
ASBG 132S	132	42	12	37	45	110	90	M16X32	216	45	258	320	125	75	425	89	11	12	245	260	545	175	640	710	240	100	255
ASBG 132M												370			475							225	690	760			
ASBG 132L												430			535							285	750	820			
ASBG 160A	160	60	18	53	64	140	125	M20X42	254	55	316	530	140	125	630	70	12	14	305	318	680	245	785	852	355	120	310
ASBG 160S												590			690							305	845	915			
ASBG 160M												660			760							375	915	985			
ASBG 160L												750			850							465	1005	1075			
ASBG 180S	180	65	18	58	69	140	125	M20X40	279	65	360	600	110	130	730	121	14	15	350	360	740	370	1020	1085	475	185	350
ASBG 180M												670			800							440	1090	1155			
ASBG 200S	200	70	20	62.5	74.5	140	125	M20X40	318	80	400	645	120	185	815	133	18	19	370	400	780	390	1090	1160	475	185	350
ASBG 200M												725			895							470	1170	1240			
ASBG 225S	225	80	22	71	85	170	140	M20X40	356	85	450	735	140	200	925	149	18	19	430	450	980	475	1290	1355	550	215	430
ASBG 225M												825			1015							565	1380	1445			
ASBG 250S	250	90	25	81	95	170	140	M24X50	406	95	500	785	150	240	1015	168	22	24	455	500	1030	530	1420	1490	530	215	430
ASBG 250M												885			1115							630	1520	1590			
ASBG 280S	280	95	25	86	100	170	140	M24X50	457	100	560	850	160	230	1100	190	22	24	485	560	1090	585	1500	1565	530	215	430
ASBG 280M												960			1210							695	1610	1675			

Note : For Nonstandard motor, refer to Works.

AUX MILL DUTY D.C. MOTORS TO AISE/IPSS STANDARDS

Crompton Greaves Ltd., a name synonymous with rotating machines backed by its long proven expertise in the field of DC motors offers the entire range of state of art Auxiliary Mill Duty 800 series DC motors in frames 802 to 818 from 7.5 kW at 900 RPM to 187 kW at 435 RPM to AISE/IPSS Standards.

These motors are very rugged, reliable and suitable for steel mills or like applications.

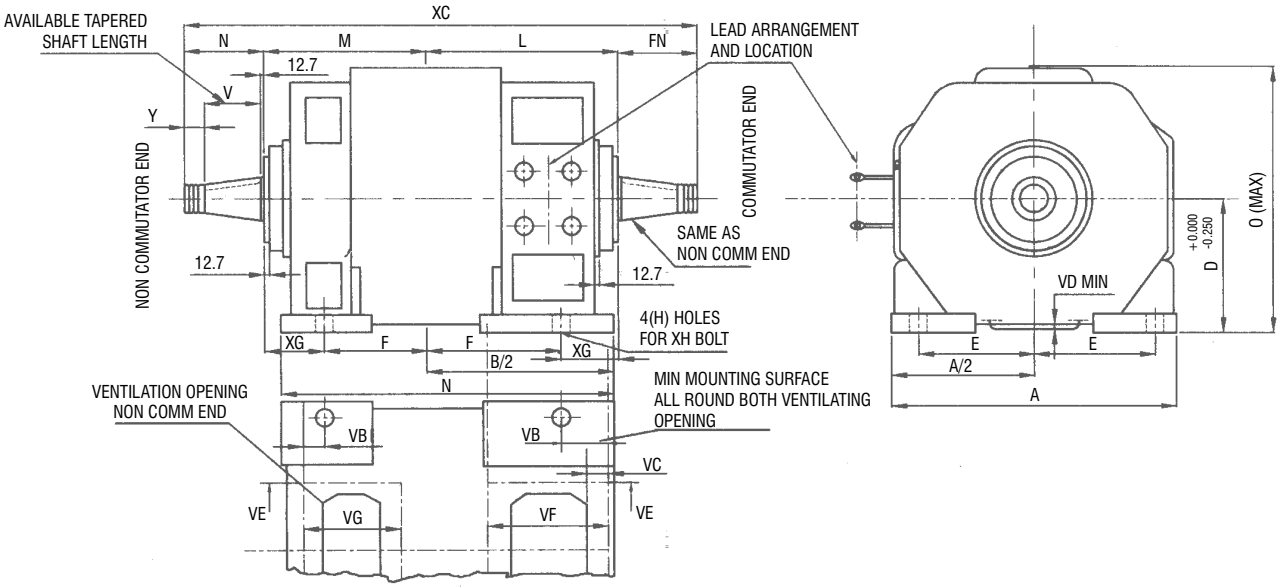
818, 816, 814, 812, 810, 808, 806, 804, 803 & 802 frames are manufactured at CGL, LT Motors Division, Ahmednagar (Lam yoke DC motor frames 100 to 280 are also manufactured here). M3 Division is accredited with **ISO 9001 Certification** by BVQI for Quality Management System.

