Quality system is certificated
according to
GOST ISO 9001-2011 (ISO 9001:2008)

Contents **Pg.**

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Standards and regulations

Name	Designation
Technical conditions	TU 3341-067-05757995-2003
Explosion hazard zones. Part 0. Equipment. General requirements	GOST R IEC 60079-0 or GOST 31610.0
Explosion hazard zones. Part 1. Equipment with explosion protection «explosion proof enclosure «d»	GOST IEC 60079-1
Explosion hazard zones. Part 7. Equipment. Increased protection "e"	GOST R IEC 60079-7 or GOST 31610.7
Electrical equipment for explosion hazard zones. Part 10. Explosion hazard zones classification	GOST R 52350.10 (IEC 60079-10) or GOST 31610.10/ IEC 60079-10
Explosion hazard zones. Part 10-1. Zones classification. Explosion hazard gas zones	GOST R IEC 60079-10-1
Explosion proof electrical equipment. Part 12. Classification of gases and steams mixtures with air according to safe experimental maximum gaps and minimum ignition currents	GOST R 51330.11 (IEC 60079-12) or GOST 30852.11 (IEC 60079-12)
Explosion hazard zones. Part 14. Design, selection and installation of electrical installations	GOST IEC 60079-14
Explosion proof electrical equipment. Part 4. Method for determining the autoignition temperature	GOST R 51330.5 (IEC 60079-4)
Explosion hazard zones. Part 20-1. Characteristics of substances for the classification of gas and steam. Test methods and data	GOST R IEC 60079-20-1
Electric rotating machines. Part 1. Nominal values of parameters and performance characteristics	GOST IEC 60034-1

Certificates

Motors are certified against requirements of technical regulations TR CU 012/ 2011 «About the equipment safety for work in explosion hazard zones».

Certificates copies could be sent upon the request.

Putting into operation

Motors are designed to be used in areas within the 1 and 2 class explosion hazard zones in accordance with GOST R 52350.10 (IEC 60079-10), GOST 31610.10/ IEC 60079-10, GOST R IEC 60079-10-1, internal and external installations, where explosive mixture of gases and steam with the air can be formed, related to categories IIA, IIB, IIC (subgroups according to GOST R 51330.11 (IEC 60079-12), GOST 30852.11 (IEC 60079-12), GOST R IEC 60079-20-1) and temperature classes T1, T2, T3, T4, T5, T6 in accordance with GOST R 51330.5 (IEC 60079-4), GOST R IEC 60079-20-1 and in accordance with assigned explosion proof mark and requirements of GOST IEC 60079-14.

For electrical equipment with explosion proof type «d» it is necessary to to comply with the requirements of GOST IEC 60079-14 clause 10.6.1 for cable selection and clause 14.2 the minimum allowable distance from continuous obstacles.

Hazardous zones and identification of electrical equipment

Explosion hazard zone: part of a closed or open space in which an explosive atmosphere is present or may be formed in a volume that requires special protection measures for the installation and operation of electrical equipment.

Explosion hazard zones are classified according to the periodicity, duration and concentration of the explosive mixture, which present in the zone.

Explosion hazard zones are classified according to routines and statutes. The competent supervisory bodies check the usage correctness of explosion-proof electrical equipment in explosion hazard zones.

Electrical equipment for operation in an explosion hazard zone must be selected in accordance with the assigned explosion protection mark.

Electrical equipment classification in accordance with groups and explosion protection level for explosion hazard zones

Class zone		Periodicity and duration and presence in explosion hazard zone	Electrical equipment group and explosion protection level (ATEX category) allowable for zone class.					
IEC 60079-10	Rules of electrical installations arrangent		Electrical equipment group		Explosion protection level		category	
			GOST R IEC 60079-0 or GOST 31610.0-2014	ATEX	GOST R IEC 60079-0 or GOST 31610.0-2014		ATEX	
					Basic	Permissible for use	Basic	Permissible for use
0		Zone in which an explosion hazard gas atmosphere is constantly or for prolonged periods of time presents.	II	II	0-Ga	-	1G	-
1	B-I	Zone in which there is a possibility of a periodic or accidental presence of an explosion hazard gas atmosphere in normal operating conditions.	II	II	1-Gb	0-Ga	2G	1G
2	B-Ia B-Iб B-Iг	Zone in which the probability of formation of an explosion hazard gas atmosphere under normal conditions is improbable, and if it arises, not for a long time	II	II	2-Gc	0-Ga 1-Gb	3G	1G 2G
20		Zone in which an explosion hazard dusty environment in the form of a combustible dust cloud in the air is constantly, often or for an extended period of time present	III	II	Da	-	1D	-
21	B-II	Zone in which from time to time an explosion hazard dusty environment appears as a cloud of combustible dust in the air under normal operation conditions	III	II	Db	Da	2D	1D
22	B-IIa	Zone in which the appearance of an explosion hazard dusty environment in the form of combustible dust cloud in the air under the normal operating conditions is improbable, and if combustible dust appears, it presents only for a short period of time	III	II	Dc	Da Db	3D	1D 2D

Remark 1: Classification of zones of an explosion hazard gas atmosphere in accordance with GOST IEC 60079-10-1
Remark 2: Classification of zone in which an explosion hazard dusty environment in accordance with GOST IEC 60079-10-2

Classifacation of explosion protection levels (category)

Explosion protection level of electrical equipment according to GOST R IEC 60079-0 or GOST 31610.0-2014					Electrical equipment category according to ATEX		
Additional marking for gas atmospheres		Designation of explosion protection level		Combustibles	Marking	Explosion protection level	Combustibles
0	**Especcially explosion-proof**	Ga	Very high	Gas, steam, fog	1G	Very high	Gas, steam, fog
1	**Explosion-proof**	Gb	High	Gas, steam, fog	2G	High	Gas, steam, fog
2	**Increased reliability against explosion**	Gc	Increased	Gas, steam, fog	3G	Normal	Gas, steam, fog
-	-	Da	Very high	Dust	1D	Very high	Dust
-	-	Db	High	Dust	2D	High	Dust
-	-	Dc	Increased	Dust	3D	Normal	Dust

Electrical equipment sage in accordance with types of explosion protection to exlosion protection level (category…) and zones according to GOST IEC 60079-14

Combustibles	Zone		Explosion protection level of electrical equipment	Explosion protection type	Designation	Apropriate standard
	IEC 60079-10	Rules of electrical installations arrangent				
Gas, steam, fog	Zone 0		Ga	Intrinsically-safe circuit	«ia»	GOST 31610.11
				Compound encapsulation	«ma»	GOST R IEC 60079-18
				Two independent types of explosion protection, each of them is in accordance with level of explosion protection Gb	-	GOST 31610.26
	Zone 1	B-I	Gb	Eplosion-proof enclosure	«d»	GOST IEC 60079-1
				Increased protection	«e»	GOST R IEC 60079-7 or GOST 31610.7
				Intrinsically-safe circuit	«id»	GOST IEC 61241-11
	Zone 2	B-Ia B-Iб B-Iг	Gc	Intrinsically-safe circuit	«ic»	GOST 31610.11
				non-sparkling equipment	«n» or «nA»	GOST 31610.15
				Sparkling equipment	«nC»	GOST 31610.15
Dust	Zone 20		Da	Compound encapsulation	«ma»	GOST R IEC 60079-18
				Protection by enclosure	«ta»	GOST R IEC 60079-31
				Intrinsically-safe circuit	«ia»	GOST 31610.11
	Zone 21	B-II	Db	Compound encapsulation	«mb»	GOST R IEC 60079-18
				Protection by enclosure	«tb» or «tD»	GOST IEC 60079-31
				Intrinsically-safe circuit	«ib»	GOST 31610.11
	Zone 22	B-IIa	Dc	Compound encapsulation	«mc»	GOST R IEC 60079-18
				Protection by enclosure	«tc» or «tD»	GOST IEC 60079-31
				Intrinsically-safe circuit	«ic»	GOST 31610.11
				Without explosion prtection. Index of protection ≥ IP54	-	

Temperature classes and groups

Flammable gases and steamss are classified according to the group and subgroup of electrical equipment, which is used in a particular explosion hazard zone, depending on their autoignition temperature. The following categories of explosive gases and steams are indicated (subgroups of electrical equipment group II) - IIA, IIB, IIC. The motor marked with the appropriate group, subgroup and temperature class is allowed to be installed and operated in an explosion hazard zone which suits to explosion hazard category of gas and autoignition temperature according to GOST R IEC 60079-20-1.

Temperature classes acording to GOST R IEC 60079-20-1

Temperature class designation	The value of the maximum surface temperature, ° C	Auto-ignition temperature	Electrical equipment, wich is marked with the following temperature class, is allowable to be used
T1	450	>450	T1, T2, T3, T4, T5, T6
T2	300	>300	T2, T3, T4, T5, T6
T3	200	>200	T3, T4, T5, T6
T4	135	>135	T4, T5, T6
T5	100	>100	T5, T6
T6	85	>85	T6

Examples of flamable gases and steams application GOST R IEC 60079-20-1

Electrical equipment subgroup / explosion hazard category of gas	Temperature class											
	T1		T2		T3		T4		T5		T6	
	Substance identification	Auto-ignition temperature, °C	Substance identification	Auto-ignition temperature, °C	Substance identification	Auto-ignition temperature, °C	Substance identification	Auto-ignition temperature, °C	Substance identification	Auto-ignition temperature, °C	Substance identification	Auto-ignition temperature, °C
II A Benzene Toluene	Acetone	539	Methanol	440	1-Prombutane	265	Ethanal	155			Ethyl nitrite	95
	Ethane	515	1-Butanol	343	1-Chlorobutane	245	Benzaldehyde	192				
	Ethyl acetate	470	Propane	450								
	Ammonia	630										
	Benzene	498										
	Acetic acid	510										
	Carbon monoxide											
	Methane	595										
	Methyl chloride	625										
	Naphthalene	540										
	Phenol	595										
	Toluene	530										
II B	Methyl propionate	455	Ethanol	400	Methylacetoacetate	280	Dibutyl ether	175				
			1-Propanol	385								
II C	Hydrogen	560	Acetylene	305							Carbon disulphide	90
In Annex C there is more detailed information about explosive hazard mixtures and nomenclature, GOST R IEC 60079-20-1												

Example: electrical equipment marking of group II for gas zones

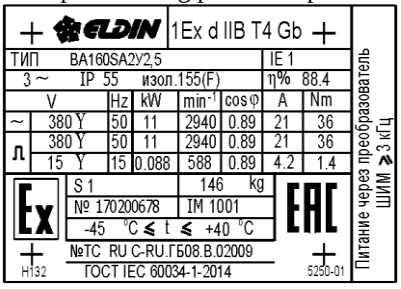
TR CU 012/ 2011, GOST R IEC 60079-0		ATEX	
1 Ex d IIC T4 Gb X		**CE xxxx Ex II 2 G Ex d IIC T4**	
-1	explosion protection level «explosion-proof» (additional designation, which is assigned to equipment of group II for explosion hazard gas atmospheres).	**-CE**	Special mark applied to a product that certifies that the product is in compliance with the essential requirements of EU directives and harmonized European Union standards, and that the product has passed the conformity assessment procedure with the directives
-Ex	Mark of equipment conformity to explosion protection standards	**- xxxx**	Identification number of certification authority
-d or **-de**	Explosion protection type of electrical equipment : «d»-«explosion proof enclosure»; or «de»-«explosion proof enclosure» with terminal box «increased protection»	**-Ex**	Mark of exploisions in accordancewith directive 94/9 / EU
-II	electrical equipment group	**-II**	electrical equipment group
-B or **-C**	electrical equipment subgroup for explosion hazard gas atmospheres category	**-2**	category
-T4	temperature class of electrical equipment T4 is standard version (T5, T6 is provided by special manufacturing conditions	**-G**	gas
-Gb	designation of explosion protection level of electrical equipment – «High»	**-Ex**	Mark of equipment conformity to explosion protection standards
-X	Mark, which pointed to he special conditions of safe application of electrical equipment (mark for types ВАБ, ВРАБ in order to provide the motor cooling by air flow of the driven fan).	**-e** or **-d** or **-de**	Explosion protection type of electrical equipment: «e»- «increased protection»; or «d»-«explosion proof enclosure»; or «de»-«explosion proof enclosure» with terminal box «increased protection»
		-IIB or **-IIC**	electrical equipment subgroup for explosion hazard gas atmospheres category
		-T4	temperature class electrical equipment

Possible variants of mountings for explosion protection of motors series BA, BRA

Type of explosion protection	Motor type									
	BA100	BA132 BRA132	BA160 BRA160	BA180 BRA180	BA200 BRA200;225	BA225 BRA250	BA250 BRA280	BA280S BRA315S	BA315 BRA315L	BA355 BRA355
1Ex d IIB T4 Gb 1Ex d IIB T4 Gb X	+	+	+	+	-	-	-	-	-	-
1Ex d IIC T4 Gb 1Ex d IIC T4 Gb X	-	+	+	+	+	+	+	+	+	+
1Ex de IIB T4 Gb 1Ex de IIB T4 Gb X	-	+	+	+	-	-	-	-	-	-
1Ex de IIC T4 Gb 1Ex de IIC T4 Gb X	-	+	+	+	-	-	-	-	+	+
«+» mouting exist, «-» there is no such mountig										

Rating plate with data.

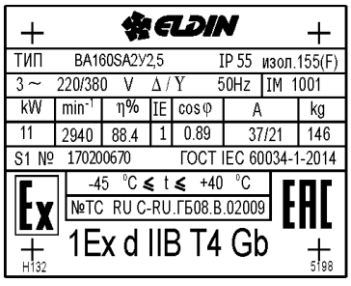
Example of rating plate for operation from frequency converter



«~» - space with data for operation from AC power supply .

«⎍» - space with data for operation from frequency converter

Example of rating plate for operation from AC power supply



It is inadmissible to use the motor with rating plate for operation from AC power supply in set of frequency controlled drive!

Typical structure of motor designations and its decoding

1	2	3	4	5	6	7	8	9	-
ВА	Б	132	S	В	2	F	Б	У3	

Basic code of designation

1- Series designation:
B – explosion-proof;
R – series designation of the type with reference of powers to mounting dimensions according to DIN EN 50347;
A – induction .

2- Electrical modification or special design:
Б – without fan (cooling method according to GOST R IEC 60034-6 «IC418»);
К – with the fan and terminal box from the opposite side of the drive end

3- Rotation axis height, mm – 100, 132, 160, 180, 200, 225, 250, 280, 315, 355

4- Mounting dimension of the frame length (S, M or L)

5- Core length (A,B,C or can be absent)

6- Number of poles 2, 4, 6, 8, 10, 12, 14

7- For improved reliability frequency converter controlled motors
Additional option (for standard mounting is absent)

8- with built-in thermal protection in stator winding.
Additional option (for standard mounting is absent)
- PTC Thermal resistors;
- Pt100 Resistance temperature converter;
- Bimetallic temperature switch (normally closed type - NCC),

9- Climatic version and placement category.

10	11	12	13	14	15	16	17	18	19	20	21	22	-
380	50	20-50	S1	IE	F	A	IM1001	IP54					

Additional code of designation

10- Supply voltage
- rated voltage
- rated voltage range

11- Supply frequency

12- Operating speed (frequency) range:
- Pointed only for the motors operated with frequency converter. The power is indicated in the table «Parameters of the motors which operate from the frequency converter».

13- Duty class according to GOST IEC 60034-1: :
- «S1» standard design (does not indicated in order)

14- Efficiency class according to GOST R 54413 (IE1; IE2)

15- Insulation class
- 155 (F) standard design (does not indicated in order)
- 180 (H) upon request

16- Vibration grade:
- «A» - standard design (does not indicated in order)
- «B» - upon request

17- Assembly method according to GOST 2479
- for mounting IMxx11 it is necessary to indicated the presence of canopy (does not installed by tacit agreement)

18- Index of protection (code IP) according to GOST IEC 60034-5

19- Requirements to terminal box and cable entries.
- in set with cable entries (standard design)
- with plugs (upon request)
- cable diameter
- connection method
unarmored cable - (standard design),
armored (shield) cable – (upon request)
with metal wrap hose – (upon request)

20- Winding heating(option) If there is no request, the requirement is not indicated.

21- Requirements to bearings and bearing assemblies
- sealed bearings ZZ, open bearings with laid lubricant / with lubricant replenishment
- ball, roller, insulated
- bearing temperature protection

22 Vibration monitoring

1	Ex	d	IIC	T4	Gb

Explosion protection marking

General characteristics.

Noise level

Levels of sound pressure Lpa and sound power Lwa :

Motor type	2 pole		4 pole		6 pole		8 pole	
	Lpa	*Lwa*	*Lpa*	*Lwa*	*Lpa*	*Lwa*	*Lpa*	*Lwa*
	dB(A)							
BRA132	74	84	65	75	61	71	-	-
BRA160	76	87	66	77	62	73	61	72
BRA180	77	88	69	80	62	73	61	72
BRA200	79	90	71	82	67	78	65	76
BRA225	79	90	71	82	67	78	65	76
BRA250	80	92	73	85	69	81	67	79
BRA280	80	92	76	88	71	83	67	79
BRA315	85	98	76	88	72	85	70	82
BRA355	87	100	82	95	75	88	75	88
BA100	72	82	60	70	-	-	-	-
BA132	74	84	65	75	61	71	-	-
BA160	76	87	66	77	62	73	61	72
BA180	77	88	69	80	66	77	65	76
BA200	79	90	71	82	67	78	65	76
BA225	80	92	72	84	68	80	67	79
BA250	80	92	76	88	71	83	67	79
BA280	82	94	76	88	71	83	70	82
BA315	85	98	74	87	72	85	66	79
BA355	87	100	82	95	75	88	75	88

All values mentioned upwards Lpa and Lwa are defined for the mode no load supply line 50 Hz.

Permissible sound power levels Lwa according to GOST IEC 60034-9:

Motor type	2 pole	4 pole	6 pole	8 pole
	Lwa	*Lwa*	*Lwa*	*Lwa*
	dB(A)			
BRA,BA 100	82	70	64	64
BRA,BA 132	85	75	73	71
BRA,BA 160	87	77	73	72
BRA,BA 180	88	80	77	76
BRA,BA 200	90	83	80	79
BRA,BA 225	92	84	80	79
BRA,BA 250	92	85	82	80
BRA,BA 280	94	88	85	82
BRA,BA 315	98	94	89	88
BRA,BA 355	100	95	94	92

All values mentioned upwards Lwa are defined for the mode no load supply line 50 Hz.

Increase of the noise level values under the rated load according to GOST IEC 60034-9 to idle values:

Rotation axis height, mm	Motor			
	2-pole	4-pole	6-pole	≥ 8-pole
71 ≤ H ≤ 160	2	5	7	8
180 ≤ H ≤ 200	2	4	6	7
225 ≤ H ≤ 280	2	3	6	7
H =315	2	3	5	6
H ≥315	2	2	4	5

Values supply line 60Hz are increasing for:
- 2 pole 2p=2 electric motors at 5 dB(A);
- 4pole and more than 2p ≥4 electric motors at 3 dB(A).Additional component as magnetic noise appears in motors while working from frequency converter. This noise conditioned by
-radio-frequency fluctuations of stator windings elements in consequence of powerfully pulsing nature of the current in this windings, and
-noise, caused by pulsing rotating moment of harmonic components of current and voltage.
Therefore at frequency 50 Hz sound pressure level of motors operating from frequency converter can increased on value from 1to 15 dB (A) in compare with supply line operation.
When the operating speed is higher than the speed relevant to frequency 50Hz for motors with self-cooling method IC411, the increase of frequency by every 10Hz leads to the growth of ventilating noise level at an average by 3dB (A). Real values of noise level in every particular situation can be provided upon request.

Climatic versions

Climatic version	Operating temperature of the ambient air		Upper value of the relative air humidity
	upper	lower	
V1	plus 45°C	minus 45°C	100% at 25°C
V2,5	plus 40°C	minus 45°C	100% at 25°C
T1	plus 55°C	minus 10°C	100% at 35°C
T2,5	plus 50°C	minus 10°C	100% at 35°C
OM1	plus 45°C	minus 40°C	100% at 35°C
OM2,5	plus 45°C	minus 40°C	100% at 35°C
VXJI1	plus 45°C	minus 60°C	100% at 25°C
VXJI2	plus 40°C	minus 60°C	100% at 25°C

Voltage and frequency

Voltage/ V	connec-tion diagram	Contact clamps quantity	BA100	BA132 BRA132	BA160 BRA160 BRA180	BA180	BA200 BRA225	BA225 BRA250	BA250 BRA280	BA280 BRA315S	BA315 BRA315L	BA355 BRA355 ≤315kW	BA355 BRA355 ≥355kW
380	Y	3	S	S	S	S	S	S	-	-	-	-	-
220/380	Δ/Y	6	R	R	R	R	R	R	-	-	-	-	-
380/660	Δ/Y	6	-	R	R	R	R	R	S	S	S	S	-
380/660	Δ/Y	12	-	-	-	-	-	-	-	-	-	-	S
660	Y	3	-	-	-	-	-	-	R	R	R	R	-
660	Y	6	-	-	-	-	-	-	-	-	-	-	R
660	Δ	6	-	-	-	-	-	-	R	R	R	R	-
660	Δ	12	-	-	-	-	-	-	-	-	-	-	R

«S» = Standard design
«R» = Upon request
«-» = Does not use

There are other voltage variants GOST 12139:

- 230/400 V Δ/Y 50 Hz; 240/415 V Δ/Y 50 Hz; 400/690 V Δ/Y 50 Hz; 415/720 V Δ/Y 50 Hz
- 440 V Δ 60 Hz; 460 V Δ 60 Hz

Voltage deviation according to GOST IEC 60034-1

When ordering for the ratedvoltage			When ordering for the ratedvoltage range		
Rated voltage	Deviation Zone A ±5%	Deviation Zone B ±10%	Ratedvoltage range	Deviation Zone A ±5%	Deviation Zone B ±10%
220 V	209 - 231 V	198 - 242 V	209 - 231 V	198 - 242 V	188 - 353 V
230 V	218 - 242 V	207 - 253 V	218 - 242 V	207 - 253 V	196 - 266 V
380 V	360 - 400 V	342 - 418 V	360 - 400 V	342 - 418 V	324 - 440 V
400 V	380 - 420 V	360 - 440 V	380 - 420 V	360 - 440 V	342 - 462 V
415 V	394 - 436 V	373 - 457 V	394 - 436 V	373 - 457 V	355 - 480 V
440 V	418 - 462 V	396 - 484 V	418 - 462 V	396 - 484 V	376 - 508 V
460 V	437 - 483 V	414 - 506 V	437 - 483 V	414 - 506 V	393 - 531 V
660 V	627 - 693 V	594 - 726 V	627 - 693 V	594 - 726 V	564 - 762 V
690 V	655 - 725 V	621 - 759 V	655 - 725 V	621 - 759 V	590 - 798 V
720 V	684 - 756 V	648 - 792 V	684 - 756 V	648 - 792 V	615 - 832 V
The motors fulfill their functions in frame of voltage deviation zone A. Meanwhile the limiting temperature of winding could be increased at 10°C higher than regulated value for insulation class. Continuous duty is not allowed. The motors fulfill their functions in frae of voltage deviation zone B. Meanwhile the limiting temperature of winding will be higher than within zone A. Continuous duty is not allowed.			The motors fulfill their functions in frame of voltage deviation zone A. Meanwhile the limiting temperature of winding could be increased at 10°C higher than regulated value for insulation class. Continuous duty is not allowed. The motors fulfill their functions in frae of voltage deviation zone B. Meanwhile the limiting temperature of winding will be higher than within zone A. Continuous duty is not allowed.		

Frequency deviation according to GOST IEC 60034-1, Zone A «±2%», Zone B «-5% +3%»

When the motor is operating from the frequency converter, the following control ranges are stated.
With a constant torque load: Mconst-1: 1.25 (40-50 Hz), 1: 1.7 (30-50 Hz), 1: 2.5 (20-50 Hz), 1: 5 (10-50 Hz), 1:10 (5-50 Hz).
With a fan load characteristic: Mkv-1: 5 (10-50 Hz)
When operating from the frequency converter, the permissible load power, normalized to the rated frequency, can be reduced in relation to the rated power from the supply line. The power at operaton from the converter are regulated in tables «Parameters of the motors which operate from the frequency converter»

Power and Duty class

Rated power is provided at continious duty class «S1» GOST IEC 60034-1 at temperature plus 40 °C and altitude above ground level not more than 1000m, at rated values of voltage and frequency.
Other duty classes upon request:
- S2 short-time duty class with a subsequent stop until the motor is completely cooled:
S2-30min, S2-60min, S2-90min S2-120min
- S3 is a short-time intermittent duty class with a number of starts no more than 10 per hour and a stop after start-up.
S3-25%, S3-40%, S3-60%, S3-80%
- S4 is a short-time intermittent duty class with frequent start-ups per hour and a stop after start-up.
S4-25%, S4-40%, S4-60%, S4-80%, the number of starts per hour, the moment of inertia of the load normalized to the motor shaft.
- S6 continuous periodic duty class with short-term load no more than 10 times per hour
S6-25%, S6-40%, S6-60%, S6-80%

For duty classes S3, S4 the operation time between the start-ups in percents is indicated.

Energy efficiency (efficiency factor)

Three IE efficiency classes are Standard efficiency(IE1), High efficiency (IE2), Premium efficiency (IE3) according to GOST R 54413-2011 or IEC 60034-30:

- from 0,75 to 355,0 kW according to GOST R 54413-2011
- from 0,75 to 375,0 kW according to IEC 60034-30

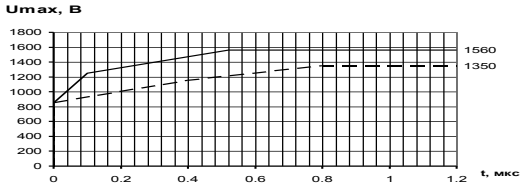
2-, 4- or 6-poles, low voltage, 50 Hz, Duty Class S1, in standard design. Standard design can be interpreted as type «N» in accordance with GOST R IEC 60034-12 (IEC 60034-12).

Insulation and overheating of the motor winding

The motors in standard design have insulation class 155(F) in GOST IEC 60034-1. Insulation class 180(H) - upon request.

The motors, specified in the catalogue with excess of winding temperature to a class B, provide use of the motor on a class B at tamb ≤+ 40°C. At tamb ≥+ 40°C maintenance of overheating of a winding according to a class B needs the coordination. Use of motors with a class of insulation 155(F) and overheating of a winding on a class B increases lifetime of the motor.

During the motor operation with frequency converter the pulse amplitude of applied to motor voltage and the speed of theirs' growth, which keep life time of winding isolation, are stated in GOST R IEC 60034-1 (for motors without marking "F" in type description) and in IEC 60034-25 (for motors with marking "F" in type description). On picture below you can see, according the mentioned standards, dependence between allowable pulse amplitude of voltage on motor terminals Umax and time of pulse growth t for motors with marking "F" in type description (firm line) and without marking (dashedline).



Overload capacities

As specified in GOST IEC 60034-1 at the rated voltage and frequency the motors can be exposed to the following overload conditions:

- 1.5 times the rated current for 2 min,
- 1.6 times the rated torque for 15 sec.

Vibration characteristics

The permissible vibration intensities of electric motors are specified in GOST IEC 60034-14-2014.

- vibration intensity stage A – standard value.
- vibration intensity stage B - upon request

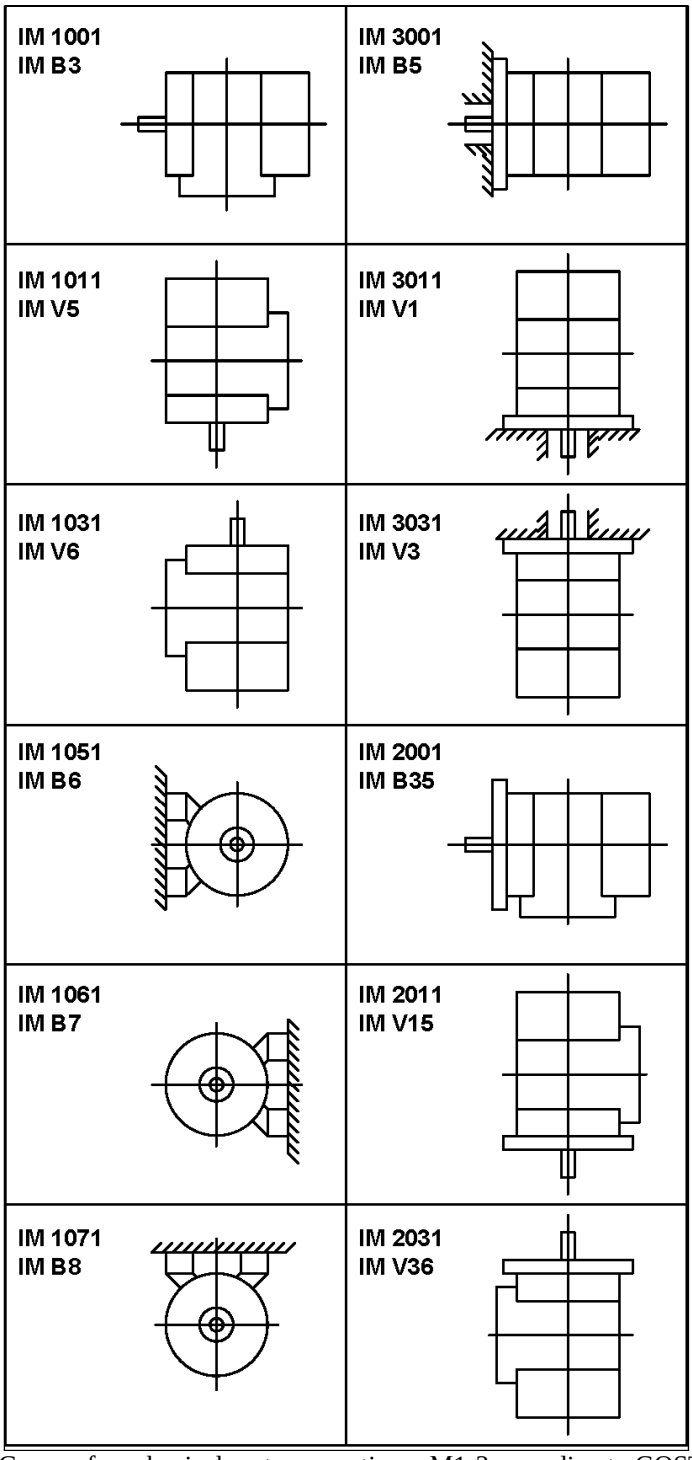
All rotors are balanced with a half key on drive shaft end.

