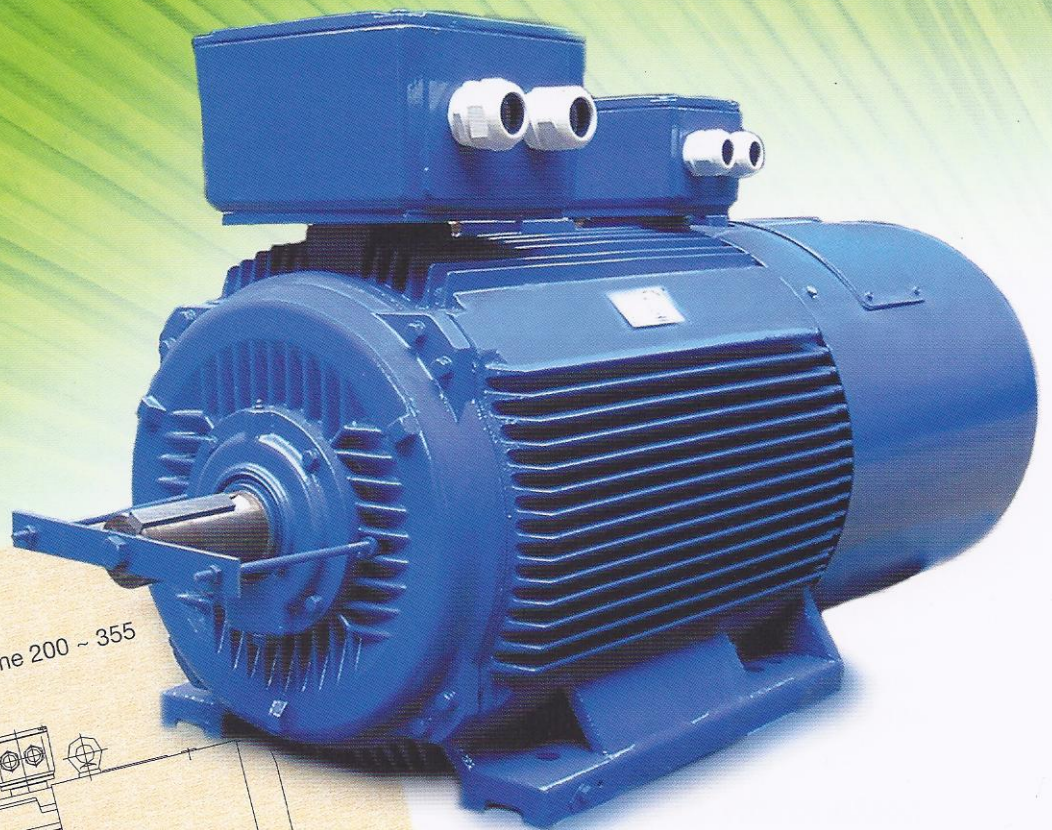
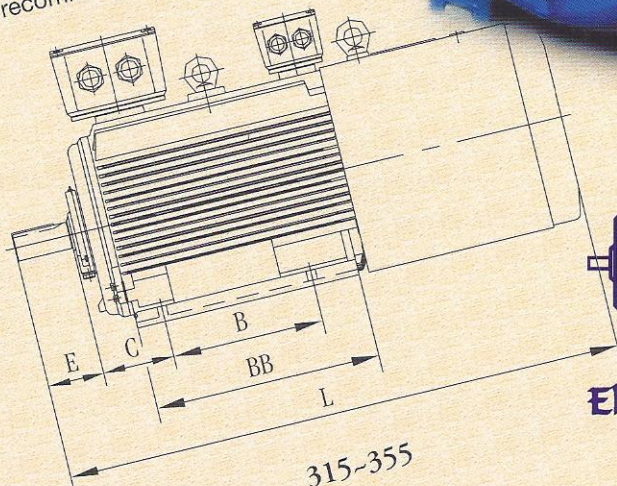


**SLIP-RING MOTOR FOR
CONTINUOUS DUTY**

SLIP-RING MOTORS



Output and dimensions to
IEC recommendations of Frame 200 ~ 355



Elektrim Motors & Machinery Pte Ltd

APPLICATION OF MOTORS

Motors are for continuous duty and are generally used in industry for driving various machines and equipments in continuous operation (S1) without frequent start-ups and reversals.

