CATALOGUE PAGES

4 EXPLOSION-PROOF MOTORS

Technical data:

Single-speed motors, series 6AT 71,112 and 7AT132-250 in explosion protection art: flame- proof –“d”(Ex d/e I/II) Motor outline drawings,exploded view with spare parts list and ordering procedure

Single-speed motors,series 5AZN 56-160 and 7AZN 132-250 in explosion protection art :non-sparking apparatus-“n”for zone 2(ExnA II)

Single-speed motors,series 5 AZS 71-112 in explosion protection art:increased safety –“e”(Ex e II)
Exploded view with spare parts list & ordering procedure

General

Explosion – proof electrical apparatus is suited for use in the hazardous areas with explosive gas atmosphere present or may be expected to be present.

Explosive gas atmosphere
A mixture with air, under normal atmospheric conditions (101.3 kPa and 20^{o}C), of flammable materials in the form of gas, vapour,mist or dust, in which, after ignition, combustion spreads throughout the unconsumed mixture(HRN IEC 50(426):1997).

Hazardous area
An area in which an explosive gas atmosphere is present, or may be expected to be present, in quantities such as to require special precautions for the construction, installation and use of electrical apparatus.

Zones
Hazardous areas are classified in **dangerous zones** based upon the frequency of the appearance and the duration of an explosive gas atmosphere as follows (acc. to **HRN EN 60079-10**):

Zone 0

An area in which an explosive gas atmosphere is **present continuously** or is **present for long periods of time**.

Zone 1

An area in which explosive gas atmosphere **is likely to occur** in normal operation.

Zone 2

An area in which an explosive gas atmosphere **is not likely to occur** in normal operation and if it does occur, it is rarely expected and for a short period of time only.

Remark:
The classification of apparatus in one of previously mentioned zones lies in responsibility of the user' s authorized person there where such an apparatus is installed.
Explosion-proof electrical apparatus used under normal operational conditions, certified by notified body, properly manufactured and correctly installed ,prevent the ignition of explosive atmosphere under exactly noted terms.

Sites of use

Explosion-proof electrical apparatus is suited for use in sites classified in groups as follows:

I	mining
II	all other sites of use

Temperature classes of electrical apparatus:

Considering the max. allowed temperature, all electrical apparatus are classified in temp. classes as shown:

Table 4.1

Temperature class	Max. allowed overtemperature (^{0}C)	Gases and vapours with ignition temperature over (^{0}C)
T1	410	450
T2	260	300
T3	160	200
T4	95	135
T5	60	100
T6	45	85

The maximum allowed overtemperature is the highest temperature during the time of duty under the most adverse conditions, which occurs on every possible part of electrical apparatus and which can be the cause of combustion spread in the ambient explosive gas atmosphere. Values given in table 4.1 reffer to working conditions of el.apparatus under the nominal load and ambient temp. of 40^{0}C. For higher ambient temp. the values of max. allowed overtemperature must be correspondingly lowered.

TYPE TESTING AND CERTIFICATES OF CONFORMITY

All explosion- proof motors are made and tested according to the general regulations given in standard **HRN EN 50014** and specifics given in associated standards **HRN EN 50018** and **HRN EN 50019** regulating the arts of explosive protection "d" and "e". Electrical tests are performed under the real working conditions (motors fully completed mechanically and electrically). The conformity of technical documentation with requests stated in a.m. standards is **approved** and **verified** by the **CROATIAN CERTIFICATION SERVICE FOR EXPLOSION PROTECTION OF EXPLOSIVE ATMOSPHERE**, **(S-KOMISIJA),** which is the notified body subordinated to the **STATE INSTITUTE FOR STANDARDIZATION AND MEASUREMENT OF REPUBLIC OF CROATIA**.

The **conformity of product** with the approved and verified technical documentation and all necessary testing prescribed by the a.m. standards is performed by the same body, about what it issues the **CERTIFICATE OF CONFORMITY**. This products are delivered accompanied with the **manufacturer's declaration** which assures that the product conforms with the approved documentation and with the **certificate of conformity** plus that it qualified to all prescribed tests and checks to which it was submitted.
The manufacture and service of explosion-proof motors is under the continuous **technical surveillance** of the previously mentioned notified body.

Motor labelling

Every explosion–proof motor is labelled acc. to the standard **HRN EN 50014-27** as follows: with the motor nameplate bearing basic motor electrical data and with the explosion protection art nameplate, bearing the "S" sign and Croatian conformity marking plus marking of the certification body, both of which are in accordance with the DZNM RH (STATE **INSTITUTE FOR THE STANDARDIZATION AND MEASUREMENT OF REPUBLIC OF CROATIA**) book of regulations. Nameplates are situated and riveted on the motor frame and they are easily readable.

Explosion protection art: flame - proof - esignation "d"

Art of EX-protection, for which the parts which can ignite an explosive atmosphere are situated inside of an enclosure which can withstand the explosion pressure of an explosive mixture within the enclosure and therefore prevent the explosion to spread to the ambient explosive atmosphere surrounding the enclosure. Such protection is achieved by the appropriate design (use of building materials with adequate mechanical strenght, prescribed wall thickness of all parts which hold the flame-proof integrity, use of certified cable glands and bushing insulators, use of prescribed forms and dimensions of protective safety gaps between the assembled parts etc).
In Table 4.1 given max.allowed overtemperatures reffering in this case to **the outer surface** of electrical apparatus.

