

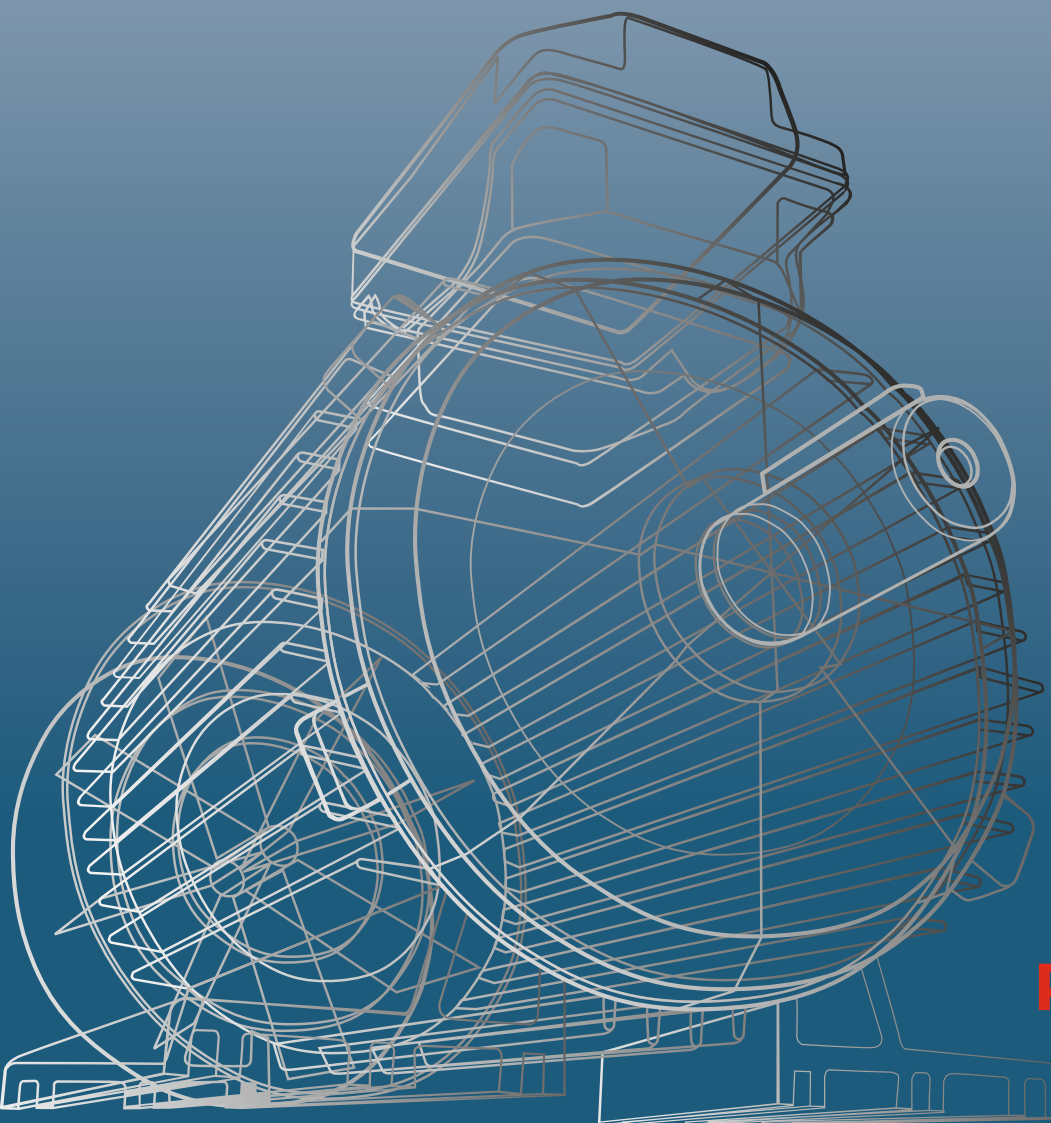
General Purpose 3-phase Induction Motors

Comply with the new efficiency classes
for low-voltage three-phase motors

IEC 60034-30 standard
and EU Regulation 640/2009, 4/2014

*Energy Efficient
Motors
series 3VTB*

IE3



Product Catalogue

Certificates



DNV BUSINESS ASSURANCE MANAGEMENT SYSTEM CERTIFICATE

Certificato No. / Certificate No. **CERT-11553-2003-AQ-VEN-SINCERT**

Si attesta che / This is to certify that

VEMAT MOTORI S.r.l.

Via Gualda, 10 - 36075 Montecchio Maggiore (VI) - Italy

è conforme ai requisiti della norma per i sistemi di gestione:
has been found to conform to the management system standard:

UNI EN ISO 9001:2008 (ISO 9001:2008)

Questa Certificazione è valida per il seguente campo applicativo:
This Certificate is valid for the following product or service ranges:

**Progettazione, sviluppo, produzione e vendita di motori elettrici asincroni monofase e trifase
(Settore EA : 19)**

**Design and manufacture of asynchronous three-phase and single-phase electric motors
(Sector EA : 19)**

Data Prima Emissione/Initial Certification Date:

2003-01-07

Il Certificato è valido fino al:

This Certificate is valid until:

2017-12-06

L'audit è stato eseguito sotto la supervisione di/
The audit has been performed under the supervision of

Mauro Sanguinetti
Lead Auditor



SGQ N°003 A PRD N°003 B
SGA N°003 D SSI N°003 G
SCR N°004 F FSA N°001 I
Membro di IMA EA per gli schemi di accreditamento SGQ,
SGA, PRD, PMS, TSP e SA/SA-HA (AF) per gli schemi di
accreditamento SGA, SGA, SSI, FSA e PRD
e di IMA ILAC per gli schemi di accreditamento IAS

Luogo e Data/Place and Date:

Vimercate (MB), 2014-10-14

Per l'Organismo di Certificazione:

For the Certification Body:

Zeno Beltrami
Management Representative

La validità del presente Certificato è subordinata al rispetto delle condizioni contenute nel Contratto di Certificazione.
Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.

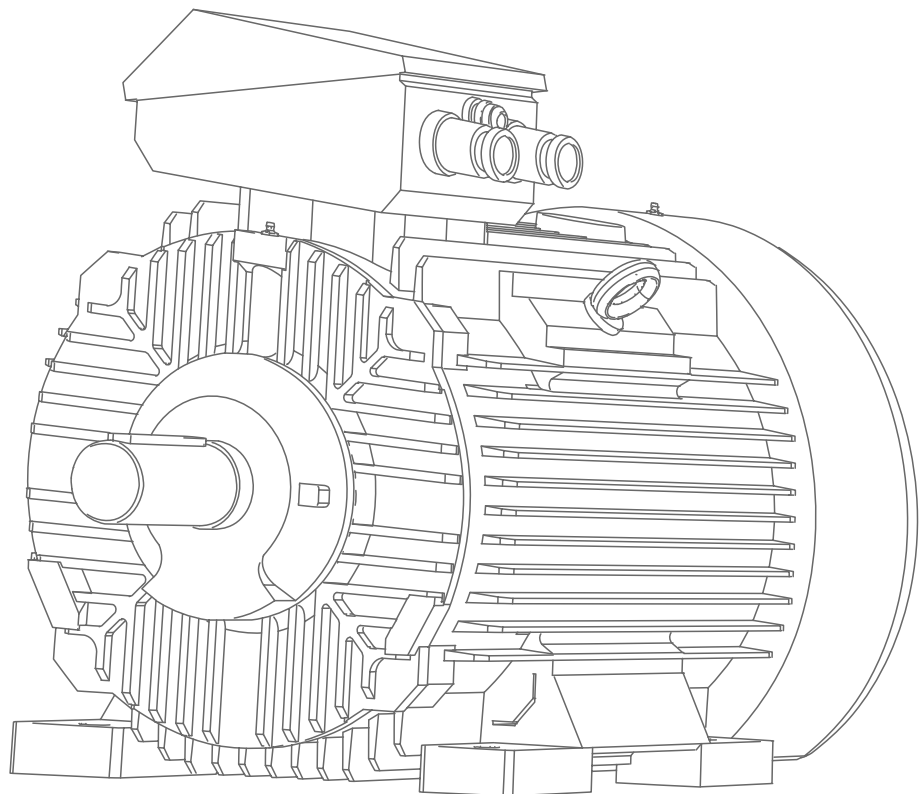
DNV GL BUSINESS ASSURANCE ITALIA S.R.L. - VIA ENERGY PARK, 14 - 20871 VIMERCATE (MB) - ITALY - TEL. 039.68.99.905 - WWW.DNVGL.COM.IT

Vemat Motori is a company which has been producing electric motors from many years and is recognised among the Italian and International market leaders.

Research, experience and continuous technological updating, always and exclusively aimed at perfecting its production, mean that Vemat Motori is a company which can meet the most varied market demands.

The investment policy which has always been pursued privileges the quality and reliability of the products, while flexible organization of production and the high professionalism of the personnel and technicians allow us to offer a range of products which are the result of continuous research and development activities.

The production cycle ensures a high and constant quality guaranteed by the certification of the materials used and by the continuous controls carried out during the machining processes.



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INTRODUCTION

New efficiency classes for the low-voltage three-phase motors (IE = International Efficiency).

Along with the international discussion on energy efficiency a worldwide harmonized energy efficiency standard classification system has been established for low-voltage three-phase asynchronous motors. For many years low-voltage three-phase motors in the European Union have been sold in three efficiency classes EFF3, EFF2 and EFF1. Aside from this, many different efficiency classification systems have been introduced and well-proven in many countries all over the world.

This was the reason for the International Electrotechnical Commission IEC to develop and publish an energy efficiency standard which replaces all previous national issues. In parallel IEC developed and issued a new standard for determining motor efficiency. The new standard IEC 60034-30-1 defines and harmonizes worldwide the efficiency classes IE1, IE2, IE3 and IE4 for low-voltage three-phase motors in the power range from 0.12 kW to 1000 kW (2p=2, 4, 6, 8)

IE1 = Standard Efficiency

IE2 = High Efficiency

IE3 = Premium Efficiency

According to IEC 60034-30-1 standard the efficiency has to be determined according to the new requirements given in the IEC 60034-2-1 standard.

According to the Commission Regulation (EC) No 640/2009 (introduced in July 2009) including Commission Regulation (EC) No 4/2014 the required efficiency class of general-purpose motors with 2p=2, 4, 6 (introduced to the market in the future) will be as follows:

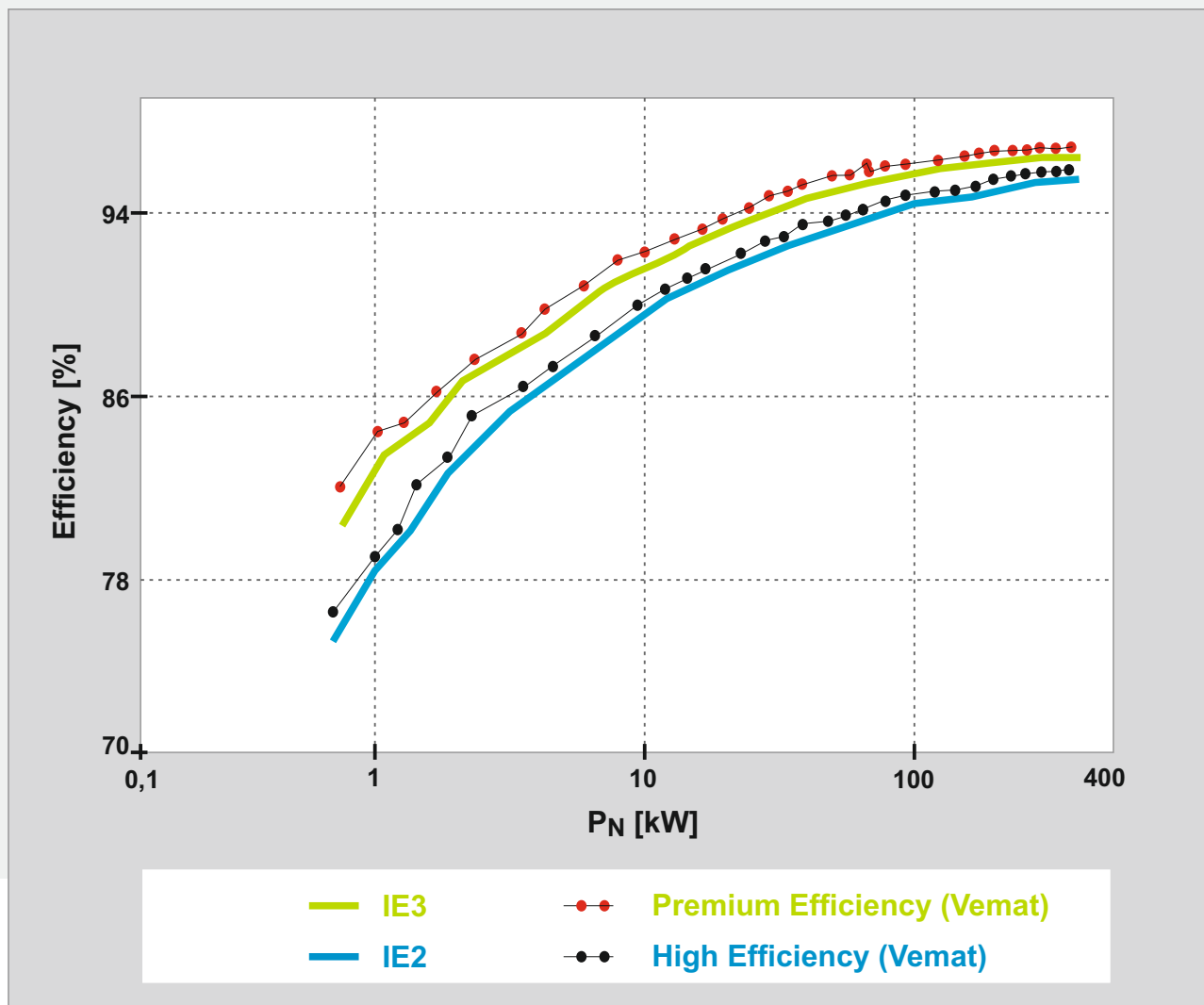
From 1 January 2017: motors with a rated output between 0.75 - 375 kW shall have a minimum efficiency class of IE3, or IE2 if they are operated/equipped with electronic speed control (VSD).

Electronic speed control is carried out using a frequency converter (VSD) that adjusts the speed of the motor - and therefore the torque produced - based on the energy needed.

EFFICIENCY OF MOTORS

The present catalogue describes the electric motors which belong to the efficiency class IE3 (Premium Efficiency) and motors excluded from the Regulations (EC) 640/2009 and 4/2014 (motors with $2p = 8, 10, 12$ and with rated output below 0.75kW and above 375kW).

Comparison between the efficiency of Vemat motors (for example $2p=4$) and efficiency class IE2/IE3 requirements according to the IEC 60034-30-1.



The efficiency class system specified under IEC 60034-30-1 is valid for low voltage three phase squirrel cage induction motors with the following specifications:

- Rated voltage up to 1.000 V
- Rated output between 0.12 kW and 1000 kW
- Either 2, 4, 6 or 8 poles
- Rated on the basis of continuous duty (S1)
- Supplied directly from mains
- With ambient temperature within the range of $-30^{\circ}\text{C} \div +60^{\circ}\text{C}$
- With altitude up to 4000 m. a.s.l.

Motors with flanges, feet and/or shafts with mechanical dimensions different from IEC 60072-1 are also covered by this standard.

RATINGS - TOLERANCES

Permissible deviations between real values and catalogue values according to the IEC 60034-1:

Power factor $\cos \varphi$	$\Delta \cos \varphi = -1/6 (1 - \cos \varphi_N)$
Efficiency η	$\Delta \eta = -15\% (100 - \eta_N)$ for $P_N \leq 150 \text{ kW}$ $\Delta \eta = -10\% (100 - \eta_N)$ for $P_N > 150 \text{ kW}$
Speed n	$\Delta n = \pm 20\% (n_s - n_N)$ for $P_N > 1 \text{ kW}$ $\Delta n = \pm 30\% (n_s - n_N)$ for $P_N \leq 1 \text{ kW}$
Locked rotor current I_L/I_N	$\Delta(I_L/I_N) = +20\% (I_L/I_N)$
Locked rotor torque T_L/T_N	$\min (T_L/T_N) = -15\% (T_L/T_N)$ $\max (T_L/T_N) = +25\% (T_L/T_N)$
Breakdown torque T_B/T_N	$\Delta(T_B/T_N) = -10\% (T_B/T_N)$
Moment of inertia $J [\text{kgm}^2]$	$\Delta J = \pm 10\% J$
Sound pressure level $L_{pA} [\text{dB}]$	$\Delta L_{pA} = +3 \text{ dB /A/}$

STANDARDS

The electric motors are manufactured according to the international standards:

Rating and performance	IEC 60034-1
Methods for determining losses and efficiency	IEC 60034-2-1
Classification of degrees of protection	IEC 60034-5
Methods of cooling	IEC 60034-6
Symbols of construction and mounting arrangements	IEC 60034-7
Terminal markings and direction of rotation	IEC 60034-8
Noise limits	IEC 60034-9
Dimensions and output of electric machines	IEC 60072-1
Vibration limits	IEC 60034-14

New IEC standards regarding efficiency classes (IEC 60034-30-1) and efficiency measurements (IEC 60034-2-1)

The resulting efficiency values differ from those obtained under the previous IEC 60034-2:1996 testing standard.
It must be noted that the efficiency values are only comparable if they are obtained using the same measuring method.

EU Regulation 640/2009 and 4/2014 adapted on 6 January 2014

Commission Regulation 640/2009, adapted on 22 July 2009, specifies the requirements regarding the ecodesign of electric motors and the use of electronic speed control (VSD).

IE1
IE2
IE3

All the motors are manufactured according to
Quality Assurance System consistent with ISO 9001.

ISO9001

The motors covered by the present catalogue comply with the regulations
and standards effective in other countries, consistent with IEC standards.

IEC

All the motors described in the present catalogue are provided with CE mark.