Table: vibration values

Machine category	Mounting method	Rotation axis height, mm								
		56 ≤ H ≤ 132			132 < H ≤ 280			H > 280		
		Vibration displacement	Vibration speed	Vibration acceleration	Vibration displacement	Vibration speed	Vibration acceleration	Vibration displacement	Vibration speed	Vibration acceleration
		µm	mm/s	m/s^2	µm	mm/s	m/s^2	µm	mm/s	m/s^2
A	Flexible	25	1.6	2.5	35	2.2	3.5	45	2.8	4.4
	Rigid	21	1.3	2.0	29	1.8	2.8	37	2.3	3.6
B	Flexible	11	0.7	1.1	18	1.1	1.7	29	1.8	2.8
	Rigid	-	-	-	14	0.9	1.4	24	1.5	2.4

Rigid mounting is not applied to the motors with rotation axis height less than 132 mm.
Limit frequencies to switch from vibration speed to vibration displacement and from vibration speed to vibration acceleration – 10 and 250 Hz accordingly.

Constructions types according to the moumting methods.
In accordance with IEC 60034-7



IM1001	For all sizes
IM1011; 1031; 1051; 1061	For motors with shaft height 100-250
IM3001; 3031	For motors with shaft height 100-250
IM3011For all sizes	For all sizes
IM2001	The scheme for assembly the drive mechanism which is attached to the flange and its mass for motors with sizes 280-355 is coordinated
IM2011; 2031	The scheme for assembly the drive mechanism which is attached to the flange and its mass is coordinated
IM1011, IM3011, IM2011	Option– defence canopy above fan cover
IM20..; 30…	BRA132, 1Ex d(e) IIC – mounting is absent

Group of mechanical motor mounting – M1-3 according to GOST 17516.1.

Index of protection

Motor index of protection according to GOST IEC 60034-5

Index of protection	BA100	BA132 BRA132	BA160 BRA160 BRA180	BA180	BA200 BRA225	BA225 BRA250	BA250 BRA280	BA280 BRA315S	BA315 BRA315L	BA355 BRA355
IP54	S	S	S	S	-	-	-	-	-	-
IP55	R – for M1001	R	R	R	S	S	S	S	S	S
IP65	R – for M1001	R	R	R	R	R	R	R	R	R
IP56	R – for M1001	R	R	R	R	R	R	R	R	R
IP66	R – for M1001	R	R	R	R	R	R	R	R	R

«S» = standard design
«R» = Upon request
«-» = does not usd

Terminal boxes standard design

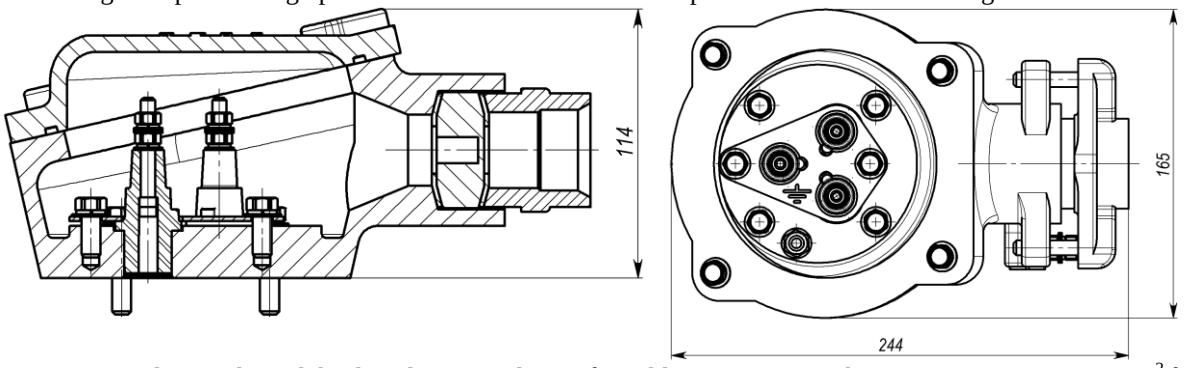
Type series	Size	Exloision protection type	Pro-tection [1]	Terminal box material	Rota-tion of ter-minal box	Terminal box position [2]	Maximum cross-section of the power cable core, mm^2	Terminal screw thread		Ground ing clamps
								Y or Δ	Y / Δ	
BA	100	1Exd IIB	IP55	Cast iron	4 x 90°	top	16	3-M6	-	1-M8
BA	100	1Exd IIB	IP55	Cast iron		top	2.5	3-2.5mm^2	6-2.5mm^2	1-M8
BA, BRA	132	1Exd IIB/IIC	IP55	Cast iron		top	25	3-M6	6-M6	1-M8
BA, BRA	132	1Exde IIB/IIC	IP55	Aluminium alloy		top	16	3-M6	6-M6	2-M6
BA, BRA	160	1Exd IIB/IIC	IP55	Cast iron		top	25	3-M6	6-M6	1-M8
BA, BRA	160	1Exde IIB/IIC	IP55	Aluminium alloy		top	16	3-M6	6-M6	2-M6
BA, BRA	180	1Exd IIB/IIC	IP55	Cast iron		top	25	3-M6	6-M6	1-M8
BA, BRA	180	1Exde IIB/IIC	IP55	Aluminium alloy		top	16	3-M6	6-M6	2-M6
BA BRA	200 200; 225	1Exd IIC	IP55	Cast iron		top right side* left side*	50	3-M8	6-M8	2-M8
BA BRA	225 250	1Exd IIC	IP55	Cast iron			50	3-M8	6-M8	2-M8
BA BRA	250 280	1Exd IIC	IP55	Cast iron			240	3-M12	6-M12	2-M10
BA BRA	280S 315S	1Exd IIC	IP55	Cast iron			240	3-M12	6-M12	2-M10
BA BRA	315 ≤132kW 315M ≤132kW	1Exd IIC 1Exde IIC	IP55	Cast iron			240	-	6-M12	2-M12
BA BRA	315 ≥160kW 315M ≥160kW	1Exd IIC 1Exde IIC	IP55	Cast iron			400	-	6-M16	2-M12
BA BRA	355 ≤315kW 355 ≤315kW	1Exd IIC 1Exde IIC	IP55	Cast iron			400	-	6-M16	2-M12
BA BRA	355 ≥355kW 355 ≥355kW	1Exd IIC 1Exde IIC	IP55	Cast iron				-	12-M16	2-M12

Cable entry for unarmored cable – standard design.
Cable entry for armored cable – upon request.
Cable entry for armored cable and tube wiring – upon request.
Without cable entries with plugs and thread indicating – upon request.
[1] - IP56; 65; 66 – upon request
[2] - Terminal box position «top» «right side», «left side» – standard design.
– upon request

Cable entries are indicated in table «**Motor terminal box mounting».**

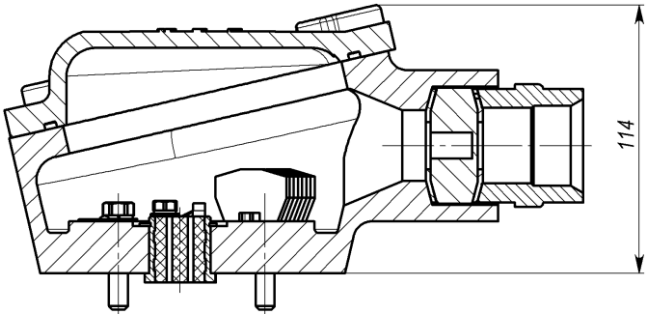
Terminal box of motors BA100. (Exloision protection type 1Exd IIB)

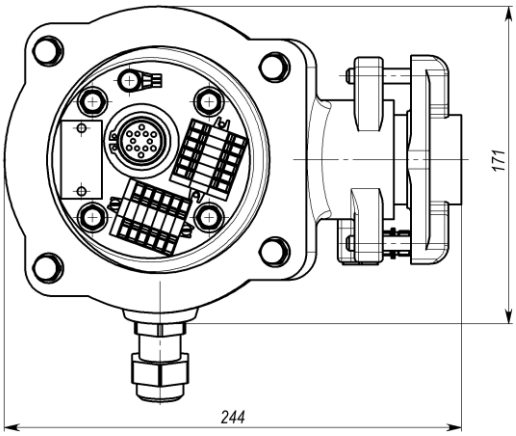
Mounting with pass-through power insulators and contact clamps 3-M6 for connection diagram «Y»



Diameter of power unarmored cable (13-19mm)

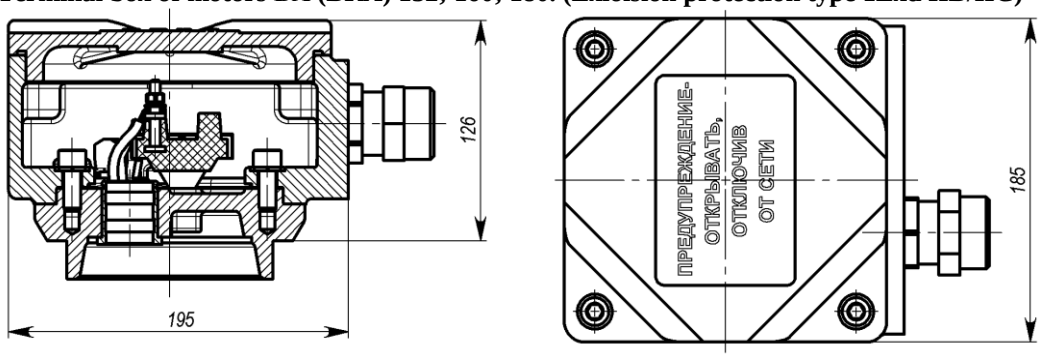
Mounting with pass-through bush and contact clamps for cable connection with wire cross-section ≤2,5mm^2 for connection diagram «Δ/Y» and connection of built-in elements (thermal protection, heating of the winding)



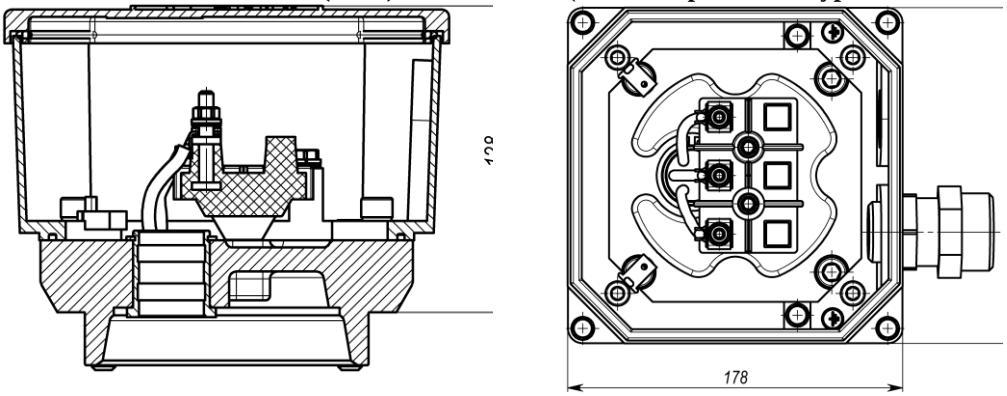


Diameter of power unarmored cable (13-19mm) .
Diameter of power controlcable (6-10)мм
Cable entry for control cableM20*1,5.
The maximum number of contac clamps for con-necting the power cable and the control cable is 12pcs.

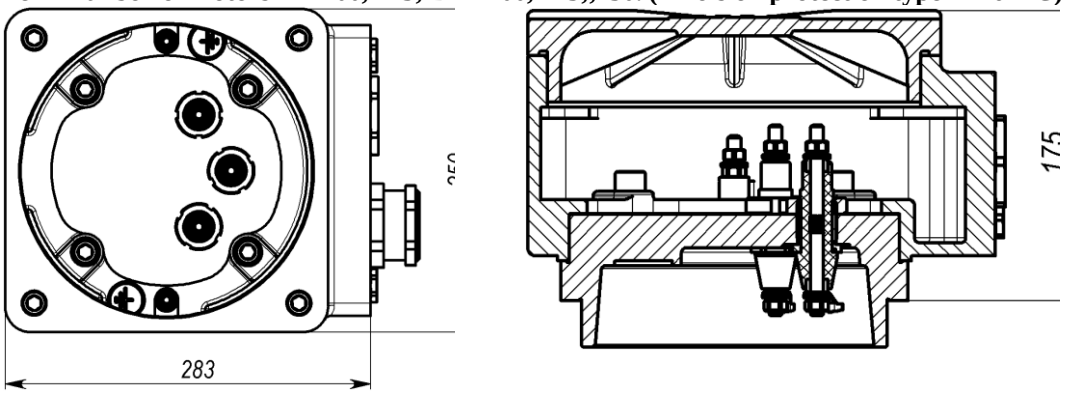
Terminal box of motors BA (BRA) 132; 160; 180. (Exloision protection type 1Exd IIB/IIC)



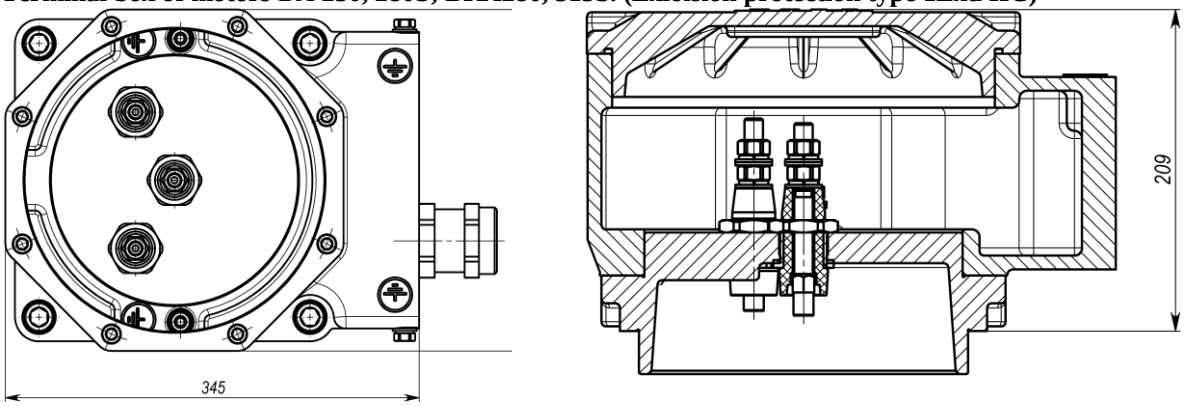
Terminal box of motors BA (BRA) 132; 160; 180. (Exloision protection type 1Exde IIB/IIC)



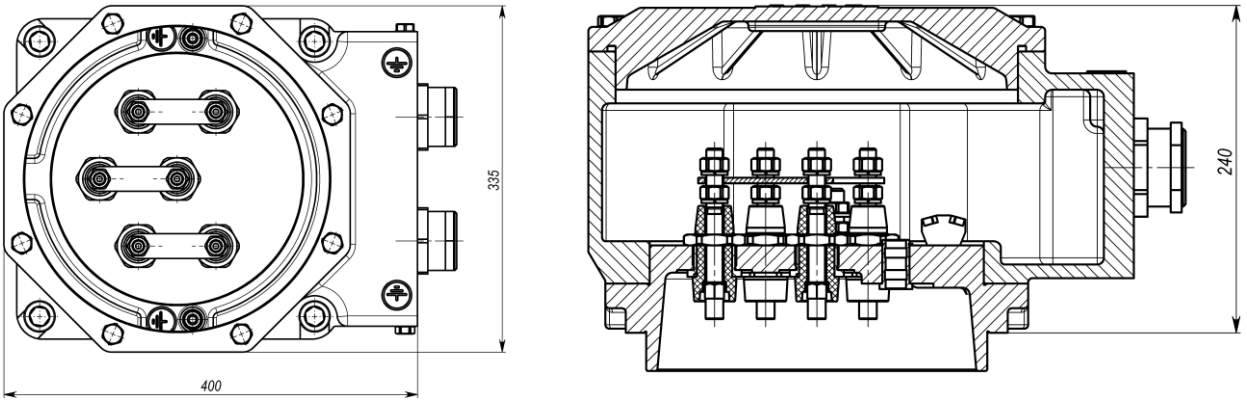
Terminal box of motors BA 200, 225; BRA200, 225;,250. (Exloision protection type 1Exd IIC)



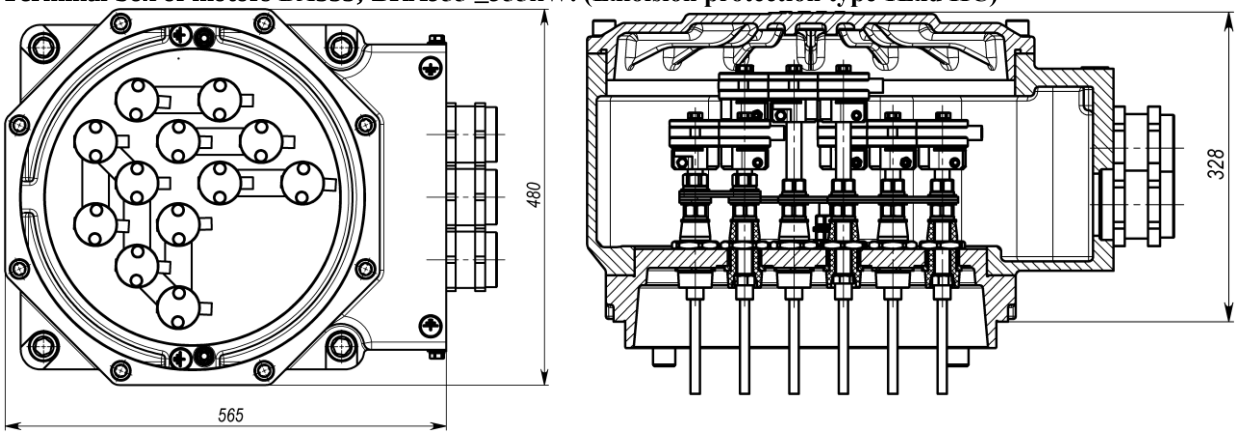
Terminal box of motors BA 250, 280S; BRA280, 315S. (Exloision protection type 1Exd IIC)



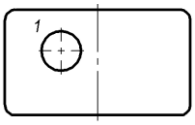
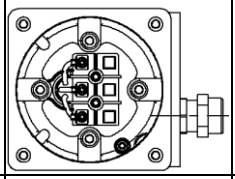
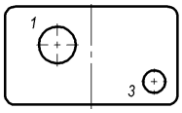
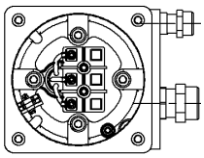
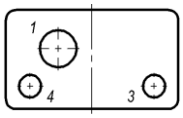
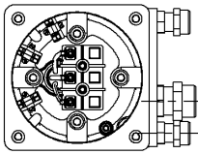
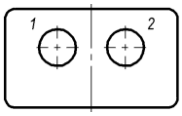
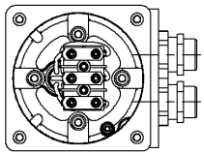
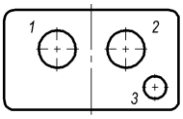
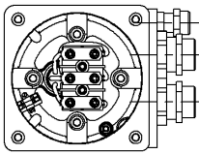
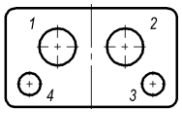
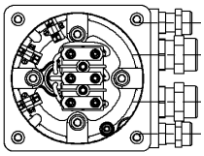
Terminal box of motors BA 315, BRA315L. (Exloision protection type 1Exd IIC)
BA355; BRA355 ≤315kW



Terminal box of motors BA355; BRA355 ≥355kW. (Exloision protection type 1Exd IIC)



Terminal box mounting of motor BA (BRA)132; 160; 180. Exloision protection type 1Exd IIB/IIC

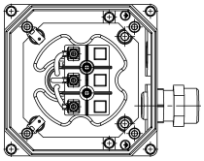
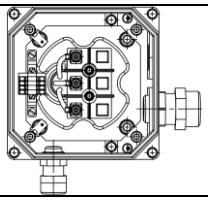
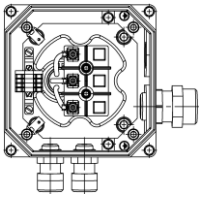
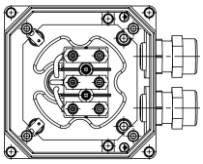
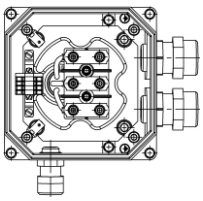
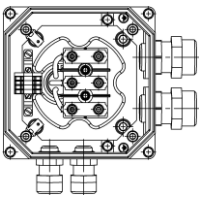
	Terminal box position		Power cable entries					Cable entries for control cables. thermal protection, heating of the winding [3]			
			Standard design (Ø cable)			Design versions(Ø cable)		Standard design (Ø cable)		Design versions(Ø cable)	
Y			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø26-32)				
				132	M25x1,5 (Ø10-14)						
				160	M32x1,5 (Ø14-20)						
				180	M40x1,5 (Ø20-26)						
			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø26-32)	3	M20x1,5 (Ø6-10)	3	M25x1,5 (Ø10-14)
				132	M25x1,5 (Ø10-14)						
				160	M32x1,5 (Ø14-20)						
				180	M40x1,5 (Ø20-26)						
			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø26-32)	3	M20x1,5 (Ø6-10)	3	M25x1,5 (Ø10-14)
				132	M25x1,5 (Ø10-14)						
				160	M32x1,5 (Ø14-20)						
				180	M40x1,5 (Ø20-26)						
				Shaft height				4	M20x1,5 (Ø6-10)	4	M25x1,5 (Ø10-14)
				132							
				160							
				180							
Δ/Y			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø26-32)[1]				
				132	M25x1,5 (Ø10-14)						
				160	M32x1,5 (Ø14-20)						
				180	M40x1,5 (Ø20-26)						
			2	Shaft height		2	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26)				
				132	M25x1,5 (Ø10-14)						
				160	M32x1,5 (Ø14-20)						
				180	M40x1,5 (Ø20-26)						
			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø26-32)[2]	3	M20x1,5 (Ø6-10)	3	M25x1,5 (Ø10-14)
				132	M25x1,5 (Ø10-14)						
				160	M32x1,5 (Ø14-20)						
				180	M40x1,5 (Ø20-26)						
			2	Shaft height		2	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26)				
				132	M25x1,5 (Ø10-14)						
				160	M32x1,5 (Ø14-20)						
				180	M40x1,5 (Ø20-26)						
			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26)	3	M20x1,5 (Ø6-10)	3	
				132	M25x1,5 (Ø10-14)						
				160	M32x1,5 (Ø14-20)						
				180	M40x1,5 (Ø20-26)						
			2	Shaft height		2	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26)	4	M20x1,5 (Ø6-10)	4	
				132	M25x1,5 (Ø10-14)						
				160	M32x1,5 (Ø14-20)						
				180	M40x1,5 (Ø20-26)						

[1] – M50x1,5 maximum with M40*1,5 pos.2

[2] – M50x1,5 maximum with M32*1,5 pos.2

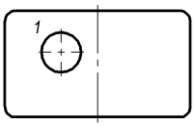
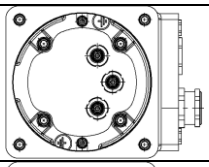
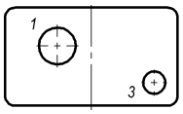
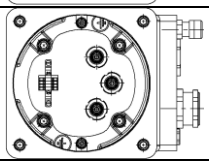
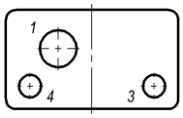
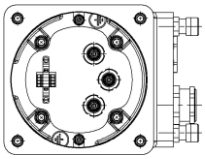
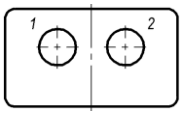
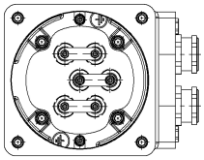
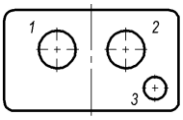
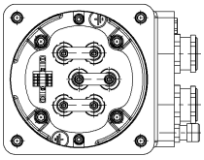
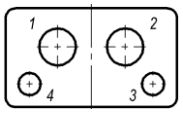
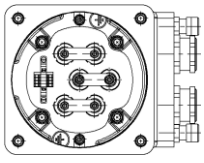
[3] – Maximum quantity of terminals for control cable connection (thermal protection, heating of the winding) – 4pcs. for connection diagram Δ/Y
– 8pcs. for connection diagram Y

Terminal box mounting of motor BA (BRA)132; 160; 180. Exloision protection type 1Exde IIB/IIC

Winding connecting circuit	Terminal box position		Power cable entries						Cable entries for control cables. thermal protection, heating of the winding 1)			
			Standard design (Ø cable)			Design versions(Ø cable)			Standard design (Ø cable)		Design versions(Ø cable)	
Y			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26)					
				132	M25x1,5 (Ø10-14)							
				160	M32x1,5 (Ø14-20)							
				180	M40x1,5 (Ø20-26)							
			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26)	3	M20x1,5 (Ø8-12)	3	M25x1,5 (Ø12-16)	
				132	M25x1,5 (Ø10-14)							
				160	M32x1,5 (Ø14-20)							
				180	M40x1,5 (Ø20-26)							
			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26)	3	M20x1,5 (Ø8-12)	3	M25x1,5 (Ø12-16)	
				132	M25x1,5 (Ø10-14)							
				160	M32x1,5 (Ø14-20)							
				180	M40x1,5 (Ø20-26)							
				Shaft height				4	M20x1,5 (Ø8-12)	4	M25x1,5 (Ø12-16)	
				132								
				160								
				180								
Δ/Y			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26)					
				132	M25x1,5 (Ø10-14)							
				160	M32x1,5 (Ø14-20)							
				180	M40x1,5 (Ø20-26)							
			2	Shaft height		2	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26)					
				132	M25x1,5 (Ø10-14)							
				160	M32x1,5 (Ø14-20)							
				180	M40x1,5 (Ø20-26)							
			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26)	3	M20x1,5 (Ø8-12)	3	M25x1,5 (Ø12-16)	
				132	M25x1,5 (Ø10-14)							
				160	M32x1,5 (Ø14-20)							
				180	M40x1,5 (Ø20-26)							
			2	Shaft height		2	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26)					
				132	M25x1,5 (Ø10-14)							
				160	M32x1,5 (Ø14-20)							
				180	M40x1,5 (Ø20-26)							
			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26)	3	M20x1,5 (Ø8-12)	3	M25x1,5 (Ø12-16)	
				132	M25x1,5 (Ø10-14)							
				160	M32x1,5 (Ø14-20)							
				180	M40x1,5 (Ø20-26)							
			2	Shaft height		2	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26)	4	M20x1,5 (Ø8-12)	4	M25x1,5 (Ø12-16)	
				132	M25x1,5 (Ø10-14)							
				160	M32x1,5 (Ø14-20)							
				180	M40x1,5 (Ø20-26)							

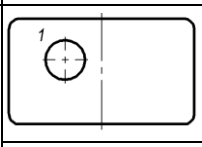
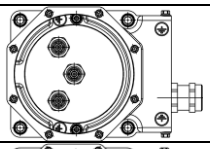
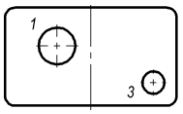
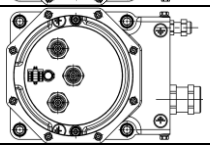
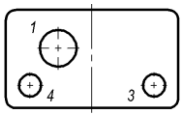
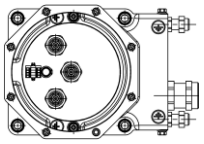
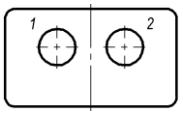
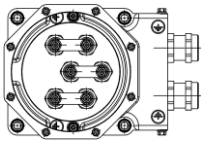
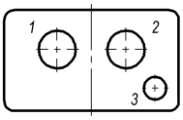
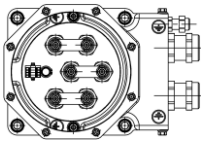
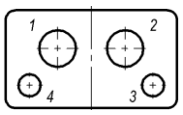
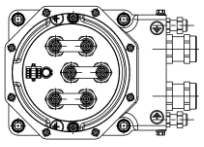
1) – Maximum quantity of terminals for control cable connection (thermal protection, heating of the winding) – 4pcs. for connection diagram Δ/Y
– 8pcs. for connection diagram Y

Terminal box mounting of motor BA 200, 225; BRA200, 225;,250. (Exloision protection type 1Exd IIC)

Winding connecting circuit	Terminal box position		Power cable entries					Cable entries for control cables. thermal protection, heating of the winding [3]			
			Standard design (Ø cable)			Design versions(Ø cable)		Standard design (Ø cable)		Design versions(Ø cable)	
Y			1	Shaft height		1	M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø32-38) M63x1,5 (Ø38-44)				
				200 225[1]	M50x1,5 (Ø26-32)						
				225 250[2]	M50x1,5 (Ø32-38)						
			1	Shaft height		1	M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø32-38) M63x1,5 (Ø38-44)	3	M20x1,5 (Ø6-10)	3	M25x1,5 (Ø10-14)
				200 225[1]	M50x1,5 (Ø26-32)						
				225 250[2]	M50x1,5 (Ø32-38)						
			1	Shaft height		1	M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø32-38) M63x1,5 (Ø38-44)	3	M20x1,5 (Ø6-10)	3	M25x1,5 (Ø10-14)
				200 225[1]	M50x1,5 (Ø26-32)						
				225 250[2]	M50x1,5 (Ø32-38)						
				Shaft height				4	M20x1,5 (Ø6-10)	4	M25x1,5 (Ø10-14)
				200 225[1]							
				225 250[2]							
Δ/Y			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø32-38) M63x1,5 (Ø38-44)				
				200 225[1]	M50x1,5 (Ø26-32)						
				225 250[2]	M50x1,5 (Ø32-38)						
			2	Shaft height		2	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø32-38) M63x1,5 (Ø38-44)				
				200 225[1]	M50x1,5 (Ø26-32)						
				225 250[2]	M50x1,5 (Ø32-38)						
			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø32-38) M63x1,5 (Ø38-44)	3	M20x1,5 (Ø6-10)	3	M25x1,5 (Ø10-14)
				200 225[1]	M50x1,5 (Ø26-32)						
				225 250[2]	M50x1,5 (Ø32-38)						
			2	Shaft height		2	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø32-38) M63x1,5 (Ø38-44)				
				200 225[1]	M50x1,5 (Ø26-32)						
				225 250[2]	M50x1,5 (Ø32-38)						
			1	Shaft height		1	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø32-38) M63x1,5 (Ø38-44)	3	M20x1,5 (Ø6-10)	3	M25x1,5 (Ø10-14)
				200 225[1]	M50x1,5 (Ø26-32)						
				225 250[2]	M50x1,5 (Ø32-38)						
			2	Shaft height		2	M25x1,5 (Ø10-14) M32x1,5 (Ø14-20) M40x1,5 (Ø20-26) M50x1,5 (Ø32-38) M63x1,5 (Ø38-44)	4	M20x1,5 (Ø6-10)	4	M25x1,5 (Ø10-14)
				200 225[1]	M50x1,5 (Ø26-32)						
				225 250[2]	M50x1,5 (Ø32-38)						

[1] – For BRA225
[2] – For BRA250
[3] – Maximum quantity of terminals for control cable connection (thermal protection, heating of the winding) – 6pcs. for connection diagram Δ/Y
– 12pcs. for connection diagram Y

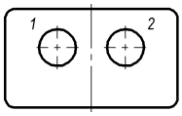
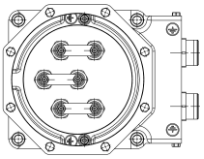
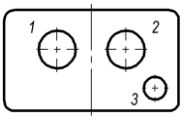
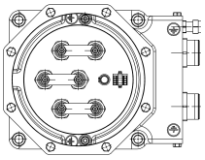
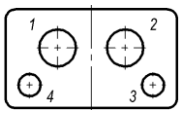
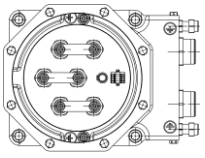
Terminal box mounting of motor BA 250, 280S; BRA280,315S. (Exloision protection type 1Exd IIC)

Winding connecting circuit	Terminal box position		Power cable entries						Cable entries for control cables. thermal protection, heating of the winding [1)]				
			Standard design (Ø cable)			Design versions(Ø cable)			Standard design (Ø cable)		Design versions(Ø cable)		
Y			1	Shaft height		1	M40x1,5 (Ø20-26) M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M63x1,5 (Ø44-50) M75x1,5 (Ø50-54)						
				250 280 315	M50x1,5 (Ø32-38)								
			1	Shaft height		1	M40x1,5 (Ø20-26) M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M63x1,5 (Ø44-50) M75x1,5 (Ø50-54)	3	M20x1,5 (Ø6-10)	3	M25x1,5 (Ø10-14)		
				250 280 315	M50x1,5 (Ø32-38)								
			1	Shaft height		1	M40x1,5 (Ø20-26) M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M63x1,5 (Ø44-50) M75x1,5 (Ø50-54)	3	M20x1,5 (Ø6-10)	3	M25x1,5 (Ø10-14)		
				250 280 315	M50x1,5 (Ø32-38)								
				Shaft height				4	M20x1,5 (Ø6-10)	4	M25x1,5 (Ø10-14)		
				250 280 315	M50x1,5 (Ø32-38)								
Δ/Y			1	Shaft height		1	M40x1,5 (Ø20-26) M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M63x1,5 (Ø44-50) M75x1,5 (Ø50-54)						
				250 280 315	M50x1,5 (Ø32-38)								
			2	Shaft height		2	M40x1,5 (Ø20-26) M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M63x1,5 (Ø44-50) M75x1,5 (Ø50-54)						
				250 280 315	M50x1,5 (Ø32-38)								
			1	Shaft height		1	M40x1,5 (Ø20-26) M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M63x1,5 (Ø44-50) M75x1,5 (Ø50-54)	3	M20x1,5 (Ø6-10)	3	M25x1,5 (Ø10-14)		
				250 280 315	M50x1,5 (Ø32-38)								
			2	Shaft height		2	M40x1,5 (Ø20-26) M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M63x1,5 (Ø44-50) M75x1,5 (Ø50-54)						
				250 280 315	M50x1,5 (Ø32-38)								
			1	Shaft height		1	M40x1,5 (Ø20-26) M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M63x1,5 (Ø44-50) M75x1,5 (Ø50-54)	3	M20x1,5 (Ø6-10)	3	M25x1,5 (Ø10-14)		
				250 280 315	M50x1,5 (Ø32-38)								
			2	Shaft height		2	M40x1,5 (Ø20-26) M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M63x1,5 (Ø44-50) M75x1,5 (Ø50-54)	4	M20x1,5 (Ø6-10)	4	M25x1,5 (Ø10-14)		
				250 280 315	M50x1,5 (Ø32-38)								

[1)] – Maximum quantity of terminals for control cable connection (thermal protection, heating of the winding) – 12pcs.