Explosive groups and sites of use

The motors of series **6AT** and **7AT** described in those CATALOGUE PAGES, are certified and suited for the sites of use II (all other sites of use except mines) and for zones 1 and 2.Additionally, the **7AT** series motors are certified and suited for use I(mining) **only there where earth slide cannot occur** and where the danger of mechanical damage is small. The classification of the most frequently used flammable materials from the site of use II into explosive groups(acc.to **HRN IEC 60079-20:1997**)is given in the following table:

Explosive group	Temp. class (acc.to the ignition temperature)			
	T1 (> 450°C)	T2 (> 300°C)	T3 (> 200°C)	T4 (> 135°C)
IIA	ACETONE AMMONIA GAS BENZOLENE ETHYLCHLORIDE ETHANE, PHENOL METHANE METHYL- CHLORIDE ACETIC ACID TOLUOLE NAPHTALIN PROPANE STYRENE	i-AMILACETATE n-BUTANE n-BUTYL ALCOHOL CYCLOHEXANONE ANHIDROUS ACETIC ACID ETHYL ACETATE METHANOLE DICHLOROETHYLENE ETHYL ALCOHOL TETRAHYDRO-NAPHTALINE	GASOLINES FOR INTERNAL COMBUSTION ENGINES DIESEL FUELS JET FUEL (KEROSENE) BURNING OILS (EL, L AND M) n-HEXANE	ACETALDEHYDE 1,2-DICHLORO -ETHANE
IIB	CITY GAS CARBON MONOXIDE	BUTA-1,3 DIENE ETHYLENE ETHYLENE OXIDE n-PROPYL ALCOHOL ETHYLENE GLYCOL	HIDROSULPHIDIC ACID ISOPRENE HYDROGEN SULPHIDE	ETHER ETHYL ETHER
IIC	HYDROGEN	ACETYLENE		

Remark:

The explosive groups are divided in the categories **A, B** and **C** according to the width of prescribed safe gap of assembled elements(MESG)*,which reflects the penetration ability of the combustion originated by coincidentally exploded gaseous mixture of some flammable material with the air inside of the enclosure through such an gap.This ability **decreases** from group **C** to group **A**, what means that requests stated on apparatus explosion protection design **increase** from group **A** to group **C**.

***Maximum Experimental Safe Gap**

The explosion protection arts

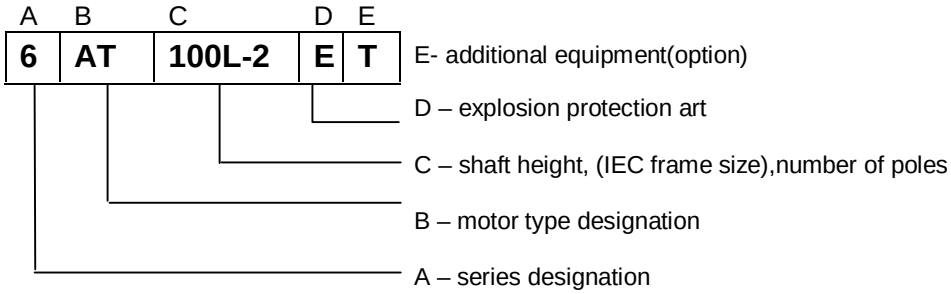
Motors of series **6AT and 7AT** are manufactured in explosion protection arts as follows:

6AT 71 ... 112 **Ex d IIC T4 and Ex de IIC T4**
7AT 132 ..250 **Ex d IIC T4** , **Ex de IIC T4 ,Ex d I and Ex de I**

Motors certified for the explosive group IIC T4 can be used up to their nominal ratings for temperature classes fromT1 to T4 and for flammable materials from explosive groups A, B and C.

Type designation

Every motor is marked with type designation, which shows all basic motor data considering electrical and mechanical design. Type designation consists of group of letters and numerals whose meaning is specified by the factory standard.



Series designation (mark “A”):

6 series of motors with alluminium alloy die casted frame (IM)
7 series of motors with cast iron frame(IM)

Motor type designation (mark”B”):

AT motors in explosion protection art “d”, flame –proof enclosure
ATA AT motors with non-standard mechanical design, which has no influence on motor explosion protection art
ATP AT multi speed motors for loads with constant torque on all speeds
ATPV AT multi speed fan rated motors
ABT ship’s use AT motors

Mark “C” designation reffers to:

71 – 250 shaft height (IEC)
S, M, L frame length
A, B, C lamination pack length inside given frame length
2, 4, 6/4 number of poles

Explosion protection art designation (mark “D”)

D Motor and terminal box with certified bushing insulators and cable glands in Ex-protection art “d” (flame proof) motor design marked with **Ex d II**
E Motor in Ex-protection art “d”(flame-proof enclosure), terminal box with bushing insulators and certified cable glands in Ex-protection art ”e” (increased safety) motor design marked with **Ex de II**
K Motor in Ex-protection art “d” (flame-proof enclosure) with frame lid, on which certified cable adapter in Ex-protection art “d” is mounted, motor design marked with Ex d II
R Motor and terminal box with certified trompet cable gland(s) in Ex-protection art”d”(flame-proof), motor design marked with **Ex d I.**

Additional equipment designation (mark”E”)

A Motors with heaters
T Motors with thermal protection

Index of protection

6AT and 7AT series motors are designed for the indexes of protection IP54 or IP55 or IP56 according to IEC 34-5/ EN60034-5.

Mounting arrangements
Standard mounting arrangements for the flame-proof motors of frame sizes 71-250 are IMB3 and IMB5. IMB14 is available up to and frame size 132. Other variants (acc. to TABLE 2 in "TEHNICAL EXPLANATIONS" chapter of this catalogue) of mounting arrangements on request.

Frame and bearing shields design:

6AT series motor frames of sizes 71-112 are made from die casted aluminium alloy and bearing shields from cast iron. Motor feet are casted together with the frame and bearing shields are tightened over the frame to each other with four fixing bolts.
Frames and bearing shields of **7AT** series motors of sizes 132-250 are made from cast iron. Demountable feet are fixed to the frame with two screws each. All screw connections are designed with the blind holes and spring washers, so they do not enter into the flame-proof enclosure. All screws which hold the flame-proof enclosure integrity are made acc. to the Croatian standard HRN M.B1.120 from the material ČV80, mark 8.8(steel with minimum tensile strenght of 800N/mm^2)

Terminal box design:

Terminal box and its lid in **6AT** and **7AT** series are made from cast iron. It is fixed on frame on top with four screws and in **7AT** series it can be rotated for 90^o. It can be situated (considering feet position) on top, R.H.S. or L.H.S. The motor winding leads connections are connected via certified bushing insulators. On behalf the bushing insulators for auxilliary circuits are built-in the terminal box. All winding lead connections with bushing insulators are secured against untightening.

