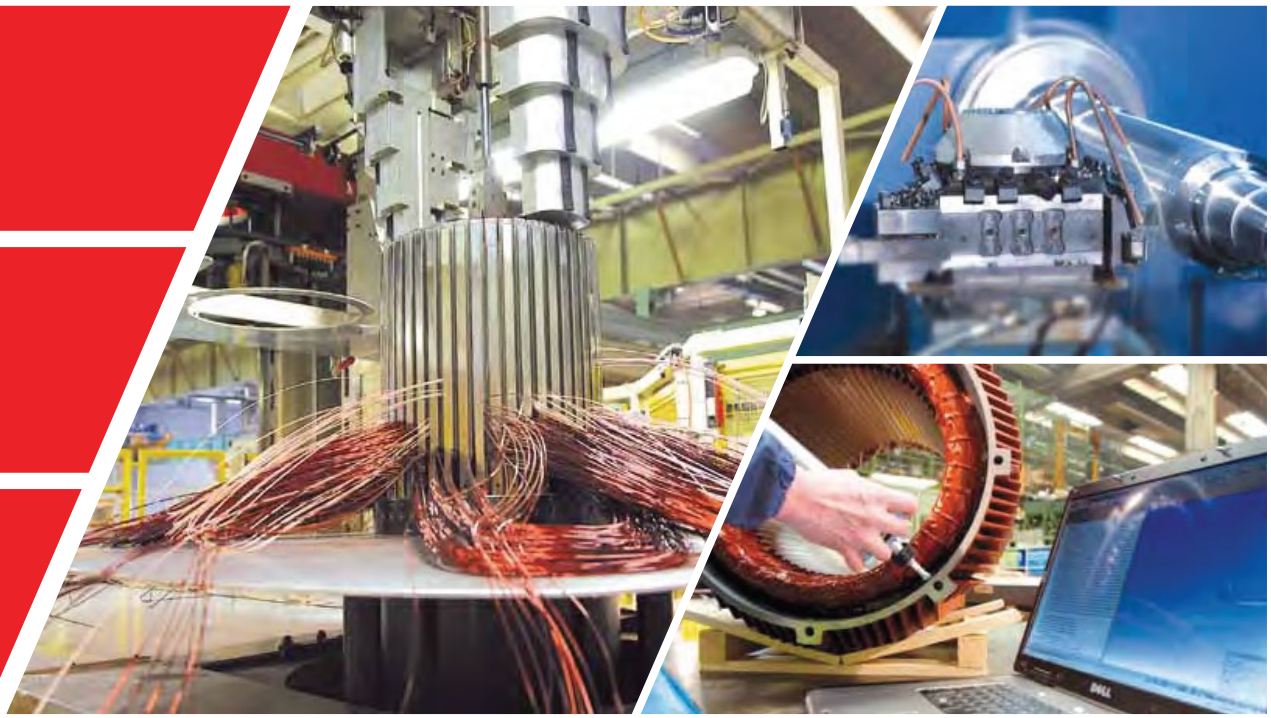
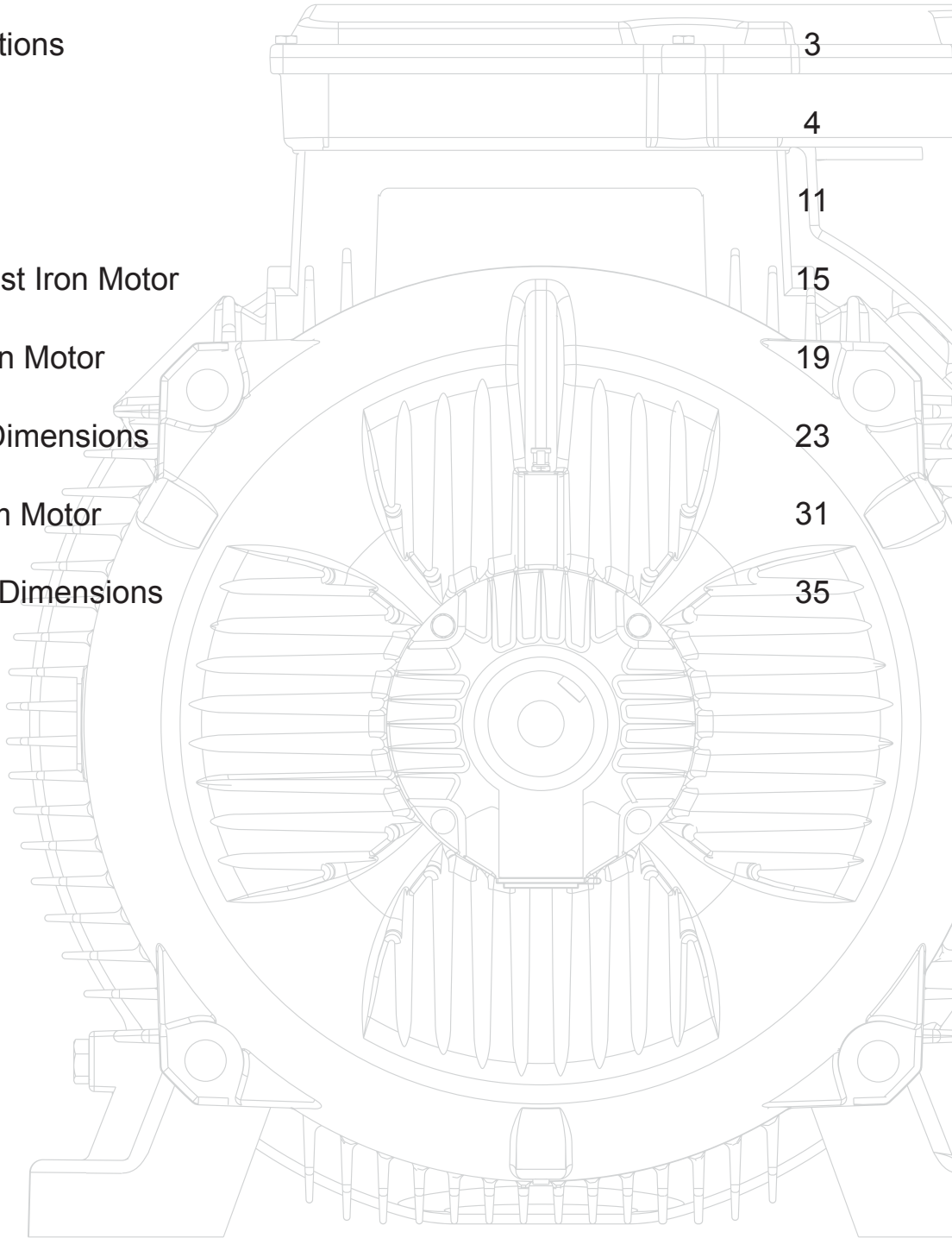
BRANCO



Contents



Standards & Regulations

The Motors comply with the relevant standards and regulations, especially:

Title Electrical	IEC	EU CENELES	D DIN/VDE	I CEI/UNEL	GB BS	F NFC	E UNE
General stipulations for electrical machines	60034-1	EN 60034-1	DIN EN 60034-1	CEI EN 60034-1	4999-1 4999-69	51-200 51-111	UNE EN 60034-1
Rotating electrical machines: methods for determining losses and efficiency using tests	60034- 2	HD 53 2	DIN EN 60034-2	CEI EN 60034-2	4999-34	51-112	UNE EN 60034-2
Terminal markings and direction of rotation of rotating electrical machines	60034- 8	HD 53 8 S4	DIN VDE 0530-8	CEI 2-8	4999-3	51-118	20113-8-96
Starting performance	60034-12	EN 60034-12	DIN EN 60034-12	CEI EN 60034-12	4999-112		UNE EN 60034-12
Standard voltages	60038	HD 472 S1	DIN IEC 60038	CEI 8-6			
Insulating materials	60085		DIN IEC 60085	CEI 15-26			
Mechanical							
Dimensions and output ratings	60072			UNEL 13113			
Mounting dimensions and relationship frame sizes-output rating,IM B3	60072	HD 231	DIN 42673-1	UNEL 13113	4999-10 51-110	51-105 51-104	201061/26 1980
Mounting dimensions and relationship frame sizes-output ratings, IM B5	60072	HD 231	DIN 42677-1	UNEL 13117		20106-2-74	
Mounting dimensions and relationship frame sizes-output rating,IM B14	60072	HD 231	DIN 42677-1	UNEL 13118	4999-10 51-110	51-105 51-104	20106-2-IC-80
Cylindrical shaft ends for electric motors	60072	HD 231	DIN 784-3	UNEL 13502	4999-10	51-111	
Degrees of protection	60034-5	EN 60034-5	DIN IEC 60034-5	CEI EN 60034-5	4999-20	EN 60034-5	20111-5
Methods of cooling	60034-6	EN 60034-6	DIN EN 60034-6	CEI EN 60034-7	4999-21		EN 60034-6
Mounting arrangements	60034-7	EN 60034-7	DIN EN 60034-7	CEI EN 60034-7	4999-22	51-117	EN 60034-7
Noise limits	60034-9	EN 60034-9	DIN EN 60034-9	CEI EN 60034-9	4999-51	51-119	EN 60034-9
Mechanical vibration	60034-14	EN 60034-14	DIN EN 60034-14	CEI EN 60034-14	4999-50	51-111	EN 60034-14
Mounting Flanges			DIN 42948	UNEL 13501			
Tolerances of mounting and shaft extensions			DIN 42955	UNEL 13501/ 13502			
Classification of environmental conditions	600721-2-1		DIN IEC 60721-2-1	CEI 75-1			
Mechanical vibration; balancing	ISO 8821		DIN ISO 8821				

Conditions of Installations

The Motors are designed for operation at altitudes ≤ 1000 m above sea-level and at ambient temperatures of up to 40° C. Exceptions are indicated on the rating plate.

Permissible temperature rises to various standards

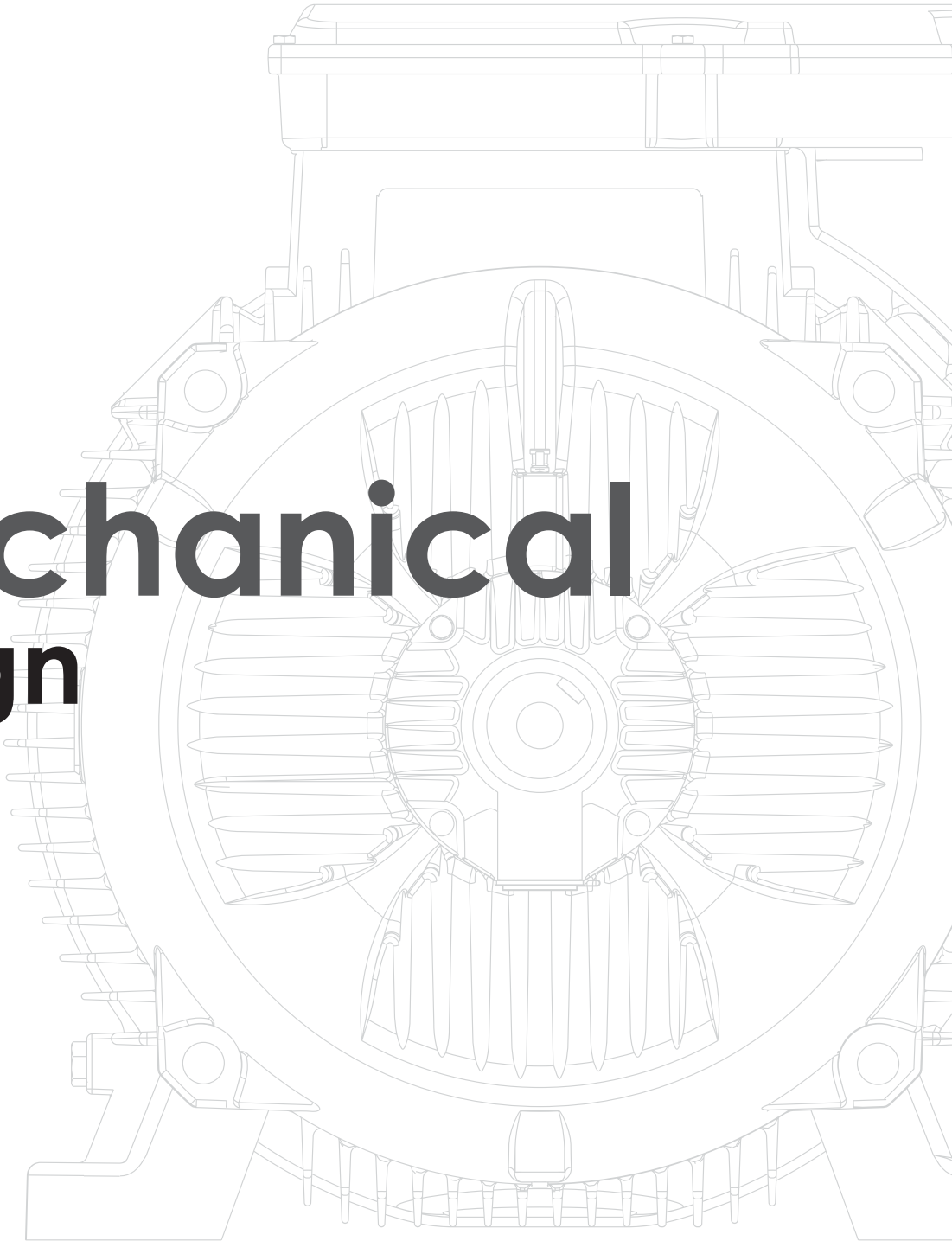
Standard/Regulation	Temperature of coolant	Permissible temperature rise in K (measured by resistance method) Temperature class		
	°C	B	F	H
VDE 0530 part 1	40	80	105	125
International IEC 34-1	40	80	105	125
Britain BS 2613	40	80	105	
Canada CSA	40	80	105	
USA NEWA and ANSI	40	80	105	
italy CEI	40	80	105	
Sweden SEN	40	80	105	
Norway NEK	40	80	105	
Belgium NBN	40	80	105	
France NF	40	80	105	
Switzerland SEV	40	80	105	
India IS	40	80	-	
Germanischer Lloyd [1]	45	75	90	
American Bureau Of Shipping [1]	50	70	95	
Bureau Veritas [1]	45	70	100	
Norske Veritas [1]	45	70	90 [2]	
Lloyds Register [1]	45	70	90	
Registro Italiano Navale [1]	45	70	90	
Korean Register [1]	50	70	90	
China Classification Society [1]	45	75	95	

on request

1) Classification societies for marine motors

2) Only with special approval

Mechanical Design



Mechanical Design

Degrees of protection

Degrees of protection for mechanical machines are designated in accordance with IEC 60034-5 by the letters **IP** and two characteristic numerals.

First numeral: Protection against contact and ingress of foreign bodies

IP	Description
0	No special protection
1	Protection against solid foreign bodies larger than 50 mm (Example: inadvertent contact with the hand)
2	Protection against solid foreign bodies larger than 12 mm (Example: inadvertent contact with the fingers)
3	Protection against solid foreign bodies larger than 2.5 mm (Example: Wires, tools)
4	Protection against solid foreign bodies larger than 1 mm (Example: Wires, bands)
5	Protection against dust (harmful deposits of dust)
6	Complete protection against dust. Is not described for electrical machines tp IEC 34-5.