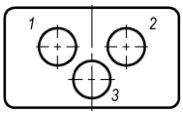
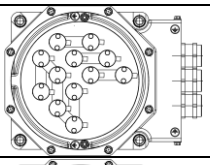
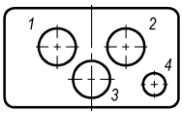
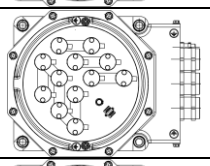
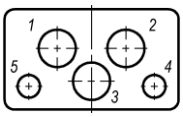
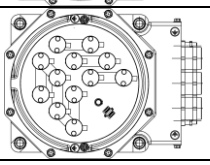
Terminal box mounting of motor BA 315, BRA315L. (Exloision protection type 1Exd IIC)

BA355; BRA355 ≤315kW

Winding connecting circuit	Terminal box position		Power cable entries					Cable entries for control cables. thermal protection, heating of the winding [1]			
			Standard design (Ø cable)			Design versions(Ø cable)		Standard design (Ø cable)		Design versions(Ø cable)	
Δ/Y			1	Shaft height		1	M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M75x1,5 (Ø50-54) M90x2,0				
				315	M63x1,5 (Ø44-50)						
				355	M75x1,5 (Ø50-54)						
			2	Shaft height		2	M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M75x1,5 (Ø50-54) M90x2,0				
				315	M63x1,5 (Ø44-50)						
				355	M75x1,5 (Ø50-54)						
			1	Shaft height		1	M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M75x1,5 (Ø50-54) M90x2,0	3	M20x1,5 (Ø6-10)	3	M25x1,5 (Ø10-14)
				315	M63x1,5 (Ø44-50)						
				355	M75x1,5 (Ø50-54)						
			2	Shaft height		2	M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M75x1,5 (Ø50-54) M90x2,0				
				315	M63x1,5 (Ø44-50)						
				355	M75x1,5 (Ø50-54)						
			1	Shaft height		1	M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M75x1,5 (Ø50-54) M90x2,0	3	M20x1,5 (Ø6-10)	3	M25x1,5 (Ø10-14)
				315	M63x1,5 (Ø44-50)						
				355	M75x1,5 (Ø50-54)						
			2	Shaft height		2	M50x1,5 (Ø26-32) M63x1,5 (Ø38-44) M75x1,5 (Ø50-54) M90x2,0	4	M20x1,5 (Ø6-10)	4	M25x1,5 (Ø10-14)
				315	M63x1,5 (Ø44-50)						
				355	M75x1,5 (Ø50-54)						

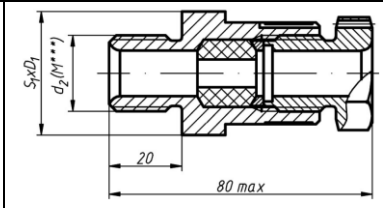
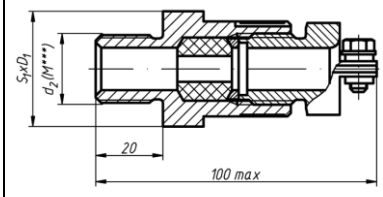
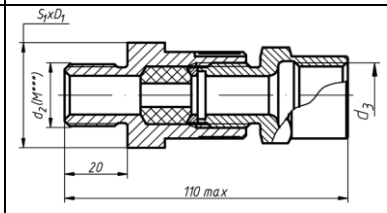
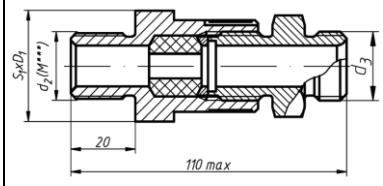
[1] – Maximum quantity of terminals for control cable connection (thermal protection, heating of the winding) – 20 pcs.

Terminal box mounting of motor BA355; BRA355 ≥355kW. (Exloision protection type 1Exd IIC)

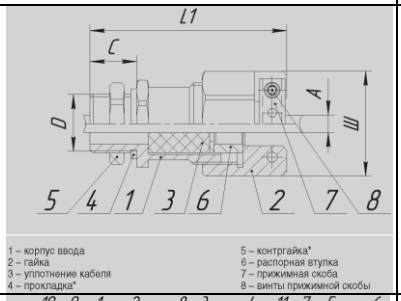
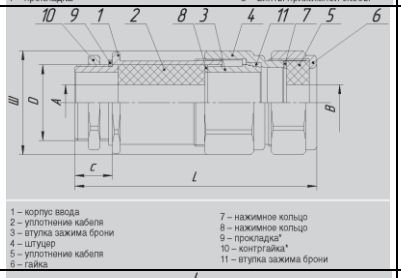
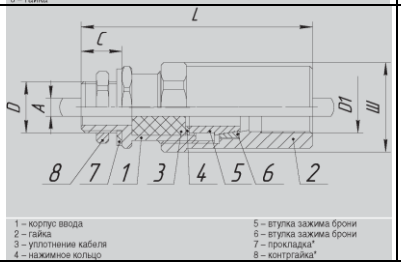
Winding connecting circuit	Terminal box position		Power cable entries				Cable entries for control cables. thermal protection, heating of the winding [1]			
			Standard design (Ø cable)		Design versions(Ø cable)		Standard design (Ø cable)		Design versions(Ø cable)	
Δ/Y			1	M75x1,5 (Ø50-54)	1	M63x1,5 (Ø38-44) M90x2,0				
			2	M75x1,5 (Ø50-54)	2	M63x1,5 (Ø38-44) M90x2,0				
			3	M75x1,5 (Ø50-54)	3	M63x1,5 (Ø38-44)				
			1	M75x1,5 (Ø50-54)	1	M63x1,5 (Ø38-44) M90x2,0	4	M20x1,5 (Ø6-10)	4	M25x1,5 (Ø10-14)
			2	M75x1,5 (Ø50-54)	2	M63x1,5 (Ø38-44) M90x2,0				
			3	M75x1,5 (Ø50-54)	3	M63x1,5 (Ø38-44)				
			1	M75x1,5 (Ø50-54)	1	M63x1,5 (Ø38-44) M90x2,0	4 5	M20x1,5 (Ø6-10) M20x1,5 (Ø6-10)	4 5	M25x1,5 (Ø10-14) M25x1,5 (Ø10-14)
			2	M75x1,5 (Ø50-54)	2	M63x1,5 (Ø38-44) M90x2,0				
			3	M75x1,5 (Ø50-54)	3	M63x1,5 (Ø38-44)				

[1] – Maximum quantity of terminals for control cable connection (thermal protection, heating of the winding) – 24pcs.

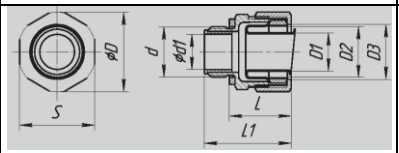
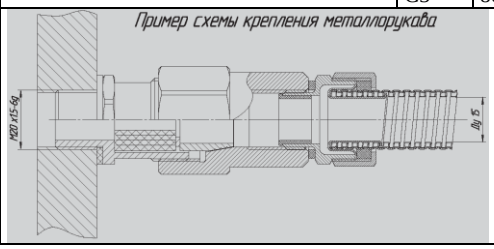
Design of cable entries, which are indcated in tables «terminal box mounting»

№ mounting	Cable entry picture	d2 mm	D3 mm	Cable diameter, mm	Designation	Variable «**x**»	Description	Index of protection	Mounting at order
1 [1]		M20*1,5 M25*1,5 M32*1,5 M40*1,5 M50*1,5 M50*1,5 M63*1,5 M63*1,5 M75*1,5		6-10 10-14 14-20 20-26 26-32 32-38 38-44 44-50 50-54	**Exd КВУ-К-18-10-x** **Exd КВУ-К-18-14-x** **Exd КВУ-К-18-20-x** **Exd КВУ-К-18-26-x** **Exd КВУ-К-18-32-x** **Exd КВУ-К-18-38-x** **Exd КВУ-К-18-44-x** **Exd КВУ-К-18-50-x** **Exd КВУ-К-18-54-x**	**А** – Al alloy [1]. **Н**- stainless steel [2].	For unarmored cables	IP65	[1] - standard design. [2] - upon request
2 [1]		M20*1,5 M25*1,5 M32*1,5 M40*1,5 M50*1,5 M50*1,5 M63*1,5 M63*1,5 M75*1,5		6-10 10-14 14-20 20-26 26-32 32-38 38-44 44-50 50-54	**Exd КВУ-Б-11-10-x** **Exd КВУ-Б-11-14-x** **Exd КВУ-Б-11-20-x** **Exd КВУ-Б-11-26-x** **Exd КВУ-Б-11-32-x** **Exd КВУ-Б-11-38-x** **Exd КВУ-Б-11-44-x** **Exd КВУ-Б-11-50-x** **Exd КВУ-Б-11-54-x**	**А** – Al alloy [1]. **Н**- stainless steel [2].	For unarmored and armored (shield) cables with fixing the cable from pulling.	IP65	[1] - standard design for motors with mark «F» operated from FC. [2] - upon request
3 [2]		M20*1,5 M25*1,5 M32*1,5 M40*1,5 M50*1,5 M50*1,5 M63*1,5 M63*1,5 M75*1,5	G1/2 G3/4 G1 1/4 G1 1/2 G1 3/4 G1 3/4 G2 G2 1/4 G2 1/2	6-10 10-14 14-20 20-26 26-32 32-38 38-44 44-50 50-54	**Exd КВУ-М-16-10-x** **Exd КВУ-М-16-14-x** **Exd КВУ-М-16-20-x** **Exd КВУ-М-16-26-x** **Exd КВУ-М-16-32-x** **Exd КВУ-М-16-38-x** **Exd КВУ-М-16-44-x** **Exd КВУ-М-16-50-x** **Exd КВУ-М-16-54-x**	**А** – Al alloy [1]. **Н**- stainless steel [2].	For unarmored cables with laying in metal wrap hose.	IP65	[1] - standard design материала. [2] - upon request
4 [2]		M20*1,5 M25*1,5 M32*1,5 M40*1,5 M50*1,5 M50*1,5 M63*1,5 M63*1,5 M75*1,5	G1/2-B G3/4-B G1 1/4-B G1 1/2-B G1 3/4-B G1 3/4-B G2-B G2 1/4-B G2 1/2-B	6-10 10-14 14-20 20-26 26-32 32-38 38-44 44-50 50-54	**Exd КВУ-Т-20-10-x** **Exd КВУ-Т-20-14-x** **Exd КВУ-Т-20-20-x** **Exd КВУ-Т-20-26-x** **Exd КВУ-Т-20-32-x** **Exd КВУ-Т-20-38-x** **Exd КВУ-Т-20-44-x** **Exd КВУ-Т-20-50-x** **Exd КВУ-Т-20-54-x**	**А** – Al alloy [1]. **Н**- stainless steel [2].	For unarmored cables , duct laying.	IP65	[1] - standard design материала. [2] - upon request

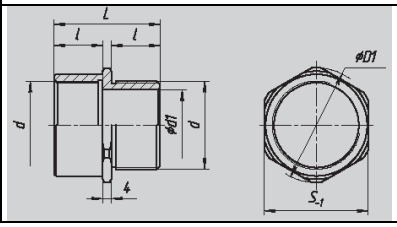
Alternative versions of cable entries design.

№ mounting	Cable entry picture	D mm	D1 mm	Cable diameter, mm		Designation	Variable «**x**»	Description	Index of protection	Mounting at order
				ØA	ØB					
1a [2]		M20*1,5 M25*1,5 M32*1,5 M40*1,5 M50*1,5 M63*1,5		7-14 11-18 14-23 19-31 22-42 29-49		ВК-**x**-ВЭЛ 2-М20-Exd ВК-**x**-ВЭЛ 2-М25-Exd ВК-**x**-ВЭЛ 2-М32-Exd ВК-**x**-ВЭЛ 2-М40-Exd ВК-**x**-ВЭЛ 2-М50-Exd ВК-**x**-ВЭЛ 2-М63-Exd	**Л** – brass [2]. **Н**- stainless steel [2].	For unarmored cables with fixing the cable from pulling.	IP66	[2] - upon request
2a [2]		M20*1,5 M25*1,5 M32*1,5 M40*1,5 M50*1,5 M63*1,5 M75*1,5 M90*2		4-14 7-17 10-23 15-31 19-42 25-49 50-68 65-80	7-18 11-23 14-30 19-35 22-46 29-57 56-80 68-92	ВК-**x**-ВЭЛ 2БМ-М20-Exd ВК-**x**-ВЭЛ 2БМ-М25-Exd ВК-**x**-ВЭЛ 2БМ-М32-Exd ВК-**x**-ВЭЛ 2БМ-М40-Exd ВК-**x**-ВЭЛ 2БМ-М50-Exd ВК-**x**-ВЭЛ 2БМ-М63-Exd ВК-**x**-ВЭЛ 2БМ-М75-Exd ВК-**x**-ВЭЛ 2БМ-М90-Exd	**Л** – brass [2]. **Н**- stainless steel [2].	For armored (shield) cables ЭМС- compatible for for motors with mark «F» operated from FC.	IP66	[2] - upon request
3a [2]		M20*1,5 M25*1,5 M32*1,5 M40*1,5 M50*1,5 M63*1,5	G1/2 G3/4 G1 G1 1/4 G1 1/2 G2	7-14 11-18 14-23 19-31 22-42 29-49		ВК-**x**-ВЭЛ 2БТ-М20-Exd-G1/2 ВК-**x**-ВЭЛ 2БТ-М25-Exd-G3/4 ВК-**x**-ВЭЛ 2БТ-М32-Exd-G1 ВК-**x**-ВЭЛ 2БТ-М40-Exd-G1 1/4 ВК-**x**-ВЭЛ 2БТ-М50-Exd-G1 1/2 ВК-**x**-ВЭЛ 2БТ-М63-Exd-G2		For unarmored and armored (shield) cables laying in a duct or a metal wrap hose	IP66	[2] - upon request

Coupling for metal wrap hose.

№ mounting	Coupling picture	d, mm	d1, mm	D1, mm	Designation	Description	Mounting at order
1m [2)]		$G^3/_8$ $G^1/_2$ $G^3/_4$ G1 $G1^1/_4$ $G1^1/_2$ G2 $G2^1/_2$ G3	11 14 19,8 25 32,4 40 55 65 80	11,8 14,8 19,5 25,4 32 37,5 50,2 60,2 75,2	mmРн-12- $G^3/_8$ mmРн-15- $G^1/_2$ mmРн-20- $G^3/_4$ mmРн-25- G1 mmРн-32- $G1^1/_4$ mmРн-40- $G1^1/_2$ mmРн-50- G2 mmРн-60- $G2^1/_2$ mmРн-75- G3	For cable entry design «3» and «3a»	[2)] - upon request
						Draft of assembly with metal wrap hose	

Adapter coupling for metal wrap hose..

№ mounting	Coupling picture	Designation	Variable «**x**»	Description	Mounting at order
1p [2)]		МП-Л-нG**x**/вG**x**	Designation of duct thread: by external diameter «нG**x**» for cable entry design «3» and «3a»; by innerer diameter «вG**x**» for coupling design of metall wrap hose «1m».	for cable entry design «3» and «3a» with coupling for metall wrap hose «1m»	[2)] - upon request

OPTIONS

Stator winding thermal protection (extra option)

In accordance with the order the motors could be supplied with stator winding thermal protection

Detector type	Motor size / connection diagram																					
	BA100		BA132 BRA132		BA160 BRA160 BRA180		BA180		BA200 BRA225		BA225 BRA250		BA250 BRA280		BA280 BRA315S		BA315 BRA315L		BA355 BRA355 ≤315kW		BA355 BRA355 ≥355kW	
	Y	Δ/Y	Y	Δ/Y	Y	Δ/Y	Y	Δ/Y	Y	Δ/Y	Y	Δ/Y		Δ/Y		Δ/Y		Δ/Y		Δ/Y		
PTC thermal resistors (3 pcs. consequently)switching-off. 2 contacts	P	P	P	P	P	P	P	P	P	P	P	P		P		P		P		P		P
PTC thermal resistors (3 pcs. consequently) switching-off / (3 pcs. consequently) warning. 4 contacts	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1		P1		P1		P1		P1		P1
Pt100 Resistance temperature converter; 2-wire (per 1pc. in 2- phases) 4 contacts	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1		P1		P1		P1		P1		P1
Pt100 Resistance temperature converter; 2-wire (per 1pc. in 3- phases) 6 contacts	P1	P1	P1	-	P1	-	P1	-	P1	P1	P1	P1		P1		P1		P1		P1		P1
Pt100 Resistance temperature converter; 2-wire (per 2 pcs. in 2- phases) 8 contacts	P1	-	P1	-	P1	-	P1	-	P1	-	P1	-		P1		P1		P1		P1		P1
Pt100 Resistance temperature converter; 2-wire (per 2 pcs. in 3- phases) 12 contacts	-	-	-	-	-	-	-	-	P1	-	P1	-		P1		P1		P1		P1		P1
Pt100 Resistance temperature converter; 3-wire (per 1pc. in 2- phases) 6 contacts	P1	P1	P1	-	P1	-	P1	-	P1	P1	P1	P1		P1		P1		P1		P1		P1
Pt100 Resistance temperature converter; 3-wire (per 1pc. in 3- phases) 9 contacts	P1	-	-	-	-	-	-	-	P1		P1			P1		P1		P1		P1		P1
Pt100 Resistance temperature converter; 3-wire (per 2 pcs. in 2- phases) 12 contacts	-	-	-	-	-	-	-	-	P1	-	P1	-		P1		P1		P1		P1		P1
Pt100 Resistance temperature converter; 3-wire (per 2 pcs. in 3- phases) 18 contacts	-	-	-	-	-	-	-	-	-	-	-	-		-		-		P1		P1		P1
Bimetallic temperature switch (normally closed type - NCC) (per 1pc. In twophases) 4 contacts	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1		P1		P1		P1		P1		P1
Bimetallic temperature switch (normally closed type - NCC) (per 1pc. in three phases) 6 contacts	P1	P1	P1	-	P1	-	P1	-	P1	P1	P1	P1		P1		P1		P1		P1		P1
Maximum quantity of terminals for control cable connection thermal protection	9	6	8	4	8	4	8	4	12	6	12	6		12		12		20		20		24

«R» = Only at the new manufacture (the standard option is set by default at the indication of the letter "Б" before the climatic performance)

«P1» = Only at a new manufacture (specified in the order)

«-» = Is not used

Temperature protection characteristic

- PTC- thermal resistors DIN 44082.

Temperature class	3pcs consequently Motor switching-off	3pcs consequently warning
T1-T4	3*PTC-155	3*PTC-130
T5, 2poles motors	3*PTC-145	3*PTC-130
T5, 4poles and more	3*PTC-130	3*PTC-115
T6	3*PTC-115	-

- Pt100 Resistance temperature converter with rated static value W_{100}=1,3850 according to GOST 6651

Heating of the winding

Motors can be equipped with an antioxidant space heater which is installed on stator winding overhang. The heater is designed for mains supply with voltage of 220V. It is recommended to use the heating of the winding at motor stop for more than 8 hours at тambient temperature lower than minus 20°C.

	Motor size			
	BA100; 132 BRA132	BA160-225 BRA160-250	BA250-315 BRA280-315	BA355 BRA355
Heating power. 2 contacts	25W	50W	100W	2x100W

	Motor size / connection diagram																					
	BA100		BA132 BRA132		BA160 BRA160 BRA180		BA180		BA200 BRA225		BA225 BRA250		BA250 BRA280		BA280 BRA315 S		BA315 BRA315L		BA355 BRA355 ≤315kW		BA355 BRA355 ≥355kW	
	Y	Δ/Y	Y	Δ/Y	Y	Δ/Y	Y	Δ/Y	Y	Δ/Y	Y	Δ/Y		Δ/Y		Δ/Y		Δ/Y		Δ/Y		
Maximum quantity of terminals for control cable connection thermal protection, heating of the winding (pcs)	9	6	8	4	8	4	8	4	12	6	12	6		12		12		20		20		24

Bearings and bearing assemblies.

Motor type	Standard design			Design versions upon the order
	Bearings type	Exloision protection type	Mounting type	Bearings type
BA100	ZZ - Sealed bearings	1Exd II B	All	No
BA132-180 BRA132-180	ZZ - Sealed bearings	1Exd(e) II B	All	No
BA132-180 BRA132-180	ZZ - Sealed bearings	1Exd(e) II C	All	Open bearings with with lubricant replenishment
BA200-225 BRA200-250	Open bearings with laid lubricant	1Exd II C	Horizontal	Open bearings with with lubricant replenishment
BA200-225 BRA200-250	Open bearings with with lubricant replenishment	1Exd II C	Vertical	
BA250-355 BRA280-355	Open bearings with with lubricant replenishment	1Exd(e) II C	All	

The storage life of the standard greases used in bearings or bearing units prior to commissioning or at long standstill:
- no more than 3 years at normal conditions of motor storage in heated, dust-free and vibration-free rooms;
- no more than 2 years at storage in unheated rooms or outdoors.

At the expiration of these terms:
- Sealed bearings ZZ or 2RS must be replaced;
- Bearing units with open bearings filled with grease for the entire service life must be disassembled, remove old grease, rinse, lay a new lubricant;
- Bearing units with open bearings with replenishment of grease through the nipple should be pumped with a new lubricant until the old grease comes out.

For detailed information on servicing the bearings and bearing assemblies, refer to the operating instructions

Service life of sealed bearings and open bearings without lubricant replenishment.

•Motors with poles quantity 2p=2 - no more than 10000 hours.

•Motors with poles quantity 2p≥4 - no more than 20000 hours.

Service life is defined by: lubricant operability during operation based on ambient temperature + 40°C; horizontal motor mounting; loads, which do not exceed the values indicated in the tables with data of maximum permissible loads on the free shaft end.

Service life during operation at ambient temperature plus 25°Ctwice increased.

Service life of bearings is two times shorter in vertical mounting motors than in horizontal mounting motors.

Mentioned service life are valid for the motors , which were putting into operation within one year frm the manufacturing date.

Service life of open bearings with lubricant replenishment.

Service life depends on:

loads indicated at the tables "maximum permissible loads on the free shaft end" ; operation conditions and lubrication refill intervals.

Lubrication refill intervals in operating hours at ambient temperature +20°C

C if temperature measuring by resistance thermometers built in bearings assembly. The bearing temperatureis determined as

C if outer temperature measurements of the endshield surface are made in bearing area) are indicated in the Table

Table "Lubricant replenishment intervals with lubricant refill through nipple"

Standard size	Lubricant refill amount per bearing, gram .	Lubricant replenishment intervals in operating hours at rated rotation frequency in rpm; Horizontal mounting of the motor; Ball bearings					
		3600	3000	1800	1500	1000	500-900
132	15-20	9000	10000	14000	18000	22000	24000
160	25-30	7000	9000	13000	16000	20000	22000
180	30-40	5000	7000	12000	15000	19000	21000
200	40-50	4000	6000	10000	12000	16000	20000
225	50-60	3000	5000	9000	11000	15000	19000
250	60-70	2500	4000	8000	10000	14000	18000
280	70-80	2000	3500	7000	9000	13000	17000
315	90-100	2000	3500	6000	7500	11000	15000
355	110-130	1200	2000	4000	5500	10000	12000

If the ambient temperature or bearing temperature is increasing at every 15° then intervals are 2 times shorter. Maximum permissi-

C

C.

Maximum permissiblet temperature of standard Russian bearings is +100°C.

Maximum permissiblet temperature of standard SKF bearings is +120°C.

For motors with vertical mounting bearing life is two times shorter.

For motors with roller bearings the Lubricant replenishment intervals are two times shorter.

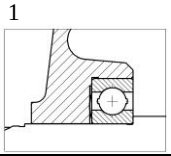
Bearings sizes.

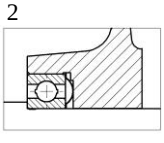
Motor type	No. of poles	D-end				N-end			
		Bearings		IP54	IP55	Bearings		IP54	IP55
		Ball[1)]	Roller[2)]	Fig.	Fig.	Ball[1)]	Insulated For operation with frequency converter	Fig.	Fig.
BA100	2, 4, 6	6306 ZZ/C3	–	1	–	6205 ZZ/C3	6205 2RSLTN9/HC5C3W[2)]	2	–
BA132 IIB	2, 4, 6	6208 ZZ/C3	–	3	5	6208 ZZ/C3	6208 2RZTN9/ HC5C3WT[2)]	4	6
BA132 IIC		6208 ZZ/C3 6208/C3*	NU208/C3	7	9	6208 ZZ/C3 6208/C3*	6208 2RZTN9/ HC5C3WT[2)] 6208/C3VL0241[2)]**	8	10
BA160 IIB	2, 4, 6, 8	6310 ZZ/C3	–	3	5	6310 ZZ/C3	6310 2RS1/ HC5C3WT[2)]	4	6
BA160 IIC		6310 ZZ/C3 6310/C3*	NU310/C3	7	9	6310 ZZ/C3 6310/C3*	6310 2RS1/ HC5C3WT[2)] 6310/C3VL0241[2)]**	8	10
BA180 IIB	2, 4, 6, 8, 12	6312 ZZ/C3	–	3	5	6310 ZZ/C3	6310 2RS1/ HC5C3WT[2)]	4	6
BA180 IIC	2, 4, 6, 8, 12	6312 ZZ/C3 6312/C3*	NU312/C3	7	9	6310 ZZ/C3 6310/C3*	6310 2RS1/ HC5C3WT[2)] 6310/C3VL0241[2)]**	8	10
BA200	2, 4, 6, 8, 12	6313/C3	NU313/C3	–	11	6312/C3	6312/HC5C3WT[2)] 6312/C3VL0241[2)]**	–	12
BA225	2, 4, 6, 8, 12	6314/C3	NU314/C3	–	13	6313/C3	6313/HC5C3WT[2)] 6313/C3VL0241[2)]**	–	14
BA250	2, 4, 6, 8	6316/C3	NU316/C3	–	15	6316/C3	6316/C3VL0241[2)]	–	16
BA280	2	6316/C3	NU316/C3	–	15	6316/C3	6316/C3VL0241[1)]	–	16
	4, 6, 8; 12	6319/C3	NU319/C3						
BA315	2	6316/C3	NU316/C3	–	15	6316/C3	6316/C3VL0241[1)]	–	16
	4, 6, 8, 12	6319/C3	NU319/C3						
BA355	2	6319/C3	NU319/C3	–	15	6319/C3	6319/ C3VL0241[1)]	–	16
	4, 6, 8, 12	6322/C3	NU322/C3						
BA132 IIB	2, 4, 6	6208 ZZ/C3	–	3	5	6208 ZZ/C3	6208 2RZTN9/ HC5C3WT[2)]	4	6
BA132 IIC		6208 ZZ/C3 6208/C3*	NU208/C3	7	9	6208 ZZ/C3 6208/C3*	6208 2RZTN9/ HC5C3WT[2)] 6208/C3VL0241[2)]**	8	10
BRA160 IIB	2, 4, 6, 8	6310 ZZ/C3	–	3	5	6310 ZZ/C3	6310 2RS1/ HC5C3WT[2)]	4	6
BRA160 IIC		6310 ZZ/C3 6310/C3*	NU310/C3	7	9	6310 ZZ/C3 6310/C3*	6310 2RS1/ HC5C3WT[2)] 6310/C3VL0241[2)]**	8	10
BRA180 IIB	2, 4, 6, 8	6310 ZZ/C3	–	3	5	6310 ZZ/C3	6310 2RS1/ HC5C3WT[2)]	4	6
BRA180 IIC		6310 ZZ/C3 6310/C3*	NU310/C3	7	9	6310 ZZ/C3 6310/C3*	6310 2RS1/ HC5C3WT[2)] 6310/C3VL0241[2)]**	8	10
BRA200	2, 4, 6, 8, 12	6313/C3	NU313/C3	–	11	6312/C3	6312/HC5C3WT[2)] 6312/C3VL0241[2)]**	–	12
BRA225	2, 4, 6, 8, 12	6313/C3	NU313/C3	–	11	6312/C3	6312/HC5C3WT[2)] 6312/C3VL0241[2)]**	–	12
BRA250	2, 4, 6, 8	6314/C3	NU314/C3	–	13	6313/C3	6313/HC5C3WT[2)] 6313/C3VL0241[2)]**	–	14
BRA280	2, 4, 6, 8	6316/C3	NU316/C3	–	15	6316/C3	6316/C3VL0241[2)]	–	16
BRA315	2	6316/C3	NU316/C3	–	15	6316/C3	6316/C3VL0241[1)]	–	16
	4, 6, 8, 12	6319/C3	NU319/C3						
BRA355	2	6319/C3	NU319/C3	–	15	6319/C3	6319/ C3VL0241[1)]	–	16
	4, 6, 8, 12	6322/C3	NU322/C3						

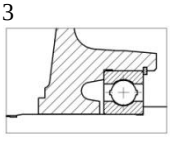
D-end – drive end **N-end** – non-drive end

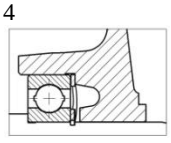
* – Version with open bearings with lubricant replenishment .

