

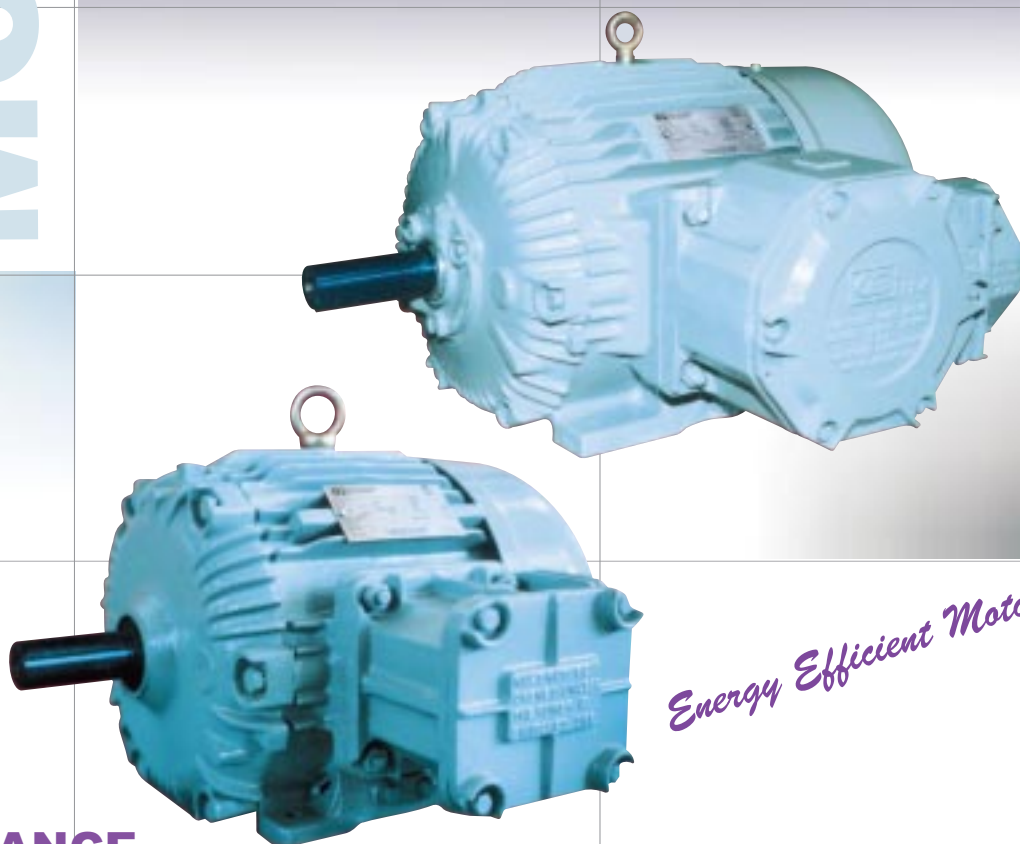
FLAME PROOF MOTORS

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Ex d

Group I, IIA, IIB & IIC

FRAME 80 TO 315
LOW TENSION TEFC MOTORS



Energy Efficient Motors

**QUALITY WITH
GLOBAL ACCEPTANCE**

CG Crompton
Greaves

EVERYDAY SOLUTIONS

Dear Customer,

We were the first in India to introduce flameproof and increased safety motors for application in hazardous areas. These motors have been exhaustively tested and certified by CMRI, DGMS and CCE enabling their use for all applications in hazardous areas in the country. In keeping with our tradition of concern for the safety needs & our pioneering status, we have obtained approval from BASEEFA & ATEX for our entire range of flameproof motors, thus ensuring that our range of flameproof motors can be used globally without any geographical limitations whatsoever. Also a complete range of motors suitable for gas group IIc is now available.

Further, in pursuance of our culture of continuous improvement towards customer satisfaction, we have also incorporated the latest designs ensuring better electrical performance as well as versatility in mechanical features. The standard motors offered are in compliance with eff2 level of proposed revision to IS12615 in India as well as CEMEP standards prevalent in Europe. These features have given the necessary impetus to the long cherished ambition of being a global player in motor industry. We take great pleasure in issuing this booklet with the relevant information.

LT motors division designs & manufactures a multifirmity of Electric Motors (DC&AC) and Alternators with manufacturing units at Ahmednagar & Goa. This division, which is part of the CG Motors SBU, is a dedicated team of professionals who along with the state-of-the-art technology, provide reliable and trouble free products and services on the basis of superior mechanical & product design.

The company's operations include R&D, manufacturing, marketing and turnkey projects in clearly defined core business areas, at home and overseas. Over the last six decades, unparalleled growth has seen CG emerge as a professionally managed organisation, with a workforce of 6500 employees, including more than 2500 professionals. With 20 manufacturing units and Centralized Support Services, CG offers a comprehensive and multi-faceted product range nationally, through strategically located branches and a well-appointed distributor / dealer network. Structured into Strategic Business Units comprising synergistic groups of responsibility centers (divisions), CG is well on the road to exceeding the extracting standards of Quality and Customer Service.

FLAMEPROOF
MOTORS

THE WIDEST AVAILABLE RANGE

SQUIRREL CAGE MOTORS

0.37 kw to 200 kw (Frames E 80 to E 315 L)

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°C/75°C. Higher Amb. upto 60°C on request.
- **TEMPERATURE CLASS** : T4
- **DEGREE OF PROTECTION** :
IP 54 - E80-E132 M
E 225 M to E/EW 315 L
(IP55 with canopy can be offered.)
IP55 - Frame E 160L to E 200 L.
- CMRI/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) IEC34 -1
Performance for Mines	IS 3682
Dimensions - Foot -	IS 1231 IEC72-1
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 (squirrel 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 slipping motors.
16. Space heaters, thermisters.
17. Multispeed motors.
18. Double /taper/non standard shaft extension
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 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 - 315 M with following advantages.
 - Inherently IP 55.
 - Spaciously designed for accomodating bigger cables.
 - Double decker terminal arrangement for easy termination of two cables.
 - Anti loosening terminal arrangement (E160-315 frames only)
- For slipping 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 (E160-315 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	6309-2Z	6309-2Z
E180	6310-2Z	6310-2Z
E200	6312-2Z	6312-2Z
E225	6313-2Z	6313-2Z
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

STATUTORY APPROVALS

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

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 CMRI, Dhanbad.