Second numeral: Protection against ingress of water

IP	Description
0	No special protection
1	Protection against vertically falling water drops (condensation)
2	Protection against dropping water when inclined by up to 15°
3	Protection against waterspray at up to 60° from vertical
4	Protection against water splashed from any direction
5	Protection against water projected by a nozzle from any direction
6	Protection against heavy seas or water projected in powerful jets
7	Protection when submerged between 0.15 and 1m
8	Protection when continuously submerged in water at conditions agreed between the manufacturer and the user.

The motors conform to degree of portection IP 55 to IEC 60034-5. Higher protection on request.

The standard design for horizontal mounting is suitable for indoor and protected outdoor installation, climate group MODERATE (temperature of coolant -20° to +40° C)

For unprotected outdoor installation or severe climatic conditions (moisture category wet, climate group WORLDWIDE, extremely dusty site conditions, aggressive industrial atmosphere, danger of storm rain and coastal climate, danger of attack by termites, etc.), as well as vertical mounting, special protective measures are recommended, such as

- Protective cowl (for vertical *shaft-down* motors)
- For vertical shaft-up motors additional bearing seal and flange drainage
- Special paint finish
- Treatment of winding with protective moisture-proof varnish
- Anti-condensation heating (possibly winding heating)
- Condensation drain holes

The special measures to be applied have to be agreed with the factory once the conditions of installation have beed settled.

The corresponding conditions of installation have to be clearly incated in the order.

Tolerances

For industrial motors to EN 60034-1, certain tolerances must be allowed on guaranteed values, taking into consideration the necessary tolerances for the manufacture of such motors and the materials used. The standard includes the following remarks:

1. It is not intended that guarantees necessarily have to be given for all or any of the items involved. Quotations including guaranteed values subject to tolerances should say so, and the tolerances should be in accordance with the table.

2. Attention is drawn to the different interpretation of the term guarantee. In some countries a distinction is made between guaranteed values anf typical or declared values.

3. Where a tolerance is stated in only one direction, the value is not limited in the other direction.

Values for	**Tolerance**
Efficiency (η) (by indirect determinatio)	- 0.15 (1-η) at $P_N \leq 150$ kW - 0.1 (1-η) at $P_N > 150$ kW
Power Factor (cos φ)	$\frac{1 - \cos \varphi}{6}$,minimm 0.02, maximum 0.07
Slip (s) (at rated load and at working temperature)	± 20 % of the guaranteed slip at $P_N \leq 1$ kW ± 30 % of the guaranteed slip at $P_N \leq 1$ kW
Breakaway starting current (I_A) (in the starting circuit envisaged)	± 20 % of the guaranteed starting current (no lower limit)
Breakaway torque (M_A)	- 15 % and + 25 % of the guaranteed breakaway torque (+ 25 % may be exceeded by agreement)
Pull-up torque (M_S)	- 15 % of the guaranteed value
Pull-out torque (M_K)	- 10 % of the guaranteed value (after allowing for this tolerance, M_K/M_N not less than 1.6)
Moment of intertia (J)	± 10 % of the guaranteed value

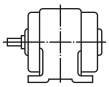
Mounting Arrangements

Mounting arrangements for rotating electrical machines are designated according to IEC 60034-7, Code I (in brackets Code II)

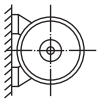
Our motors are available with the mounting arrangements listed below, depending on design and frame size. Motors with aluminium frame are equipped with removable feet that allow easy change of mounting arrangement.

Foot Mounting

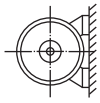
IM B3 (IM 1001)



IM B6 (IM 1051)

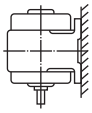


IM B7 (IM 1061)

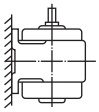


IM B8 (IM 1071)

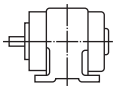
IM V5 (IM 1011)



IM V6 (IM 1031)



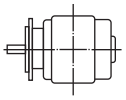
IM B33 (IM 2101)



Flange type C to DIN 42 948 at drive end

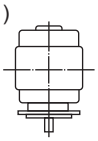
Flange Mounting

IM B5 (IM 3001)



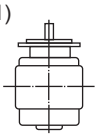
Flange type A to DIN 42 948 at drive end

IM V1 (IM 3011)



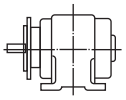
Flange type A to DIN 42 948 at drive end

IM V3 (IM 3031)



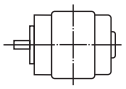
Flange type A to DIN 42 948 at drive end

IM B35 (IM 2001)



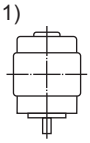
Flange type A to DIN 42 948 at drive end

IM B14 (IM 3601)



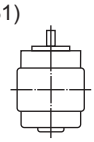
Flange type C to DIN 42 948 at drive end

IM V18 (IM 3611)



Flange type C to DIN 42 948 at drive end

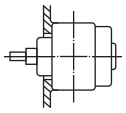
IM V19(IM 3631)



Flange type C to DIN 42 948 at drive end

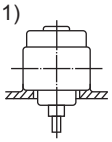
Motor Without Endshield Mounting

IM B9 (IM 9101)



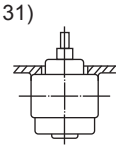
Without endshield and without ball bearings on drive end

IM V8 (IM 9111)



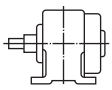
Without endshield and without ball bearings on drive end

IM V9 (IM 9131)



Without endshield and without ball bearings on drive end

IM B15 (IM 1201)



Without endshield and without ball bearings on drive end

It is essential to state the desired mounting arrangement when ordering, as the constructive design depends partly on the mounting arrangement.

Bearings

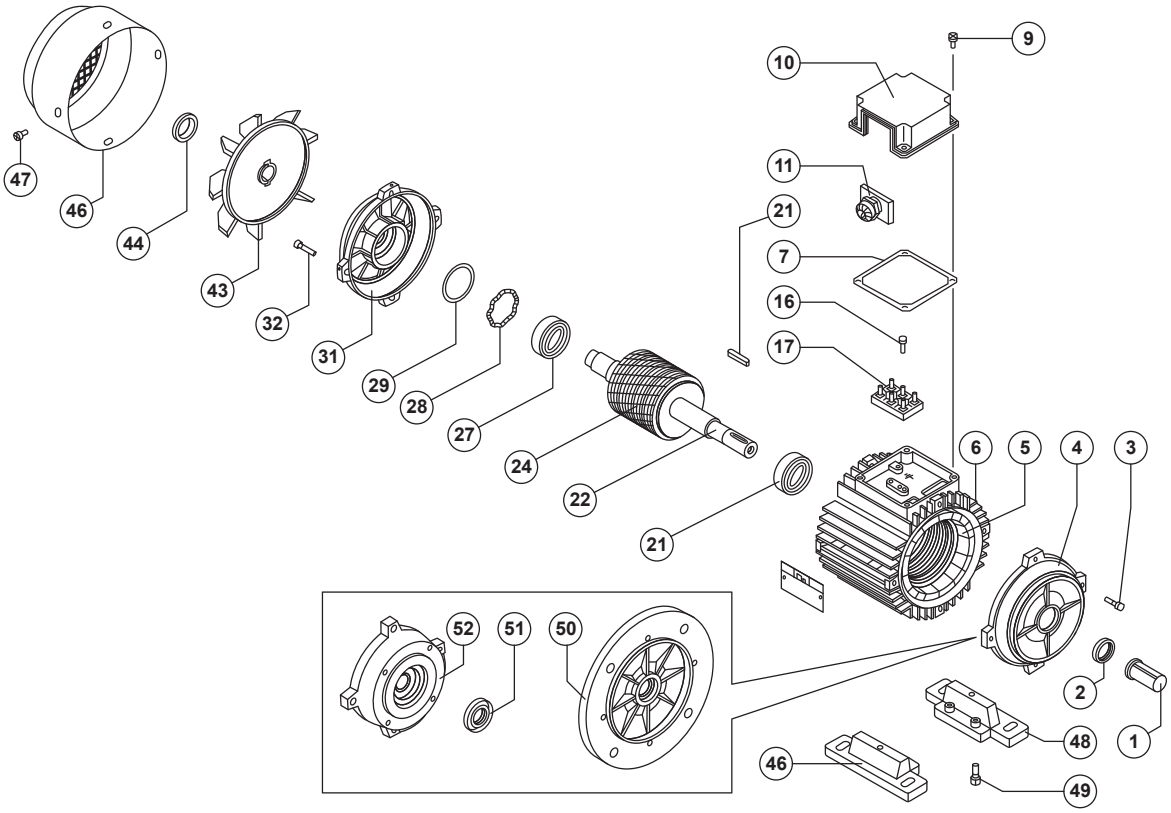
BA Aluminium Motor Bearing Size

Frame	BA (Aluminium)	
	Drive end	Non-Drive end
56	6201ZZ	6201ZZ
63	6201ZZ	6201ZZ
71	6202ZZ	6202ZZ
80	6204ZZ	6204ZZ
90	6205ZZ	6204ZZ
100	6206ZZ	6206ZZ
112	6306ZZ	6306ZZ
132	6308ZZ	6308ZZ
160	6309ZZ	6309ZZ

BR Cast Iron Motor Bearing Size

Frame Size	Poles	Drive end		Non-Drive end	
		Horizontal	Vertical	Horizontal	Vertical
80	2 to 8	6204ZZ-C3	6204ZZ-C3	6204ZZ-C3	6204ZZ-C3
90	2 to 8	6205ZZ-C3	6205ZZ-C3	6205ZZ-C3	6205ZZ-C3
100	2 to 8	6206ZZ-C3	6206ZZ-C3	6206ZZ-C3	6206ZZ-C3
112	2 to 8	6306ZZ-C3	6306ZZ-C3	6306ZZ-C3	6306ZZ-C3
132	2 to 8	6308ZZ-C3	6308ZZ-C3	6308ZZ-C3	6308ZZ-C3
160	2 to 8	6309-C3	6309-C3	6309-C3	6309-C3
180	2 to 8	6311-C3	6311-C3	6311-C3	6311-C3
200	2 to 8	6312-C3	6312-C3	6312-C3	6312-C3
225	2 to 8	6313-C3	6313-C3	6313-C3	6313-C3
250	2 to 8	6314-C3	6314-C3	6314-C3	7314
280	2 4 to 8	6314-C3 6317-C3	6314-C3 6317-C3	6314-C3 6317-C3	7314 7314
315	2 4 to 10	6316-C3 NU319	6316-C3 6319-C3	6316-C3 6319-C3	7316 7319B
355	2 4 to 10	6319-C3 NU322	6319-C3 6322-C3	6319-C3 6322-C3	7319B 7322B

Spare Parts



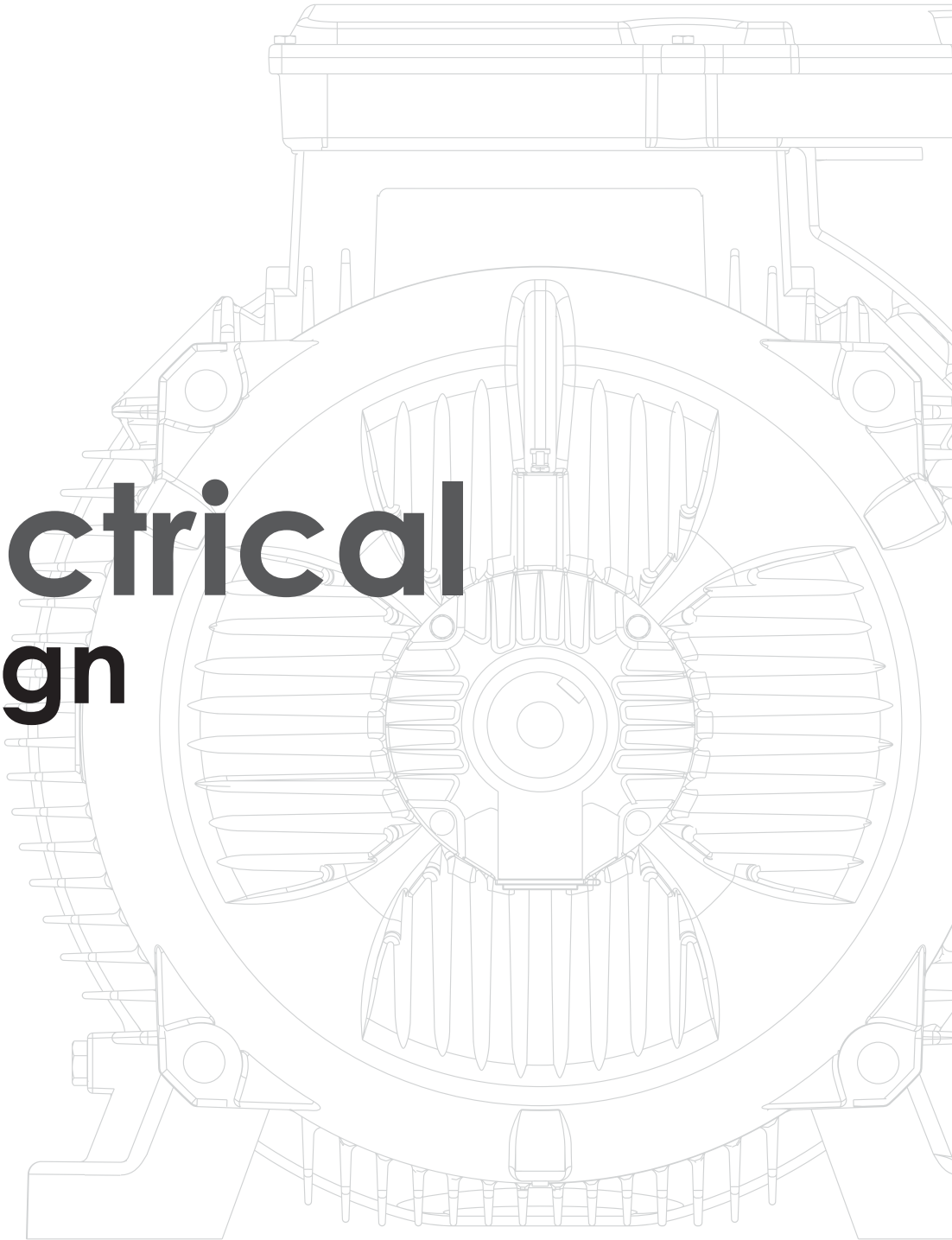
Part descriptIon

1	Shaft protection	24	Rotor assembly
2	Drive end dust seal	27	Non-drive end bearing
3	Drive end endshield fixing screw	28	Non-drive end pre-load washer
4	Drive end endshield	29	Non-drive end shim ring
5	Stator	31	Non-drive end endshield
6	Stator Frame	32	Non-drive end endshield fixing screw
7	Terminal box gasket	43	Fan
9	Terminal box fixing screw	44	Fan hose clamp
10	Terminal box	46	Fan cowl
11	Cable gland	47	Fan cowl fixing screw
16	Terminal board fixing screw	48	Feet
17	Terminal board	49	Feet fixing bolt
21	Drive end bearing	50	Flange B5
22	Motor shaft	51	Seal ring
23	Hub key	52	Flange B14

In enquires and orders for spare parts please state always:

Designation of spare part, motor type, mounting arrangement, motor serial number
(Product No. when available)
Enquire and orders cannot be handled without these data.