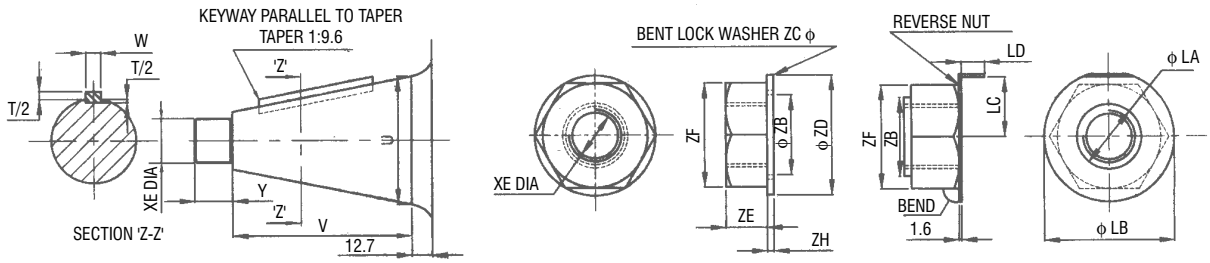
SALIENT FEATURES

- Conforming to AISE technical report no. 1-1991 / IPSS 1-03-002-94.
- Full speed, half speed and quarter speed designs available.
- Suitable for operations upto 500 volts.
- Suitable for operation on 3 phase, 6 pulse thyristor converter.
- Class 'H' insulation with class 'F' temperature rise limits.
- Armature class 'H' with VPI in solventless polyesterimide resin.
- TIG welding of armature coil connection to commutator.
- Split / Non split yoke without compensating winding or non split laminated yoke with compensating winding. However split yoke is preferred for 808 & above frames and compensating type for 812 & above frames.
- Replaceable shaft.
- Double shaft extension 1:9.6 taper with key way paralle to taper as per AISE or 1:10 taper with key way parallel to shaft axis as per IPSS.
- Convertible between TENV & TEFV enclosure or with top mounted blower unit.
- Loose hanging leads or terminal box as required.
- Axial play of 3 mm approximately of shaft.
- Brush position of 45 deg. for easy access for maintenance (except in case of laminated yoke version).
- Motor mounting dimension can be matched to replace 600 series motors to AISE or Russian standard.

STANDARD DATA OF MILL DUTY FRAMES 802 TO 818 AS PER AISE TECH REPORT 1

FRAME	kW RATING FORCED VENTILATED CONTINUOUS TENV ONE HOUR	BASE SPEED (RPM) AT 230V			ADJUSTABLE SPEED	SAFE SPEED (MECH) RPM	ROTOR GD SQ KGM SQ	APPROX TOTAL WEIGHT KG
		SHUNT	COMP	SERIES				
802C	7.5	900	900	800	900 / 1800	3600	0.8	300
803	11	800	800	725	800 / 2000	3300	1.5	400
804	15	725	725	650	725 / 1800	3000	2.6	500
806	22	650	650	575	650 / 1950	2600	4.5	700
808	37	575	575	525	575 / 1725	2300	8	900
810	52	550	550	500	550 / 1650	2200	15	1200
812	75	515	515	475	515 / 1300	1900	23	1600
814	112	500	500	460	500 / 1250	1700	36	2200
816	150	480	480	450	480 / 1200	1600	56	3000
818	187	435	435	410	435 / 1100	1500	85	3700