CE

INSULATION CLASSIFICATION

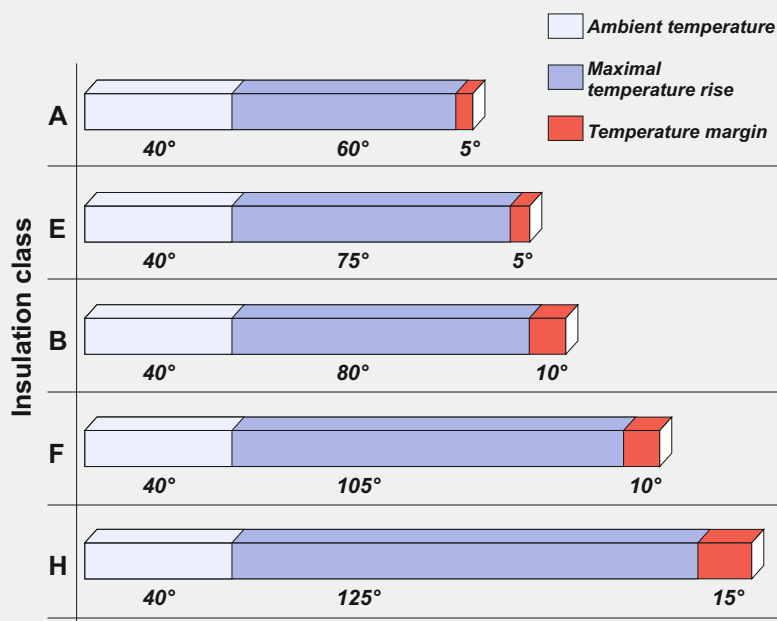
The insulation system of an electric motor is determined by a given insulation class on the basis of its thermal resistance. This thermal resistance should be guaranteed by the entire set of electric insulating materials used in the motor insulating system.

Thermal resistance classification is related to the temperature of the hotspot in the insulation occurring during rated operating conditions of the electric motor, allowing for the highest permissible rise in average temperature.

This rise should be selected so that at the highest permissible ambient temperature, the temperature of the hotspot in insulation will not exceed the value assigned to a given thermal resistance class.

Symbols of thermal resistance classes (permissible insulation temperatures at 40°C ambient temperature)

Symbol	Temperature [°C]
A	105
E	120
B	130
F	155
H	180



Insulation class F in an electric motor means that at ambient temperature of 40°C the temperature rise of the winding may be max. 105°C with the additional temperature margin of 10°C (under specified measuring conditions in accordance with the IEC 60034-1 standard).

Class F

The standard motors made by Vemat in their basic version have the insulation class F while the temperature rise is for class B. This means longer life for motors.

For special request we can deliver motors equipped with insulation class H.

Strengthened insulation system gives possibility to safe operation with frequency converters.

MOTOR FEET

Motors with frame size ≤ 132 have screwed feet.

Motors with frame size > 132 up to 315 have screwed feet or feet integrated with the motor housing.

Motors with frame size from 355 have feet integrated with the motor housing.

TERMINAL BOX

The terminal boxes of low voltage motors have threaded inlet holes designed for mounting cable glands.

The box contains a terminal board with marked terminals making possible connection of supply cables.

In addition, terminal boxes may be provided with additional terminals connected to the ends of thermal protection or anticondensation heater circuits and extra glands to connect these circuits.

Low voltage high-power motors contain terminal boxes with cable gland seals.

The circuits of thermal protection and anticondensation heaters are connected to separate terminal boxes.

Inside the boxes there are special clamps used to ground the supply cable armouring.

VIBRATION LEVEL AND NOISE LEVEL

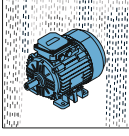
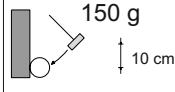
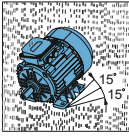
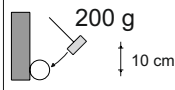
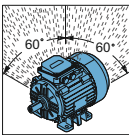
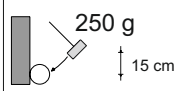
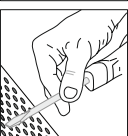
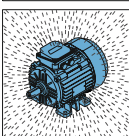
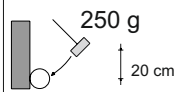
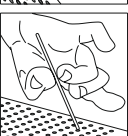
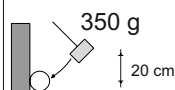
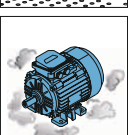
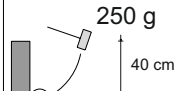
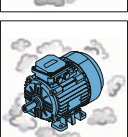
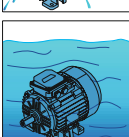
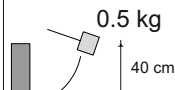
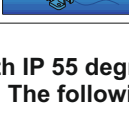
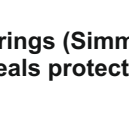
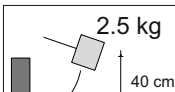
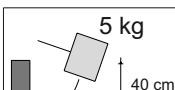
The rotor balancing method guarantees that a standard vibration level A is maintained in accordance with the IEC 60034-14 and a standard sound power level is maintained in accordance with the IEC 60034-9. On customer's demand the motors can be made with reduced vibration or noise level.

level A

INTERNATIONAL PROTECTION MARKING IP

According to the IEC 60034-5 standard the electric motors are provided with IP code which determines the degree of protection (ensured by the housing) against penetration of solid matter and fluids.

IP55

PROTECTION AGAINST PENETRATION OF SOLID MATTER		PROTECTION AGAINST PENETRATION OF FLUIDS		IK	MECHANICAL PROTECTION	
1st digit	DESCRIPTION	2nd digit	DESCRIPTION	3rd digit	DESCRIPTION	
				00	No protection	
0	 Not protected	0	 Not protected	01	 150 g 10 cm	Striking energy: 0.15 J
	 Protected against solid bodies larger than 50 mm	1	 Protected against vertically falling drops of water		 200 g 10 cm	Striking energy: 0.20 J
	 Protected against solid bodies larger than 12 mm	2	 Protected against vertically falling drops of water up to 15°		 250 g 15 cm	Striking energy: 0.37 J
	 Protected against solid bodies larger than 2.5 mm	3	 Protected against rain up to 60°		 250 g 20 cm	Striking energy: 0.50 J
	 Protected against solid bodies larger than 1 mm	4	 Protected against rain falling from any direction		 350 g 20 cm	Striking energy: 0.70 J
	 Protected against deposition of dust	5	 Protected against sprayed water from any direction		 250 g 40 cm	Striking energy: 1 J
6	 Totally protected against deposition of dust	6	 Protected against temporary immersion		 0.5 kg 40 cm	Striking energy: 2 J
		7	 Protected against immersion between 0.15 and 1 m		 1.25 kg 40 cm	Striking energy: 5 J
		8	 Protected against immersion at preset pressure and time		 2.5 kg 40 cm	Striking energy: 10 J
					 5 kg 40 cm	Striking energy: 20 J

All Vemat standard motors are manufactured with IP 55 degree of protection according to the standard in force (IEC 60034-5). The following table lists its characteristics.

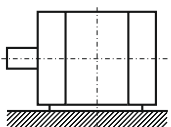
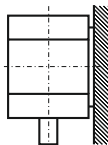
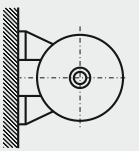
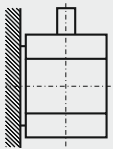
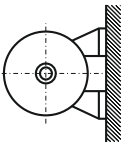
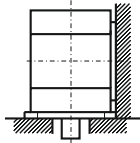
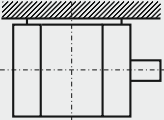
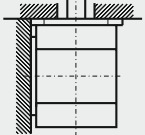
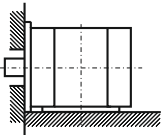
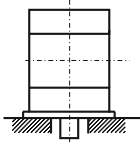
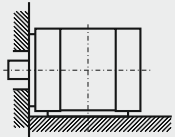
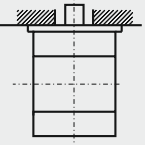
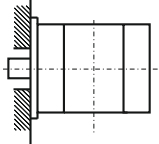
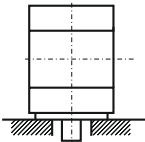
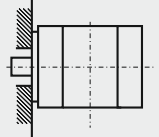
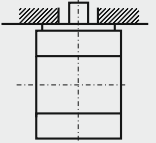
Each size 80 to 180 motor is equipped with seal rings (Simmerring or V-ring) on drive side and on non drive side. Labyrinth seals protect the motors from size 200 and above.

The terminal box is sealed with a gasket.

Motors with a higher degree of protection are available on request.

MOUNTING ARRANGEMENTS

According to the IEC 60034-7 standard

Horizontal shaft				Vertical shaft			
	Designation		Frame size		Designation		Frame size
	Code II	Code I			Code II	Code I	
	IM 1001	IM B3	56 ÷ 500		IM 1011	IM V5	56 ÷ 315 without 3VTB 315 6B,C,D without VTB 315 M8C,D
	IM 1051	IM B6	56 ÷ 280		IM 1031	IM V6	56 ÷ 315 without 3VTB 315M 6B,C,D without VTB 315 M8C,D
	IM 1061	IM B7	56 ÷ 280		IM 2011 or IM 2111	IM V15	56 ÷ 355
	IM 1071	IM B8	56 ÷ 280		IM 2031 or IM 2131	IM V36	56 ÷ 355
	IM 2001	IM B35	56 ÷ 500		IM 3011	IM V1	56 ÷ 500
	IM 2101	IM B34	56 ÷ 132		IM 3031	IM V3	56 ÷ 280
	IM 3001	IM B5	56 ÷ 315 without 3VTB 315 M6B,C,D without VTB 315 M8C,D		IM 3611	IM V18	56 ÷ 180
	IM 3601	IM B14	56 ÷ 132		IM 3631	IM V19	56 ÷ 180

* Other mounting arrangements available on special request

PERMISSIBLE LOADS ON THE SHAFT END

Frame size	Number of poles	Horizontal operation		Vertical operation			Frame size	Number of poles	Horizontal operation		Vertical operation		
		$F_R(x=0)$	$F_R(x=\max)$	F_p	F_{a1}	F_{a2}			$F_R(x=0)$	$F_R(x=\max)$	F_p	F_{a1}	F_{a2}
		[kN]			[kN]				[kN]			[kN]	
VTB 56	2	0,20	0,16	0,04	0,03	0,05	3VTB 200 LA	2	2,91	2,44	2,24	1,72	2,92
VTB 56	4	0,25	0,20	0,05	0,04	0,06	3VTB 200 LB	2	2,85	2,39	2,23	1,67	2,93
VTB 56	6	0,25	0,20	0,06	0,05	0,07	3VTB 200 L	4	3,61	3,03	2,81	2,12	3,70
VTB 63	2	0,20	0,16	0,04	0,04	0,06	3VTB 200 LA	6	4,31	3,62	3,62	2,92	4,56
VTB 63	4	0,25	0,20	0,06	0,05	0,07	3VTB 200 LB	6	4,06	3,40	3,54	2,71	4,65
VTB 63	6	0,27	0,22	0,06	0,05	0,07	3VTB 225 S	4	4,18	3,40	3,19	2,42	4,16
VTB 63	8	0,27	0,22	0,07	0,06	0,08	3VTB 225 M	2	3,31	2,81	2,53	1,93	3,29
VTB 71	2	0,29	0,24	0,07	0,05	0,09	3VTB 225 M	4	3,97	3,23	3,13	2,26	4,24
VTB 71	4	0,36	0,30	0,09	0,07	0,11	3VTB 225 M	6	4,57	3,72	3,98	2,95	5,33
VTB 71	6	0,40	0,35	0,10	0,08	0,12	3VTB 250 M	2	4,09	3,39	3,11	2,33	4,13
VTB 71	8	0,40	0,35	0,11	0,09	0,13	3VTB 250 M	4	4,90	4,06	3,85	2,68	5,36
3VTB 80	2	0,33	0,27	0,09	0,06	0,12	3VTB 250 M	6	5,92	4,90	4,99	3,81	6,55
3VTB 80	4	0,44	0,37	0,12	0,09	0,15	3VTB 280 S	2	3,94	3,34	3,07	2,01	4,43
VTB 80	6	0,51	0,42	0,14	0,11	0,17	3VTB 280 S	4	6,69	5,67	5,01	3,65	6,77
VTB 80	8	0,51	0,42	0,17	0,15	0,20	3VTB 280 S	6	7,86	6,67	5,79	4,32	7,70
3VTB 90	2	0,68	0,44	0,68	0,35	0,38	3VTB 280 M	2	3,80	3,22	3,03	1,89	4,49
3VTB 90	4	0,78	0,44	0,78	0,35	0,38	3VTB 280 M	4	6,15	5,22	4,86	3,16	7,04
3VTB 90	6	0,96	0,44	0,96	0,35	0,38	3VTB 280 M	6	7,69	6,52	5,75	4,19	7,75
3VTB 100	2	0,88	0,46	0,90	0,28	0,40	3VTB 315 S	2	3,56	3,08	2,96	1,63	4,69
3VTB 100	4	1,06	0,46	0,98	0,38	0,40	3VTB 315 S	4	5,75	4,82	4,74	2,71	7,37
3VTB 100	6	1,20	0,46	1,10	0,38	0,40	3VTB 315 S	6	7,21	6,04	5,61	3,84	8,14
3VTB 112	2	1,00	0,48	1,00	0,40	0,45	3VTB 315 MA	2	3,07	2,65	2,82	1,23	4,89
3VTB 112	4	1,45	0,48	1,40	0,40	0,45	3VTB 315 MB	2	2,67	2,31	2,71	0,91	5,05
3VTB 112	6	1,62	0,48	1,60	0,40	0,45	3VTB 315 MA	4	5,40	4,52	4,64	2,41	7,53
3VTB 132	2	1,82	0,66	1,90	0,43	0,60	3VTB 315 MB	4	5,16	4,33	4,58	2,20	7,64
3VTB 132	4	2,10	0,66	2,20	0,45	0,60	3VTB 315 MA	6	6,75	5,66	5,48	3,22	8,40
3VTB 132	6	2,80	0,66	2,80	0,50	0,60	3VTB 315 MB	6	6,27	5,33	5,34	2,68	8,78
3VTB 160	2	2,22	0,98	2,30	0,92	0,95	3VTB 315 MC	2	2,84	2,48	2,71	0,63	5,37
3VTB 160	4	2,40	0,98	2,40	0,92	0,95	3VTB 315 MC	4	6,27	5,33	4,34	1,46	8,06
3VTB 160	6	2,85	1,10	2,90	0,98	1,00	3VTB 315 MC	6	7,57	6,44	5,08	1,87	9,23
3VTB 180	2	2,92	1,30	3,00	1,10	1,20	3VTB 315 MD	6	7,47	6,36	5,05	1,82	9,22
3VTB 180	4	3,60	1,30	3,60	1,10	1,30							
3VTB 180	6	4,00	1,80	4,10	1,40	1,70							

PERMISSIBLE LOADS ON THE SHAFT END for motors VTB (2p = 8 ÷ 12)

		F _R (x = 0)	F _R (x = max)	F _p	Fa1	Fa2			F _R (x = 0)	F _R (x = max)	F _p	Fa1	Fa2
		[kN]			[kN]				[kN]			[kN]	
VTB 200L8	8	5,10	4,20	4,10	3,40	5,00	VTB 280S8	8	8,30	6,90	6,60	5,20	8,50
VTB 200L10A	10	5,50	4,60	4,20	3,50	5,10	VTB 280S10	10	9,30	7,70	6,70	5,40	8,40
VTB 200L10B	10	5,50	4,50	4,10	3,40	5,10	VTB 280S12	12	9,80	8,10	7,00	5,70	8,70
VTB 200L12	12	5,90	4,90	4,40	3,70	5,40	VTB 280M8	8	8,00	6,60	6,50	4,90	8,60
VTB 225S8	8	5,90	4,70	4,70	3,90	5,70	VTB 280M10	10	8,80	7,30	6,50	5,20	8,20
VTB 225S10	10	6,50	5,10	4,70	4,00	5,60	VTB 280M12	12	9,20	7,60	6,80	5,00	9,30
VTB 225S12	12	6,70	5,30	4,80	4,20	6,00	VTB 315S8	8	8,40	7,00	7,00	5,00	9,60
VTB 225M8	8	5,70	4,60	4,60	3,70	5,80	VTB 315S10	10	9,30	7,70	7,60	5,60	10,20
VTB 225M10	10	6,30	4,90	5,70	4,40	7,40	VTB 315S12	12	9,80	8,10	8,00	5,90	10,80
VTB 225M12	12	6,70	5,30	4,90	3,90	6,20	VTB 315M8A	8	8,20	6,80	6,90	4,80	9,70
VTB 250M8	8	6,90	5,60	5,60	4,30	7,20	VTB 315M8B	8	7,70	6,40	6,80	4,30	10,00
VTB 250M10	10	7,50	6,20	5,70	4,40	7,40	VTB 315M10	10	8,40	7,00	7,30	4,80	10,70
VTB 250M12	12	8,10	6,70	6,10	4,80	7,80	VTB 315M12A	12	9,30	7,70	7,90	5,50	11,10
							VTB 315M12B	12	9,10	7,60	7,80	5,30	11,20

VERSION WITH ROLLER BEARINGS for motors 355

Mechanical Size	Type of construction	No. of poles, 2p	D.E. bearing	N.D.E. bearing
3VTB 355 ML	IM1001 (B3)	4 ÷ 6	NU222 EM1C3	6222 C3
3VTB 355 H	IM1001 (B3)	4 ÷ 6	NU322 EM1C3	6322 C3

			Horizontal mounting		
			Permissible radial forces	Permissible axial forces	
			FX0	FXmax	FA
Motor type	Number of poles	Length of shaft extension E(mm)	kN	kN	kN
3VTB 355 ML	4	210	22	18	5
	6	210	23	15	5,5
3VTB 355 H	4	210	27	17	6
	6	210	29	15	7

VERSION WITH ROLLER BEARINGS for motors VTB355-500

Mechanical Size	Type of construction	No. of poles, 2p	D.E. bearing	N.D.E. bearing
VTB 355	IM1001 (B3)	8	NU222 EM1C3	6222 C3
VTB 355..s	IM1001 (B3)	4 ÷ 8	NU322 EM1C3	6322 C3
VTB 400..s	IM1001 (B3)	4 ÷ 10	on request	on request
VTB 450..s	IM1001 (B3)	4 ÷ 12	on request	on request
VTB 500..s	IM1001 (B3)	4 ÷ 10	on request	on request

Horizontal mounting						Vertical operation
			Permissible radial forces	Permissible axial forces		
			FX0	FXmax	FA	
Motor type	Number of poles	Length of shaft extension E(mm)	kN	kN	kN	
VTB 355	8	210	24	14	6	on request
VTB 355..s	4	210	27	17	6	on request
	8	210	30	15	8	on request
VTB 400 VTB 450 VTB 500	4 ÷ 8	on request				

PERMISSIBLE LOADS ON THE SHAFT END

Value of radial force F_R acting on the shaft end for a given belt pulley diameter is calculated according to the following formula:

$$F_R = \frac{19600 \times P \times k}{D_K \times n} \text{ [N]}$$

where: P - motor output [kW]
 D_K - belt pulley diameter [m]
n - speed [rpm]
k - belt tension factor:
for V-belts $k=2,2$
for flat belts $k=3$