Electrical Design



Electrical Design

Rated voltage

For the rated voltage of the motors, EN 60034-1 allows a tolerance of ± 5 %. According to IEC 60038, the mains voltages may have a tolerance of ± 10 %.

Therefore the motors are designed for the following rated voltage ranged (exceptions are shown in the data tables):

Mains voltage to DIN IEC 38	Rated voltage range of motor
230 V ± 10%	218-242 V ± 5%
400 V ± 10%	380-420 V ± 5%
690 V ± 10%	655-725 V ± 5%

Within the rated motor voltage range, the permissible maximum temperature is not exceeded. When the motors are operated at the limits of the voltage tolerance, the permissible overtemperature of the stator winding may be exceeded by 10 K.

Rated frequency

50 Hz motors can also be operated on 60Hz mains, provided the mains voltage increases proportionally to the frequency. The relative values for starting and breakaway torque remain nearly unchanged and slightly increase for the starting current. The rated speed increases by the factor 1.2 and output by factor 1.15. Should a motor designed for 50 Hz be operated at 60Hz without the voltage being increased, the rated output of the motor cannot be increased. Under these operating conditions, rated speed increases by factor 1.2. The relative values for starting and breakaway torque are reduced by factor 0.82 and for starting current by factor 0.9.

Rated current

The rated currents listed in the data tables apply to an operating voltage of 400 V. The conversion to other operating voltages, with output and frequency remaining unchanged, is to be made as follows:

Norminal voltage (**V**)	230	380	**400**	440	500	660	690
Conversion factor x In	1.74	1.05	**1.0**	0.91	0.80	0.61	0.58

Rated torque

$$\text{Rated torque in Nm} = 9550 \times \frac{\text{Rated voltage in kW}}{\text{Rated Speed in min}^{-1}}$$

Output

The outputs stated in this catalogue are for constant load in continuous running duty S1 according to EN 60034-1, based on an ambient temperature of 40° C and installation at altitudes up to 1000m above sea level.

For severe operating conditions, e.g. high switching rate , long run-up time or electric braking , a thermal reserve is necessary, which could call for higher thermal class or the use of a motor with a higher rating. In these cases we recommend to enquire with detailed information on the operating conditions.

Overload

At operating temperature three-phase motors are capable of withstanding an overload for 15 seconds at 1.5 times the rated torque at rated voltage. This overload is according to EN 60034-1 and will not result in excessive heating.

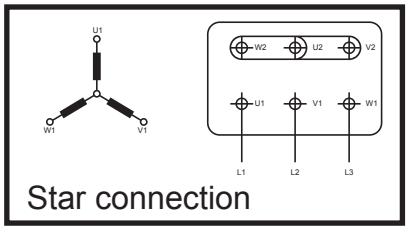
Utilizing thermal class F, motors can be operated continuously with an overload of 12 %. Nevertheless this is not valid for motors which to catalogue are utilized to thermal class F.

Connection diagrams

Windings of standard three-phase motors can be connected either in star or delta connection.

Star connection

A star connection is obtained by connecting W2, U2, V2 terminals to eachother and U1, V1, W1 terminals to the mains. The phase current and voltage are:



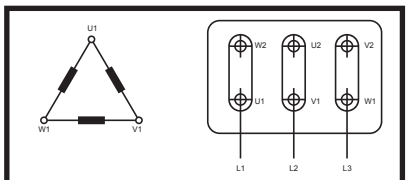
Star connection

$I_{ph} = I_n$; $U_{ph} = U_n / \sqrt{3}$

where In is the line current and Vn the line voltage referred to the star connection.

Delta connection

A delta connection is obtained by connecting the end of a phase to the beginning of the next phase.



Delta connection

The phase current Iph and the phase voltage Uph are:

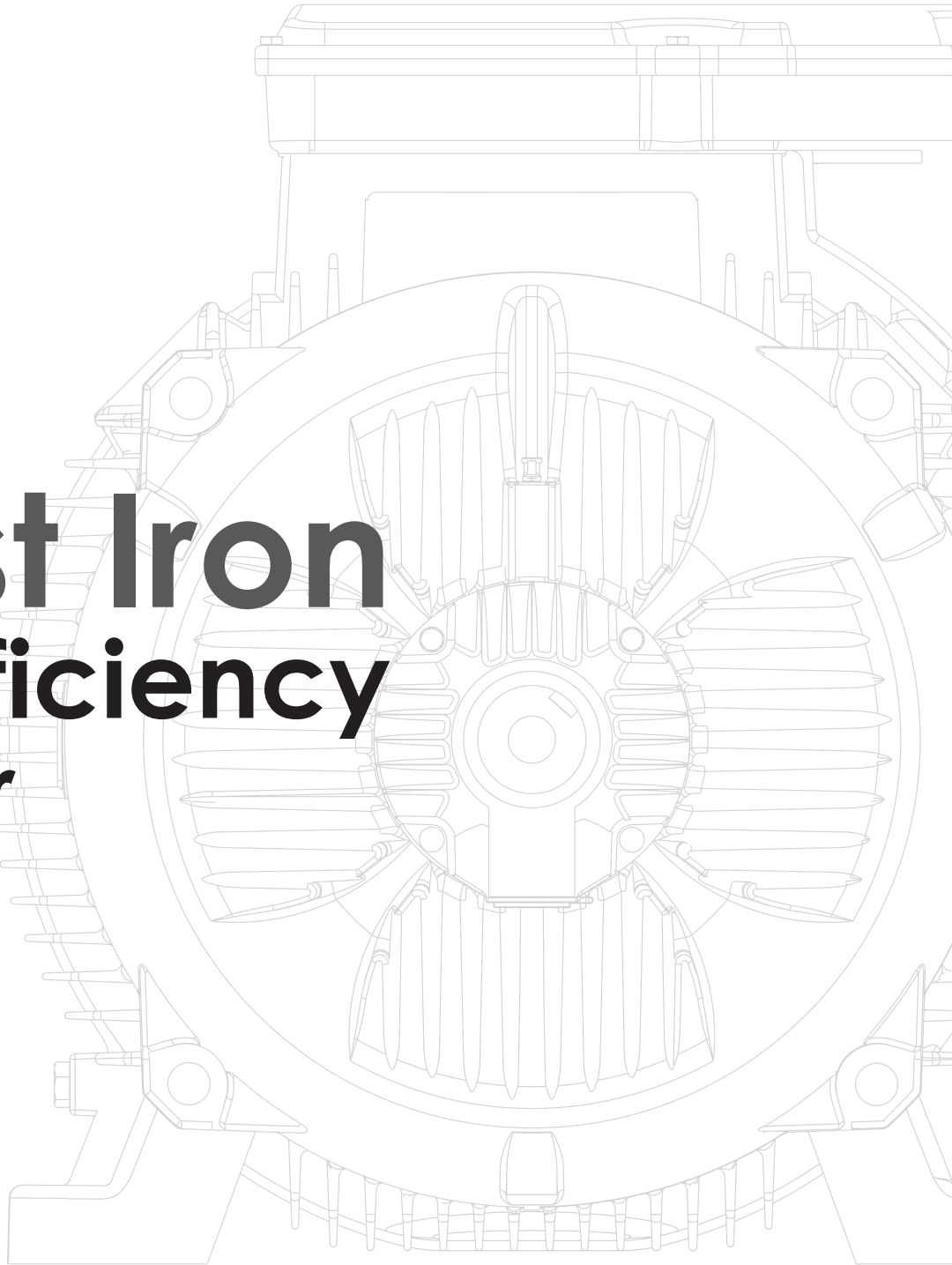
$I_{ph} = I_n / \sqrt{3}$; $U_{ph} = U_n$

where in and Un are referred to the delta connection.

Star-delta starting

Star-delta starting allows a peak current reduction, ensuring however that the peak torque obtained is bigger than the resistant torque. Actually , it should be notedthat the torque of an induction squirrel-cage motor is directly proportional to the square of the voltage. Motors whose rated voltage with delta connection corresponds to the mains voltage, can be started with the star-delta method.

All motors can be supplied with windings designed for star-delta starting (for example: 400VΔ / 690VY).



Cast Iron
IE2 Efficiency
Motor

CAST IRON
IE2 Efficiency Motor

BR2 Series

Three-Phase Squrriel Cage Motors
380-415v
Protection IP55

SPEED 3000 RPM 2-POLE 50HZ

Type	Rated Output		Rated Speed rpm	Effciency η% load	Power factor cos Φ	Rated current A			Rated Torque Nm	Ts/Tn	Tmax/ Tn	Is/In	Weight kg
	Kw	HP				380	400	415					
BR2-80M1-2	0.75	1	2840	77.5	0.83	1.8	1.7	1.6	2.5	2.3	2.4	6.8	16
BR2-80M2-2	1.1	1.5	2840	82.8	0.83	2.4	2.3	2.2	3.7	2.3	2.6	7.3	18
BR2-90S-2	1.5	2	2850	84.1	0.84	3.2	3.1	3.0	5.0	2.5	2.8	7.6	26
BR2-90L-2	2.2	3	2850	85.6	0.85	4.6	4.4	4.2	7.4	2.4	2.7	7.5	30
BR2-100L-2	3	4	2880	86.7	0.87	6.0	5.7	5.5	9.9	2.4	2.6	7.5	40
BR2-112M-2	4	5.5	2880	87.6	0.88	7.9	7.5	7.2	13.3	2.3	2.4	7.5	47
BR2-132S1-2	5.5	7.5	2880	88.6	0.88	10.7	10.2	9.8	18.2	2.2	2.7	7.6	63
BR2-132S2-2	7.5	10	2900	89.5	0.89	14.3	13.6	13.1	24.7	2.3	2.3	7.2	70
BR2-160M1-2	11	15	2910	90.5	0.89	20.8	19.7	19.0	36.1	2.2	2.3	7.3	120
BR2-160M2-2	15	20	2930	91.3	0.89	28.0	26.6	25.7	48.9	2.2	2.3	7.5	128
BR2-160L-2	18.5	25	2930	91.8	0.89	34.4	32.7	31.5	60.3	2.4	2.7	7.6	150
BR2-180M-2	22	30	2930	92.2	0.89	40.7	38.7	37.3	71.7	2.2	2.3	7.7	190
BR2-200L1-2	30	40	2930	92.9	0.89	55.1	52.4	50.5	97.8	2.4	2.6	7.0	252
BR2-200L2-2	37	50	2950	93.3	0.89	67.7	64.3	62.0	119.8	2.2	2.3	7.0	275
BR2-225M-2	45	60	2970	93.7	0.89	82.0	77.9	75.1	144.7	2.2	2.3	7.1	315
BR2-250M-2	55	75	2970	94.0	0.89	99.9	94.9	91.5	176.9	2.2	2.3	7.1	396
BR2-280S-2	75	100	2970	94.6	0.89	135.3	128.6	123.9	241.2	2.0	2.3	6.5	571
BR2-280M-2	90	125	2970	95.0	0.89	161.7	153.6	148.1	289.4	2.1	2.4	6.8	595
BR2-315S-2	110	150	2980	95.4	0.90	194.7	184.9	178.2	352.5	2.0	2.4	7.0	965
BR2-315M-2	132	180	2980	95.4	0.90	233.6	221.9	213.9	423.0	2.2	2.6	7.0	1067
BR2-315L1-2	160	200	2980	95.4	0.91	280.0	266.0	256.4	512.8	2.1	2.4	6.8	1151
BR2-315L2-2	200	270	2980	95.4	0.91	350.0	332.5	320.5	640.9	2.3	2.7	7.2	1208
BR2-355M2-2	250	340	2980	95.8	0.91	437.1	415.2	400.2	801.2	2.0	2.2	7.1	1638
BR2-355L-2	315	430	2980	95.8	0.91	549.0	521.5	502.7	1009.5	2.0	2.2	7.1	1834

CAST IRON
IE2 Efficiency Motor

BR2 Series

Three-Phase Squrriel Cage Motors
380-415v
Protection IP55

SPEED 1500 RPM 4-POLE 50HZ

Type	Rated Output		Rated Speed rpm	Effciency η% load	Power factor cos Φ	Rated current A			Rated Torque Nm	Ts/Tn	Tmax/ Tn	Is/In	Weight kg
	Kw	HP				380	400	415					
BR2-80M1-4	0.55	0.75	1390	80.7	0.75	1.4	1.3	1.3	3.8	2.3	2.5	6.3	16
BR2-80M2-4	0.75	1	1390	82.3	0.75	1.8	1.8	1.7	5.2	2.3	2.6	6.5	18
BR2-90S-4	1.1	1.5	1405	83.8	0.75	2.7	2.5	2.4	7.5	2.3	2.5	6.6	25
BR2-90L-4	1.5	2	1405	85.0	0.75	3.6	3.4	3.3	10.2	2.4	2.7	6.9	29
BR2-100L1-4	2.2	3	1425	86.4	0.81	4.8	4.5	4.4	14.7	2.3	2.6	7.5	37
BR2-100L2-4	3	4	1425	87.4	0.82	6.4	6.0	5.8	20.1	2.3	2.7	7.6	42
BR2-112M-4	4	5.5	1440	88.3	0.82	8.4	8.0	7.7	26.5	2.3	2.7	7.7	52
BR2-132S-4	5.5	7.5	1440	89.2	0.82	11.4	10.9	10.5	36.5	2.1	2.4	7.5	70
BR2-132M-4	7.5	10	1445	90.1	0.83	15.2	14.5	14.0	49.6	2.2	2.5	7.4	82
BR2-160M-4	11	15	1460	91.0	0.85	21.6	20.5	19.8	72.0	2.3	2.6	7.5	135
BR2-160L-4	15	20	1460	91.8	0.86	28.9	27.4	26.4	98.1	2.2	2.4	7.5	156
BR2-180M-4	18.5	25	1470	92.2	0.86	35.4	33.7	32.5	120.0	2.4	2.7	7.7	203
BR2-180L-4	22	30	1475	92.6	0.86	42.0	39.9	38.4	142.4	2.2	2.5	7.8	218
BR2-200L-4	30	40	1475	93.2	0.86	56.9	54.0	52.1	194.2	2.2	2.5	7.2	275
BR2-225S-4	37	50	1480	93.6	0.86	69.8	66.3	63.9	238.8	2.2	2.6	7.3	328
BR2-225M-4	45	60	1480	93.9	0.86	84.7	80.4	77.5	290.4	2.2	2.4	7.4	355
BR2-250M-4	55	75	1480	94.2	0.86	103.2	98.0	94.5	354.9	2.2	2.7	7.4	473
BR2-280S-4	75	100	1480	94.7	0.88	136.7	129.9	125.2	484.0	2.3	2.5	6.7	596
BR2-280M-4	90	125	1480	95.0	0.88	163.6	155.4	149.8	580.7	2.3	2.5	6.9	713
BR2-315S-4	110	150	1480	95.4	0.88	199.1	189.1	182.3	709.8	2.2	2.6	6.9	1012
BR2-315M-4	132	180	1480	95.4	0.88	238.9	227.0	218.7	851.8	2.3	2.7	6.9	1147
BR2-315L1-4	160	200	1480	95.4	0.89	286.3	272.0	262.2	1032.4	2.2	2.6	6.9	1224
BR2-315L2-4	200	270	1485	95.4	0.89	358.0	340.0	327.7	1286.2	2.3	2.4	6.9	1331
BR2-355M2-4	250	340	1490	95.8	0.90	441.0	418.5	403.4	1602.3	2.2	2.4	6.9	1650
BR2-355L2-4	315	430	1490	95.8	0.90	555.1	527.3	508.3	2019.0	2.2	2.3	6.9	1804