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

	CMRI	DGMS	CCE	DGFAS & LI	GROUP SUITABILITY
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 E/EW 250 M	√	√	√	√	I, II A, IIB.
E/EW 280 M E/EW 315 M/L	√	√	√	√	I, IIA, IIB.

BASEEFA
Δ
Δ
II A, II B ONLY *
II A, II B ONLY *
II A, II B ONLY *
II A, II B ONLY *

√ AVAILABLE Δ Pending for approval.

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

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

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

CABLE TERMINATION

CABLE SIZE REFERENCE CHART

FRAME SIZE	MAX. CABLE SIZE				TERMINAL STUD			
	GROUP I - COPPER inch ²		GROUP II - AL. mm ²		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 185	6	M10	M8	M6
E 315 L	0.25	2X0.25 Double Sealing Box 2X0.06 Single Sealing Box	240	2 x 240 Double Sealing Box 2 x 120 Single Sealing Box	6	M14	M8	M8
					3	M16		
EW250 M STATOR ROTOR	0.25	NA	185 95	NA	3	M10	M8	M6
					3	M8		
EW280-EW 315 M STATOR ROTOR	0.25	NA	185 185	NA	3	M10	M8	M6
					3	M10		
EW 315 L STATOR ROTOR	0.25	NA	240 185	NA	3	M16	M8	M8
					3	M10		

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 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 315 L)
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	-	-	-	-

PERFORMANCE DATA FOR THREE PHASE TEFC FLAMEPROOF SQUIRREL CAGE INDUCTION MOTORS (45°C Ambient)

OUTPUT		P O L E	FRAME SIZE	FL SPEED RPM	FL CURRENT AMPS	EFFICIENCY			POWER FACTOR			DOL STG.		GD SQ. KGM ²
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	0.47	68.0	64.0	57.0	0.79	0.72	0.61	250	650	0.003
		4	E80	1400	0.51	70.0	66.0	59.0	0.70	0.64	0.58	200	500	0.007
		6	E80	950	0.70	58.0	50.0	40.0	0.62	0.52	0.40	220	450	0.011
		8	E90L	680	0.73	60.0	56.0	48.0	0.57	0.50	0.40	180	400	0.024
0.25	0.33	2	E80	2850	0.65	68.0	64.0	57.0	0.79	0.72	0.61	250	650	0.003
		4	E80	1395	0.71	70.0	66.0	59.0	0.70	0.64	0.58	200	500	0.007
		6	E80	930	0.93	60.0	50.0	40.0	0.62	0.52	0.40	220	450	0.011
		8	E90L	670	1.02	60.0	56.0	48.0	0.57	0.50	0.40	180	400	0.024
0.37	0.50	2	E80	2820	0.85	72.0	71.0	65.0	0.82	0.76	0.68	225	550	0.003
		4	E80	1410	0.95	73.5	72.5	69.5	0.74	0.70	0.66	225	500	0.007
		6	E80	910	1.00	69.0	68.0	66.0	0.71	0.63	0.52	210	400	0.011
		8	E90L	680	1.35	64.0	63.5	62.0	0.60	0.53	0.48	175	400	0.024
0.55	0.75	2	E80	2820	1.30	73.0	72.0	68.0	0.81	0.73	0.62	250	600	0.003
		4	E80	1410	1.25	77.0	76.0	74.0	0.78	0.75	0.64	200	500	0.007
		6	E80	910	1.50	69.0	68.0	66.0	0.71	0.63	0.52	210	400	0.011
		8	E90L	685	1.70	72.0	71.0	68.0	0.63	0.55	0.45	175	400	0.034
0.75	1.00	2	E80	2820	1.60	77.0	76.0	73.0	0.85	0.80	0.72	250	600	0.003
		4	E80	1410	1.70	77.0	76.0	74.0	0.78	0.75	0.64	200	500	0.007
		6	E90L	925	2.00	72.0	72.0	70.0	0.70	0.62	0.52	230	400	0.024
		8	E100L	700	2.20	72.0	71.0	68.0	0.65	0.58	0.48	175	400	0.038
1.10	1.50	2	E90L	2830	2.30	78.0	76.0	73.0	0.85	2.00	0.72	230	650	0.010
		4	E90L	1415	2.60	77.0	76.0	74.0	0.76	0.70	0.62	225	500	0.018
		6	E90L	925	2.85	74.0	68.0	64.0	0.70	0.62	0.52	180	500	0.034
		8	E100L	700	3.25	72.0	69.0	68.0	0.65	0.58	0.48	175	400	0.050
1.50	2.00	2	E90L	2850	3.10	80.0	79.0	75.0	0.85	0.80	0.72	230	600	0.010
		4	E90L	1415	3.25	80.0	79.0	77.0	0.80	0.75	0.70	200	550	0.025
		6	E100L	945	3.50	80.0	79.0	77.0	0.74	0.65	0.56	200	500	0.038
		8	E112M	715	3.80	78.0	77.0	75.0	0.70	0.64	0.55	225	500	0.130
2.20	3.00	2	E90L	2850	4.30	82.0	81.0	79.0	0.87	0.83	0.74	250	600	0.014
		4	E100L	1430	4.50	82.0	81.0	78.0	0.83	0.78	0.70	225	600	0.040
		6	E112M	945	5.10	80.0	79.0	77.0	0.75	0.70	0.60	200	500	0.106
		8	E132M	715	5.10	81.0	80.0	78.0	0.73	0.66	0.59	200	400	0.300
3.70	5.00	2	E100L	2850	7.00	84.0	83.0	81.0	0.88	0.84	0.75	250	600	0.029
		4	E112M	1450	7.40	83.0	81.0	70.0	0.80	0.75	0.69	200	600	0.099
		6	E132M	945	7.50	85.0	84.0	82.0	0.80	0.76	0.72	200	500	0.205
		8	E132M	700	8.70	81.0	80.0	78.0	0.73	0.66	0.59	200	400	0.340
5.50	7.50	2	E112M	2900	10.40	84.0	83.0	81.0	0.88	0.84	0.75	250	650	0.045
		4	E132M	1450	10.60	86.0	85.0	84.0	0.84	0.81	0.73	250	600	0.227
		6	E132M	945	11.00	85.0	84.0	82.0	0.81	0.77	0.73	200	500	0.330
		8	E160L	710	12.5	83.0	82.5	80.0	0.74	0.70	0.62	175	500	0.65
7.50	10.00	2	E132M	2900	14.00	85.0	84.0	82.0	0.88	0.85	0.80	250	650	0.108
		4	E132M	1450	14.50	87.0	86.0	85.0	0.84	0.81	0.73	225	600	0.269
		6	E160L	965	15.5	86.0	85.5	84.0	0.78	0.74	0.66	175	600	0.65
		8	E160L	710	16.0	84.0	83.5	81.0	0.78	0.74	0.66	175	500	0.55
9.3	12.5	2	E160L	2910	16.5	87.7	87.2	85.7	0.90	0.86	0.78	225	600	0.29
		4	E160L	1475	17.5	88.0	87.5	86.0	0.85	0.81	0.73	200	600	0.53
		6	E160L	965	19.0	88.0	87.5	86.0	0.78	0.74	0.66	175	600	0.77
		8	E180L	725	19.0	88.0	87.0	85.0	0.78	0.74	0.66	200	500	1.70
11.0	15.0	2	E160L	2910	19.5	88.4	87.5	86.4	0.90	0.86	0.78	225	600	0.29
		4	E160L	1475	20.0	89.0	88.5	87.0	0.85	0.81	0.73	200	600	0.53
		6	E160L	965	22.0	88.5	88.0	86.5	0.79	0.75	0.67	175	600	0.86
		8	E180L	725	22.0	88.0	87.5	86.0	0.78	0.84	0.66	200	500	1.70
15.0	20.0	2	E160L	2910	26.0	89.4	88.9	87.4	0.90	0.86	0.78	225	600	0.27
		4	E160L	1475	28.0	90.0	89.5	88.0	0.85	0.81	0.73	225	600	0.70
		6	E180L	975	28.0	89.5	88.5	87.0	0.84	0.80	0.72	225	600	1.69
		8	E200L	735	34.0	88.5	88.0	86.5	0.70	0.66	0.58	175	500	2.90

