



LOW VOLTAGE STANDARD EFFICIENCY MOTORS IE1



e-catalog



HASCON

ELECTRIC MOTOR

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Notes

Revisions

All technical data, outputs, dimensions and weights, stated in this catalogue, are subject to change without notice.
Illustrations do not purport to show constructional details.

Standards and regulation

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

Electrical

IEC - Standard	EN - Standard	Content
IEC 60034 - 1	EN 60034 - 1	Rating and performance
IEC 60034 - 8	EN 60034 - 8	Terminal markings and direction of rotation
IEC 60034 - 12	EN 60034 - 12	Starting performance
IEC 60034 - 30	EN 60034 - 30	Efficiency classes of single - speed, three-phase, cage - induction motors (IE-Code)
IEC 60038	EN 60038	Standard voltages

Mechanical

IEC - Standard	EN - Standard	Content
IEC 60072	EN 50347	Dimensions and outputs
IEC 60034 - 5	EN 60034 - 5	Degrees of protection
IEC 60034 - 6	EN 60034 - 6	Methods of cooling
IEC 60034 - 7	EN 60034 - 7	Type of construction
IEC 60034 - 9	EN 60034 - 9	Noise limits
IEC 60034 - 14	EN 60034 - 14	Vibrations

Conditions of installation

The motors are designed for operation at altitudes ≤ 1000 m above sea-level and at coolant temperature of up to 40°C .

Exceptions are indicated on the rating plate.

The motors comply with protection degree IP 55 according IEC 60034-5 (higher protection degrees on request).

Motors with standard design for horizontal mounting arrangements are suitable for indoor and protected outdoor installation, climate group Moderate (temperature of coolant -20°C to $+40^{\circ}\text{C}$).

In case of unprotected outdoor installation or aggravating 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 measures are required, such as:

- Protective cowl (for vertical mounting with shaft - down)
- For vertical mounting with shaft - up flange drainage and additional bearing seal, if necessary
- Special painting
- Treatment of winding with moisture protection varnish
- Anti-condensation heating (anti-condensation heating of winding, if necessary)
- Condensation drain holes

The special measures to be applied have to be agreed with us once the conditions of installation have been clarified.

Insulation and temperature rise

The insulation of the motors complies with temperature class F according EN 60034-1. The table beside defines the temperature rise (ΔT^*) and maximum temperatures at the hottest points of the winding (T_{max}) according to the temperature classes of the EN 60034-1 standard.

Class	ΔT^*	T_{max}
B	80 K	125 °C
F	105 K	155 °C
H	125 K	180 °C

Tolerances

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

- Guarantee of all or any of the values according to the table is not obligatory. Guaranteed values that are subject to tolerance have to be mentioned in offers explicit. The allowed tolerances must be in accordance with the table.
- Where a tolerance is stated in only one direction, the value is not limited in the other direction.

Values for	Tolerance
Efficiency (η) (in case of indirect determination)	-0,15 x (1- η) at $P_N \leq 50$ kW -0,1 x (1- η) at $P_N > 50$ kW
Power factor ($\cos\phi$)	- $\frac{1-\cos\phi}{6}$, minimum 0.02, maximum 0.07
Slip (s) (at rated load and at working temperature)	±20 % of the guaranteed slip at $P_N \geq 1$ kW ±30 % of the guaranteed slip at $P_N < 1$ kW
Starting current (I_S) (in case of the intended starting circuit)	+20 % of the guaranteed starting current no lower limit
Starting torque (T_S)	-15 % and +25 % of the guaranteed starting torque (+25 % may be exceeded by agreement)
Pull-up torque (T_P)	-15 % of the guaranteed value
Breakdown torque (T_B)	-10 % of the guaranteed value (after allowing for this tolerance, T_B / TN at least 1,6)
Moment of inertia (I)	± 10 % of the guaranteed value

Mechanical tolerances

According to IEC 72-1, the tolerances on mechanical dimensions of electric motors given beside are permitted.

Note: The holes at the shaft end correspond with DIN 332

Parameter	Code	Area	Tolerance
Frame size	H	up to 250 > 250	0.5 mm 1 mm
Diameter of shaft end	D-DA	from 11 to 28 mm from 38 to 48 mm from 55 to 100 mm	j6 k6 m6
Hub key width	F-FA		h9
Flange centring	N	up to 132 > 132	j6 h8

Mechanical design

Protection degrees

Protection degrees for electrical machines and 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 50mm (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 1mm (Example: Wires, bands)
5	Protection against dust (harmful deposits of dust)
6	Total protection against dust (is not described for electrical machines according IEC 34-5)

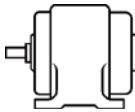
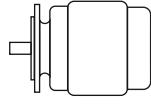
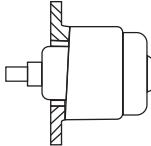
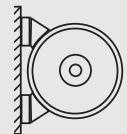
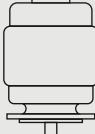
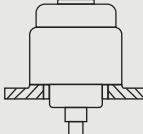
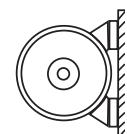
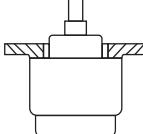
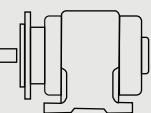
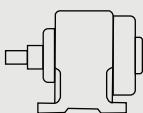
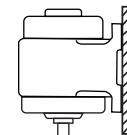
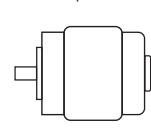
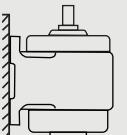
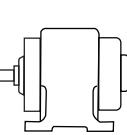
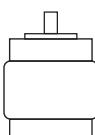
Second numeral:

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 spray water up to 60° from vertical
4	Protection against shower water from any direction
5	Protection against water projected by a nozzle and from any direction
6	Protection against heavy seas or water projected in powerful jets
7	Protection when submerged between 0,15 and 1 m
8	Protection when continuously submerged in water at conditions agreed between the manufacturer and the user

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 according to the table depending on design and frame size.

Foot mounting	Flange mounting	Motors without end shield
IM B3 (IM 1001) 	IM B5 (IM 3001)  Mounting flange type A according DIN 42 948 at drive end	IM B9 (IM 9101)  Without end shield and without roller bearing on drive end
IM B6 (IM 1051) * 	IM V1 (IM 3011)  Mounting flange type A according DIN 42 948 at drive end	IM V8 (IM 9111)  Without end shield and without roller bearing on drive end
IM B7 (IM 1061) * 	IM V3 (IM 3031)  Mounting flange type A according DIN 42 948 at drive end	IM V9 (IM 9131)  Without end shield and without roller bearing on drive end
IM B8 (IM 1071) * 	IM B35 (IM 2001)  Mounting flange type A according DIN 42 948 at drive end	IM B15 (IM 1201)  Without end shield and without roller bearing on drive end
IM V5 (IM 1011) * 	IM B14 (IM 3601)  Mounting flange type C according DIN 42 948 at drive end	
IM V6 (IM 1031) * 	IM V18 (IM 3611)  Mounting flange type C according DIN 42 948 at drive end	
IM B34 (IM 2101)  Mounting flange type C according DIN 42 948 at drive end	IM V19 (IM 3631)  Mounting flange type C according DIN 42 948 at drive end	

* From frame size 225 on request

Terminal boxes

The location of the terminal box in standard design is on top (view to drive end); on the right or on the left is also possible. For motors with mounting arrangements IM B6, IM B7, IM B8, IM V5, IM V6 the location of the terminal box is related to an IM B3 mounting.

The position of the entry openings can be adapted to the existing connection possibilities for most motors by turning the terminal box by 90°. Please enquire if special accessories should be used (temperature sensors, anti-condensation heating, etc.).

For motors in standard design, the screwed stuffing boxes do not belong to our scope of delivery.

Belt drive

The data refer only to the normal shaft end at the drive end of IM B3 motors with one speed.

Calculation of radial shaft load:

$$F_R = \frac{19120 \cdot P \cdot k}{D_1 \cdot n} \quad [N]$$

F_R = radial shaft load in N
 P = power in kW
 n = speed in min⁻¹
 D_1 = pulley diameter in m
 k = belt tension factor

The belt tension factor depends on the type of belt and is assumed to be approximately:

- 3...4 for normal flat belt without idle pulley
- 2...2,5 for normal flat belt with idle pulley
- 2,2...2,5 for V-belt

Please enquire exact data from the belt manufacturer.

Vibration behaviour

The vibration severity of electric motors is determined in EN 60034-14 Mechanical vibration of certain machines with shaft heights 56 and higher – Measurement, evaluation and limits of vibration severity.

The rotors of the motors are dynamically balanced with half key fitted according to DIN ISO 8821. Other balancing is available by agreement only.

Our standard motors observe or fall below vibration category A. Motors with ball bearing can be supplied in vibration category B at extra cost.

Maximum operating speed

Motors in basic design are mechanically suitable for the maximum operating speeds given beside.

Rame size	2-pole	4...8-pole
63...112	5200	3600
132...180	4600	3000
200	4500	3000
225	4500	3000
250	3900	3000
280	3600	3000
315 S/M	3600	2600
315 L	3600	2600
355 S	3600	2600
355 M	3600	2600
355 L	3600	2600

Lubrication and maintenance of bearings

The bearings of standard motors up to frame size 132 (EH1) have permanent lubrication. Bearing grease K3N according DIN 51 825 is used (e.g. KLÜER ASONIC GHY72, ESSO UNIREX N3 or similar).

Maintenance-free operating time of motors with permanent lubrication at ambient temperature of 40°C and 50 Hz mains operation:

- 2- and 4/2-pole motors 10,000 h
- 4 and more pole motors 20,000 h, but 4 years at most

From frame size 160 the motors are equipped with lubricator and grease.

First lubrication is made with grease K3N according DIN 51 825 (lithium-based, behaviour in the presence of water according DIN 51 807 part 1: level 0 or 1).

For motors with lubricator, the regreasing interval and required quantity of grease is indicated on the rating plate.

For regreasing please observe the operating instructions.

In case of unfavourable conditions (e.g. high ambient temperature, dusty conditions, corrosive atmosphere, operation by frequency inverter), regreasing should be carried out more frequently.

Lubricating nipples

Flat type lubricating nipple M10x1 according DIN 3404.

Electrical design

Rated voltage

For the rated voltage of the motors a voltage tolerance of $\pm 10\%$ applies. According to IEC 60038 the mains voltages may have a tolerance of $\pm 10\%$.

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

Motors with windings for 50 Hz can be also operated on 60 Hz mains, when 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 the rated power by factor 1,15. Should a motor designed for 50 Hz be operated at 60 Hz without the voltage being increased, the rated power of the motor cannot be increased. Under these operating conditions, the rated speed increases by factor 1,2. The relative values for starting and breakaway torque are reduced by factor 0,82 and the starting current by factor 0,9.

Rated current

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

Rated voltage (V)	230	380	400	440	500	660	690
Conversion factor $X I_N$	1,74	1,05	1,0	0,91	0,80	0,61	0,58

Rated torque

$$\text{Rated torque in Nm} = 9550 \cdot \frac{\text{Shaft power in kW}}{\text{Rated speed in rpm}}$$

Power

The power stated in the table applies for constant load at continuous operation according duty class S1 of EN 60034-1, based on a coolant temperature of 40°C and installation at altitudes up to 1000 m 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 may require a higher temperature class or the use of a motor with higher rating. In these cases we recommend further enquiring and specification of the operating conditions.

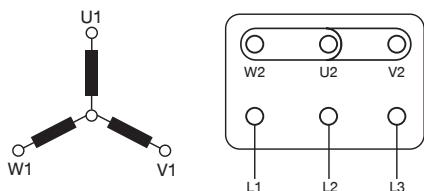
Overload capability

At operating temperature three-phase motors are capable of withstanding an overload for 2 minutes (\leq frame size 112: 15 seconds) with 1,5 times of the rated current at rated voltage. This overload capability complies with EN 60034-1 and will not result in excessive temperature rise.