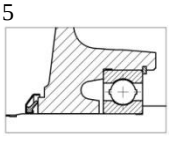
[1)] – Standard design.[2)] – Upon the order. [2)]** – Require the availability from the manufacturer .

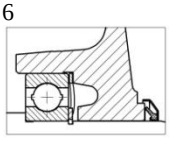
1 

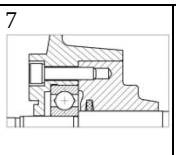
2 

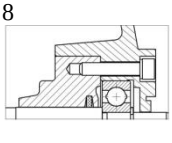
3 

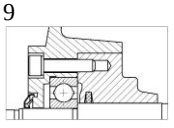
4 

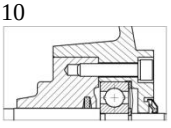
5 

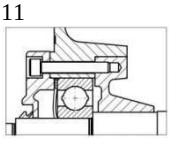
6 

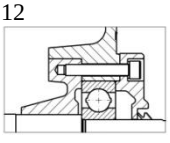
7 

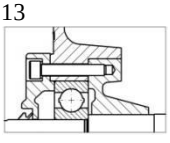
8 

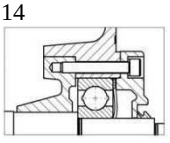
9 

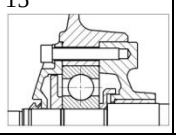
10 

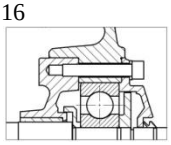
11 

12 

13 

14 

15 

16 

Permissible load on the free shaft end.

The tables show motor designs for which it is possible upon request o obtain data on the maximum permissible radial and axial loads on he shaft, depending on the mounting position of the motor in space. The load values are calculated from the conditions of normal operation at a frequency of 50Hz, an ambient temperature of 25 ° C and a bearing service life of 20,000 and 40,000 hours. At a frequency of 60Hz, these values should be reduced by 10%. At an ambient temperature of 40 ° C, the indicated values should be reduced by 5% /A the required bearing life, it is possible to calculate the minimum permissible diameter of the pulley, taking into account the radial force according to the formula

$$D = \frac{1.9 * 10^7 * K * P}{n * Fr}$$

when:

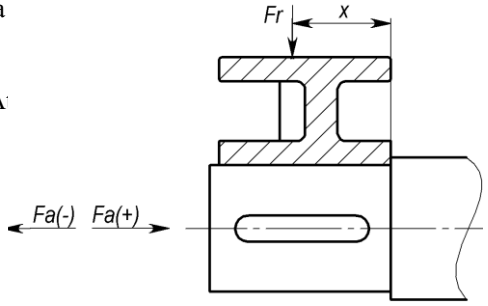
D- diameter of the pulley, mm

P – required power, kW

n – shaft rotation speed, rpm

K – Belt tension factor, depending on the belt type and duty class. The conventional value for V-belts is 2.5 .

Fr – permissible radial load.



Motor size	Power kW	IE	Ball bearings				Roller bearings	
			IIB		IIC		IIC	
			20 000hours	40 000hours	20 000hours	40 000hours	20 000hours	40 000hours
BA100S2	4.0	0	±	+	-	-	-	-
BRA132SA2	5.5	2	+	+	+	+	+	+
BA132S2, BRA132SB2	7.0	1,2	+	+	+	+	+	+
BRA132MA2	9.0	2	+	+	+	+	+	+
BA132M2, BRA132MB2	11	1,2	+	+	+	+	+	+
BA160SA2, BRA160MA2	11	1,2	+	+	+	+	+	+
BA160S2, BRA160MB2	15	1,2	+	+	+	+	+	+
BA160M2, BRA160L2	18.5	1,2	+	+	+	+	+	+
BA180S2	22	1,2	+	+	+	+	+	+
BRA180M2	22	1,2	+	+	+	+	+	+
BA180M2	30	2	+	+	+	+	+	+
BRA200LA2	30	2	-	-	+	+	+	+
BA200M2, BRA200LB2	37	2	-	-	+	+	+	+
BA200L2, BRA225M2	45	2	-	-	+	+	+	+
BA225M2	55	1,2	-	-	+	+	+	+
BRA250M2	55	1,2	-	-	+	+	+	+
BA250S2, BRA280S2	75	1,2	-	-	+	+	+	+
BA250M2, BRA280M2	90	1,2	-	-	+	+	+	+
BA280S2	110	1,2	-	-	+	+	+	+
BRA315S2	110	1,2	-	-	+	+	+	+
BA315S2	160	2,3	-	-	+	+	+	+
BRA315MB2, BRA315LA2	160	2,3	-	-	+	+	+	+
BA315M2	200	2,3	-	-	+	+	+	+
BRA315LB2	200	2,3	-	-	+	+	+	+
BA355SMA2, BRA355SMA2	250	1,2	-	-	+	+	+	+
BA355SMB2, BRA355SMB2	315	2	-	-	+	+	+	+
BA355SMC2, BRA355SMC2	355	2	-	-	+	+	+	+
BA355MLB2, BRA355MLB2	400	3	-	-	+	+	+	+
BA355MLC2, BRA355MLC2	450	3	-	-	+	+	+	+

«+» - data will be sent upon request.

«-» - not used.

Motor size	Power kW	IE	Ball bearings				Roller bearings	
			IIB		IIC		IIC	
			20 000hours	40 000hours	20 000hours	40 000hours	20 000hours	40 000hours
BA100S4	3.0	0	+	+	-	-	-	-
BA132SA4, BRA132S4	5.5	1	+	+	+	+	+	+
BA132SA4, BRA132S4	5.5	2	+	+	+	+	+	+
BA132S4	7.5	1	+	+	+	+	+	+
BRA132M4	7.5	1	+	+	+	+	+	+
BA132S4, BRA132M4	7.5	2	+	+	+	+	+	+
BA132M4	11.0	1	+	+	+	+	+	+
BA160SA4	11.0	1,2	+	+	+	+	+	+
BRA160M4	11.0	1,2	+	+	+	+	+	+
BA160S4	15.0	1,2	+	+	+	+	+	+
BRA160L4	15.0	1,2	+	+	+	+	+	+
BA160M4, BRA180M4	18.5	1,2	+	+	+	+	+	+
BA180S4	22.0	1,2	+	+	+	+	+	+
BRA180L4	22.0	1,2	+	+	+	+	+	+
BA180M4	30.0	1	+	+	+	+	+	+
BRA200L4	30.0	1	-	-	+	+	+	+
BRA200L4	30.0	2	-	-	+	+	+	+
BA200M4, BRA225S4	37.0	1	-	-	+	+	+	+
BA200M4, BRA225S4	37.0	2	-	-	+	+	+	+
BA200L4, BRA225M4	45.0	1	-	-	+	+	+	+
BA225M4, BRA250M4	55.0	1,2	-	-	+	+	+	+
BA250S4, BRA280S4	75.0	1,2	-	-	+	+	+	+
BA250M4, BRA280M4	90.0	1,2	-	-	+	+	+	+
BA280S4, BRA315S4	110.0	2	-	-	+	+	+	+
BA315S4	160.0	2,3	-	-	+	+	+	+
BRA315LA4	160.0	2,3	-	-	+	+	+	+
BA315M4	200.0	2,3	-	-	+	+	+	+
BRA315LB4	200.0	2,3	-	-	+	+	+	+
BA355SMA4, BRA355SMA4	250.0	2	-	-	+	+	+	+
BA355SMB4, BRA355SMB4	315.0	2	-	-	+	+	+	+
BA355SMC4, BRA355SMC4	355.0	2	-	-	+	+	+	+
BA355MLB4, BRA355MLB4	400.0	3	-	-	+	+	+	+
BA355MLC4, BRA355MLC4	450.0	3	-	-	+	+	+	+
BA355MLD4, BRA355MLD4	500.0	3	-	-	+	+	+	+
BA132SA6, BRA132S6	3.0	1,2	+	+	+	+	+	+
BA132SB6	4.0	1,2	+	+	-	-	-	-
BRA132MA6	4.0	1,2	+	+	-	-	-	-
BA132SB6, BRA132MA6	4.0	1,2	-	-	+	+	+	+
BA132S6	5.5	1	+	+	-	-	-	-
BRA132MB6	5.5	1	+	+	-	-	-	-
BA132S6, BRA132MB6	5.5	1	-	-	+	+	+	+
BA132S6, BRA132MB6	5.5	2	+	+	+	+	+	+
BA132M6	7.5	0	+	+	+	+	+	+
BA160SA6	7.5	1,2	+	+	+	+	+	+
BRA160M6	7.5	1,2	+	+	+	+	+	+
BA160S6	11.0	1,2	+	+	+	+	+	+
BRA160L6	11.0	1,2	+	+	+	+	+	+
BA160M6, BRA180L6	15.0	1,2	+	+	+	+	+	+
BA180M6	18.5	1	+	+	+	+	+	+
BRA200LA6	18.5	0	-	-	+	+	+	+
BRA200LA6	18.5	1	-	-	+	+	+	+
BRA200LA6	18.5	2	-	-	+	+	+	+
BA200M6	22.0	1	-	-	+	+	+	+
BA200M6	22.0	2	-	-	+	+	+	+
BRA200LB6	22.0	1	-	-	+	+	+	+
BRA200LB6	22.0	2	-	-	+	+	+	+
BA200L6, BRA225M6	30.0	0	-	-	+	+	+	+
BA200L6, BRA225M6	30.0	1	-	-	+	+	+	+
BA225M6, BRA250M6	37.0	1	-	-	+	+	+	+
BA225M6, BRA250M6	37.0	2	-	-	+	+	+	+
BA250S6, BRA280S6	45.0	1,2	-	-	+	+	+	+
BA250M6, BRA280M6	55.0	1,2	-	-	+	+	+	+
BA280S6, BRA315S6	75.0	1,2	-	-	+	+	+	+
BA315S6	110.0	2,3	-	-	+	+	+	+
BRA315LA6	110.0	2,3	-	-	+	+	+	+
BA315M6	132.0	2,3	-	-	+	+	+	+
BRA315LB6	132.0	2,3	-	-	+	+	+	+
BA355SMA6, BRA355SMA6	160.0	1,2,3	-	-	+	+	+	+
BA355SMB6, BRA355SMB6	200.0	1,2,3	-	-	+	+	+	+
BA355MLA6, BRA355MLA6	250.0	2,3	-	-	+	+	+	+
BA355MLB6, BRA355MLB6	315.0	3	-	-	+	+	+	+
BA355MLC6, BRA355MLC6	355.0	3	-	-	+	+	+	+

«+» - data will be sent upon request.

«-» - not used.

Motor size	Power kW	IE	Ball bearings				Roller bearings	
			IIB		IIC		IIC	
			20 000hours	40 000hours	20 000hours	40 000hours	20 000hours	40 000hours
BA160SA8	4.0	-	+	+	+	+	+	+
BRA160MA8	4.0	-	+	+	+	+	+	+
BA160SB8	5.5	-	+	+	+	+	+	+
BRA160MB8	5.5	-	+	+	+	+	+	+
BA160S8	7.5	1,2	+	+	+	+	+	+
BRA160L8	7.5	1,2	+	+	+	+	+	+
BA160M8, BRA180L8	11.0	1,2	+	+	+	+	+	+
BA180M8	15.0	-	+	+	+	+	+	+
BRA200L8	15.0	-	-	-	+	+	+	+
BA200M8, BRA225S8[1)]	18.5	-	-	-	+	+	+	+
BA200L8, BRA225M8[1)]	22.0	-	-	-	+	+	+	+
BA225M8, BRA250M8	30.0	1,2	-	-	+	+	+	+
BA250S8, BRA280S8	37.0	1,2	-	-	+	+	+	+
BA250M8, BRA280M8	45.0	1,2	-	-	+	+	+	+
BA280S8, BRA315S8	55.0	1,2	-	-	+	+	+	+
BA315S8	90.0	-	-	-	+	+	+	+
BRA315LA8	90.0		-	-	+	+	+	+
BA315M8	110.0	-	-	-	+	+	+	+
BRA315LB8	110.0		-	-	+	+	+	+
BA355SMA8, BRA355SMA8	132.0	1,2	-	-	+	+	+	+
BA355SMB8, BRA355SMB8	160.0	-	-	-	+	+	+	+
BA355MLA8, BRA355MLA8	200.0	-	-	-	+	+	+	+
BA355MLB8, BRA355MLB8	250.0	2,3	-	-	+	+	+	+
BA250S10	22.0	-	-	-	+	+	+	+
BA250M10	30.0	-	-	-	+	+	+	+
BA280S10	37.0	-	-	-	+	+	+	+
BA315SA10	55.0	-	-	-	+	+	+	+
BA315SB10	75.0	-	-	-	+	+	+	+
BA315M10	90.0	-	-	-	+	+	+	+
BA(BRA)355SMA10	110.0	-	-	-	+	+	+	+
BA(BRA)355SMB10	132.0	-	-	-	+	+	+	+
BA(BRA)355MLA10	160.0	-	-	-	+	+	+	+
BA(BRA)355MLB10	200.0	-	-	-	+	+	+	+
BA160S12	5.5	-	+	+	+	+	+	+
BA160M12	6.0	-	+	+	+	+	+	+
BA180S12	6.0	-	+	+	+	+	+	+
BA180MA12	7.5	-	+	+	Fr not allowed	Fr not allowed	Fr not allowed	Fr not allowed
BA180MB12	9.0	-	+	+	Fr not allowed	Fr not allowed	Fr not allowed	Fr not allowed
BA200M12	11.0	-	-	-	under construction	under construction	under construction	under construction
BA200LA12	13.0	-	-	-	under construction	under construction	under construction	under construction
BA200LB12	15.0	-	-	-	under construction	under construction	under construction	under construction
BA225MA12	18.5	-	-	-	+	+	+	+
BA250S12	22.0	-	-	-	+	+	+	+
BA250M12	30.0	-	-	-	+	+	+	+
BA280S12 , BRA315S12	37.0	-	-	-	+	+	+	+
BA315SA12	45.0	-	-	-	+	+	+	+
BA315S12	55.0	-	-	-	+	+	+	+
BA315M12	75.0	-	-	-	+	+	+	+
BA(BRA)355S12	75.0	-	-	-	+	+	+	+
BA(BRA)355SMA12	90.0	-	-	-	+	+	+	+
BA(BRA)355MLA12	110.0	-	-	-	+	+	+	+
BA(BRA)355MLB12	132.0	-	-	-	+	+	+	+

«+» - data will be sent upon request.

«-» - not used.

Bearing temperature protection (extra option)

To protect bearing temperature, motors can be equipped with sensors.
Possible sensor types:
- Resistance temperature converter with rated static characteristic Pt100 according to GOST 6651 ((rated resistance R□ = 100 Ω and temperature coefficient of resistance α = 0,00385˚C¯¹), (versions - passive sensor, sensor + current converter 4-20mA, sensor + current converter 4-20mA + HART protocol);
- Resistance temperature converter with rated static characteristic 50M according to GOST 6651 (rated resistance R□ = 50 Ω, temperature coefficient of resistance α = 0,00428˚C¯¹), (versions - passive sensor, sensor + current converter 4-20mA);
- thermoelectric thermoelement (thermocouple) type TXA with a nominal static characteristic HA (K) according to GOST R 8.585, (versions - passive sensor, sensor + current converter 4-20mA + HART protocol);
- thermoelectric thermoelement (thermocouple) type TCK with a nominal static characteristic HK (L) according to GOST R 8.585, (versions - passive sensor, sensor + current converter 4-20mA + HART protocol) ;

Resistance temperature converters must be connected to measuring circuit at current ≤ 1 mA..

The motors can be supplied without sensors with holes in end shields.

Installation options of the sensors and holes for them are shown in Figures К.1; К.2; К.3; К.4; К.5;

The choice of installation option of the sensor is made at the time of order.

Passive sensors according to Figure K1 and K2:

1. Resistance temperature converter Pt100, 50M for motors BA132, 160, 180

К.1-Х-Х-Х-Х-Х (quantity of sensitive elements 1pcs)

- **Design variant according to Figure**
- **Installation side:**
  - D-end, N-end
- **Static characteristic**(at delivery without sensors is not indicated):
  - Pt100
  - 50M
- **Tolerance class** (at delivery without sensors is not indicated):
  - A
  - B – standard
- **Diagram of internal connections** (at delivery without sensors is not indicated):
  - 3-x wire (standard)
  - 4-x wire
- **Cable length (от 0,2 до 20м)Cable diameter 5mm**
  (at delivery without sensors is not indicated).

2.Thermoelectric thermoelement (thermocouple) XA(K), XK(L) for motors BA132, 160, 180

К.1-Х-Х-Х-Х (quantity of sensitive elements 1pcs)

- **Design variant according to Figure**
- **Installation side:**
  - D-end, N-end
- **Static characteristic**(at delivery without sensors is not indicated):
  - XA(K)
  - XK(L)
- **Cable length (from 0,2 to 20m)** (at delivery without sensors is not indicated).
- **Tolerance class** (at delivery without sensors is not indicated):
  - 1 – first class
  - 2 – second class(standard)

3. Resistance temperature converter Pt100, 50M for motors BA132, 160, 180 only for explosion protection type «de».

К.2-Х-Х-Х-Х-Х (quantity of sensitive elements 1pcs)

- **Design variant according to Figure**
- **Installation side:**
  - D-end, N-end
- **Static characteristic**:
  - Pt100
  - 50M
- **Tolerance class**:
  - A
  - B – standard
- **Diagram of internal connections**:
  - 3-x wire (standard)
  - 4-x wire
- **Cable entry for ввода кабелей управления:**
  - M20*1,5 (drift cable diameter 8-12)mm (1pcs/2pcs)
  - M25*1,5 (drift cable diameter 12-16)mm (1pcs/2pcs)

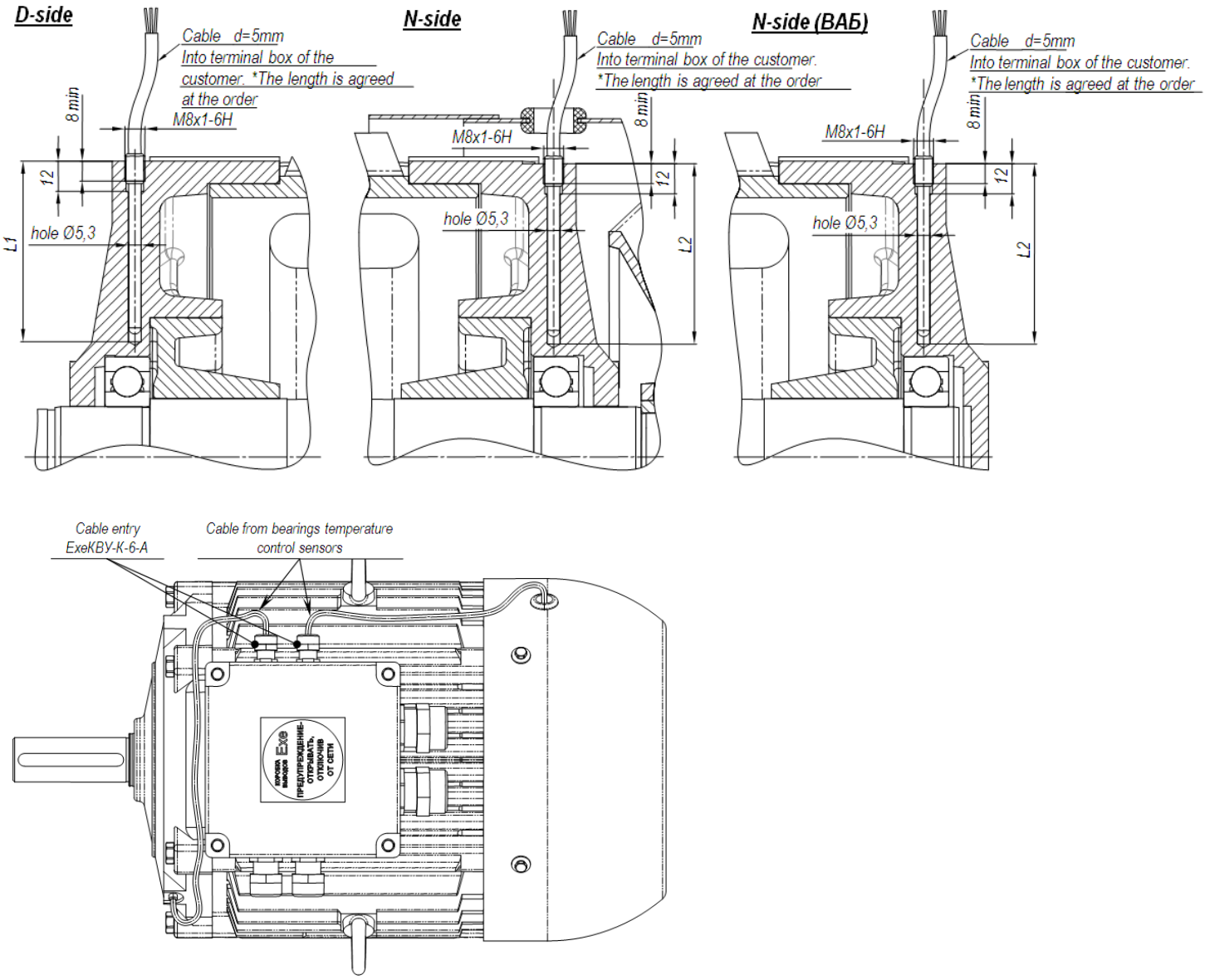


Figure K.2. Connection cable from bearings temperature control sensors into the motor terminal box (only for motors ith explosion protection «de»). Others according to Figure K.1

Motor type	D-end		N-end	
	Fig.	L1, mm	Fig.	L2, mm
BA132 BRA132	K.1; K.2	72	K.1; K.2	72
BA160 BRA160 BRA180	K.1; K.2	82	K.1; K.2	82
BA180	K.1; K.2	72	K.1; K.2	82

Passive sensors according to the Figure К3:

1. Resistance temperature converter Pt100, 50M for motors BA200, 225, 315, 355

К.3-X-X-X-X-X (quantity of sensitive elements 1pcs)

- **Design variant according to Figure**
- **Installation side:**
  - D-end, N-end
- **Static characteristic**(at delivery without sensors is not indicated):
  - Pt100
  - 50M
- **Tolerance class** (at delivery without sensors is not indicated):
  - A
  - B – standard
- **Diagram of internal connections** (at delivery without sensors is not indicated):
  - 3-x wire (standard)
  - 4-x wire
- **Cable length (from 0,2 to 20м) Cable diameter 5mm**
  (at delivery without sensors is not indicated).

2. Thermoelectric thermoelement (thermocouple) XA(K), XK(L) for motors BA200, 225, 315, 355

К.3-X-X-X-X (quantity of sensitive elements 1pcs)

- **Design variant according to Figure**
- **Installation side:**
  - D-end, N-end
- **Static characteristic**(at delivery without sensors is not indicated):
  - XA(K)
  - XK(L)
- **Cable length (от 0,2 до 20m)** (at delivery without sensors is not indicated).
- **Tolerance class** (at delivery without sensors is not indicated):
  - 1 – first class
  - 2 – second class (standard)

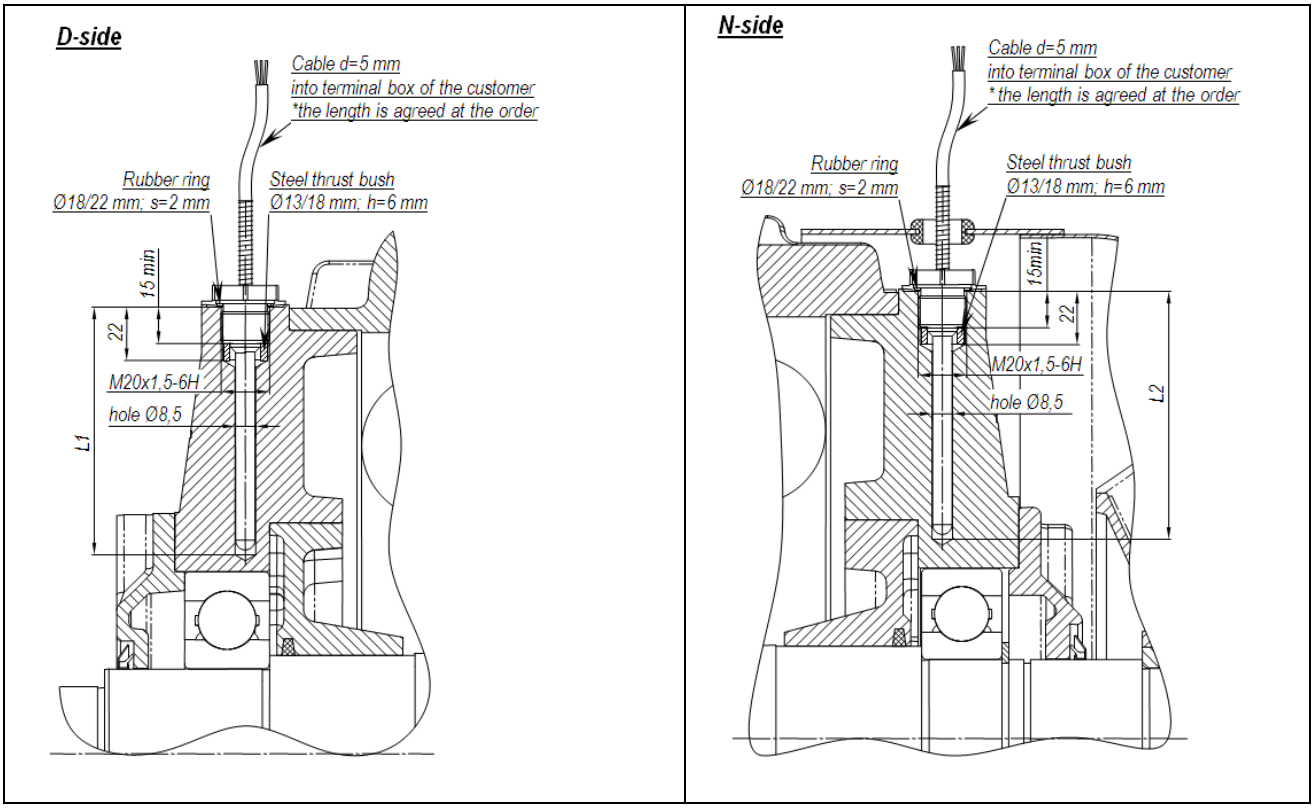


Figure К.3. Passive sensors with control cable connections not in the motor terminal box

Motor type	D-end		N-end	
	Fig.	L1, mm	Fig.	L2, mm
BA200 BRA200	К.3	82	К.3	82
BA225 BRA250	К.3	102	К.3	102
BA315 BRA315L	К.3	137	К.3	137
BA355 BRA355	К.3	182	К.3	182

Sensors according to the Figure К4 и К5:

1. Resistance temperature converter Pt100, 50M for motors BA132-355

К.Х-Х-Х-Х-Х-Х-Х

Design variant according to Figure:
«4» or «5»

Installation side:
D-end, N-end

Static characteristic(at delivery without sensors is not indicated):
«Pt100» or «Pt100+(4-20mA)» or «Pt100+(4-20mA)+HART»
«50M» or «50M+(4-20mA)»

Explosion protection (at delivery without sensors is not indicated)::
«1ExdIICT4» or «0ExdiaIICT4»

Diagram of internal connections (at delivery without sensors is not indicated):
3-x wire (standard). Only for passive sensors Pt100 or 50M
4-x wire. Only for passive sensors Pt100 or 50M

quantity of sensitive elements:
1 – (standard). Only for passive sensorsPt100 or 50M
2 Only for passive sensors Pt100 or 50M

Cable entry design:
Non-armored or armored (shielded) cable without fastening screen inside the cable entry
- Cable diameter without armor
(Cable Ø (5-14,5) mm without armor (screen) allowed)
Armored (shielded) cable with a screen mount inside the cable entry
(EMC - cable entry)
- Cable diameter (with screen) / (without screen)
(Allowed to use the cable with Ø (8-19) / (5-14,5) mm)
Non-armored cable with gasket in metal hose
- diameter of metal hose / Cable diameter
(Diameters (metal hose) / (cable) are allowed to be used
(Ø15)/(Ø5-13); (Ø16)/(Ø5-14,5); (Ø20)/(Ø5-19); (Ø22)/(Ø5-19); (Ø25)/(Ø5-19).