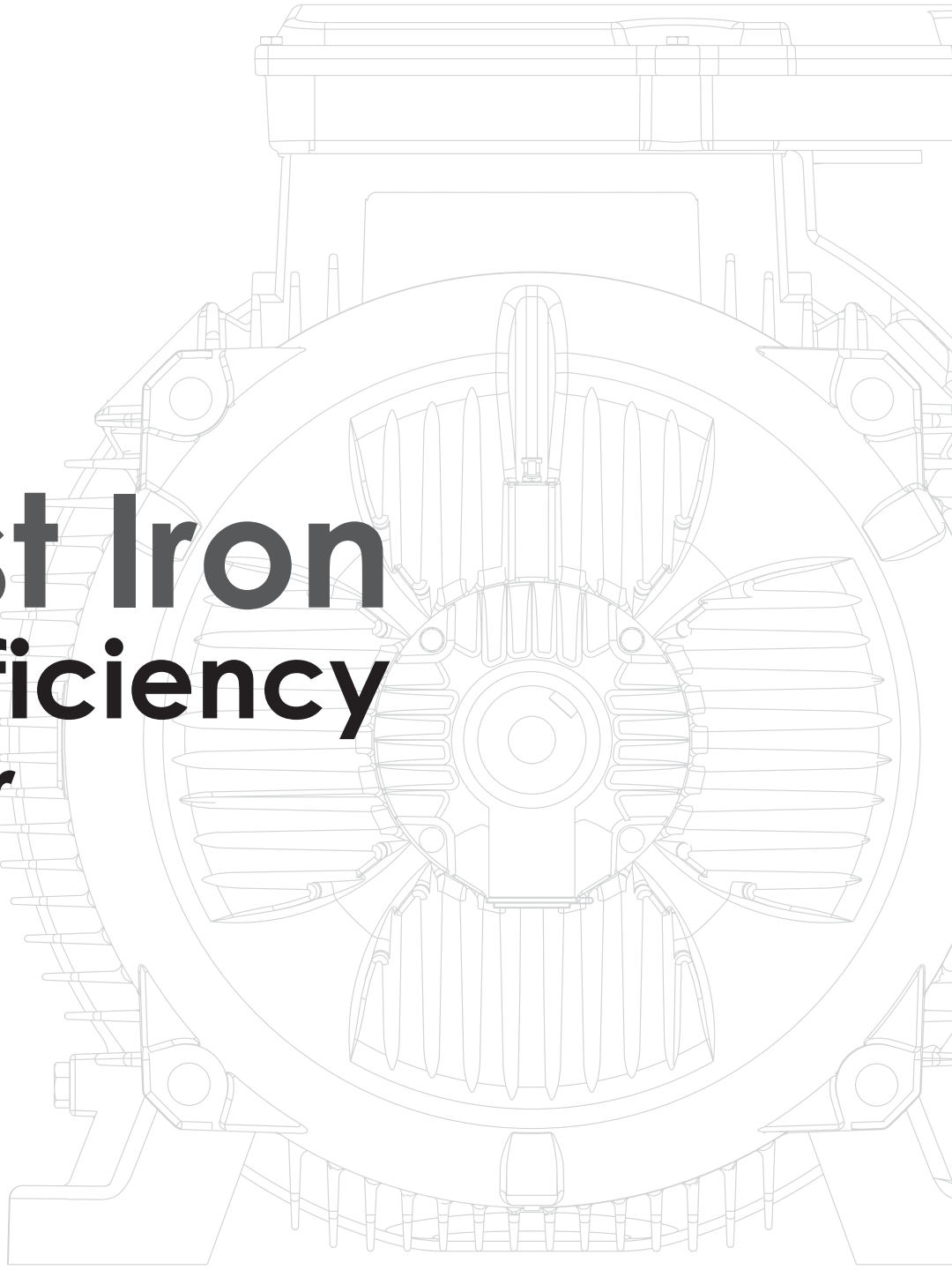
CAST IRON
IE2 Efficiency Motor

BR2 Series

Three-Phase Squrriel Cage Motors
380-415v
Protection IP55

SPEED 1000 RPM 6-POLE 50HZ

Type	Rated Output		Rated Speed rpm	Effciency η% load	Power factor cos Φ	Rated current A			Rated Torque Nm	Ts/Tn	Tmax/ Tn	Is/In	Weight kg
	Kw	HP				380	400	415					
BR2-90S-6	0.75	1	910	77.7	0.72	2.0	1.9	1.9	7.9	2.1	2.4	5.8	24
BR2-90L-6	1.1	1.5	910	79.9	0.73	2.9	2.7	2.6	11.5	2.3	2.5	5.9	28
BR2-100L-6	1.5	2	920	81.5	0.74	3.8	3.6	3.5	15.6	2.1	2.3	6.0	38
BR2-112M-6	2.2	3	940	83.4	0.74	5.4	5.1	5.0	22.4	2.2	2.3	6.0	45
BR2-132S-6	3	4	960	84.9	0.74	7.3	6.9	6.6	29.8	2.1	2.3	6.2	68
BR2-132M1-6	4	5.5	960	86.1	0.74	9.5	9.1	8.7	39.8	2.0	2.2	6.8	79
BR2-132M2-6	5.5	7.5	960	87.4	0.75	12.7	12.1	11.7	54.7	2.0	2.3	7.1	84
BR2-160M-6	7.5	10	970	89.0	0.78	16.4	15.6	15.0	73.8	2.2	2.5	6.7	126
BR2-160L-6	11	15	970	90.0	0.79	23.5	22.3	21.5	108.3	2.1	2.4	6.9	153
BR2-180L-6	15	20	970	91.0	0.81	30.9	29.4	28.3	147.7	2.0	2.2	7.2	207
BR2-200L1-6	18.5	25	970	91.5	0.81	37.9	36.0	34.7	182.1	2.2	2.4	7.2	250
BR2-200L2-6	22	30	970	92.0	0.82	44.3	42.1	40.6	216.6	2.2	2.5	7.3	259
BR2-225M-6	30	40	980	92.5	0.81	60.8	57.8	55.7	292.3	2.1	2.5	7.1	382
BR2-250M-6	37	50	980	93.0	0.84	72.0	68.4	65.9	360.6	2.2	2.4	7.1	449
BR2-280S-6	45	60	980	93.5	0.86	85.0	80.8	77.9	438.5	2.1	2.0	7.2	586
BR2-280M-6	55	75	980	93.8	0.86	103.6	98.4	94.9	536.0	2.1	2.0	7.2	645
BR2-315S-6	75	100	990	94.2	0.85	142.3	135.2	130.3	723.5	2.0	2.3	6.7	1006
BR2-315M-6	90	125	990	94.5	0.84	172.3	163.7	157.7	868.2	2.0	2.3	6.7	1107
BR2-315L1-6	110	150	990	95.0	0.85	207.0	196.6	189.5	1061.1	2.0	2.3	6.7	1197
BR2-315L2-6	132	180	990	95.0	0.86	245.5	233.2	224.8	1273.3	2.0	2.3	6.7	1268
BR2-355M1-6	160	200	990	95.0	0.87	294.1	279.4	269.3	1543.4	2.0	2.2	6.7	1554
BR2-355M3-6	200	270	990	95.0	0.87	367.7	349.3	336.7	1929.3	2.0	2.2	6.7	1768
BR2-355L2-6	250	340	990	95.0	0.87	459.6	436.6	420.8	2411.6	2.0	2.2	6.7	1902



Cast Iron
IE1 Efficiency
Motor

CAST IRON
IE1 Efficiency Motor

BR1 Series

Three-Phase Squrriel Cage Motors
380-415v
Protection IP55

SPEED 3000 RPM 2-POLE 50HZ

Type	Rated Output		Rated Speed rpm	Effciency η% (IE1)	Power factor cos Φ	Rated current A			Rated Torque Nm	Ts/Tn	Tmax/ Tn	Is/In	Weight kg
	Kw	HP				380	400	415					
BR1-80M1-2	0.75	1	2840	75.5	0.83	1.8	1.7	1.67	2.5	2.3	2.6	5.5	13
BR1-80M2-2	1.1	1.5	2840	76.1	0.84	2.6	2.5	2.4	3.7	2.3	2.6	5.6	15
BR1-90S-2	1.5	2	2850	79.5	0.85	3.4	3.2	3.1	5	2.5	2.9	6.1	20
BR1-90L-2	2.2	3	2850	81.7	0.85	4.8	4.6	4.4	7.4	2.7	2.9	6.1	23
BR1-100L-2	3	4	2880	83.1	0.87	6.3	6	5.8	10	2.7	2.9	6.5	30
BR1-112M-2	4	5.5	2880	83.5	0.88	8.3	7.9	7.6	13.3	2.6	2.9	6.5	40
BR1-132S1-2	5.5	7.5	2900	85.9	0.88	11.1	10.5	10.2	18.1	2.3	2.6	6.9	54
BR1-132S2-2	7.5	10	2900	87.2	0.88	14.9	14.2	13.5	24.5	2.5	2.8	0.9	60
BR1-160M1-2	11	15	2930	88.7	0.89	21.1	20.1	19.4	35.8	2.6	2.9	6.7	99
BR1-160M2-2	15	20	2930	89.5	0.89	28.6	27.2	26.2	48.8	2.6	2.9	6.7	110
BR1-160L-2	18.5	25	2930	90.2	0.9	34.6	32.9	31.8	60.4	2.5	2.8	6.8	127
BR1-180M-2	22	30	2940	90.6	0.9	41	38.9	37.6	71.4	2.6	2.8	6.6	167
BR1-200L1-2	30	40	2950	91.5	0.9	55.4	52.6	50.7	97.2	2.5	2.7	6.5	220
BR1-200L2-2	37	50	2950	92	0.9	67.9	64.5	62.2	119.8	2.4	2.6	6.5	242
BR1-225M-2	45	60	2970	92.5	0.9	82.1	78	75.3	145	2.4	2.6	6.8	281
BR1-250M-2	55	75	2970	93.2	0.9	99.6	94.6	91.3	177	2.5	2.8	6.8	373
BR1-280S-2	75	100	2970	93.9	0.9	134.8	128.1	123.5	241	2.4	2.7	6.7	477
BR1-280M-2	90	125	2970	94.2	0.91	159.5	151.5	146.1	290	2.4	2.7	6.7	516
BR1-315S-2	110	150	2980	94.4	0.91	194.6	184.9	178.2	353	2	2.5	6.6	792
BR1-315M-2	132	180	2980	94.6	0.91	233	221.4	213.4	423	2.1	2.5	6.6	828
BR1-315L1-2	160	200	2980	94.7	0.91	282.1	270	258.4	513	1.9	2.4	6.7	932
BR1-315L2-2	200	270	2980	95	0.92	347.7	330.1	318.4	641	1.9	2.4	6.7	1044
BR1-355M1-2	220	300	2980	95.5	0.92	379	361	349	705	1.48	2.34	5.42	1490
BR1-355M2-2	250	340	2980	95.6	0.92	429	408	393	802	1.65	2.44	5.74	1638
BR1-355L1-2	280	380	2980	95.6	0.93	478	457	437	897	2.01	2.76	6.69	1798
BR1-355L2-2	315	430	2980	95.7	0.93	537	510	491	1010	1.61	2.29	5.46	1834

CAST IRON
IE1 Efficiency Motor

BR1 Series

Three-Phase Squrriel Cage Motors
380-415v
Protection IP55

SPEED 1500 RPM 4-POLE 50HZ

Type	Rated Output		Rated Speed rpm	Effciency η% (IE1)	Power factor cos Φ	Rated current A			Rated Torque Nm	Ts/Tn	Tmax/ Tn	Is/In	Weight kg
	Kw	HP				380	400	415					
BR1-80M1-4	0.55	0.75	1390	71.4	0.75	1.6	1.5	1.4	3.8	2.2	2.4	5.5	13
BR1-80M2-4	0.75	1	1390	73.5	0.76	2.1	2..0	1.9	5.2	2.2	2.4	5.6	15
BR1-90S-4	1.1	1.5	1400	76.2	0.77	2.9	2.8	2.7	7.5	2.2	2.5	5.4	20
BR1-90L-4	1.5	2	1400	78.7	0.78	3.8	3.6	3.5	10.2	2.4	2.6	5.2	24
BR1-100L1-4	2.2	3	1420	81.0	0.81	5.1	4.8	4.7	14.8	2.3	2.6	6.0	29
BR1-100L2-4	3	4	1420	82.7	0.82	6.8	6.5	6.2	20.2	2.3	2.7	6.1	32
BR1-112M-4	4	5.5	1440	84.5	0.82	8.8	8.4	8.1	26.5	2.3	2.8	6.5	42
BR1-132S-4	5.5	7.5	1440	85.7	0.83	11.7	11.1	10.7	36.5	2.3	2.9	6.8	57
BR1-132M-4	7.5	10	1440	87.1	0.84	15.6	14.8	14.3	49.8	2.4	3.0	6.5	69
BR1-160M-4	11	15	1460	88.6	0.84	22.5	21.4	20.6	72	2.3	2.9	6.9	107
BR1-160L-4	15	20	1460	89.5	0.85	30.3	28.8	27.7	98.2	2.3	2.9	6.8	129
BR1-180M-4	18.5	25	1470	90.2	0.86	36.2	34.4	33.1	120.2	2.3	2.9	6..4	162
BR1-180L-4	22	30	1470	90.7	0.86	42.9	40.8	39.3	143	2.3	2.9	6.9	172
BR1-200L-4	30	40	1470	92.1	0.86	57.5	54.6	52.7	195	2.4	2.9	6.8	224
BR1-225S-4	37	50	1480	92.7	0.87	69.7	66.2	63.8	238.9	2.2	2.7	6.5	277
BR1-225M-4	45	60	1480	93.0	0.87	84.5	80.3	77.4	290.5	2.3	2.5	6.3	302
BR1-250M-4	55	75	1480	93.3	0.87	103	97.9	94.3	355.1	2.2	2.5	6.4	383
BR1-280S-4	75	100	1480	93.8	0.88	138.1	131.2	126.5	483.9	2.1	2.8	6.8	527
BR1-280M-4	90	125	1480	94.1	0.88	165	156.8	151.1	580.7	2.2	2.7	6.9	548
BR1-315S-4	110	150	1480	94.7	0.88	200.5	190.5	183.6	709.8	1.9	2.7	6.5	850
BR1-315M-4	132	180	1480	95.0	0.88	240	228.0	219.8	851.8	2.3	3.2	6.8	918
BR1-315L1-4	160	200	1480	.95.2	0.89	287	272.7	262.8	1032	2.6	3.0	6.6	1018
BR1-315L2-4	200	270	1480	95.4	0.89	358	340.1	327.8	1290	2.2	2.8	6.4	1122
BR1-355M1-4	220	300	1490	95.6	0.90	388	372	356	1410	1.94	2.41	6.18	1592
BR1-355M2-4	250	340	1490	95.6	0.90	440	420	403	1603	1.93	2.33	6.05	1650
BR1-355L1-4	280	380	1490	95.7	0.90	492	471	450	1795	2.01	2.35	6.17	1758
BR1-355L2-4	315	430	1490	95.7	0.90	554	521	506	2020	2.17	2.42	6.44	1804