Designs considering the speed of rotation:

Motors in the explosion protection are "d" (flame-proof enclosure) of standard series **6AT** and **7AT** (or "**ABT**" for ship's use) are of one –speed design, on request they can be manufactured as multi-speed motors ("**ATP/ATPV**" or "**ABT/ABTPV**").

Electrical design

stator winding is made from the round profile, double enamelled copper wire for temp. class "H". Insulation system is suited for the temp. class "F". Wound stators are immersed into the polyester-imide resin, and after polymerisation the winding heads are protected (on request) with fungicide coating (tropicalisation) in ABT series.

Voltage and frequency

The motors with rated power up to 2.2kW are normally made for the voltage of 400V in DELTA or STAR connection, and motors with rated power of 3kW or more are made for 400/690 V in DELTA/STAR connection. Voltage variation allowed is $\pm$ 10% and in this range the motor rated power remains unchanged, and the max. reached temperature below those which is given as the " max. allowed over temperature of the motor" (for the given temperature class and for this explosion protection art where it is the max. allowed motor surface temperature). Nominal frequency is 50Hz. Motors built for other voltages (up to 690V) and other frequencies are available on request.
Motors suited for supply over the static frequency converters are manufactured on special request because of the influence of such drive art on motor's cooling and the need for built-in of additional motor temperature protection devices.

Power and heating

In tehnical data tables are given continuos duty (S1) rated power outputs reffering to the ambient temperature of 40^{o}C and altitude up to 1000 m above sea level. Allowed motor heating is in accordance with the standard HRN EN 50014.Allowed stator armature heating at amb. temp. of 40^{o}C is 105K and for the ships use design at amb. temp. of 50^{o}C, is 90K .
Motors for duties S2-S10 and other ambient temperatures(out of range -20Cto+40C) are made on request.

Cooling

Their own outer fan (cooling method IC 411 acc. to IEC 34-6/EN60034-6) cools motors. They can be delivered also as non- ventilated (IC 410) with their ratings given on request, or on behalf of given data of ventilation which provided the airflow coming from the driven system, (cooling method IC 418).
7AT series motors have aluminium alloy die casted fans or welded steel fans in their **Ex d I** design.
6AT series motors have plastic fans, in ship's use variants the fan is made from aluminium die casted alloy. Fan cover is made from the deep pressed steel sheet of appropriate thickness in both series.

Rated current

In tehnical data tables are given rated current values at 400V mains voltage and the nominal load. Tolerances are as given in IEC 34 recommendations and VDE 0530 regulations. All dimensions (in mm) and weights (in kg) from table's and outline drawings are only informative and submitted to changes. Exact up to date values can be obtained on request in the confirmed outline drawings at the order.

Electrical protection

Motors in duty must be protected from overheating caused by short circuit, one phase supply loss and overload. Such protections and their design characteristics are described in "TECHNICAL EXPLANATIONS" chapter.

Thermal protection

Thermal protection against overheating is built-in on request. This sort of protection uses PTC resistors or thermoswitches as sensors, as desorbed in "TECHNICAL EXPLANATIONS" .

Heaters

Heaters are embedded in the motor's winding only on special request. Their leads are connected inside of the terminal box, via bushing insulators and the motor in this case has 3 terminals (stator windings connected in STAR (Y) OR DELTA (D)).

Corrosion protection and external finish

The painting system and the art of corrosion protection are described in "TEHNICAL EXPLANATIONS" chapter. External finish of motors in the explosion protection art "d" (flame-proof enclosure) is in colour tone RAL7030. On request external finishes can be performed in other colour tones.

Other layouts of explosion-proof motors

MOTORS OF "AZN" SERIES-non sparking apparatus for zone 2 - "n".Explosion protection art: **Exn A II** (without electrical circuit breaking).
Layout acc.to **HRN IEC (R) 60079-15** and **EN 50021**
Frame sizes and series: 5 AZN 56-160 (aluminium die-cast frame)and 7AZN 132-250 (cast iron frame)
Motors of this series find the widest use in zone 2 belonging to the site of use group II ,there where it is,under normal operating conditions prevented by the protection layout ,that electrical apparatus which do not normally generate sparks ,will not be with their temp.rise the ignition source of explosive atmosphere,i.e.they lie above the temp.class(in this case T4).
In modern plants nowadays prevail(even up to 90%) dangerous zones 2 defined acc.to corresp.standards,in which the risk of simultaneous appearance of explosive atmosphere and ignition source is considered **"acceptably low".**This fact allows the widest and for the user financially optimal use of electrical apparatus in protection art "n".
Technical data,outline drawings,exploded view with spare parts list also as design/layout variants of **"AZN"** series motors can be found in CATALOGUE PAGES"1"-THREE PHASE CAGE INDUCTION MOTORS

MOTORS OF "AZS" SERIES –increased safety - "e". Explosion protection art **Ex e II**
Layout acc.to **HRN 50014** and **HRN 50019**
Frame sizes and series:5 AZS 71-112 (aluminium die-cast frame).
Motors of this series find their use in zones 1 and 2 belonging to the site of use group II, where **they have limited temp.rise and they do not generate sparks under normal operating conditions.**They are designed on such a way, that the appearance of malfunction,which can ignite by spark, arc or overheating of any part above the temp.class-in this case T1-T4(even with locked rotor at warm operational condition) the explosive atmosphere ,is of **very low probability**.
Exploded view with spare parts list is given at the end of this chapter.
Technical data and design/layout variants of **" AZS"** series motors are given on request.

Attention:

Without the special written permission issued by the manufacturer, every action which have or can have the influence on the explosion protection lies only in performer's own responsibility.
This is not applied on such performers registered in the "Register of servicers " issued by "S-komisija" DZNM RH, which are under the permanent surveillance of this notified body.