When temperature class F is utilized, motors can be operated continuously with an overload of 12 %. This does not apply to motors which are already utilized according to thermal class F in their standard design.

Connection diagrams

Star connection

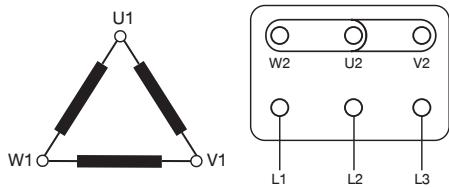


Star connection is obtained by connecting terminals W2, U2, V2 to each other and terminals U1, V1, W1 to the mains.

Phase current and phase voltage are: $I_{ph} = I_N$; $V_{ph} = V_N / \sqrt{3}$

I_N is the rated current and V_N the rated voltage at star connection.

Delta connection



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

Phase current and phase voltage are: $I_{ph} = I_N / 3$; $V_{ph} = V_N$

I_N and V_N are rated current and rated voltage at delta connection.

Star-delta connection

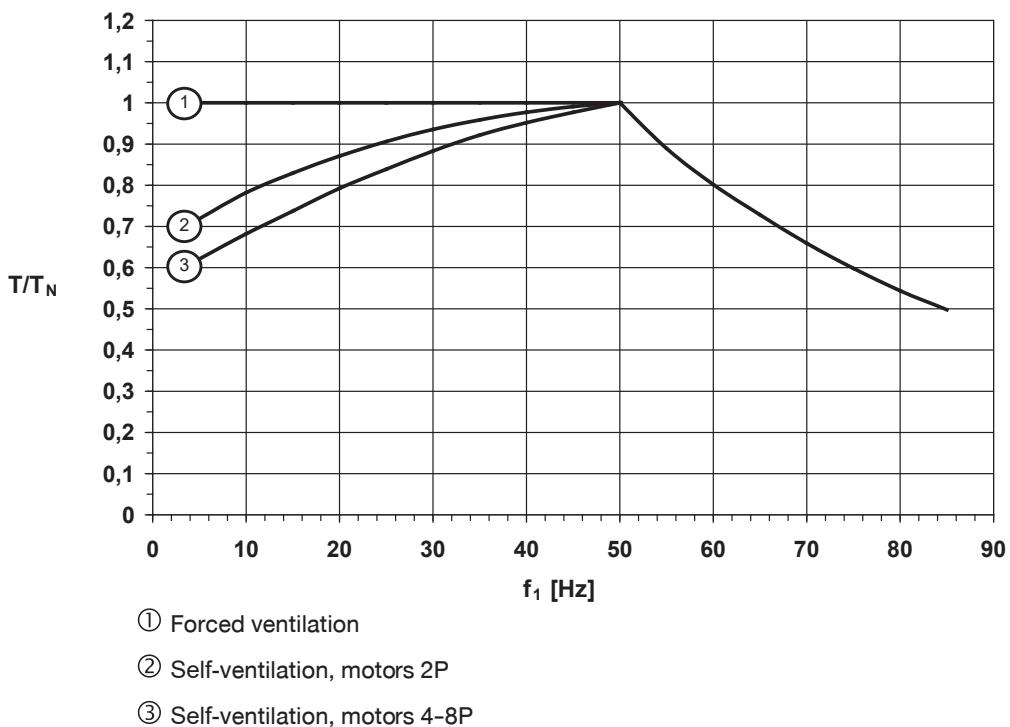
Star-delta connection permits a reduction of the starting current, ensuring however that the resulting starting torque obtained is higher than the load torque. Thereby it should be observed that the torque of an asynchronous motor is directly proportional to the square of the voltage. Motors whose rated 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: 400 V Δ / 690 V Y).

Three-phase squirrel-cage motors driven by frequency inverters

The motors in standard design are suitable for operation on static frequency inverters, taking into account the following remarks:

- Maximum inverter output voltage 500 V at peak voltages $\hat{U} \leq 1460$ V and $dv/dt \leq 13$ kV/ms. For higher inverter output voltages or higher stress a special insulation is required.
- At square characteristic of the load torque, motors can be operated with their rated torque (exceptions are marked in the selection tables).
- In case of constant torque, the rated torque must be reduced for self-ventilated motors due to reduced supply of cooling air. Depending on the speed range, the use of an external fan is recommendable.
- For motors from frame size 280 we recommend an insulated bearing at the non-drive end.



Voltage capability

The insulating system of the motors is suitable for inverter output voltages ≤ 500 V. Higher voltages are available on request.

Noises

Depending on the operating point, the type of inverter and the set pulse frequency, inverter-fed motors produce between 1 and 15dB(A) higher noise values than at mains operation.

Motors that are operated with a frequency over 50 Hz have more air noise. In this case we recommend the use of an external fan

Vibration severity

When operating at high speeds (according to frequency > 60 Hz) a reduced vibration severity "B" according to EN 60034 part 14 may be required, measured at a mains frequency of 50 Hz or 60 Hz and sinusoidal mains voltage.

Cast Iron Motors

Range of motors in cast iron frame, standard-like with lubricator, PTC thermistor temperature sensor in the stator winding, additional external protective conductor connection, available on short term in 2, 4, 6 and 8-pole design up to frame size 355.

Overview cast iron motors

Frame size	Rated power [kw]			
	2-pole	4-pole	6-pole	8-pole
63	0,18	0,12	—	—
63	0,25	0,18	—	—
71	0,37	0,25	0,18	—
71	0,55	0,37	0,25	—
80	0,75	0,55	0,37	0,18
80	1,1	0,75	0,55	0,25
90S	1,5	1,1	0,75	0,37
90L	2,2	1,5	1,1	0,55
100L	3,0	2,2	1,5	0,75
100L	—	3,0	—	1,1
112M	4,0	4,0	2,2	1,5
132S	5,5	—	—	—
132S	7,5	5,5	3,0	2,2
132M	—	—	4,0	—
132M	—	7,5	5,5	3,0
160M	11	—	—	4,0
160M	15	11	7,5	5,5
160L	18,5	15	11	7,5
180M	22	18,5	—	—
180L	—	22	15	11
200L	30	—	18,5	—
200L	37	30	22	15
225S	—	37	—	18,5
225M	45	45	30	22
250M	55	55	37	30
280S	75	75	45	37
280M	90	90	55	45
315S	110	110	75	55
315M	132	132	90	75
315L	160	160	110	90
315L	200	200	132	110
355M	250	250	160	132
355M	—	—	200	160
355L	315	315	250	200

General data

- Voltage/Connection up to 3.0 kW: 220 V Δ / 380 V Y
from 4.0 kW: 380 V Δ / 660 V Y
 - Mounting arrangements IM 1001 (B3), IM 3001 (B5), IM 3601 (B14) feet can be mounted on flange-mounted motors
 - Thermistor 3 PTC built-in standard from frame 160 and above

Maximum permissible axial loads without radial load

Values are valid for 50 Hz. For 60 Hz. Operation the values have to be reduced by 10%. (If additional radial forces affect, enquiry is necessary depending on the direction of force)

Horizontal shaft

Frame size	Axial load thrust [kN]				Axial load tension [kN]			
	3000 min ⁻¹	1500 min ⁻¹	1000 min ⁻¹	750 min ⁻¹	3000 min ⁻¹	1500 min ⁻¹	1000 min ⁻¹	750 min ⁻¹
63	0,25	0,28	-	-	0,25	0,28	-	-
71	0,27	0,35	0,44	-	0,27	0,35	0,44	-
80	0,38	0,47	0,59	0,62	0,38	0,47	0,59	0,62
90	0,44	0,55	0,62	0,64	0,44	0,55	0,62	0,64
100	0,61	0,75	0,88	0,89	0,61	0,75	0,88	0,89
112	1,22	1,44	1,65	1,78	1,22	1,44	1,65	1,78
132	1,50	1,78	1,82	1,92	1,50	1,78	1,82	1,92
160	1,65	2,10	2,45	2,65	1,65	2,10	2,45	2,65
180	2,10	2,60	2,90	3,17	2,10	2,60	2,90	3,17
200	2,40	3,12	3,48	3,95	2,40	3,12	3,48	3,95
225	2,72	3,48	3,89	4,33	2,72	3,48	3,89	4,33
250	3,10	3,90	4,45	4,98	3,10	3,90	4,45	4,98
280	5,30	6,30	6,70	7,10	3,10	4,40	4,30	5,02
315	5,90	7,10	7,60	8,10	3,80	5,10	5,80	3,60
355	6,10	9,80	10,50	12,50	1,85	3,90	4,70	6,00

Vertical shaft downwards

Frame size	Axial load upwars [kN]				Axial load downwards [kN]			
	3000 min ⁻¹	1500 min ⁻¹	1000 min ⁻¹	750 min ⁻¹	3000 min ⁻¹	1500 min ⁻¹	1000 min ⁻¹	750 min ⁻¹
63	0,26	0,30	-	-	0,23	0,26	-	-
71	0,29	0,37	0,46	-	0,25	0,32	0,42	-
80	0,40	0,49	0,62	0,65	0,36	0,45	0,56	0,59
90	0,47	0,60	0,68	0,70	0,41	0,51	0,46	0,58
100	0,67	0,84	0,97	0,97	0,57	0,71	0,82	0,84
112	1,30	1,52	1,74	1,88	1,17	1,37	1,58	1,71
132	1,62	1,97	2,00	2,10	1,43	1,61	1,66	1,76
160	1,95	2,47	2,80	3,05	1,35	1,72	2,05	2,21
180	2,45	3,20	3,51	3,78	1,72	2,00	2,28	2,55
200	2,94	3,85	4,35	4,81	1,84	2,39	2,61	3,09
225	3,42	4,37	5,04	5,33	2,02	2,59	2,82	3,33
250	3,94	5,00	5,57	6,38	2,26	2,80	3,32	3,58
280	6,50	7,80	7,90	9,10	2,10	3,00	2,90	3,52
315	8,00	10,70	11,80	12,50	2,00	3,15	3,50	4,40
355	14,00	18,30	20,70	21,50	0,80	2,50	3,50	3,60