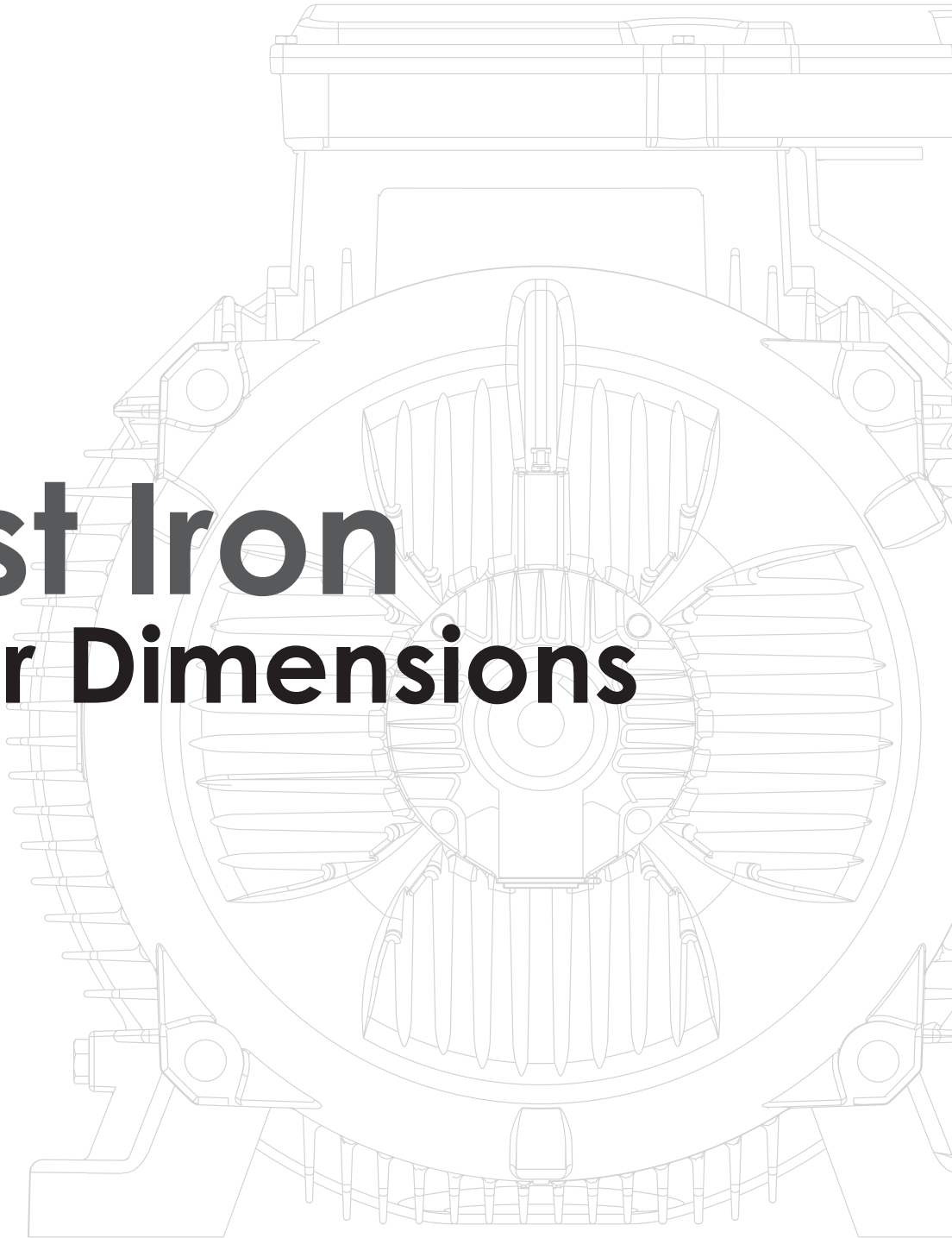
CAST IRON
IE1 Efficiency Motor

BR1 Series

Three-Phase Squrriel Cage Motors
380-415v
Protection IP55

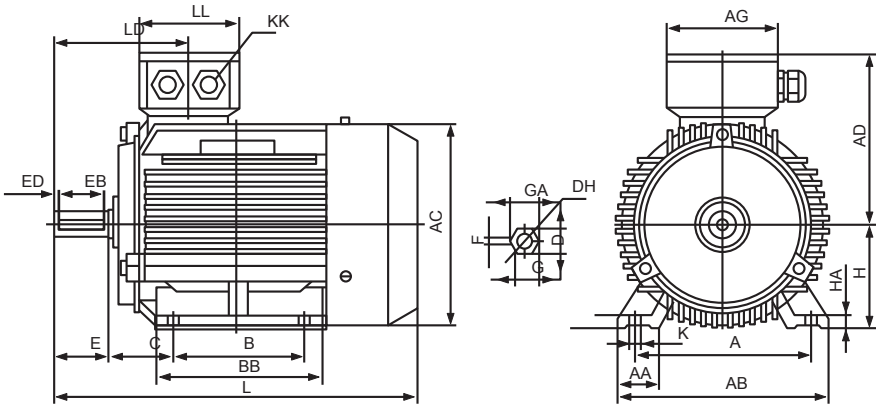
SPEED 1000RPM 6-POLE 50HZ

Type	Rated Output		Rated Speed rpm	Effciency η% (IE1)	Power factor cos Φ	Rated current A			Rated Torque Nm	Ts/Tn	Tmax/ Tn	Is/In	Weight kg
	Kw	HP				380	400	415					
BR1-90S-6	0.75	1	910	69.1	0.72	2.3	2.2	2.1	7.9	2.3	2.7	4.1	21
BR1-90L-6	1.1	1.5	910	72	0.73	3.2	3.0	2.9	11.5	2.3	2.7	4.6	23
BR1-100L-6	1.5	2	920	76	0.75	4.1	3.9	3.8	15.6	2.4	2.8	5	29
BR1-112M-6	2.2	3	940	79.1	0.76	5.6	5.3	5.1	22.4	2.1	2.5	5.2	37
BR1-132S-6	3	4	960	81.3	0.76	7.4	7.0	6.8	29.9	1.9	2.5	5.6	52
BR1-132M1-6	4	5.5	960	82.3	0.76	9.7	9.2	8.9	39.8	2.1	2.7	6.2	59
BR1-132M2-6	5.5	7.5	960	84.7	0.77	12.8	12.2	11.7	54.7	2.3	2.8	6.5	72
BR1-160M-6	7.5	10	970	86.6	0.77	17.1	16.2	15.7	73.9	2	2.6	5.6	98
BR1-160L-6	11	15	970	87.6	0.78	24.5	23.3	22.4	108	2.1	2.4	5.8	121
BR1-180L-6	15	20	970	89	0.81	31.6	30.0	28.9	148	2	2.4	5.7	164
BR1-200L1-6	18.5	25	970	90.2	0.81	38.5	36.6	35.3	182	2.2	2.8	6.7	208
BR1-200L2-6	22	30	970	90.2	0.83	44.7	42.5	40.9	217	2.3	2.9	6.6	217
BR1-225M-6	30	40	980	91.5	0.84	59.3	56.3	54.3	293	2.2	2.7	6.8	287
BR1-250M-6	37	50	980	92.2	0.86	70.1	66.6	64.2	361	2	2.5	6.2	355
BR1-280S-6	45	60	980	92.5	0.86	86	81.7	78.7	438	1.9	2.5	6.1	456
BR1-280M-6	55	75	985	92.9	0.86	105	99.8	96.1	536	2.1	2.7	6.7	502
BR1-315S-6	75	100	990	93.7	0.86	142	134.9	130.0	724	2	2.7	6.5	786
BR1-315M-6	90	125	990	93.9	0.86	170	161.5	155.7	869	2	2.6	6.2	884
BR1-315L1-6	110	150	990	94.5	0.86	206	195.7	188.6	1062	1.9	2.7	6	964
BR1-315L2-6	132	180	990	94.6	0.87	244	231.8	223.4	1274	2	2.7	5.8	1060
BR1-355M1-6	160	200	990	95.4	0.87	291	275	267	1544	2.28	2.95	7.13	1554
BR1-355M2-6	200	270	990	95.5	0.88	361	342	330	1930	2.3	2.89	7.09	1768
BR1-355L1-6	220	300	990	95.5	0.88	395	376	365	2122	1.84	2.73	5.9	1796
BR1-355L2-6	250	340	990	95.6	0.89	448	425	409	2413	2.16	2.64	6.59	1902

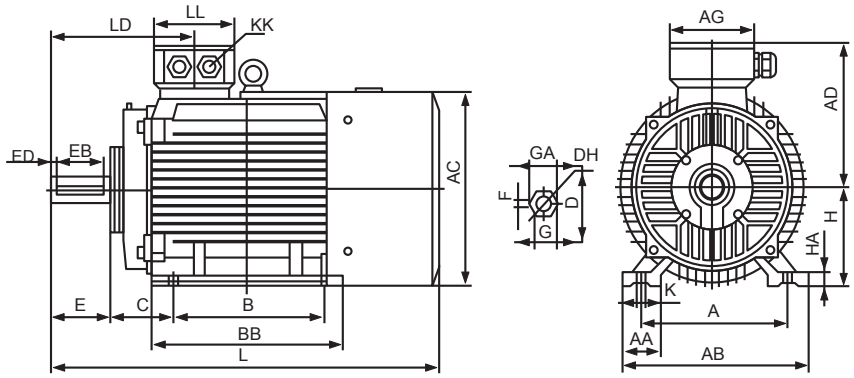


Cast Iron
Motor Dimensions

CAST IRON
Motor Dimensions



FR#80-132



FR#160-355

Foot Mounting
IM B3 #80-355

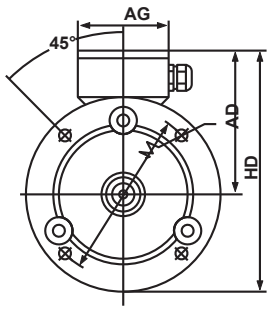
Type	Pole	A	AA	AB	AC
80	2,4,6,8	125	34	160	155.4
90S	2,4,6,8	140	36	176	175.4
90L	2,4,6,8	140	36	176	175.4
100L	2,4,6,8	160	40	200	195.4
112M	2,4,6,8	190	45	226	219.5
132S	2,4,6,8	216	55	262	258.4
132M	4,6,8	216	55	262	258.4
160M	2,4,6,8	254	65	314	314
160L	2,4,6,8	254	65	314	314
180M	2,4,8	279	70	349	355
180L	4,6,8	279	70	349	355
200L	2,4,6,8	318	70	388	397
225S	4,6,8	356	75	431	446
225M	2	356	75	431	446
225M	4,6,8	356	75	431	446
250M	2	406	80	484	485
250M	4,6,8	406	80	484	485
280S	2	457	85	542	547
280S	4,6,8	457	85	542	547
280M	2	457	85	542	547
280M	4,6,8	457	85	542	547
315S	2	508	120	628	620
315S	4,6,8,10	508	120	628	620
315M	2	508	120	628	620
315M	4,6,8,10	508	120	628	620
315L	2	508	120	628	620
315L	4,6,8,10	508	120	628	620
355M	2	610	116	726	698
355M	4,6,8,10	610	116	726	698
355L	2	610	116	726	698
355L	4,6,8,10	610	116	726	698

AD	AG	B	BB	C	D	DH	E	EB	ED	F	G	GA	H	HA	K	KK	L	LD	LL
131	94	100	130	50	19	M6X16	40	30	5	6	15.5	21.5	80	10	4-Φ10	1-M25X1.5	284	112	94
148	102	100	130	56	24	M8X19	50	40	5	8	20	27	90	12	4-Φ10	1-M25X1.5	308	130	102
148	102	125	155	56	24	M8X19	50	40	5	8	20	27	90	12	4-Φ10	1-M25X1.5	333	130	102
162	102	140	176	63	28	M10X22	60	50	5	8	24	31	100	14	4-Φ12	1-M32X1.5	380	139	102
183	118	140	180	70	28	M10X22	60	50	5	8	24	31	112	15	4-Φ12	2-M32X1.5	394	147	110
203	118	140	200	89	38	M12X28	80	65	7.5	10	33	41	132	18	4-Φ12	2-M32X1.5	470	172	110
203	118	178	238	89	38	M12X28	80	65	7.5	10	33	41	132	18	4-Φ12	2-M32X1.5	508	172	110
251	162	210	260	108	42	M16X36	110	90	10	12	37	45	160	20	4-Φ14.5	2-M40X1.5	608	256	152
251	162	254	304	108	42	M16X36	110	90	10	12	37	45	160	20	4-Φ14.5	2-M40X1.5	652	256	152
267	162	241	311	121	48	M16X36	110	90	10	14	42.5	51.5	180	22	4-Φ14.5	2-M40X1.5	688	271	152
267	162	279	349	121	48	M16X36	110	90	10	14	42.5	51.5	180	22	4-Φ14.5	2-M40X1.5	726	271	152
299	210	305	369	133	55	M20X42	110	100	5	16	49	59	200	25	4-Φ16.5	2-M50X1.5	771	296	190
322	210	286	368	149	60	M20X42	140	125	7.5	18	53	64	225	28	4-Φ18.5	2-M50X1.5	824	329	190
322	210	311	393	149	55	M20X42	110	100	5	16	49	59	225	28	4-Φ18.5	2-M50X1.5	819	299	190
322	210	311	393	149	60	M20X42	140	125	7.5	18	53	64	225	28	4-Φ18.5	2-M50X1.5	846	329	190
358	248	349	445	168	60	M20X42	140	125	7.5	18	53	64	250	30	4-Φ24	2-M63X1.5	910	347	218
358	248	349	445	168	65	M20X42	140	125	7.5	18	58	69	250	30	4-Φ24	2-M63X1.5	910	347	218
387	248	368	485	190	65	M20X42	140	125	7.5	18	58	69	280	35	4-Φ24	2-M63X1.5	982	355.5	218
387	248	368	485	190	75	M20X42	140	125	7.5	20	67.5	79.5	280	35	4-Φ24	2-M63X1.5	982	355.5	218
387	248	419	536	190	65	M20X42	140	125	7.5	18	58	69	280	35	4-Φ24	2-M63X1.5	1033	355.5	218
387	248	419	536	190	75	M20X42	140	125	7.5	20	67.5	79.5	280	35	4-Φ24	2-M63X1.5	1033	355.5	218
527	320	406	570	216	65	M20X42	140	125	7.5	18	58	69	315	45	4-Φ28	2-M63X1.5	1178	397	280
527	320	406	570	216	80	M20X42	170	160	5	22	71	85	315	45	4-Φ28	2-M63X1.5	1208	427	280
527	320	457	680	216	65	M20X42	140	125	7.5	18	58	69	315	45	4-Φ28	2-M63X1.5	1288	397	280
527	320	457	680	216	80	M20X42	170	160	5	22	71	85	315	45	4-Φ28	2-M63X1.5	1318	427	280
527	320	508	680	216	65	M20X42	140	125	7.5	18	58	69	315	45	4-Φ28	2-M63X1.5	1288	397	280
527	320	508	680	216	80	M20X42	170	160	5	22	71	85	315	45	4-Φ28	2-M63X1.5	1318	427	280
642	380	560	750	254	75	M20X50	140	130	5	20	67.5	79.5	355	52	5-Φ28	2-M63X1.5	1486	414	330
642	380	560	750	254	95	M24X50	170	160	5	25	86	100	355	52	6-Φ28	2-M63X1.5	1516	444	330
642	380	630	750	254	75	M20X50	140	130	5	20	67.5	79.5	355	52	6-Φ28	2-M63X1.5	1486	414	330
642	380	630	750	254	95	M24X50	170	160	5	25	86	100	355	52	6-Φ28	2-M63X1.5	1516	444	330