FRAME SIZE	A	B	XC	D	E	F	XG	H	XH	L M	O
802	381	520.7	835.02	193.68	158.75	209.55	92.25	24	M20	304.8	400
803	431.8	596.9	939.8	215.9	177.8	228.6	114.3	28	M24	342.9	445
804	457.2	647.7	990.6	228.6	190.5	241.3	127	28	M24	368.3	470
806	508	698.5	1073.15	254	209.55	266.7	127	28	M24	393.7	521
808	577.9	793.8	1206.5	285.75	238.13	314.32	130.17	35	M30	444.5	584
810	622.3	825.5	1276.36	311.15	260.35	330.2	146.05	35	M30	476.25	635
812	685.8	914.4	1397	339.73	285.75	361.95	158.75	35	M30	520.7	692
814	762	1054.1	1543.05	374.65	317.5	406.4	184.15	42	M36	590.55	762
816	825.5	1187.45	1714.5	406.4	342.9	444.5	215.9	42	M36	660.4	829
818	914.4	1263.65	1793.88	450.85	381	495.3	203.2	48	M42	698.5	918

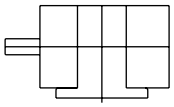
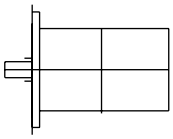
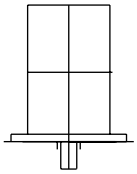
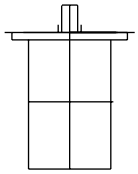
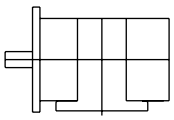
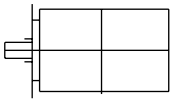
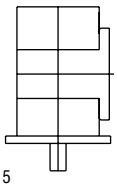
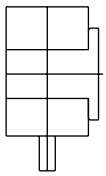
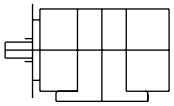
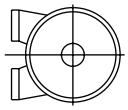
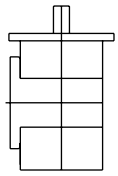
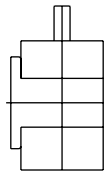
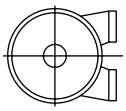
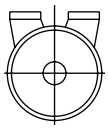
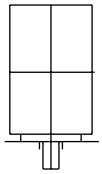
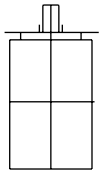
SHAFT					KEY			SHAFT NUT AND LOCK WASHER					
N FN	U	V	Y	XE	WIDTH	THK	ZB	ZC	ZD	ZE	ZF	ZG	ZH
112.71	44.45	69.85	30.16	M30X2	12.7	12.7	35	36	58.2	22	48	6	4.5
127	50.8	82.55	31.75	M36X3	12.7	12.7	41	42	68.2	24	55	7	5.5
127	50.8	82.55	31.75	M36X3	12.7	12.7	41	42	68.2	24	55	7	5.5
142.87	63.5	95.25	34.93	M42X3	12.7	12.7	47.5	48	75	27	65	7	5.5
158.75	76.2	107.95	38.1	M48X3	19.05	12.7	51.5	52	83	30	75	8	6.5
161.93	82.55	107.95	41.28	M56X4	19.05	12.7	59.5	60	91	32	85	8	6.5
177.8	92.075	120.65	44.45	M64X4	19.05	12.7	71.5	72	103	36	95	8	6.5
180.96	107.95	120.65	47.63	M80X4	25.4	19.05	89.5	90	121	40	115	8	6.5
196.85	117.475	133.35	50.8	M90X4	31.75	19.05	99.5	100	131	632	130	8	6.5
198.44	127	146.05	39.69	M100X4	31.75	25.4	109.5	110	141	40	145	8	6.5