2. Thermoelectric thermoelement (thermocouple) XA(K), XK(L) for motors BA132-355

К.Х-Х-Х-Х-Х-Х-Х

Design variant according to Figure
«4» or «5»

Installation side:
D-end, N-end

Static characteristic(at delivery without sensors is not indicated):
«XA(K)» or «XA(K)+(4-20mA)+HART»
«XK(L)» or «XK(L)+(4-20mA)+HART»

Explosion protection(at delivery without sensors is not indicated)::
«1ExdIICT4» or «0ExdiaIICT4»

quantity of sensitive elements:
1 – (standard). Only for passive sensors XA(K) or XK(L)
2 Only for passive sensors XA(K) or XK(L)

Cable entry design:
Non-armored or armored (shielded) cable without fastening screen inside the cable entry
- Cable diameter without armor
(Cable Ø (5-14,5) mm without armor (screen) allowed)
Armored (shielded) cable with a screen mount inside the cable entry
(EMC - cable entry)
- Cable diameter (with screen) / (without screen)
(Allowed to use the cable with Ø (8-19) / (5-14,5) mm)
Non-armored cable with gasket in metal hose
- diameter of metal hose / Cable diameter
(Diameters (metal hose) / (cable) are allowed to be used
(Ø15)/(Ø5-13); (Ø16)/(Ø5-14,5); (Ø20)/(Ø5-19); (Ø22)/(Ø5-19); (Ø25)/(Ø5-19).

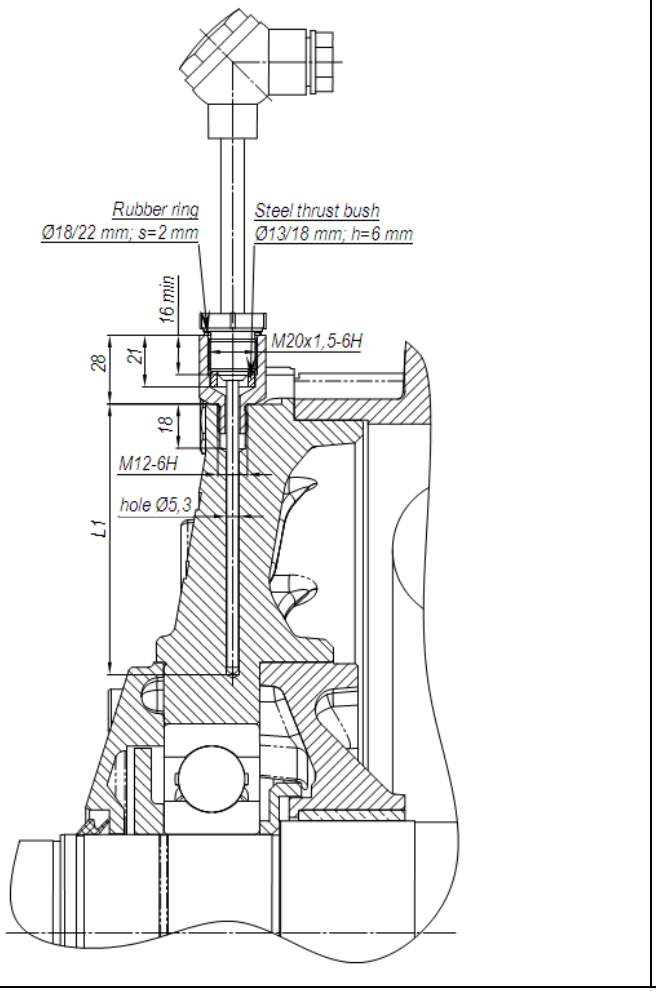
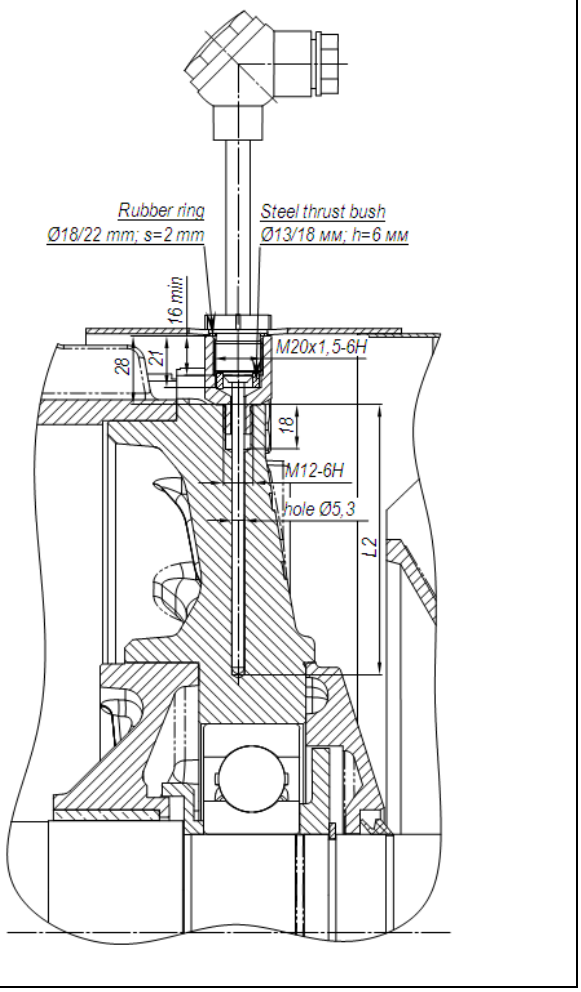
D Side	N Side
	

Figure K.4. Sensors with control cable connection inside the sensors box

Design variants:

- passive sensor;
- sensor + current converter (4-20mA);
- sensor + current converter (4-20mA) + HART.

Motor type	D-end		N-end		Mounting type
	Fig.	L1, mm	Fig.	L2, mm	
BA132 BRA132	K.4	72	K.4	72	All
BA160 BRA160	K.4	82	K.4	82	All
BA180 BRA180	K.4	72	K.4	82	All
BA250 BRA280	K.4	110	K.4	110	IM10
BA250 BRA280	K.5	see. K.5	K.4	110	IM20;30
BA280; 2p=2 BRA315S;M; 2p=2	K.4	110	K.4	110	IM10
BA280; 2p=2 BRA315S;M; 2p=2	K.5	see. K.5	K.4	110	IM20;30
BA280; 2p≥4 BRA315S;M; 2p≥4	K.5	see.K.5	K.4	110	All

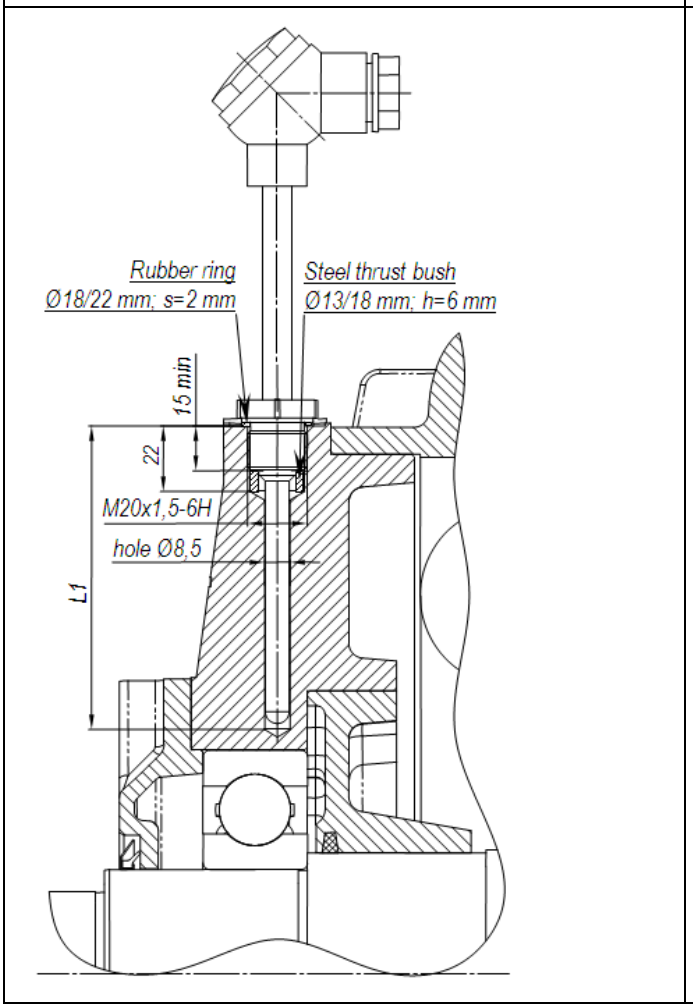
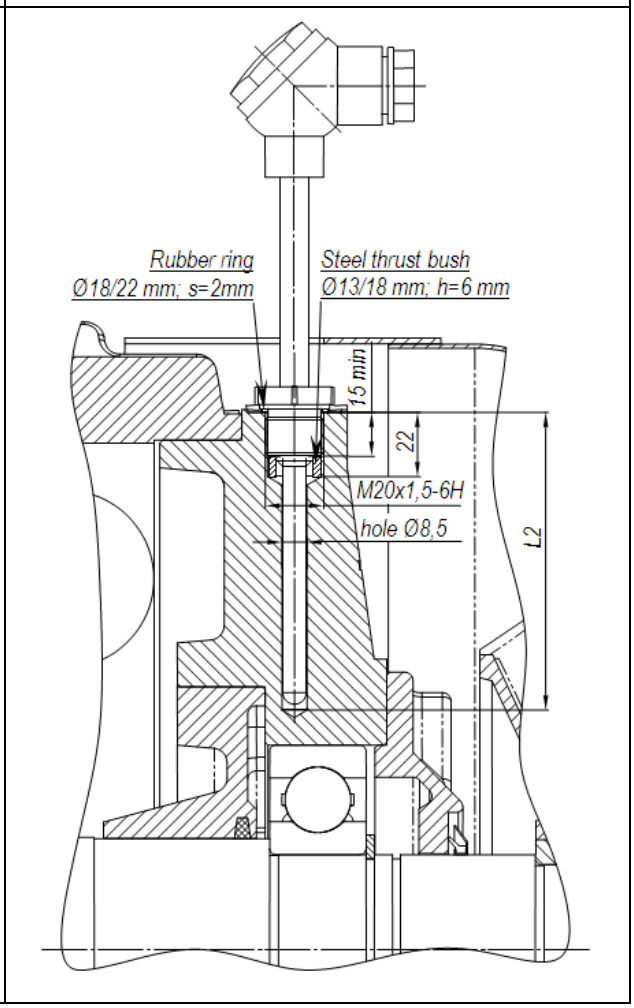
D Side	N Side
	

Figure K.5. Sensors with control cable connection inside the sensors box

Design variants:

- passive sensor;
- sensor + current converter (4-20mA);
- sensor + current converter (4-20mA) + HART.

Motor type	D-end		N-end		Mounting type
	Fig.	L1, mm	Fig.	L2, mm	
BA200 BRA200; 225	K.5	82	K.5	82	All
BA225 BRA250	K.5	102	K.5	102	All
BA250 BRA280	K.5	122	K.4	See K4	IM20;30
BA280; 2p=2 BRA315S;M; 2p=2	K.5	122	K.4	SeeK4	IM20;30
BA280; 2p≥4 BRA315S;M; 2p≥4	K.5	102	K.4	SeeK4	All
BA315; BRA315L;	K.5	137	K.5	137	All
BA355; BRA355;	K.5	182	K.5	182	All

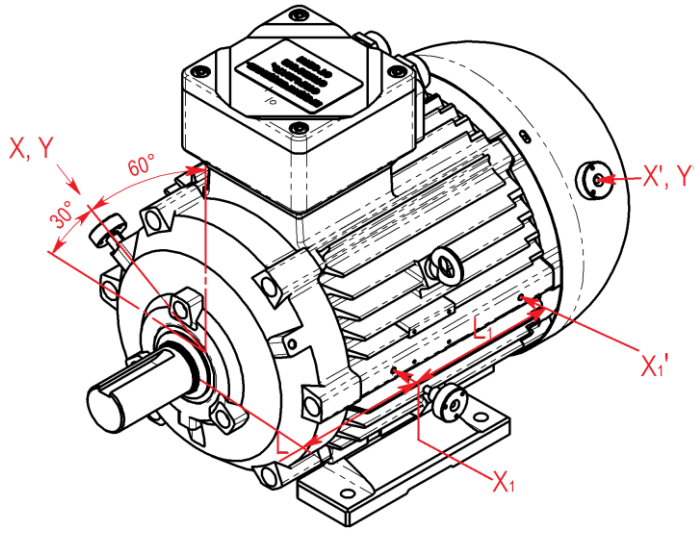
Vibration monitoring (extra option).

Upon request he motors can be designed with holes in bearing shields in order to install vibration measuring sensors. м.

Choice of installation variant is agreed at the order:

- D-end – measurement point;
- N-end – measurement point;
- Sensors type if its overall dimentions differ to the standard version

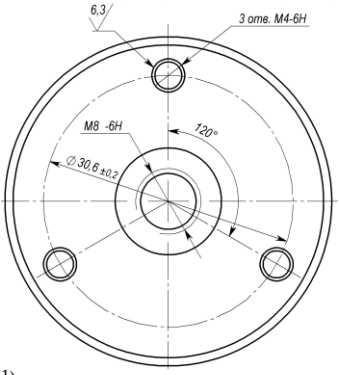
BA(BRA)132, 160, 180.



Standard holes for vibration sensors installation

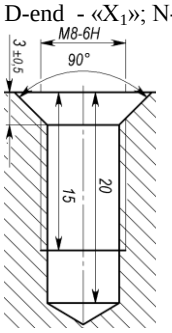
measurement point:[1)]

D-end - «X,Y»; N-end - «X',Y'»;



measurement point:

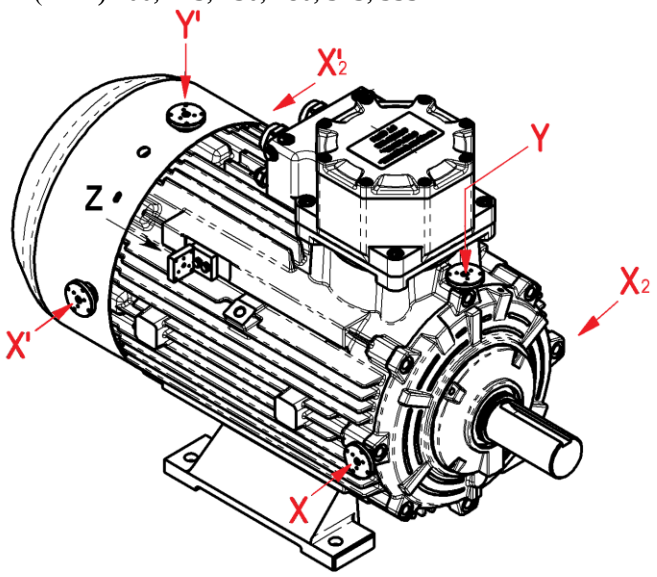
D-end - «X_1»; N-end - «X_1'»

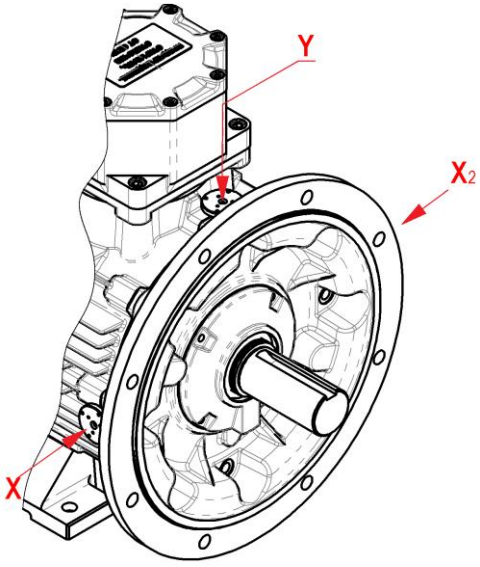


Design variant measurement point: «X_1», «X_1'» + adapter (Fig. left side)

[1)] – for ямounting of exploisin protection 1Exd(e)IIC at the same time, the use of the option of vibration measuring and bearing temperature is absent.

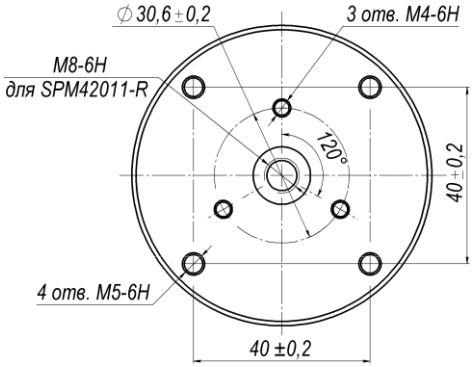
BA(BRA) 200, 225, 250, 280, 315, 355





Motor type	measurement point							Mounting type.
	D-end			N-end				
	«X»	«X_2»	«Y»	«X'»	«X'_2»	«Y'»	«Z'»	
BA200	-	-	+	-	-	+	+	IM10..
BRA200; 225	+	+	+	-	-	+	+	IM20..; IM30..
BA225	-	-	+	-	-	+	+	IM10..
BRA250	+	+	+	-	-	+	+	IM20..; IM30..
BA250 BRA280	+	+	+	+	+	+	+	All
BA280 BRA315S	+	+	+	+	+	+	+	All
BA315 BRA315L	+	+	+	+	+	+	+	All
BA355 BRA3355	+	+	+	+	+	+	+	All
« +» - upon request « - » - not used								

Standard holes for vibration sensors installation [1)]



[1)] - Oholes may be different for the definite sensors type

Energy indexes of motors.

Temperature class T4. Efficiency class (IE) in accordance with IEC 60034-30-2008, GOST R IEC 54413-2011.
Nominal data and power are regulated for ambient temperatures 40°C.
Temperature rise class B .

Motor size	Power, kW	Rotation speed, rpm	Efficiency , % under load			IE	Power factor under load		Current at 380 V , A	IA IN	MA MN	Mmax MN	Mo-ment of iner-tia, kg*m 2	
			4/4	3/4	2/4		4/4	3/4						
3000 rpm (synchronus)														
BA100S2 [1)]	4.0	2820	80.0	80.4	78.2	0	0.85	0.77	9.0	6.5	3.8	3.8	0.004	
BRA132SA2	5.5	2895	87.5	88.4	87.8	2	0.89	0.88	10.2	6.8	2.4	3.0	0.014	
BA132S2, BRA132SB2	7.5	2895	87.5	88.3	88.0	1	0.89	0.88	14.6	7.0	2.4	3.1	0.017	
		2895	88.5	89.3	89.0	2	0.89	0.88	14.5	7.0	2.5	3.2	0.017	
BRA132MA2	9.0	2900	89.0	88.9	88.4	2	0.88	0.87	17.5	7.5	2.7	3.5	0.019	
BA132M2, BRA132MB2	11.0	2905	88.9	89.8	90.0	1[1)]	0.88	0.84	21.4	7.5	2.5	3.5	0.019	
		2905	89.4	90.3	89.8	2	0.88	0.84	21.0	7.5	2.8	3.5	0.019	
BA160SA2, BRA160MA2	11.0	2940	88.4	88.1	85.5	1	0.89	0.85	21.2	6.8	2.0	3.3	0.044	
		2948	89.4	89.3	87.4	2	0.88	0.84	21.0	7.7	1.8	3.3	0.044	
BA160S2, BRA160MB2	15.0	2945	88.7	88.6	86.7	1[1)]	0.86	0.82	30	7.7	2.0	3.2	0.047	
		2949	90.3	90.1	88.5	2	0.85	0.81	30	7.7	2.0	3.6	0.047	
BA160M2, BRA160L2	18.5	2940	89.9	90.1	89.1	1[1)]	0.87	0.83	36	7.8	2.0	3.2	0.054	
		2950	90.9	90.7	89.2	2	0.86	0.81	36	8.0	2.0	3.6	0.054	
BA180S2, BRA180M2 [1)]	22.0	2940	90.5	90.5	89.7	1	0.89	0.86	42	7.5	2.1	3.5	0.061	
		2940	91.4	91.7	91.1	2	0.88	0.83	42	7.8	2.0	3.3	0.061	
BA180M2 [1)]	30.0	2940	92.0	91.8	91.0	2	0.89	0.86	56	8.0	2.2	3.5	0.077	
BRA200LA2	30.0	2940	92.0	92.8	90.6	2	0.87	0.85	57	7.0	2.3	3.6	0.089	
BA200M2, BRA200LB2	37.0	2950	93.1	93.5	93.0	2	0.88	0.85	69	7.8	2.3	3.2	0.105	
BA200L2, BRA225M2	45.0	2950	93.5	93.8	93.6	2	0.90	0.89	81	8.0	2.6	4.0	0.123	
BA225M2, BRA250M2	55.0	2955	93.1	93.4	92.8	1	0.88	0.87	102	7.5	2.3	4.0	0.203	
		2955	93.8	93.0	91.5	2	0.88	0.87	101	7.5	2.3	4.0	0.203	
BA250S2, BRA280S2	75.0	2965	93.7	93.7	92.9	1	0.89	0.87	137	7.9	2.6	4.0	0.382	
		2965	94.5	94.5	93.7	2	0.89	0.87	136	7.9	2.6	4.0	0.382	
BA250M2, BRA280M2	90.0	2960	94.0	94.0	93.3	1[1)]	0.90	0.88	162	7.7	2.4	4.0	0.411	
		2960	94.5	94.5	93.4	2	0.90	0.88	161	7.7	2.5	4.0	0.411	
BA280S2, BRA315S2	110.0	2965	94.2	94.0	93.0	1[1)]	0.88	0.86	202	8.3	2.9	3.5	0.484	
		2965	94.3	94.3	93.0	2	0.88	0.86	201	8.3	2.9	3.5	0.484	
BRA315M2	132.0	2973	95.0	94.0	93.1	2	0.86	0.84	246	6.8	1.9	3.8	1.00	
BA315S2, BRA315MB2 BRA315LA2	160.0	2977	95.1	94.7	93.5	2	0.87	0.84	294	7.5	2.4	3.3	1.160	
		2977	95.6	95.3	94.2	3	0.87	0.84	292	7.5	2.4	3.3	1.160	
BA315M2, BRA315LB2	200.0	2978	95.5	95.3	94.3	2	0.88	0.87	362	7.5	2.5	3.3	1.350	
		2978	95.8	95.6	94.6	3	0.88	0.85	359	7.5	2.5	3.3	1.350	
BA355SMA2, BRA355SMA2	250.0	2982	94.7	94.2	92.6	1	0.87	0.85	461	6.5	1.4	2.9	2.7	
		2982	95.0	94.5	93.1	2	0.87	0.85	460	6.5	1.4	2.9	2.7	
BA355SMB2, BRA355SMB2 [1)]	315.0	2984	95.4	94.8	93.5	2	0.87	0.84	577	7.7	1.6	3.3	3.3	
BA355SMC2, BRA355SMC2 [1)]	355.0	2982	95.7	95.3	94.4	2	0.88	0.85	640	7.0	1.4	3.1	3.3	
BA355MLB2, BRA355MLB2	400.0	2980	95.8	95.4	94.5	3	0.89	0.88	713	7.9	1.5	3.2	4.45	
BA355MLC2, BRA355MLC2 [1)]	450.0	2978	95.9	95.5	94.6	3	0.89	0.88	801	7.7	1.5	3.1	4.45	
1500 rpm (synchronus)														
BA100S4, BAK100S4[1)]	3.0	1395	79.0	80.8	79.3	0	0.80	0.70	7.3	5.5	2.7	3.0	0.006	
BA132SA4, BRA132S4	5.5	1449	85.0	85.1	83.8	1	0.84	0.79	11.7	7.0	2.4	3.0	0.021	
		1457	88.2	88.3	87.0	2	0.83	0.77	11.4	6.9	2.2	3.0	0.028	
BA132S4, BRA132M4	7.5	1455	86.5	86.9	86.2	1[1)]	0.83	0.77	15.9	7.0	2.8	3.2	0.028	
		1457	89.0	89.3	88.7	2	0.83	0.78	15.4	7.4	2.4	3.2	0.032	
BA132M4	11.0	1440	88.0	89.0	88.3	1	0.84	0.79	23	7.5	2.8	3.3	0.032	
BA160SA4, BRA160M4	11.0	1460	87,8	88.4	87.8	1[1)]	0.84	0.80	23	6.5	1.8	2.8	0.061	
		1460	89.8	90.5	90.2	2	0.84	0.80	22	6.5	1.8	2.8	0.061	
BA160S4, BRA160L4	15.0	1465	89.0	89.5	88.5	1[1)]	0.84	0.79	31	7.3	2.0	3.1	0.078	
		1465	90.6	90.9	89.9	2	0.84	0.79	30	7.3	2.0	3.1	0.078	
BA160M4, BRA180M4	18.5	1465	90.5	91.2	90.9	1[1)]	0.86	0.83	36	7.5	2.0	3.2	0.096	
		1465	91.6	92.1	91.7	2	0.86	0.83	36	7.5	2.0	3.2	0.096	
BA180S4, BRA180L4	22.0	1465	90.5	90.7	89.7	1[1)]	0.85	0.81	44	7.6	2.3	3.4	0.103	
		1465	91.6	92.0	91.4	2	0.88	0.86	42	7.4	2.0	3.1	0.103	
BA180M4 [1)]	30.0	1460	91.5	92.0	91.8	1	0.88	0.86	57	7.5	2.4	3.0	0.148	
BRA200L4	30.0	1460	91.3	91.8	91.3	1[1)]	0.86	0.83	58	7.0	2.3	3.2	0.153	
		1464	92.3	92.9	92.5	2	0.89	0.87	56	7.5	2.4	3.0	0.188	
BA200M4, BRA225S4	37.0	1463	92.0	92.7	92.7	1[1)]	0.87	0.84	70	8.0	2.2	3.5	0.188	
		1475	93.0	93.4	93.0	2	0.88	0.86	68	7.8	2.2	3.5	0.213	
BA200L4, BRA225M4 [1)]	45.0	1460	92.5	93.1	92.4	1	0.87	0.83	85	7.0	2.2	3.2	0.213	
BA225M4, BRA250M4	55.0	1475	92.5	92.7	91.8	1[1)]	0.87	0.82	104	7.9	2.8	3.7	0.399	
		1475	93.5	93.7	93.1	2	0.87	0.83	104	7.9	2.2	3.5	0.399	
BA250S4, BRA280S4	75.0	1470	93.0	93.3	92.8	1	0.89	0.87	138	7.0	2.2	3.2	0.647	
		1480	94.4	94.4	93.6	2	0.87	0.84	139	7.5	2.3	3.1	0.647	
BA250M4, BRA280M4	90.0	1473	93.8	94.2	93.8	1[1)]	0.90	0.89	162	7.8	2.5	3.2	0.802	
		1479	94.6	94.6	93.9	2	0.86	0.82	166	7.1	2.2	3.0	0.802	
BA280S4, BRA315S4	110.0	1478	94.5	94.6	94.0	2	0.88	0.85	201	7.4	2.4	3.0	0.850	
BRA315M4	132.0	1480	95.6	95.6	95.0	3	0.84	0.81	250	6.6	2.3	3.0	1.9	
BA315S4, BRA315LA4	160.0	1487	95.5	95.4	94.7	2[1)]	0.83	0.78	308	7.5	2.5	3.2	2.3	
		1487	95.8	95.8	95.0	3	0.83	0.78	307	7.5	2.5	3.2	2.3	
BA315M4, BRA315LB4	200.0	1485	95.7	95.7	95.1	2[1)]	0.84	0.80	378	7.4	2.3	3.3	2.8	
		1487	96.0	96.0	95.6	3	0.84	0.80	376	7.4	2.3	3.3	2.8	
BA355SMA4, BRA355SMA4	250.0	1487	95.3	95.0	93.7	2	0.85	0.81	467	7.0	2.3	2.8	5.6	
BA355SMB4, BRA355SMB4	315.0	1488	95.6	95.3	94.3	2	0.85	0.81	589	7.7	2.5	3.4	6.8	
BA355SMC4, BRA355SMC4 [1)]	355.0	1488	95.9	95.6	94.7	2	0.86	0.83	652	6.6	2.2	2.7	6.8	
BA355MLB4, BRA355MLB4	400.0	1489	96.3	96.3	95.5	3	0.88	0.87	716	7.0	1.5	3.0	8.0	
BA355MLC4, BRA355MLC4	450.0	1489	96.4	96.2	95.3	3	0.87	0.84	815	7.8	1.4	3.0	8.8	
BA355MLD4, BRA355MLD4 [1)]	500.0	1489	96.4	96.3	95.6	3	0.87	0.84	906	7.8	1.4	3.0	8.8	

[1)] – Temperature rise class F

Energy indexes of motors

Temperature class T4.Efficiency class (IE) in accordance with IEC 60034-30-2008, GOST R IEC 54413-2011.
Nominal data and power are regulated for ambient temperatures 40°C.
Temperature rise class B .