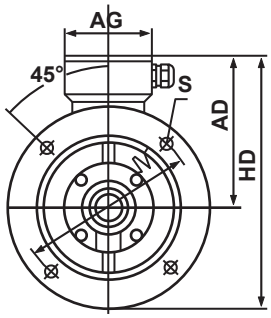
CAST IRON
Motor Dimensions

Flange Mounting
IM B5 #80-355

Type	Pole	AC	AD	AG
80	2,4,6,8	155.4	131	94
90S	2,4,6,8	175.4	148	102
90L	2,4,6,8	175.4	148	102
100L	2,4,6,8	195.4	162	102
112M	2,4,6,8	219.4	190	118
132S	2,4,6,8	258.4	203	118
132M	4,6,8	258.4	203	118
160M	2,4,6,8	314	251	162
160L	2,4,6,8	314	251	162
180M	2,4,8	355	267	162
180L	4,6,8	355	267	162
200L	2,4,6,8	397	299	210
225S	4,6,8	446	322	210
225M	2	446	322	210
225M	4,6,8	446	322	210
250M	2	485	358	248
250M	4,6,8	485	358	248
280S	2	547	387	248
280S	4,6,8	547	387	248
280M	2	547	387	248
280M	4,6,8	547	387	248
315S	2	620	527	320
315S	4,6,8,10	620	527	320
315M	2	620	527	320
315M	4,6,8,10	620	527	320
315L	2	620	527	320
315L	4,6,8,10	620	527	320
355M	2	698	642	380
355M	4,6,8,10	698	642	380
355L	2	698	642	380
355L	4,6,8,10	698	642	380



FR#80-132



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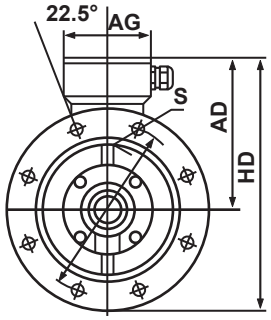

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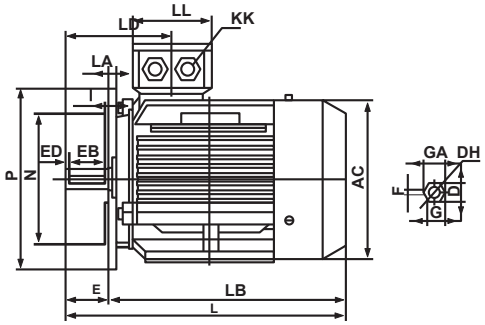

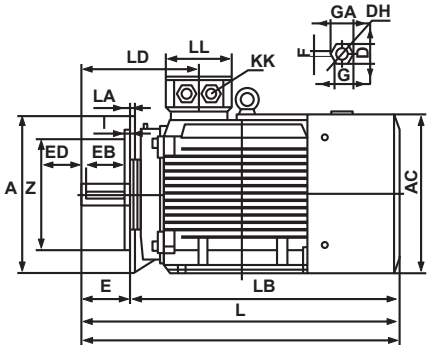

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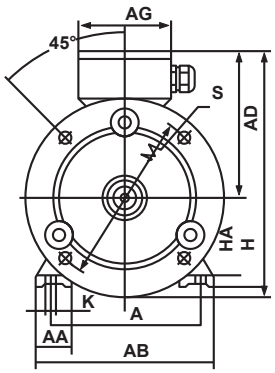
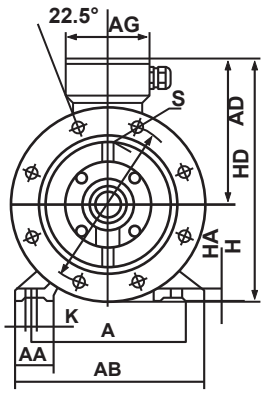
D	DH	E	EB	ED	F	G	GA	HD	KK	L	LA	LB	LD	LL	M	N	P	S	T
19	M6X16	40	30	5	6	15.5	21.5	231	1-M25X1.5	284	12	244	112	94	165	130	200	12	3.5
24	M8X19	50	40	5	8	20	27	248	1-M25X1.5	308	12	258	130	102	165	130	200	12	3.5
24	M8X19	50	40	5	8	20	27	248	1-M25X1.5	333	12	283	130	102	165	130	200	12	3.5
28	M10X22	60	50	5	8	24	31	287	1-M32X1.5	380	13	320	139	102	215	180	250	14.5	4
28	M10X22	60	50	5	8	24	31	308	2-M32X1.5	452	14	334	147	110	215	180	250	14.5	4
38	M12X28	80	65	1.5	10	33	41	353	2-M32X1.5	470	14	390	172	110	265	230	300	14.5	4
38	M12X28	80	65	7.5	10	33	41	353	2-M32X1.5	508	14	428	173	110	265	230	300	14.5	4
42	M16X36	110	90	10	12	37	45	426	2-M40X1.5	608	15	498	256	152	300	250	350	18.5	5
42	M16X36	110	90	10	12	37	45	426	2-M40X1.5	652	15	542	256	152	300	250	350	18.5	5
48	M16X36	110	90	10	14	42.5	51.5	444.5	2-M40X1.5	688	15	578	271	152	300	250	350	18.5	5
48	M16X36	110	90	10	14	42.5	51.5	444.5	2-M40X1.5	726	15	616	271	152	300	250	350	18.5	5
55	M20X42	110	100	5	16	49	59	499	2-M50X1.5	779	17	661	296	190	350	300	400	18.5	5
60	M20X42	140	125	7.5	18	53	64	547	2-M50X1.5	824	20	684	329	190	400	350	450	18.5	5
55	M20X42	110	100	5	16	49	59	547	2-M50X1.5	819	20	709	299	190	400	350	450	18.5	5
60	M20X42	140	125	7.5	18	53	64	547	2-M50X1.5	849	20	709	329	190	400	350	450	18.5	5
60	M20X42	140	125	7.5	18	53	64	633	2-M63X1.5	910	22	770	347	218	500	450	550	18.5	5
65	M20X42	140	125	7.5	18	58	69	633	2-M63X1.5	910	22	770	347	218	500	450	550	18.5	5
65	M20X42	140	125	7.5	18	58	69	662	2-M63X1.5	982	22	842	355.5	218	500	450	550	18.5	5
75	M20X42	140	125	7.5	20	67.5	79.5	662	2-M63X1.5	982	22	842	355.5	218	500	450	550	18.5	5
65	M20X42	140	125	7.5	18	58	69	662	2-M63X1.5	1033	22	893	355.5	218	500	450	550	18.5	5
75	M20X42	140	125	7.5	20	67.5	79.5	662	2-M63X1.5	1033	22	893	355.5	218	500	450	550	18.5	5
65	M20X42	140	125	7.5	18	58	69	857	2-M63X1.5	1194	22	1038	397	280	600	550	660	24	6
80	M20X42	170	160	5	22	71	85	857	2-M63X1.5	1224	22	1038	427	280	600	550	660	24	6
65	M20X42	140	125	7.5	18	58	69	857	2-M63X1.5	1304	22	1148	397	280	600	550	660	24	6
80	M20X42	170	160	5	22	71	85	857	2-M63X1.5	1334	22	1148	427	280	600	550	660	24	6
65	M20X42	140	125	7.5	18	58	69	857	2-M63X1.5	1304	22	1148	397	280	600	550	660	24	6
80	M20X42	170	160	5	22	71	85	857	2-M63X1.5	1334	22	1148	427	280	600	550	660	24	6
75	M20X50	140	130	5	20	67.5	79.5	1042	2-M63X1.5	1486	25	1346	414	330	740	680	800	24	6
95	M24X50	170	160	5	25	86	100	1042	2-M63X1.5	1516	25	1346	444	330	740	680	800	24	6
75	M20X50	140	130	5	20	67.5	79.5	1042	2-M63X1.5	1486	25	1346	414	330	740	680	800	24	6
95	M24X50	170	160	5	25	86	100	1042	2-M63X1.5	1516	25	1346	444	330	740	680	800	24	6

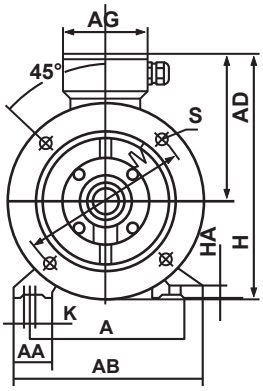
CAST IRON
Motor Dimensions



FR#80-132



FR#225-355



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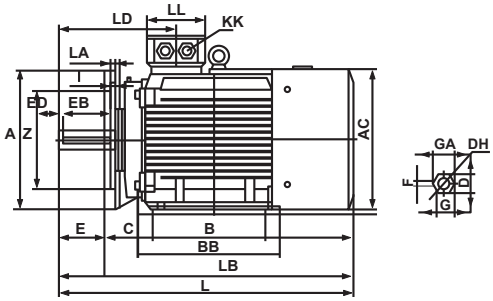

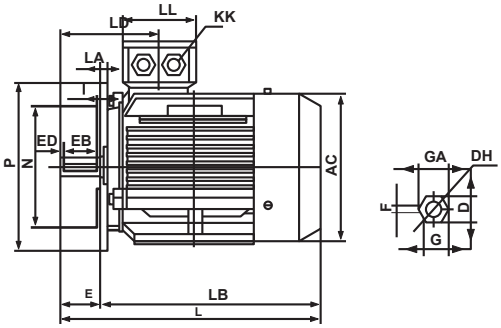

Foot Flange Mou
IM B35 #80-355

Type	Pole	A	AA	AB	AC
80	2,4,6,8	125	34	160	155.4
90S	2,4,6,8	140	36	176	175.4
90L	2,4,6,8	140	36	176	175.4
100L	2,4,6,8	160	40	200	195.4
112M	2,4,6,8	190	50	240	219.4
132S	2,4,6,8	216	55	262	258.4
132M	4,6,8	216	55	262	258.4
160M	2,4,6,8	254	65	314	314
160L	2,4,6,8	254	65	314	314
180M	2,4,8	279	70	349	355
180L	4,6,8	279	70	349	355
200L	2,4,6,8	318	70	388	397
225S	4,6,8	356	75	431	446
225M	2	356	75	431	446
225M	4,6,8	356	75	431	446
250M	2	406	80	484	485
250M	4,6,8	406	80	484	485
280S	2	457	85	542	547
280S	4,6,8	457	85	542	547
280M	2	457	85	542	547
280M	4,6,8	457	85	542	547
315S	2	508	120	628	620
315S	4,6,8,10	508	120	628	620
315M	2	508	120	628	620
315M	4,6,8,10	508	120	628	620
315L	2	508	120	628	620
315L	4,6,8,10	508	120	628	620
355M	2	610	116	726	698
355M	4,6,8,10	610	116	726	698
355L	2	610	116	726	698
355L	4,6,8,10	610	116	726	698