Value of force F_R acting on any point of the shaft end (between points $X=\max$ and $X=0$) may be calculated according to the following formula:

$$F_R = F_{X0} - \frac{X}{E} \times (F_{X0} - F_{XMAX}) \text{ [N]}$$

where: F_{X0} - value of F_R force acting on the beginning of the shaft end
 F_{XMAX} - value of F_R force acting on the end of the shaft end
E - length of the shaft end

Other specifications dependent on the frame size:

Frame size	Degree of protection	Position of the terminal box	Number of terminals	Number of cable outlets	Optional rotation of the terminal box	Glands	Temperature sensors in winding	Bearing lubrication on the run	Thermal protection of bearings
56	IP 55	top	6	1	180°	M 20	on request	no	no
63	IP 55	top	6	1	180°	M 20	on request	no	no
71	IP 55	top	6	1	180°	M 20	on request	no	no
80	IP 55	top	6	1	180°	M 20	on request	no	no
90	IP 55	top	6	2	180°	M 20	on request	no	no
100	IP 55	top	6	2	180°	M 20	on request	no	no
112	IP 55	top	6	2	180°	M 25	on request	no	no
132	IP 55	top	6	2	180°	M 25	on request	no	no
160	IP 55	top	6	2	180°	M 40	on request	on request	on request
180	IP 55	top	6	2	180°	M 40	on request	on request	on request
200	IP 55	top *	6	2	4 × 90°	M 50	PTC	yes	on request
225	IP 55	top *	6	2	4 × 90°	M 50	PTC	yes	on request
250	IP 55	top *	6	2	4 × 90°	M 63	PTC	yes	on request
280	IP 55	top *	6	2	4 × 90°	M 63	PTC	yes	on request
315	IP 55	top *	6	2	4 × 90°	M 76	PTC	yes	on request
355ML	IP 55	top	6	2	4 × 90°	M 76	PTC Mark A	yes	on request
355H	IP 55	top	6	2	4 × 90°	M 90	Pt 100	yes	Pt 100
400	IP 55	top	6 (bars)	3	180°	3×φ55	Pt 100	yes	Pt 100
450	IP 55	top	3 (bars)	3	180°	3×φ55	Pt 100	yes	Pt 100
500	IP 55	top	3 (bars)	3	180°	3×φ55	Pt 100	yes	Pt 100

* terminal box on right side for VTB 200-315 motors series

BEARINGS

Frame size	Number of poles	Bearings
VTB 56	2 ÷ 6	6201 2Z
VTB 63	2 ÷ 8	6202 2Z
VTB 71	2 ÷ 8	6203 2Z
3VTB 80	2 ÷ 6	6204 2Z C3
3VTB 90	2 ÷ 6	6205 2Z C3
3VTB 100	2 ÷ 6	6206 2Z C3
3VTB 112	2 ÷ 6	6306 2Z C3
3VTB 132	2 ÷ 6	6308 2Z C3
3VTB 160	2 ÷ 6	6309 2Z C3
3VTB 180	2 ÷ 6	6311 2Z C3
3VTB 200	2 ÷ 6	6312 C3
3VTB 225	2 ÷ 6	6313 C3
3VTB 250	2 ÷ 6	6315 C3
3VTB 280	2	6315 C3
3VTB 280	4 ÷ 6	6318 C3
3VTB 315S,MA,MB	2	6315 C3
3VTB 315MC	2	6316 C3
3VTB 315S,MA,MB	4 ÷ 6	6318 C3
3VTB 315MC,MD	4 ÷ 6	6320 C3/6318 C3

The bearings in basic version of motors for horizontal and vertical duty, excluding 3VTB 315 with 2p=2.

BEARINGS for 2Sg (2p = 8 ÷ 12)

Frame size	Number of poles	Bearings
VTB 200	8 ÷ 12	6312 C3
VTB 225	8 ÷ 12	6313 C3
VTB 250	8 ÷ 12	6315 C3
VTB 280	8 ÷ 12	6317 C3
VTB 315	8 ÷ 12	6318 C3

Frame Size	Type of construction	No. of poles, 2p	D.E. bearing	N.D.E. bearing
3VTB 355 ML	IM1001 (B3)	2	6217 C3	6217 C3
3VTB 355 ML	IM2001 (B35)	4 ÷ 6	6222 C3	6222 C3
3VTB 355 ML	IM3011 (V1)	4 ÷ 6	6322 C3	6322 C3
3VTB 355 H	IM1001 (B3)	2	6217 C3	6217 C3
3VTB 355 H	IM2001 (B35)	4 ÷ 6	6322 C3	6322 C3
3VTB 355 H	IM3011 (V1)	4 ÷ 6	6322 C3	6322 C3

The bearings in basic version of motors for horizontal and vertical duty.

Frame Size	Type of construction	No. of poles, 2p	D.E. bearing	N.D.E. bearing
VTB 355	IM1001 (B3)	8	6222 C3	6222 C3
VTB 355	IM2001 (B35)	8	6222 C3	6222 C3
VTB 355	IM3011 (V1)	8	6322 C3	6322 C3
VTB 355..s	IM1001 (B3)	2	6217 C3	6217 C3
VTB 355..s	IM2001 (B35)	4 ÷ 8	6322 C3	6322 C3
VTB 355..s	IM3001 (V1)	4 ÷ 8	6322 C3	6322 C3
VTB 400..s	IM1001 (B3)	2	on request	
VTB 400..s	IM2001 (B35)	4 ÷ 10		
VTB 400..s	IM3011 (V1)	4 ÷ 10		
VTB 450..s	IM1001 (B3)	4 ÷ 12		
VTB 450..s	IM2001 (B35)	4 ÷ 12		
VTB 450..s	IM3011 (V1)	4 ÷ 12		
VTB 500..s	IM1001 (B3)	4 ÷ 10		
VTB 500..s	IM2001 (B35)	4 ÷ 10		
VTB 500..s	IM3011 (V1)	4 ÷ 10		

HOUSING, END SHIELDS, FEET

Frame size [mm]	Motor housing	End shields	Feet
56	Aluminium	Aluminium	Aluminium - screwed
63	Aluminium	Aluminium	Aluminium - screwed
71	Aluminium	Aluminium	Aluminium - screwed
3VTB 80	Aluminium	Aluminium	Aluminium - screwed
3VTB 90	Aluminium	Aluminium	Aluminium - screwed
3 VTB100	Aluminium	Aluminium	Aluminium - screwed
3VTB 112	Aluminium	Cast iron	Aluminium - screwed
3VTB 132	Aluminium / cast iron	Cast iron	Aluminium - screwed
3VTB 160	Cast iron	Cast iron	Cast iron - screwed or integrated
3VTB 180	Cast iron	Cast iron	Cast iron - screwed or integrated
3VTB 200	Cast iron	Cast iron	Cast iron - screwed or integrated
3VTB 225	Cast iron	Cast iron	Cast iron - screwed or integrated
3VTB 250	Cast iron	Cast iron	Cast iron - screwed or integrated
3VTB 280	Cast iron	Cast iron	Cast iron - screwed or integrated
3VTB 315	Cast iron	Cast iron	Cast iron - screwed or integrated
355	Cast iron	Cast iron	Cast iron - integrated
400	Cast iron	Cast iron	Cast iron - integrated
450	Cast iron	Cast iron	Cast iron - integrated
500	Cast iron	Cast iron	Cast iron - integrated

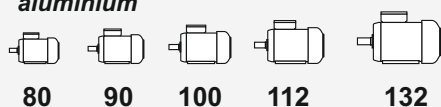
In motors series VTB of frame size 80, 90 and 100mm: on request end shields may be made of cast iron.

In motors series 3VTB of frame size 80 and 90mm: on request end shields may be made of cast iron.

In motors of frame size 132: feet may be integrated with housing.

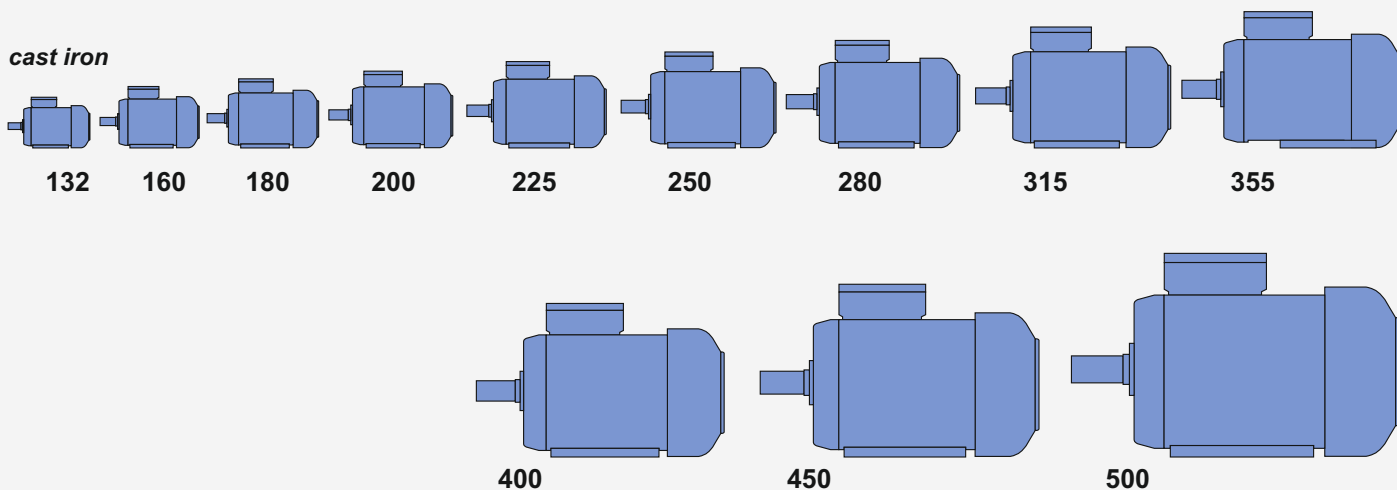
Motor housing

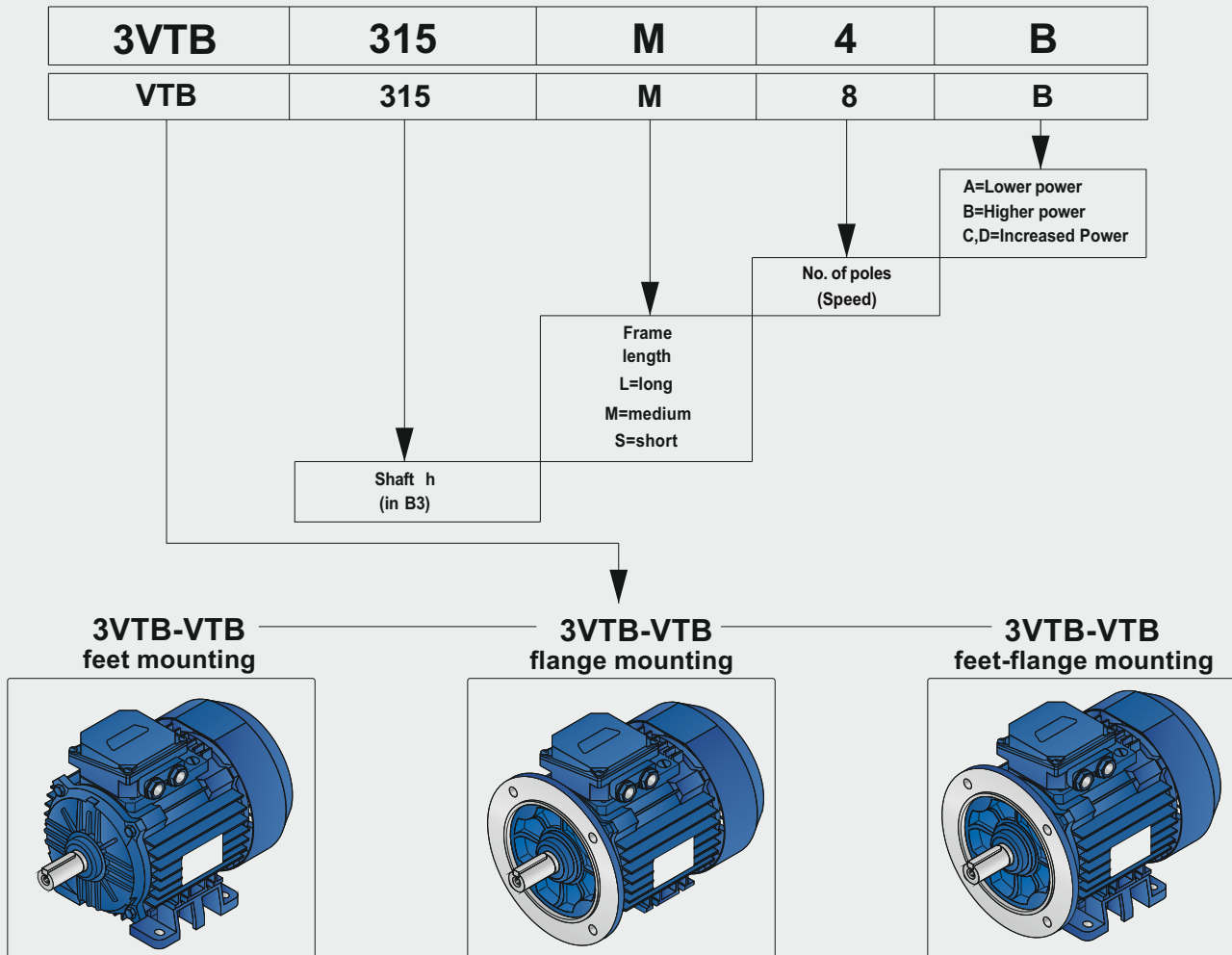
aluminium



aluminium cast iron

cast iron



DESCRIPTION OF THE CATALOGUE VERSION**ORDERING INFORMATION****Orders for motors should specify:**

- motor type designation,
- rated output,
- rated speed,
- operating duty,
- supply voltage and connection,
- frequency,
- mounting arrangements, end shield material,
- degree of protection,
- type of driven machine,
- other details regarding special requests,

and information concerning additional accessories e.g.

- thermal protection,
- anticondensation heaters,
- vibration sensors,
- etc.

When ordering high-power or special purpose motors one should also indicate:

- required direction of rotation,
- required degree of interior protection,
- method of start-up,
- method of coupling with the driven unit (gears, dimensions of belt pulleys, etc.),
- type of machine driven (nature of load), including the moment of inertia J or flywheel effect GD^2 brought to the motor shaft,
- other customer's specifications.

When ordering spare parts one should specify:

- full designation of the motor type including its serial number (provided on the nameplate) or catalogue number,
- degree of protection,
- mounting arrangement,
- name of part,
- number of pieces.

As part of our development program, we reserve the right to alter or amend any of the specifications without giving prior notice