VENT DUCT FLANGE						SURFACEBEND LOCK PLATE				BEARING NO. (BOTH SIDE)
VB	VC	VD	VE	VF	VG	LA	LB	LC	LD	
22.2	9.5	9.5	184.2	120.7	55.6	31.5	63.5	25.4	6.4	NJ310
44.5	12.7	9.5	215.9	127	82.6	37.5	73	28.5	8	NJ311
57.2	12.7	9.5	228.6	139.7	69.9	37.5	73	28.5	8	NJ313
54	12.7	9.5	260.4	152.4	85.7	43.5	92.1	31.8	14.3	NJ315
50.8	12.7	19	292.1	165.1	88.9	49.5	109.5	38.1	16.7	NJ317
54	12.7	19	304.8	177.8	92.1	57.5	120.7	41.3	19	NJ319
63.5	15.9	19	349.3	209.6	123.8	65.5	127	47.6	15.9	NJ321
85.7	15.9	19	387.4	235.0	139.7	81.5	149.3	56.3	18.3	NJ324
114.3	25.4	19	406.4	279.4	168.3	91.5	165.5	66.7	15.9	NJ326
98.4	25.4	19	457.2	304.8	180.98	101.5	171.5	66.7	19	NJ328

Notes :

1. Shaft Extension threading can be of inch series on request.
2. Terminal Box can be provided on request.
3. Motors with force cooling unit or heat exchangers also can be given on request.
4. Generally conform to A.I.S.E. STD.1. Can be given to I.P.S.S.1-03-002-94 standard also.
5. Laminated type of construction can be offered on request (with blower or without blower.

MOUNTING ARRANGEMENTS

HORIZONTAL		VERTICAL	
 MOUNTING : B3 HORIZONTAL FOOT MOUNTING	 MOUNTING : B5 HORIZONTAL FLANGE MOUNTING	 MOUNTING : V1 VERTICAL FLANGE SHAFT DOWNWARD	 MOUNTING : V3 FLANGE, VERTICAL SHAFT UPWARD
 MOUNTING : B35 FOOT CUM FLANGE MOUNTING	 MOUNTING : B14 HORIZONTAL FACE MOUNTING	 MOUNTING : V15 FOOT cum FLANGE VERTICAL SHAFT DOWNWARD	 MOUNTING : V5 FOOT, VERTICAL SHAFT DOWNWARD
 MOUNTING : B34 FOOT CUM FACE MOUNTING	 MOUNTING : B6 FOOT, WALL MOUNTING (LEFT VIEWING FROM DE)	 MOUNTING : V36 FOOT cum FLANGE VERTICAL SHAFT UPWARD	 MOUNTING : V6 FOOT, VERTICAL SHAFT UPWARD
 MOUNTING : B7 FOOT, WALL MOUNTING (RIGHT VIEWING FROM DE)	 MOUNTING : B8 CEILING FOOT MOUNTING	 MOUNTING : V18 FACE, VERTICAL SHAFT DOWNWARD	 MOUNTING : V19 FACE, VERTICAL SHAFT UPWARD

REFERENCE, IS:2253

* For installation of foot mounted motor on the wall, additional support must be provided.

Drives

0.25 kW to 1200 kW

CG Drive-SK

Vector control compact Invertors

Simple to Use…Compact to Fit….Power to perform

The CG DRIVE SK is an easy drive to connect, easy to configure & easy to install. CG-SK is a compact footprint with space saving feature. Reliable & productive with exceptional motor performance as you would expect from Crompton Greaves drives. Dynamic performance that exceeds expectations.