PERFORMANCE DATA FOR THREE PHASE TEFC FLAMEPROOF SQUIRREL CAGE INDUCTION MOTORS

OUTPUT		P O L E	FRAME SIZE	FL SPEED RPM	FL CURRENT AMPS	EFFICIENCY			POWER FACTOR			DOL STG.		GD SQ. KGM ²
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	2910	31.0	90.0	89.5	88.0	0.92	0.88	0.80	225	650	0.37
		4	E180L	1470	32.0	91.0	90.5	89.0	0.89	0.85	0.77	225	600	1.11
		6	E200L	975	34.0	91.0	90.5	89.0	0.84	0.80	0.72	200	600	2.50
		8	E225S	725	39.0	89.0	88.5	87.0	0.75	0.71	0.63	175	500	3.30
22.0	30.0	2	E180L	2940	37.0	90.5	88.0	86.0	0.92	0.88	0.80	225	600	0.64
		4	E180L	1470	38.0	91.0	90.5	89.0	0.89	0.85	0.77	250	600	1.35
		6	E200L	975	40.0	91.0	90.5	89.0	0.84	0.80	0.72	200	600	2.86
		8	E225M	725	46.0	89.0	88.5	87.0	0.75	0.71	0.63	175	500	3.90
30.0	40.0	2	E200L	2950	50.0	91.4	88.0	86.0	0.94	0.90	0.82	225	650	1.48
		4	E200L	1480	51.0	92.0	91.5	90.0	0.89	0.85	0.77	250	600	2.33
		6	E225M	975	56.0	91.5	91.0	89.5	0.82	0.78	0.70	200	600	3.70
		8	E250M	735	63.0	90.5	87.0	88.5	0.73	0.69	0.61	175	550	7.49
37.0	50.0	2	E200L	2950	61.0	92.0	89.0	87.0	0.94	0.90	0.82	225	700	1.40
		4	E225S	1480	63.0	92.5	92.0	90.5	0.89	0.85	0.77	250	600	2.70
		6	E250M	975	65.0	92.0	91.5	90.0	0.86	0.82	0.74	200	600	7.51
		8	E280M	740	75.0	91.5	91.0	89.5	0.75	0.71	0.63	225	500	14.15
45.0	60.0	2	E225M	2955	73.0	92.5	90.0	88.0	0.94	0.90	0.82	200	650	1.50
		4	E225M	1480	76.0	93.0	92.5	91.0	0.89	0.85	0.77	250	600	3.20
		6	E280M	990	78.0	93.0	92.5	91.0	0.86	0.82	0.74	225	600	14.15
		8	E280M	740	91.0	92.0	91.5	90.0	0.75	0.71	0.63	225	600	14.15
55.0	75.0	2	E250M	2980	90.0	93.0	92.0	90.0	0.92	0.88	0.80	200	600	6.22
		4	E250M	1475	94.0	93.0	92.5	91.0	0.88	0.84	0.76	225	600	6.26
		6	E280M	985	96.0	93.0	92.5	91.0	0.86	0.92	0.74	225	600	14.15
		8	E315M	735	110.0	92.0	91.5	90.0	0.76	0.72	0.64	225	550	24.20
75.0	100.0	2	E280M	2975	119.0	93.6	93.0	91.5	0.94	0.90	0.82	175	600	7.25
		4	E280M	1488	122.0	93.6	93.0	91.5	0.92	0.88	0.80	225	600	11.60
		6	E315M	985	130.0	93.5	93.0	91.5	0.86	0.82	0.74	225	600	24.20
		8	E315M	735	148.0	93.0	92.5	91.0	0.76	0.72	0.64	225	550	24.20
90.0	120.0	2	E280M	2975	142.0	94.0	93.5	92.0	0.94	0.90	0.82	175	600	7.25
		4	E280M	1488	145.0	93.9	93.3	91.8	0.92	0.88	0.80	225	600	11.60
		6	E315M	985	155.0	93.8	93.3	91.8	0.86	0.82	0.74	225	600	24.20
		8	E315L	740	172.0	93.5	93.0	91.5	0.78	0.74	0.66	250	550	33.33
110.0	150.0	2	E315M	2975	174.0	94.0	93.0	91.5	0.94	0.90	0.82	200	600	10.76
		4	E315M	1485	181.0	94.4	93.5	92.0	0.90	0.86	0.78	200	600	20.30
		6	E315L	985	190.0	94.0	93.5	92.0	0.86	0.82	0.74	225	600	40.00
		8	E315L	740	210.0	93.5	93.0	91.5	0.78	0.74	0.66	250	550	40.00
132.0	180.0	2	E315M	2975	209.0	94.5	93.0	91.5	0.94	0.90	0.82	200	600	10.76
		4	E315M	1485	217.0	94.7	93.5	92.0	0.90	0.86	0.78	200	600	20.30
		6	E315L	985	227.0	94.0	93.5	92.0	0.86	0.82	0.74	250	550	33.33
160.0	215.0	2	E315L	2975	252.0	94.8	93.5	92.0	0.94	0.90	0.82	175	600	16.37
		4	E315L	1490	262.0	95.0	94.0	92.5	0.90	0.86	0.78	200	600	24.97
		6	E315L	990	274.0	94.5	94.0	92.5	0.86	0.82	0.74	250	600	40.0
200.0	270.0	2	E315L	2975	313.0	94.5	94.0	92.5	0.94	0.90	0.82	200	600	16.4
		4	E315L	1490	327.0	94.5	94.0	92.5	0.90	0.86	0.78	225	600	31.1