* insulation class F/F

Totally Enclosed Motors IP 55

	Item	Type	Rated output		Rated speed	Rated torque	Efficiency			Power factor	Full load current			Locked rotor torque	Locked rotor current	Breakdown torque	Moment of Inertia	Weight
			P _N		η _N	T _N	η _N [%]			cos φ _N	I _N at rated voltage [A]			T _L /T _N	I _L /I _N	T _B /T _N	J	
			[kW]	[HP]	[min ⁻¹]	[Nm]	50%	75%	100%	[-]	230V	380V	400V	[-]	[-]	[-]	[kgm ²]	[kg]
			2p=4 n_s=1500 rpm f=50Hz															
	37	VTB 56-4A	0,06	0,08	1400	0,41	40,0	48,0	50,0	0,58	0,52	0,30	0,30	2,0	2,8	2,3	0,00015	2,6
	38	VTB 56-4B	0,09	0,12	1400	0,61	54,0	58,0	58,0	0,60	0,70	0,40	0,40	2,1	2,6	2,3	0,00019	2,8
	39	VTB 63-4A	0,12	0,17	1380	0,83	56,0	60,0	60,0	0,63	0,80	0,45	0,45	1,9	2,6	2,0	0,00024	3,5
	40	VTB 63-4B	0,18	0,25	1340	1,52	52,0	55,0	57,0	0,66	1,2	0,70	0,70	2,0	2,6	2,0	0,00031	4,1
	41	VTB 71-4A	0,25	0,33	1380	1,73	60,0	63,0	66,0	0,64	1,5	0,85	0,85	2,0	3,0	2,0	0,00061	5,1
	42	VTB 71-4B	0,37	0,50	1370	2,6	64,0	67,0	70,0	0,68	2,2	125	1,25	2,0	3,1	2,1	0,00077	5,8
	43	VTB 80-4A	0,55	0,75	1400	3,75	70,0	69,0	73,0	0,69	2,8	1,6	1,6	2,1	3,6	2,1	0,00158	7,5
IE3	44	3VTB 80-4B	0,75	1	1430	5,0	81,5	82,0	82,5	0,64	3,6	2,1	2,1	3,8	5,7	3,8	0,00265	11,0
IE3	45	3VTB 90S4	1,1	1,5	1450	7,2	81,8	84,0	84,1	0,77	4,3	2,6	2,5	2,5	7,6	3,1	0,0036	18,0
IE3	46	3VTB 90L4	1,5	2	1450	9,9	83,9	85,5	85,3	0,78	5,7	3,4	3,3	2,6	8,0	3,2	0,0040	21,0
IE3	47	3VTB 100L4A	2,2	3	1460	14,4	85,0	86,8	86,7	0,79	8,1	4,9	4,6	2,3	7,5	2,9	0,0076	27,5
IE3	48	3VTB 100L4B	3	4	1460	19,6	85,8	87,7	87,7	0,77	11,2	6,7	6,4	2,5	7,8	3,0	0,0086	31,0
IE3	49	3VTB 112M4	4	5,5	1460	26,2	88,5	89,0	88,6	0,80	14,2	8,6	8,1	2,1	7,1	3,1	0,0115	41,5
IE3	50	3VTB 132S4	5,5	7,5	1465	35,7	88,6	89,8	89,6	0,85	18,1	11,0	10,4	2,5	8,5	3,3	0,036	63,0
IE3	51	3VTB 132M4	7,5	10	1465	49,1	89,7	90,6	90,4	0,83	25,1	15,2	14,4	2,9	8,8	3,8	0,042	67,0
IE3	52	3VTB 160M4	11	15	1470	71,5	89,8	91,3	91,4	0,83	36,4	22,0	20,9	2,3	7,3	2,8	0,088	136
IE3	53	3VTB 160L4	15	20	1475	97,1	90,8	92,1	92,1	0,83	49,3	29,8	28,3	2,8	8,1	3,2	0,104	154
IE3	54	3VTB 180M4	18,5	25	1475	120,2	92,1	92,8	92,6	0,85	59,0	35,7	33,9	2,6	7,9	3,0	0,162	190
IE3	55	3VTB 180L4	22	30	1475	142,4	91,4	92,8	93,0	0,83	71,5	43,3	41,1	3,2	8,4	3,4	0,185	200
IE3	56	3VTB 200L4	30	40	1477	194	94,2	94,3	93,8	0,89	90	55	52	2,1	6,4	2,6	0,38	329
IE3	57	3VTB 225S4	37	50	1485	238	94,1	94,4	94,0	0,87	114	69	65	2,0	6,9	2,8	0,51	373
IE3	58	3VTB 225M4	45	60	1483	290	94,4	94,8	94,3	0,88	136	82	78	2,1	7,1	2,7	0,59	410
IE3	59	3VTB 250M4	55	75	1487	353	94,0	94,8	94,7	0,90	162	98	93	2,5	7,6	2,9	1,00	520
IE3	60	3VTB 280S4	75	100	1488	481	93,9	95,0	95,0	0,91	218	132	125	2,0	6,8	2,5	1,37	710
IE3	61	3VTB 280M4	90	125	1491	576	94,9	95,5	95,4	0,89	266	161	153	2,6	8,4	3,0	1,80	761
IE3	62	3VTB 315S4	110	150	1488	706	95,1	95,5	95,4	0,90	322	195	185	2,0	6,6	2,4	2,25	920
IE3	63	3VTB 315M4A	132	175	1489	847	95,6	95,9	95,6	0,91	381	231	219	2,3	7,9	2,8	2,59	1030
IE3	64	3VTB 315M4B	160	220	1490	1026	95,9	96,1	95,8	0,90	466	282	268	2,4	8,5	3,1	2,80	1130
IE3	65	3VTB 315M4C	200	270	1488	1284	95,8	96,2	96,2	0,90	-	351	333	2,4	8,1	2,9	3,46	1205
IE3	66	3VTB 355 ML4A	250	340	1489	1603	95,6	96,1	96,1	0,89	-	422	244	2,0	7,4	2,3	5,30	1700
IE3	67	3VTB 355 ML4B	315	430	1489	2020	96,0	96,4	96,3	0,90	-	525	303	2,3	7,5	2,5	6,40	1830
IE3	68	3VTB 355 H4D	355	480	1488	2278	96,1	96,4	96,3	0,88	-	605	349	1,7	6,4	2,2	7,80	2200
	69	VTB 355H4Es	400	540	1489	2566	96,4	96,8	96,7	0,88	-	715	678	1,8	7,0	2,3	8,7	2275
	70	VTB 400H4Cs	450	610	1490	2884	96,3	96,9	96,9	0,88	-	796	762	1,6	7,6	2,6	12,3	2920
	71	VTB 400H4Ds	500	680	1491	3203	96,2	96,7	96,7	0,88	-	891	848	1,6	7,5	2,6	13,6	3100
	72	VTB 400H4Es	560	760	1491	3587	96,6	97,0	97,0	0,87	-	987	958	1,7	7,6	2,6	15,0	3220
	73	VTB 400H4Fs	630	850	1491	4035	96,7	97,1	97,1	0,87	-	1114	1076	1,9	8,4	2,8	16,5	3440
	74	VTB 450H4Bs	710	960	1492	4545	96,6	97,1	97,1	0,88	-	-	696 ²	1,6	7,0	2,5	27,1	4000
	75	VTB 450H4Cs	800	1080	1494	5114	96,8	97,1	97,1	0,89	-	-	774 ²	1,6	6,8	2,6	31,6	4400
	76	VTB 450H4Ds	900	1210	1493	6757	96,8	97,2	97,2	0,88	-	-	881 ²	1,0	7,3	2,5	35,4	4620
	77	VTB 450H4Es	1000	1350	1493	6397	96,8	97,3	97,3	0,89	-	-	966 ²	1,5	7,3	2,5	38,0	4700
	78	VTB 500H4Cs	1120	1510	1495	7155	96,7	97,4	97,4	0,87	-	-	1107 ²	0,8	6,9	2,5	58,4	6100
	79	VTB 500H4Ds	1250	1680	1495	7985	96,7	97,4	97,5	0,87	-	-	1234 ²	0,8	7,5	2,7	65,2	6600
	80	VTB 500H4Es	1400	1880	1494	8949	96,9	97,5	97,5	0,88	-	-	1367 ²	0,7	6,4	2,4	66,5	6900

2 - at rated voltage 690V

Totally Enclosed Motors IP 55

Item	Type	Rated output		Rated speed	Rated torque	Efficiency			Power factor	Full load current			Locked rotor torque	Locked rotor current	Breakdown torque	Moment of Inertia	Weight	
		P _N		n _N	T _N	η _N [%]			cos φ _N	I _N at rated voltage [A]			T _L /T _N	I _L /I _N	T _B /T _N	J		
		[kW]	[HP]	[min ⁻¹]	[Nm]	50%	75%	100%	[-]	230V	380V	400V	[-]	[-]	[-]	[kgm ²]	[kg]	
2p=6 n _s =1000 rpm f=50Hz																		
81	VTB 56-6B	0,06	0,08	870	0,64	44	46	50	0,65	1,1	0,65	0,65	1,3	1,8	1,5	0,00019	2,8	
82	VTB 63-6A	0,09	0,12	820	1,05	26	32	40	0,75	0,8	0,45	0,45	1,15	1,9	1,3	0,00024	3,5	
83	VTB 63-6B	0,12	0,17	870	1,30	38	44	50	0,65	1,15	0,65	0,65	1,3	1,8	1,1	0,00031	4,1	
84	VTB 71-6A	0,18	0,25	890	1,93	47	54	57	0,68	1,3	0,75	0,75	1,9	2,6	1,9	0,00074	4,8	
85	VTB 71-6B	0,25	0,33	860	2,78	45	52	55	0,79	1,75	1,0	1,0	1,6	2,0	1,6	0,00095	5,6	
86	VTB 80-6A	0,37	0,50	910	3,88	61	63	64	0,65	2,4	1,4	1,4	2,0	3,0	2,1	0,00169	7,4	
87	VTB 80-6B	0,55	0,75	900	5,84	62	65	67	0,70	3,1	1,8	1,8	1,9	2,7	2,0	0,00207	8,7	
88	3VTB 90S6	0,75	1	940	7,6	77,2	79,3	78,9	0,71	3,4	2,0	1,9	2,1	4,5	2,6	0,0032	16	IE3
89	3VTB 90L6	1,1	1,5	940	11,1	79,9	81,9	81,0	0,70	4,9	2,9	2,8	2,1	4,5	2,6	0,0090	19	IE3
90	3VTB 100L6	1,5	2	960	14,9	81,1	82,8	82,5	0,74	6,2	3,7	3,5	2,6	6,2	3,3	0,0100	23,5	IE3
91	3VTB 112M6	2,2	3	960	21,9	83,9	84,9	84,3	0,76	8,6	5,2	5,0	2,1	5,9	2,6	0,0177	34	IE3
92	3VTB 132S6	3	4	965	29,7	85,0	87,2	87,0	0,81	10,7	6,5	6,1	2,2	6,6	2,9	0,0440	54	IE3
93	3VTB 132M6A	4	5,5	965	39,8	89,1	89,2	88,0	0,81	14,1	8,5	8,1	2,3	6,6	3,0	0,0579	62	IE3
94	3VTB 132M6B	5,5	7,5	960	54,7	88,9	89,1	88,0	0,81	19,4	11,7	11,1	2,4	6,7	3,1	0,0637	66	IE3
95	3VTB 160M6	7,5	10	970	73,8	89,0	89,9	89,5	0,82	25,7	15,5	14,8	2,1	6,8	2,9	0,1020	134	IE3
96	3VTB 160L6	11	15	970	108,3	89,6	90,5	90,3	0,82	37,3	22,6	21,4	2,2	7,0	3,0	0,1230	146	IE3
97	3VTB 180L6	15	20	980	146,2	90,0	91,3	91,2	0,81	60,0	30,9	29,3	3,3	7,3	2,8	0,2760	198	IE3
98	3VTB 200L6A	18,5	25	988	179	91,3	92,0	91,7	0,81	63	38	36	2,0	5,8	2,4	0,50	285	IE3
99	3VTB 200L6B	22	30	987	213	91,7	92,2	92,2	0,82	73	44	42	2,0	5,7	2,1	0,64	309	IE3
100	3VTB 225M6	30	40	989	290	92,3	92,9	92,9	0,83	98	53	55	1,9	6,4	2,3	0,89	392	IE3
101	3VTB 250M6	37	50	991	357	92,2	93,4	93,3	0,82	121	73	70	2,0	6,7	2,6	1,23	440	IE3
102	3VTB 280S6	45	60	993	433	92,9	93,8	93,7	0,81	149	90	86	2,3	7,3	2,6	1,70	635	IE3
103	3VTB 280M6	55	75	992	529	93,8	94,4	94,1	0,82	179	108	103	2,3	6,8	2,6	1,90	695	IE3
104	3VTB 315S6	75	100	992	722	94,6	95,0	94,7	0,82	242	147	139	2,4	7,1	2,6	2,40	900	IE3
105	3VTB 315M6A	90	125	993	866	95,1	95,4	95,1	0,82	290	175	167	2,6	7,6	2,7	2,93	965	IE3
106	3VTB 315M6B	110	150	992	1059	95,2	95,6	95,2	0,82	354	214	203	2,8	7,5	2,8	3,46	1110	IE3
107	3VTB 315M6C	132	175	992	1271	95,4	95,8	95,4	0,83	-	253	241	2,5	7,0	2,5	4,21	1230	IE3
108	3VTB 315M6D	160	220	992	1540	95,2	95,7	95,6	0,78	-	310	180	3,3	8,0	2,7	4,36	1235	IE3
109	3VTB 355 ML6A	200	270	989	1931	95,3	95,9	95,8	0,86	-	350	202	2,0	7,1	2,3	7,20	1740	IE3
110	3VTB 355 ML6B	250	340	990	2412	95,5	96,0	95,8	0,86	-	438	253	2,1	7,2	2,4	8,60	1950	IE3
111	3VTB 355 H6C	315	430	992	3033	96,0	96,3	96,1	0,86	-	550	318	2,0	7,1	2,2	12,70	2390	IE3
112	3VTB 355 H6D	355	480	991	3421	95,9	96,3	96,1	0,86	-	620	358	1,9	7,0	2,3	13,60	2500	IE3
113	VTB 400H6Bs	400	540	992	3851	95,6	96,3	96,3	0,84	-	-	714	1,7	6,8	2,2	18,2	3050	
114	VTB 400H6Cs	450	610	993	4328	95,8	96,3	96,0	0,83	-	-	815	1,5	7,5	2,5	19,4	3250	
115	VTB 450H6As	500	680	994	4804	96,6	96,9	96,8	0,88	-	-	491 ²	1,2	6,7	2,6	36,5	3800	
116	VTB 450H6Bs	560	760	994	5380	96,7	97,0	96,9	0,88	-	-	549 ²	1,2	6,8	2,6	40,6	4300	
117	VTB 450H6Cs	630	850	994	6053	96,7	97,1	97,0	0,89	-	-	611 ²	1,3	7,0	2,6	45,0	4500	
118	VTB 450H6Ds	710	960	994	6821	96,5	96,8	96,8	0,89	-	-	690 ²	1,4	7,4	2,6	50,0	4890	
119	VTB 500H6As	800	1080	995	7678	96,7	97,1	97,0	0,86	-	-	802 ²	0,9	5,8	2,4	61,5	6200	
120	VTB 500H6Bs	900	1210	995	8638	96,8	97,1	97,0	0,87	-	-	893 ²	1,0	6,0	2,2	67,5	6550	
121	VTB 500H6Cs	1000	1350	995	9598	96,4	97,0	97,1	0,86	-	-	1002 ²	1,0	6,4	2,5	70,0	6700	
122	VTB 500H6Ds	1120	1510	996	10739	96,4	97,1	97,2	0,85	-	-	1134 ²	1,1	7,0	2,6	80,0	7130	
123	VTB 500H6Es	1250	1680	996	11985	96,4	97,1	97,2	0,85	-	-	1266 ²	1,1	7,1	2,6	84,6	7460	

2 - at rated voltage 690V

Totally Enclosed Motors IP 55

Item	Type	Rated output		Rated speed n_N [min ⁻¹]	Rated torque T_N [Nm]	Efficiency η_N [%] at % of full load			Power factor $\cos \varphi_N$ [-]	Full load current I_N at rated voltage			Locked rotor torque T_L/T_N [-]	Locked rotor current I_L/I_N [-]	Breakdown torque T_b/T_N [-]	Moment of inertia J [kgm ²]	Weight (IMB3) [kg]
		P_N				50%	75%	100%		I_N at rated voltage							
		[kW]	[HP]							[A] _{230V}	[A] _{380V}	[A] _{400V}					

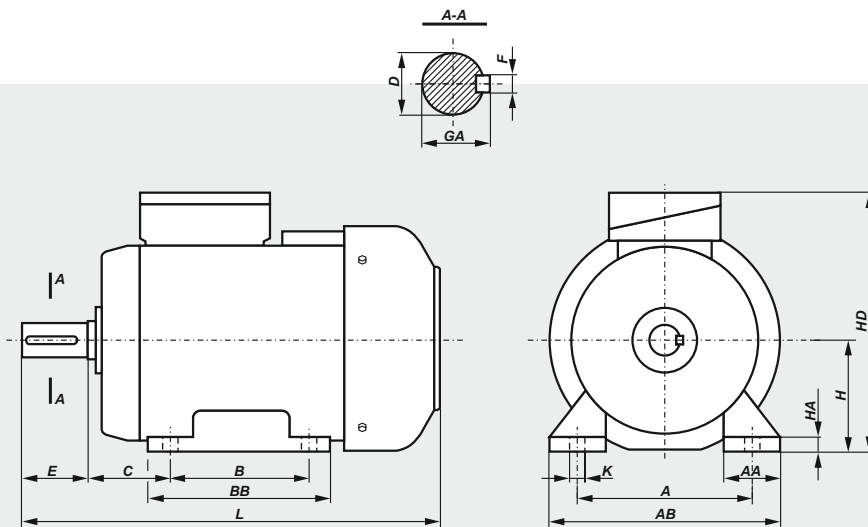
¹ insulation class H² at rated voltage 690 V

Totally Enclosed Motors IP 55

Item	Type	Rated output		Rated speed n_N [min ⁻¹]	Rated torque T_N [Nm]	Efficiency			Power factor $\cos \varphi_N$ [-]	Full load current			Locked rotor torque T_L/T_N [-]	Locked rotor current I_L/I_N [-]	Breakdown torque T_b/T_N [-]	Moment of inertia J [kgm ²]	Weight (IMB3) [kg]
		P_N				η_N [%] at % of full load	I_N at rated voltage										
		[kW]	[HP]					50%		75%	100%	[A] _{230V}					
2p=10 $n_s=600$ rpm																	
166	VTB 200L10A	7,5	10	580	123	82,5	84	85	0,68	32,5	19,7	18,7	1,7	3,5	2,1	0,4	240
167	VTB 200L10B	11	15	590	178	84,7	86,7	87,5	0,68	46,5	28,1	26,7	3,2	5,9	2,4	0,47	255
168	VTB 225S10	13	18	592	210	87,5	89,3	90,5	0,67	54	32,5	31	1,8	3,8	2	0,6	280
169	VTB 225M10	15	20	590	243	86	88	89	0,67	63	38	36,5	2,8	5,4	2	0,76	315
170	VTB 225M10z	18,5	25	590	299	84,3	87,1	87,7	0,64	83	50	47,5	2,8	5,5	2,1	0,76	325
171	VTB 250M10	22	30	592	355	87,5	89,6	90	0,70	88	53	50	3	5,8	2	1,27	430
172	VTB 280S10A	30	40	586	489	85,3	87,3	88,8	0,71	119	72	69	2	4,5	1,7	1,35	525
173	VTB 280S10B	37	50	583	606	87	90	91	0,75	136	82	78	1,9	4,5	1,5	1,61	565
174	VTB 280M10	45	60	587	732	88	90,5	91,6	0,76	162	98	93	2	4,5	1,6	2,03	630
175	VTB 315S10	45	60	588	731	90	91,5	92,1	0,71	173	105	99	2	4,1	2	2,16	720
176	VTB 315S10z	55	75	583	901	88	90,5	91,5	0,75	201	122	116	1,7	4,7	1,9	2,86	840
177	VTB 315M10	75	100	583	1229	88	90,5	91,5	0,75	274	166	158	1,8	4,9	1,5	3,01	895
178	VTB 400H10As	200	270	594	3216	94,4	95,1	95,0	0,82	-	-	371	1,0	5,4	2,5	25,6	3010
179	VTB 400H10Bs	250	340	594	4019	94,4	95,2	95,2	0,79	-	-	480	1,1	5,6	2,6	31,3	3270
180	VTB 450H10As	315	430	594	5064	94,9	95,5	95,5	0,81	-	-	341 ²	1,0	5,9	2,2	49,4	4050
181	VTB 450H10Bs	355	480	594	5708	95,0	95,7	95,7	0,81	-	-	384 ²	1,0	6,0	2,3	53,9	4130
182	VTB 450H10Cs	400	540	594	6431	95,0	95,7	95,7	0,81	-	-	432 ²	1,1	6,4	2,3	58,3	4300
183	VTB 500H10As	450	610	594	7235	95,1	95,8	95,7	0,81	-	-	486 ²	1,4	6,3	2,1	74,1	5420
184	VTB 500H10Bs	500	680	594	8039	95,2	95,9	95,8	0,82	-	-	533 ²	1,5	6,6	2,2	85,5	5700
185	VTB 500H10Cs	560	760	593	9019	95,4	95,9	95,8	0,82	-	-	597 ²	1,3	6,2	2,0	94,2	5950
186	VTB 500H10Ds	630	850	594	10129	95,5	96,0	96,0	0,82	-	-	670 ²	1,7	6,9	2,2	108	6400
2p=12 $n_s=500$ rpm																	
187	VTB 200L12	9	12	490	175	75,3	80,1	81,8	0,55	50	30,5	28,9	2,7	4,3	2,5	0,47	255
188	VTB 225S12	11	15	490	214	83,1	85,0	86,0	0,63	51	31	29,3	1,7	3,5	1,7	0,58	315
189	VTB 225M12	13	18	475	261	81,5	82,2	82,5	0,59	67	40,5	38,5	1,7	3,5	1,7	0,68	320
190	VTB 225M12z	15	20	491	292	80,5	83,5	84,4	0,58	77	46,5	44	2,7	4,6	1,8	0,68	350
191	VTB 250M12	18,5	25	490	361	84,0	86,0	87,8	0,65	81	49,5	47	1,7	3,5	1,8	1,27	430
192	VTB 280S12	22	30	491	428	86,9	89,2	89,6	0,61	101	61	58	2,3	4,5	1,8	1,47	535
193	VTB 280M12	30	40	490	585	85,6	88,2	89,0	0,62	136	83	78	1,8	3,5	1,8	1,8	570
194	VTB 315S12	37	50	492	718	87,5	89,9	90,4	0,58	177	107	102	2,6	4,5	1,9	2,29	730
195	VTB 315M12A	45	60	490	877	87,9	89,0	90,1	0,58	216	131	124	2	3,5	1,8	2,86	870
196	VTB 315M12B	55	75	490	1072	87,5	90,0	89,5	0,58	266	161	153	2,5	4,4	1,8	3,01	885
197	VTB 450H12As	160	220	495	3087	94,1	95,0	95,0	0,79	-	-	308	0,9	5,9	2,6	30,0	3470
198	VTB 450H12Bs	200	270	495	3859	94,7	94,9	94,9	0,80	-	-	381	0,9	5,7	2,3	33,7	3600
199	VTB 450H12Cs	250	340	493	4843	94,7	95,0	94,7	0,82	-	-	465	0,8	5,1	2,2	40,0	3750

² - at rated voltage 690 V

As part of our development program, we reserve the right to alter or amend any of the specifications without giving prior notice.