Range : - 0.25kW 45kW

Power Supply : S200 V class / 400 V Class

> 0.25kW to 2.2 kW Single Phase Input / Three Phase Output

> 0.37 kW to 45 kW Three Phase Input / Three Phase Output

*Marks: CE, UL, cUL, CSA

Features :

- Open-loop vector control, speed or torque control Automatic no spin auto tune for rapid performance optimization.
- Output frequency 1500Hz
- Speed reference input 0-10V, 0-20mA, 4-20mA (-10V to +10V SM I/O lite option)
- Switching frequency from 3Khz to 18Khz quite motor operation
- Modbus RTU RS485 via RJ45 connector is standard
- DC injection braking as standard
- Dynamic braking transistor as standard
- Energy saving with dynamic motor flux V/Hz
- 8 preset speeds available
- Keypad access to all parameters- basic & advanced menus
- IP20 protection degree as standard
- Electromagnetic Immunity compliance with EN61800-3 & EN618003-6-3&4

Replace PLC :

The CG Drive SK establishes its dominant status in simple general purpose drives providing a level of performance & flexibility not found in any other low cost, open loop AC drive. It is the first economical drive that a user can add PLC functionality into, to save both space & cost on system. The Logic Stick & the SyPTLite programming software can be used to replace a nano or micro PLC, or to replace relays & timers.

Functions :

- Add PLC functionality
- Off-line self-tuning: of speed-current-flux regulators and motor data identification
- On-line self-tuning: motor parameters compensation according to the temperature variations
- Simplified Start-up menu
- Instantaneous Overload up to 150 %
- Motor and Drive thermal protection
- Flying restart function

Options :

- Smart stick Parameters can be copied from one drive to another.
- Logik Stick helps to add required memory space to operate PLC functions.
- SK Key pad plus Multilanguage display.
- Additional EMC filters.
- I/O modules
- Serial cables
- Operator interface options

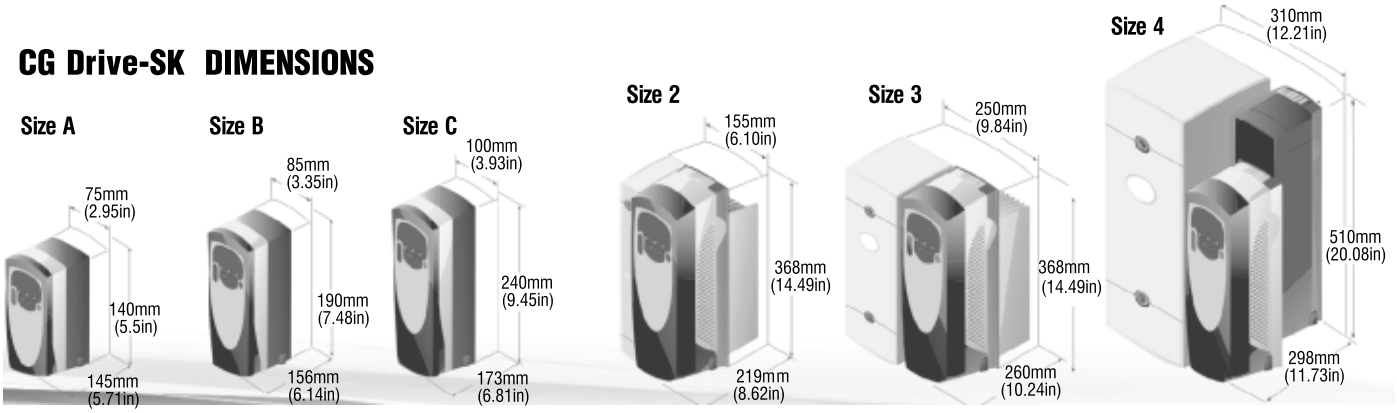
CG Drive-SK ORDER CODES

380 / 480 VAC +/- 10% 3 phase		Normal Duty			Heavy Duty		
Order Code	Size	Max Continuous Current (A)	Typical Output (kW)	Motor Power (HP)	Max Continual Current (A)	Typical Output (kW)	Motor Power (HP)
CGK4300037	B				1.3	0.37	0.5
CGK4300055	B				1.7	0.55	0.75
CGK4300075	B				2.1	0.75	1
CGK4300110	B				2.8	1.1	1.5
CGK4300150	B				3.8	1.5	2
CGK4300220	C				5.1	2.2	3
CGK4300400	C				9	4	5
CGK4300750	2	15.3	7.5	10	13	5.5	7.5
CGK4301100	2	21	11	15	16.5	7.5	10
CGK4301500	2	29	15	20	25	11	15
CGK4301850	2				29	15	20
CGK4302200	3	43	22	30	40	18.5	25
CGK4303000	3	56	30	40	46	22	30
CGK4303700	4	68	37	50	60	30	40
CGK4304500	4	83	45	60	74	37	50