2p=2		400V / 50Hz 3000min^{-1}									440V / 60Hz 3600min^{-1}		
Power (kW)	Motor type	Speed (rpm.)	Efficl ency η (%)	Power factor cos φ	Rated current at400 V (A)	Is / In	Ts / Tn	Tmax / Tn	Moment of Inertia J (kgm^2)	Weight (kg) IMB3	Power (kW)	Speed (rpm.)	Rated current at 440 V (A)
0.37	6AT 71A-2	2750	70	0.82	1.0	3.8	2.0	2.1	0.000350	8.3	0.4	3300	1.0
0.55	6AT 71B-2	2790	70	0.83	1.45	4.2	2.2	2.2	0.000530	9.5	0.6	3350	1.45
0.75	6AT 80A-2	2830	73	0.82	1.9	4.5	2.6	2.6	0.000930	11.8	0.8	3400	1.9
1.1	6AT 80B-2	2830	79	0.83	2.5	4.9	2.6	2.6	0.001100	13	1.2	3400	2.5
1.5	6AT 90S-2	2830	79	0.86	3.5	5.3	2.6	2.6	0.001500	16.8	1.7	3400	3.5
2.2	6AT 90L-2	2830	81.5	0.85	5	5.6	2.8	2.9	0.002100	19.8	2.5	3400	5
3	6AT 100L-2	2870	83	0.86	6.2	6.6	3.2	3.4	0.004000	25	3.4	3440	6.2
4	6AT 112M-2	2890	85	0.86	8.3	7.0	3.2	3.4	0.006300	35	4.5	3470	8.3
5.5	7AT 132SA-2	2890	86	0.83	11.5	7.0	2.6	3.4	0.014000	67	6.2	3470	11.5
7.5	7AT 132SB-2	2920	87.5	0.90	14.5	7.0	3.0	3.2	0.015000	74	8.5	3500	14.5
9.5	7AT 132M-2	2920	88	0.88	18	7.5	3.0	3.6	0.020000	79	11	3500	18
11	7AT 160MA-2	2930	89	0.90	21	7.3	3.0	3.2	0.034000	114	12.5	3515	21
15	7AT 160MB-2	2940	90	0.91	28	8.8	3.0	3.8	0.053000	124	17	3530	28
18.5	7AT 160L-2	2940	90.5	0.90	34	8.8	3.0	3.8	0.063000	138	21	3530	34
22	7AT 180M-2	2940	91	0.86	42	7.5	3.0	3.8	0.093000	195	25	3530	42
30	7AT 200LA-2	2960	92	0.89	53	6.9	2.2	2.4	0.140000	232	33	3550	52
37	7AT 200LB-2	2960	93.5	0.89	64	7.0	2.3	2.5	0.160000	249	40	3550	63
45	7AT 225M-2	2965	94	0.90	78	7.2	2.3	2.5	0.260000	339	50	3560	77
55	7AT 250M-2	2970	94.5	0.91	93	7.3	2.2	2.8	0.340000	401	60	3560	92

2p=4		400V / 50Hz 1500min^{-1}									440V / 60Hz 1800min^{-1}		
0.25	6AT 71A-4	1390	61	0.72	0.85	3.4	2.0	2.1	0.000600	8.3	0.3	1670	0.85
0.37	6AT 71B-4	1390	66	0.75	1.1	3.4	2.0	2.1	0.000850	9	0.4	1670	1.1
0.55	6AT 80A-4	1390	70	0.76	1.6	4.1	2.0	2.1	0.001500	11.6	0.6	1670	1.6
0.75	6AT 80B-4	1390	72	0.77	2.0	4.1	2.2	2.3	0.001600	12.2	0.8	1670	2.0
1.1	6AT 90S-4	1390	77	0.78	2.7	4.1	2.2	2.3	0.003300	16	1.2	1670	2.7
1.5	6AT 90L-4	1390	79	0.80	3.6	4.4	2.2	2.3	0.004100	19	1.7	1670	3.6
2.2	6AT 100LA-4	1400	82	0.81	5.0	5.0	2.2	2.3	0.006500	27	2.5	1680	5.0
3	6AT 100LB-4	1400	83	0.81	6.9	5.5	2.5	2.8	0.008750	30	3.4	1680	6.9
4	6AT 112M-4	1430	85	0.82	8.7	6.5	2.8	3.0	0.001130	39	4.5	1720	8.7
5.5	7AT 132S-4	1430	86	0.85	11	6.0	2.5	3.0	0.021000	69	6.2	1720	11
7.5	7AT 132M-4	1440	88	0.83	15	6.5	2.7	3.2	0.027000	79	8.5	1730	15
9.5	7AT 132MA-4	1440	89	0.87	18.5	6.7	2.9	3.3	0.035000	83	11	1730	18.5
11	7AT 160M-4	1460	89.5	0.82	22	7.3	2.8	3.5	0.067000	124	12.5	1750	22
15	7AT 160L-4	1460	90	0.85	29	7.0	2.7	3.1	0.083000	139	17	1750	29
18.5	7AT 180M-4	1460	90.5	0.85	35.5	7.5	2.7	3.1	0.130000	185	21	1750	35.5
22	7AT 180L-4	1460	91	0.84	41.5	7.5	2.8	3.1	0.160000	204	25	1750	41.5
30	7AT 200L-4	1475	92.5	0.86	55	7.0	2.4	2.6	0.250000	262	34	1770	55
37	7AT 225S-4	1480	94	0.85	67	7.1	2.3	2.6	0.410000	334	42	1780	67
45	7AT 225M-4	1480	94	0.87	81	7.2	2.4	2.6	0.480000	366	52	1780	81
55	7AT 250M-4	1480	95	0.87	98	7.5	2.4	2.8	0.710000	454	63	1780	98

The 2p=2 and 2p=4 AT series motors in 1.1 to 55 kW power range are normally made as the **"Improved Efficiency-eff 2"**ones, acc.to EU/CEMEP agreement. On request such motors can be made as the**"High Efficiency-eff 1"** ones.