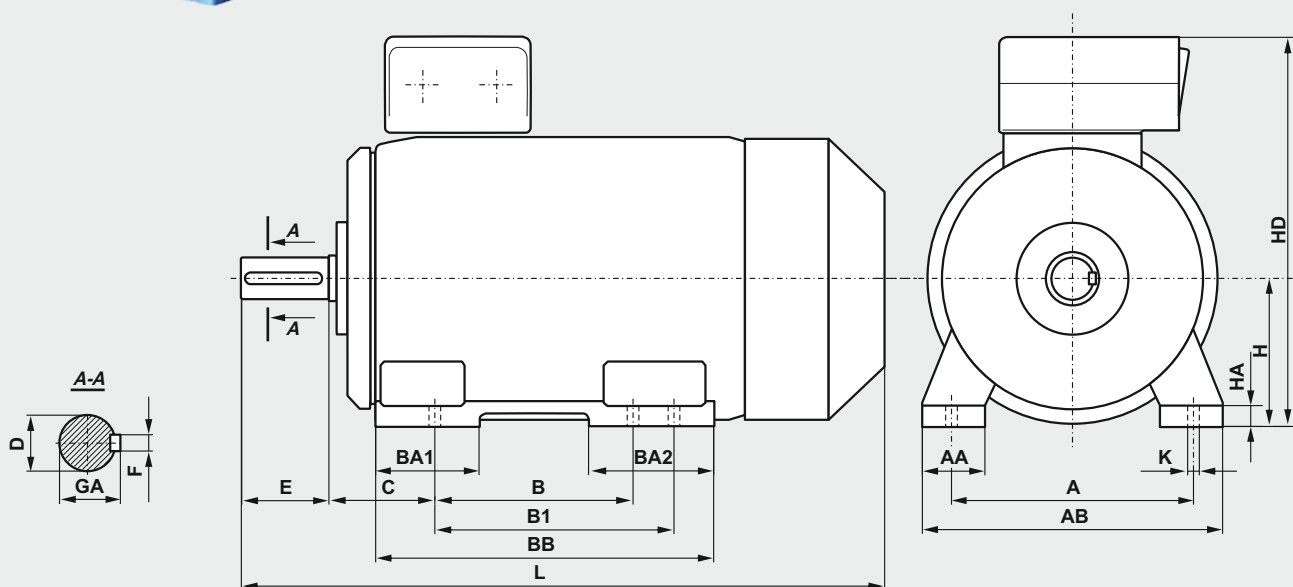
Dimensions for FOOT MOUNTED MOTORS - IM B3

Motor type	A	B	C	D	E	F	GA	H	K	AA	AB	BB	HA	HD	L
VTB 56-A	90	71	36	9j6	20	3h9	10,2	56	5,8	30	110	92	7	154	183
VTB 56-B	90	71	36	9j6	20	3h9	10,2	56	5,8	30	110	92	7	154	193
VTB 63-A	100	80	40	11j6	23	4h9	12,5	63	7	36	124	106	8,5	165	200
VTB 63-B	100	80	40	11j6	23	4h9	12,5	63	7	36	124	106	8,5	165	210
VTB 71-A	112	90	45	14j6	30	5h9	16	71	7	45	142	116	8	182	223
VTB 71-B	112	90	45	14j6	30	5h9	16	71	7	45	142	116	8	182	245
VTB 80-A	125	100	50	19j6	40	6h9	21,5	80	10	55	160	130	9	200	266
VTB 80-B	125	100	50	19j6	40	6h9	21,5	80	10	55	160	130	9	200	278
3VTB 80-A	125	100	50	19j6	40	6h9	21,5	80	10	55	160	130	9	199	278
3VTB 80-B	125	100	50	19j6	40	6h9	21,5	80	10	55	160	130	9	199	306
3VTB 90S-2,4,6	140	100	56	24j6	50	8h9	27	90	10	47	182	153	10	238	331
3VTB 90L-2	140	125	56	24j6	50	8h9	27	90	10	47	182	153	10	238	331
3VTB 90L-4,6	140	125	56	24j6	50	8h9	27	90	10	47	182	153	10	238	356
3VTB 100L-2,6	160	140	63	28j6	60	8h9	31	100	12	52	202	170	12	257	377
3VTB 100L-4A,4B	160	140	63	28j6	60	8h9	31	100	12	52	202	170	12	257	417
3VTB 112M-2,6	190	140	70	28j6	60	8h9	31	112	12	52	222	170	14	280	398
3VTB 112M-4	190	140	70	28j6	60	8h9	31	112	12	52	222	170	14	280	425
3VTB 132S	216	140	89	38k6	80	10h9	41	132	12	61	266	220	18	329	512
3VTB 132M	216	178	89	38k6	80	10h9	41	132	12	61	266	220	18	329	512
3VTB 160M	254	210	108	42k6	110	12h9	45	160	15	81	320	300	25	383	643
3VTB 160L	254	254	108	42k6	110	12h9	45	160	15	81	320	300	25	383	643
3VTB 180M-2,4	279	241	121	48k6	110	14h9	51,5	180	15	92	353	320	27	414	723
3VTB 180L-4,6	279	279	121	48k6	110	14h9	51,5	180	15	92	353	320	27	414	723

MOTORS series VTB 2p=8

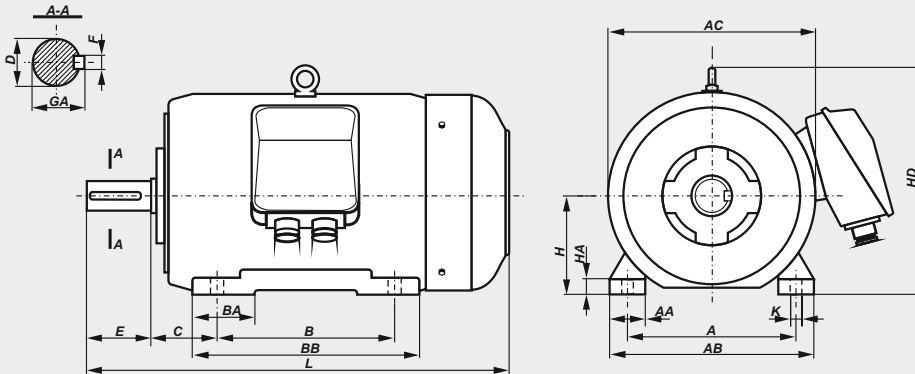
Motor type	A	B	C	D	E	F	GA	H	HA	K	AA	AB	BB	HD	L
VTB 90S ...	140	100	56	24j6	50	8h9	27	90	10	10	50	170	153	220	305
VTB 90L ...	140	125	56	24j6	50	8h9	27	90	10	10	50	170	153	220	330
VTB 100L ...	160	140	63	28j6	60	8h9	31	100	14	12	45	200	172	240	376
VTB 112M ...	190	140	70	28j6	60	8h9	31	112	14	12	54	230	174	276	384
VTB 132S ...	216	140	89	38k6	80	10h9	41	132	16	12	56	278	182	310	463
VTB 132S-2B	216	140	89	38k6	80	10h9	41	132	16	12	56	278	220	310	501
VTB 132M ...	216	178	89	38k6	80	10h9	41	132	16	12	56	278	220	310	501
VTB 160M ...	254	210	108	42k6	110	12h9	45	160	20	15	60	305	256	370	612
VTB 160L ...	254	254	108	42k6	110	12h9	45	160	20	15	60	305	300	370	656
VTB 180M ...	279	241	121	48k6	110	14h9	51,5	180	26	15	70	350	320	408	705
VTB 180L ...	279	279	121	48k6	110	14h9	51,5	180	26	15	70	350	320	408	705

Dimensions for FOOT MOUNTED MOTORS - IM B3



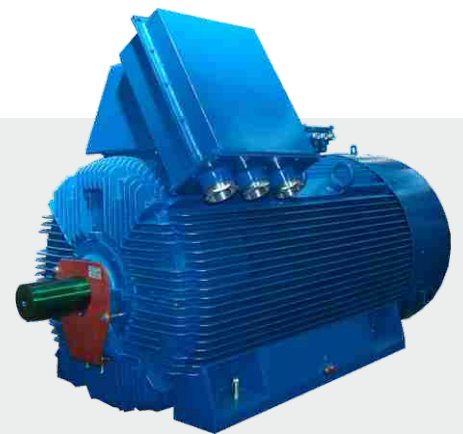
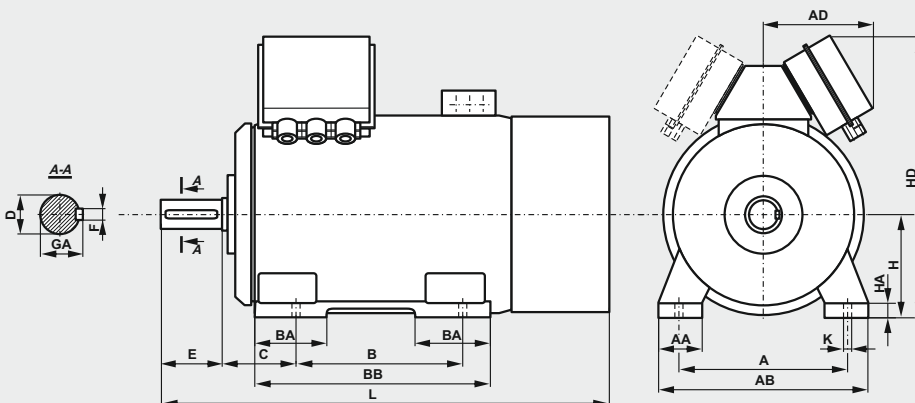
Motor type	A	B	B1	C	D	E	F	GA	H	HA	K	AA	AB	BA1	BA2	BB	HD	L
3VTB200	318	305	-	133	55	110	16	59	200	32	19	80	400	113	113	380	520	850
3VTB225S4	356	286	311	149	60	140	18	64	225	34	19	85	440	115	115	380	570	930
3VTB225M2	356	286	311	149	55	110	16	59	225	34	19	85	440	115	115	380	570	900
3VTB225M4-6	356	286	311	149	60	140	18	64	225	34	19	85	440	115	115	380	570	930
3VTB250M2	406	349	-	168	60	140	18	64	250	37	24	90	480	135	135	445	635	1010
3VTB250M4-6	406	349	-	168	65	140	18	69	250	37	24	90	480	135	135	445	635	1040
3VTB280S2	457	368	419	190	65	140	18	69	280	40	24	105	550	130	165	520	720	1135
3VTB280S4-6	457	368	419	190	75	140	20	79,5	280	40	24	105	550	130	165	520	720	1135
3VTB280M2	457	368	419	190	65	140	18	69	280	40	24	105	550	130	165	520	720	1135
3VTB280M4-6	457	368	419	190	75	140	20	79,5	280	40	24	105	550	130	165	520	720	1135
3VTB315S2	508	406	457	216	65	140	18	69	315	48	28	120	610	160	160	565	805	1235
3VTB315S4-6	508	406	457	216	80	170	22	85	315	48	28	120	610	160	160	565	805	1265
3VTB315M2A;B	508	406	457	216	65	140	18	69	315	48	28	120	610	160	160	565	805	1235
3VTB315M4A;B;6A	508	406	457	216	80	170	22	85	315	48	28	120	610	160	160	565	805	1265
3VTB280M6B	508	406	457	216	80	170	22	85	315	48	28	135	610	135	205	600	805	1355
3VTB315M2C	508	406	457	216	70	140	20	74,5	315	48	28	135	610	135	205	600	805	1290
3VTB315M4C	508	406	457	216	80	170	22	85	315	48	28	135	610	135	205	600	805	1320
3VTB315M6C	508	406	457	216	80	170	22	85	315	48	28	135	610	135	205	600	805	1320
3VTB315M6D	508	406	457	216	90	170	25	95	315	48	28	135	610	135	205	600	805	1320
3VTB 355 ML (2)	610	560	630	254	80	170	22	85	355	50	28	150	720	250	300	890	935	1580
3VTB 355 ML (4, 6)	610	560	630	254	100	210	28	106	355	50	28	150	720	250	300	890	935	1620
3VTB 355 H (2)	610	900	-	200	70	140	20	74,5	355	45	28	160	730	265	265	1045	995	1800
3VTB 355 H (4, 6)	610	900	-	200	100	210	28	106	355	45	28	160	730	265	265	1045	995	1870

Dimensions for FOOT MOUNTED MOTORS - IM B3



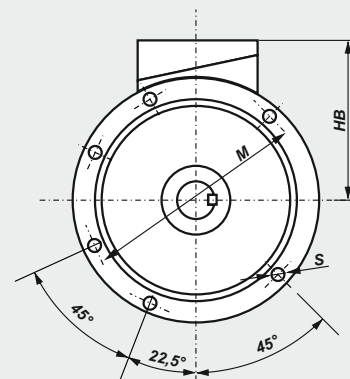
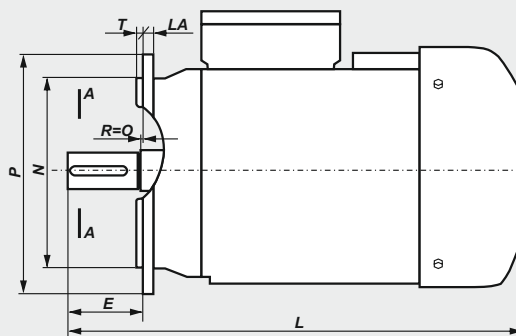
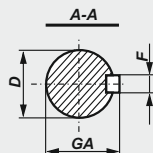
Motor type	A	B	C	D	E	F	GA	H	HA	K	AA	AB	AC	BA	BB	HD	L
VTB 200 L8-12	318	305	133	55m6	110	16h9	59	200	32	19	80	400	450	100	380	485	825
VTB 225 S8-12	356	286	149	60m6	140	18h9	64	225	34	19	85	445	505	110	355	535	865
VTB 225 M8-12	356	311	149	60m6	140	18h9	64	225	34	19	85	445	505	110	380	535	890
VTB 250 M8-12	406	349	168	65m6	140	18h9	69	250	36	24	90	495	540	120	420	590	965
VTB 280 S8-12	457	368	190	75m6	140	20h9	79,5	280	40	24	100	560	620	165	520	660	1040
VTB 280 M8-12	457	419	190	75m6	140	20h9	79,5	280	40	24	100	560	620	165	520	660	1040
VTB 315 S8-12	508	406	216	80m6	170	22h9	85	315	46	28	105	610	620	190	560	695	1210
VTB 315 M8-12	508	457	216	80m6	170	22h9	85	315	46	28	105	610	620	190	560	695	1210

Dimensions for FOOT MOUNTED MOTORS - IM B3



Motor type	Poles	A	B	C	D	E	F	GA	H	HA	K	AA	AB	AD	BA	BB	HD	L
VTB 355...s	2	610	900	200	70	140	20	74,5	355	45	28	160	730	-	265	1045	995	1800
VTB 355...s	4+8	610	900	200	100	210	28	106	355	45	28	160	730	-	265	1045	995	1870
VTB 400...s	2	686	1000	224	80	170	22	85	400	50	35	175	840	520	265	1160	1255	1980
VTB 400...s	4+8	686	1000	224	110	210	28	116	400	50	35	175	840	520	265	1160	1255	1960
VTB 450...s	4+12	750	1120	254	110	210	28	116	450	60	35	205	940	560	340	1320	1356	2105
VTB 500...s	4+10	850	1250	280	120	210	32	127	500	70	42	223	1050	560	300	1450	1470	2430