200 / 240 VAC +/- 10% 1 phase		Normal Duty			Heavy Duty		
Order Code	Size	Max Continuous Current (A)	Typical Output (kW)	Motor Power (HP)	Max Continual Current (A)	Typical Output (kW)	Motor Power (HP)
CGK2100025	A				1.7	0.25	0.33
CGK2100037	A				2.2	0.37	0.5
CGK2100055	A				3	0.55	0.75
CGK2100075	A				4	0.75	1
CGK2D00110	B				5.2	1.1	1.5
CGK2D00150	B				7	1.5	2
CGK2D00220	C				9.6	2.2	3

Normal Duty	For applications which use self-ventilated induction motors and require a low overload capability (e.g. fans, pumps)
Heavy Duty	150% overload current for 60 s. For constant torque applications which require a high overload capability (e.g. cranes, hoists).

CG Drive-SK DIMENSIONS



CG Drive-SG

Range: - 5.5kW 200kW

Field-oriented vector inverter, from 0.75 to 630kW

- Power supply 3ph :
  - 230V 15%…480V +10% 50/60Hz ±5%
  - 575V ±10% 50/60Hz ±5%
  - 690V ±10% 50/60Hz ±5%
- Rectified voltage supply version up to 480V +10% 50/60Hz ±5%
- Motor ratings from 0,75kW (0,75Hp) to 630kW
- Marks: CE, UL, cUL, CSA

Features :

- Output frequency 500Hz
- Integrated braking module up to 55kW
- Speed feedback with closed loop through encoder (Optional)
- Digital I/O commands in PNP and/or NPN logic
- 3 differential analog inputs ± 10V
- 2 analog outputs (±10V)
- 8 digital inputs
- 4 digital outputs (2 opto-coupled and 2 relays)
- Programmable Overload up to 150% (IEC 146-1-1 Class 1 and Class 2)
- RS485 serial port (Modbus RTU protocol)
- LED display key pad (optional LCD)
- Interfacing with the more common field bus protocols: ProfiBus - CANopen - DeviceNet
- IP20 protection degree as standard (Option IP54 with external heatsink)

Functions:

- Motor parameters self-tuning
- Programmable & predefined V/F curves
- Simplified Start-up menu
- Instantaneous Overload up to 150 %
- Auto capture function (Flying Restart)
- Motor thermal protection
- 4 independent programmable Multi-ramp (“linear” and “S”types)
- PID block function
- Skip frequencies
- Programmable autorestart
- Energy saving function
- Mains loss detection with controlled stop and/or energy optimization
- Virtual and Remote I/O management
- Internal Links with logical/mathematical functions

Options :

- I/O expansion cards, configurable according to the customer's machine needs
- Expansion cards for the management of auxiliary encoders (Incremental - Absolute - Resolver)
- Field-bus interface cards on board or in “stand alone” configuration: ProfiBus , CANopen, DeviceNet
- Dedicated EMC filters (in compliance with CEE - EN61800-3:2004)
- Braking resistors (standardized for the whole line)
- Input and Output chokes (standardized for the whole line)
- NEMA 1 type kit
- Remote keypad kit