FL = Full Load; FLC = Full Load Current,
 FLT = Full Load Torque STG.T. = Starting Torque
 STG.C. = Starting Current

NOTE : All performance figures are subject to tolerances as per IS : 325.

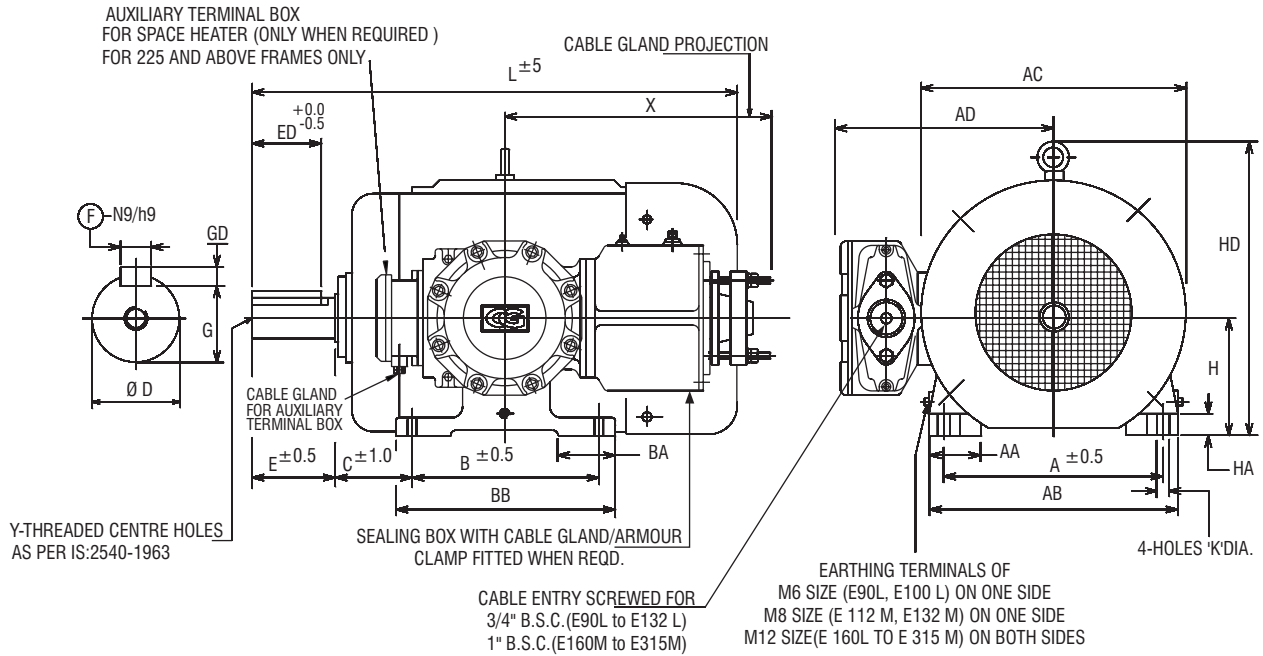
PERFORMANCE DATA FOR THREE PHASE FLAMEPROOF SLIPRING INDUCTION MOTORS

OUTPUT		P O L E	FRAME SIZE	FL SPEED RPM	FL CURRENT AMPS	EFF % FL	POWER FACTOR FL	OC ROTOR VOLT	ROTOR AMPS	POT % FLT	GD SQ. KGM ²
KW	HP										
15	20	8	EW250M	730	34.0	89.0	0.70	350	27	300	7.50
18.5	25	6	EW250M	970	36.0	89.0	0.82	310	37	400	7.50
		8	EW250M	730	41.0	90.0	0.70	360	32	300	7.50
22.0	30.0	6	EW250M	970	42.0	89.0	0.82	310	45	400	7.50
		8	EW250M	730	45.0	91.0	0.74	250	55	360	7.50
30.0	40.0	4	EW250M	1470	55.0	89.0	0.85	380	47	450	6.26
		6	EW250M	975	55.0	91.0	0.82	320	56	400	7.50
		8	EW280M	735	62.0	91.0	0.74	440	43	400	14.15
37.0	50.0	4	EW250M	1475	67.0	90.0	0.85	425	52	450	6.26
		6	EW280M	980	67.0	91.0	0.84	410	57	390	14.15
		8	EW280M	735	76.0	91.0	0.74	520	45	400	14.15
45.0	60.0	4	EW250M	1475	82.0	90.0	0.85	445	80	450	6.26
		6	EW280M	980	81.0	91.5	0.85	320	87	390	14.15
		8	EW315M	735	93.0	91.0	0.74	320	88	350	24.20
55.0	75.0	4	EW280M	1480	97.0	91.5	0.86	460	73	450	11.60
		6	EW315M	980	98.0	92.0	0.85	535	62	370	24.20
		8	EW315M	735	112.0	91.0	0.75	320	108	350	24.20
75.0	100.0	4	EW280M	1480	130.0	92.5	0.87	490	92	450	11.60
		6	EW315M	980	132.0	93.0	0.85	470	96	350	24.20
		8	EW315L	735	152.0	91.0	0.75	320	147	350	40.00
90.0	120.0	4	EW315M	1480	159.0	92.5	0.86	505	106	450	20.20
		6	EW315L	980	158.0	93.0	0.85	450	125	370	40.00
		8	EW315L	735	183.0	91.5	0.75	320	176	350	40.00
110.0	150.0	4	EW315M	1485	193.0	92.5	0.86	500	132	450	20.20
		6	EW315L	980	194.0	93.0	0.85	450	150	360	40.00
132.0	175.0	4	EW315L	1485	230.0	92.5	0.86	500	158	450	33.46
		6	EW315L	980	233.0	93.0	0.85	450	175	360	40.00
150.0	200.0	4	EW315L	1485	256.0	93.0	0.86	500	180	450	33.46
160.0	215.0	4	EW315L	1485	275.0	93.0	0.87	500	194	450	33.46

FL = Full Load; FLC = Full Load Current; OC = Open Circuit, POT = Pull Out Torque; FLT = Full Load Torque

NOTE : All performance figures are subject to tolerances as per IS : 325.

DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FOOT MOUNTED FLAME PROOF INDUCTION MOTORS CONFORMING TO IS:1231



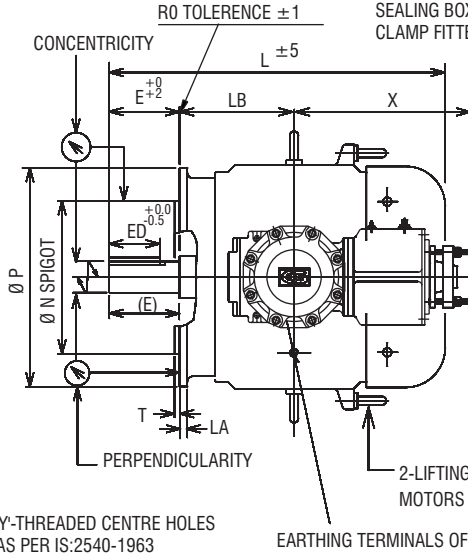
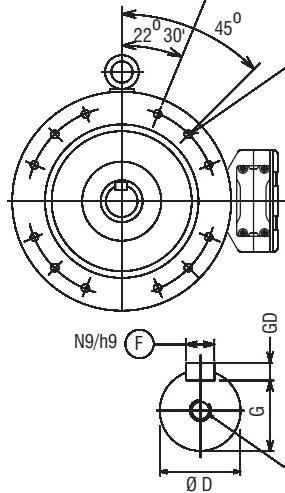
ALL DIMENSIONS ARE IN mm.

FRAME SIZE	FOOT FIXING									SHAFT AND KEY *						OVERALL						
	A	B	C	H TOL.	AA	AB	BA	BB	K TOL.	D TOL.	E	ED	F TOL.	GD TOL.	G TOL.	Y	AD	AC	L	HD	HA	X
E90L	140	125	56	90 89.5	35	168	45	152	10.0 10.36	24.009 23.996	50	36	8.0 7.97	7.0 6.91	20.0 19.8	M8 x 19	240	210	335	240	13	307
E100L	160	140	63	100 99.5	38	198	51	168	12.0 12.36	28.009 27.996	60	44	8.0 7.97	7.0 6.91	24.0 23.8	M10 x 22	255	240	380	265	13	
E112M	190	140	70	112 111.5	38	228	57	171	12.0 12.36	28.009 27.996	60	44	8.0 7.97	7.0 6.91	24.0 23.8	M10 x 22	265	270	400	290	14	
E132M	216	178	89	132 131.5	41	254	64	216	12.0 12.36	38.018 37.996	80	60	10.0 9.964	8.0 7.91	33.0 32.8	M12 x 28	285	320	500	350	16	
E160M	254	210	108	160.0	54	298	76	298	15.5	42.018	110	80	12.0	8.00	37.0	M16x32	335	372	630	400	22	409
E160L		254		159.7																		
E180M	241	180.0	121	60	337	95	323	15.5	48.018	110	80	14.0	9.00	42.5	360		425	705	455	22		
E180L	279	179.7																			15.0	
E200L	318	305	133	200.0 199.5	64	381	105	356	19.5 19.0	55.030 55.011	110	80	16.0 15.957	10.00 9.91	49.0 48.8	M20x40	380	454	815	495	25	
E225S	356	286	149	225.0	70	425	114	349	19.5	60.030	140	110	18.0	11.00	53.0		402	490	805	525	25	
E225M		311		224.5				375	19.0	60.011							17.957	10.91	52.8			
E250S	406	311	168	250.0	79	483	127	381	24.5	65.030	140	110	18.0	11.00	58.0		440	560	927	605	32	
E250M		349		249.5				419	24.0	65.011						17.957	10.91	57.8	965			
E280S	457	368	190	280.0	83	540	146	489	24.5	75.030	140	110	20.0	12.00	67.5	476	620	1070	660	35		
E280M		419		279.0				24.0	75.011	19.948						11.91	67.3					
E315M	508	457	216	315.0 314.0	89	597	153	533	28.5 28.0	80.030 80.011	170	140	22.0 21.948	14.00 13.91	71.0 70.8	516	705	1200	775	38		

* ABOVE 200 FRAMES MACHINES RUNNING AT 3000 RPM HAVE SMALLER SHAFTS AS SHOWN HERE	FRAME SIZE	D TOL.	E	ED	F TOL.	GD TOL.	G TOL.	L	
								S	M
	E225	55.030/55.011	110	80	16.0/15.957	10.0/9.91	49.0/48.8	775	800
	E250	60.030/60.011	140	110	18.0/17.957	11.0/10.91	53.0/52.8	927	965
	E280	65.030/65.011	140	110	18.0/17.957	11.0/10.91	58.0/57.8	-	1070
E315	-							1170	

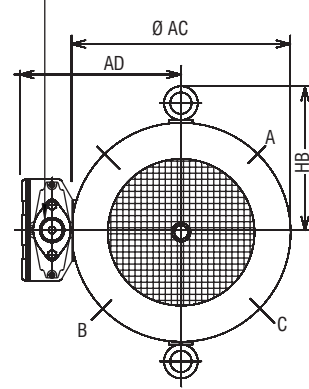
DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FLANGE MOUNTED FLAME PROOF INDUCTION MOTORS CONFORMING TO IS:2223

4-HOLES FOR FRAME 80-200
8-HOLES FOR FRAME 225-315
DRILLED Ø 'S' ON 'M' P.C.D.
EQ-SPACED AS SHOWN



CABLE ENTRY SCREWED FOR 3/4" B.S.C. (E80 TO E132 M FRAME)
1" B.S.C. (E160 M TO E315 M FRAME)

SEALING BOX WITH CABLE GLAND/ARMOUR
CLAMP FITTED WHEN REQD.