Dimensions for FLANGE MOUNTED MOTORS - IM B5, IM V1



Motor type	D	E	F	GA	M	N	P	LA	T	HB	L	S (f)	S (holes)
VTB 56-.A	9j6	20	3h9	10,2	100	80j6	120	8	3	98	183	7	4
VTB 56-.B	9j6	20	3h9	10,2	100	80j6	120	8	3	98	193	7	4
VTB 63-.A	11j6	23	4h9	12,5	115	95j6	140	9	3	102	200	10	4
VTB 63-.B	11j6	23	4h9	12,5	115	95j6	140	9	3	102	210	10	4
VTB 71-.A	14j6	30	5h9	16	130	110j6	160	9	3,5	111	223	10	4
VTB 71-.B	14j6	30	5h9	16	130	110j6	160	9	3,5	111	245	10	4
VTB 80-.A	19j6	40	6h9	21,5	165	130j6	200	10	3,5	120	266	12	4
VTB 80-.B	19j6	40	6h9	21,5	165	130j6	200	10	3,5	120	278	12	4
3VTB 80-.A	19j6	40	6h9	21,5	165	130j6	200	10	3,5	119	278	12	4
3VTB 80-.B	19j6	40	6h9	21,5	165	130j6	200	10	3,5	119	306	12	4
3VTB 90S-2,4,6,L2	24j6	50	8h9	27	165	130j6	200	8	3,5	148	331	12	4
3VTB 90L-4,6	24j6	50	8h9	27	165	130j6	200	8	3,5	148	356	12	4
3VTB 100L-2,6	28j6	60	8h9	31	215	180j6	250	11	4	157	377	15	4
3VTB 100L-4A,4B	28j6	60	8h9	31	215	180j6	250	11	4	157	417	15	4
3VTB 112M-2,6	28j6	60	8h9	31	215	180j6	250	12	4	168	398	15	4
3VTB 112M-4	28j6	60	8h9	31	215	180j6	250	12	4	168	425	15	4
3VTB 132S	38k6	80	10h9	41	265	230j6	300	12	4	197	512	15	4
3VTB 132M	38k6	80	10h9	41	265	230j6	300	12	4	197	512	15	4
3VTB 160M	42k6	110	12h9	45	300	250j6	350	13	5	223	643	19	4
3VTB 160L42k6	110	12h9	45	300	250j6	350	13	5	223	643	19	4	
3VTB 180M-2,4	48k6	110	14h9	51,5	300	250j6	350	13	5	234	723	19	4
3VTB 180L-4,6	48k6	110	14h9	51,5	300	250j6	350	13	5	234	723	19	4
3VTB 200	55	110	16	59	350	300	400	16,5	5	320	850	19	4
3VTB 225S4	60	140	18	64	400	350	450	18	5	345	930	19	8
3VTB 225M2	55	110	16	59	400	350	450	18	5	345	900	19	8
3VTB 225M4-6	60	140	18	64	400	350	450	18	5	345	930	19	8
3VTB 250M2	60	140	18	64	500	450	550	23	5	385	1010	19	8
3VTB 250M4-6	65	140	18	69	500	450	550	23	5	385	1040	19	8
3VTB 280S2	65	140	18	69	500	450	550	23	5	440	1135	19	8
3VTB 280S4-6	75	140	20	79,5	500	450	550	23	5	440	1135	19	8
3VTB 280M2	65	140	18	69	500	450	550	23	5	440	1135	19	8
3VTB 280M4-6	75	140	20	79,5	500	450	550	23	5	440	1135	19	8
3VTB 315S2*	65	140	18	69	600	550	660	23	6	490	1235	24	8
3VTB 315S4-6*	80	170	22	85	600	550	660	23	6	490	1265	24	8
3VTB 315M2A;B*	65	140	18	69	600	550	660	23	6	490	1235	24	8
3VTB 315M4A;B;6A*	80	170	22	85	600	550	660	23	6	490	1265	24	8
3VTB 315M6B*	80	170	22	85	600	550	660	23	6	490	1355	24	8
3VTB 315M2C*	70	140	20	74,5	600	550	660	23	6	490	1290	24	8
3VTB 315M4C*	80	170	22	85	600	550	660	23	6	490	1320	24	8
3VTB 315M6C*	80	170	22	85	600	550	660	23	6	490	1320	24	8
3VTB 315M6D*	90	170	25	95	600	550	660	23	6	490	1320	24	8
3VTB 355 ML (4 - 6)*	100m6	210	28h9	106	740	680	800	24	6	580	1620	22	8
3VTB 355 H (4 - 6)*	100m6	210	28h9	106	740	680	800	24	6	638	1955	22	8
VTB 355ML8*	100	210	28	106	740	680	800	24	6	580	1620	22	8

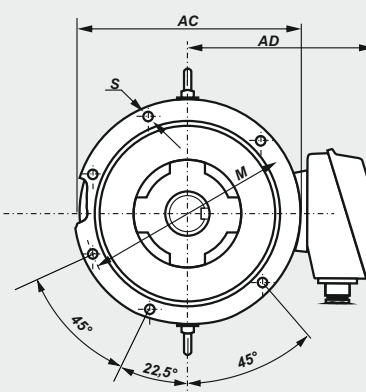
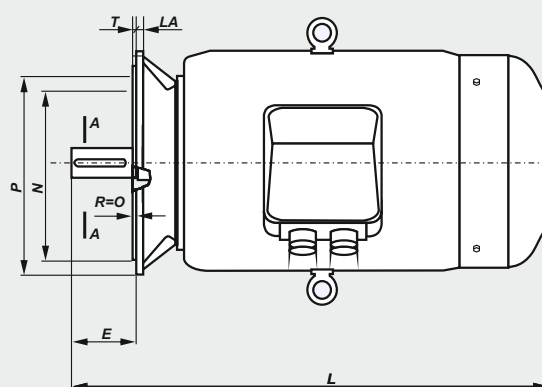
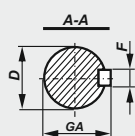
* only in vertical position IM V1

Dimensions for FLANGE MOUNTED MOTORS - IM B5, IM V1

MOTORS series VTB 2p=8

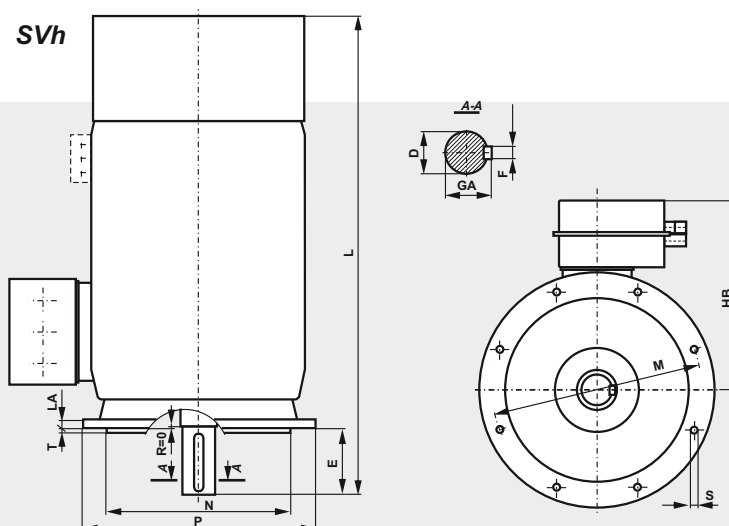
Type of motor	D	E	F	GA	M	N	P	LA	T	S	HB	L
VTB 90S ...	24j6	50	8h9	27	165	130j6	200	8	3,5	12	130	305
VTB 90L ...	24j6	50	8h9	27	165	130j6	200	8	3,5	12	130	330
VTB 100L ...	28j6	60	8h9	31	215	180j6	250	11	4	15	140	376
VTB 112M ...	28j6	60	8h9	31	215	180j6	250	12	4	15	164	384
VTB 132S ...	38k6	80	10h9	41	265	230j6	300	12	4	15	178	463
VTB 132S-2B	38k6	80	10h9	41	265	230j6	300	12	4	15	178	501
VTB 132M ...	38k6	80	10h9	41	265	230j6	300	12	4	15	178	501
VTB 160M ...	42k6	110	12h9	45	300	250j6	350	13	5	19	210	612
VTB 160L ...	42k6	110	12h9	45	300	250j6	350	13	5	19	210	656
VTB 180M ...	48k6	110	14h9	51,5	300	250j6	350	13	5	19	228	705

Dimensions for FLANGE MOUNTED MOTORS - IM B5, IM V1



Motor type	D	E	F	GA	AC	AD	L	LA	M	N	P	T	S	φ	Holes
VTB 200 L8-12	55m6	110	16h9	59	450	340	825	16,5	350	300j6	400	5	18	4	
VTB 225 S8-12	60m6	140	18h9	64	505	360	865	18	400	350j6	450	5	18	8	
VTB 225 M8-12	60m6	140	18h9	64	505	360	890	18	400	350j6	450	5	18	8	
VTB 250 M8-12	65m6	140	18h9	69	540	405	965	19	500	450j6	550	5	18	8	
VTB 280 S8-12	75m6	140	20h9	79,5	620	440	1040	20	500	450j6	550	5	18	8	
VTB 280 M8-12	75m6	140	20h9	79,5	620	440	1040	20	500	450j6	550	5	18	8	
VTB 315 S8-12	80m6	170	22h9	85	620	440	1210	22	600	550j6	660	6	22	8	
VTB 315 M8-12	80m6	170	22h9	85	620	440	1210	22	600	550j6	660	6	22	8	

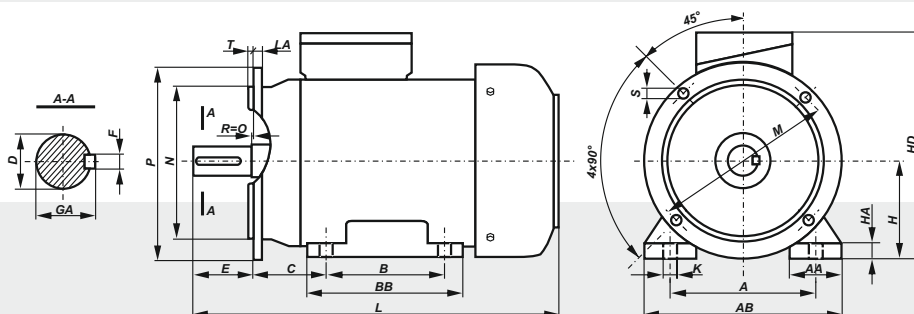
Dimensions for FLANGE MOUNTED MOTORS - IM B5, IM V1



Motor type	Poles	D	E	F	GA	HB	L	LA	M	N	P	S	T
VTB 355...s*	4+8	100	210	28	106	640	1955	24	740	680	800	22	6
VTB 400...s*	4+8	110	210	28	116	725	2016	37	940	880	1000	23	6
VTB 450...s*	4+12	110	210	28	116	835	2162	30	1080	1000	1150	28	6
VTB 500...s*	4+12	120	210	32	127	835	2505	30	1080	1000	1150	28	6

* - the SVh motors may operate only in vertical position IM V1.

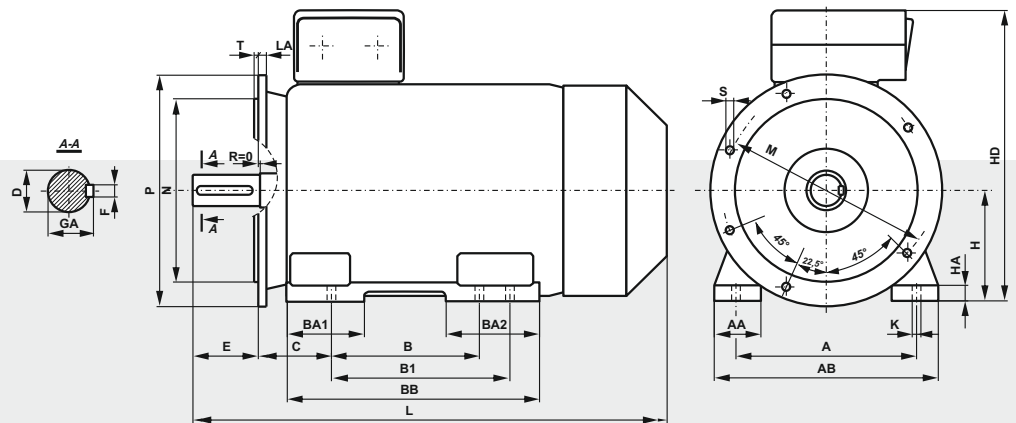
Dimensions for FOOT/FLANGE MOUNTED MOTORS - IM B35



Motor type	A	B	C	D	E	F	GA	H	K	M	N	P	S	LA	T	AA	AB	BB	HA	HD	L
VTB 56-A	90	71	36	9j6	20	3h9	10,2	56	8	100	80j6	120	7	8	3	30	110	92	7	154	183
VTB 56-B	90	71	36	9j6	20	3h9	10,2	56	8	100	80j6	120	7	8	3	30	110	92	7	154	193
VTB 63-A	100	80	40	11j6	23	4h9	12,5	63	10	115	95j6	140	10	9	3	36	124	106	8,5	165	200
VTB 63-B	100	80	40	11j6	23	4h9	12,5	63	10	115	95j6	140	10	9	3	36	124	106	8,5	165	210
VTB 71-A	112	90	45	14j6	30	5h9	16	71	10	130	110j6	160	10	9	3,5	45	142	116	8	182	223
VTB 71-B	112	90	45	14j6	30	5h9	16	71	10	130	110j6	160	10	9	3,5	45	142	116	8	182	245
VTB 80-A	125	100	50	19j6	40	6h9	21,5	80	10	165	130j6	200	12	10	3,5	55	160	130	9	200	266
VTB 80-B	125	100	50	19j6	40	6h9	21,5	80	10	165	130j6	200	12	10	3,5	55	160	130	9	200	278
3VTB 80-A	125	100	50	19j6	40	6h9	21,5	80	10	165	130j6	200	12	10	3,5	55	160	130	9	200	278
3VTB 80-B	125	100	50	19j6	40	6h9	21,5	80	10	165	130j6	200	12	10	3,5	55	160	130	9	200	306
3VTB 90S-2,4,6	140	100	56	24j6	50	8h9	27	90	10	165	130j6	200	12	8	3,5	47	182	153	10	238	331
3VTB 90L-2	140	125	56	24j6	50	8h9	27	90	10	165	130j6	200	12	8	3,5	47	182	153	10	238	331
3VTB 90L-4,6	140	125	56	24j6	50	8h9	27	90	10	165	130j6	200	12	8	3,5	47	182	153	10	238	356
3VTB 100L-2,6	160	140	63	28j6	60	8h9	31	100	12	215	180j6	250	15	11	4	52	202	170	12	257	377
3VTB 100L-4A,4B	160	140	63	28j6	60	8h9	31	100	12	215	180j6	250	15	11	4	52	202	170	12	257	417
3VTB 112M-2,6	190	140	70	28j6	60	8h9	31	112	12	215	180j6	250	15	12	4	52	222	170	14	280	398
3VTB 112M-4	190	140	70	28j6	60	8h9	31	112	12	215	180j6	250	15	12	4	52	222	170	14	280	425
3VTB 132S	216	140	89	38k6	80	10h9	41	132	12	265	230j6	300	15	12	4	61	266	220	18	329	512
3VTB 132M	216	178	89	38k6	80	10h9	41	132	12	265	230j6	300	15	12	4	61	266	220	18	329	512
3VTB 160M	254	210	108	42k6	110	12h9	45	160	15	300	250j6	350	19	13	5	81	320	200	25	383	643
3VTB 160L	254	254	108	42k6	110	12h9	45	160	15	300	250j6	350	19	13	5	81	320	300	25	383	643
3VTB 180M	279	241	121	48k6	110	14h9	51,5	180	15	300	250j6	350	19	13	5	92	353	320	27	414	723
3VTB 180L	279	279	121	48k6	110	14h9	51,5	180	15	300	250j6	350	19	13	5	92	353	320	27	414	723

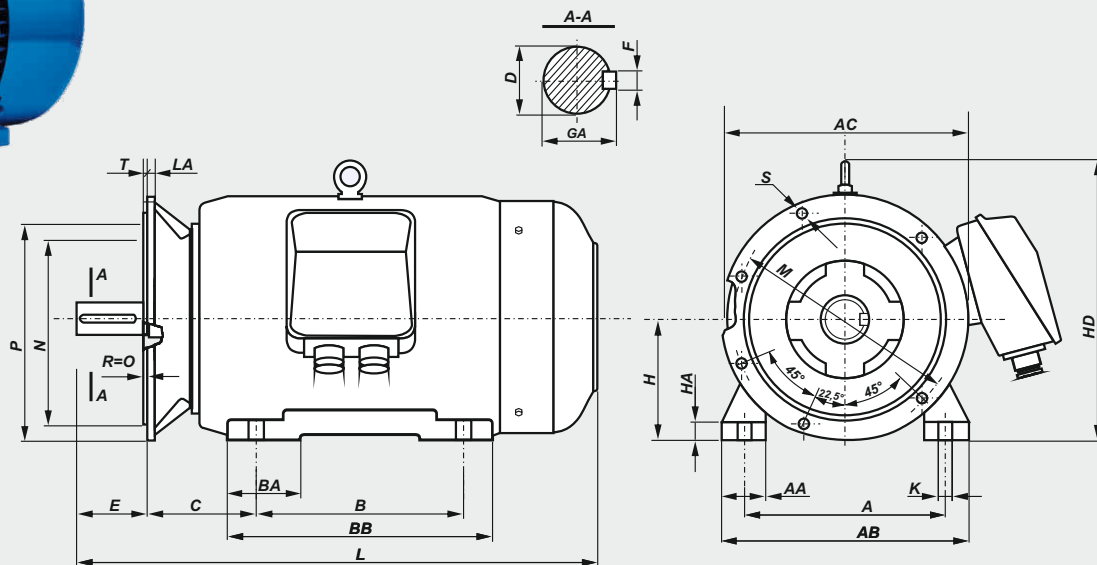
Dimensions for FOOT/FLANGE MOUNTED MOTORS - IM B35**MOTORS series VTB 2p=8**

Motor type	A	B	C	D	E	F	GA	H	HA	K	AA	AB	BB	HD	L	LA	M	N	P	T	S
VTB 90S ...	140	100	56	24j6	50	8h9	27	90	10	10	50	170	153	220	305	8	165	130j6	200	3,5	12
VTB 90L ...	140	125	56	24j6	50	8h9	27	90	10	10	50	170	153	220	330	8	165	130j6	200	3,5	12
VTB 100L ...	160	140	63	28j6	60	8h9	31	100	14	12	45	200	172	240	376	11	215	180j6	250	4	15
VTB 112M ...	190	140	70	28j6	60	8h9	31	112	14	12	54	230	174	276	384	12	215	180j6	250	4	15
VTB 132S ...	216	140	89	38k6	80	10h9	41	132	16	12	56	278	182	310	463	12	265	230j6	300	4	15
VTB 132S-2B	216	140	89	38k6	80	10h9	41	132	16	12	56	278	220	310	501	12	265	230j6	300	4	15
VTB 132M ...	216	178	89	38k6	80	10h9	41	132	16	12	56	278	220	310	501	12	265	230j6	300	4	15
VTB 160M ...	254	210	108	42k6	110	12h9	45	160	20	15	60	305	256	370	612	13	300	250j6	350	5	19
VTB 160L ...	254	254	108	42k6	110	12h9	45	160	20	15	60	305	300	370	656	13	300	250j6	350	5	19
VTB 180M ...	279	241	121	48k6	110	14h9	51,5	180	26	15	70	350	320	408	705	13	300	250j6	350	5	19
VTB 180L ...	279	279	121	48k6	110	14h9	51,5	180	26	15	70	350	320	408	705	13	300	250j6	350	5	19