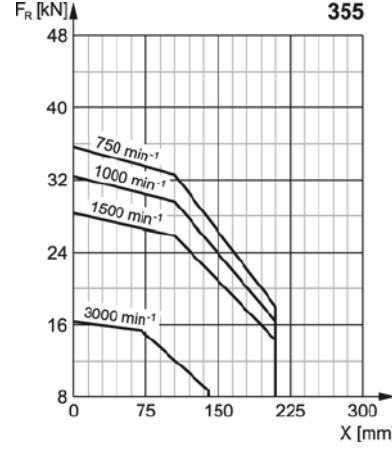
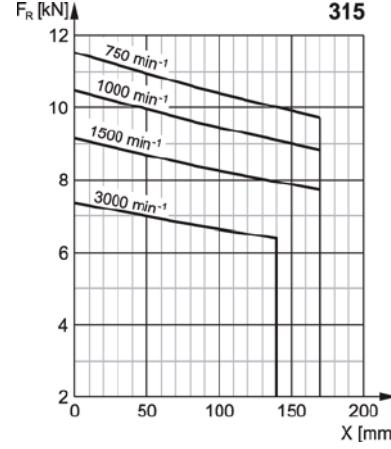
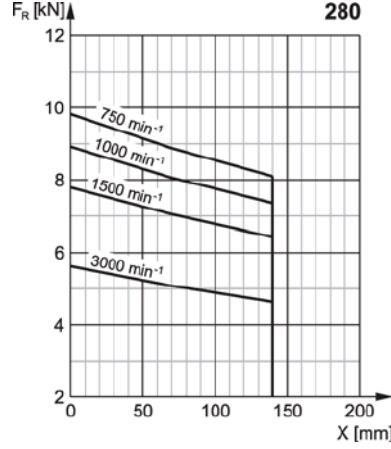
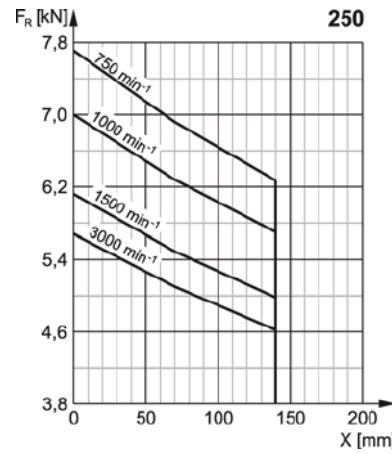
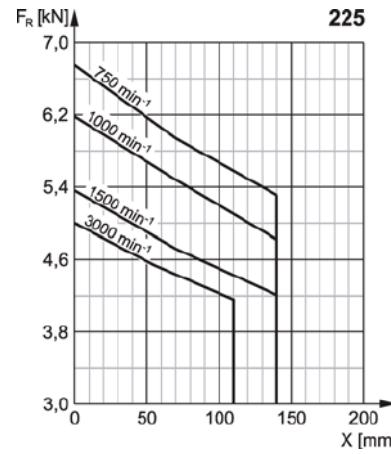
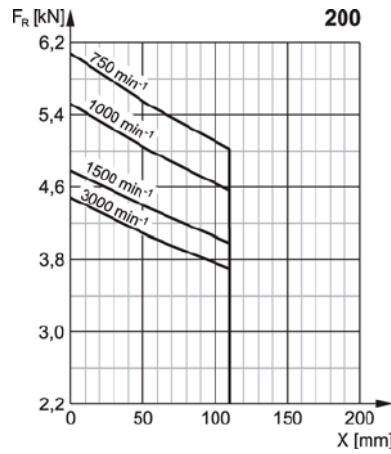
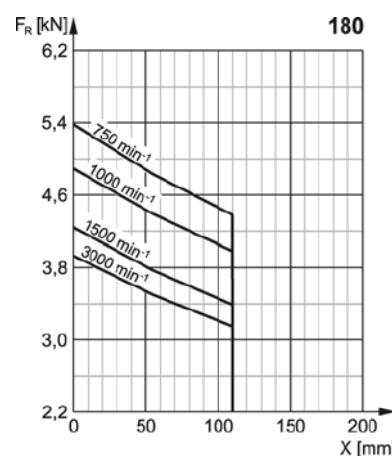
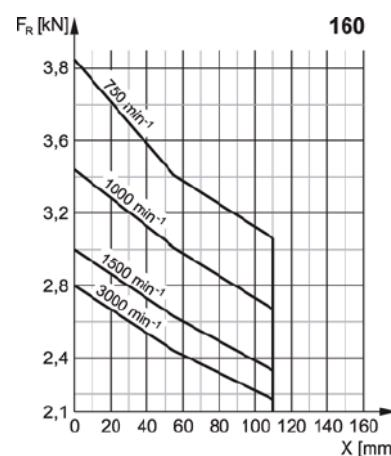
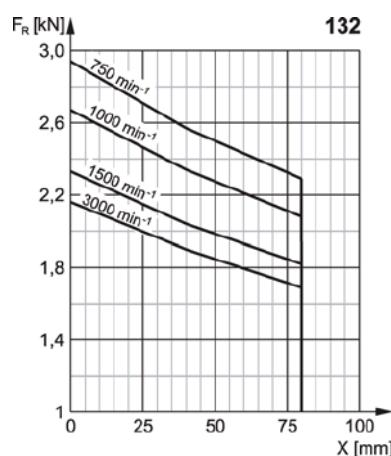
Permissible radial loads

without additional axial load (ball bearing)

max. permissible radial loads in the table are valid for
 $X = 1/2$ shaft length F_R = Permissible radial load in kN (without additional axial load) X = Distance between working point of force and shaft shoulder (e.g. half pulley width)

For calculation of the radial forces see Belt drive on page 9.

Frame size	F_R in N for number of poles			
	2	4	6	8
63	300	300	-	-
71	400	400	400	-
80	610	650	750	820
90S/L	660	710	810	890
100L	920	990	1130	1240
112M	1330	1430	1640	1800



Anti – condensation heating

Motors which are exposed to a risk of humidity during standstill due to severe temperature variations can be equipped with anti-condensation heating (space heaters) for an extra charge, if requested.

The supply voltage and the heating power of the strip heaters can be taken from the table beside.

Frame size	Supply voltage [V]	Heating elements [W]
132...200	220	2 × 40
225...250	220	2 × 50
280...315	220	2 × 65
355	220	2 × 100

IE1 General Performance

2 pole-3000 rpm synchronous speed 50Hz

Motors type	Rated output KW	Rated speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	$\frac{IST}{IFL}$	EFF %	Power factor	Rated torque Nm	$\frac{TST}{TFL}$	$\frac{TM}{TFL}$	M of J kgm ²	Noise level LW dB(A)	Net weight kg
HC-801-2	0.75	2840	1.8	1.7	1.67	5.5	75.5	0.83	2.5	2.3	2.6	0.0008	67	14
HC-802-2	1.1	2840	2.6	2.5	2.4	5.6	76.2	0.84	3.7	2.3	2.6	0.0009	67	15
HC-90S-2	1.5	2850	3.4	3.2	3.1	6.1	79.5	0.85	5	2.5	2.9	0.0012	72	20
HC-90L-2	2.2	2850	4.8	4.6	4.4	6.1	81.7	0.85	7.4	2.7	2.9	0.0014	72	24
HC-100L-2	3	2880	6.3	6	5.8	6.5	83.1	0.87	10	2.7	2.9	0.0039	76	30
HC-112M1-2	4	2880	8.2	7.8	7.6	6.5	84.2	0.88	13.3	2.6	2.9	0.0055	77	38
HC-112M2-2	5.5	2880	11.1	10.5	10.2	7.7	85.7	0.88	13.3	2.7	3.2	0.0076	78	43
HC-132S1-2	5.5	2900	11.1	10.5	10.2	6.9	85.9	0.88	18.1	2.3	2.6	0.011	80	57
HC-132S2-2	7.5	2900	14.9	14.2	13.5	6.9	87.2	0.88	24.5	2.5	2.8	0.013	80	61
HC-132M-2	11	2910	21.4	20.4	19.7	6.2	88.4	0.88	36.2	2.2	2.4	0.028	83	73
HC-160M1-2	11	2930	21.1	20.1	19.4	6.7	88.7	0.89	35.8	2.6	2.9	0.038	86	101
HC-160M2-2	15	2930	28.6	27.2	26.2	6.7	89.5	0.89	48.8	2.6	2.9	0.045	86	111
HC-160L-2	18.5	2930	34.6	32.9	31.8	6.8	90.2	0.90	60.4	2.5	2.8	0.055	86	126
HC-180M-2	22	2940	41	38.9	37.6	6.6	90.6	0.90	71.4	2.6	2.8	0.076	89	176
HC-200L1-2	30	2950	55.4	52.6	50.7	6.5	91.5	0.90	97.2	2.5	2.7	0.124	92	226
HC-200L2-2	37	2950	67.9	64.5	62.2	6.5	92.0	0.90	119.8	2.4	2.6	0.139	92	245
HC-225M-2	45	2970	82.1	78	75.3	6.8	92.5	0.90	144.8	2.4	2.6	0.233	92	280
HC-250M1-2	55	2970	99.6	94.6	91.3	6.8	93.2	0.90	177	2.5	2.8	0.312	93	379
HC-250M2-2	75	2970	135.1	128.4	123.8	6.5	93.7	0.90	241.3	2.3	3.2	0.412	94	466
HC-280S-2	75	2970	134.8	128.1	123.5	6.7	93.9	0.90	241.3	2.4	2.7	0.597	94	512
HC-280M1-2	90	2970	159.5	151.5	146.1	6.7	94.2	0.91	289.5	2.4	2.7	0.675	94	578
HC-280M2-2	110	2970	194.7	185	178.3	6.5	94.3	0.91	353.9	2	2.5	0.86	96	733
HC-315S-2	110	2980	194.6	184.9	178.2	6.6	94.4	0.91	352.7	2	2.5	1.18	96	845
HC-315M-2	132	2980	233	221.4	213.4	6.6	94.6	0.91	423.2	2.1	2.5	1.55	96	942
HC-315L1-2	160	2980	282.1	270	258.4	6.7	94.7	0.91	513	1.9	2.4	1.76	99	1019
HC-315L2-2	200	2980	347.7	330.1	318.4	6.7	95.0	0.92	641.2	1.9	2.4	2.02	99	1177
HC-355M-2	250	2980	432.3	410.8	395.9	6.5	95.5	0.92	801.5	1.6	2.3	3.56	103	1740
HC-355L-2	315	2980	543	515.9	497.3	6.5	95.8	0.92	1010	1.6	2.3	4.1	103	1920

■ IFL = full load current ■ IST = locked rotor current ■ TST= locked rotor torque ■ TM = maximum torque ■ TFL = full load torque

IE1 General Performance

4 pole-1500 rpm synchronous speed 50Hz

Motors type	Rated output KW	Rated speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	IST IFL	EFF %	Power factor	Rated torque Nm	TST TFL	TM TFL	M of J kgm ²	Noise level LW dB(A)	Net weight kg
HC-80M1-4	0.55	1390	1.6	1.5	1.4	5.5	71.4	0.75	3.8	2.2	2.4	0.002	58	13
HC-80M2-4	0.75	1390	2.1	2	1.9	5.6	73.5	0.76	5.2	2.2	2.4	0.002	58	14
HC-90S-4	1.1	1400	2.9	2.7	2.6	5.4	76.2	0.77	7.5	2.2	2.5	0.002	61	20
HC-90L-4	1.5	1400	3.8	3.5	3.4	5.2	78.7	0.78	10.2	2.4	2.6	0.003	61	23
HC-100L1-4	2.2	1420	5.1	4.9	4.7	6.0	81.0	0.81	14.8	2.3	2.6	0.007	64	29
HC-100L2-4	3	1420	6.8	6.4	6.2	6.1	82.7	0.82	20.2	2.3	2.7	0.007	64	33
HC-112M-4	4	1440	8.8	8.4	8.1	6.5	84.5	0.82	26.5	2.3	2.8	0.01	65	40
HC-132S-4	5.5	1440	11.7	11.2	10.8	6.8	85.7	0.83	36.5	2.3	2.9	0.021	7	59
HC-132M1-4	7.5	1440	15.6	14.8	14.3	6.5	87.1	0.84	49.8	2.4	3.0	0.03	71	69
HC-132M2-4	11	1440	22.6	21.4	20.7	6.8	88.4	0.84	73	2.2	2.7	0.057	75	99
HC-160M-4	11	1460	22.5	21.3	20.6	6.9	88.6	0.84	72	2.3	2.9	0.075	75	109
HC-160L-4	15	1460	30.3	28.5	27.5	6.8	89.5	0.85	98.2	2.3	2.9	0.092	75	130
HC-180M-4	18.5	1470	36.2	34.4	33.2	6.4	90.2	0.86	120.2	2.3	2.9	0.139	76	165
HC-180L-4	22	1470	42.9	40.7	39.3	6.9	90.7	0.86	143	2.3	2.9	0.158	76	180
HC-200L-4	30	1470	57.5	54.7	52.7	6.8	92.1	0.86	195	2.4	2.9	0.262	79	240
HC-225S-4	37	1480	69.7	66.2	64.6	6.5	92.7	0.87	238.9	2.2	2.7	0.406	81	278
HC-225M-4	45	1480	84.5	80.3	77.4	6.3	93.0	0.87	290.5	2.3	2.5	0.469	81	308
HC-250M1-4	55	1480	103	97.8	94.3	6.4	93.3	0.87	355.1	2.2	2.5	0.66	83	402
HC-250M2-4	75	1480	138.4	131.4	126.7	6.2	93.6	0.88	483.9	2.3	2.6	0.88	86	488
HC-280S-4	75	1480	138.1	131.1	126.4	6.8	93.8	0.88	483.9	2.1	2.8	1.12	86	540
HC-280M1-4	90	1480	165	157	152	6.9	94.1	0.88	580.7	2.2	2.7	1.46	86	615
HC-280M2-4	110	1480	201	191	184	6.5	94.5	0.89	709.8	2.1	2.3	2.68	93	717
HC-315S-4	110	1480	200.5	190.5	183.6	6.5	94.7	0.88	709.8	1.9	2.7	3.11	93	870
HC-315M-4	132	1480	240	228	220	6.8	95.0	0.88	851.8	2.3	3.2	3.29	93	990
HC-315L1-4	160	1480	287	273	263	6.6	95.2	0.89	1032	2.6	3.0	3.79	97	1053
HC-315L2-4	200	1480	358	340	328	6.4	95.4	0.89	1290	2.2	2.8	4.49	97	1243
HC-355M-4	250	1490	441	419	405	6.2	95.6	0.90	1603	1.9	2.9	5.67	101	1745
HC-355L-4	315	1490	555	527	509	6.1	95.8	0.90	2020	2.1	3.1	6.66	101	1957

■ IFL = full load current ■ IST = locked rotor current ■ TST = locked rotor torque ■ TM = maximum torque ■ TFL = full load torque

IE1 General Performance

6 pole-1000 rpm synchronous speed 50Hz

Motors type	Rated output KW	Rated speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	1FL 415V (AMP)	<u>IST</u> IFL	EFF %	Power factor	Rated torque Nm	<u>TST</u> TFL	<u>TM</u> TFL	M of J kgm ²	Noise level LW dB(A)	Net weight kg
HC-80M1-6	0.37	890	1.3	1.2	1.1	4.4	62.5	0.70	4	1.9	2.3	0.002	54	14
HC-80M2-6	0.55	890	1.8	1.7	1.6	4.5	65.0	0.72	5.9	2.1	2.4	0.003	54	16
HC-90S-6	0.75	910	2.3	2.2	2.1	4.1	69.1	0.72	7.9	2.3	2.7	0.003	57	20
HC-90L-6	1.1	910	3.2	3	2.9	4.6	72.0	0.73	11.5	2.3	2.7	0.004	57	23
HC-100L-6	1.5	920	4.1	3.9	3.7	5	76.0	0.75	15.6	2.4	2.8	0.007	61	29
HC-112M-6	2.2	940	5.6	5.3	5.1	5.2	79.1	0.76	22.4	2.1	2.5	0.014	65	38
HC-132S-6	3	960	7.4	7	6.8	5.6	81.3	0.76	29.9	1.9	2.5	0.029	69	54
HC-132M1-6	4	960	9.7	9.2	8.9	6.2	82.3	0.76	39.8	2.1	2.7	0.036	69	62
HC-132M2-6	5.5	960	12.8	12.2	11.7	6.5	84.7	0.77	54.7	2.3	2.8	0.045	69	69
HC-160M-6	7.5	970	17.1	16.2	15.6	5.6	86.6	0.77	73.9	2.0	2.6	0.088	73	103
HC-160L-6	11	970	24.5	23.2	22.4	5.8	87.6	0.78	108.3	2.1	2.4	0.116	73	121
HC-180L-6	15	970	31.6	30.1	28.9	5.7	89.0	0.81	147.7	2.0	2.4	0.207	73	173
HC-200L1-6	18.5	970	38.5	36.6	35.2	6.7	90.2	0.81	182.2	2.2	2.8	0.315	76	221
HC-200L2-6	22	970	44.7	42.5	40.9	6.6	90.2	0.83	216.7	2.3	2.9	0.36	76	236
HC-225M-6	30	980	59.3	56.4	54.3	6.8	91.5	0.84	292.5	2.2	2.7	0.547	76	301
HC-250M-6	37	980	70.1	67.4	64.9	6.2	92.2	0.86	360.7	2.0	2.5	0.834	78	370
HC-280S-6	45	980	86	82	79	6.1	92.5	0.86	438.7	1.9	2.5	1.39	80	478
HC-280M1-6	55	980	105	100	96	6.7	92.9	0.86	536.2	2.1	2.7	1.65	80	535
HC-280M2-6	75	985	140	133	128	5.8	93.6	0.87	727.2	2.1	2.3	3.21	85	682
HC-315S-6	75	990	142	135	129	6.5	93.7	0.86	723.8	2.0	2.7	4.11	85	790
HC-315M-6	90	990	170	161	155	6.2	93.9	0.86	868.6	2.0	2.6	4.28	85	880
HC-315L1-6	110	990	206	196	188	6	94.5	0.86	1062	1.9	2.7	5.45	85	997
HC-315L2-6	132	990	244	232	223	5.8	94.6	0.87	1274	2.0	2.7	6.12	85	1103
HC-355M1-6	160	990	291	276	266	6.3	95.1	0.88	1544	1.6	2.8	8.85	92	1400
HC-355M2-6	200	990	362	343	331	6.6	95.4	0.88	1930	2.0	2.9	9.55	92	1780
HC-355L-6	250	990	451	249	413	6.5	95.7	0.88	2413	1.6	3.0	10.3	92	2050

■ IFL = full load current ■ IST = locked rotor current ■ TST = locked rotor torque ■ TM = maximum torque ■ TFL = full load torque

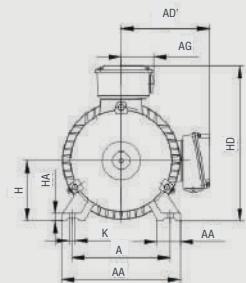
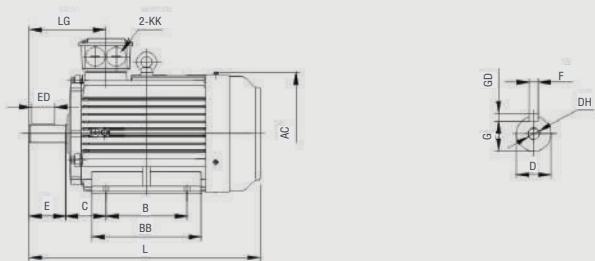
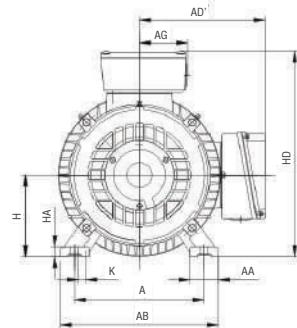
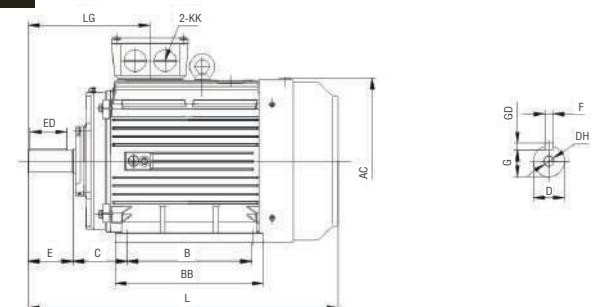
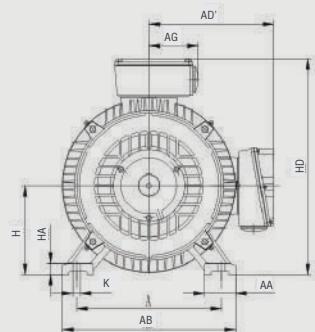
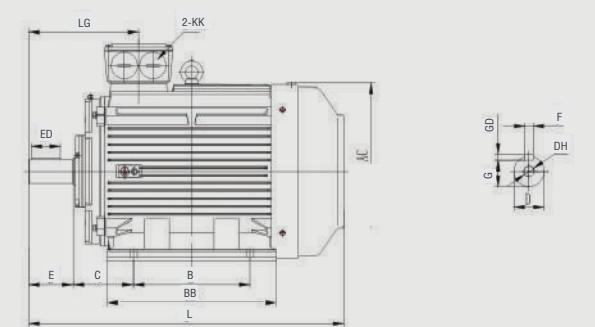
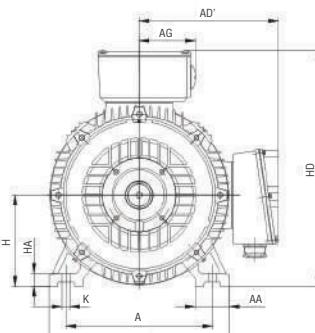
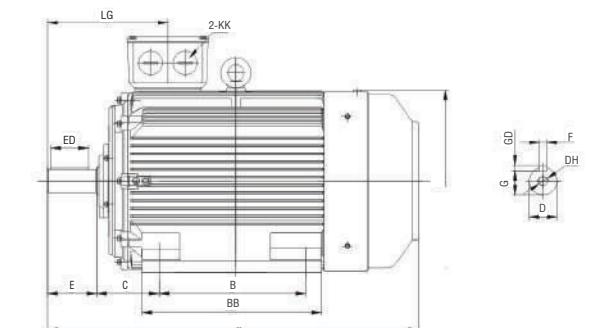
IE1 General Performance

8 pole-750 rpm synchronous speed 50Hz

Motors type	Rated output KW	Rated speed rpm	IFL 380V (AMP)	IFL 400V (AMP)	IFL 415V (AMP)	IST IFL	EFF %	Power factor	Rated torque Nm	TST TFL	TM TFL	M of J kgm ²	Noise level LW dB(A)	Net weight kg
HC-80M1-8	0.18	630	0.88	0.83	0.8	2.9	51.2	0.61	2.8	2	2.2	0.002	52	14
HC-80M2-8	0.25	640	1.15	1.09	1.05	3	54.2	0.61	3.7	2.1	2.4	0.003	52	16
HC-90S-8	0.37	660	1.48	1.41	1.36	3.4	62.2	0.61	5.4	2	2.2	0.004	56	20
HC-90L-8	0.55	660	2.16	2.06	1.98	3.5	63.3	0.61	8	2.1	2.3	0.004	56	23
HC-100L1-8	0.75	690	2.41	2.29	2.21	3.5	70.5	0.67	10.4	2	2.2	0.008	59	31
HC-100L2-8	1.1	690	3.35	3.18	3.06	3.6	72.4	0.69	15.2	2.2	2.4	0.01	59	35
HC-112M-8	1.5	690	4.4	4.2	4	3.9	74.5	0.70	20.8	2.4	2.6	0.017	61	38
HC-132S-8	2.2	710	5.9	5.6	5.4	4.3	79.3	0.71	29.6	2.3	2.5	0.031	64	52
HC-132M-8	3	710	7.8	7.4	7.1	4.4	80.1	0.73	40.4	2.2	2.4	0.01	64	61
HC-160M1-8	4	720	10.2	9.7	9.3	4.4	81.6	0.73	53.1	2.2	2.5	0.075	68	90
HC-160M2-8	5.5	720	13.6	12.9	12.4	5	83.3	0.74	73	2.2	2.4	0.093	68	102
HC-160L-8	7.5	720	17.7	16.8	16.2	5.7	85.9	0.75	99.5	2.1	2.3	0.126	68	122
HC-180L-8	11	730	25.4	24.1	23.2	5.6	87.8	0.75	144	2.3	2.5	0.203	70	150
HC-200L-8	15	730	34	32.3	31.1	5.5	88.3	0.76	196.3	2.1	2.4	0.339	73	212
HC-225S-8	18.5	730	41	39	37.5	5.6	90.2	0.76	242.1	2.2	2.6	0.491	73	285
HC-225M-8	22	740	47.2	44.8	43.2	5.4	90.8	0.78	284	2.1	2.4	0.547	73	385
HC-250M-8	30	740	63.3	60.1	57.9	5.3	91.2	0.79	387.3	2.2	2.5	0.83	75	378
HC-280S-8	37	740	77.5	73.6	71	5.6	91.8	0.79	477.7	2.3	2.7	1.39	76	485
HC-280M-8	45	740	94.1	89.4	86.1	5.2	92.0	0.79	581	2.1	2.8	1.65	76	568
HC-315S-8	55	740	110.8	105.3	101.5	5.7	93.1	0.81	710.1	1.9	2.5	4.79	82	745
HC-315M-8	75	740	150.1	142.6	137.5	5.9	93.7	0.81	968.3	2.1	2.8	5.58	82	805
HC-315L1-8	90	740	177.4	168.5	162.4	6.2	94.0	0.82	1162	2.3	2.9	6.37	82	998
HC-315L2-8	110	740	216.4	205.6	198.1	6	94.2	0.82	1420	2.2	2.8	7.23	82	1175
HC-355M1-8	132	740	259.4	246.4	237.5	6.4	94.3	0.82	1704	1.9	2.7	7.55	90	1580
HC-355M2-8	160	740	313.7	298	287.3	6.3	94.5	0.82	2066	1.7	2.6	11.73	90	1680
HC-355L-8	200	740	386.2	366.9	353.6	6.5	94.8	0.83	2582	1.8	2.9	12.86	90	1995