MOTOR CONSTRUCTION

The motor frame is made of ribbed iron casting. The terminal box is protected by means of a cover with hole enabling easy access and observation of the sliding contact operation. Motor frame sizes 200-280 has the slip-ring head installed on the drive - end of the motor shaft. Dismounting and exchange of the brush holders may be carried out through the hole in the terminal box : dismantling of the bearing shield is not necessary.

Motors of frame sizes 315-400 has the slip-ring located on the motor non-drive end and they are accessible after removal of the protective covers.

Every motor is provided with an external fan on the non-drive end. All the motors of frame sizes 200-355 have the cooling system type, IC 01-41, while the motors of frame size 400 has the cooling system type IC 01-61 acc., to BN - 77/3010-13.

TYPE AND SIZE OF APPLIED BEARINGS

Grease should be refilled every 1000-1500 hours of motor operation or at least once every 6 months. After 2.5 to 3 years of operation, the grease in the bearing chambers should be exchanged regardless of the time of operation. For the lubrication of the bearings LT 43 or LT 42 acc. to PN-72/C-96134, suitable for operation in the temperature range from -30 deg.C (243K) is used.

Equivalents of LT43 and LT42 Greases :

- a) Alvania 3-manufactured by SHELL
- b) Baacon M-200-manufactured by ESSO
- c) Energese 1S3-manufactured by British Petroleum

RATED POWER

Motor rated power is defined for continuous duty S1 at 50 Hz, coolant temperature 40 deg.C (313K), temperature rise limit complying with the insulation classes B or F and mounting at the altitude up to 1000m above the sea level. For higher temperature and higher altitudes, admissible motor power output should be defined acc. to the data as follows :

STATOR WINDING

Motors with standard winding are intended for voltage UN=380 and 415V, 50Hz. Motors with special winding may be manufactured for voltage range 380V to 660V, 50HZ. On special request the production of motors for voltages lower than 380V but not lower than 220V may be agreed with the manufacturer.

INSULATION CLASS

Insulation class acc. to the PN/E-2050 complying with IEC/TC-2C/CO/3-V 1955 regulations, defines the max temperature permanently admissible, which does not damage the motor. Standard design motors of frame sizes 200-280 and 315-400 have stator and rotor windings of the class F.

COOLANT TEMP. DEG. C	40	45	50	55	60	65	70	75
Admissible power output in % of rated power for insulation class B	100	96	92	87	82	77	72	67
Admissible power output in % of rated power for insulation class F	-	-	-	-	100	96	92	87

Mounting altitude in meters above the sea level	1000	2000	3000	4000
Admissible power output in 1% of rated power	100%	94%	88%	82%

THERMAL PROTECTION OF WINDINGS

Motors of frame sizes 200-400 may be provided with thermistors on special request. Thermistors protect the stator winding against excessive heating in case of:

- ⊙ Motor overloading
- ⊙ Exceeding of the permissible number of on off switches
- ⊙ Single phase operation
- ⊙ Supply voltage drop
- ⊙ High temperature and restricted cooling

Resistor leads are connected to the terminal strip in the terminal box. Rotor winding will not be provided with thermistors.

TERMINAL BOX

Terminal box in motors of frame sizes 200-400 is installed on top of the frame, which makes it possible to connect lead on the left or the right side. Terminal box contains the following:

- ⊙ 3 terminals for stator winding (6 terminals on request)
- ⊙ 3 terminals for rotor winding
- ⊙ 2 terminals for thermistor circuit
- ⊙ 1 terminal for zero lead or earth lead

Standard design motors of frame sizes 315-400 have two separate terminal boxes - one for the stator and one for the rotor. Stator terminal box contains 6 terminals for the stator winding, rotor terminal box contains 3 terminals.

To connect the thermistors, for the motors of frame sizes 200-280 cable glands type DVP 16 acc. to BN-72/3068-13 are provided.