Motor size	Power, kW	Rotation speed, rpm	Efficiency, % under load			IE	Power factor under load		Current at 380 V , A	IA IN	MA MN	Mmax MN	Moment of inertia, kg*m2	
			4/4	3/4	2/4		4/4	3/4						
1000 rpm (synchronus)														
BA132SA6, BRA132S6	3.0	960	80.9	81.1	80.1	1	0.77	0.68	7.3	5.5	1.8	2.6	0.0319	
		960	83.3	83.5	82.4	2	0.76	0.67	7.2	5.7	2.1	2.7	0.0319	
BA132SB6, BRA132MA6	4.0	960	82.5	83.3	83.0	1	0.78	0.71	9.5	6.2	2.2	2.7	0.0425	
		960	84.6	85.4	85.0	2	0.77	0.70	9.3	6.5	2.3	2.8	0.0425	
BA132S6, BRA132MB6	5.5	960	84.0	84.8	83.6	1[1)]	0.77	0.69	9.3	6.5	2.3	2.8	0.0491	
		960	86.0	86.8	85.6	2	0.76	0.68	12.7	6.8	2.8	3.3	0.0558	
BA132M6 [1)]	7.5	960	84.5	85.3	84.0	0	0.77	0.68	17	6.5	2.8	3.1	0.0558	
BA160SA6, BRA160M6	7.5	970	85.5	86.0	84.7	1	0.80	0.73	17	6.0	1.7	2.8	0.0828	
		970	87.2	87.7	86.4	2	0.80	0.73	16	6.0	1.7	2.8	0.0828	
BA160S6, BRA160L6	11.0	970	86.7	83.3	86.0	1	0.82	0.75	24	6.5	2.2	2.9	0.1135	
		975	89.0	89.5	88.6	2	0.81	0.74	23	6.5	1.9	2.9	0.1135	
BA160M6, BRA180L6	15.0	970	88.0	88.4	87.3	1[1)]	0.81	0.74	32	7.0	2.3	3.0	0.1424	
		970	89.7	90.1	89.3	2	0.80	0.74	32	7.0	2.3	3.0	0.1424	
BA180M6 [1)]	18.5	970	89.0	90.0	89.5	1	0.85	0.81	37	6.0	2.2	3.0	0.1612	
BRA200LA6	18.5	970	87.0	87.5	87.3	0[1)]	0.80	0.75	39	5.5	1.8	2.7	0.1958	
		975	88.6	89.0	89.0	1	0.83	0.76	38	6.0	1.8	2.8	0.2230	
		980	90.4	90.4	90.8	2	0.84	0.77	37	6.5	1.9	2.9	0.2709	
BA200M6, BRA200LB6	22.0	975	89.5	90.0	89.3	1	0.84	0.79	45	6.8	1.9	3.0	0.2709	
		980	90.9	91.1	89.7	2	0.82	0.77	45	7.7	2.6	3.5	0.2967	
BA200L6, BRA225M6	30.0	975	90.0	90.2	88.0	0[1)]	0.84	0.79	60	6.5	2.1	3.0	0.3119	
		975	90.6	90.9	90.2	1	0.84	0.80	60	7.5	2.3	3.1	0.351	
BA225M6, BRA250M6	37.0	980	91.6	92.2	92.0	1[1)]	0.86	0.83	71	6.5	2.0	3.0	0.5122	
		983	92.6	93.1	92.8	2	0.86	0.82	71	7.3	2.0	3.0	0.5493	
BA250S6, BRA280S6	45.0	985	91.9	92.3	91.7	1	0.87	0.84	86	7.0	1.7	2.8	0.967	
		986	93.0	93.0	92.1	2	0.86	0.83	85	7.5	1.8	3.0	0.967	
BA250M6, BRA280M6	55.0	985	92.3	92.5	91.6	1	0.87	0.83	104	7.5	1.9	3.0	1.153	
		986	93.1	92.8	91.8	2	0.87	0.83	103	7.5	1.9	3.0	1.153	
BA280S6, BRA315S6	75.0	985	93.1	93.4	92.8	1[1)]	0.87	0.84	141	7.7	2.0	3.2	1.520	
		985	93.7	93.6	93.0	2	0.87	0.84	140	7.7	2.0	3.2	1.520	
BA315S6, BRA315LA6	110.0	988	94.6	94.8	94.2	2	0.89	0.88	199	7.0	1.5	2.5	3.76	
		988	95.1	95.4	95.1	3	0.89	0.88	197	7.0	1.5	2.5	3.76	
BA315M6, BRA315LB6	132.0	989	94.9	95.0	94.6	2[1)]	0.89	0.87	237	7.7	1.6	2.8	4.53	
		989	95.4	95.4	95.1	3	0.89	0.87	236	7.7	1.6	2.8	4.53	
BA355SMA6, BRA355SMA6	160.0	992	94.7	94.4	93.8	1	0.83	0.78	313	6.9	2.3	2.7	8.30	
		992	95.1	94.8	94.0	2	0.83	0.78	310	6.9	2.3	2.7	8.30	
		992	95.6	95.3	94.5	3	0.83	0.78	310	6.9	2.3	2.7	8.30	
BA355SMB6, BRA355SMB6	200.0	992	94.9	94.9	94.2	1	0.83	0.80	386	7.0	2.3	2.8	9.9	
		992	95.3	95.3	94.6	2	0.83	0.80	382	7.0	2.3	2.8	9.9	
		992	95.8	95.8	95.1	3	0.83	0.80	382	7.0	2.3	2.8	9.9	
BA355MLA6, BRA355MLA6	250.0	992	95.5	95.3	94.6	2[1)]	0.84	0.80	478	6.9	2.4	2.9	11.7	
		992	95.8	95.6	94.9	3	0.84	0.80	478	6.9	2.4	2.9	11.7	
BA355MLB6, BRA355MLB6[1)]	315.0	992	96.1	95.9	95.2	3	0.84	0.80	600	7.1	2.4	3.0	14.2	
BA355MLC6, BRA355MLC6[1)]	355.0	992	96.0	96.2	95.6	3	0.84	0.80	676	7.1	2.5	3.1	15.0	
750 rpm (synchronus)														
BA160SA8, BRA160MA8	4.0	730	84.0	84.4	82.2	-	0.71	0.64	10	4.8	1.8	2.2	0.0982	
BA160SB8, BRA160MB8	5.5	730	84.0	84.5	81.6	-	0.71	0.64	14	4.8	1.8	2.2	0.1115	
BA160S8, BRA160L8	7.5	730	86.0	86.8	86.0	1[1,2)]	0.75	0.68	18	5.0	1.4	2.2	0.1372	
		730	86.0	86.8	86.0	2[2)]	0.75	0.68	18	5.0	1.4	2.2	0.1372	
BA160M8, BRA180L8	11.0	730	88.0	88.9	88.2	1[1,2)]	0.75	0.68	25	5.5	1.7	2.4	0.1838	
		730	88.0	88.9	88.2	2[2)]	0.75	0.68	25	5.5	1.7	2.4	0.1838	
BA180M8[1)]	15.0	730	88.0	88.5	88.2	-	0.76	0.69	35	5.5	1.7	2.7	0.1981	
BRA200L8	15.0	730	88.0	88.5	88.2	-	0.80	0.74	32	5.7	2.0	2.5	0.2230	
BA200M8, BRA225S8[1)]	18.5	728	89.0	89.6	88.0	-	0.78	0.74	40	5.8	2.1	2.5	0.2709	
BA200L8, BRA225M8[1)]	22.0	725	88.8	89.8	89.4	-	0.77	0.70	49	5.6	2.0	2.5	0.2967	
BA225M8, BRA250M8	30.0	735	90.2	91.4	90.7	1[1,2)]	0.77	0.73	66	6.0	1.8	2.7	0.5493	
		733	91.0	92.0	91.3	2[2)]	0.77	0.73	65	6.0	1.8	2.7	0.5493	
BA250S8, BRA280S8	37.0	735	91.1	91.6	91.0	1[1,2)]	0.80	0.76	77	5.5	1.5	2.5	0.967	
		738	92.1	93.3	92.0	2[2)]	0.80	0.76	76	6.0	1.8	2.5	0.967	
BA250M8, BRA280M8	45.0	735	91.5	92.0	91.2	1[2)]	0.80	0.76	93	5.8	1.5	2.5	1.153	
		735	92.5	93.0	92.2	2[2)]	0.80	0.76	93	6.0	1.8	2.6	1.153	
BA280S8, BRA315S8	55.0	740	92.1	92.4	91.6	1[2)]	0.80	0.76	113	6.5	1.8	2.7	1.520	
		740	93.0	93.2	92.4	2[2)]	0.80	0.76	112	6.5	1.8	2.6	1.520	
BA315S8, BRA315LA8[1)]	90.0	740	93.5	93.9	93.4	-	0.82	0.78	179	5.2	1.1	1.9	3.76	
BA315M8, BRA315LB8	110.0	742	94.4	94.3	93.6	-	0.79	0.75	224	6.8	1.6	2.8	4.53	
BA355SMA8, BRA355SMA8	132.0	743	94.3	94.4	94.1	1[2)]	0.81	0.77	263	6.4	1.3	2.5	8.30	
		743	94.5	94.6	94.3	2[2)]	0.81	0.77	262	6.4	1.3	2.5	8.30	
BA355SMB8, BRA355SMB8	160.0	743	94.8	94.7	94.0	-	0.81	0.76	317	6.7	1.5	2.4	9.9	
BA355MLA8, BRA355MLA8	200.0	743	95.3	95.1	94.4	-	0.79	0.75	404	7.2	1.6	1.9	11.7	
BA355MLB8, BRA355MLB8	250.0	744	95.6	95.6	95.1	2[1,2)]	0.80	0.76	497	6.9	1.6	2.8	14.2	
		744	95.8	95.8	95.3	3[2)]	0.80	0.76	456	6.8	1.6	2.8	14.2	

[1)] – Temperature rise class F

[2)] – Energy efficiency class is specified by convention

Energy indexes of motors.
Temperature class T4.
Nominal data and power are regulated for ambient temperatures 40°C.
Temperature rise class B .

Motor size	Power, kW	Rotation speed, rpm	Efficiency, %	Power factor	Current at 380 V, A	IA/IN	MA/MN	Mmax/MN	Moment of inertia, kg*m2	
600 rpm (synchronus)										
BA250S10	22.0	588	90.6	0.76	49	5.4	1.1	2.2	0.967	
BA250M10	30.0	588	91.0	0.77	65	5.3	1.1	2.2	1.153	
BA280S10	37.0	588	91.7	0.77	80	5.5	1.2	2.3	1.520	
BA315SA10	55.0	590	92.6	0.78	115	5.0	1.1	2.1	3.16	
BA315SB10[1)]	75.0	590	93.3	0.76	161	5.0	1.2	2.0	3.76	
BA315M10[1)]	90.0	592	93.3	0.74	198	5.0	1.2	2.0	4.53	
BA(BRA)355SMA10	110.0	594	93.5	0.78	229	5.5	1.1	2.0	8.30	
BA(BRA)355SMB10[1)]	132.0	594	93.9	0.78	274	5.7	1.2	2.0	9.9	
BA(BRA)355MLA10[1)]	160.0	594	94.2	0.78	331	5.9	1.2	2.0	11.7	
BA(BRA)355MLB10[1)]	200.0	594	94.4	0.78	413	5.9	1.2	2.0	14.2	
500 rpm (synchronus)										
BA160S12	5.5	481	80.8	0.72	14	4.2	1.4	2.2	0.1858	
BA160M12	6.0	483	81.7	0.71	16	4.4	1.6	2.4	0.2133	
BA180S12	6.0	483	81.7	0.71	16	4.4	1.6	2.4	0.2133	
BA180MA12	7.5	482	83.0	0.72	19	4.4	1.6	2.4	0.2627	
BA180MB12[1)]	9.0	480	83.5	0.72	23	4.5	1.7	2.4	0.3017	
BA200M12	11.0	478	84.0	0.70	28	3.8	1.4	2.2	0.323	
BA200LA12[1)]	13.0	478	84.4	0.70	33	3.8	1.4	2.2	0.369	
BA200LB12[1)]	15.0	476	84.7	0.71	38	3.8	1.4	2.2	0.405	
BA225MA12[1)]	18.5	485	86.0	0.68	48	5.0	1.9	2.6	0.8537	
BA250S12	22.0	486	88.2	0.68	53	3.8	1.2	1.7	1.025	
BA250M12	30.0	485	88.2	0.67	77	4.1	1.3	1.8	1.211	
BA280S12 , BRA315S12	37.0	485	88.5	0.67	95	4.1	1.1	1.8	1.522	
BA315SA12	45.0	490	92.1	0.70	106	4.5	1.1	2.2	3.16	
BA315S12	55.0	491	92.9	0.70	128	4.9	1.2	1.9	3.76	
BA315M12[1)]	75.0	488	92.3	0.76	162	4.6	1.1	1.9	4.53	
BA(BRA)355S12	75.0	494	93.6	0.77	158	5.1	1.1	1.3	8.30	
BA(BRA)355SMA12	90.0	493	93.5	0.72	203	5.5	1.2	2.2	8.30	
BA(BRA)355MLA12	110.0	493	94.0	0.75	237	5.4	1.2	2.2	11.7	
BA(BRA)355MLB12	132.0	493	94.3	0.75	284	5.6	1.2	2.2	14.2	
428.5 rpm (synchronus)										
BA250S14[1)]	18.5	414	85.2	0.68	49	4.0	1.1	1.9	1.1	
BA250M14[1)]	22.0	417	85.7	0.68	57	3.8	1.2	2.1	1.5	
BA280S14[1)]	30.0	416	87.0	0.67	78	3.8	1.2	2.1	1.9	
BA(BRA)355SMA14	75.0	423	92.7	0.78	158	5.0	0.8	2.1	7.2	
BA(BRA)355SMB14	90.0	423	92.8	0.78	189	5.0	0.8	2.1	8.7	
BA(BRA)355MLA14	110	423	92.9	0.78	231	5.0	0.8	2.1	10.5	
BA(BRA)355MLB14	132	423	92.9	0.78	277	5.0	0.8	2.1	12.9	
375 rpm (synchronus)										
BA(BRA)355SMA16	55.0	369	91.7	0.73	125	4.9	1.0	1.8	7.2	
BA(BRA)355SMB16	75.0	369	91.8	0.73	170	4.9	1.0	1.8	8.7	
BA(BRA)355MLA16	90.0	369	91.9	0.73	204	4.9	1.0	1.8	10.5	
BA(BRA)355MLB16	110.0	369	91.9	0.73	249	4.9	1.0	1.8	12.9	
300 rpm (synchronus)										
BA(BRA)355SMA20	45.0	293	90.5	0.66	114	4.0	1.0	1.7	7.2	
BA(BRA)355SMB20	55.0	293	90.6	0.66	140	4.0	1.0	1.7	8.7	
BA(BRA)355MLA20	75.0	293	90.7	0.66	190	4.0	1.0	1.7	10.5	
750/1500 rpm (synchronus)										
BA200M8/4	15.0 22.0	730 1468	87.1 87.4	0.78 0.92	34 41	5.8 6.8	1.9 1.6	2.8 3.5	0.255	

[1)] – Temperature rise class F

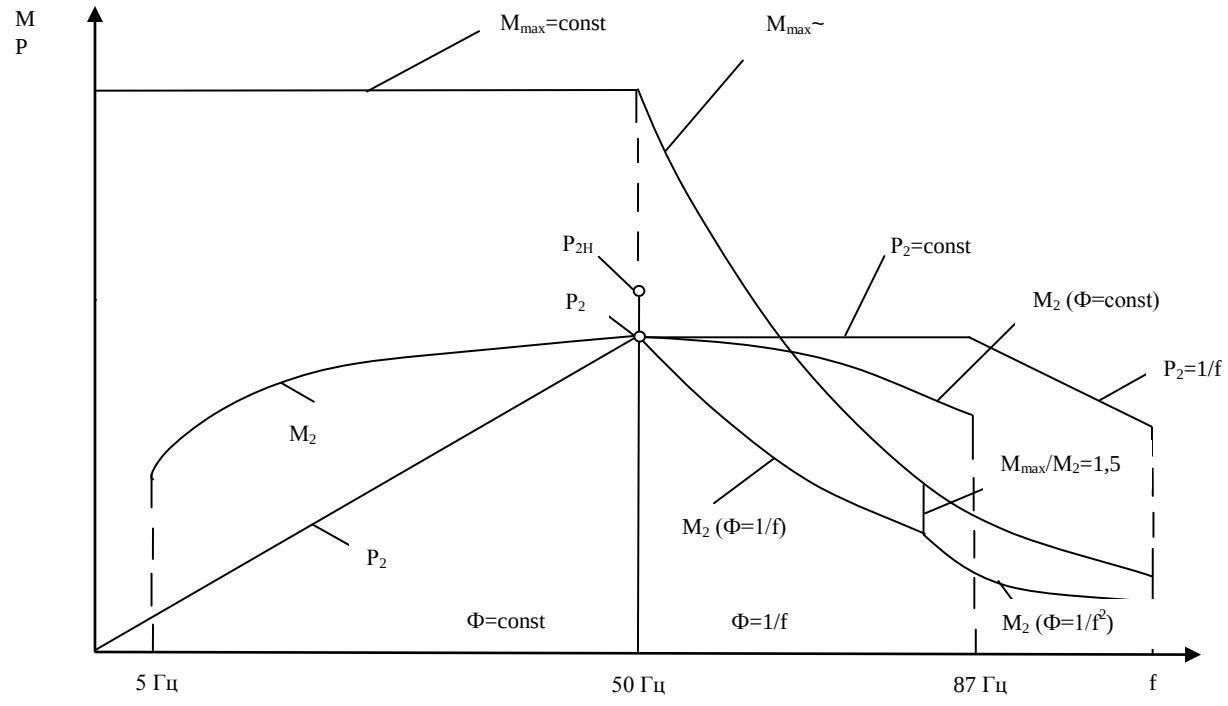
Features of the motor operation controlled by the frequency converter.

When working from the supply line, we have a sinusoidal shape of the voltage and current curves. When operating from a frequency converter (hereinafter referred to as an FC), these curves no longer have a sinusoidal appearance, which affects the motor characteristics and changes them. These changes must be taken into account when choosing a drive.
Figure 1 shows a general graphical representation of the induction motor operation of an from FC. Mmax is the maximum motor torque curve. In the frequency range from 0 to 50 Hz at work with a constant flux (Φ = const), the maximum moment is constant. Therefore, in this zone, due to a decrease in the flow of cooling air at a decrease in the revolutions, the torque load characteristic decreases (the torque curve M_2) if the stator winding overheat is kept. The power curve on the motor shaft P_2 in the range 0-50 Hz decreases directly in proportion to the motor speed reduction according to the formula P_2 (kW) = n_2 (rpm) * M_2 (N * m) / 9550. Point P_2 - rated power on the motor shaft at operation from FC at 50 Hz. Point P2H - rated power on the motor shaft at operation from supply line at 50 Hz. Due to the power supply of the drive from the frequency converter as compared to the sinusoidal power in the motor, additional losses occur due to the presence of higher harmonics, which affect the increase of the overheating of the windings. Therefore, the value of the rated power of the motor running from the FC can be lower than the regulated power at operation from the supply line. In the frequency range above 50 Hz, two options are possible
Motor operation from frequency converter.
1. With a weakening flow with a constant load power on the motor shaft (curve P_2 = const).The load moment decreases inversely proportional to the increase in revolutions according to the formula $M_2 = P_2 / n_2 * 9550$ (the torque curve (M_2 (Φ = 1 / f)). The maximum motor torque decreases inversely proportional to the increase in frequency in the square. Therefore, in the magnetic flux weakening mode, the motor can operate with a constant Power until the overload capability of the motor Mmax / M2 = 1.5 is maintained. The frequency at this will be

$$f_{max} = f_H \frac{M_{max}}{1{,}5 M_H}$$

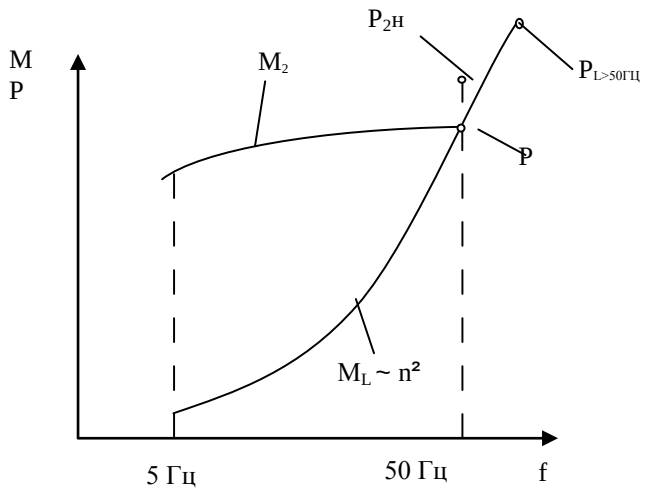
After this, it is necessary that the load torque decreases in proportion to the decrease of the maximum torque (the torque curve M_2 (Φ = 1 / f2)).
The motor work with a constant power and overload capacity of less than 1.5 to 1.1 is permissible, but at this point there is a possibility of breaking due to various factors (short-term load skip, dips of supply voltage, etc.).

2. With the preservation of the magnetic flux.
For motors designed for a connection diagram of winding Δ / Y, for example 220 / 380V, it is possible to work with the preservation of the magnetic flux to the frequency of 87 Hz, at the condition of switching the winding to Δ at a line voltage of 380 V. When the frequency increases above 50 Hz, the load moment decreases (the torque curve M_2 (Φ = Const).



Picture 1

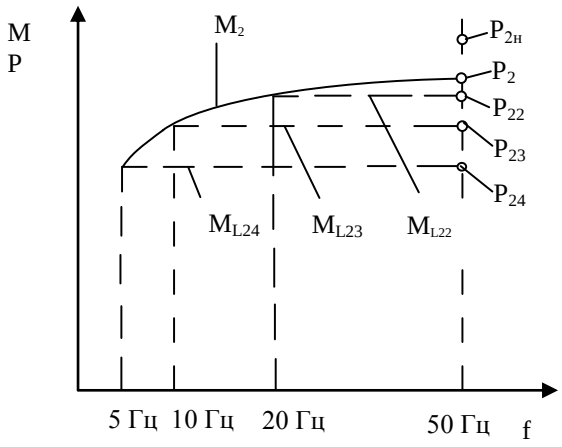
Figure 2 shows the operation of an induction motor in the set of fan or centrifugal pump.
On the entire control range below 50 Hz, the load torque M_L is less than the permissible torque of the motor M_2. The moment M_L decreases in proportion to the decrease in velocity in the square ($M_2 \sim n2$).
To regulate in the direction of decreasing frequency, it is necessary to select a motor with a regulated power P_2 at 50 Hz corresponding to the rated load of the fan load.
For regulation in the direction of increasing the frequency, it is necessary to order a special motor with a power corresponding to the power of the fan load (point PL> 50Hz) at the maximum speed (frequency).



Picture 2

P_{2n} - rated motor power at operation from the supply line
P_2 - power of the motor at operation from the frequency converter with a frequency of 50 Hz
M_2 - permissible load torque of the motor in the control range 1:10
M_L - torque characteristic of a centrifugal pump (fan)

Figure 3 shows the operation of the engine for mechanisms with a constant torque independent of the rotations.
From the condition of the control range, for example 1:10 (5-50 Hz), the motor with a specified load moment corresponding to or exceeding M_{L24} (the moment of loading of the drive mechanism) and power P_{24} reduced to 50 Hz is selected.



Picture 3

$P_{2н}$ – rated motor power at operation from the supply line
P_2 – power of the motor at operation from the frequency converter with a frequency of 50 Hz
M_2 – permissible load torque of the motor
P_{22} – permissible power load of the drive mechanism in the control range 1:2,5 with a frequency 50 Hz
P_{23} – permissible power load of the drive mechanism in the control range 1: 5 with a frequency of 50 Hz
P_{23} – permissible power load of the drive mechanism in the control range 1:10 with a frequency 50 Hz
M_{L22} – permissible constant torque of the drive mechanism in the control range 1:2,5
M_{L23} – permissible constant torque of the drive mechanism in the control range 1:5
M_{L24} – permissible constant torque of the drive mechanism in the control range 1:10

The motor operation at the control range above 50 Hz is shown in Figure 1above.
Motors with standard balancing, with the permissible vibration level A according to IEC 60034-14, are recommended to be used up to a frequency till 60 Hz. At frequencies above 60 Hz, more accurate balancing is required with a degree of vibration B.
To increase the maximum (breaking) torque of the motor in the range above 50 Hz, in order to increase the depth of regulation, a special motor with recalculated winding data is required.

Motors parameters at operation from frequency converter
Nominal data and power are regulated for ambient temperature 40°C.

Operation		In supply line			With frequency converter, IC411														
Supply frequency and load torque		50 Hz			10-50 Hz, fan characteristic 40-50 Hz, constant torque			30-50 Hz, constant torque			20-50 Hz, constant torque			10-50 Hz, constant torque			5-50 Hz, constant torque		
Motor size	IE	P2	M2	I1	P2	M2	I1	P2	M2	I1	P2	M2	I1	P2	M2	I1	P2	M2	I1
		kW	Нм	A	kW	Нм	A	kW	Нм	A	kW	Нм	A	kW	Нм	A	kW	Нм	A
3000 rpm (synchronus)																			
BA100S2	0	4.0	13.	8.9	3.8	12.	8.6	3.6	12.	8.3	3.5	11.	8.1	2.5	8.4	6.6	2.4	8	6.5
BRA132SA2	2	5.5	18.	10.	5.5	18.	10.	5.2	17.	10.	5.1	16.	10.	3.9	12.	8.3	3.6	11.	7.8
BA132S2, BRA132SB2	1	7.5	24.	14.	7.5	25	14.	7.1	24	14.	7.1	23	13.	5.4	17.	11.	4.9	16.	10.
	2	7.5	24.	14.	7.5	25	14.	7.1	24	13.	7.1	23	13.	5.4	17.	11.	4.9	16.	10.
BRA132MA2	2	9.0	29.	17.	9	30	17.	8.6	28	16.	8.5	28	16.	6.5	21	13.	5.9	19.	13
BA132M2	1	11.	36.	21.	10.	34	21	10	33	20	9.5	31	19.	7.3	24	16	6.7	22	15.
BRA132MB2	2	0	36.	21.	10.	36	21	10.	34	20	9.9	32	19.	7.6	25	16.	6.9	22	15.
BA160SA2, BRA160MA2	1	11.	35.	21.	11	36	21	10.	34	20	10	33	20	8.1	26	16.	7.4	24	15.
	2	0	35.	21.	11	36	21	10.	34	20	10	32	20	8.1	26	17	7.4	24	16.
BA160S2, BRA160MB2	1	15.	48.	29.	14.	46	29	13.	44	28	12.	42	27	10.	33	23	9.6	31	22
	2	0	48.	29.	15	49	30	14.	46	29	13.	44	28	10.	35	24	10.	33	23
BA160M2, BRA160L2	1	18.	60.	35.	17.	57	35	16.	54	33	15.	51	32	12.	41	28	11.	38	27
	2	5	59.	36.	18.	60	36	17.	57	35	16.	54	33	13.	43	29	12.	40	28
BA180S2, BRA180M2	1	22.	71.	41.	21	68	40	20	64	38	18.	61	37	14.	48	31	14.	45	30
	2	0	71.	41.	21	69	41	20	66	39	19.	62	38	15.	49	32	14.	46	31
BA180M2	2	30.	97.	55.	29	92	53	27	88	51	26	83	49	20	66	42	19.	62	40
BRA200LA2	2	30.	97.	56.	30	97	57	29	93	55	27	89	53	23	75	47	22	71	46
BA200M2, BRA200LB2	2	37.	120	68.	36	118	68	35	112	65	33	107	63	28	90	56	27	86	54
BA200L2, BRA225M2	2	45.	146	81.	44	142	80	42	135	77	40	130	74	34	109	65	32	104	63
BA225M2, BRA250M2	1	55.	178	102	53	172	99	51	163	96	49	157	93	42	136	84	40	129	81
	2	0	178	101	55	176	101	52	167	97	50	160	94	43	139	85	41	132	82
BA250S2, BRA280S2	1	75.	242	137	74	238	135	70	226	130	67	217	126	58	187	113	56	179	109
	2	0	242	135	75	242	135	71	229	130	68	220	126	59	190	113	56	181	110
BA250M2, BRA280M2	1	90.	290	162	85	273	154	81	260	148	77	249	143	67	215	129	64	205	124
	2	0	290	161	90	290	161	86	276	154	82	264	149	71	228	134	68	218	129
BA280S2, BRA315S2	1	110	354	202	106	341	196	101	324	188	98	314	184	88	281	170	85	273	167
	2	.0	354	201	110	354	201	104	336	193	101	325	189	91	292	175	88	283	171
BRA315M2	2	132	424	246	132	420	245	125	400	236	122	390	231	109	350	215	106	339	210
BA315S2, BRA315MB2,	2	160	510	294	157	500	290	149	480	279	148	470	277	132	420	255	126	400	248
BRA315LA2	3	.0	513	292	160	510	292	152	490	281	150	480	279	134	430	257	128	410	249
BA315M2, BRA315LB2	2	200	640	362	194	620	353	185	590	340	183	590	337	163	520	310	156	500	301
	3	.0	640	360	200	640	360	190	610	347	188	600	344	167	540	316	160	510	306
BA355SMA2,BRA355SM	1	250	800	460	240	770	450	228	730	430	221	710	420	198	630	391	192	610	383
A2	2	.0	800	460	250	800	460	238	760	440	230	740	430	207	660	400	200	640	392
BA355SMB2,	2	315	101	580	297	950	550	282	900	530	273	870	520	245	780	480	238	760	470
BA355SMC2,	2	355	114	640	331	106	610	315	101	580	305	980	570	274	880	530	265	850	520
BA355MLB2,	3	400	128	710	400	128	710	380	122	680	368	118	670	331	106	620	320	103	600
BA355MLC2,	3	450	144	800	420	136	770	400	129	740	391	125	720	351	112	660	340	109	650
1500 rpm (synchronus)																			
BA,BAK,BAБ100S4	0	3.0	20.	7.2	2.9	19.	7.0	2.7	18.	6.8	2.7	18.	6.7	2.2	14.	6	1.9	12.	5.6
BA132SA4, BRA132S4	1	5.5	36.	11.	5.5	36	11.	5.2	34	11.	5.1	34	11.	3.9	25	9.3	3.5	23	8.9
	2		36.	11.	5.5	36	11.	5.2	34	11	5.1	34	10.	3.9	25	9.2	3.5	23	8.7
BA132S4,BRA132M4	1	7.5	49.	15.	7.1	47	15.	6.8	44	14.	6.4	42	14.	4.8	31	12.	4.3	28	11.
	2		49.	15.	7.5	49	15.	7.1	47	14.	6.8	44	14.	5.1	33	12.	4.6	29	11.
BA132M4	1	11.	72.	22.	11	73	23	10.	69	22	9.9	66	21	7.5	49	17.	6.7	44	16.
BA160SA4, BRA160M4	1	11.	71.	22.	10.	68	22	9.9	65	21	9.6	63	21	7	46	17.	6.3	41	16.
	2	0	71.	22.	11	72	22	10.	68	21	10.	66	21	7.4	48	17.	6.7	43	16.
BA160S4, BRA160L4	1	15.	97.	30.	14.	93	29	13.	88	28	13.	85	28	9.6	62	23	8.6	56	22
	2	0	97.	29.	15	98	30	14.	93	29	13.	90	28	10.	65	23	9.1	59	22
BA160M4, BRA180M4	1	18.	121	36.	17.	116	35	17	111	34	16.	107	33	12	78	27	10.	70	26
	2	5	121	35.	18.	121	36	17.	115	34	17.	111	34	12.	81	27	11.	72	26
BA180S4, BRA180L4	1	22.	143	43.	21	136	42	20	129	40	19.	125	40	14.	91	33	12.	82	31
	2	0	143	41.	22	143	41	21	136	40	20	132	39	14.	96	31	13.	86	29
BA180M4	1	30.	196	56.	29	188	55	27	179	53	27	173	52	19.	126	42	17.	113	39
BRA200L4	1	30.	196	57.	29	190	57	28	180	55	27	176	54	23	151	49	22	142	47
	2	0	196	56.	30	196	56	29	186	54	28	182	53	24	156	48	23	147	46
BA200M4, BRA225S4	1	37.	242	70.	35	231	68	34	219	65	33	215	64	28	184	58	27	173	56
	2	0	240	68.	37	241	68	35	229	65	34	224	64	30	192	57	28	181	55
BA200L4, BRA225M4	1	45.	294	85.	43	277	81	40	263	78	40	258	77	34	221	70	32	208	67
BA225M4, BRA250M4	1	55.	356	104	52	335	99	49	318	96	49	315	95	42	273	86	41	261	84
	2	0	356	103	54	349	101	51	331	97	51	328	97	44	285	88	42	272	85
BA250S4, BRA280S4	1	75.	490	141	73	470	138	69	450	133	67	440	130	61	394	121	59	380	118
	2	0	490	139	75	490	139	71	460	134	69	450	131	63	400	122	60	390	119
BA250M4, BRA280M4	1	90.	583	169	85	550	162	81	520	156	78	500	153	71	460	143	68	440	139
	2	0	583	168	88	570	165	83	540	159	81	520	155	73	470	145	70	450	142
BA280S4, BRA313S4	2	110	710	201	107	690	197	102	660	189	99	640	185	89	580	172	86	550	168
BRA315M4	3	132	850	250	132	850	250	125	810	241	125	810	241	114	730	226	110	710	221
BA315S4, BRA315LA4	2	160	103	307	152	970	296	144	930	286	144	930	286	131	840	269	126	810	264
	3	.0	102	302	158	102	303	150	970	293	150	970	293	136	870	275	132	840	269
BA315M4, BRA315LB4	2	200.0	1280	378	191	123	366	181	116	353	181	116	353	164	105	332	159	102	324
	3		128	377	200	128	377	190	122	364	190	122	364	172	111	341	166	107	333
BA355SMA4,	2	250	1610	470	250	161	470	238	153	450	235	151	450	214	137	420	208	133	410
BA355SMB4,	2	315	2020	590	315	202	590	299	192	570	296	190	560	270	173	530	262	168	520
BA355SMC4,	2	355	2280	650	331	212	620	315	202	600	311	200	600	284	182	560	275	176	550
BA355MLB4,	3	400	2570	720	400	257	720	380	244	690	376	241	680	343	219	640	332	213	620
BA355MLC4,	3	450	2890	820	450	289	820	430	274	780	420	271	780	385	247	730	374	240	710
BA355MLD4,BRA355ML	3	500	3210	910	470	301	860	450	286	830	440	283	830	400	257	770	390	250	760

Motors parameters at operation from frequency converter.
Nominal data and power are regulated for ambient temperature 40°C.