2p=6	400V / 50Hz										440V / 60Hz		
	1000 min^{-1}										1200min^{-1}		
Power (kW)	Motor type	Speed (rpm.)	Efficl ency η (%)	Power factor cos φ	Rated current at 400 V (A)	Is / In	Ts / Tn	Tmax / Tn	Moment of Inertia J (kgm^2)	Weight (kg) IMB3	Power (kW)	Speed (rpm.)	Rated current at 440 V (A)
0.18	6AT 71A-6	870	51	0.67	0.9	2.2	1.6	1.8	0.000600	8.2	0.2	1040	0.9
0.25	6AT 71B-6	880	53	0.65	1.1	2.5	1.7	1.8	0.000850	8.9	0.3	1060	1.1
0.37	6AT 80A-6	900	65	0.77	1.1	3.5	1.7	2.0	0.001400	11.3	0.4	1080	1.1
0.55	6AT 80B-6	900	67	0.77	1.7	3.4	2.1	2.2	0.002000	11.9	0.6	1080	1.7
0.75	6AT 90S-6	900	70	0.67	2.5	3.2	2.2	2.3	0.003300	15.5	0.8	1080	2.5
1.1	6AT 90L-6	900	72	0.69	3.2	3.2	2.0	2.1	0.004300	18.5	1.2	1080	3.2
1.5	6AT 100L-6	910	76	0.80	3.6	4.0	1.9	2.1	0.007000	21	1.7	1090	3.6
2.2	6AT 112M-6	930	78	0.72	5.7	5.3	2.7	3.1	0.013000	34	2.5	1110	5.7
3	7AT 132S-6	940	82	0.72	7.4	4.6	2.1	2.5	0.030000	69	3.4	1130	7.4
4	7AT 132MA-6	950	84	0.70	9.8	5.5	2.7	3.0	0.037000	77	4.5	1140	9.8
5.5	7AT 132MB-6	950	84	0.74	12.7	5.8	2.8	3.0	0.045000	79	6.2	1140	12.7
7.5	7AT 160M-6	965	89	0.72	15.5	7.0	2.8	2.0	0.095000	121	8.2	1160	15.5
11	7AT 160L-6	965	89	0.83	22	7.0	2.8	2.0	0.120000	143	12.5	1160	22
15	7AT 180L-6	965	90	0.82	29.5	7.8	2.7	3.6	0.200000	175	17	1160	29.5
18.5	7AT 200L-6	980	91	0.80	37	6.4	2.3	2.9	0.310000	242	21	1180	38
22	7AT 200LA-6	980	91	0.83	43	6.1	2.2	2.8	0.310000	273	25	1180	44.5
30	7AT 225M-6	980	92	0.81	59	6.2	2.3	2.7	0.520000	317	34	1180	59
37	7AT 250M-6	985	93	0.75	77	7.2	2.2	2.6	0.780000	411	42	1180	79

2p=8	400V / 50Hz										440V / 60Hz		
	750 min^{-1}										900min^{-1}		
0.09	6AT 71A-8	660	43	0.53	0.60	2.0	1.8	1.9	0.000600	8.2	0.09	790	0.60
0.12	6AT 71B-8	660	43	0.54	0.75	2.0	2.0	2.2	0.000850	8.9	0.12	790	0.75
0.18	6AT 80A-8	700	60	0.58	0.75	3.0	2.3	2.6	0.001400	11.2	0.2	840	0.75
0.25	6AT 80B-8	680	60	0.61	1.05	2.6	1.7	2.0	0.001400	11.5	0.3	820	1.05
0.37	6AT 90S-8	690	58	0.57	1.7	2.5	1.7	2.0	0.002800	15.5	0.4	830	1.7
0.55	6AT 90L-8	670	60	0.58	2.2	2.8	2.0	2.1	0.003500	18.5	0.6	810	2.2
0.75	6AT 100LA-8	700	65	0.60	2.8	3.1	1.8	2.2	0.007000	21	0.8	840	2.8
1.1	6AT 100LB-8	700	73	0.62	3.5	3.7	2.1	2.4	0.011000	25	1.2	840	3.5
1.5	6AT 112M-8	680	72	0.70	4.3	3.8	1.9	2.3	0.013000	38	1.7	820	4.3
2.2	7AT 132S-8	690	78	0.78	5.2	4.2	2.0	2.1	0.030000	65	2.5	830	5.2
3	7AT 132M-8	690	78	0.76	7.4	4.2	2.1	2.4	0.040000	72	3.4	830	7.4
4	7AT 160MA-8	710	85	0.73	9.7	4.8	2.0	2.7	0.060000	104	4.5	850	9.7
5.5	7AT 160MB-8	710	85	0.75	13	5.1	2.0	2.7	0.095000	120	6.2	850	13
7.5	7AT 160L-8	720	86	0.78	16.5	5.5	2.2	2.6	0.140000	139	8.5	860	16.5
11	7AT 180L-8	720	88	0.80	24	5.6	2.3	2.8	0.022000	205	12.5	860	24
15	7AT 200L-8	730	90	0.78	31	5.8	1.9	2.4	0.320000	247	17	880	31
18.5	7AT 225S-8	735	91	0.78	38	5.9	2.0	2.6	0.460000	302	21	880	38
22	7AT 225M-8	735	91	0.78	45	5.9	2.0	2.5	0.530000	324	25	880	45
30	7AT 250M-8	735	92	0.78	60	5.6	1.9	2.4	0.860000	406	34	880	60

Is/In -relation of currents at starting(relation between locked rotor/current and nominal current at nominal torque)
Ts/Tn -relation of torques at starting(relation between locked rotor torque and nominal torque)
Tmax/Tn -relation between the break down torque and nominal torque