2-LIFTING EYEBOLT FOR VERTICAL
MOTORS ABOVE 200 FRAME ONLY

EARTHING TERMINALS OF M6 SIZE (E80 & E 100 L) ON ONE SIDE
M8 SIZE (E 112M & E 132 M) ON ONE SIDE
EARTHING TERMINALS OF M12 SIZE AT POSITION A & B FOR 160-180 FRAME
B & C FOR 200 - ABOVE FRAMES

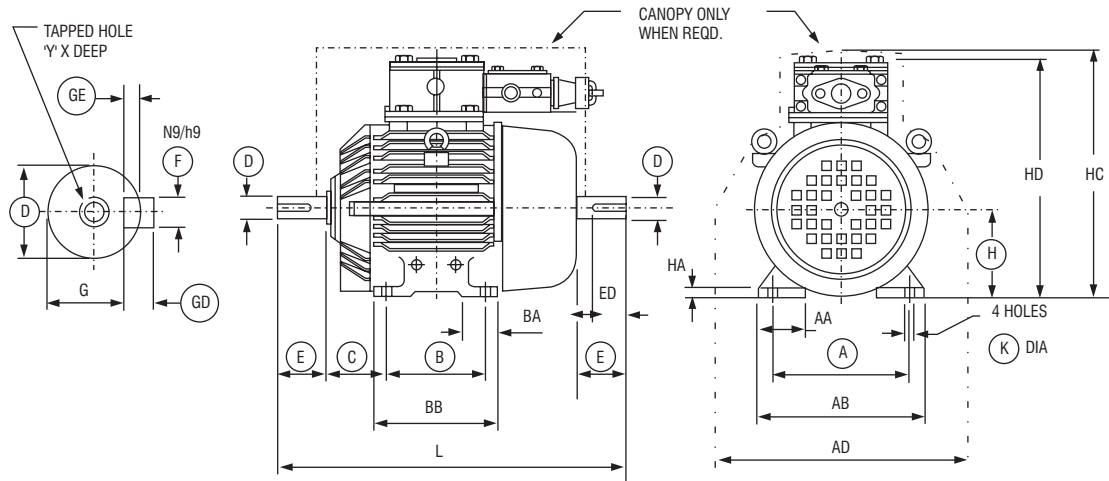
ALL DIMENSIONS ARE IN mm

FRAME SIZE	FLANGE FIXING						SHAFT AND KEY *							OVERALL					
	M TOL.	N TOL.	P	S	T	LA	D TOL.	E	ED	F TOL.	GD TOL.	G	Y	AD	AC	L	LB	HB	X
E90LD	165.3 164.7	130.014 129.989	200	12	3.5	10	24.009 23.996	50	36	8.0 7.964	7.0 6.91	20.0 19.8	M8X19	240	210	380	330	150	307
E100LD	215.3 214.7	180.014 179.989	250	15	4	11	28.009 27.996	60	44	8.0 7.964	7.0 6.91	24.0 23.8	M10X22	255	240	415	355	165	
E112MD	215.3 214.7	180.014 179.989	250	15	4	11	28.009 27.996	60	44	8.0 7.964	7.0 6.91	24.0 23.8	M10X22	260	270	425	365	175	
E132MD	265.3 264.7	230.016 229.987	300	15	4	13	38.018 38.002	80	60	10.0 9.965	8.0 7.91	33.0 32.8	M12X28	290	320	520	440	220	409
E160MD E160LD	300.5 299.5	250.016 249.987	350	19	5	18	42.018 42.002	110	80	12.00 11.957	8.00 7.91	37.0 36.8	M16x32	335	372	630	262.5	240	
E180MD E180LD	350.5 349.5	300.016 299.984	400	19	5	18	48.018 48.002	110	80	14.00 13.957	9.00 8.91	42.5 42.3		360	425	705	260.5	275	
E200LD	350.5 349.5	300.016 299.984	400	19	5	18	55.030 55.011	110	80	16.00 15.957	10.00 9.91	49.0 48.8	M20x40	380	454	748	285.5	295	443
E225SD E225MD	400.5 399.5	350.018 349.982	450	19	5	19	60.030 60.011	140	110	18.00 17.957	11.00 10.91	53.0 52.8		402	490	805	292.0	300	
E250SD E250MD	500.5 499.5	450.020 449.980	550	19	5	22	65.030 65.011	140	110	18.00 17.957	11.00 10.91	58.0 57.8				440	560	965	
E280SD E280MD	500.5 499.5	450.020 449.980	550	19	5	22	75.030 75.011	140	110	20.00 19.948	12.00 11.91	67.5 67.3		476	620	1070	399.5	380	
E315SD E315MD	601.0 599.0	550.022 549.978	660	24	6	25	80.030 80.011	170	140	22.00 21.948	14.00 13.91	71.0 70.8		516	705	1200	444.5	460	

* ABOVE 200 FRAMES MACHINES RUNNING AT 3000 RPM HAVE SMALLER SHAFTS AS SHOWN HERE	FRAME SIZE	D TOL.	E	ED	F TOL.	GD TOL.	G	L	
	E225	55.030/55.011	110	80	16.0/15.957	10.0/9.91	49.0/48.8	SD	MD
	E250	60.030/60.011	140	110	18.0/17.957	11.0/10.91	53.0/52.8	---	965
	E280	65.030/65.011	140	110	18.0/17.957	11.0/10.91	58.0/57.8	---	1070
	E315							---	1170