ORDERING OF MOTORS

While placing orders, the following informations should be given :

- | | | |
|-----------------|----------------------|-------------------------|
| a) Motor type | d) Rotational speed | g) Mounting version |
| b) Rated power | e) Supply voltage | h) Degree of protection |
| c) Type of duty | f) Current frequency | i) Climatic version |

TECHNICAL DATA OF SLIP-RING MOTORS FOR CONTINUOUS DUTY S1 VOLTAGE 380V, 415V

MOTOR TYPE	POWER OUTPUT		SPEED R.P.M.	STATOR CURRENT (AMPS)		COS ϕ	EFFICIENCY %	MCR MR	ROTOR		NOISE LEVEL (LW)	J KGM ²	WT KG
	KW	HP		380V	415V				U2 V	I2 A			
4 poles ns = 1500rpm f = 50hz													
200LA4	18.5	25	1470	35.7	32.7	0.86	89	3	247	47.5	94	0.29	272
200LB4	22	30	1470	42.1	38.5	0.86	90	3	293	47	94	0.32	288
225MB4	30	40	1470	55.1	50.4	0.87	91	3	350	51.5	98	0.63	376
250MA4	37	50	1480	70.5	64.6	0.86	92	3	292	78	98	0.87	460
250MB4	45	60	1480	84.4	77.3	0.87	92.5	3	350	78	100	0.98	520
280S4	55	75	1480	101.9	93.3	0.88	92.5	3	470	70	100	1.86	655
280M4	75	100	1485	137.5	125.9	0.88	92.5	3	380	123	103	2.41	765
315S4	90	125	1485	165	151.1	0.88	93	3	474	113	103	3.97	1175
315M4	110	150	1490	198.7	182	0.88	93.5	3	464	140	103	4.59	1300
315LA4	132	175	1485	238.1	218	0.89	94	3	457	171	106	5.33	1260
315LB4	160	220	1490	285	261	0.88	94	3	522	181	106	6.11	1450
355MA4	200	270	1485	346.3	317.1	0.91	94	3	524	231	106	10.03	1955
355MB4	250	340	1485	431.6	395.1	0.91	94.5	3	612	247	108	11.33	2080
355L4	280	375	1490	480	439.6	0.91	94.5	3	734	230	108	12.47	2195
6 poles ns = 1000rpm f = 50hz													
200LB6	15	20	980	30.9	28.3	0.81	88.5	2.8	198	48	88	0.41	277
225MA6	18.5	25	980	37.2	34	0.83	88.5	2.8	187	62.5	88	0.65	335
225MB6	22	30	985	43.8	40.1	0.83	89.5	2.8	224	61	88	0.72	360
250MA6	30	40	985	58.2	53.3	0.84	90.5	2.8	282	66	91	1.22	480
250MB6	37	50	985	72.5	66.4	0.84	91	2.8	331	69	91	1.35	520
280S6	45	60	985	86.2	79	0.86	91.5	2.8	346	81	94	2.41	645
280M6	55	75	985	103.6	94.8	0.86	92	2.8	455	75	94	2.74	695
315S6	75	100	990	142.1	130.1	0.85	93	2.8	470	98	98	5.48	745
315M6	90	125	990	169.5	155.1	0.85	93.2	2.8	489	113	98	6.25	1335
315LA6	110	150	990	202.5	185.4	0.86	93.5	2.8	485	140	98	7.3	1421
315LB6	132	175	990	244	223.4	0.85	94	2.8	477	170	98	8.45	1430
355MA6	160	220	990	295.8	270.8	0.87	94	2.8	460	213	102	12.28	1950
355MB6	200	270	990	364.2	333.5	0.87	94	2.8	597	202	102	14.86	2165
355L6	220	300	990	401	367.2	0.87	94.5	2.8	664	205	102	16.71	2275