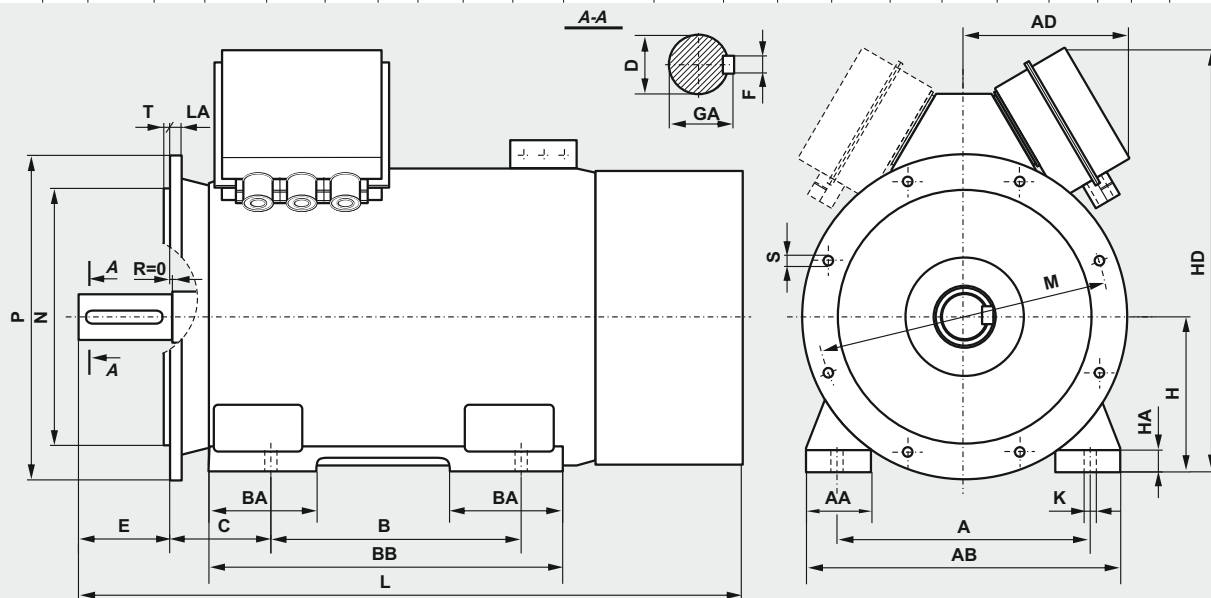
Dimensions for FOOT/FLANGE MOUNTED MOTORS - IM B35

Motor type	A	B	B1	C	D	E	F	GA	H	HA	K	AA	AB	BA1	BA2	BB	HD	LA	P	M	N	T	L	S (φ)	S (holes)
3VTB 200	318	305	-	133	55	110	16	59	200	32	19	80	400	113	113	380	520	16,5	400	350	300	5	850	19	4
3VTB 225S4	356	286	311	149	60	140	18	64	225	34	19	85	440	115	115	380	570	18	450	400	350	5	930	19	8
3VTB 225M2	356	286	311	149	55	110	16	59	225	34	19	85	440	115	115	380	570	18	450	400	350	5	900	19	8
3VTB 225M4-6	356	286	311	149	60	140	18	64	225	34	19	85	440	115	115	380	570	18	450	400	350	5	930	19	8
3VTB 250M2	406	349	-	168	60	140	18	64	250	37	24	90	480	135	135	445	635	23	550	500	450	5	1010	19	8
3VTB 250M4-6	406	349	-	168	65	140	18	69	250	37	24	90	480	135	135	445	635	23	550	500	450	5	1040	19	8
3VTB 280S2	457	368	419	190	65	140	18	69	280	40	24	105	550	130	165	520	720	23	550	500	450	5	1135	19	8
3VTB 280S4-6	457	368	419	190	75	140	20	79,5	280	40	24	105	550	130	165	520	720	23	550	500	450	5	1135	19	8
3VTB 280M2	457	368	419	190	65	140	18	69	280	40	24	105	550	130	165	520	720	23	550	500	450	5	1135	19	8
3VTB 280M4-6	457	368	419	190	75	140	20	79,5	280	40	24	105	550	130	165	520	720	23	550	500	450	5	1135	19	8
3VTB 315S2	508	406	457	216	65	140	18	69	315	48	28	120	610	160	160	565	805	23	660	600	550	6	1235	24	8
3VTB 315S4-6	508	406	457	216	80	170	22	85	315	48	28	120	610	160	160	565	805	23	660	600	550	6	1265	24	8
3VTB 315M2A;B	508	406	457	216	65	140	18	69	315	48	28	120	610	160	160	565	805	23	660	600	550	6	1235	24	8
3VTB 315M4A;B;6A	508	406	457	216	80	170	22	85	315	48	28	120	610	160	160	565	805	23	660	600	550	6	1265	24	8
3VTB 315M6B	508	406	457	216	80	170	22	85	315	48	28	135	610	135	205	600	805	23	660	600	550	6	1355	24	8
3VTB 315M2C	508	406	457	216	70	140	20	74,5	315	48	28	135	610	135	205	600	805	23	660	600	550	6	1290	24	8
3VTB 315M4C	508	406	457	216	80	170	22	85	315	48	28	135	610	135	205	600	805	23	660	600	550	6	1320	24	8
3VTB 315M6C	508	406	457	216	80	170	22	85	315	48	28	135	610	135	205	600	805	23	660	600	550	6	1320	24	8
3VTB 315M6D	508	406	457	216	90	170	25	95	315	48	28	135	610	135	205	600	805	23	660	600	550	6	1320	24	8
3VTB 355 ML (2)	610	560	630	254	80	170	22	85	355	50	28	150	720	250	300	890	935	24	800	740	680	6	1580	22	8
3VTB 355 ML (4,6)	610	560	630	254	100	210	28	106	355	50	28	150	720	250	300	890	935	24	800	740	680	6	1620	22	8
3VTB 355 H (2)	610	900	-	254	70	140	20	74,5	355	45	28	160	730	265	265	1045	995	24	800	740	680	6	1854	22	8
3VTB 355 H (4,6)	610	900	-	254	100	210	28	106	355	45	28	160	730	265	265	1045	995	24	800	740	680	6	1924	22	8
VTB 355 ML8	610	560	630	254	100	210	28	106	355	50	28	150	720	250	300	890	935	24	800	740	680	6	1620	22	8

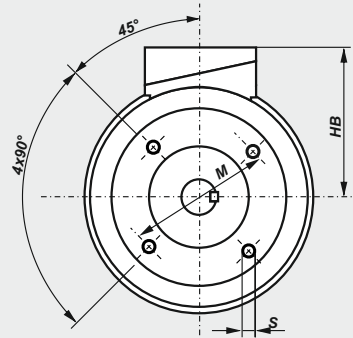
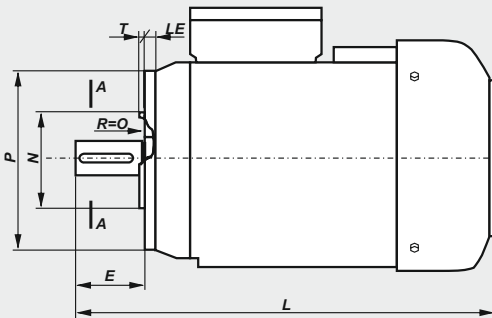
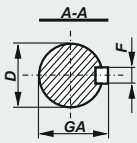
Dimensions for FOOT/FLANGE MOUNTED MOTORS - IM B35



Motor type	A	B	C	D	E	F	GA	H	HA	K	AA	AB	AC	BA	BB	HD	L	LA	M	N	P	T	S	φ Holes
VTB 200 L8-12	318	305	133	55m6	110	16h9	59	200	32	19	80	400	450	100	380	485	825	16,5	350	300	400	5	18	4
VTB 225 S8-12	356	286	149	60m6	140	18h9	64	225	34	19	85	445	505	110	355	535	865	18	400	350	450	5	18	8
VTB 225 M8-12	356	311	149	60m6	140	18h9	64	225	34	19	85	445	505	110	380	535	890	18	400	350	450	5	18	8
VTB 250 M8-12	406	349	168	65m6	140	18h9	69	250	36	24	90	495	540	120	420	590	965	19	500	450	550	5	18	8
VTB 280 S8-12	457	368	190	75m6	140	20h9	79,5	280	40	24	100	560	620	165	520	660	1040	20	500	450	550	5	18	8
VTB 280 M8-12	457	419	190	75m6	140	20h9	79,5	280	40	24	100	560	620	165	520	660	1040	20	500	450	550	5	18	8
VTB 315 S8-12	508	406	216	80m6	170	22h9	85	315	46	28	105	610	620	190	560	695	1210	22	600	550	660	6	22	8
VTB 315 M8-12	508	457	216	80m6	170	22h9	85	315	46	28	105	610	620	190	560	695	1210	22	600	550	660	6	22	8



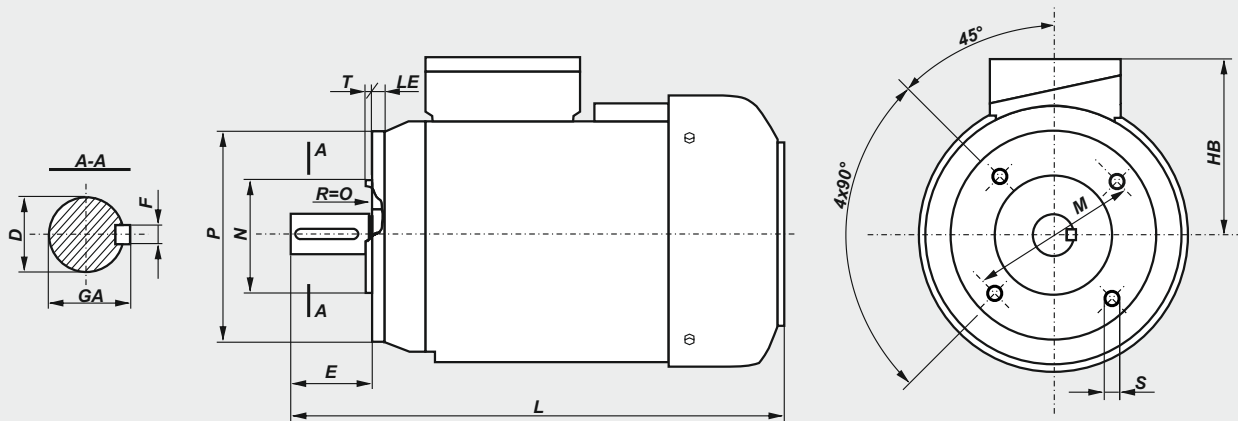
Type of motor	Poles	A	B	C	D	E	F	GA	H	HA	K	AA	AB	AD	BA	BB	HD	L	LA	M	N	P	S	T
VTB 355...s	2	610	900	254	70	140	20	74.5	355	45	28	160	730	344	265	1045	995	1854	24	740	680	800	22	6
VTB 355...s	4+8	610	900	254	100	210	28	106	355	45	28	160	730	344	265	1045	995	1924	24	740	680	800	22	6
VTB 400...s	2	686	1000	280	80	170	22	85	400	50	35	175	840	520	265	1160	1255	2031	30	940	880	1000	25	6
VTB 400...s	4+8	686	1000	280	110	210	28	116	400	50	35	175	840	520	265	1160	1255	2016	30	940	880	1000	25	6
VTB 450...s	4+12	750	1120	315	110	210	28	116	450	60	35	205	940	560	340	1320	1356	2162	30	1080	1000	1150	28	6
VTB 500...s	4+10	850	1250	355	120	210	32	127	500	70	42	223	1050		560	300	1450	1470	2505	30	1080	1000	1150	286

Dimensions for FLANGE MOUNTED MOTORS - IM B14

Motor type	Flange	D	E	F	GA	M	N	P	S	T	LE	HB	L
VTB 56- .A1	B14/C1	9j6	20	3h9	10,2	85	70j6	105	M6	2,5	15	98	183
VTB 56- .A2	B14/C2	9j6	20	3h9	10,2	65	50j6	80	M5	2,5	12,5	98	183
VTB 56- .B1	B14/C1	9j6	20	3h9	10,2	85	70j6	105	M6	2,5	15	98	193
VTB 56- .B2	B14/C2	9j6	20	3h9	10,2	65	50j6	80	M5	2,5	12,5	98	193
VTB 63- .A1	B14/C1	11j6	23	4h9	12,5	100	80j6	120	M6	3	14	102	200
VTB 63- .A2	B14/C2	11j6	23	4h9	12,5	75	60j6	90	M5	2,5	9,5	102	200
VTB 63- .B1	B14/C1	11j6	23	4h9	12,5	100	80j6	120	M6	3	14	102	210
VTB 63- .B2	B14/C2	11j6	23	4h9	12,5	75	60j6	90	M5	2,5	9,5	102	210
VTB 71- .A1	B14/C1	14j6	30	5h9	16	115	95j6	140	M8	3	14	111	223
VTB 71- .A2	B14/C2	14j6	30	5h9	16	85	70j6	105	M6	2,5	12	111	223
VTB 71- .B1	B14/C1	14j6	30	5h9	16	115	95j6	140	M8	3	14	111	245
VTB 71- .B2	B14/C2	14j6	30	5h9	16	85	70j6	105	M6	2,5	12	111	245
VTB 80- .A1	B14/C1	19j6	40	6h9	21,5	130	110j6	160	M8	3,5	14	120	266
VTB 80- .A2	B14/C2	19j6	40	6h9	21,5	100	80j6	120	M6	3	12	120	266
VTB 80- .B1	B14/C1	19j6	40	6h9	21,5	130	110j6	160	M8	3,5	14	120	278
VTB 80- .B2	B14/C2	19j6	40	6h9	21,5	100	80j6	120	M6	3	12	120	278
3VTB 80- .A1	B14/C1	19j6	40	6h9	21,5	130	110j6	160	M8	3,5	14	119	278
3VTB 80- .A2	B14/C2	19j6	40	6h9	21,5	100	80j6	120	M6	3	12	119	306
3VTB 80- .B1	B14/C1	19j6	40	6h9	21,5	130	110j6	160	M8	3,5	14	119	278
3VTB 80- .B2	B14/C2	19j6	40	6h9	21,5	100	80j6	120	M6	3	12	119	306
3VTB 90S 2,4,6,L2	B14/C1	24j6	50	8h9	27	130	110j6	160	M8	3,5	10	148	331
3VTB 90S 2,4,6,L2	B14/C2	24j6	50	8h9	27	115	95j6	140	M8	3	10	148	331
3VTB 90L 4,6	B14/C1	24j6	50	8h9	27	130	110j6	160	M8	3,5	10	148	356
3VTB 90L 4,6	B14/C2	24j6	50	8h9	27	115	95j6	140	M8	3	10	148	356
3VTB 100L2,6	B14/C1	28j6	60	8h9	31	165	130j6	200	M10	3,5	12	157	377
3VTB 100L2,6	B14/C2	28j6	60	8h9	31	130	110j6	160	M8	3,5	12	157	377
3VTB 100L4A,4B	B14/C1	28j6	60	8h9	31	165	130j6	200	M10	3,5	12	157	417
3VTB 100L4A,4B	B14/C2	28j6	60	8h9	31	130	110j6	160	M8	3,5	12	157	417
3VTB 112M2,6	B14/C1	28j6	60	8h9	31	165	130j6	200	M10	3,5	12	168	398
3VTB 112M2,6	B14/C2	28j6	60	8h9	31	130	110j6	160	M8	3,5	12	168	398
3VTB 112M4	B14/C1	28j6	60	8h9	31	165	130j6	200	M10	3,5	12	168	425
3VTB 112M4	B14/C2	28j6	60	8h9	31	130	110j6	160	M8	3,5	12	168	425
3VTB 132S	B14/C1	38k6	80	10h9	41	215	180j6	250	M12	4	12	197	512
3VTB 132S	B14/C2	38k6	80	10h9	41	165	130j6	200	M10	3,5	12	197	512
3VTB 132M	B14/C1	38k6	80	10h9	41	215	180j6	250	M12	4	12	197	512
3VTB 132M	B14/C2	38k6	80	10h9	41	165	130j6	200	M10	3,5	12	197	512

Dimensions for FLANGE MOUNTED MOTORS - IM B14

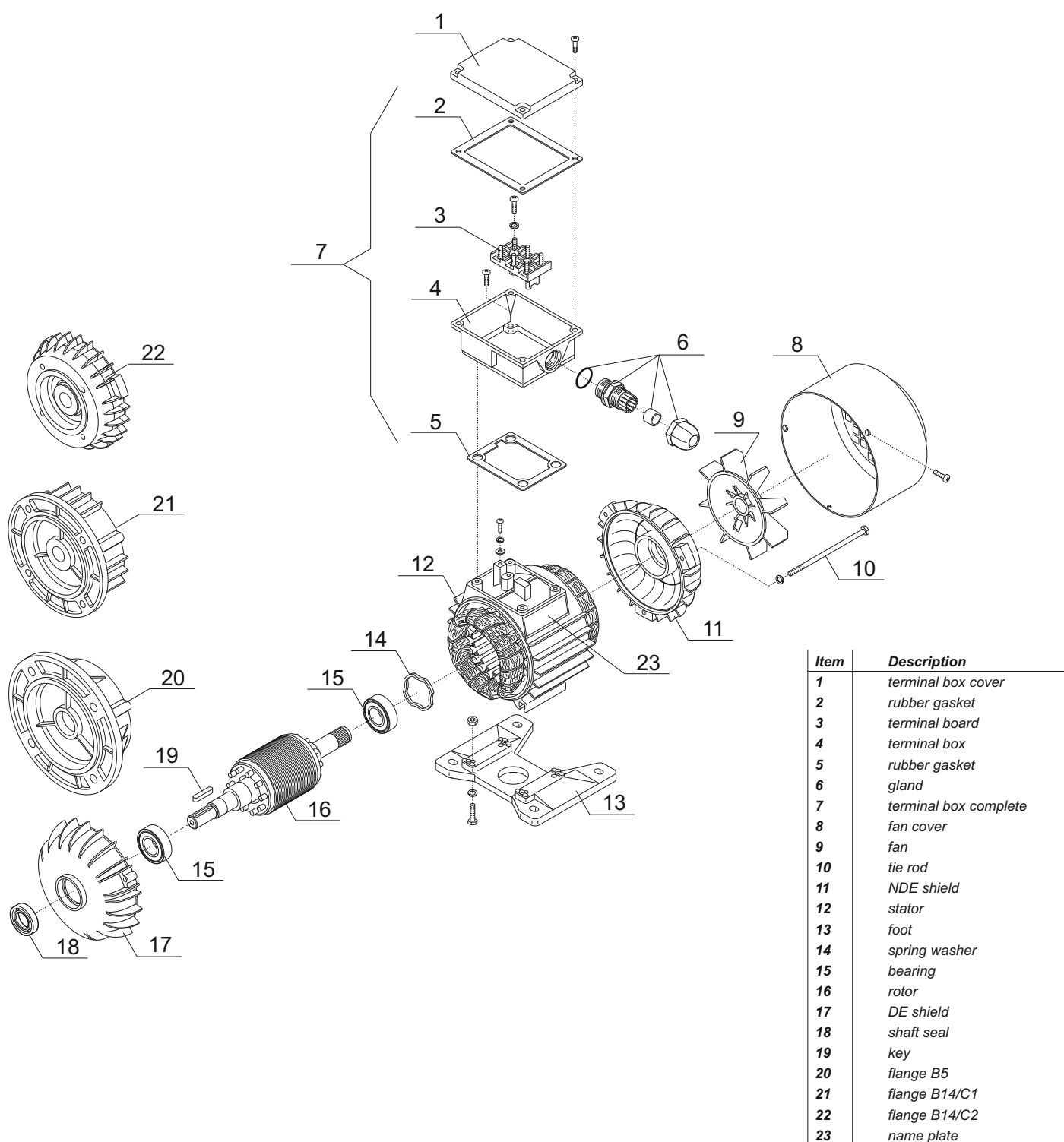
MOTORS series VTB 2p=8



Motor type	Flange	D	E	F	GA	M	N	P	S	T	LE	HB	L
VTB 90S ...	B14/C2	24j6	50	8h9	27	115	95j6	140	M8	3	10	130	305
VTB 90L ...	B14/C1	24j6	50	8h9	27	130	110j6	160	M8	3,5	10	130	330
VTB 90L ...	B14/C2	24j6	50	8h9	27	115	95j6	140	M8	3	10	130	330
VTB 100L ...	B14/C1	28j6	60	8h9	31	165	130j6	200	M10	3,5	12	140	376
VTB 100L ...	B14/C2	28j6	60	8h9	31	130	110j6	160	M8	3,5	12	140	376
VTB 112M ...	B14/C1	28j6	60	8h9	31	165	130j6	200	M10	3,5	12	164	384
VTB 112M ...	B14/C2	28j6	60	8h9	31	130	110j6	160	M8	3,5	12	164	384
VTB 132S ...	B14/C1	38k6	80	10h9	41	215	180j6	250	M12	4	12	178	463
VTB 132S ...	B14/C2	38k6	80	10h9	41	165	130j6	200	M10	3,5	12	178	463
VTB 132S-2B	B14/C1	38k6	80	10h9	41	215	180j6	250	M12	4	12	178	501
VTB 132S-2B	B14/C2	38k6	80	10h9	41	165	130j6	200	M10	3,5	12	178	501
VTB 132M ...	B14/C1	38k6	80	10h9	41	215	180j6	250	M12	4	12	178	501
VTB 132M ...	B14/C2	38k6	80	10h9	41	165	130j6	200	M10	3,5	12	178	501
VTB 160M ...	B14/C1	42k6	110	12h9	45	265	230j6	300	M12	4	13	210	612
VTB 160M...	B14/C2	42k6	110	12h9	45	215	180j6	250	M12	4	20	210	612
VTB 160L ...	B14/C1	42k6	110	12h9	45	265	230j6	300	M12	4	13	210	656
VTB 160L ...	B14/C2	42k6	110	12h9	45	215	180j6	250	M12	4	20	210	656