■ IFL = full load current ■ IST = locked rotor current ■ TST = locked rotor torque ■ TM = maximum torque ■ TFL = full load torque

Dimensions foot mount B3

HC-80 ~ 132**HC -160 ~ 200****HC-225 ~ 280****HC-315 ~ 355**

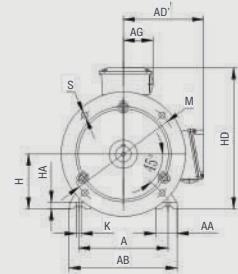
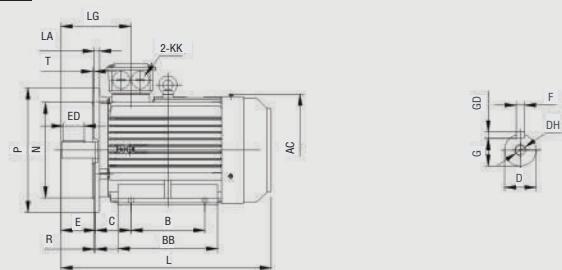
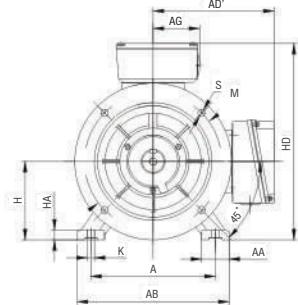
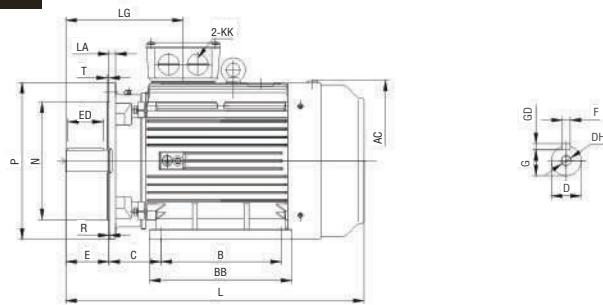
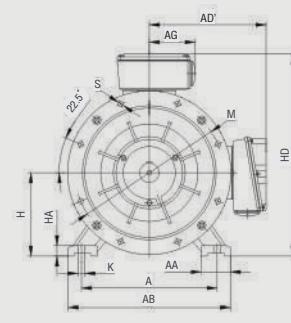
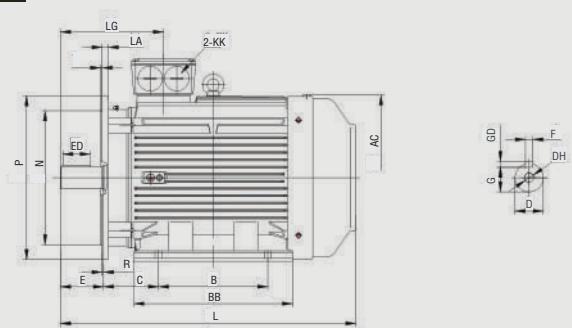
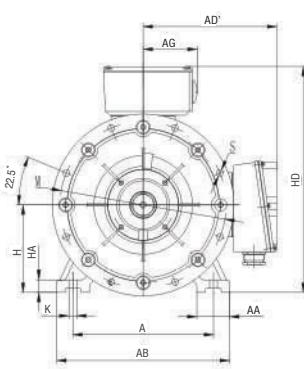
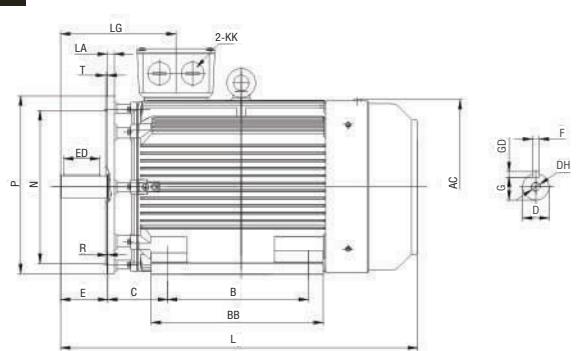
Technical Data

Dimensions foot mount B3

Frame size	A	AA	AB	AC	AD'	AG	B	BB	C	D	DH	E	ED	F	G	GD	H	HA	HD	K	KK	L	LG
80M	125	34	160	175	140	51	100	130	50	19	M6 × 16	40	25	6	15.5	6	80	10	230	10	M25 × 1.5	295	106
90S	140	36	180	190	150	60	100	135	56	24	M8 × 19	50	40	8	20	7	90	12.5	260	10	M25 × 1.5	320	124
90L	140	36	180	190	150	60	125	160	56	24	M8 × 19	50	40	8	20	7	90	12.5	260	10	M25 × 1.5	345	124
100L	160	40	200	215	160	60	140	182	63	28	M10 × 22	60	45	8	24	7	100	14	275	12	M25 × 1.5	385	140
112M	190	45	230	236	185	75	140	195	70	28	M10 × 22	60	45	8	24	7	112	14	310	12	M32 × 1.5	410	145
132S	216	52	265	275	205	75	140	205	89	38	M12 × 28	80	63	10	33	8	132	16	350	12	M32 × 1.5	480	169
132M	216	52	265	275	205	75	178	245	89	38	M12 × 28	80	63	10	33	8	132	16	350	12	M32 × 1.5	520	196
160M	254	65	320	330	250	95	210	260	108	42	M16 × 36	110	90	12	37	8	160	19	425	14.5	M40 × 1.5	610	270
160L	254	65	320	330	250	95	254	305	108	42	M16 × 36	110	90	12	37	8	160	19	425	14.5	M40 × 1.5	655	270
180M	279	74	350	380	270	95	241	297	121	48	M16 × 36	110	90	14	42.5	9	180	22	460	14.5	M40 × 1.5	680	277
180L	279	74	350	380	270	95	279	327	121	48	M16 × 36	110	90	14	42.5	9	180	22	460	14.5	M40 × 1.5	720	277
200L	318	75	395	420	325	120	305	370	133	55	M20 × 42	110	90	16	49	10	200	25	515	18.5	M50 × 1.5	760	300
225S(4-8P)	356	75	436	465	335	120	286	355	149	60	M20 × 42	140	110	18	53	11	225	28	560	18.5	M50 × 1.5	825	340
225M(2P)	356	75	436	465	335	120	311	380	149	55	M20 × 42	110	90	16	49	10	225	28	560	18.5	M50 × 1.5	820	310
225M(4-8P)	356	75	435	465	335	120	311	380	149	60	M20 × 42	140	110	18	53	11	225	28	560	18.5	M50 × 1.5	850	340
250M(2P)	406	88	495	520	370	160	349	440	168	60	M20 × 42	140	110	18	53	11	250	33	620	24	M63 × 1.5	925	353
250M1(4-8P)	406	88	495	520	370	160	349	440	168	65	M20 × 42	140	110	18	58	11	250	33	620	24	M63 × 1.5	925	353
250M2(4P)	406	88	495	520	370	160	349	440	168	70	M20 × 42	140	110	20	62.5	12	250	33	620	24	M63 × 1.5	935	353
280S(2P)	457	103	550	570	400	160	368	495	190	65	M20 × 42	140	110	18	58	11	280	35	685	24	M63 × 1.5	960	350
280S(4-8P)	457	103	550	570	400	160	368	495	190	75	M20 × 42	140	110	20	67.5	12	280	35	685	24	M63 × 1.5	975	350
280M(2P)	457	103	550	570	400	160	419	535	190	65	M20 × 42	140	110	18	58	11	280	35	685	24	M63 × 1.5	1000	350
280M1(4-8P)	457	103	550	570	400	160	419	535	190	75	M20 × 42	140	110	20	67.5	12	280	35	685	24	M63 × 1.5	1015	350
280M2(4-8P)	457	103	550	570	400	160	419	535	190	80	M20 × 42	170	140	22	71	14	280	35	685	24	M63 × 1.5	1060	380
315S(2P)	508	120	630	650	495	195	406	515	216	65	M20 × 42	140	110	18	58	11	315	45	820	28	M63 × 1.5	1160	387
315M(2P)	508	120	630	650	495	195	457	625	216	65	M20 × 42	140	110	18	58	11	315	45	820	28	M63 × 1.5	1270	387
315L(2P)	508	120	630	650	495	195	508	625	216	65	M20 × 42	140	110	18	58	11	315	45	820	28	M63 × 1.5	1270	387
315S(4-8P)	508	120	630	650	495	195	406	515	216	80	M20 × 42	170	140	22	71	14	315	45	820	28	M63 × 1.5	1190	417
315M(4-8P)	508	120	630	650	495	195	457	625	216	80	M20 × 42	170	140	22	71	14	315	45	820	28	M63 × 1.5	1300	417
315L(4-8P)	508	120	630	650	495	195	508	625	216	80	M20 × 42	170	140	22	71	14	315	45	820	28	M63 × 1.5	1300	417
355M(2P)	610	125	735	735	640	330	560	775	254	75	M24 × 50	140	110	20	67.5	12	355	49	1000	28	M63 × 1.5	1500	420
355L(2P)	610	125	735	735	640	330	630	775	254	75	M24 × 50	140	110	20	67.5	12	355	49	1000	28	M63 × 1.5	1500	420
355M(4-8P)	610	125	735	735	640	330	560	775	254	95	M24 × 50	170	140	25	86	14	355	49	1000	28	M63 × 1.5	1530	450
* 355M(4-8P)	610	125	735	735	640	330	630	775	254	100	M24 × 50	210	160	28	90	16	355	49	1000	28	M63 × 1.5	1570	490
355L(4-8P)	610	125	735	735	640	330	630	775	254	95	M24 × 50	170	140	25	86	14	355	49	1000	28	M63 × 1.5	1530	450
* 355L(4-8P)	610	125	735	735	640	330	630	775	254	100	M24 × 50	210	160	28	90	16	355	49	1000	28	M63 × 1.5	1570	490

* These motors can also be supplied. Please state the dimensions of the shaft extension on order.