3

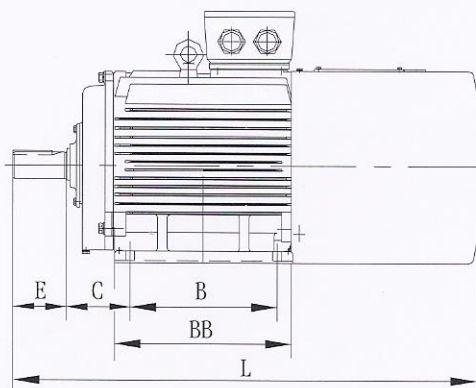
MOUNTING DIMENSIONS IMB3

DIMENSION DRAWING

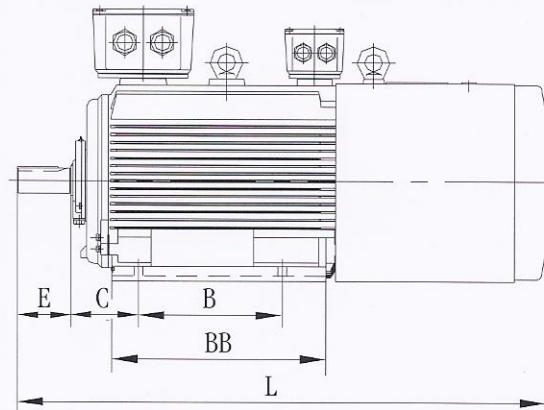
MOTOR TYPE	A	B	C	D	E	FXCD	G	H	K	AB	AC	AA	BB	HD	HA	L	
200L	318	305	133	55	110	16x10	49	200		388	400	70	375	525	25	970	
225M	356	311	149	60	140	18x11	53	225	19	435	446	75	400	555	28	1065	
250M	406	349	168	65			58	250	24	490	495	80	450	615	30	1150	
280S	457	368	190	75		20x12	67.5	280	24	550	560	85	490	700	35	1260	
280M		419											540				1310
315S	508	406	216	80	170	22x14	71	315	28	635	635	125	540	870	45	1700	
315M		457											680				
315L		508															
355M	610	560	254	100	210	28x16	100	355		730	710	125	750	1010	52	1910	
355L		630															

TYPE AND SIZE OF APPLIED BEARING

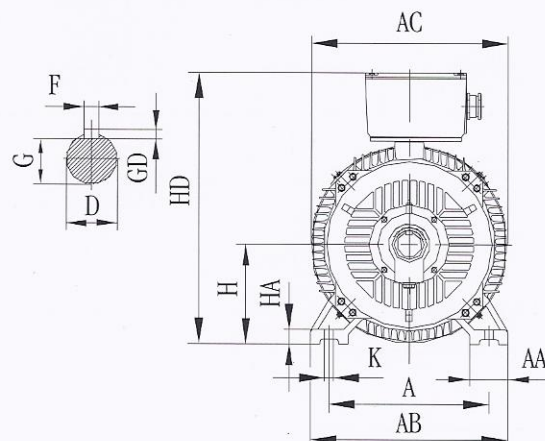
FRAME SIZE	TYPE OF BEARING	
	DRIVE END "N"	NON - DRIVE END "P"
EMR 200	6312	6312
EMR 225	6313	6313
EMR 250	6314	6314
EMR 280	NU317	6317
EMR 315	NU319	6319
EMR 355	NU322	6322



132-280



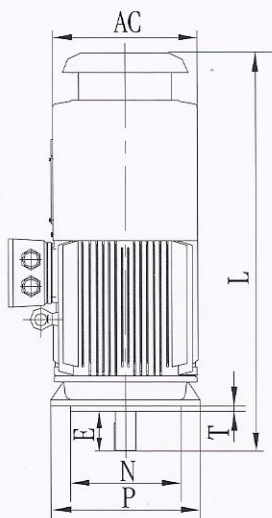
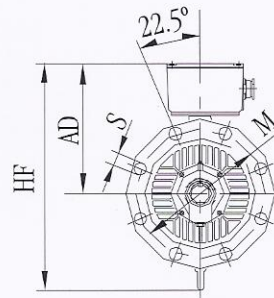
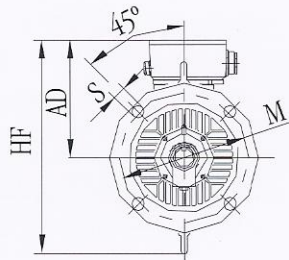
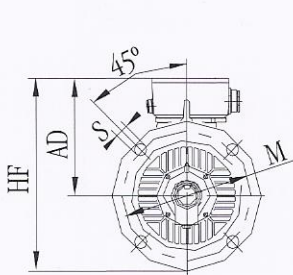
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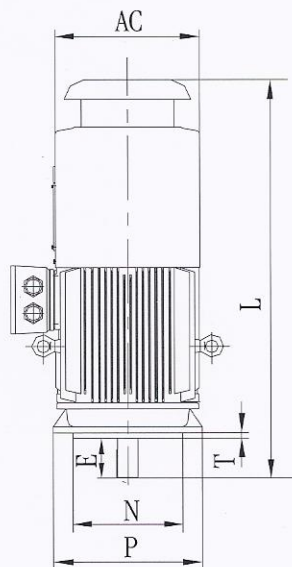
MOUNTING DIMENSIONS IMV1