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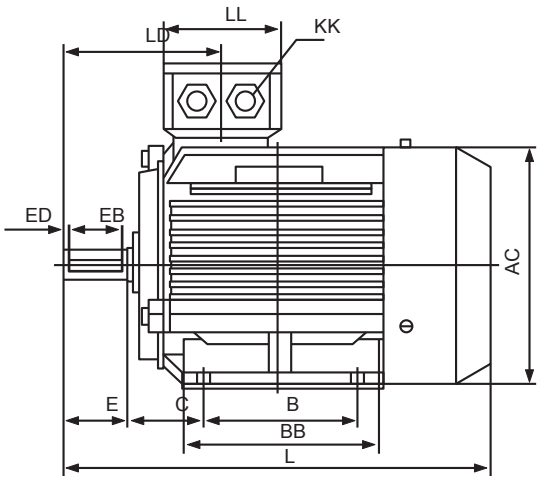
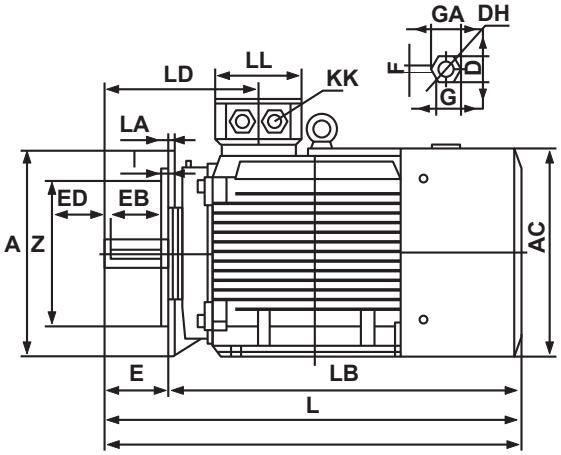
AD	AG	B	BB	C	D	DH	E	EB	ED	F	G	GA	H	HA	K	KK	L	LA	LB	LD	LL	M	N	P	S	T
131	94	100	130	50	19	M6X16	40	30	5	6	15.5	21.5	80	10	4-Φ10	1-M25X1.5	284	12	244	112	94	165	130	200	12	3.5
148	102	100	130	56	24	M8X19	50	40	5	8	20	27	90	12	4-Φ10	1-M25X1.5	308	12	258	130	102	165	130	200	12	3.5
148	102	125	155	56	24	M8X19	50	40	5	8	20	27	90	12	4-Φ10	1-M25X1.5	333	12	283	130	102	165	130	200	12	3.5
162	102	140	176	63	28	M10X22	60	50	5	8	24	31	100	14	4-Φ12	1-M32X1.5	380	13	320	139	102	215	180	250	14.5	4
190	118	140	225	70	28	M10X22	60	50	5	8	24	31	112	15	4-Φ12	2-M32X1.5	452	14	334	147	110	215	180	250	14.5	4
203	118	140	200	89	38	M12X28	80	65	7.5	10	33	41	132	18	4-Φ12	2-M32X1.5	470	14	390	172	110	265	230	300	14.5	4
203	118	178	238	89	38	M12X28	80	65	7.5	10	33	41	132	18	4-Φ12	2-M32X1.5	508	14	428	172	110	265	230	300	14.5	4
251	162	210	260	108	42	M16X36	110	90	10	12	37	45	160	20	4-Φ14.5	2-M40X1.5	608	15	498	256	152	300	250	350	18.5	5
251	162	254	304	108	42	M16X36	110	90	10	12	37	45	160	20	4-Φ14.5	2-M40X1.5	652	15	542	256	152	300	250	350	18.5	5
267	162	241	311	121	48	M16X36	110	90	10	14	42.5	51.5	180	22	4-Φ14.5	2-M40X1.5	688	15	578	271	152	300	250	350	18.5	5
267	162	279	349	121	48	M16X36	110	90	10	14	42.5	51.5	180	22	4-Φ14.5	2-M40X1.5	726	15	616	271	152	300	250	350	18.5	5
299	210	305	369	133	55	M20X42	110	100	5	16	49	59	200	25	4-Φ16.5	2-M50X1.5	779	17	661	296	190	350	300	400	18.5	5
322	210	286	368	149	60	M20X42	140	125	7.5	18	53	64	225	28	4-Φ18.5	2-M50X1.5	824	20	684	329	190	400	350	450	18.5	5
322	210	311	393	149	55	M20X42	110	100	5	16	49	59	225	28	4-Φ18.5	2-M50X1.5	819	20	709	299	190	400	350	450	18.5	5
322	210	311	393	149	60	M20X42	140	125	7.5	18	53	64	225	28	4-Φ18.5	2-M50X1.5	849	20	709	329	190	400	350	450	18.5	5
358	248	349	445	168	60	M20X42	140	125	7.5	18	53	64	250	30	4-Φ24	2-M63X1.5	910	22	770	347	218	500	450	550	18.5	5
358	248	349	445	168	65	M20X42	140	125	7.5	18	58	69	250	30	4-Φ24	2-M63X1.5	910	22	770	347	218	500	450	550	18.5	5
387	248	368	485	190	65	M20X42	140	125	7.5	18	58	69	280	35	4-Φ24	2-M63X1.5	982	22	842	355.5	218	500	450	550	18.5	5
387	248	368	485	190	75	M20X42	140	125	7.5	20	67.5	79.5	280	35	4-Φ24	2-M63X1.5	982	22	842	355.5	218	500	450	550	18.5	5
387	248	419	536	190	65	M20X42	140	125	7.5	18	58	69	280	35	4-Φ24	2-M63X1.5	1033	22	893	355.5	218	500	450	550	18.5	5
387	248	419	536	190	75	M20X42	140	125	7.5	20	67.5	79.5	280	35	4-Φ24	2-M63X1.5	1033	22	893	355.5	218	500	450	550	18.5	5
527	320	406	570	216	65	M20X42	140	125	7.5	18	58	69	315	45	4-Φ28	2-M63X1.5	1194	22	1038	397	280	600	550	660	24	6
527	320	406	570	216	80	M20X42	170	160	5	22	71	85	315	45	4-Φ28	2-M63X1.5	1224	22	1038	427	280	600	550	660	24	6
527	320	457	680	216	65	M20X42	140	125	7.5	18	58	69	315	45	4-Φ28	2-M63X1.5	1304	22	1148	397	280	600	550	660	24	6
527	320	457	680	216	80	M20X42	170	160	5	22	71	85	315	45	4-Φ28	2-M63X1.5	1334	22	1148	427	280	600	550	660	24	6
527	320	508	680	216	65	M20X42	140	125	7.5	18	58	69	315	45	4-Φ28	2-M63X1.5	1304	22	1148	397	280	600	550	660	24	6
527	320	508	680	216	80	M20X42	170	160	5	22	71	85	315	45	4-Φ28	2-M63X1.5	1334	22	1148	427	280	600	550	660	24	6
642	380	560	750	254	75	M20X50	140	130	5	20	67.5	79.5	355	52	5-Φ28	2-M63X1.5	1486	25	1346	414	330	740	680	800	24	6
642	380	560	750	254	95	M24X50	170	160	5	25	86	100	355	52	6-Φ28	2-M63X1.5	1516	25	1346	444	330	740	680	800	24	6
642	380	630	750	254	75	M20X50	140	130	5	20	67.5	79.5	355	52	6-Φ28	2-M63X1.5	1486	25	1346	414	330	740	680	800	24	6
642	380	630	750	254	95	M24X50	170	160	5	25	86	100	355	52	6-Φ28	2-M63X1.5	1516	25	1346	444	330	740	680	800	24	6

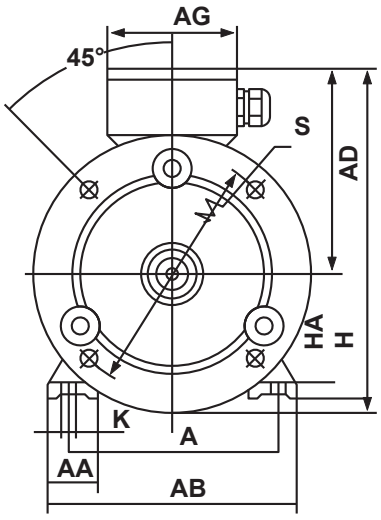
CAST IRON
Motor Dimensions



Foot Mounting
IM B3 #80-355



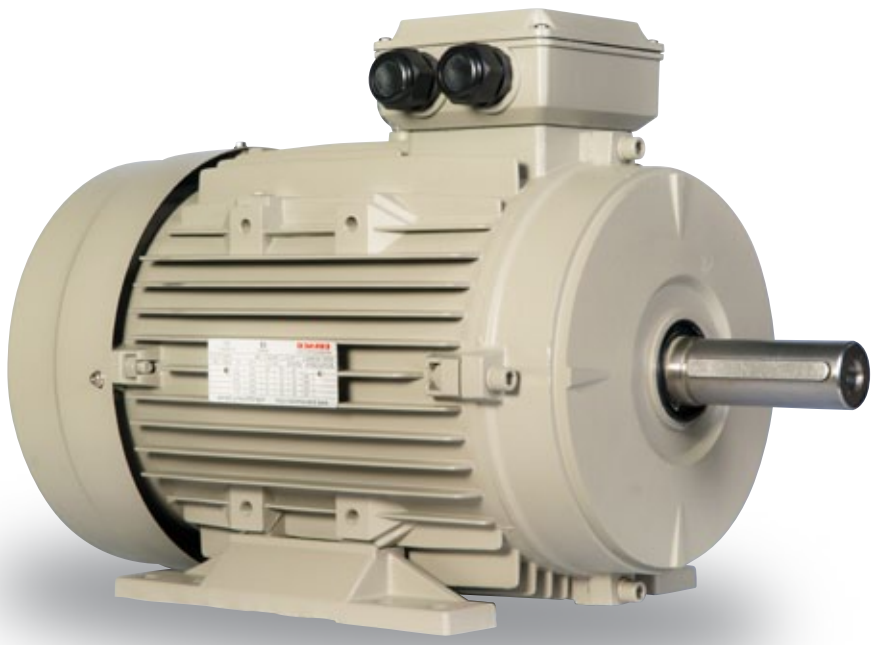
Flange Mounting
IM B5 #80-355



Foot Flange Mounting
IM B35 #80-355

Aluminium
IE1 Efficiency
Motor

ALUMINIUM
IE1 Efficiency Motor



BA1 Series

Three-Phase Squrriel Cage Motors
Protection IP55
380-415V

SPEED 3000 R

Model	Power kW	220V
BA1-63-2	0.18	1.00
BA1-711-2	0.37	1.76
BA1-712-2	0.55	2.57
BA1-801-2	0.75	3.21
BA1-802-2	1.1	4.56
BA1-90S-2	1.5	5.97
BA1-90L1-2	2.2	8.39
BA1-100L1-2	3	11.0
BA1-112M-2	4	14.3
BA1-132S1-2	5.5	19.1
BA1-132S2-2	7.5	25.7
BA1-160M1-2	11	36.3
BA1-160M2-2	15	48.4

SPEED 1500 R

Model	Power kW	220V
BA1-63-4	0.18	1.28
BA1-71-4	0.37	2.02
BA1-801-4	0.55	2.67
BA1-802-4	0.75	3.50
BA1-90S-4	1.1	4.80
BA1-90L1-4	1.5	6.27
BA1-100L1-4	2.2	8.80
BA1-100L2-4	3	11.8
BA1-112M-4	4	15.0
BA1-132S-4	5.5	20.1
BA1-132M-4	7.5	26.6
BA1-160M-4	11	37.5
BA1-160L1-4	15	51.2

SPEED 1000 R

Model	Power kW	220V
BA1-71-6	0.18	1.28
BA1-801-6	0.37	2.24
BA1-802-6	0.55	2.99
BA1-90S-6	0.75	3.96
BA1-90L-6	1.1	5.49
BA1-100L1-6	1.5	7.00
BA1-112M-6	2.2	9.70
BA1-132S-6	3	13.1
BA1-132M1-6	4	17.2
BA1-132M2-6	5.5	22.6
BA1-160M-6	7.5	28.6
BA1-160L-6	11	41.8

BRANCO

RPM 2-POLE 50HZ

Current(A)		Current(A)			Current(A)			Speed	eff	Power factor	Tst/Tn	Tmax/Tn	Tmin/Tn	Ist/In	Noise	WT
380V	660V	230V	400V	690V	240V	415V	720V	r.p.m	%	Cos Φ	(Times)	(Times)	(Times)	(Times)	dB(A)	(Kg)
0.58	0.33	0.95	0.55	0.32	0.92	0.53	0.31	2710	63	0.75	2.2	2.4	1.6	6	61	4.00
1.02	0.59	1.67	0.97	0.56	1.61	0.93	0.54	2730	70	0.79	2.2	2.4	1.6	6	64	5.20
1.49	0.86	2.45	1.42	0.82	2.36	1.36	0.79	2760	71	0.79	2.2	2.4	1.6	6	64	6.00
1.83	1.07	3.06	1.77	1.02	2.94	1.70	0.98	2770	72	0.84	2.2	2.4	1.5	6	67	8.70
2.64	1.52	4.35	2.51	1.45	4.18	2.42	1.39	2770	76.2	0.83	2.2	2.4	1.5	6	67	10.00
3.46	1.99	5.76	3.28	1.90	5.47	3.16	1.82	2840	78.5	0.84	2.2	2.4	1.5	6	72	12.00
4.85	2.80	8.0	4.61	2.66	7.69	4.45	2.56	2840	81	0.85	2.2	2.4	1.4	6	72	14.50
6.34	3.65	10.4	6.03	3.48	10.0	5.81	3.35	2840	82.6	0.87	2.2	2.3	1.4	7	76	20.00
8.30	4.78	13.7	7.88	4.55	13.1	7.60	4.38	2880	84.2	0.87	2.2	2.3	1.4	7.5	77	26.00
11.1	6.38	18.2	10.5	6.08	17.5	10.1	5.85	2900	85.7	0.88	2	2.2	1.2	7.5	80	38.40
14.9	8.57	24.5	14.1	8.16	23.6	13.6	7.86	2920	87	0.88	2	2.2	1.2	7.5	80	41.30
21.0	12.1	34.6	20.0	11.5	33.3	19.2	11.1	2940	88.4	0.9	2	2.2	1.2	7.5	86	76.00
28.0	16.1	46.1	26.6	15.4	44.4	25.7	14.8	2940	89.4	0.91	2	2.2	1.2	7.5	86	77.50

RPM 4-POLE 50HZ

Current(A)		Current(A)			Current(A)			Speed	eff	Power factor	Tst/Tn	Tmax/Tn	Tmin/Tn	Ist/In	Noise	WT
380V	660V	230V	400V	690V	240V	415V	720V	r.p.m	%	Cos Φ	(Times)	(Times)	(Times)	(Times)	dB(A)	(Kg)
0.74	0.43	1.21	0.70	0.40	1.17	1.67	0.39	1310	57	0.65	2.2	2.4	2	4	52	4.20
1.17	0.67	1.92	1.11	0.64	1.85	1.07	0.62	1370	65	0.74	2.2	2.4	1.7	6	55	5.80
1.66	0.96	2.74	1.58	0.91	2.63	1.52	0.88	1370	67	0.75	2.3	2.4	1.7	6	58	8.10
2.03	1.17	3.34	1.93	1.11	3.21	1.86	1.07	1380	72	0.78	2.3	2.4	1.6	6	58	9.10
2.78	1.60	4.57	2.64	1.52	4.40	2.54	1.47	1400	76.2	0.79	2.2	2.4	1.6	6	61	11.70
3.63	2.09	5.97	3.45	1.99	5.75	3.32	1.92	1400	78.5	0.8	2.2	2.4	1.6	6	61	14.40
5.09	2.93	8.38	4.84	2.79	8.07	4.66	2.69	1420	81	0.81	2.2	2.3	1.5	7	64	19.20
6.81	3.92	11.2	6.47	3.74	10.8	6.24	3.60	1420	82.6	0.81	2.2	2.3	1.5	7	64	22.50
8.70	5.01	14.3	8.26	4.77	13.8	7.96	4.59	1430	84.2	0.83	2.2	2.2	1.5	7	65	29.00
11.6	6.68	19.1	11.0	6.37	18.4	10.6	6.13	1450	85.7	0.84	2.2	2.2	1.4	7	71	39.00
15.4	8.87	25.4	14.6	8.45	24.4	14.1	8.13	1450	87	0.85	2.2	2.2	1.4	7	71	48.60
21.7	12.5	35.8	20.6	11.9	34.4	19.9	11.5	1460	88.4	0.87	2.2	2.2	1.4	7	75	73.00
29.6	17.1	48.8	28.2	16.3	46.9	27.1	15.6	1460	88.4	0.87	2.2	2.2	1.4	7.5	75	88.50