Dimensions foot-flange mount B35

HC-80 ~ 132**HC -160 ~ 200****HC-225 ~ 280****HC-315 ~ 355**

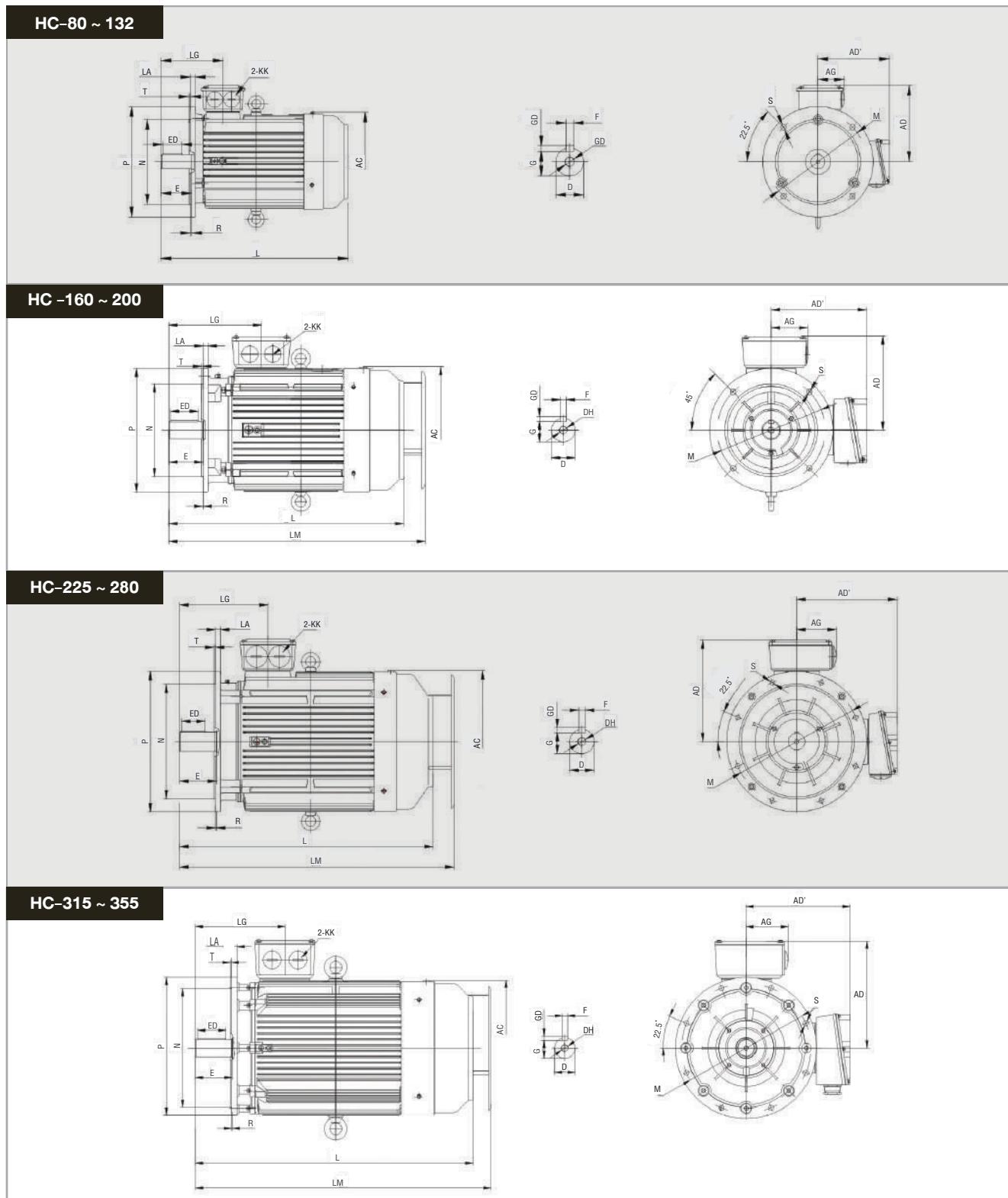
Dimensions foot-flange mount B35

Frame size	A	AA	AB	AC	AD'	AG	B	BB	C	D	DH	E	ED	F	G	GD	H	HA	HD	K	KK	L	LG	LA	M	N	P	S	T
80M	125	34	160	175	140	51	100	130	50	19	M6 x 16	40	25	6	15.5	6	80	10	230	10	M25 x 1.5	295	106	12	165	130	200	12	3.5
90S	140	36	180	190	150	60	100	135	56	24	M8 x 19	50	40	8	20	7	90	12.5	260	10	M25 x 1.5	320	124	12	165	130	200	12	3.5
90L	140	36	180	190	150	60	125	160	56	24	M8 x 19	50	40	8	20	7	90	12.5	260	10	M25 x 1.5	345	124	12	165	130	200	12	3.5
100L	160	40	200	215	160	60	140	182	63	28	M10 x 22	60	45	8	24	7	100	14	275	12	M25 x 1.5	385	140	14	215	180	250	14.5	4
112M	190	45	230	236	185	75	140	195	70	28	M10 x 22	60	45	8	24	7	112	14	310	12	M32 x 1.5	410	145	14	215	180	250	14.5	4
132S	216	52	265	275	205	75	140	205	89	38	M12 x 28	80	63	10	33	8	132	16	350	12	M32 x 1.5	480	169	14	265	230	300	14.5	4
132M	216	52	265	275	205	75	178	245	89	38	M12 x 28	80	63	10	33	8	132	16	350	12	M32 x 1.5	520	169	14	265	230	300	14.5	4
160M	254	65	320	330	250	95	210	260	108	42	M16 x 36	110	90	12	37	8	160	19	425	14.5	M40 x 1.5	610	270	15	300	250	350	18.5	5
160L	254	65	320	330	250	95	254	305	108	42	M16 x 36	110	90	12	37	8	160	19	425	14.5	M40 x 1.5	655	270	15	300	250	350	18.5	5
180M	279	74	350	380	270	95	241	297	121	48	M16 x 36	110	90	14	42.5	9	180	22	460	14.5	M40 x 1.5	680	277	15	300	250	350	18.5	5
180L	279	74	350	380	270	95	279	327	121	48	M16 x 36	110	90	14	42.5	9	180	22	460	14.5	M40 x 1.5	720	277	15	300	250	350	18.5	5
200L	318	75	395	420	325	120	305	370	133	55	M20 x 42	110	90	16	49	10	200	25	515	18.5	M50 x 1.5	760	300	17	350	300	400	18.5	5
225S(4-8P)	356	75	436	465	335	120	286	355	149	60	M20 x 42	140	110	18	53	11	225	28	560	18.5	M50 x 1.5	825	340	20	400	350	450	18.5	5
225M(2P)	356	75	436	465	335	120	311	380	149	55	M20 x 42	110	90	16	49	10	225	28	560	18.5	M50 x 1.5	820	310	20	400	350	450	18.5	5
225M(4-8P)	356	75	436	465	335	120	311	380	149	60	M20 x 42	140	110	18	53	11	225	28	560	18.5	M50 x 1.5	850	340	20	400	350	450	18.5	5
250M(2P)	406	88	495	520	370	160	349	440	168	60	M20 x 42	140	110	18	53	11	250	33	620	24	M63 x 1.5	925	353	20	500	450	550	18.5	5
250M1(4-8P)	406	88	495	520	370	160	349	440	168	65	M20 x 42	140	110	18	58	11	250	33	620	24	M63 x 1.5	925	353	20	500	450	550	18.5	5
250M2(4P)	406	88	495	520	370	160	349	440	168	70	M20 x 42	140	110	20	62.5	12	280	33	620	24	M63 x 1.5	935	353	20	500	450	550	18.5	5
280S(2P)	457	103	550	570	400	160	368	495	190	65	M20 x 42	140	110	18	58	11	280	35	685	24	M63 x 1.5	960	350	22	500	450	550	18.5	5
280S(4-8P)	457	103	550	570	400	160	368	495	190	75	M20 x 42	140	110	20	67.5	12	280	35	685	24	M63 x 1.5	975	350	22	500	450	550	18.5	5
280M(2P)	457	103	550	570	400	160	419	535	190	65	M20 x 42	140	110	18	58	11	280	35	685	24	M63 x 1.5	1000	350	22	500	450	550	18.5	5
280M1(4-8P)	457	103	550	570	400	160	419	535	190	75	M20 x 42	140	110	20	67.5	12	280	35	685	24	M63 x 1.5	1015	350	22	500	450	550	18.5	5
280M2(4-8P)	457	103	550	570	400	160	419	535	190	80	M20 x 42	170	140	22	71	14	280	35	685	24	M63 x 1.5	1160	380	22	500	450	550	18.5	5
315S(2P)	508	120	630	650	495	195	406	515	216	65	M20 x 42	140	110	18	58	11	315	45	820	28	M63 x 1.5	1060	387	24	600	550	660	24	6
315M(2P)	508	120	630	650	495	195	457	625	216	65	M20 x 42	140	110	18	58	11	315	45	820	28	M63 x 1.5	1270	387	24	600	550	660	24	6
315L(2P)	508	120	630	650	495	195	508	625	216	65	M20 x 42	140	110	18	58	11	315	45	820	28	M63 x 1.5	1270	387	24	600	550	660	24	6
315S(4-8P)	508	120	630	650	495	195	406	515	216	80	M20 x 42	170	140	22	71	14	315	45	820	28	M63 x 1.5	1190	417	24	600	550	660	24	6
315M(4-8P)	508	120	630	650	495	195	457	625	216	80	M20 x 42	170	140	22	71	14	315	45	820	28	M63 x 1.5	1300	417	24	600	550	660	24	6
315L(4-8P)	508	120	630	650	495	195	508	625	216	80	M20 x 42	170	140	22	71	14	315	45	820	28	M63 x 1.5	1300	417	24	600	550	660	24	6
355M(2P)	610	125	735	735	640	330	560	775	254	75	M24 x 50	140	110	20	67.5	12	355	49	1000	28	M63 x 1.5	1500	420	25	740	680	800	24	6
355L(2P)	610	125	735	735	640	330	630	775	254	75	M24 x 50	140	110	20	67.5	12	355	49	1000	28	M63 x 1.5	1500	420	25	740	680	800	24	6
355M(4-8P)	610	125	735	735	640	330	560	775	254	95	M24 x 50	170	140	25	86	14	355	49	1000	28	M63 x 1.5	1530	450	25	740	680	800	24	6
355M(4-8P)	610	125	735	735	640	330	560	775	254	100	M24 x 50	210	160	28	90	16	355	49	1000	28	M63 x 1.5	1570	490	25	740	680	800	24	6
355L(4-8P)	610	125	735	735	640	330	630	775	254	100	M24 x 50	210	160	28	90	16	355	49	1000	28	M63 x 1.5	1570	490	25	740	680	800	24	6
355L(4-8P)	610	125	735	735	640	300	630	775	254	100	M24 x 50	210	160	28	90	16	355	49	1000	28	M63 x 1.5	1570	490	25	740	680	800	24	6

The 'R' dimensions is zero.

* These motors can also be supplied. Please state the dimensions of the shaft extension on order.