DIMENSION DRAWING

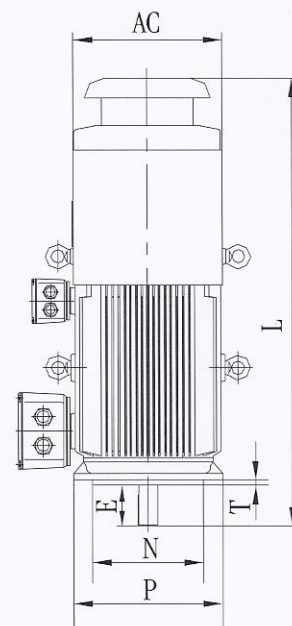
MOTOR TYPE	D	E	FXGD	G	M	N	P	S	T	AC	HF	L
132M	38	80	10x8	33	265	230	300	4xø15	4	275	315	740
160M	42	110	12x8	37	300	250	350	4xø19	5	330	385	820
160L												865
180L	48		14x9	42.5	380	500	980					
200L	55	16x10	49	350	300	400	420	550	1045			
225M	60	140	18x11	53	400	350	450	8xø19	6	470	610	1150
250M	65			58	510	650	1255					
280S	75		20x12	67.5	550	450	550	580		720	1375	
280M		1425										
315S	80	170	22x14	71	600	550	660	8xø24	6	645	900	1815
315M												
315L												
355M	100	210	28x16	100	740	680	800	8xø24	6	710	1010	2050
355L												