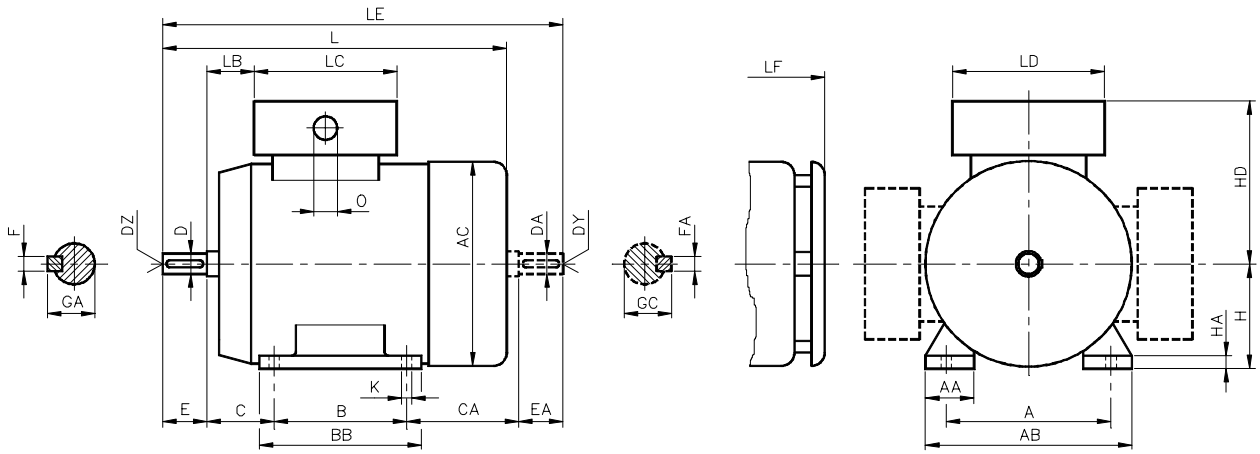
Remark:

Multi-speed motors and motors with increased power considering their frame size are made in all frame sizes on request.

For other data on 440V, 60Hz,please use those given for 400V, 50Hz from tables.

Outline drawing

Foot-mounted motor IM 1001 / IM B3



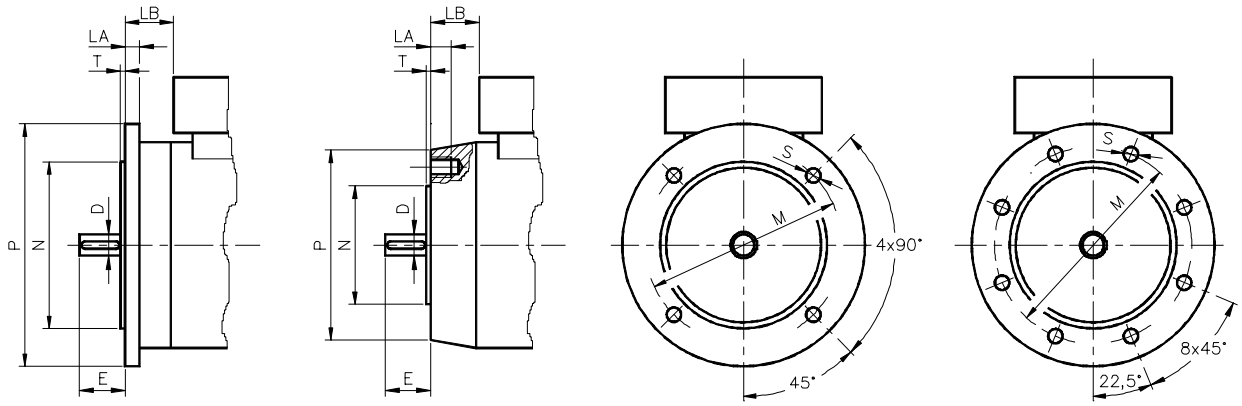
Type	IM B3, IM B5 & IM B14														IM B3										
	AC	D = DA	DZ = DY	E = EA	F = FA	GA = GC	HD	L	LB	LC	LD	LE	LF	O	A	AA	AB	B	BB	C	CA	H	HA	K
	(mm)														(mm)									
6AT 71	139	14j6	M5	30	5	16	150	235	34	112	112	270	250	See the TECHNIOCAL EXPLNATIONS Chapter(cable glands)	112	33	140	90	110	45	75	71	8	7
6AT 80	156	19j6	M6	40	6	21.5	164	270	44	112	112	315	285		125	37	160	100	125	50	85	80	10	9
6AT 90S	176	24j6	M8	50	8	27	170	297	50	112	112	355	317		140	42	180	100	125	56	99	90	12	9
6AT 90L	176	24j6	M8	50	8	27	170	322	62	112	112	380	342		140	42	180	125	150	56	99	90	12	9
6AT 100	194	28j6	M10	60	8	31	183	365	67	132	132	430	385		160	47	200	140	175	63	107	100	14	13
6AT 112	218	28j6	M10	60	8	31	194	383	74	132	132	450	403		190	48	220	140	175	70	120	112	15	13
7AT 132S	258	38k6	M12	80	10	41	264	515	44	170	180	600	545		216	50	260	140	218	89	168	132	18	13
7AT 132M	258	38k6	M12	80	10	41	264	515	44	170	180	600	545		216	50	260	178	218	89	168	132	18	13
7AT 160M	318	42k6	M16	110	12	45	300	650	47	210	220	757	667		254	62	320	210	304	108	170	160	25	15
7AT 160L	318	42k6	M16	110	12	45	300	650	47	210	220	757	667		254	62	320	254	304	108	170	160	25	15
7AT 180M	348	48k6	M16	110	14	51.5	320	705	66	210	220	815	735		279	65	350	241	334	121	195	180	28	15
7AT 180L	348	48k6	M16	110	14	51.5	320	705	66	210	220	815	735		279	65	350	279	334	121	195	180	28	15
7AT 200	391	55m6	M20	110	16	59	355	790	63	250	275	903	880		318	75	398	305	360	133	245	200	30	18.5
7AT 225S	425	60m6	M20	140	18	64	370	865	65	250	275	1010	960		356	82	436	286	370	149	295	225	30	18.5
7AT 225M 2 4-8	425	55m6 60m6	M20	110 140	16 18	59 64	370	835 865	65	250	275	950 1010	930 960		356	82	436	311	370	149	270	225	30	18.5
7AT 250M 2 4-8	471	60m6 65m6	M20	140	18	64 69	415	910	64	280	305	1055	1010		406	100	500	349	415	168	258	250	35	24

The manufacturer **KONČAR - MES** keep the right of product change and development without further notice.