Selection Chart:
Rating Table

Model No.	CGG-……4	2055	2075	3110	3150	4185	4220	4300	4370	5450	5550	6750	7900	71100	71320	81600	82000
200 V Class																	
Recommended	kW	3	4	5.5	7.5	10	11	18.5	22	22	30	37	55	55	75	90	100
Motor Capacity	HP	4	5	7.5	10	10	15	25	30	30	40	50	75	75	100	125	125
Output	Rated Current (A)	12.6	17.7	24.8	33	39	47	63	79	93	114	142	185	210	250	324	400
	Over load current capacity(5)	136% for 60 Seconds															
Recommended	kW	3	4	5.5	7.5	9	11	15	18.5	22	30	37	45	55	55	90	100
Motor Capacity	HP	4	5	7.5	10	10	15	20	25	30	40	50	60	75	75	100	125
Output	Rated Current (A)	11.5	16.1	22.5	30	35	43	57	72	85	104	129	168	191	227	295	364
	Over load current capacity(5)	150% for 60 Seconds															
400 V Class																	
Recommended	kW	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	200
Motor Capacity	HP	7.5	10	15	20	25	30	40	50	60	75	100	125	150	175	200	250
Output	Rated Current (A)	12.6	17.7	24.8	33	39	47	63	79	93	114	142	185	210	250	324	400
	Over load current capacity(5)	136% for 60 Seconds															
Recommended	kW	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	200
Motor Capacity	HP	7.5	10	15	20	25	30	40	50	60	75	100	125	150	175	200	250
Output	Rated Current (A)	11.5	16.1	22.5	30	35	43	57	72	85	104	129	168	191	227	295	364
	Over load current capacity(5)	150% for 60 Seconds															
Input AC Power Supply	Rated voltage frequency	3 Phase, 400 VAC, 50/60 Hz															
	Tolerable Voltage Fluctuation	230V-15%...480V+10%															
	Tolerable frequency fluctuation	+/-5%															
Overvoltage Threshold		440 Vdc (for 230 Vac mains), 820 Vdc(for 400 V ac mains)															
Undervoltage Threshold		230Vdc(for 230 Vac mains), 380 Vdc(for 400 v ac mains)															
Protection Class		IP20 (NEMA1 Optional)															
Maximum Braking Torque %		150	150	150	150	150(3)	150(3)	150(3)	150(3)	150(3)	150(3)	(4)	(4)	(4)	(4)	(4)	(4)
Approximate weight (kg)		4.95	4.95	8.6	8.6	18	18	22	22.2	34	34	59	75.4	80.2	86.5	109	109

CG Drive-SV

Range : - 0.75 kW 1200 kW

Field-oriented vector inverter, from 0.75 to 1200 kW

- Power supply 3ph:
  - 230V 15%…480V +10% 50/60Hz ±5%
  - 690V ±10% 50/60Hz ±5%
- Rectified voltage supply version up to 480V +10% 50/60Hz ±5%
- Motor ratings from 0,75kW (0,75Hp) to 1200kW
- Marks: CE, UL, cUL, CSA

Features :

- Regulation control modes:
  - Flux Vector closed-loop with feedback
  - Flux Vector open-loop without feedback (Sensorless)
- Output frequency 400Hz
- Integrated braking module up to 15kW, integrated as option up to 55kW
- Alphanumeric programming keypad
- Digital I/O commands in PNP and/or NPN logic
- 3 differential analog inputs ± 10V
- 8 digital inputs
- 4 digital outputs (2 opto-coupled and 2 relays)
- Programmable Overload up to 200% (IEC 146-1-1 Class 1 and Class 2)
- RS485 serial port (Modbus RTU protocol)
- Interfacing with the more common field bus interfaces: ProfiBus - CANopen - DeviceNet
- IP20 protection degree as standard (drive predisposition for mounting in IP54 with external heatsink)

The CGSV series represents an innovative field-oriented vector inverter concept, capable of incorporating the needs of OEMs, systems integrators and panel builders in order to make them more innovative and competitive in international markets.

Thanks to its advanced functions, high level of precision and ultimate performance, CGSV is at the cutting edge of any application area where maximum motor performance and regulating sophisticated control architectures are an absolute must.

CGSV is extremely adaptable to every technical requirement of state-of-the-art process and control systems, not to mention that its extensive range and a series of specialised configurations successfully guarantee virtually universal automation solutions.