Dimensions flange mount B5 and V1



Technical Data

Dimensions flange mount B5 and V1

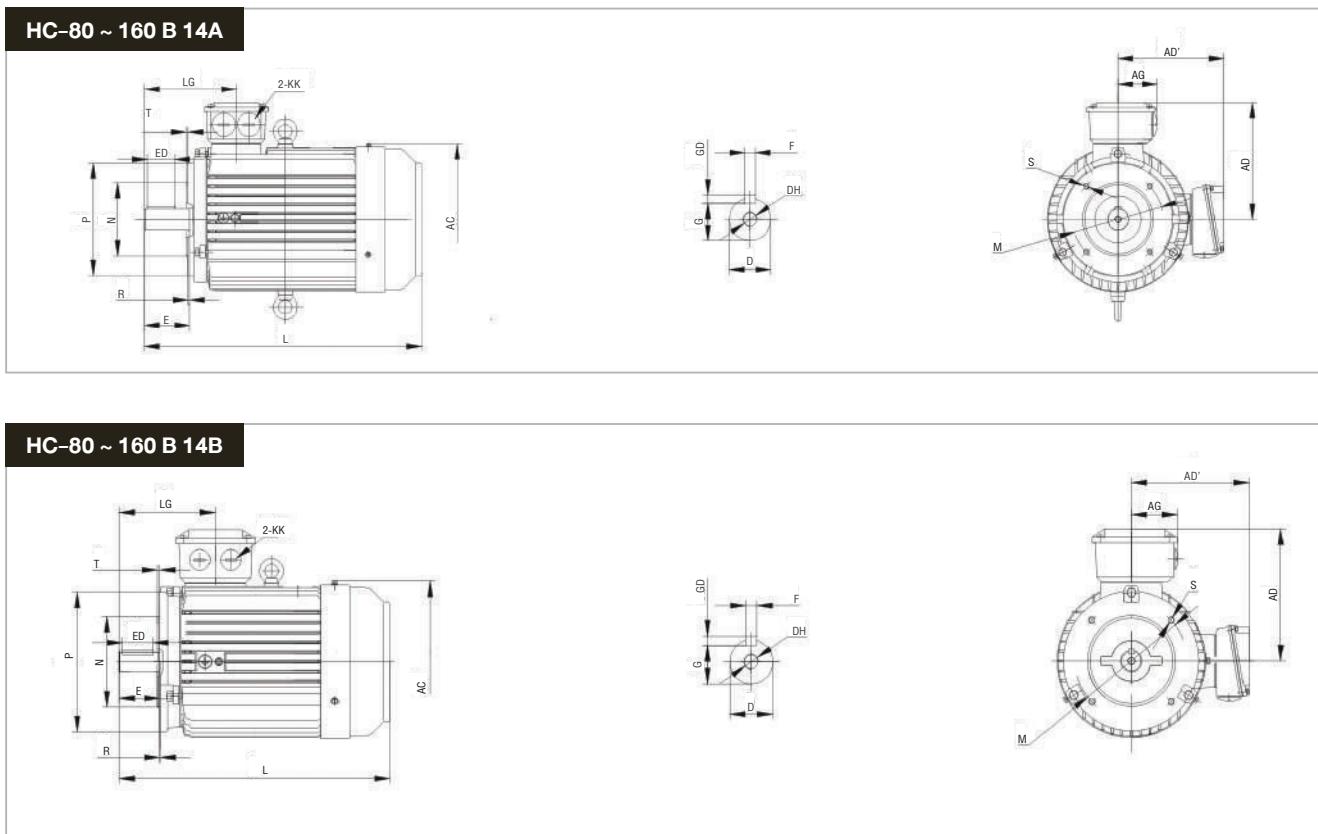
Frame size	AC	AD	AD'	AG	D	DH	E	ED	F	G	GD	KK	L	LA	LG	M	N	P	S	T
80M	175	150	140	51	19	M6 × 16	440	25	6	15.5	6	M25 × 1.5	295	12	106	165	130	200	12	3.5
90S	190	165	150	60	24	M8 × 19	50	40	8	20	7	M25 × 1.5	320	12	124	165	130	200	12	3.5
90L	190	165	150	60	24	M8 × 19	50	40	8	20	7	M25 × 1.5	345	12	124	165	130	200	12	3.5
100L	215	170	160	60	28	M10 × 22	60	45	8	24	7	M25 × 1.5	385	14	140	215	180	250	14.5	4
112M	236	195	185	75	28	M10 × 22	60	45	8	24	7	M32 × 1.5	410	14	145	215	180	250	14.5	4
132S	275	215	205	75	38	M12 × 28	80	63	10	33	8	M32 × 1.5	480	14	169	265	230	300	14.5	4
132M	275	215	205	75	38	M12 × 28	80	63	10	33	8	M32 × 1.5	520	14	169	265	230	300	14.5	4
160M	330	265	250	95	42	M16 × 36	110	90	12	37	8	M40 × 1.5	610	15	270	300	250	350	18.5	5
160L	330	265	250	95	42	M16 × 36	110	90	12	37	8	M40 × 1.5	655	15	270	300	250	350	18.5	5
180M	380	280	270	95	48	M16 × 36	110	90	14	42.5	9	M40 × 1.5	680	15	277	300	250	350	18.5	5
180L	380	280	270	95	48	M20 × 42	110	90	14	42.5	9	M40 × 1.5	720	15	277	300	250	350	18.5	5
200L	420	315	325	120	55	M20 × 42	110	90	16	49	10	M50 × 1.5	760	17	300	350	300	400	18.5	5
225S(4-8P)	465	335	335	120	60	M20 × 42	140	110	18	53	11	M50 × 1.5	825	20	340	400	350	450	18.5	5
225M(2P)	465	335	335	120	55	M20 × 42	110	90	16	49	10	M50 × 1.5	820	20	310	400	350	450	18.5	5
225M(4-8P)	465	335	335	120	60	M20 × 42	140	110	18	53	11	M50 × 1.5	850	20	340	400	350	450	18.5	5
250M(2P)	520	375	370	160	60	M20 × 42	140	110	18	53	11	M63 × 1.5	925	20	353	500	450	550	18.5	5
250M1(4-8P)	520	375	370	160	65	M20 × 42	140	110	18	58	11	M63 × 1.5	925	20	353	500	450	550	18.5	5
250M2(4P)	520	375	370	160	70	M20 × 42	140	110	20	62.5	12	M63 × 1.5	925	20	353	500	450	550	18.5	5
280S(2P)	570	405	400	160	65	M20 × 42	140	110	18	58	11	M63 × 1.5	960	22	350	500	450	550	18.5	5
280S(4-8P)	570	405	400	160	75	M20 × 42	140	110	20	67.5	12	M63 × 1.5	975	22	350	500	450	550	18.5	5
280M(2P)	570	405	400	160	65	M20 × 42	140	110	18	58	11	M63 × 1.5	1000	22	350	500	450	550	18.5	5
280M1(4-8P)	570	405	400	160	75	M20 × 42	140	110	20	67.5	12	M63 × 1.5	1015	22	350	500	450	550	18.5	5
280M2(4P)	570	405	400	160	80	M20 × 42	170	140	22	71	14	M63 × 1.5	1060	22	450	550	450	550	18.5	5
315S(2P)	650	500	495	195	65	M20 × 42	140	110	18	58	11	M63 × 1.5	1160	24	387	600	550	660	24	6
315M(2P)	650	500	495	195	65	M20 × 42	140	110	18	58	11	M63 × 1.5	1270	24	387	600	550	660	24	6
315L(2P)	650	500	495	195	65	M20 × 42	140	110	18	58	11	M63 × 1.5	1270	24	387	600	550	660	24	6
315S(4-8P)	650	500	495	195	80	M20 × 42	170	140	22	71	14	M63 × 1.5	1190	24	417	600	550	660	24	6
315M(4-8P)	650	500	495	195	80	M20 × 42	170	140	22	71	14	M63 × 1.5	1300	24	417	600	550	660	24	6
315L(4-8P)	650	500	495	195	80	M20 × 42	170	140	22	71	14	M63 × 1.5	1300	24	417	600	550	660	24	6
355M(2P)V1	735	645	640	330	75	M24 × 50	140	110	20	67.5	12	M63 × 1.5	1500	25	420	740	680	800	24	6
355L(2P)V1	735	645	640	330	75	M24 × 50	140	110	20	67.5	12	M63 × 1.5	1500	25	420	740	680	800	24	6
355M(4-8P)V1	735	645	640	330	95	M24 × 50	170	140	25	86	14	M63 × 1.5	1530	25	450	740	680	800	24	6
*355M(4-8P)V1	735	645	640	330	100	M24 × 50	210	160	28	90	16	M63 × 1.5	1570	25	490	740	680	800	24	6
355L(4-8P)V1	735	645	640	330	95	M24 × 50	170	140	25	86	14	M63 × 1.5	1530	25	450	740	680	800	24	6
*355L(4-8P)V1	735	645	640	330	100	M24 × 50	210	160	28	90	16	M63 × 1.5	1570	25	490	740	680	800	24	6

The 'R' dimensions is zero.

The motors of B5 are supplied only up to frame size 315.

* These motors can also be supplied. Please state the dimension of the shaft extension on order.

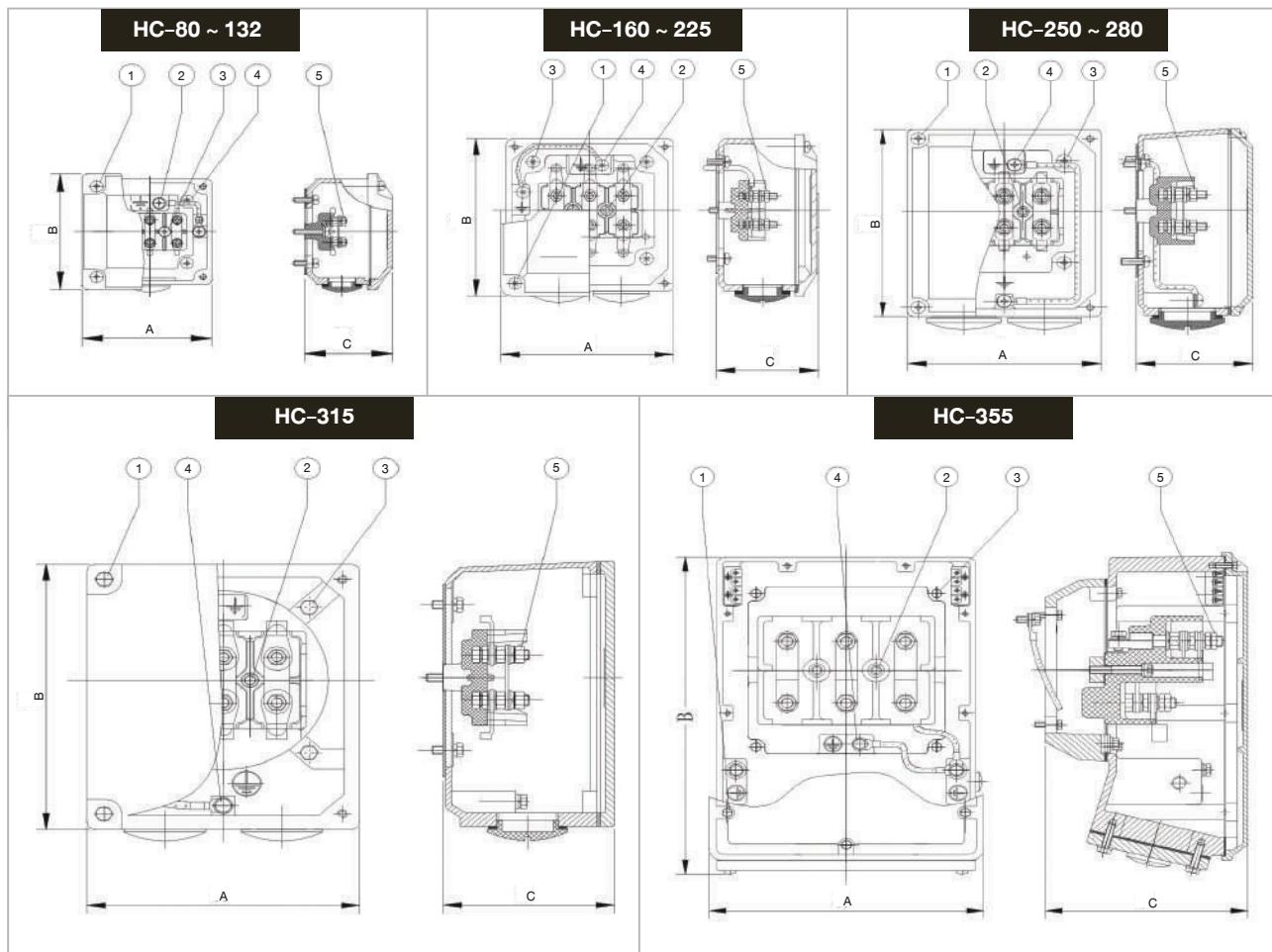
Dimensions face-flange mount B14A and B14B



Frame size	AC	AD	AD'	AG	D	DH	E	ED	F	G	GD	KK	L	LG	B14A					B14B				
															M	N	P	S	T	M	N	P	S	T
80M	175	150	140	51	19	M6 x 16	40	25	6	15.5	6	M25 x 1.5	295	106	100	80	120	M6	3	130	110	160	M8	3.5
90S	190	165	150	60	24	M8 x 19	50	40	8	20	7	M25 x 1.5	320	124	115	95	140	M8	3	130	110	160	M8	3.5
90L	190	165	150	60	24	M8 x 19	50	40	8	20	7	M25 x 1.5	345	124	115	95	140	M8	3	130	110	160	M8	3.5
100L	215	170	160	60	28	M10 x 22	60	45	8	24	7	M25 x 1.5	385	140	130	110	160	M8	3.5	165	130	200	M10	3.5
112M	236	195	185	75	28	M10 x 22	60	45	8	24	7	2 x M32 x 1.5	410	145	130	110	160	M8	3.5	165	130	200	M10	3.5
132S	275	215	205	75	38	M12 x 28	80	63	10	33	8	2 x M32 x 1.5	480	169	165	130	200	M10	3.5	215	180	250	M12	4
132M	275	215	205	75	38	M12 x 28	80	63	10	33	8	2 x M32 x 1.5	520	169	165	130	200	M10	3.5	215	180	250	M12	4
160M	330	265	250	95	42	M16 x 36	110	90	12	37	8	2 x M40 x 1.5	610	270	215	180	250	M12	4	-	-	-	-	-
160L	330	265	250	95	42	M16 x 36	110	90	12	37	8	2 x M40 x 1.5	655	270	215	180	250	M12	4	-	-	-	-	-

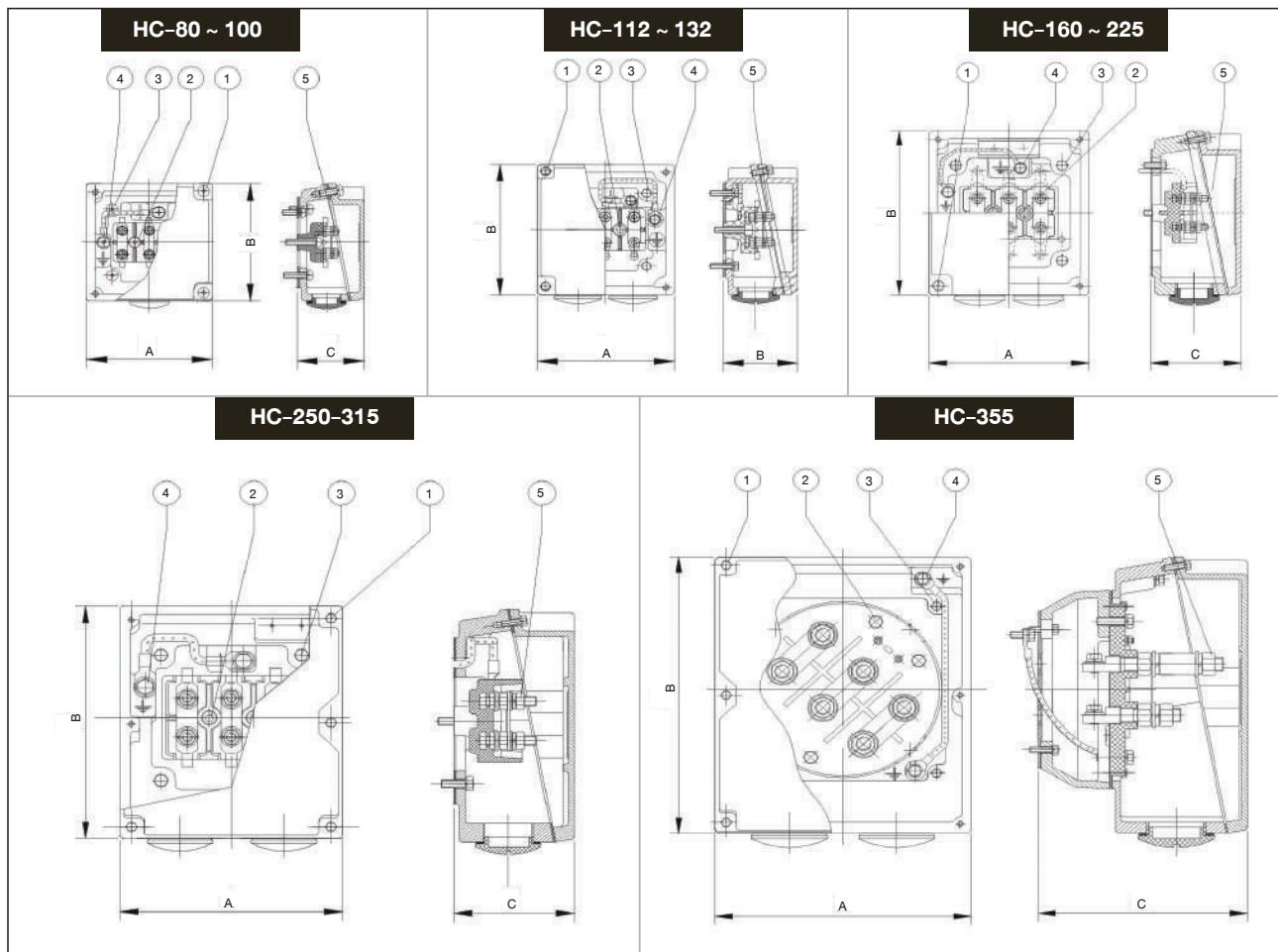
The 'R' dimensions is zero.

Top terminal box



Frame size	A	B	C	1	2	3	4	5	METRIC GRAND SIZE	PG GLAND SIZE
HC-80	107	107	67	M5 × 16	M5 × 25	M5 × 16	M5 × 12	M4	M25 × 1.5	PG16
HC-90-100	115	115	75	M5 × 16	M5 × 25	M5 × 16	M5 × 12	M4	M25 × 1.5	PG16
HC-112-132	124	130	80	M5 × 16	M5 × 25	M5 × 20	M5 × 16	M5	2 × M32 × 1.5	2 × PG21
HC-160-180	184	163	95	M6 × 16	M6 × 25	M6 × 16	M6 × 12	M6	2 × M40 × 1.5	2 × PG29
HC-200-225	215	192	112	M8 × 25	M8 × 35	M8 × 25	M8 × 16	M8	2 × M50 × 1.5	2 × PG36
HC-250-280	249	220	134	M8 × 25	M8 × 35	M8 × 25	M8 × 16	M10	2 × M63 × 1.5	2 × PG42
HC-315	323	283	180	M10 × 25	M8 × 45	M10 × 25	M10 × 20	M12	2 × M63 × 1.5	2 × PG48
HC-355	365	490	285	M8 × 30	M12 × 80	M12 × 30	M12 × 25	M16	2 × M63 × 1.5	2 × PG48

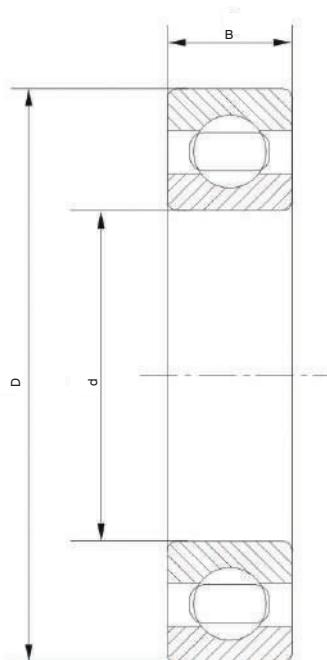
Side terminal box



Frame size	A	B	C	1	2	3	4	5	METRIC GRAND SIZE	PG GLAND SIZE
HC-80	95	95	56	M5 × 16	M5 × 25	M5 × 16	M5 × 12	M4	M25 × 1.5	PG16
HC-90-100	105	109	56	M5 × 16	M5 × 25	M5 × 16	M5 × 12	M4	M25 × 1.5	PG16
HC-112-132	117	125	65	M5 × 16	M5 × 25	M5 × 20	M5 × 16	M5	2 × M32 × 1.5	2 × PG21
HC-160-180	155	177	87	M6 × 16	M6 × 25	M6 × 16	M6 × 12	M6	2 × M40 × 1.5	2 × PG29
HC-200-225	179	215	107	M6 × 25	M8 × 35	M8 × 20	M8 × 16	M8	2 × M50 × 1.5	2 × PG36
HC-250-280	217	261	120	M6 × 30	M8 × 35	M8 × 30	M10 × 20	M10	2 × M63 × 1.5	2 × PG42
HC-315	279	331	165	M8 × 35	M10 × 45	M10 × 30	M10 × 20	M12	2 × M63 × 1.5	2 × PG48
HC-355	334	410	278	M8 × 30	M12 × 80	M12 × 30	M10 × 25	M20	2 × M63 × 1.5	2 × PG48

Bearing & lubrication

Frame size	DE	NDE	d	D	B
HC-80	6204 ZZ C3	6204 ZZ C3	20	47	14
HC-90	6205 ZZ C3	6205 ZZ C3	25	52	15
HC-100	6206 ZZ C3	6206 ZZ C3	30	62	16
HC-112	6306 ZZ C3	6306 ZZ C3	30	72	19
HC-132	6308 ZZ C3	6308 ZZ C3	40	90	23
HC-160	6309 C3	6309 C3	45	100	25
HC-180	6311 C3	6311 C3	55	120	29
HC-200	6312 C3	6312 C3	60	130	31
HC-225	6313 C3	6313 C3	65	140	33
HC-250 (Horizontal)	6314 C3	6314 C3	70	150	35
HC-250 (Vertical)	6314 C3	7314	70	150	35
HC-280-2P (Horizontal)	6314 C3	6317 C3	70	150	35
HC-280-2P (Vertical)	6314 C3	7317	70	150	35
HC-280 4-8P (Horizontal)	6317 C3	6317 C3	85	180	41
HC-280 4-8P (Vertical)	6317 C3	7317	85	180	41
HC-315 2P (Horizontal)	6316 C3	6316 C3	80	170	39
HC-315 2P (Vertical)	6316 C3	7316	80	170	39
HC-315 4-8P (Horizontal)	N319	6319 C3	95	200	45
HC-315 4-8P (Vertical)	N319	7319	95	200	45
HC-355 2P (Horizontal)	6319 C3	6319 C3	95	200	45
HC-355 2P (Vertical)	6319 C3	7319	95	200	45
HC-355 4-8P (Horizontal)	N322	6322 C3	110	240	50
HC-355 4-8P (Vertical)	N322	7322	110	240	50



- HC motors are equipped with bearings from excellent manufacturers.
- In general the bearings have C3 clearances.
- Motors of frame sizes 80-132 are fitted with life-lubricated bearing.
- Motors of frame sizes 160-355 are fitted with open bearings and regreasing device. Depending on the useful life of grease, open bearings must be regreased in good time so that the scheduled bearing service life is reached.

Frame size	Drive end bearing	Non-drive end bearing	Regreasing period hours for operating temperatures up to 70 °C*			Quantity of grease in bearing chamber
			<3600r/min	<1800r/min	<1200r/min	
HC3-160	6309 C3	6309 C3	6000	12000	18000	13
HC3-180	6311 C3	6311 C3	4000	11000	16000	15
HC3-200	6312 C3	6312 C3	3500	8500	13000	20
HC3-225	6313 C3	6313 C3	3000	6000	9000	22
HC3-250	6314 C3	6314 C3	2000	5000	8000	23
HC3-280 2P	6314 C3	6314 C3	1200	-	-	30
HC3-280 4-8P	6317 C3	6317 C3	-	4000	6000	30
HC3-315 2P	6316 C3	6316 C3	1200	-	-	30
HC3-315 4-8P	N319	6319 C3	-	2000	3000	45
HC3-355 2P	6319 C3	6319 C3	1200	-	-	30
HC3-355 4-8P	N322	6322 C3	-	1400	2200	60

Note:

- 1.Vertical motors should be greased twice as often as horizontal motors.
 - 2.Regreasing time should be reduced if bearing operating temperature is in excess of 70 °C*
- HASCON reserves right to make changes to this brochure without notice.

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