Outline drawing

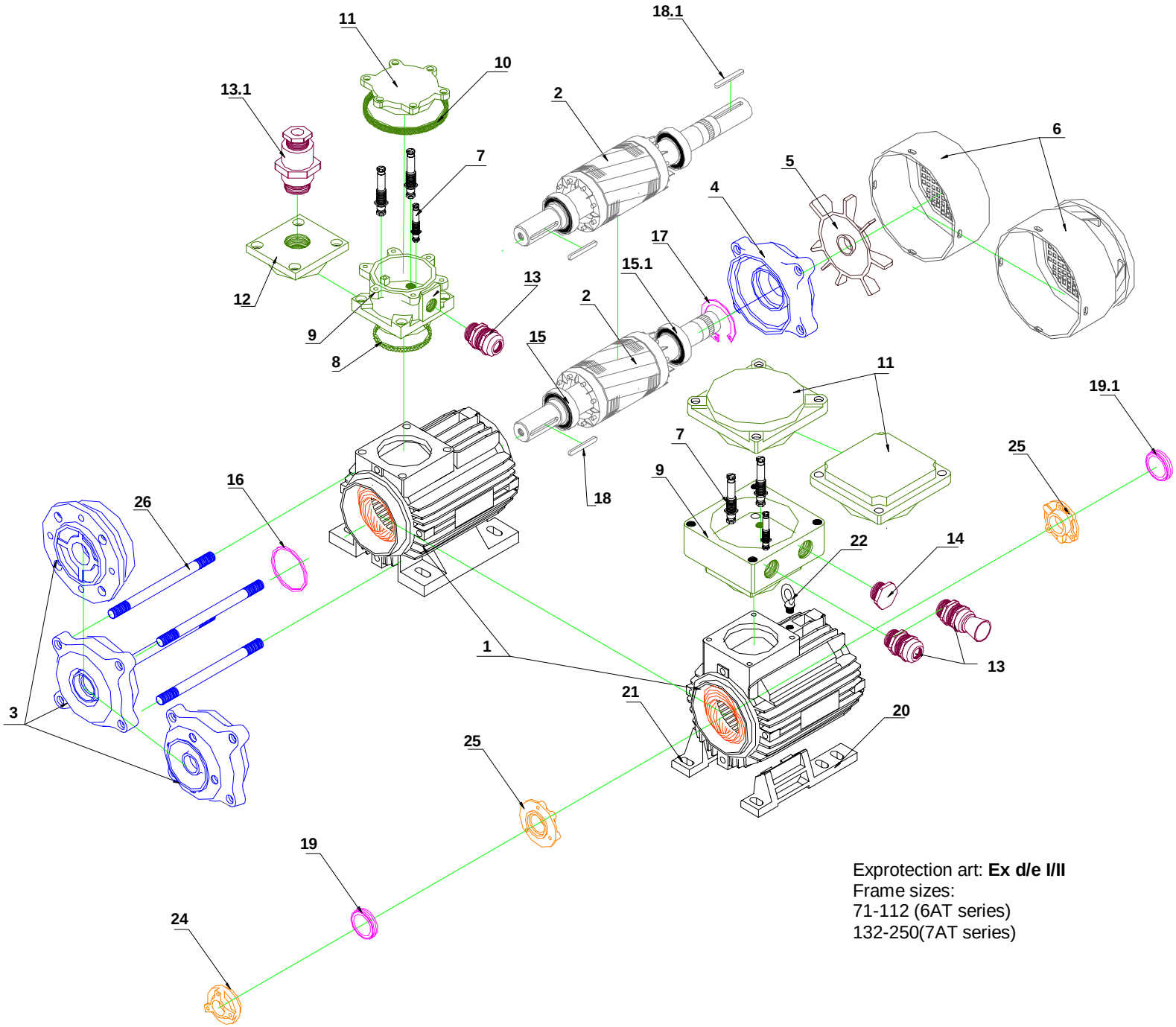
Flange-mounted motors IM 3001 / IM B5 and IM 3601 / IM B14

Frame sizes 71 - 200 **Frame sizes 225 - 250**



Type	IM B5						IM B14 *small*						IM B14 *big*						IM B3, B5 & B14
	LA	M	N	P	S	T	LA	M	N	P	S	T	LA	M	N	P	S	T	
	(mm)						(mm)						(mm)						
6AT 71	9	130	110j6	160	9.5	3.5	8	85	70j6	105	M6	2.5							**Dimensions**
6AT 80	10	165	130j6	200	11.5	3.5	8	100	80j6	120	M6	3	10	130	110j6	160	M8	3.5	
6AT 90S	12	165	130j6	200	12	3.5	10	115	95j6	140	M8	3	10	130	110j6	160	M8	3.5	**AC, D/DA, DZ/DY, E/EA, F/FA, GA/GC, HD, L, LB, LC, LD, LE, LF, O**
6AT 90L	12	165	130j6	200	12	3.5	10	115	95j6	140	M8	3	10	130	110j6	160	M8	3.5	
6AT 100	16	215	180j6	250	15	4	10	130	110j6	160	M8	3	12	165	130j6	200	M10	3.5	
6AT 112	16	215	180j6	250	15	4	10	130	110j6	160	M8	3	12	165	130j6	200	M10	3.5	
7AT 132S	14	265	230j6	300	14	4	16	215	180j6	250	M12	4							
7AT 132M	14	265	230j6	300	14	4	16	215	180j6	250	M12	4							**are listed on the previous page**
7AT 160M	15	300	250h6	350	18	5													
7AT 160L	15	300	250h6	350	18	5													
7AT 180M	15	300	250h6	350	18	5													
7AT 180L	15	300	250h6	350	18	5													
7AT 200	20	350	300j6	400	19	5													
7AT 225S	22	400	350j6	450	19	5													
7AT 225M 2 4-8	22	400	350j6	450	19	5													
7AT 250M 2 4-8	22	500	450j6	550	19	5													

The manufacturer **KONČAR – MES** keep the right of product change and development without further notice.