Standard versions (CGSV …-4A)

- Power supply 3ph 230V 15%…480V +10% 50/60Hz ±5%
- Motor ratings from 0,75kW (0,75Hp) to 315kW (450Hp)

Standard versions (CGSV…-6)

- Power supply 3ph: 690V ±10% 50/60Hz ±5%
- Motor ratings from 75kW to 1200kW
- DC bus power supply versions
- Protection degree IP00 and IP23 Cabinet versions (CGSV Cabinet)
- Power supply 3ph: 400V 15%…480V +10% 50/60Hz ±5%, 690V ±10% 50/60Hz ±5%
- Motor ratings from 90 kW to 1200 kW
- Standard protection degree IP23/IP54 (higher on request)
- Marks: CE

Functions :

- Off-line self-tuning: of speed-current-flux regulators and motor data identification
- On-line self-tuning: motor parameters compensation according to the temperature variations
- Torque control: with OR built-in function, for the gradual commutation between speed and torque regulators
- Simplified Start-up menu
- Instantaneous Overload up to 200 %
- Motor and Drive I2t thermal protection
- Multispeed function (7 programmable preset)
- 5 independent programmable Multi-ramp (“linear” and “S”types)
- Motorpotentiometer function
- Flying restart function
- Droop function
- Double motor parameters setting
- PID block function
- Mains loss detection managed through controlled stop and/or energy optimization
- Virtual and Remote I/O management
- Internal Links with logical/mathematical functions

Options :

- I/O expansion cards, configurable according to the customer's machine needs
- Expansion cards for the management of auxiliary encoders (Incremental - Absolute - Resolver)
- Field-bus interface cards on board or in “stand alone” configuration: ProfiBus , CANopen, DeviceNet
- Programmable Application Card
- Safety cards for the power output bridge disabling (UNI IN 954-1 category 3)
- Dedicated EMC filters (in compliance with CEE - EN61800-3:2004)
- Braking resistors (standardized for the whole line)
- Input and Output chokes (standardized for the whole line) NEMA 1 type kit
- Remote keypad kit

Please see CG Drive Catalogue for selection chart.

Northen Region Sales Office :

New Delhi :
Vandana, 11, Tolstoy Marg, New Delhi - 110 001
Phones : (011) 30416300

Jalandhar :
416-417, 3rd Floor, Prestige Chambers,
GT Road, Jalandhar - 144 001
Phones : (0181) 3240990

Lucknow :
Saran Chambers II, 3rd Floor, 5 Park Road,
Lucknow - 226 001
Phones : (0522) 3018850

Jaipur :
Church Road, P. O. Box. No. 173, Jaipur-302 001
Phones : (0141) 3018800

Eastern Region Sales Office :

Kolkata :
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Bhubaneshwar :
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Ashok Nagar, Unit II,
Bhubaneshwar - 751 009
Phones : (0674) 2531128

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Kanjur Marg (E), Mumbai-400 042.
Phones : (022) 67558000

Ahmedabad :
909-916, Sakar II, Near Ellis Bridge Police Station,
Ahmedabad - 380 006
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Jangali Maharaj Road, Pune 5.
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5, New Tilak Nagar, Near Sai Care Hospital,
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Shanmugham Road, Ernakulum,Cochin - 682 031.
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4th Floor, Minerva House, 94, Sarojini Devi Road,
Secunderabad - 500 003.
Phones : (040) 40002300

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East : 21, R.N.Mukherjee Road, Kolkata-700 001. Phones: (033) 22489160.

West : Kanjur Marg (E), Mumbai 400 042. Phones : (022) 67558590.

South : 3A, MGR Salai, Kodambakkam High Road, Nungambakkam, Chennai-600 034. Phones : (044) 23651369.

NOTE : As the design and manufacture of Crompton Greaves electrical equipment are subject to constant improvement,, the product supplied may differ in some details from the specifications and illustrations given in this booklet.
For more details, contact Works.

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LT Motors Division

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Goa Works :
S-14/15, Colvale Industrial Estate, Colvale, Bardez, Goa - 403 513.
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