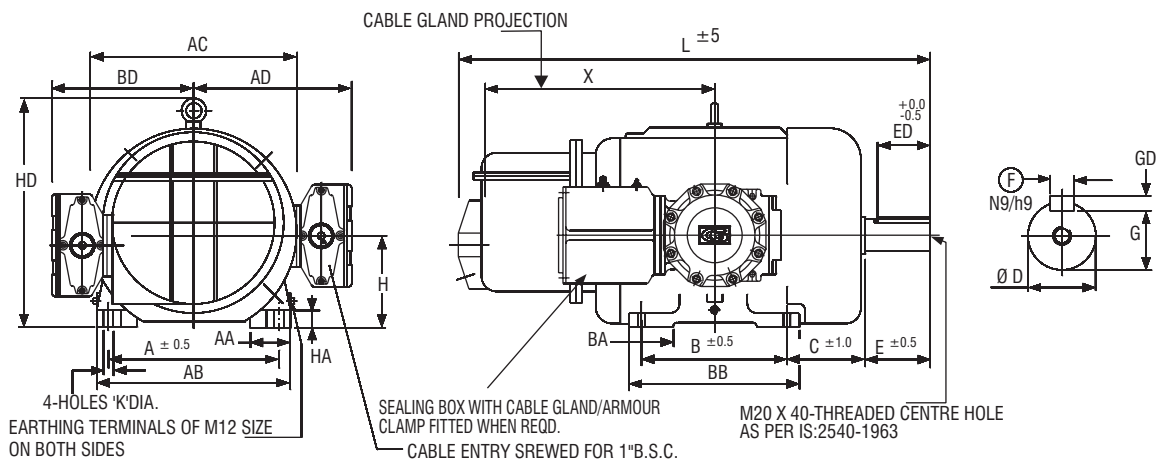
FRAME SIZE	CONCENTRICITY IN MICRON	PERPENDICULARITY IN MICRON	RUNOUT IN MICRON	
	NORM.	NORM.	SHAFT Ø D	NORM.
160-280	125	125	30-50	50
315	160	160	50-80	60

DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FOOT MOUNTED FLAME PROOF INDUCTION MOTOR - TERMINAL BOX ON TOP



FRAME REF.	FOOT FIXING									SHAFT AND KEY							Y X DEEP	OVERALL (MAX)								
	A	B	C	H	AA	AB	BA	BB	K	D	E	ED	F	G	GA	GD		GE	AC	L	HD	HA	X1	X2	AD	HC
E80	125	100	50	80	28	152	25	124	10	19	40	24	6	15.5/15.4	21.5	6	3.5	M6 X 16	165	274	268	11	-	-	-	-
E90L	140	125	56	90	35	168	45	152	10	24	50	36	8	20	31	7	4	M8 X 19	210	335	330	13	105	140		
E100L	160	140	63	100	38	198	51	168	12	28	60	44	8	24	31	7	4	M10 X 22	240	380	355	13	85	120		
E112M	190	140	70	112	38	228	57	171	12	28	60	44	8	24	31	7	4	M10 X 22	270	400	380	14	70	105		
E132M	216	178	89	132	41	254	64	216	12	38	80	60	10	33	41	8	5	M12 X 28	320	500	420	16	30	65	360	445

DIMENSION DRAWING FOR 3 PHASE SLIPRING TEFC FOOT MOUNTED FLAME PROOF INDUCTION MOTORS CONFORMING TO IS :1231



ALL DIMENSIONS ARE IN mm.

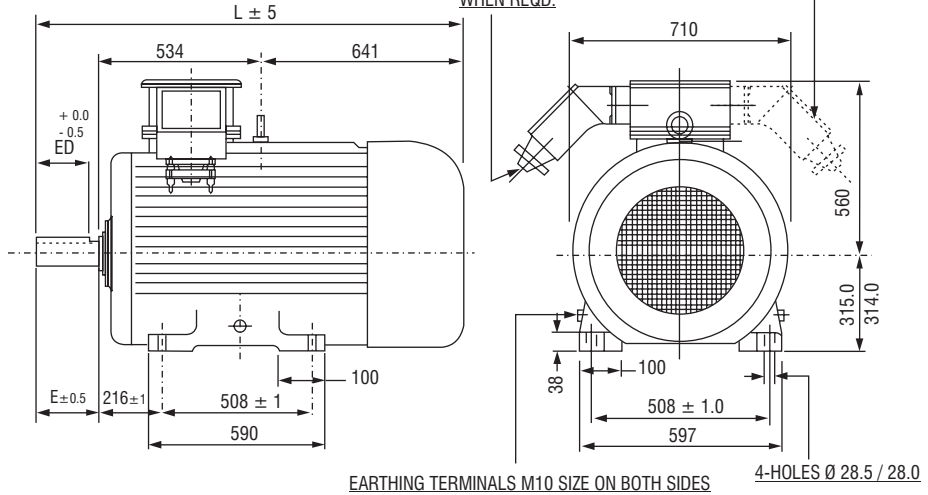
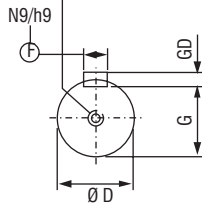
FRAME SIZE	FOOT FIXING									SHAFT & KEY							OVERALL						
	A	B	C	H TOL.	AA	AB	BA	BB	K TOL.	D TOL.	E	ED	F TOL.	GD TOL.	G	AD	AC	L	HD	HA	BD	X	
EW250M	406	349	257	250.0 249.5	79	483	127	419	24.5 24.0	65.030 65.011	140	110	18.00 17.957	11.00 10.91	58.0 57.8	420	560	1445	605	32	340	470	
EW280M	457	419	291	280.0 279.0	83	540	146	489	24.5 24.0	75.030 75.011	140	110	20.00 19.948	12.00 11.91	67.5 67.3	455	620	1660	660	35	380	470	
EW315M	508	457	333	315.0 314.0	89	597	153	533	28.5 28.0	80.030 80.011	170	140	22.00 21.948	14.00 13.91	71.0 70.8	495	705	1795	775	38	380	470	

DIMENSION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FOOT MOUNTED FLAME PROOF INDUCTION MOTOR - FRAME E315L

NOTE :-
MAX. CABLE SIZE FOR E 315 LD 2X3 1/2 C X 240 mm Sq.

SEALING BOX WILL BE PROVIDED ONLY WHEN REQD.