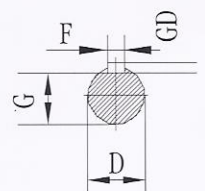
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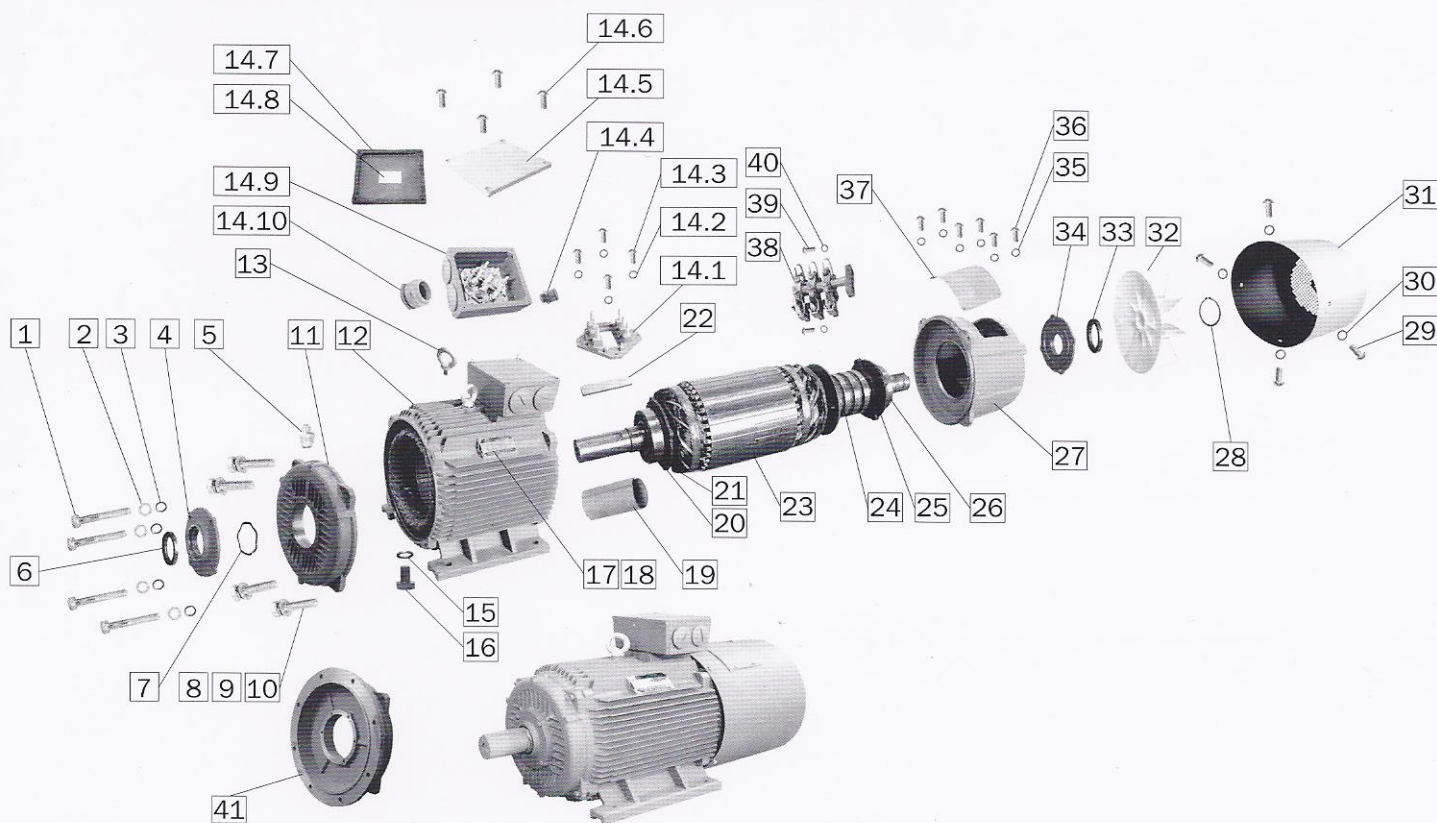
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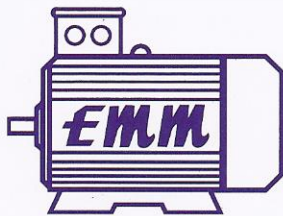
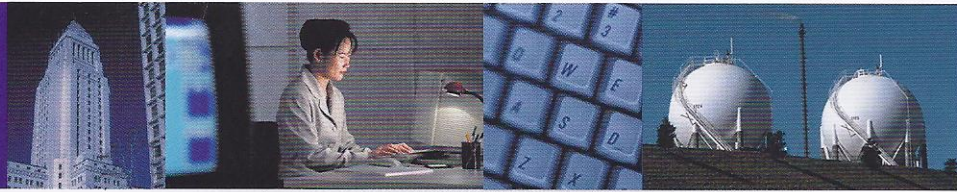
225-355



LIST OF BASIC PARTS AND SUBASSEMBLIES FOR MOTORS OF FRAME SIZES 200 ~ 280



ITEM	SPECIFICATION	ITEM	SPECIFICATION
1	Bolt	17	Nameplate
2	Washer	18	Rivet
3	Washer	19	Shaft sleeve
4	Bearing cap	20	Bearing
5	Oil cup	21	Bearing cap
6	Seal ring	22	Key
7	Wave form elastic washer	23	Rotor
8	Bolt	24	Collector ring
9	Washer	25	Bearing cap
10	Washer	26	Bearing
11	End cover	27	End cover
12	Stator	28	Retainer ring
13	Eyebolt	29	Bolt
14	Terminal box	30	Washer
14.1	Connecting board	31	Fan cover
14.2	Washer	32	Cooling fan
14.3	Screw	33	Seal ring
14.4	Cable inlet	34	Bearing cap
14.5	Terminal box cover	35	Washer
14.6	Screw	36	Screw
14.7	Terminal box seal	37	Cover plate
14.8	Connecting diagram	38	Carbon brush
14.9	Terminal box holder	39	Bolt
14.10	Cable inlet	40	Washer
15	Seal ring	41	Flange
16	Plug screw		



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