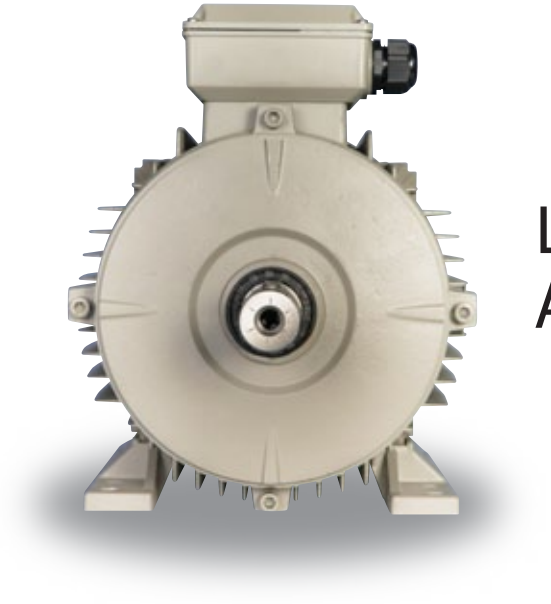
RPM 6-POLE 50HZ

Current(A)		Current(A)			Current(A)			Speed	eff	Power factor	Tst/Tn	Tmax/Tn	Tmin/Tn	Ist/In	Noise	WT
380V	660V	230V	400V	690V	240V	415V	720V	r.p.m	%	Cos Φ	(Times)	(Times)	(Times)	(Times)	dB(A)	(Kg)
0.74	0.43	1.22	0.70	0.41	1.17	0.68	0.39	860	56	0.66	1.6	1.7	1.5	4	52	5.60
1.30	0.75	2.13	1.23	0.71	2.05	1.19	0.68	900	62	0.7	1.9	1.9	1.5	4	56	8.10
1.73	1.00	2.85	1.65	0.95	2.74	1.59	0.91	900	67	0.72	2	2.3	1.5	4	56	9.60
2.29	1.32	3.77	2.18	1.26	3.63	2.10	1.21	920	69	0.72	2.2	2.2	1.5	5.5	59	11.30
3.18	1.83	5.23	3.02	1.74	5.03	2.91	1.68	925	72	0.73	2.2	2.2	1.3	5.5	59	14.40
4.05	2.33	6.67	3.85	2.22	6.42	3.71	2.14	945	74	0.76	2.2	2.2	1.3	6	61	18.80
5.64	3.25	9.28	5.36	3.09	8.93	5.16	2.98	955	78	0.76	2.2	2.2	1.3	6	64	25.00
7.59	4.37	12.5	7.21	4.16	12.0	6.95	4.01	960	79	0.76	2	2	1.3	6.5	64	35.00
9.93	5.72	16.4	9.44	5.45	15.7	9.10	5.24	960	80.5	0.76	2	2	1.3	6.5	68	47.60
13.1	7.53	21.5	12.4	7.17	20.7	12.0	6.9	960	83	0.77	2	2	1.3	6.5	68	50.70
16.6	9.5	27.3	15.7	9.08	26.2	15.2	8.7	960	86	0.8	2	2.2	1.3	6.5	68	70.0
24.2	13.9	39.8	23.0	13.3	38.3	22.1	12.8	960	87.5	0.79	2	2.2	1.2	6.5	73	87.0

ALUMINIUM
IE1 Efficiency Motor

BA1 Series

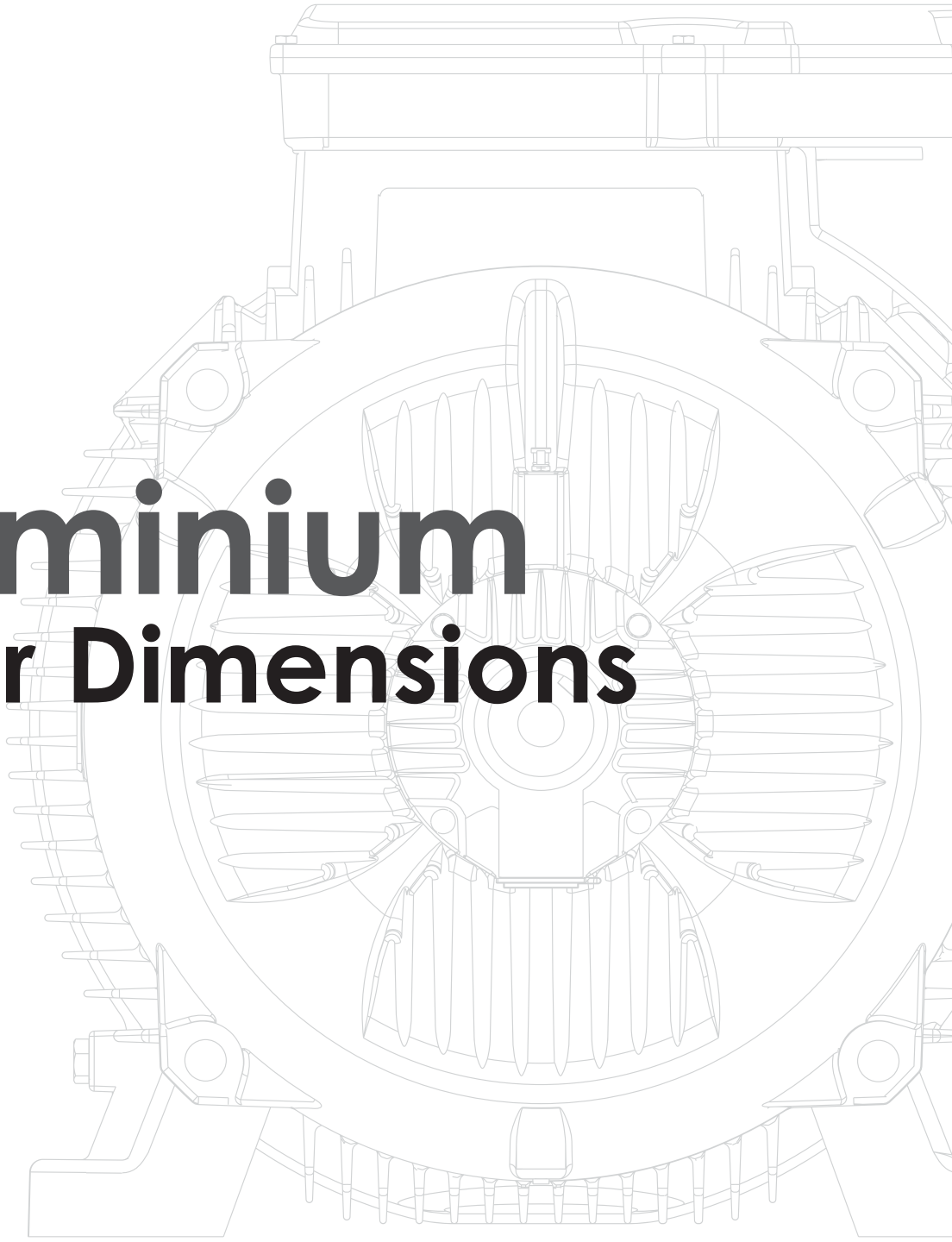
Three-Phase Squrriel Cage Motors
Protection IP55
380-415V



LOW WEIGHT
ALUMINUM HOUSING

WIDE RANGE OF GENERAL
PURPOSE APPLICATION

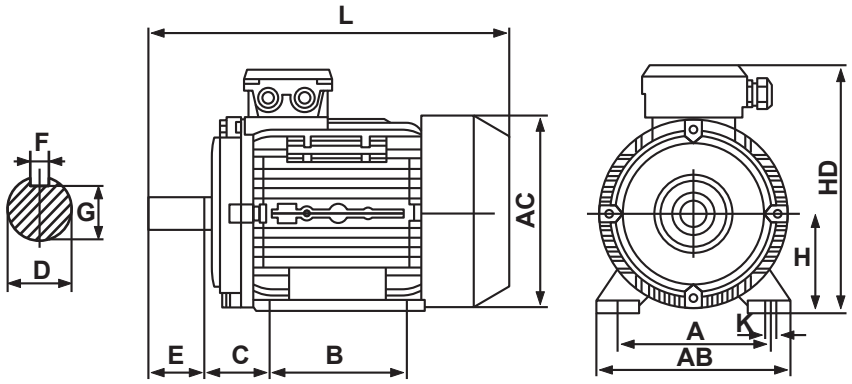
EFFICIENT THERMAL
CONDUCTIVITY



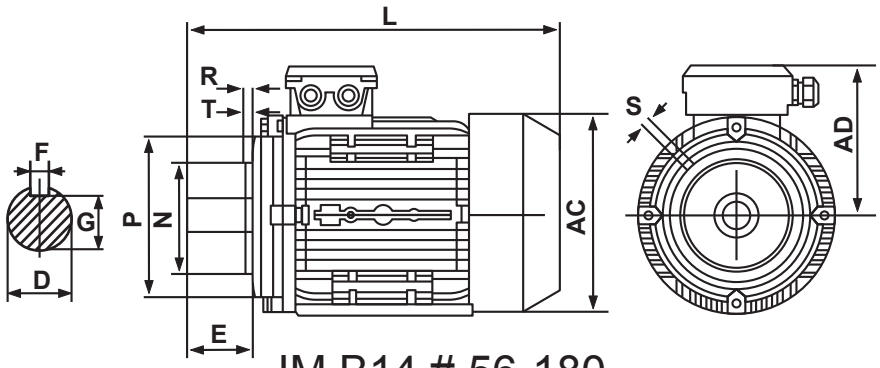
Aluminium
Motor Dimensions

ALUMINIUM
Motor Dimensions

Frame Size			
	A	B	C
56	90	71	36
63	100	80	40
71	112	90	45
80	125	100	50
90S	140	100	56
90L	140	125	56
100L	160	140	63
112M	190	140	70
132S	216	140	89
132M	216	178	89
160M	254	210	108
160L	254	254	108
180M	279	241	121
180L	279	279	121



IM B3 # 56-180



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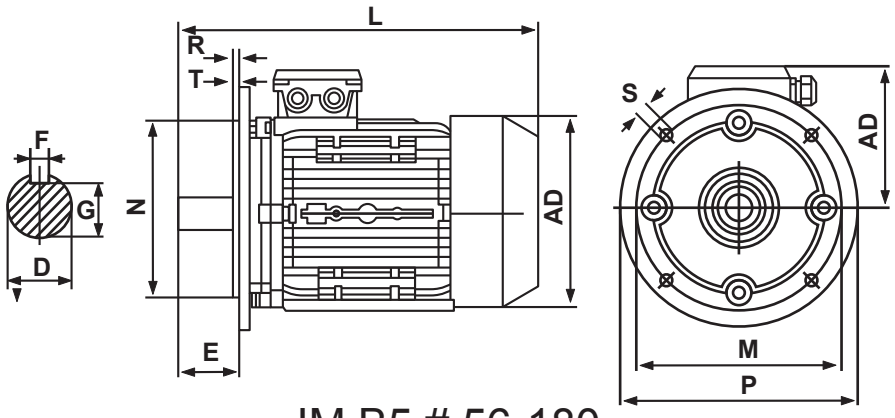
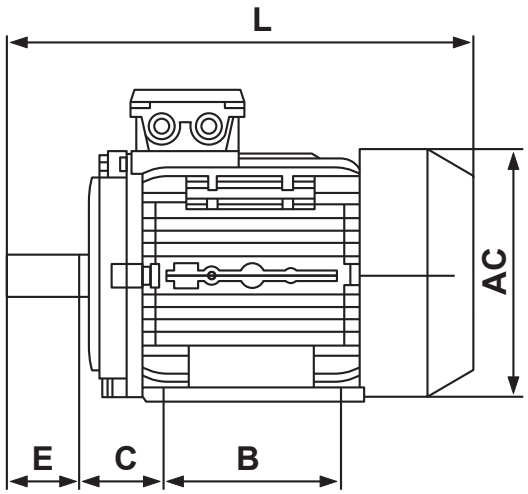


IM B5 # 56-180

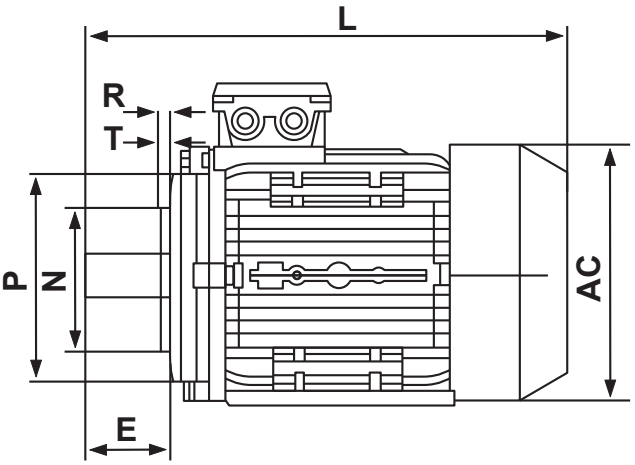
Installation Size (mm) IMB3						Installation Size (mm) IMB14					Installation Size (mm) IMB5					Outline Dimension (mm)				
D	E	F	G	H	K	M	N	P	S	T	M	N	P	S	T	AB	AC	AD	HD	L
9	20	3	7.2	56	6	65	50	80	M5	2.5	98	80	120	7	3	110	120	110	155	195
11	23	4	8.5	63	7	75	60	90	M5	2.5	115	95	140	10	3	130	130	115	165	230
14	30	5	11	71	7	85	70	105	M6	2.5	130	110	160	10	3.5	145	145	125	185	255
19	40	6	15.5	80	10	100	80	120	M6	3	165	130	200	12	3.5	160	165	135	215	295
24	50	8	20	90	10	115	95	140	M8	3	165	130	200	12	3.5	180	185	145	235	335
24	50	8	20	90	10	115	95	140	M8	3	165	130	200	12	3.5	180	185	145	235	360
28	60	8	24	100	12	130	110	160	M8	3.5	215	180	250	15	4	205	215	170	255	380
28	60	8	24	112	12	130	110	160	M8	3.5	215	180	250	15	4	245	240	180	285	400
38	80	10	33	132	12	165	130	200	M10	4.0	265	230	300	15	4	280	275	195	325	475
38	80	10	33	132	12	165	130	200	M10	4.0	265	230	300	15	4	280	275	195	325	515
42	110	12	37	160	15	215	180	250	M12	4.0	300	250	350	15	5	320	330	255	420	615
42	110	12	37	160	15	215	180	250	M12	4.0	300	250	350	15	5	320	330	255	420	670
48	110	14	42.5	180	15	265	230	300	M15	4.0	300	250	350	19	5	355	380	280	455	700
48	110	14	42.5	180	15	265	230	300	M15	4.0	300	250	350	19	5	355	380	280	455	740

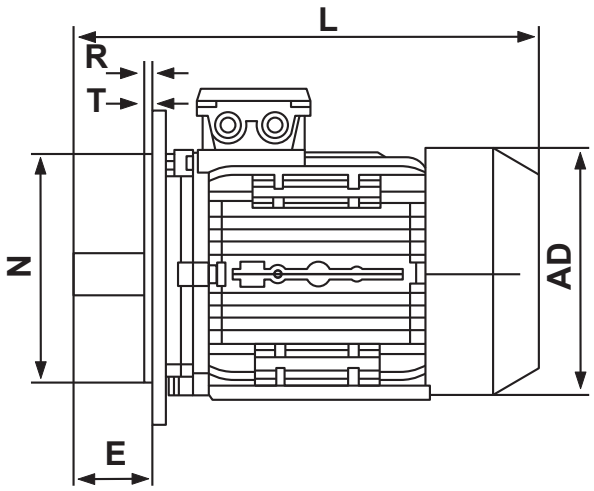
ALUMINIUM
Motor Dimensions



IM B3 # 56-180

IM B14 # 56-180





IM B5 # 56-180

BRANCO