Y^c THREADED CENTRE HOLE
AS PER IS : 2540 - 1963



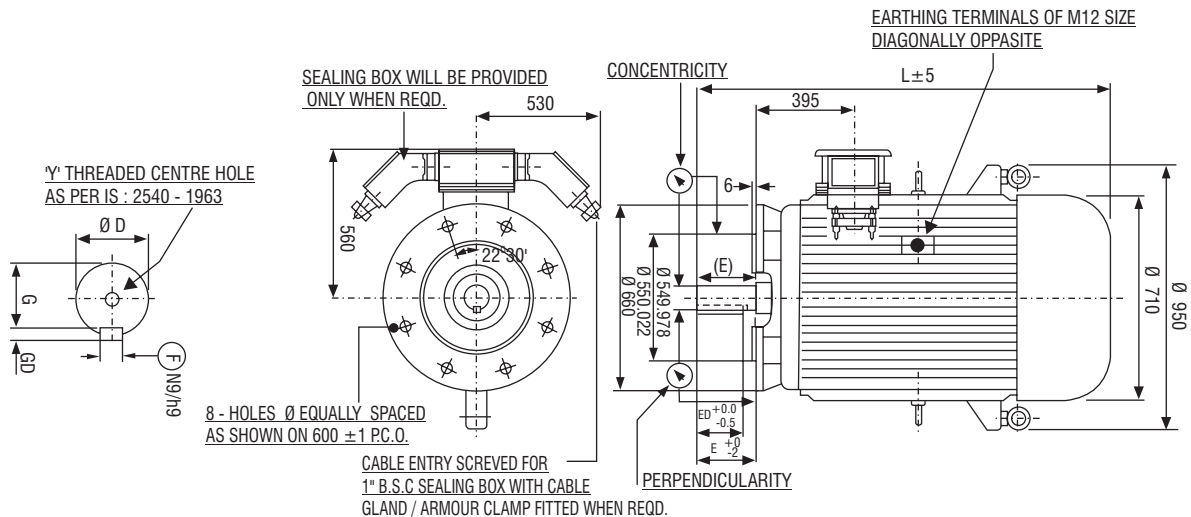
EARTHING TERMINALS M10 SIZE ON BOTH SIDES

4-HOLES Ø 28.5 / 28.0

ALL DIMENSIONS ARE IN mm

POLE	SHAFT AND KEY							
	D TOL.	E	ED	F TOL.	GD TOL.	G	Y	L
4,6 & 8	90.035 / 90.013	170	140	25.0 / 24.948	14.0 / 13.91	81.0 / 80.8	M 24 X 50	1345
2	70.030 / 70.011	140	110	20.0 / 19.948	12.0 / 11.91	62.5 / 62.3	M 20 X 40	1315

DIMENTION DRAWING FOR 3 PHASE SQUIRREL CAGE TEFC FLANGE MOUNTED FLAME PROOF INDUCTION MOTOR - FRAME E315LD



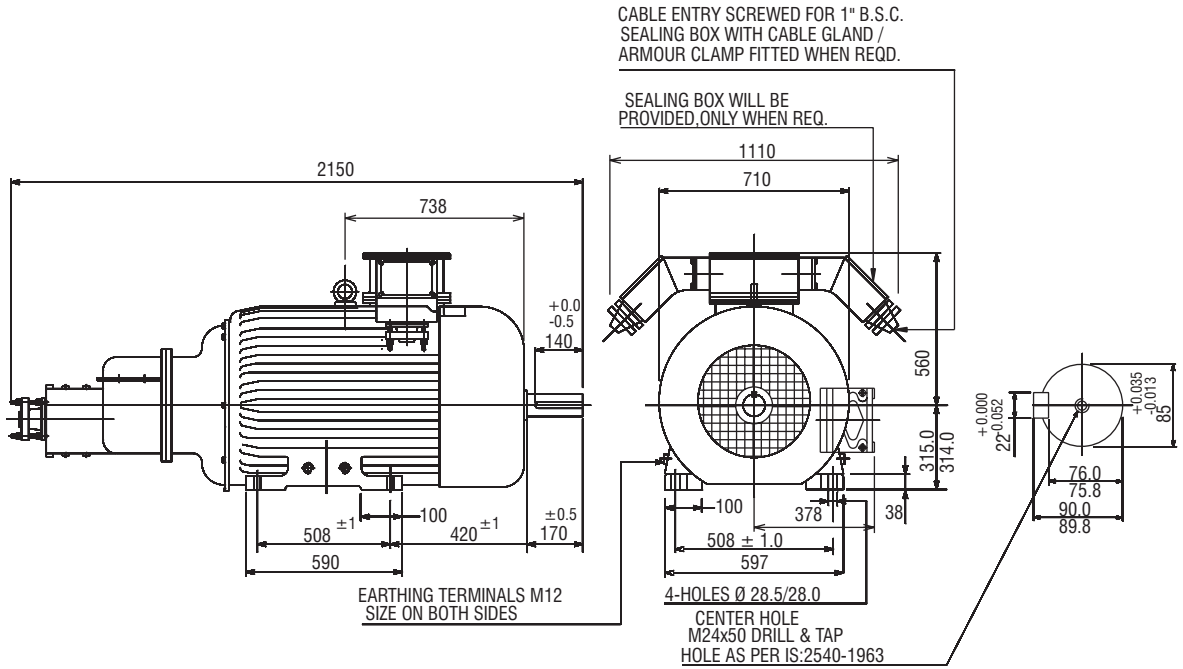
NOTE:-
MAX. CABLE SIZE FOR
E315LD 2 X 3 1/2 C X 240 MM Sq.

ALL DIMENSIONS ARE IN mm

POLE	SHAFT AND KEY							
	D TOL.	E	ED	F TOL.	GD TOL.	G	Y	L
4.6 & 8	90.035 / 90.013	170	140	25.0 / 24.948	14.0 / 13.91	81.0 / 80.8	M24 X 50	1445
2	70.030 / 70.011	140	110	20.0 / 19.948	12.0 / 11.91	62.5 / 62.3	M20 X 40	1415

FRAME SIZE	CONCENTRICITY IN MICRON		PERPENDICULARITY IN MICRON		RUNOUT IN MICRON	
	NORM		NORM		SHAFT Ø	NORM.
E 315 L	160		160		50-80	60
					90	70

DIMENSION DRAWING FOR 3 PHASE SLIPRING TEFC FOOT MOUNTED FLAME PROOF INDUCTION MOTOR (EW315L)



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.

Northern Region Sales Office :

New Delhi :

Vandana, 11 Tolstoy, Marg, New Delhi - 110 001

Phones : (011) 23352161, 23352162

Jalandhar :

50, Mahavir Marg, Jalandhar - 144 001

Phones : (0181) 2223801, 2959467

Lucknow :

Saran Chambers II, 3rd Floor, 5 Park Road,

Lucknow - 226 001

Phones : (0522) 2239443, 2237007

Jaipur :

Church Road, P. O. Box. No.: 173, Jaipur-302 001

Phones : (0141) 2376919, 2376307

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50, Chowringhee Road, Kolkata - 700 071

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Bhubaneswar :

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Unit II, Bhubaneswar - 751 009

Phones : (0674) 2531128, 2531429

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