Operation		In supply line			With frequency converter, IC411														
Supply frequency and load torque		50 Hz			10-50 Hz, fan characteristic 40-50 Hz, constant torque			30-50 Hz, constant torque			20-50 Hz, constant torque			10-50 Hz, constant torque			5-50 Hz, constant torque		
Motor size	IE	P2	M2	I1	P2	M2	I1	P2	M2	I1	P2	M2	I1	P2	M2	I1	P2	M2	I1
		kW	Нм	A	kW	Нм	A	kW	Нм	A	kW	Нм	A	kW	Нм	A	kW	Нм	A
1000 rpm (synchronus)																			
BA132SA6, BRA132S6	1	3.0	29.	7.3	3	30	7.3	2.6	25	6.7	2.3	22	6.3	2	20	6	1.9	18.	5.8
	2		29.8	7.2	3	30	7.2	2.6	25	6.6	2.3	22	6.2	2	20	6	1.9	18.	5.8
BA132SB6, BRA132MA6	1	4.0	39.	9.4	4	40	9.4	3.4	34	8.6	3	30	8.1	2.7	27	7.7	2.5	25	7.5
	2		39.8	9.3	4	40	9.3	3.4	34	8.5	3	30	8	2.7	27	7.7	2.5	25	7.4
BA132S6, BRA132MB6	1	5.5	54.	12.	5.3	53	12.	4.5	45	11.	4	39	10.	3.6	35	10.	3.3	33	10.
	2		54.7	12.8	5.5	55	12.	4.7	47	11.	4.2	41	11.	3.7	37	10.	3.5	34	10.
BA132M6	0	7.5	74.	17.	7.5	74	17.	6.4	63	15.	5.7	56	14.	5.1	50	14.	4.7	46	13.
BA160SA6, BRA160M6	1	7.5	73.	16.	7.5	74	16.	7.4	72	16.	7	69	15.	5.5	54	13.	4.9	47	13.
	2		73.	16.	7.5	74	16.	7.4	72	16.	7	69	15.	5.5	54	13.	4.9	47	12.
BA160S6, BRA160L6	1	11.	108	23.	11	108	24	10.	106	23	10.	101	22	8.1	79	19.	7.1	69	18.
	2	0	108	23.	11	108	23	10.	106	23	10.	100	22	8.1	79	19.	7.1	69	18.
BA160M6, BRA180L6	1	15.	148	32.	14.	140	31	14	137	31	13.	130	30	10.	102	26	9.2	90	24
	2	0	148	31.	15	148	32	14.	145	31	14	137	30	11	108	27	9.7	95	25
BA180M6	1	18.	182	37.	17.	173	36	17.	169	36	16.	161	35	12.	126	30	11.	111	28
BRA200LA6	0	18.	182	39.	17.	175	38	17.	172	38	16.	163	37	13.	128	32	11.	112	30
	1	5	181	38.	18.	181	38	18.	178	38	17.	169	36	13.	132	31	11.	116	29
	2		181	37.	18.	180	37	18.	177	36	17.	168	35	13.	132	30	11.	115	28
BA200M6, BRA200LB6	1	22.	215	43.	22	215	44	22	211	44	20	200	42	16.	157	36	14.	138	34
	2	0	215	44.	22	215	45	22	210	44	20	200	43	16.	157	37	14.	137	35
BA200L6, BRA225M6	0	30.	292	60.	28	278	58	28	272	57	26	258	55	21	203	48	18.	178	45
	1	0	294	59.	30	289	59	29	283	58	28	269	56	22	211	49	19.	185	45
BA225M6, BRA250M6	1	37.	361	71.	35	339	68	34	332	67	32	315	65	26	248	56	22	217	52
	2	0	359	70.	36	348	69	35	341	68	33	324	65	26	254	56	23	223	52
BA250S6, BRA280S6	1	45.0	440	86	44	420	84	43	420	83	41	395	79	32	310	68	28	272	63
	2		440	85	45	440	85	44	430	84	42	410	81	33	318	69	29	279	64
BA250M6, BRA280M6	1	55.0	530	104	54	520	102	53	510	101	50	490	97	39	381	83	35	334	77
	2		530	103	55	530	103	54	520	102	51	500	98	40	389	83	35	341	77
BA280S6, BRA315S6	1	75.0	730	141	71	680	134	69	670	132	66	640	128	52	500	109	45	440	101
	2		730	140	75	730	140	74	710	138	70	680	132	55	530	112	48	470	104
BA280M6, BRA315M6	2	90.0	870	163	87	840	161	85	830	158	81	790	152	64	620	128	56	540	118
	3		870	162	90	870	163	88	860	161	84	810	154	66	640	130	58	560	119
BA315S6, BRA315LA6	2	110.0	1060	199	108	105	196	106	103	193	101	970	185	79	760	156	70	670	143
	3		1064	198	110	106	197	108	104	194	102	990	187	81	780	157	71	680	144
BA315M6, BRA315LB6	2	132.0	1270	237	124	120	226	121	117	222	115	111	214	91	870	181	80	760	167
	3		1275	236	129	125	232	126	122	228	120	116	219	94	910	185	83	800	170
BA355SMA6, BRA355SMA6	1	160	1540	309	154	149	302	147	141	292	145	140	290	132	127	273	128	123	268
	2	.0	1540	308	160	154	308	152	146	297	150	145	295	137	132	278	133	128	273
	3		1540	306	160	154	306	152	146	296	150	145	294	137	132	277	133	128	272
BA355SMB6, BRA355SMB6	1	200	1930	386	192	185	375	182	176	363	181	174	360	164	158	340	160	153	334
	2	.0	1930	384	200	193	384	190	183	371	188	181	368	171	165	347	166	160	341
	3		1930	382	200	193	382	190	183	369	188	181	367	171	165	345	166	160	339
BA355MLA6, BRA355MLA6	2	250	2410	470	233	224	450	222	213	440	219	211	430	200	192	410	194	186	400
	3	.0	2410	470	243	234	460	231	222	450	228	220	440	208	200	420	202	194	410
BA355MLB6,	3	315	3030	590	299	288	570	284	273	550	281	270	550	256	246	520	248	239	510
BA355MLC6,	3	355	3420	670	333	320	640	317	304	620	313	301	610	285	274	580	277	266	570
750 rpm (synchronus)																			
BA160SA8, BRA160MA8	-	4.0	52.	10.	4	52	10.	3.8	50	9.9	3.6	47	9.6	2.7	35	8.7	2.5	32	8.4
BA160SB8, BRA160MB8	-	5.5	71.	14.	5.5	72	14	5.2	68	13.	4.9	64	13.	3.8	49	12	3.4	44	11.
BA160S8, BRA160L8	1*	7.5	98	17.	7.1	93	17.	6.8	88	17	6.4	83	16.	4.9	63	14.	4.4	57	14.
	2*		98	17.7	7.5	98	17.	7.1	93	17.	6.7	87	16.	5.1	66	14.	4.6	60	14.
BA160M8, BRA180L8	1*	11.	144	26.	10.	137	25	9.9	130	24	9.3	122	24	7.1	93	21	6.4	83	20
	2*	0	144	25.0	11	144	25	10.	137	25	9.8	128	24	7.5	98	21	6.8	88	20
BA180M8	-	15.	196	36.	14.	186	33	13.	177	32	12.	166	31	9.7	126	28	8.8	114	27
BRA200L8	-	15.	196	32.	15	196	32	14.	186	31	13.	181	31	11.	155	28	11.	147	27
BA200M8, BRA225S8	-	18.	243	40.	17.	233	40	16.	222	38	16.	215	38	14.	184	35	13.	175	34
BA200L8, BRA225M8	-	22.	290	48.	21	274	47	20	260	46	19.	252	45	16.	217	42	15.	205	41
BA225M8	1*	30.	390	66	29	373	64	27	354	62	27	351	62	23	302	57	22	287	56
BRA250M8	2*	0	390	65	30	390	65	29	370	63	28	366	63	24	316	58	23	300	57
BA250S8, BRA280S8	1*	37.0	480	77	35	460	75	34	440	73	33	430	72	30	384	68	29	373	67
	2*		480	76	37	480	76	35	450	74	34	450	73	31	400	69	30	388	67
BA250M8, BRA280M8	1*	45.	580	93	44	570	92	41	540	89	41	530	88	37	470	82	35	460	81
	2*	0	580	92	45	580	92	43	560	89	42	540	88	38	490	83	37	470	82
BA280S8, BRA315S8	1*	55.0	710	113	53	690	111	51	660	108	50	640	106	45	580	100	43	560	98
	2*		710	112	55	710	112	52	680	109	51	660	107	46	600	101	45	580	99
BA280M8, BRA315M8	1*	75.0	970	154	71	910	148	67	870	144	66	850	142	59	760	134	57	740	132
	2*		970	152	73	950	150	70	900	146	68	880	144	62	790	135	60	770	133
BA315S8, BRA315LA8	-	90.0	1161	177	85	110	172	81	104	166	81	104	166	73	940	156	70	900	152
BA315M8, BRA315LB8	-	110.0	1420	224	106	137	219	101	130	213	101	130	213	91	117	201	87	112	196
BA355SMA8,	1*	132	170	263	131	169	262	125	160	253	122	157	250	111	142	235	107	137	230
BRA355SMA8	2*	.0	170	262	132	170	262	125	161	253	123	158	250	111	143	235	107	137	231
BA355SMB8,	-	160	206	317	160	206	317	152	195	306	149	191	302	135	173	284	130	167	279
BA355MLA8,	-	200	257	400	200	257	400	190	244	391	186	239	386	168	216	365	162	208	358
BA355MLB8,	2*	250	321	500	235	301	480	223	286	460	218	280	460	197	253	430	190	244	420
BRA355MLB8	3*	.0	321	500	250	321	500	238	305	480	233	298	470	210	270	450	203	260	440

* - Energy efficiency class is specified by convention

Motors parameters at operation from frequency converter.
Nominal data and power are regulated for ambient temperature 40°C.

Operation	In supply line			With frequency converter, IC411														
Supply frequency and load torque	50 Hz			10-50 Hz, fan characteristic 40-50 Hz, constant torque			30-50 Hz, constant torque			20-50 Hz, constant torque			10-50 Hz, constant torque			5-50 Hz, constant torque		
Motor size	P2	M2	I1	P2	M2	I1	P2	M2	I1	P2	M2	I1	P2	M2	I1	P2	M2	I1
	kW	Нм	A	kW	Нм	A	kW	Нм	A	kW	Нм	A	kW	Нм	A	kW	Нм	A
600 rpm (synchronus)																		
BA250S10	22.	356	49	22	356	49	21	338	48	20	331	47	18.	296	44	17.	285	44
BA250M10	30.	490	66	30	480	66	28	460	64	28	450	63	25	400	60	24	386	59
BA280S10	37.	600	80	37	600	80	35	570	77	34	560	76	31	500	72	30	480	71
BA315SA10	55.	890	116	55	890	116	52	850	112	52	850	112	47	750	105	45	720	103
BA315SB10	75.	121	161	70	113	155	67	108	150	67	108	150	59	960	142	57	920	139
BA315M10	90.	145	190	84	135	182	80	129	177	80	129	177	71	114	167	68	110	164
BA355SMA10, BRA355SMA10	110	177	229	106	171	224	101	162	218	99	159	215	88	142	203	85	137	199
BA355SMB10, BRA355SMB10	132	212	274	125	201	265	119	191	258	117	187	255	104	167	240	100	161	236
BA355MLA10, BRA355MLA10	160	257	331	150	241	318	143	229	309	140	224	306	125	200	289	120	193	283
BA355MLB10, BRA355MLB10	200	322	410	187	300	400	177	285	385	174	279	380	155	249	359	150	240	353
500 rpm (synchronus)																		
BA160S12	5.5	109	14.	5.5	109	14.	5.2	104	14	4.9	97	13.	3.8	74	12.	3.4	67	11.
BA160M12	6	119	15.	6	119	15.	5.7	113	15.	5.4	106	15.	4.1	80	13.	3.7	72	13.
BA180S12	6	119	15.	6	119	15.	5.7	113	15.	5.4	106	15.	4.1	80	13.	3.7	72	13.
BA180MA12	7.5	149	19.	7.5	148	19	7.1	140	18.	6.7	132	18	5.1	100	16.	4.6	90	15.
BA180MB12	9	179	23	8.7	172	22	8.2	163	22	7.7	153	21	5.9	117	19	5.4	105	18.
BA200M12	11.	220	28	10.	214	28	10.	203	27	10	199	27	8.5	168	25	8	158	25
BA200LA12	13.	260	33	12.	245	33	11.	233	32	11.	228	32	9.8	193	30	9.2	182	29
BA200LB12	15.	301	38	14.	284	37	13.	270	36	13.	264	36	11.	224	33	10.	210	33
BA225MA12, BRA250MA12	18.	364	48.	17.	345	46.	16.	327	45.	16.	320	45.	14.	289	43.	13.	263	42.
BA250S12	22.	430	56	22	430	56	21	410	54	21	410	54	18.	359	52	17.	346	51
BA250M12	30.	590	77	30	590	77	29	560	75	28	560	75	25	490	72	24	470	71
BA280S12, BRA315S12	37.	730	92	37	730	92	35	690	90	35	680	89	31	610	85	30	580	84
BA315SA12	45.	880	106	45	870	105	42	820	103	42	820	103	38	730	98	36	700	96
BA315S12	55.	107	129	55	107	129	52.	101	125	52.	101	125	48.	941	121	44.	870	117
BA315M12	75.	147	162	71	138	157	67	131	153	67	131	153	60	117	144	58	112	142
BA355S12, BRA355S12	75.	145	158	75	145	158	71	138	153	70	135	152	62	120	143	60	116	140
BA355SMA12, BRA355SMA12	90.	174	203	90	174	203	86	166	198	84	162	196	75	145	186	72	139	183
BA355MLA12, BRA355MLA12	110	213	237	110	213	237	105	202	230	102	198	228	92	177	215	88	170	212
BA355MLB12, BRA355MLB12	132	256	284	132	259	284	125	243	276	123	238	273	110	212	258	106	205	253
428.5 rpm (synchronus)																		
BA250S14	18.	430	49	17.	400	47	16.	381	46	16.	377	46	14.	333	44	14	321	43
BA250M14	22.	510	57	21	480	56	20	460	55	20	450	55	17.	400	52	17	387	52
BA280S14	30.	690	78	28	650	76	27	620	75	27	610	74	24	540	71	23	520	70

Power reduction or maximum ambient temperature reduction for the use of motors with temperature class T5 and T6.

Table of power reduction for the use of motors with temperature class T5 and T6, or a reduction in the maximum ambient temperature for the use of motors with a temperature class of T5 and T6 with a nominal power, regulated for class T4.

Type	IE	T4	T5	T6	T4	T5	T6	Type	IE	T4	T5	T6	T4	T5	T6
		P2	P2	P2	tamb	tamb	tamb			P2	P2	P2	tamb	tamb	tamb
		kW	kW	kW	C°	C°	C°			kW	kW	kW	C°	C°	C°
3000 rpm (2 poles)								1500 rpm (4 poles)							
BA100S2	0	4.0	4.0	3.5	40	40	25	BA100S4	0	3.0	2.5	2.0	40	35	20
BRA132SA2	2	5.5	5.5	5.5	40	40	40	BA132SA4, BRA132S4	1	5.5	5.5	4.5	40	40	25
BA132S2, BRA132SB2	1	7.5	7.5	6.5	40	40	30		2	5.5	5.5	5.5	40	40	40
	2	7.5	7.5	7.5	40	40	40	BA132S4, BRA132M4	1	7.5	7.5	7.0	40	40	35
BRA132MA2	2	9.0	9.0	9.0	40	40	40		2	7.5	7.5	7.5	40	40	40
BA132M2; BRA132MB2	1	11.0	11.0	9.0	40	40	25	BA132M4	1	11.0	10.0	8.0	40	30	-
	2	11.0	11.0	9.0	40	40	25	BA160SA4,BRA 160M4	1	11.0	10.0	8.0	40	30	-
BA160SA2, BRA160MA2	1	11.0	11.0	10.0	40	40	35		2	11.0	11.0	9.0	40	40	25
	2	11.0	11.0	11.0	40	40	40	BA160S4, BRA160L4	1	15.0	13.0	11.0	40	30	-
BA160S2, BRA160MB2	1	15.0	14.0	12.5	40	35	25		2	15.0	15.0	12.0	40	40	25
	2	15.0	15.0	15.0	40	40	40	BA160M4, BRA180M4	1	18.5	16.5	14.0	40	30	-
BA160M2, BRA160L2	1	18.5	16.5	13.5	40	25	-		2	18.5	18.5	15.0	40	40	25
	2	18.5	18.5	16.5	40	40	30	BA180S4, BRA180L4	1	22.0	19.0	16.0	40	25	-
BA180S2, BRA180M2	1	22.0	20.0	16.0	40	20	-		2	22.0	20.0	17.0	40	30	-
	2	22.0	22.0	18.5	40	40	25	BA180M4	1	30.0	25.0	21.0	40	20	-
BA180M2	2	30.0	27.0	24.0	40	20	-	BRA200L4	1	30.0	25.0	22.0	40	25	-
BA200M2, BRA200LB2	2	37.0	37.0	33.0	40	40	35		2	30.0	28.0	24.0	40	35	20
BA200L2, BRA225M2	2	45.0	40.0	35.0	40	30	-	BA200M4, BRA225S4	1	37.0	32.0	27.0	40	30	-
BA225M2,BRA250 M2	1	55.0	52.0	44.0	40	35	-		2	37.0	34.0	28.0	40	35	20
								BA200L4, BRA225M4	1	45.0	37.0	31.0	40	20	-
								BA225M4, BRA250M4	1	55.0	51.0	44.0	40	35	20
									2	55.0	55.0	47.0	40	40	30
1000 rpm (6 poles)								750 rpm (6 poles)							
BA132SA6, BRA132S6	1	3.0	3.0	2.5	40	40	35	BA160SB8, BRA160MB8	-	5.5	5.5	5.5	40	40	40
	2	3.0	3.0	3.0	40	40	40	BA160S8, BRA160L8	-	7.5	7.0	6.0	40	35	20
BA132SB6, BRA132MA6	1	4.0	4.0	3.5	40	40	35	BA160M8, BRA180L8	-	11.0	9.5	8.0	40	30	-
	2	4.0	4.0	4.0	40	40	40	BA180M8	-	15.0	12.0	10.0	40	20	-
BA132S6, BRA132MB6	1	5.5	5.5	4.5	40	40	25	BA200M8, BRA225S8	-	18.5	15.0	12.0	40	-	-
	2	5.5	5.5	5.0	40	40	35	BA200L8, BRA225M8	-	22.0	17.0	14.0	40	-	-
BA132M6	0	7.5	6.0	5.5	40	20	-	BA225M8, BRA250M8	-	30.0	24.0	20.0	40	20	-
BA160SA6, BRA160M6	1	7.5	7.5	6.0	40	40	30								
	2	7.5	7.5	7.0	40	40	35								
BA160S6, BRA160L6	1	11.0	9.0	7.5	40	20	-								
	2	11.0	11.0	9.5	40	40	30								
BA160M6, BRA180L6	1	15.0	12.0	10.0	40	20	-								
	2	15.0	15.0	13.0	40	40	35								
BA180M6	1	18.5	16.0	14.0	40	20	-								
BA200M6, BRA200LB6	1	22.0	18.5	-	40	25	-								
	2	22.0	22.0	19.0	40	40	30								
BA200L6, BRA225M6	0	30.0	22.0	-	40	-	-								
	1	30.0	24.0	-	40	-	-								
BA225M6,BRA250 M6	1	37.0	31.0	26.0	40	20	-								
	2	37.0	33.0	27.0	40	30	-								

The analogue values, which are not indicated in table, will be sent upon request.

Motors weight

Motor size	Power, kW	IE	Weight, kg											
			1ExdIIB			1ExdIIC			1ExdeIIB			1ExdeIIC		
			IM10xx	IM20xx	IM30xx	IM10xx	IM20xx	IM30xx	IM10xx	IM20xx	IM30xx	IM10xx	IM20xx	IM30xx
BA100S2		0	52	53.8	55	-	-	-	-	-	-	-	-	-
BRA132SA2	5.5	1,2	87	88	84	95	108	104	77	78	74	85	98	94
BA132S2, BRA132SB2	7.5	1,2	92	103	99	100	113	109	82	93	89	90	103	99
BRA132MA2	9.0	1,2	101	112	108	110	123	119	91	102	98	100	113	109
BA132M2, BRA132MB2	11.0	1,2	101	112	108	110	123	119	91	102	98	100	113	109
BA160SA2, BRA160MA2	11.0	1,2	146	154	150	159	171	167	136	144	140	149	161	157
BA160S2, BRA160MB2	15.0	1,2	144	152	148	157	169	165	134	142	138	147	159	155
BA160M2, BRA160L2	18.5	1,2	160	168	164	173	185	181	150	158	154	163	175	171
BA180S2,	22.0	1,2	168	178	174	181	195	191	158	168	164	171	185	181
BRA180M2	22.0	1,2	168	176	172	181	193	189	158	166	162	171	183	179
BA180M2	30.0	2	203	213	205	216	230	202	193	203	195	206	220	192
BRA200LA2	30.0	2	-	-	-	310	325	315	-	-	-	-	-	-
BA200M2,	37.0	2	-	-	-	345	365	355	-	-	-	-	-	-
BRA200LB2			-	-	-	345	360	350	-	-	-	-	-	-
BA200L2	45.0	2	-	-	-	365	385	375	-	-	-	-	-	-
BRA225M2			-	-	-	370	390	375	-	-	-	-	-	-
BA225M2	55.0	1,2	-	-	-	405	425	415	-	-	-	-	-	-
BRA250M2	55.0	1,2	-	-	-	410	430	415	-	-	-	-	-	-
BA250S2, BRA280S2	75.0	1,2	-	-	-	582	608	596	-	-	-	-	-	-
BA250M2, BRA280M2	90.0	1,2	-	-	-	608	634	621	-	-	-	-	-	-
BA280S2, BRA315S2	110.0	1,2	-	-	-	690	768	741	-	-	-	-	-	-
BRA315M2	132.0	2	-	-	-	1075	1105	1080	-	-	-	-	-	-
BA315S2, BRA315LA2	160.0	2,3	-	-	-	1185	1205	1190	-	-	-	-	-	-
BRA315MB2	160.0	2,3	-	-	-	1180	1200	1185	-	-	-	-	-	-
BA315M2, BRA315LB2	200.0	2,3	-	-	-	1210	1240	1215	-	-	-	-	-	-
BA355SMA2, BRA355SMA2	250.0	1,2	-	-	-	1603	1693	1638	-	-	-	-	-	-
BA355SMB2, BRA355SMB2	315.0	2	-	-	-	1753	1843	1788	-	-	-	-	-	-
BA355SMC2, BRA355SMC2	355.0	2	-	-	-	1830	1920	1865	-	-	-	-	-	-
BA355MLB2, BRA355MLB2	400.0	3	-	-	-	2213	2303	2248	-	-	-	-	-	-
BA355MLC2, BRA355MLC2	450.0	3	-	-	-	2213	2303	2248	-	-	-	-	-	-

BA100S4, BAK100S4, BAБ100S4	3.0	0	52	59	57	-	-	-	-	-	-	-	-	-
BA132SA4, BRA132S4	5.5	1	88	99	95	96	110	106	78	89	85	86	100	96
		2	96	107	103	108	121	117	86	97	93	98	111	117
BA132S4, BRA132M4	7.5	1	96	107	103	108	121	117	86	97	93	98	111	117
		2	108	119	115	117	130	125	98	109	105	107	120	115
BA132M4	11.0	1	108	119	115	117	130	125	98	109	105	107	120	115
BA160SA4, BRA160M4	11.0	1,2	142	150	146	155	167	163	132	140	136	145	157	153
BA160S4	15.0	1,2	155	163	159	168	180	176	145	153	149	158	170	166
BRA160L4	15.0	1,2	157	165	161	170	182	178	147	155	151	160	172	168
BA160M4, BRA180M4	18.5	1,2	170	178	174	183	195	191	160	168	164	173	185	181
BA180S4	22.0	1,2	185	195	191	196	212	208	175	185	181	186	202	198
BRA180L4	22.0	1,2	175	183	179	188	200	196	165	173	169	178	190	186
BA180M4	30.0	1	225	235	227	238	252	244	215	225	217	228	242	234
BRA200L4	30.0	1	-	-	-	310	325	315	-	-	-	-	-	-
		2	-	-	-	335	355	345	-	-	-	-	-	-
BA200M4	37.0	1	-	-	-	335	355	345	-	-	-	-	-	-
		2	-	-	-	365	385	375	-	-	-	-	-	-
BRA225S4		1	-	-	-	340	360	350	-	-	-	-	-	-
		2	-	-	-	370	390	380	-	-	-	-	-	-
BA200L4	45.0	1	-	-	-	365	385	375	-	-	-	-	-	-
BRA225M4		1	-	-	-	370	390	380	-	-	-	-	-	-
BA225M4	55.0	1	-	-	-	410	430	420	-	-	-	-	-	-
BRA250M4		1	-	-	-	415	435	425	-	-	-	-	-	-
BA250S4, BRA280S4	75.0	1,2	-	-	-	585	606	595	-	-	-	-	-	-
BA250M4, BRA280M4	90.0	1,2	-	-	-	643	669	657	-	-	-	-	-	-
BA280S4, BRA315S4	110.0	1	-	-	-	725	771	745	-	-	-	-	-	-
BRA315M4	132.0	3	-	-	-	1050	1080	1055	-	-	-	-	-	-
BA315S4, BRA315LA4	160.0	2,3	-	-	-	1235	1255	1240	-	-	-	-	-	-
BA315M4, BRA315LB4	200.0	2,3	-	-	-	1330	1350	1335	-	-	-	-	-	-
BA355SMA4, BRA355SMA4	250.0	2	-	-	-	1666	1756	1696	-	-	-	-	-	-
BA355SMB4, BRA355SMB4	315.0	2	-	-	-	1836	1926	1866	-	-	-	-	-	-
BA355SMC4, BRA355SMC4	355.0	2	-	-	-	1943	2033	1973	-	-	-	-	-	-
BA355MLB4, BRA355MLB4	400.0	3	-	-	-	2189	2279	2219	-	-	-	-	-	-
BA355MLC4, BRA355MLC4	450.0	3	-	-	-	2304	2394	2334	-	-	-	-	-	-
BA355MLD4, BRA355MLD4	500.0	3	-	-	-	2304	2394	2334	-	-	-	-	-	-

Motors weight.