List of Motor parts

Frame Size: 56-80
Motor series 3VTB and VTB

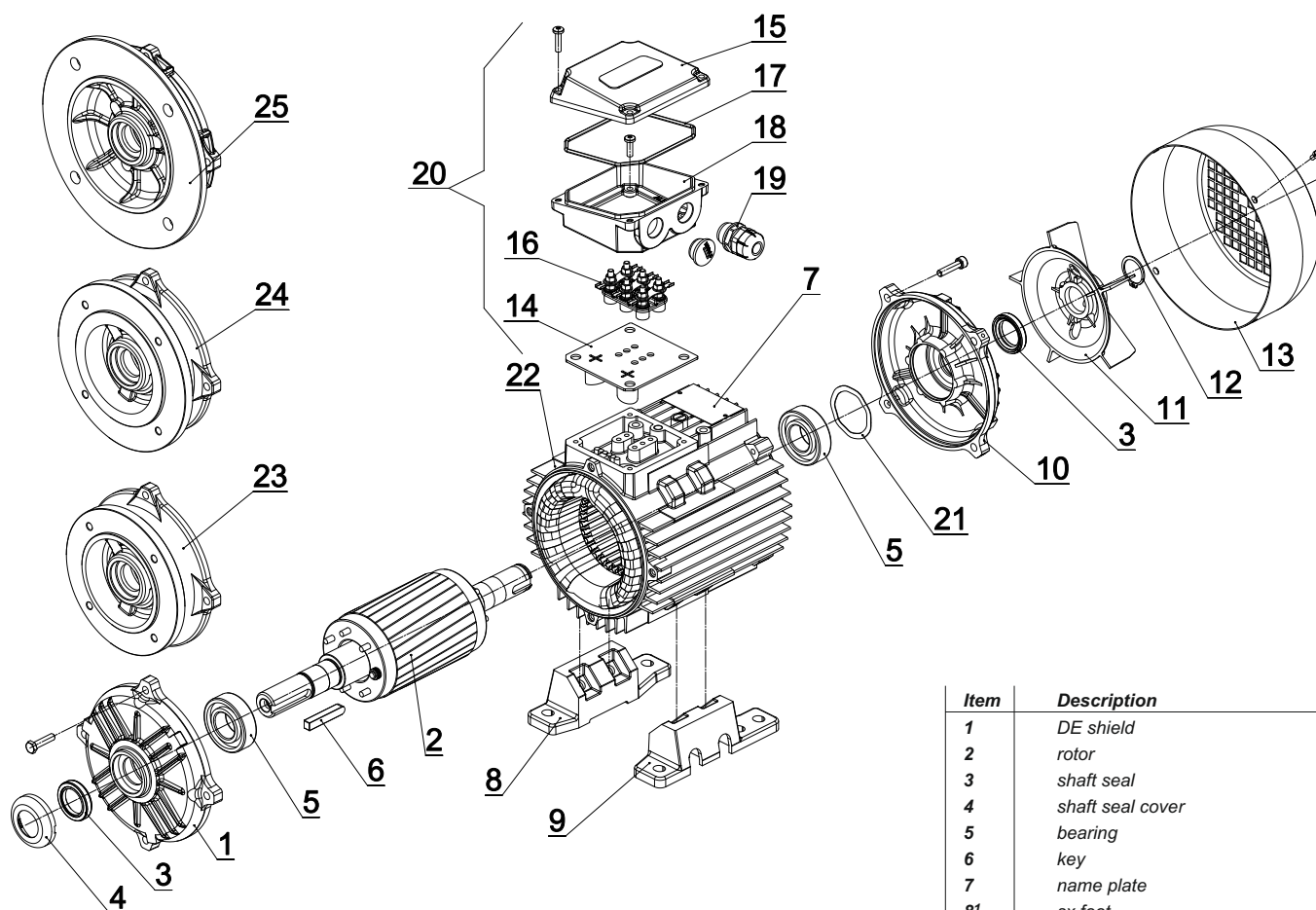


DE - drive end
NDE - non drive end

Frame Size: 90 ÷ 180

Motor series 3VTB and VTB (2p = 8 ÷ 12)

List of Motor parts



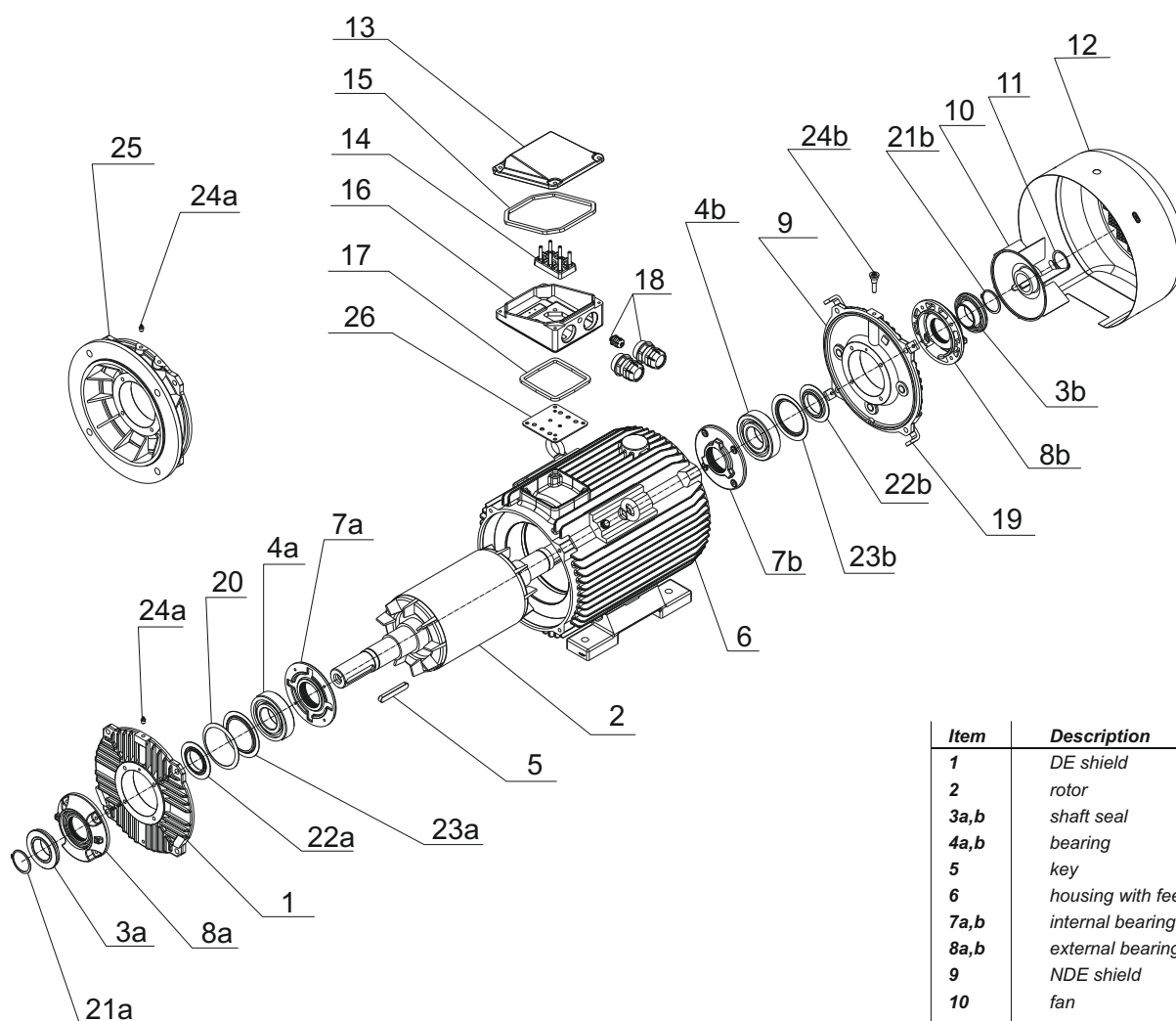
Item	Description
1	DE shield
2	rotor
3	shaft seal
4	shaft seal cover
5	bearing
6	key
7	name plate
8 ¹	sx foot
9 ¹	dx foot
10	NDE shield
11	fan
12	seeger ring
13	fan cover
14	rubber gasket
15	terminal box cover
16	terminal board
17	rubber gasket
18	terminal box
19	glands
20	terminal box complete
21	spring washer
22	stator
23 ²	flange B14/C2
24 ²	flange B14/C1
25	flange B5

DE - drive end
NDE - non drive end

¹ - for frame size 132 - 180 feet can be screwed or integrated with the motor housing,
² - only for frame size 90 - 132.

List of Motor parts

Frame Size: 200÷355
Motor series 3VTB



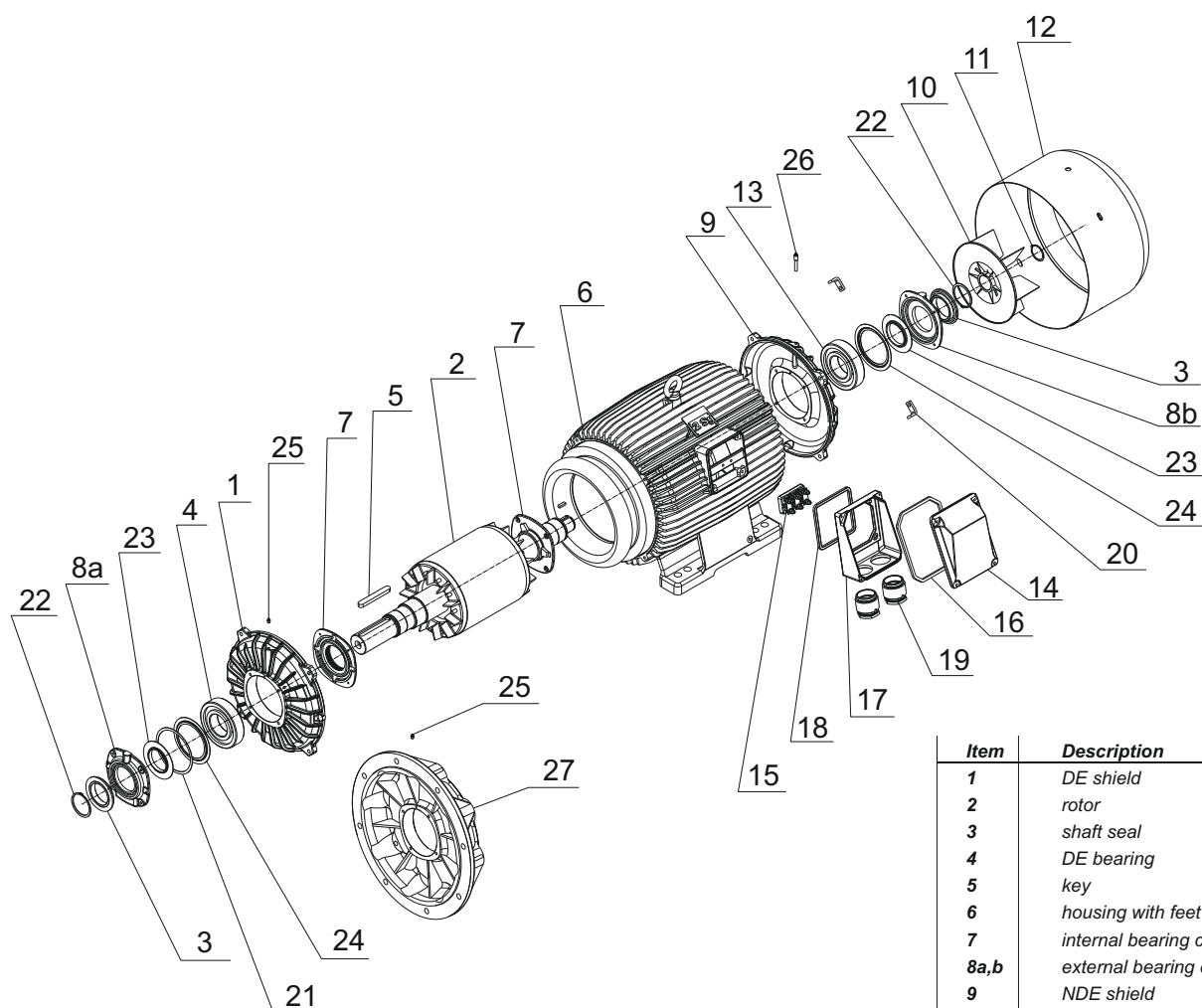
Item	Description
1	DE shield
2	rotor
3a,b	shaft seal
4a,b	bearing
5	key
6	housing with feet
7a,b	internal bearing cap
8a,b	external bearing cap
9	NDE shield
10	fan
11	seeger ring
12	fan cover
13	terminal box cover
14	terminal board
15	rubber gasket
16	terminal box housing
17	rubber gasket
18	cable glands
19	fan cover support
20	spring washer
21a,b	seeger ring
22a,b	grease shield
23a,b	bearing internal ring
24a,b	grease nipple
25	flange B5
26	rubber gasket

DE - drive end
 NDE - non drive end

Frame Size: 200÷315

Motor series VTB (2p = 8 ÷ 12)

List of Motor parts



Item	Description
1	DE shield
2	rotor
3	shaft seal
4	DE bearing
5	key
6	housing with feet
7	internal bearing cap
8a,b	external bearing cap
9	NDE shield
10	fan
11	seeger ring
12	fan cover
13	NDE bearing
14	terminal box cover
15	terminal cover support
16	rubber gasket
17	terminal box housing
18	rubber gasket
19	cable glands
20	fan cover support
21	spring washer
22	seeger ring
23	grease shield *
24	bearing internal ring *
25	DE grease nipple
26	NDE grease nipple
27	flange B5

* only for size 315

DE - drive end
NDE - non drive end

PRODUCT RANGE

GENERAL PURPOSE 3-PHASE INDUCTION MOTORS	Three-phase motors with squirrel-cage rotor series VTB. High efficiency motors series 2VTB, 3VTB and 4VTB (Efficiency classes IE1, IE2, IE3, IE4)	from 0,04kW up to 1400kW	general purpose, pumps, fans, compressors, specific requirements relating to the highest efficiency	
GENERAL PURPOSE 1-PHASE INDUCTION MOTORS	Single-phase motors with squirrel-cage rotor series VMB, VMC. - motors with standard starting torque - motors with increased starting torque - motors with high starting torque.	from 0,04kW up to 4kW	general purpose, pumps, fans, compressors, wood machines, machines and devices for food processing, mixers for building	
HIGH VOLTAGE INDUCTION MOTORS	Three-phase squirrel-cage high voltage and high efficiency motors series VTB with cast-iron housing. High voltage motors with module construction (steel/welded housing) series VTB-E and VTBw.	from 160kW up to 3150kW	general industrial use, drives used for own needs of power plants (pumps, fans, coal mills, conveyors)	
BRAKE MOTORS	Three-phase and single-phase brake motors with AC and DC brakes.	from 0,04kW up to 160kW	applied in case of necessity to stop the motor suddenly	
MOTORS WITH FOREIGN COOLING	Three-phase 3-phase induction motors with foreign cooling.	from 0,06kW up to 250kW	drives adapted for speed regulation by frequency converter	
EXPLOSION-PROOF MOTORS	Increased safety motors. Flame-proof motors.	from 0,06kW up to 22kW from 0,75kW up to 315kW	adapted for operation in areas endangered by explosion (without methane) application in an atmosphere where a mixture of explosive gas and vapours may occur	
NEMA MOTORS	Low voltage NEMA motors SIE series (in compliance with the NEMA PREMIUM requirements).	from 1HP up to 250HP	general industrial application, pumps, fans	
TRACTION MOTORS	Traction motors and traction generators.	from 50kW up to 1500kW	various traction vehicles: trams (including low-deck trams), trolleybusses, subway and locomotives	



VEMAT MOTORI S.r.l. - Registered office: Via Pantano, 2 - 20122 Milano - Italy
Productive unit and administrative offices: Via Gualda, 10 Z.I. - 36075 Montebelluna (VI) - Italy
Tel. +39 0444 491973 r.a. - Fax +39 0444 491978 - e-mail: vemat@vemat.it - www.vemat.it