Exprotection art: **Ex d/e I/II**
Frame sizes:
71-112 (6AT series)
132-250(7AT series)

Standard spare parts of products from CATALOGUE PAGES “4”- protection art flame-proof-“d”(Ex d/e I/II)- exploded view

Position	**Name**
1	Wound stator
2	Rotor (half-key balanced)
3	DE shield - B3, B5, B14
4	NDE shield
5	Fan
6	Fan cover
7	Bushing insulators
8	Terminal box O-seal
9	Terminal box
10	Terminal box lid O-seal
11	Terminal box lid
12	Lid
13	Cable gland
13.1	Cable adapter
14	Plug
15*	Bearing DE
15.1*	Bearing NDE
16	Resilient preloading ring
17	Circlip
18	Shaft key
18.1	Shaft key 2nd DE
19	DE V –shaft seal (200-250)
19.1	NDE V –shaft seal (200-250)
20	Frame foot,right
21	Frame foot,left
22	Lifting ring
24	Outer bearing cover on DE
25	Inner bearing cover
26	Fixing bolt

Remark: *can be ordered with Pos. 2. or separately

Ordering procedure

All above listed standard spare parts differ between each other depending upon the type of motor, frame size, series and possible peculiarities.

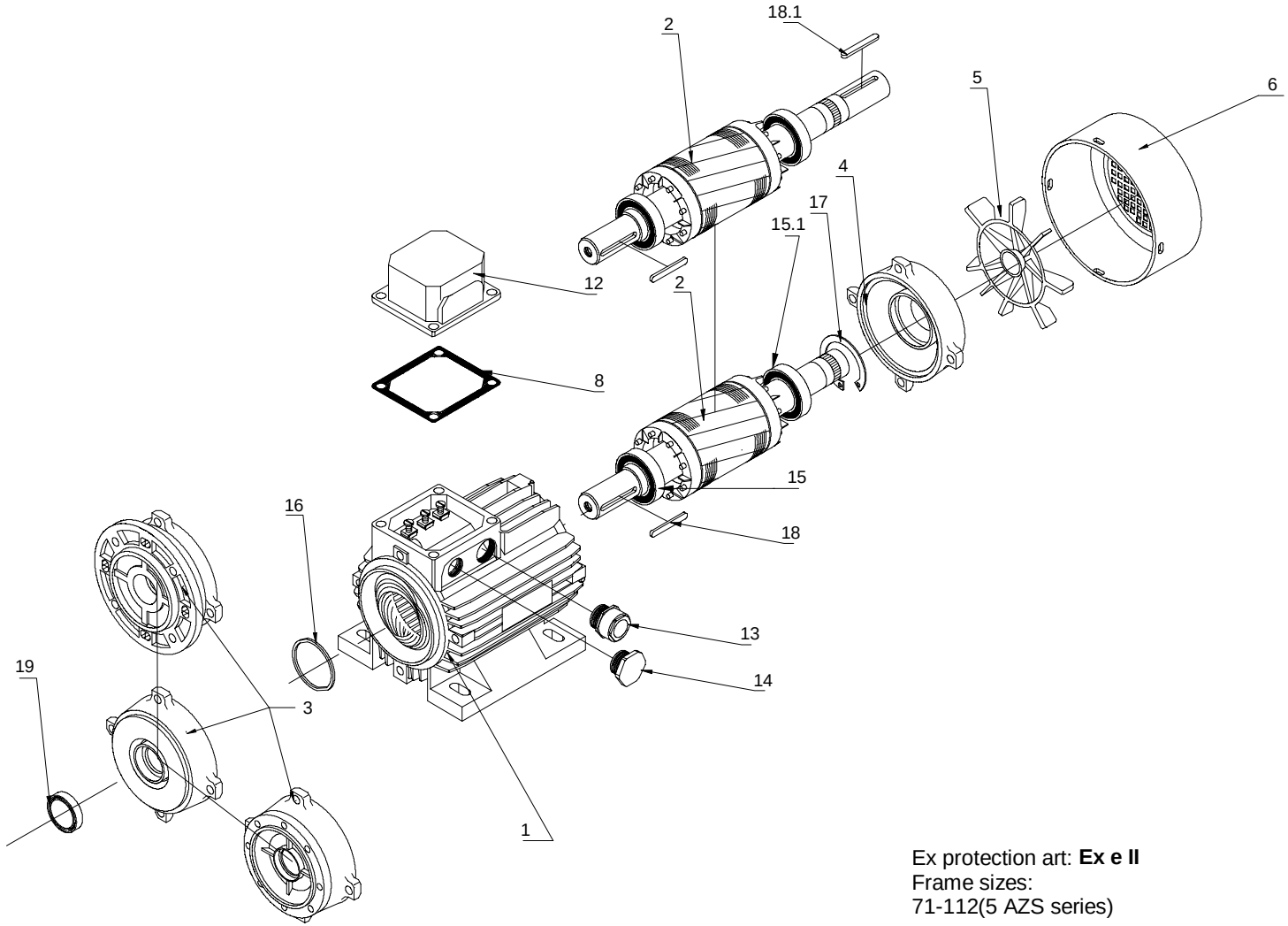
To allow us to pinpoint them exactly, please assure when ordering, that the following data are available:

- name and position number of the spare part according to the above list and exploded view
- type designation of the motor
- motor code number

} from the motor name plate

Example:

Pos. 9 Terminal box
6AT 90L-2E B14F115
A458023



Ex protection art: **Ex e II**
Frame sizes:
71-112(5 AZS series)

Standard spare parts of products from CATALOGUE PAGES 4-protection art:increased safety-“e”(Ex e II)-exploded view

Position	**Name**
1	Wound stator with compounded terminals
2	Rotor (half-key balanced)
3	DE shield - B3, B5, B14
4	NDE shield
5	Fan
6	Fan cover
8	Terminal box seal
9	Terminal box
12	Terminal box lid
13	Cable gland
14	Plug
15*	Bearing DE
15.1*	Bearing NDE
16	Resilient preloading ring
17	Circlip
18	Shaft key
18.1	Shaft key for 2nd DE
19	DE Radial shaft seal

Remark: *can be ordered with Pos. 2. or separately

Ordering procedure

All above listed standard spare parts differ between each other depending upon the type of motor, frame size, series and possible peculiarities.

To allow us to pinpoint them exactly, please assure when ordering, that the following data are available:

- name and position number of the spare part according to the above list and exploded view
-
- type designation of the motor
- motor code number

} from the motor name plate

Example:

Pos. 5 Fan
5.5 AZS 71B-2/T3 B3
A500201