Motor size	Power, kW	IE	Weight, kg											
			1ExdIIB			1ExdIIC			1ExdeIIB			1ExdeIIC		
			IM10xx	IM20xx	IM30xx	IM10xx	IM20xx	IM30xx	IM10xx	IM20xx	IM30xx	IM10xx	IM20xx	IM30xx
BA132SA6, BRA132S6	3.0	1, 2	87	98	94	95	108	104	77	88	84	85	98	94
BA132SB6	4.0	1, 2	93	104	100	101	114	110	83	94	90	91	104	100
BRA132MA6	4.0	1, 2	98	109	105	107	120	115	88	99	95	97	110	105
BA132S6	5.5	1	96	107	103	104	117	113	86	97	93	94	107	103
		2	112	123	119	120	133	128	102	113	109	110	123	118
BRA132MB6	5.5	1	101	112	108	110	123	119	91	102	98	100	113	109
		2	112	123	119	120	133	128	102	113	109	110	123	118
BA132M6	7.5	0	112	123	119	120	133	128	102	113	109	110	123	118
BA160SA6, BRA160M6	7.5	1, 2	141	149	145	154	166	162	131	139	135	144	156	152
BA160S6	11.0	1, 2	153	161	157	166	178	174	143	151	147	156	168	164
BRA160L6	11.0	1, 2	160	168	164	173	185	181	150	158	154	163	175	171
BA160M6, BRA180L6	15.0	1, 2	174	182	178	187	199	195	164	172	168	177	189	185
BA180M6	18.5	1	203	213	221	216	230	222	193	203	211	206	220	212
BRA200LA6	18.5	0	-	-	-	285	300	290	-	-	-	-	-	-
		1	-	-	-	295	310	300	-	-	-	-	-	-
		2	-	-	-	315	320	310	-	-	-	-	-	-
BA200M6	22.0	1	-	-	-	315	335	325	-	-	-	-	-	-
		2	-	-	-	330	350	340	-	-	-	-	-	-
BRA200LB6		1	-	-	-	320	340	330	-	-	-	-	-	-
		2	-	-	-	335	355	345	-	-	-	-	-	-
BA200L6	30.0	0	-	-	-	340	360	350	-	-	-	-	-	-
		1	-	-	-	-	-	-	-	-	-	-	-	-
BRA225M6		0	-	-	-	345	365	355	-	-	-	-	-	-
		1	-	-	-	-	-	-	-	-	-	-	-	-
BA225M6	37.0	1	-	-	-	390	410	400	-	-	-	-	-	-
		2	-	-	-	400	420	410	-	-	-	-	-	-
BRA250M6		1	-	-	-	395	415	405	-	-	-	-	-	-
		2	-	-	-	405	425	415	-	-	-	-	-	-
BA250S6, BRA280S6	45.0	1,2	-	-	-	544	570	559	-	-	-	-	-	-
BA250M6, BRA280M6	55.0	1,2	-	-	-	582	608	596	-	-	-	-	-	-
BA280S6, BRA315S6	75.0	1,2	-	-	-	684	730	704	-	-	-	-	-	-
BA315S6, BRA315LA6	110.0	2,3	-	-	-	1100	1120	1105	-	-	-	-	-	-
BA315M6, BRA315LB6	132.0	2,3	-	-	-	1190	1210	1195	-	-	-	-	-	-
BA355SMA6, BRA355SMA6	160.0	1,2,3	-	-	-	1576	1666	1606	-	-	-	-	-	-
BA355SMB6, BRA355SMB6	200.0	1,2,3	-	-	-	1720	1811	1751	-	-	-	-	-	-
BA355MLA6, BRA355MLA6	250.0	2,3	-	-	-	2020	2112	2052	-	-	-	-	-	-
BA355MLB6, BRA355MLB6	315.0	3	-	-	-	2217	2307	2247	-	-	-	-	-	-
BA355MLC6, BRA355MLC6	355.0	3	-	-	-	2364	2454	2394	-	-	-	-	-	-

BA160SA8, BRA160MA8	4.0	-	139	147	143	152	164	160	129	137	133	142	154	150
BA160SB8, BRA160MB8	5.5	-	143	151	147	157	169	165	133	141	137	147	159	155
BA160S8, BRA160L8	7.5	1,2	156	164	160	169	181	177	146	154	150	159	171	167
BA160M8, BRA180L8	11.0	1,2	178	186	182	191	203	199	168	176	172	181	193	189
BA180M8	15.0	-	215	225	217	228	242	234	205	215	207	218	232	234
BRA200L8	15.0	-	-	-	-	300	315	305	-	-	-	-	-	-
BA200M8	18.5	-	-	-	-	315	335	325	-	-	-	-	-	-
BRA225S8		-	-	-	-	320	340	330	-	-	-	-	-	-
BA200L8	22.0	-	-	-	-	340	360	350	-	-	-	-	-	-
BRA225M8		-	-	-	-	335	355	345	-	-	-	-	-	-
BA225M8	30.0	1,2	-	-	-	400	420	410	-	-	-	-	-	-
BRA250M8	30.0	1,2	-	-	-	405	425	415	-	-	-	-	-	-
BA250S8, BRA280S8	37.0	1,2	-	-	-	544	570	559	-	-	-	-	-	-
BA250M8, BRA280M8	45.0	1,2	-	-	-	582	608	596	-	-	-	-	-	-
BA280S8, BRA315S8	55.0	1,2	-	-	-	684	730	704	-	-	-	-	-	-
BA315S8, BRA315LA8	90.0	-	-	-	-	1100	1120	1105	-	-	-	-	-	-
BA315M8, BRA315LB8	110.0	-	-	-	-	1190	1210	1195	-	-	-	-	-	-
BA355SMA8, BRA355SMA8	132.0	1,2	-	-	-	1576	1666	1606	-	-	-	-	-	-
BA355SMB8, BRA355SMB8	160.0	-	-	-	-	1720	1811	1751	-	-	-	-	-	-
BA355MLA8, BRA355MLA8	200.0	-	-	-	-	1987	2077	2017	-	-	-	-	-	-
BA355MLB8, BRA355MLB8	250.0	2,3	-	-	-	2197	2287	2227	-	-	-	-	-	-

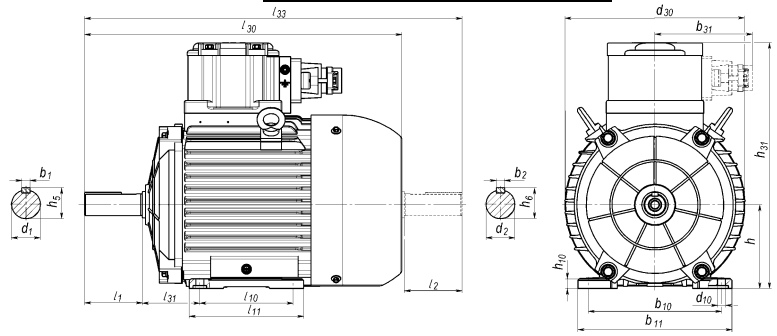
Motors weight.

Motor size	Power, kW	IE	Weight, kg											
			1ExdIIB			1ExdIIC			1ExdeIIB			1ExdeIIC		
			IM10xx	IM20xx	IM30xx	IM10xx	IM20xx	IM30xx	IM10xx	IM20xx	IM30xx	IM10xx	IM20xx	IM30xx
BA250S10	22.0	-	-	-	-	545	571	560	-	-	-	-	-	-
BA250M10	30.0	-	-	-	-	583	564	553	-	-	-	-	-	-
BA280S10	37.0	-	-	-	-	684	730	704	-	-	-	-	-	-
BA315SA10	55.0	-	-	-	-	1100	1120	1105	-	-	-	-	-	-
BA315SB10[1)]	75.0	-	-	-	-	1100	1120	1105	-	-	-	-	-	-
BA315M10[1)]	90.0	-	-	-	-	1210	1230	1215	-	-	-	-	-	-
BA(BRA)355SMA10	110.0	-	-	-	-	1596	1686	1626	-	-	-	-	-	-
BA(BRA)355SMB10	132.0	-	-	-	-	1741	1831	1771	-	-	-	-	-	-
BA(BRA)355MLA10	160.0	-	-	-	-	2007	2097	2037	-	-	-	-	-	-
BA(BRA)355MLB10	200.0	-	-	-	-	2217	2307	2247	-	-	-	-	-	-
BA160S12	5.5	-	-	-	-	-	-	-	-	-	-	-	-	-
BA160M12	5.5	-	-	-	-	-	-	-	-	-	-	-	-	-
BA180M12	6.0	-	198	208	200	206	220	212	188	198	190	196	210	202
BA180S12	6.0	-	178	188	181	197	211	204	168	178	171	187	201	194
BA180MA12	7.5	-	216	226	218	-	-	-	206	216	208	-	-	-
BA180MB12	9.0	-	230	240	238	-	-	-	220	230	228	-	-	-
BA200M12	11.0	-	-	-	-	-	-	-	-	-	-	-	-	-
BA200LA12	13.0	-	-	-	-	-	-	-	-	-	-	-	-	-
BA200LB12	15.0	-	-	-	-	-	-	-	-	-	-	-	-	-
BA225MA12	18.5	-	-	-	-	405	425	415	-	-	-	-	-	-
BRA250MA12		-	-	-	-	410	430	420	-	-	-	-	-	-
BA250S12	22.0	-	-	-	-	545	571	560	-	-	-	-	-	-
BA250M12	30.0	-	-	-	-	583	564	553	-	-	-	-	-	-
BA280S12, BRA315S12	37.0	-	-	-	-	730	704	678	-	-	-	-	-	-
BA315SA12	45.0	-	-	-	-	1100	1120	1105	-	-	-	-	-	-
BA315S12	55.0	-	-	-	-	1100	1120	1105	-	-	-	-	-	-
BA315M12	75.0	-	-	-	-	1205	1225	1210	-	-	-	-	-	-
BA(BRA)355S12	75.0	-	-	-	-	1494	1584	1524	-	-	-	-	-	-
BA(BRA)355SMA12	90.0	-	-	-	-	1576	1666	1606	-	-	-	-	-	-
BA(BRA)355MLA12	110.0	-	-	-	-	1987	2077	2017	-	-	-	-	-	-
BA(BRA)355MLB12	132.0	-	-	-	-	2197	2287	2227	-	-	-	-	-	-

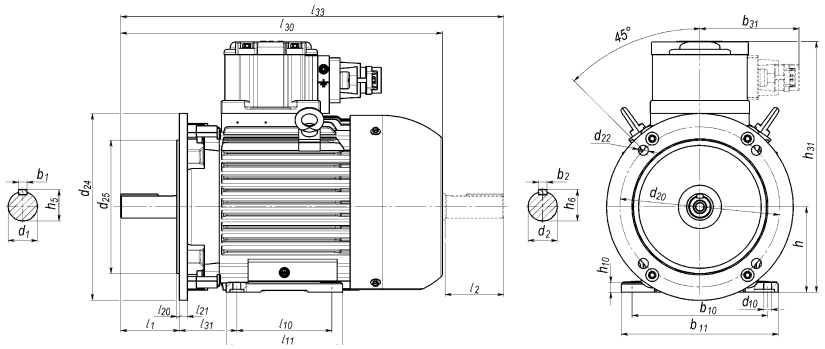
BA250S14	18.5	-	-	-	-	-	-	-	-	-	-	-	-	-
BA250M14	22.0	-	-	-	-	-	-	-	-	-	-	-	-	-
BA280S14	30.0	-	-	-	-	684	730	704	-	-	-	-	-	-
BA(BRA)355SMA14	75.0	-	-	-	-	1494	1584	1524	-	-	-	-	-	-
BA(BRA)355SMB14	90.0	-	-	-	-	1576	1666	1606	-	-	-	-	-	-
BA(BRA)355MLA14	110	-	-	-	-	1987	2077	2017	-	-	-	-	-	-
BA(BRA)355MLB14	132	-	-	-	-	2197	2287	2227	-	-	-	-	-	-
BA(BRA)355SMA16	55.0	-	-	-	-	1494	1584	1524	-	-	-	-	-	-
BA(BRA)355SMB16	75.0	-	-	-	-	1576	1666	1606	-	-	-	-	-	-
BA(BRA)355MLA16	90.0	-	-	-	-	1987	2077	2017	-	-	-	-	-	-
BA(BRA)355MLB16	110.0	-	-	-	-	2197	2287	2227	-	-	-	-	-	-
BA(BRA)355SMA20	45.0	-	-	-	-	1494	1584	1524	-	-	-	-	-	-
BA(BRA)355SMB20	55.0	-	-	-	-	1576	1666	1606	-	-	-	-	-	-
BA(BRA)355MLA20	75.0	-	-	-	-	1987	2077	2017	-	-	-	-	-	-
BA200M8/4	15.0 22.0	-	-	-	-	315	335	325	-	-	-	-	-	-

Dimension drawings

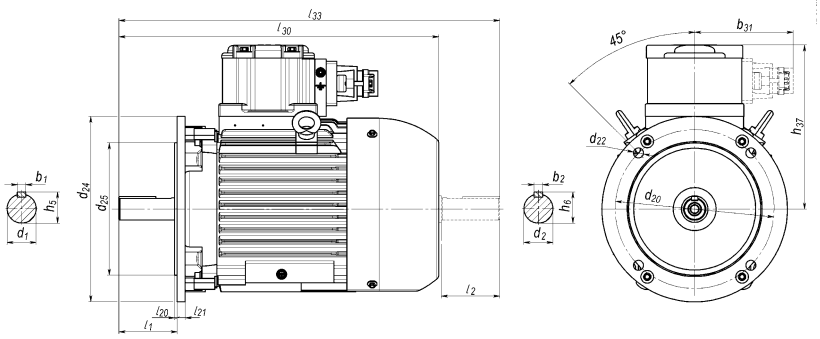
Dimension drawing IM 1001 (B3)



Dimension drawing IM 2001 (B35)



Dimension drawing IM 3001 (B5)



Possible variants of mounting of the exploision -proof motors

Motor type	Possible variants
BA100, BA132, BA160, BA180, BA200, BRA225, BA225, BRA250, BA250, BA280, BRA280, BRA315, BA315, BA355, BRA355	Fig.1, 3, 4
BAK100	Fig.5
BAБ100	Fig.2, 6

Tolerance for overall dimensions of the motors

Dimensions, mm

Designation размера Size designation		Nominal dimension interval, mm	GOST 31606 (type «BA»)		DIN EN 50347 (type«BRA»)	
GOST	DIN EN		Tolerance	Limit deviation	Tolerance	Limit deviation
d_1, d_2	D, DA	$14 < d_1(d_2)/D(DA) \le 18$	j6	+0,008 +0,003	j6	+0,008 +0,003
		$18 < d_1(d_2)/D(DA) \le 30$		+0,009 +0,004		+0,009 +0,004
		$30 < d_1(d_2)/D(DA) \le 50$	k6	+0,018 +0,002	k6	+0,018 +0,002
		$50 < d_1(d_2)/D(DA) \le 80$	m6	+0,030 +0,011	m6	+0,030 +0,011
		$80 < d_1(d_2)/D(DA) \le 100$		+0,035 +0,013		+0,035 +0,013
l_1, l_2	E, EA	$l_1(l_2)/E(EA) \le 30$	-	-0,2	-	-0,5
		$40 < l_1(l_2)/E(EA) \le 110$	-	-0,3	-	
		$140 < l_1(l_2)/E(EA) \le 210$	-	-0,5	-	
h	H	$71 < h(H) \le 250$	-	-0,5	-	-0,5
		$250 < h(H) \le 355$	-	-1,0	-	-1,0
d_{25}	N	$110 < d_{25}(N) \le 120$	j6	+0,013 -0,009	j6	+0,013 -0,009
		$120 < d_{25}(N) \le 180$		+0,014 -0,011		+0,014 -0,011
		$180 < d_{25}(N) \le 250$		+0,016 -0,013		+0,016 -0,013
		$250 < d_{25}(N) \le 315$		±0,016	h6	-0,032
		$315 < d_{25}(N) \le 400$		±0,018		-0,036
		$400 < d_{25}(N) \le 500$		±0,020		-0,040
		$500 < d_{25}(N) \le 630$	js6	±0,022		-0,044
		$630 < d_{25}(N) \le 680$		±0,025		-0,050
b_{10}	A	$b_{10}(A) \le 71$	-	±0,30	-	±0,30
		$80 < b_{10}(A) \le 132$	-	±0,60	-	±0,60
		$160 < b_{10}(A) \le 225$	-	±0,80	-	±0,80
		$250 < b_{10}(A) \le 355$	-	±1,00	-	±1,00
l_{10}	B	$l_{10}(B) \le 71$	-	±0,30	-	±0,30
		$80 < l_{10}(B) \le 132$	-	±0,60	-	±0,60
		$160 < l_{10}(B) \le 225$	-	±0,80	-	±0,80
		$250 < l_{10}(B) \le 355$		±1,00	-	±1,00
l_{31}, l_{39}	C, R	$71 < l_{31}(l_{39})/C(R) \le 90$	-	±1,5	-	±1,5
		$90 < l_{31}(l_{39})/C(R) \le 132$	-	±2,0	-	±2,0
		$132 < l_{31}(l_{39})/C(R) \le 200$	-	±3,0	-	±3,0
		$200 < l_{31}(l_{39})/C(R) \le 355$	-	±4,0	-	±4,0

		Nominal accuracy tolerance	High accuracy tolerance
Shaft radial runout «f» $d_1(d_2)/D(DA)$	$14 < d_1(D) \le 18$	0,035	0,018
	$18 < d_1(D) \le 30$	0,040	0,021
	$30 < d_1(D) \le 50$	0,050	0,025
	$50 < d_1(D) \le 80$	0,060	0,030
	$80 < d_1(D) \le 100$	0,070	0,035
Radial and face runout "s" and "g" of flange grind $d_{25}(N)$	$110 < d_{25}(N) \le 230$	0,100	0,050
	$230 < d_{25}(N) \le 450$	0,125	0,063
	$450 < d_{25}(N) \le 680$	0,160	0,080

Upon the customers request the motors can be produced with shaft threaded hole

Interval of nominal diameter $d_1(d_2)$ / D(DA), mm	Threaded hole form/ thread length DS по DIN 332
$13 < d_1(d_2) / D(DA) \le 16$	M5 / 12.5mm
$16 < d_1(d_2) / D(DA) \le 21$	M6 / 16mm
$21 < d_1(d_2) / D(DA) \le 24$	M8 / 19mm
$24 < d_1(d_2) / D(DA) \le 30$	M10 / 22mm
$30 < d_1(d_2) / D(DA) \le 38$	M12 / 28mm
$38 < d_1(d_2) / D(DA) \le 50$	M16 / 36mm
$50 < d_1(d_2) / D(DA) \le 85$	M20 / 42mm
$85 < d_1(d_2) / D(DA) \le 130$	M24 / 50mm

Dimensions in mm

Motor type	l30[1)]	l33	b31	d24	d30	h31	h37	b1	b2	b10	d1	d2	d10	d20	d22	d25	h	h5	h6	l1	l2	l10	l20	l21	l31	l11	b11	h10
BA(Б)100S2,4	435(420)	-	165	250	215	345	245	8	-	160	28	-	12	215	15	180	100	31	-	60	-	112	4	15	63	155	210	14
BA(Б)132S2,4,6 (IIB)	505(485)	569	180	350	285	400	265	10	8	216	38	28	12	300	19	250	132	41	31	80	60	140	5	14	89	190	260	19
BA(Б)132M2,4,6 (IIB)	545(525)	609																				178				230		
BA(Б)132S2,4 (IIC)	545(500)	607																				140				190		
BA(Б)132S6 (IIC)	585(540)	647																				178				254		
BA(Б)132M2,4,6 (IIC)																												
BA(Б)160S2 (IIB)	610(565)	726			355	465	305	12	12	254	42	42	15				160	45	45	110	110	210		15	108	294	300	
BA(Б)160S4,6,8,12 (IIB)								14			48							51.5										
BA(Б)160M2 (IIB)	650(605)	766						12			42							45				210				294		
BA(Б)160M4,6,8,12 (IIB)								14			48							51.5										
BA(Б)160S2 (IIC)	680(595)	768						12			42							45				178				254		
BA(Б)160S4,6,8,12 (IIC)								14			48							51.5										
BA(Б)160M2 (IIC)	720(635)	808						12			42							45				210				294		
BA(Б)160M4,6,8,12 (IIC)								14			48							51.5										
BA(Б)180S2 (IIB)	650(605)	766		400	355	485	305	14	12	279	48	42	15	350		300	180	51.5	45	110	110	203		15	121	250	330	21
BA(Б)180S4; 12 (IIB)								16			55							59										
BA(Б)180M2 (IIB)	720(675)	836						14			48							51.5				241				290		
BA(Б)180M4,6,8,12 MA,MB12 (IIB)								16			55							59										
BA(Б)180S2 (IIC)	720(635)	808						14			48							51.5				203				250		
BA(Б)180S4, 12 (IIC)								16			55							59										
BA(Б)180M2 (IIC)	790(705)	878						14			48							51.5				241				290		
BA(Б)180M4,6,8, MA,MB12 (IIC)								16			55							59										
Motor type	**l30[1)]**	**l33**	**b31**	**d24**	**d30**	**h31**	**h37**	**b1**	**b2**	**b10**	**d1**	**d2**	**d10**	**d20**	**d22**	**d25**	**h**	**h5**	**h6**	**l1**	**l2**	**l10**	**l20**	**l21**	**l31**	**l11**	**b11**	**h10**
BRA(Б)132S2,4,6 (IIB)	505(485)	569	180	300	285	400	265	10	8	216	38	28	12	265	14	230	132	41	31	80	60	140	4	14	89	190	260	19
BRA(Б)132M2,4,6 (IIB)	545(525)	609																				178				230		
BRA(Б)132S2,4,6 (IIC)	545(500)	607																				140				190		
BRA(Б)132M2,4,6 (IIC)	585(540)	647																				178				230		
BRA(Б)160M2,4,6,8 (IIB)	610(565)	726		350	355	465	305	12	12	254	42	42	15	300	19	250	160	45	45	110	110	210	5	15	108	254	300	
BRA(Б)160L2,4,6,8 (IIB)	650(605)	766																				254				294		
BRA(Б)160M2,4,6,8 (IIC)	680(595)	768																				210				254		
BRA(Б)160L2,4,6,8 (IIC)	720(635)	808																				254				294		
BRA(Б)180M2,4 (IIB)	650(605)	766				485		14		279	48						180	51.5				241			121	290	330	21
BRA(Б)180L 4,6,8 (IIB)																						279				325		
BRA(Б)180M2,4 (IIC)	720(635)	808																				241				290		
BRA(Б)180L4,6,8 (IIC)																						279				325		

[1)] – the size l30 in frames is indicated for motors BAБ, BRAБ (without fan and cover). In such ounting the design versions with two shaft ends is absent.

Motor type	l30[1)]	l33	b31	d24	d30	h31	h37	b1	b2	b10	d1	d2	d10	d20	d22[2)]	d25	h	h5	h6	l1	l2	l10	l20	l21	l31	l11	b11	h10
BA(Б)200M2	890(810)	1008	235	450	380	595	395	16	16	318	55	55	19	400	19	350	200	59	59	110	110	267	5	16	133	345	395	28
BA(Б)200L2																						305				380		
BA(Б)200M4	875(795)	993						18			60							64		140		267				345		
BA(Б)200L4, LB12	920(840)	1038																				305				380		
BA(Б)200M6,8, M12	830(750)	948																				267				345		
BA(Б)200L6,8, LA12	875(795)	993																				305				380		
BRA(Б)200LA2	800(720)	918		400				16			55			350		300		59		110								
BRA(Б)200LB2	890(810)	1008																										
BRA(Б)200L4,6,8	800(720)	918																										
BRA(Б)225M2	890(810)	1008		450		615	380	18		356	60			400		350	225	64		140		311			149	385	430	31
BRA(Б)225S4	875(795)	993																				286				360		
BRA(Б)225M8																						311				385		
BRA(Б)225M4,6	920(840)	1038																										
BRA(Б)225S8	830(750)	948																				286				360		
BA(Б)225M2	880(800)	995		550	440	640	415	16	18	406	55	60	24	500		450	250	59	64	110	140	311		18	168	380	438	32
BA(Б)225M4,6,8,12	910(830)	1055						18			65							69		140								
BRA(Б)250M2		1025				665			16		60	55						64	59		110	349				420	485	
BRA(Б)250M4,6,8,12		1055							18		65	60						69	64		140							

[1)] – the size l30 in frames is indicated for motors BAБ, BRAБ (without fan and cover). In such mounting the design versions with two shaft ends is absent.

[2)] – in motors H200-H355 quantity of holes d22 - 8

Dimensions in mm

Motor type	l30[1]	l33	b31	d24	d30	h31	h37	b1	b2	b10	b11	d1	d2	d10	d20	d22[2]	d25	h	h5	h6	l1	l2	l10	l11	l20	l21	l31
BA(Б)250S2	1035(927)	1155	315	550	500	735	485	18	16	406	482	65	55	24	500	19	450	250	69	59	140	110	311	380	5	18	168
BA(Б)250S4,6,8,10,12,14		1185						20	18			75	65						79.5	69		140					
BA(Б)250M2		1155						18	16			65	55						69	59		110	349	420			
BA(Б)250M4,6,8,10,12,14		1185						20	18			75	65						79.5	69		140					
BA(Б)280S2	1190(1020)	1340	315	660	605	765	590	20	18	457	532	70	65	24	600	24	550	280	74.5	69	140	140	368	440	6	22	190
BA(Б)280S4,6,8,10,12,14	1220(1050)	1370						22				80							85		170						
BA(Б)315S2	1295(1145)	1455	340			905		20		508	614	75		28		23		315	79.5		140		406	520			216
BA(Б)315M2																							457	570			
BA(Б)315S4,6,8,12,SA10,SB10	1325(1175)	1485						25				90							95		170		406	520			
BA(Б)315M4,6,8,10,12																							457	570			
Motor type	**l30[1]**	**l33**	**b31**	**d24**	**d30**	**h31**	**h37**	**b1**	**b2**	**b10**	**b11**	**d1**	**d2**	**d10**	**d20**	**d22[2]**	**d25**	**h**	**h5**	**h6**	**l1**	**l2**	**l10**	**l11**	**l20**	**l21**	**l31**
BRA(Б)280S2	1035(927)	1155	315	550	500	765	485	18	16	457	532	65	55	24	500	19	450	280	69	59	140	110	368	440	5	18	190
BRA(Б)280S4,6,8		1185						20	18			75	65						79.5	69		140					
BRA(Б)280M2		1155						18	16			65	55						69	59		110	419	495			
BRA(Б)280M4,6,8		1185						20	18			75	65						79.5	69		140	416	495			
BRA(Б)315S2	1190(1020)	1340	315	660	605	800	590	18	18	508	606	65	65	28	600	24	550	315	69	69	140	140	406	515	6	22	216
BRA(Б)315S4,6,8,12	1220(1050)	1370						22				80							85		170						
BRA(Б)315M2, MB2	1295(1145)	1455	340			905		18				65		24		24			69		140		457	570			
BRA(Б)315LA2,LB2														28		23							508	625			
BRA(Б)315M4,6,8,12	1325(1175)	1485						22				80		24		24			85		170		457	570			
BRA(Б)315LA4,6,8,LB4,6,8														28		23							508	625			
Motor type	**l30[1]**	**l33**	**b31**	**d24**	**d30**	**h31**	**h37**	**b1**	**b2**	**b10**	**b11**	**d1**	**d2**	**d10**	**d20**	**d22[2]**	**d25**	**h**	**h5**	**h6**	**l1**	**l2**	**l10**	**l11**	**l20**	**l21**	**l31**
BA(Б),BRA(Б)355SMA2	1525(1285)	1690	330	660	760	991	636	22	20	610	715	85	75	28	740	24	680	355	90	79.5	170	140	500/560	665	6	25	254
BA(Б),BRA(Б)355SMB2																											
BA(Б),BRA(Б)355SMC2			415			1080	722																				
BA(Б),BRA(Б)355MLB2	1680(1440)	1845																					560/630	735			
BA(Б),BRA(Б)355MLC2																											
BA(Б),BRA(Б)355SMA4	1565(1325)	1760	330			991	636	28	25			100	90						106	95	210	170	500/560	665			
BA(Б),BRA(Б)355SMB4																											
BA(Б),BRA(Б)355SMC4			415			1080	722																				
BA(Б),BRA(Б)355MLB4	1720(1480)	1915																					560/630	735			
BA(Б),BRA(Б)355MLC4																											
BA(Б),BRA(Б)355MLD4																											
BA(Б),BRA(Б)355SMA6,8,10,12	1565(1325)	1760	330			991	636																500/560	665			
BA(Б),BRA(Б)355SMB6,8,10																											
BA(Б),BRA(Б)355MLA6,8,10,12	1720(1480)	1915																					560/630	735			
BA(Б),BRA(Б)355MLB6,8,10,12																											
BA(Б),BRA(Б)355MLC6,8,10,12			415			1080	722																				

[1] – the size l30 in frames is indicated for motors BAБ, BRAБ (without fan and cover). In such ounting the design versions with two shaft ends is absent.

[2] – in motors H200-H355 quantity of holes d22 - 8

Quastionary for exploision proof motors B(R)A(Б) according TC3341-067-05757995-2003 ver.1

Manufacturer: (JSC "ELDIN") Yaroslavl electric machine building plant 150040, Russia, Yaroslavl, October ave., 74 internet: http://www.eldin.ru phone: (4852) 78-00-00 fax: (4852) 78-00-01 e-mail: info@eldin.ru	Customer:
	phone:
	fax:
	e-mail:
Date: Manager:	Date

Necessary data for request and order

Quantity:		pcs.	Price:		in rubles incl. WAT per 1 pc			
1-2 type	3 Shaft height	4-5 length	6 poles qty	7 FC	8 wind.sensors presence	9 climatic vertion. (tamb.range)	9a non-standard tamb.range	9б rated motor power at operation from supply line or another,
								kW

10-voltage	10a- voltage tolerance	11-supply line frequncy.	11a -frequency tolerance
Explos.protection type:		18-index of protection:	

12 - FC control range	12a - ПЧ Motor power at rated frequencies (choose from catalogue	12б - FC Load torque of drive mechanism at frequencies (min, rated, max)
	kW	***Н*м***

13 Duty class	13a Start ups qty per hour (for S4)	13б Inertia load torque (for S4)	14 classIE (from catalogue)	15 кinsulation class	16 vibration degree.
	c/h	**kg*m²**			

17-Mounting type:							
IM20..;30…. - BRA(Б)132, 1Exd(e) IIC - отсуствует!!!							
17a -non standard shaft							
d_1=	mm	l_1=	mm	d_2=	mm	l_2=	mm
17б -non standard flange							
d_{24}=	mm	d_{20}=	mm	d_{25}=	mm	d_{22}=	mm

19 — terminal box position	Terminal s direction:

19a- Cable entry for supply cable, basic design of series "Exd КБУ"

Type of gasket:	unarmored (1)	unarmored in metal hose (3)	unarmored in duct laying(4)	Cable entry material	Withot cable entries with plugs
1-thread(Øcab):					
2-thread(Øcab):					
3-thread(Øcab): BA355, ≥355kW					

19a- Cable entry for control cable (thermal protection, heating of the winding), basic design of series "Exd КБУ"

3-thread(Øcab):					
4-thread(Øcab):					

19б- Cable entry for supply cable, alternative design for series "ВК"

Type of gasket::	unarmored (1a)	armored(2a)	armored in metal hose(3a)	Cable entry material
1-thread(Øcab):				

2-thread(Øcab):				
3-thread(Øcab): BA355, ≥355kW				

19б- Cable entries for control cables (thermal protection, heating of the winding), alternative design for series "ВК"

3-thread(Øcab):				
4-thread(Øcab):				

Coupling for metal hose:		Adapter coupling for metal hose:		pcs
Coupling for metal hose:		Adapter coupling for metal hose:		pcs

19в- without data for cable entries

Supply cable mark:		Cable Qty:	pcs
Control cable mark for thermal protection:		Cable Qty:	pcs
Control cable mark for heating of the winding:		Cable Qty:	pcs

8- temperature protection of stator winding[1]:		20-winding heating[1]:	***yes***

[1] — when you choose the temperature protestion or winding heating , check the Qty of clamps for control cable connection

21-Bearings	Manufacturer:		others:	
D-end side		N-endside		

Loas for bearing: (if they exceed mentioned in cata-logue)	radial Fr:		кН	application point "X":	mm
	axial Fa(+):		кН	axialFa(-):	кН

Bearings temperature control

fig	D-end	N-end	Qty of sensi-tive ele-ments	Static characteristic	Eplos.protection type	Cable length	Gasket type [2]	Cable entry for cable: [3] н/б -unarmored; б -armored; Метрук — in metal hose
К.1								-
К.2 [1]						-	-	
К.3								-
К.4						-	-	
К.5						-	-	

[1] - when you choose the temperature protestion or winding heating , check the Qty of clamps for control cable connection.

[2] - by default the sensor with armored cable in doble insulation and metal hose is used

[3] - by default the sensor for cable is used К.4-"н/б(7-11) -temp. ";
К.5-"н/б(5-8) -овен" or "н/б(7-11) -терм.приб." or "н/б(6-13) -элемер"

Exact type of sensor (по заказу):	D-end:	
	N-end:	

vibration monitoring	D-end:			N-end:			
	X,Y	X_1	X_1+адап	X',Y'	X_1'	X_1'+адап	
ВА(ВРА)(Б)132-180							
	X	X_2	Y	X'	X_2'	Y'	Z'
ВА200; ВРА200,225_IM10	-	-		-	-		
ВА200; ВРА200,225_IM20;30				-	-		
ВА225; ВРА250_IM10	-	-		-	-		
ВА225; ВРА250_IM20;30				-	-		
Type of sensor upon request							

paint		**standard- RAL5017**	other:	

Free sace for additional information: