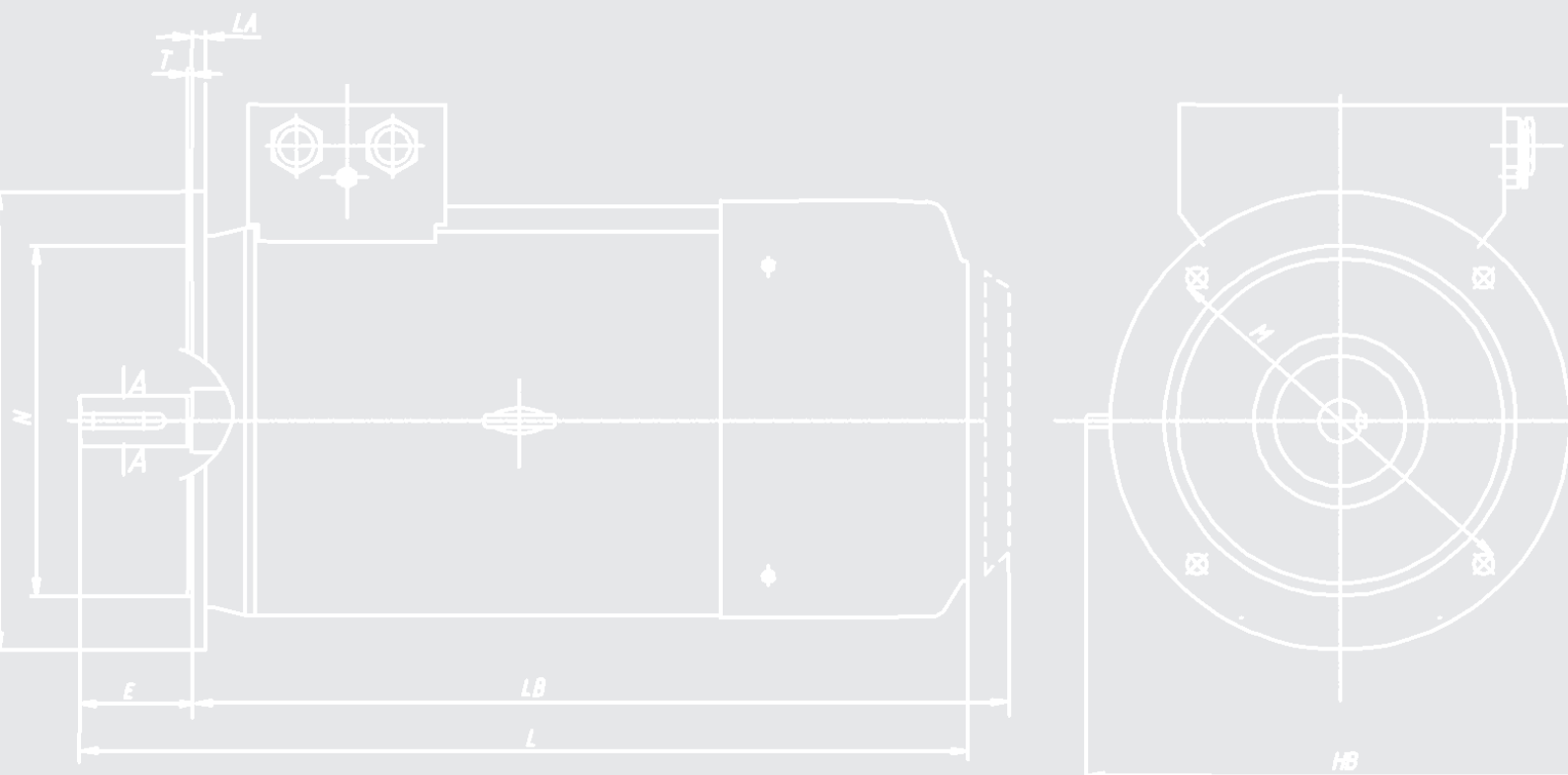


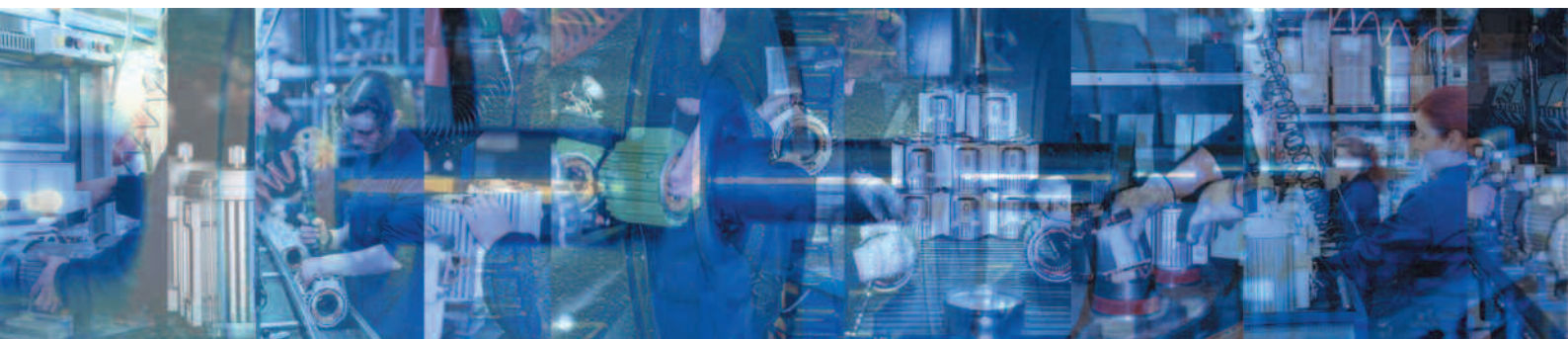


## *Slip ring motors*



A technical drawing of a motor assembly, showing a cross-section of the stator and rotor. The drawing includes various components and dimensions, with labels such as 'E', 'M', 'HB', and 'ME' indicating different parts and measurements. The drawing is rendered in a light blue color on a white background.

VEMAT SPA is a company which has been producing electric motors for many years and is recognised among the Italian and international market leaders. Research, experience and continuous technological updating, always and exclusively aimed at perfecting its production, mean that VEMAT SPA is a company which can meet the most varied market demands. The investment policy which has always been pursued privileges the quality and reliability of the products, while flexible organisation of production and the high professionalism of the personnel and technicians allow us to offer a range of products which are the result of continuous research and development activities. The production cycle ensures a high and constant quality guaranteed by the certification of the materials used and by the continuous controls carried out during the machining processes.





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## SLIP RING OR WOUND ROTOR MOTORS

The slip ring or wound rotor motor is an induction machine where the rotor comprises a set of coils that are terminated in sliprings to which external impedances can be connected. The stator is the same as is used with a standard squirrel cage motor.

By changing the impedance connected to the rotor circuit, the speed/current and speed/torque curves can be altered.

The slip ring motor is used primarily to start a high inertia load or a load that requires a very high starting torque across the full speed range. By correctly selecting the resistors used in the secondary resistance or slip ring starter, the motor is able to produce maximum torque at a relatively low current from zero speed to full speed.

A secondary use of the slip ring motor, is to provide a means of speed control. Because the torque curve of the motor is effectively modified by the resistance connected to the rotor circuit, the speed of the motor can be altered. Increasing the value of resistance on the rotor circuit will move the speed of maximum torque down.

If the resistance connected to the rotor is increased beyond the point where the maximum torque occurs at zero speed, the torque will be further reduced. When used with a load that has a torque curve that increases with speed, the motor will operate at the speed where the torque developed by the motor is equal to the load torque.

Reducing the load will cause the motor to speed up, and increasing the load will cause the motor to slow down until the load and motor torque are equal. Operated in this manner, the slip losses are dissipated in the secondary resistors and can be very significant. The speed regulation is also very poor.

## MOTOR CHARACTERISTICS

The Slip Ring motor has two distinctly separate parts, the stator and the rotor. The stator circuit is rated as with a standard squirrel cage motor and the rotor is rated in frame voltage and short circuit current.

The frame voltage is the open circuit voltage when the rotor is not rotating and gives a measure of the turns ratio between the rotor and the stator. The short circuit current is the current flowing when the motor is operating at full speed with the slip rings (rotor) shorted and full load is applied to the motor shaft.

## SECONDARY RESISTANCE STARTERS

The secondary resistance starter comprises a contactor to switch the stator and a series of resistors that are applied to the rotor circuit and gradually reduced in value as the motor accelerates to full speed.

The rotor would normally be shorted out once the motor is at full speed. The resistor values are selected to provide the torque profile required and are sized to dissipate the slip power during start. The secondary resistors can be metallic resistors such as wound resistors, plate resistors or cast resistors, or they can be liquid resistors made up of saline solution or caustic soda or similar, provided there is sufficient thermal mass to absorb the total slip loss during start.



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To select the values of the resistors, you need to know the frame voltage and the short circuit current. The maximum torque occurs approximately at the point where the rotor reactance equals the termination resistance.

The final stage of the resistance should always be designed for a maximum torque close to full speed to prevent a very large step in current when shorting the final stage of resistance. If a single stage was used and the maximum torque occurred at 50% speed, then motor may accelerate to 60% speed, depending on the load.

If the rotor was shorted at this speed, the motor would draw a very high current (typically around 1400% FLC) and produce very little torque, and would most probably stall!

## **HIGH INERTIA LOADS**

Slip ring motors are commonly used on high inertia loads because of their superior start efficiencies and their ability to withstand the inertia of the loads.

When a load is started, the full speed kinetic energy of that load is dissipated in the rotor circuit.

With a standard cage type induction motor, there only some motors that can be used on high inertia loads.

Most will suffer rotor damage due to the power dissipated by the rotor. With the slip ring motor, the secondary resistors can be selected to provide the optimum torque curves and they can be sized to withstand the load energy without failure. Starting a high inertia load with a standard cage motor would require between 400% and 550% start current for up to 60 seconds.

Starting the same machine with a wound rotor motor (slip ring motor) would require around 200% current for around 20 seconds. A much more efficient solution. Shorting the rings out on a slip ring motor with a high inertia load is not an option as the load energy must be dissipated in the rotor winding during start.

This will cause insulation failure in the rotor circuit.



PERFORMANCE OF MOTORS

Totally enclosed motors IP54 (IP55, IP56)

Catalogue no.	Type	Rated output	Rated speed	Full load torque	Efficiency	Power factor	Full load current at 380V	Breakdown torque	Rotor current	Rotor voltage	Resistance of the rotor winding at 20°C	Characteristic resistance	Moment of inertia	Weight (IMB3)	Manufacturer
		$P_n$	$n_n$	$T_n$	$\eta_n$	$\cos\varphi_n$	$I_{ln}$	$T_b/T_n$	$I_2$	$U_2$	$R_{2f}$	$k = \frac{U_2}{\sqrt{3} \cdot I_2}$	J	m	
		[kW]	[min <sup>-1</sup> ]	[Nm]	[%]	[-]	[A]	[-]	[A]	[V]	[Ω]	[Ω]	[kgm <sup>2</sup> ]	kg	

		2p=4 n=1500 rpm													
1.	SUg 200 L4A	18,5	1455	122	89,6	0,87	36,0	3,8	54,5	215	0,0473	2,2776	0,35	275	C
2.	SUg 200 L4B	22,0	1455	145	90,2	0,89	41,5	3,6	55,0	253	0,0553	2,6555	0,41	285	C
3.	SUg 225 M4	30,0	1460	197	91,0	0,88	57,0	3,8	62,5	305	0,0503	2,8175	0,54	365	C
4.	SUg 250 M4A	37,0	1455	243	89,5	0,88	71,0	4,3	117	200	0,0195	0,9869	0,95	485	C
5.	SUg 250 M4B	45,0	1460	295	90,3	0,88	86,0	4,3	118	240	0,0208	1,1743	0,97	510	C
6.	SUg 280 S4	55,0	1455	362	91,0	0,91	101	3,3	144	240	0,0171	0,9623	1,65	620	C
7.	SUf 280 S4	55,0	1450	362	89,5	0,91	103	3,2	144	240	0,0188	0,9623	1,70	650	E
8.	SUg 280 M4	75,0	1472	487	93,0	0,88	139	4,2	139	340	0,0185	1,4122	1,95	700	C
9.	SUf 280 M4	75,0	1470	488	91,5	0,87	143	3,8	139	340	0,0205	1,4122	2,0	730	E
10.	SUg 315 S4A	90,0	1461	588	90,7	0,88	171	3,2	258	215	0,0062	0,4811	3,5	1020	E
11.	SUg 315 S4B	110	1468	716	91,9	0,88	207	3,5	248	271	0,0069	0,6309	4,1	1100	E
12.	SUg 315 M4	132	1472	856	92,8	0,89	243	3,8	245	327	0,0075	0,7706	4,7	1210	E
13.	SUg 355 S4	160	1477	1035	92,8	0,89	294	3,4	284	342	0,0064	0,6953	6,8	1610	E
14.	SUg 355 M4	200	1481	1290	93,8	0,90	360	3,8	276	437	0,0072	0,9141	8,1	1810	E
15.	SUg 355 L4	250	1484	1609	94,9	0,89	450	4,4	298	506	0,0063	0,9803	13,0	1960	E

		2p=6 n=1000 rpm													
16.	SUg 200 L6	15,0	965	149	87,7	0,87	30,0	3,1	44,5	215	0,0611	2,7894	0,51	280	C
17.	SUg 225 M6A	18,5	975	182	90,3	0,86	36,2	3,2	53,5	220	0,0441	2,3742	0,64	355	C
18.	SUg 225 M6B	22,0	972	217	90,3	0,86	43,0	3,1	56,5	247	0,0459	2,5240	0,72	370	C
19.	SUg 250 M6A	30,0	972	295	89,5	0,85	60,0	3,4	126	150	0,0113	0,6873	1,35	485	C
20.	SUg 250 M6B	37,0	975	345	90,5	0,80	78,0	3,6	128	182	0,0124	0,8209	1,50	525	C
21.	SUg 280 S6	45,0	977	441	91,7	0,84	88,9	3,3	144	196	0,0124	0,7858	1,65	660	C
22.	SUf 280 S6	45,0	970	443	90,0	0,85	89,0	3,0	145	195	0,0140	0,7764	2,2	665	E
23.	SUg 280 M6	55,0	975	539	91,8	0,82	111	3,5	151	230	0,0127	0,8794	2,22	690	C
24.	SUf 280 M6	55,0	975	539	91,0	0,84	109	3,1	151	230	0,0140	0,8794	2,3	700	E
25.	SUg 315 S6	75,0	973	736	91,6	0,86	143	3,3	170	268	0,0138	0,9102	4,8	1000	E
26.	SUg 315 M6A	90,0	976	881	92,4	0,87	170	3,5	168	324	0,0150	1,1135	5,4	1100	E
27.	SUg 315 M6B	110	980	1072	93,1	0,85	211	4,0	162	406	0,0164	1,4469	6,2	1180	E
28.	SUg 355 S6	132	981	1285	93,4	0,87	247	3,2	213	374	0,0123	1,0138	8,2	1540	E
29.	SUg 355 M6	160	985	1551	94,3	0,86	300	3,8	195	490	0,0140	1,4508	10,4	1740	E
30.	SUg 355 L6	200	986	1937	94,8	0,87	369	4,1	194	615	0,0143	1,8303	17,0	1950	E
31.	SUem 400 S6B	250	982	2431	94,0	0,84	480	3,5	276	540	0,0122	1,1296	19,0	2050	E
32.	SUem 400 M6	315	983	3060	94,0	0,86	592	3,0	310	620	0,0131	1,1547	22,0	2150	E



PERFORMANCE OF MOTORS

Totally enclosed motors IP54 (IP55, IP56)

Catalogue no.	Type	Rated output	Rated speed	Full load torque	Efficiency	Power factor	Full load current at 380V	Breakdown torque	Rotor current	Rotor voltage	Resistance of the rotor winding at 20°C	Characteristic resistance	Moment of inertia	Weight (IMB3)	Manufacturer
		$P_n$	$n_n$	$T_n$	$\eta_n$	$\cos\varphi_n$	$I_{In}$	$T_b/T_n$	$I_2$	$U_2$	$R_{2f}$	$k = \frac{U_2}{\sqrt{3} \cdot I_2}$	J	m	
		[kW]	[min <sup>-1</sup> ]	[Nm]	[%]	[-]	[A]	[-]	[A]	[V]	[Ω]	[Ω]	[kgm <sup>2</sup> ]	kg	

2p=8 n=750 rpm															
33.	SUg 200 L8	11,0	717	147	86,3	0,77	25,0	2,6	31,0	225	0,1087	4,1904	0,51	280	C
34.	SUg 225 M8A	15,0	725	198	87,5	0,74	35,0	3,0	50,0	190	0,0475	2,1939	0,64	350	C
35.	SUg 225 M8B	18,5	725	244	89,3	0,80	39,0	2,7	53,5	220	0,0533	2,3742	0,80	375	C
36.	SUg 250 M8A	22,0	730	288	89,0	0,76	49,5	2,9	103	135	0,0439	0,7567	1,35	500	C
37.	SUg 250 M8B	30,0	732	392	89,3	0,74	69,0	3,1	105	180	0,0489	0,9897	1,60	535	C
38.	SUg 280 S8	37,0	730	485	91,0	0,76	81,3	2,9	133	175	0,0445	0,7597	1,64	655	C
39.	SUf 280 S8	37,0	720	491	90,0	0,78	80,0	2,5	133	175	0,0520	0,7597	2,20	660	E
40.	SUg 280 M8	47,0	728	617	91,5	0,79	98,9	2,6	137	217	0,0506	0,9145	2,02	735	C
41.	SUf 280 M8	47,0	720	623	90,5	0,79	100	2,3	138	215	0,0560	0,8995	2,5	750	E
42.	SUg 315 S8	55,0	731	719	91,2	0,80	115	3,4	134	250	0,0146	1,0771	5,2	1095	E
43.	SUg 315 M8A	75,0	731	980	91,7	0,82	152	3,1	156	281	0,0156	1,0400	5,6	1150	E
44.	SUg 315 M8B	90,0	733	1173	92,4	0,81	183	3,3	155	351	0,0171	1,3074	6,4	1200	E
45.	SUg 355 S8	110	735	1429	93,4	0,82	218	2,9	188	350	0,0114	1,0749	10,9	1570	E
46.	SUg 355 M8A	132	735	1715	93,8	0,82	261	3,1	191	413	0,0136	1,2484	12,4	1690	E
47.	SUg 355 M8B	160	737	2073	94,6	0,82	313	3,2	189	504	0,0188	1,5396	14,8	1880	E
48.	SUem 400 M8A	200	737	2592	93,0	0,80	408	2,9	239	500	0,0133	1,2078	22,0	2100	E
49.	SUem 400 M8B	250	738	3235	93,5	0,83	460	2,8	240	582	0,0150	1,4001	25,6	2250	E

2p=10 n=600 rpm															
50.	SUg 355 S10A	75	584	1226	92,1	0,77	161	2,6	168	270	0,0154	0,9279	9,1	1490	E
51.	SUg 355 S10B	90	585	1469	92,6	0,78	189	2,6	165	330	0,0179	1,1547	11,2	1650	E
52.	SUg 355 M10A	110	586	1793	93,2	0,79	227	2,5	165	400	0,0207	1,3996	13,5	1870	E
53.	SUg 355 M10B	132	588	2144	93,5	0,78	275	2,7	166	476	0,0223	1,6555	15,0	1980	E
54.	SUem 400 M10A	132	586	2151	92,7	0,77	281	2,9	224	367	0,0134	0,9459	22,6	2040	E
55.	SUem 400 M10B	160	588	2599	93,2	0,77	339	2,9	220	448	0,0148	1,1757	25,8	2170	E
56.	SUem 400 M10C	200	588	3248	93,6	0,78	416	2,9	228	538	0,0167	1,3623	30,1	2350	E

2p=12 n=500 rpm															
57.	SUg 355 S12	75	485	1477	91,6	0,74	168	1,8	260	176	0,0072	0,3908	11,6	1650	E
58.	SUg 355 M12A	90	486	1769	92,3	0,75	198	1,8	255	215	0,0082	0,4868	13,9	1870	E
59.	SUg 355 M12B	105	487	2059	92,8	0,74	232	1,9	252	252	0,0089	0,5774	15,4	1980	E
60.	SUem 400 S12B	110	480	2189	91,2	0,78	235	2,0	241	278	0,0139	0,6660	22,0	2020	E
61.	SUem 400 M12A	125	484	2466	92,4	0,78	264	2,1	237	278	0,0153	0,6772	24,7	2170	E
62.	SUem 400 M12B	145	486	2849	92,8	0,78	304	2,5	221	395	0,0173	1,0319	29,9	2300	E



PERFORMANCE OF MOTORS

Open drip proof motors IP23 (mounting arrangement: IMB3)

Catalogue no.	Type	Rated output	Rated speed	Full load torque	Efficiency	Power factor	Full load current at 380V	Breakdown torque	Rotor current	Rotor voltage	Resistance of the rotor winding at 20°C	Characteristic resistance	Moment of inertia	Weight (IMB3)	Manufacturer
		$P_n$	$n_n$	$T_n$	$\eta_n$	$\cos\varphi_n$	$I_{1n}$	$T_b/T_n$	$I_2$	$U_2$	$R_{2f}$	$k = \frac{U_2}{\sqrt{3} \cdot I_2}$	J	m	
		[kW]	[min <sup>-1</sup> ]	[Nm]	[%]	[-]	[A]	[-]	[A]	[V]	[Ω]	[Ω]	[kgm <sup>2</sup> ]	kg	

		2p=4		n=1500 rpm											
63.	SCUe 315 S4	160	1463	1044	92.5	0.88	298	2.2	397	243	0,00574	0,3534	3.62	970	E
64.	SCUe 315 M4	200	1465	1304	93.3	0.88	370	2.2	417	286	0,00614	0,3960	4.00	1040	E
65.	SCUe 355 S4	250	1459	1636	93.0	0.89	459	2.7	448	336	0,00800	0,4330	5.85	1250	E
66.	SCUe 355 M4	315	1462	2058	93.7	0.89	574	2.8	472	400	0,00858	0,4893	6.48	1350	E

		2p=6		n=1000 rpm											
67.	SCUe 315 S6	110	969	1084	91.5	0.86	212	2.1	427	157	0,0039	0,2123	4.82	940	E
68.	SCUe 315 M6	132	973	1296	92.5	0.86	250	2.2	421	190	0,0043	0,2606	5.38	1040	E
69.	SCUe 355 S6	160	970	1575	92.1	0.88	300	2.7	283	342	0,0145	0,6977	8.25	1200	E
70.	SCUe 355 M6	200	971	1967	92.6	0.88	373	2.8	302	400	0,0155	0,7647	9.00	1300	E
71.	SCUe 400 S6A	250	976	2446	93.3	0.86	473	2.7	343	450	0,0114	0,7575	14.0	1600	E
72.	SCUe 400 S6B	315	978	3076	94.0	0.87	585	2.8	350	555	0,0122	0,9155	17.0	1760	E

		2p=8		n=750 rpm											
73.	SCUe 315 S8	90	725	1186	91.5	0.82	182	2.1	225	242	0,0138	0,6210	4.85	940	E
74.	SCUe 315 M8	110	726	1447	92.0	0.82	221	2.2	234	282	0,0148	0,6958	5.38	1000	E
75.	SCUe 355 S8	132	719	1753	91.0	0.84	262	2.3	282	285	0,0168	0,5835	9.26	1170	E
76.	SCUe 355 M8	160	722	2116	91.8	0.84	315	2.5	282	344	0,0182	0,7043	10.4	1250	E
77.	SCUe 400 S8B	200	731	2613	92.3	0.84	392	2.2	296	405	0,0123	0,7900	19.3	1630	E
78.	SCUe 400 M8A	250	733	3257	93.0	0.83	492	2.3	303	495	0,0133	0,9432	21.7	1800	E
79.	SCUe 400 M8B	315	735	4093	93.5	0.84	609	2.25	326	575	0,0150	1,0183	25.3	1990	E

		2p=10		n=600 rpm											
80.	SCUe 315 S10	55	579	907	90.8	0.79	116	2.3	158	212	0,0160	0,7747	5.30	910	E
81.	SCUe 315 M10	75	580	1235	91.3	0.79	158	2.2	180	254	0,0172	0,8147	5.90	980	E
82.	SCUe 355 S10	90	577	1490	90.9	0.79	190	1.8	240	240	0,0062	0,5774	9.83	1180	E
83.	SCUe 355 M10A	110	577	1821	91.2	0.79	232	1.8	250	275	0,0150	0,6351	10.8	1250	E
84.	SCUe 355 M10B	132	581	2170	91.0	0.80	261	2.0	283	279	0,0164	0,5692	11.5	1300	E
85.	SCUe 400 M10A	160	583	2621	92.3	0.79	333	2.4	275	367	0,0134	0,7705	22.3	1740	E
86.	SCUe 400 M10B	200	585	3265	92.8	0.79	414	2.4	280	448	0,0148	0,9238	25.5	1870	E
87.	SCUe 400 M10C	250	585	4081	93.3	0.80	509	2.4	290	538	0,0167	1,0711	29.8	2050	E

		2p=12		n=500 rpm											
88.	SCUe 355 S12	75	478	1498	89.3	0.75	170	1.6	347	133	0,0068	0,2213	10.1	1220	E
89.	SCUe 355 M12	90	479	1794	89.8	0.75	203	1.6	359	154	0,0066	0,2477	11.3	1280	E
90.	SCUe 400 S12A	110	476	2207	90.0	0.76	244	1.9	311	216	0,0126	0,4010	18.6	1600	E
91.	SCUe 400 S12B	132	480	2626	90.8	0.79	279	1.7	296	272	0,0139	0,5305	21.7	1720	E
92.	SCUe 400 M12A	160	482	3170	92.1	0.79	334	1.7	309	315	0,0153	0,5886	24.4	1870	E
93.	SCUe 400 M12B	200	483	3954	92.3	0.79	417	1.8	309	389	0,0173	0,7268	28.6	2050	E



**MOUNTING ARRANGEMENTS, BEARINGS**

FOOT MOUNTING		FOOT / FLANGE MOUNTING		FLANGE MOUNTING		BEARINGS	
Type / available execution		Type / available execution		Type / available execution		D	ND
<b>2p=4 n=1500 rpm</b>							
SUg 200 L4A	B3 V5,V6	SULg 200 L4A	B35 V15,V36	SUKg 200 L4A	B5 V1,V3	6212 C3 (NU212) <sup>1</sup>	6212 C3
SUg 200 L4B	B3 V5,V6	SULg 200 L4B	B35 V15,V36	SUKg 200 L4B	B5 V1,V3	6212 C3 (NU212) <sup>1</sup>	6212 C3
SUg 225 M4	B3 V5,V6	SULg 225 M4	B35 V15,V36	SUKg 225 M4	B5 V1,V3	6213 C3 (NU213) <sup>1</sup>	6213 C3
SUg 250 M4A	B3 V5,V6	SULg 250 M4A	B35 V15,V36	SUKg 250 M4A	V1,V3	6215 C3 (NU215) <sup>1</sup>	6215 C3
SUg 250 M4B	B3 V5,V6	SULg 250 M4B	B35 V15,V36	SUKg 250 M4B	V1,V3	6215 C3 (NU215) <sup>1</sup>	6215 C3
SUg 280 S4	B3 V5,V6	SULg 280 S4	B35 V15,V36	SUKg 280 S4	V1,V3	6217 C3 (NU217) <sup>1</sup>	6217 C3
SUf 280 S4	B3					6317 P636 (NU317) <sup>1</sup>	6317 P636 (NU317) <sup>1</sup>
SUg 280 M4	B3 V5,V6	SULg 280 M4	B35 V15,V36	SUKg 280 M4	V1,V3	6217 C3 (NU217) <sup>1</sup>	6217 C3
SUf 280 M4	B3					6317 P636	6317 P636
SUg 315 S4A	B3	SULg 315 S4A	B35			NU320 P63	6320 P63
SUg 315 S4B	B3	SULg 315 S4B	B35			NU320 P63	6320 P63
SUg 315 M4	B3	SULg 315 M4	B35			NU320 P63	6320 P63
SUg 355 S4	B3	SULg 355 S4	B35			NU322 MP63	6320 MP63
SUg 355 M4	B3	SULg 355 M4	B35			NU322 MP63	6320 MP63
SUg 355 L4	B3	SULg 355 L4	B35			NU320 MP63	6320 MP63
<b>2p=6 n=1000 rpm</b>							
SUg 200 L6	B3 V5,V6	SULg 200 L6	B35 V15,V36	SUKg 200 L6	B5 V1,V3	6212 C3 (NU212) <sup>1</sup>	6212 C3
SUg 225 M6A	B3 V5,V6	SULg 225 M6A	B35 V15,V36	SUKg 225 M6A	B5 V1,V3	6213 C3 (NU213) <sup>1</sup>	6213 C3
SUg 225 M6B	B3 V5,V6	SULg 225 M6B	B35 V15,V36	SUKg 225 M6B	B5 V1,V3	6213 C3 (NU213) <sup>1</sup>	6213 C3
SUg 250 M6A	B3 V5,V6	SULg 250 M6A	B35 V15,V36	SUKg 250 M6A	V1,V3	6215 C3 (NU215) <sup>1</sup>	6215 C3
SUg 250 M6B	B3 V5,V6	SULg 250 M6B	B35 V15,V36	SUKg 250 M6B	V1,V3	6215 C3 (NU215) <sup>1</sup>	6215 C3
SUg 280 S6	B3 V5,V6	SULg 280 S6	B35 V15,V36	SUKg 280 S6	V1,V3	6217 C3 (NU217) <sup>1</sup>	6217 C3
SUf 280 S6	B3					6317 P636 (NU317) <sup>1</sup>	6317 P636 (NU317) <sup>1</sup>
SUg 280 M6	B3 V5,V6	SULg 280 M6	B35 V15,V36	SUKg 280 M6	V1,V3	6217 C3 (NU217) <sup>1</sup>	6217 C3
SUf 280 M6	B3					6317 P636	6317 P636
SUg 315 S6A	B3	SULg 315 S6A	B35			NU320 P6	6320 P6
SUg 315 M6A	B3	SULg 315 M6A	B35			NU320 P6	6320 P6
SUg 315 M6B	B3	SULg 315 M6B	B35			NU320 P6	6320 P6
SUg 355 S6	B3	SULg 355 S6	B35			NU322 P6	6322 P6
SUg 355 M6	B3	SULg 355 M6	B35			NU322 P6	6322 P6
SUg 355 L6	B3	SULg 355 L6	B35			NU320 P6	6322 P6
SUem 400 S6B	B3					NU324 P6	6322 P6
SUem 400 M6	B3					NU324 P6	6322 P6

<sup>1</sup> - for belt drive





**MOUNTING ARRANGEMENTS, BEARINGS**

FOOT MOUNTING Type / available execution	FOOT / FLANGE MOUNTING Type / available execution	FLANGE MOUNTING Type / available execution	BEARINGS				
			D	ND			
2p=8 n=750 rpm							
SUg 200 L8	B3 V5,V6	SULg 200 L8	B35 V15,V36	SUKg 200 L8	B5 V1,V3	6212 C3 (NU212) <sup>1</sup>	6212 C3
SUg 225 M8A	B3 V5,V6	SULg 225 M8A	B35 V15,V36	SUKg 225 M8A	B5 V1,V3	6213 C3 (NU213) <sup>1</sup>	6213 C3
SUg 225 M8B	B3 V5,V6	SULg 225 M8B	B35 V15,V36	SUKg 225 M8B	B5 V1,V3	6213 C3 (NU213) <sup>1</sup>	6213 C3
SUg 250 M8A	B3 V5,V6	SULg 250 M8A	B35 V15,V36	SUKg 250 M8A	V1,V3	6215 C3 (NU215) <sup>1</sup>	6215 C3
SUg 250 M8B	B3 V5,V6	SULg 250 M8B	B35 V15,V36	SUKg 250 M8B	V1,V3	6215 C3 (NU215) <sup>1</sup>	6215 C3
SUg 280 S8	B3 V5,V6	SULg 280 S8	B35 V15,V36	SUKg 280 S8	V1,V3	6217 C3 (NU217) <sup>1</sup>	6217 C3
SUf 280 S8	B3					6317 P636 (NU317) <sup>1</sup>	6317 P636 (NU317) <sup>1</sup>
SUg 280 M8	B3 V5,V6	SULg 280 M8	B35 V15,V36	SUKg 280 M8	V1,V3	6217 C3 (NU217) <sup>1</sup>	6217 C3
SUf 280 M8	B3					6317 P636	6317 P636
SUg 315 S8	B3	SULg 315 S8	B35			NU320 P6	6320 P6
SUg 315 M8A	B3	SULg 315 M8A	B35			NU320 P6	6320 P6
SUg 315 M8B	B3	SULg 315 M8B	B35			NU320 P6	6320 P6
SUg 355 S8	B3	SULg 355 S8	B35			NU322 P6	6322 P6
SUg 355 M8A	B3	SULg 355 M8A	B35			NU322 P6	6322 P6
SUg 355 M8B	B3	SULg 355 M8B	B35			NU320 P6	6322 P6
SUem 400 M8A	B3					NU324 P6	6322 P6
SUem 400 M8B	B3					NU324 P6	6322 P6

1- for belt drive

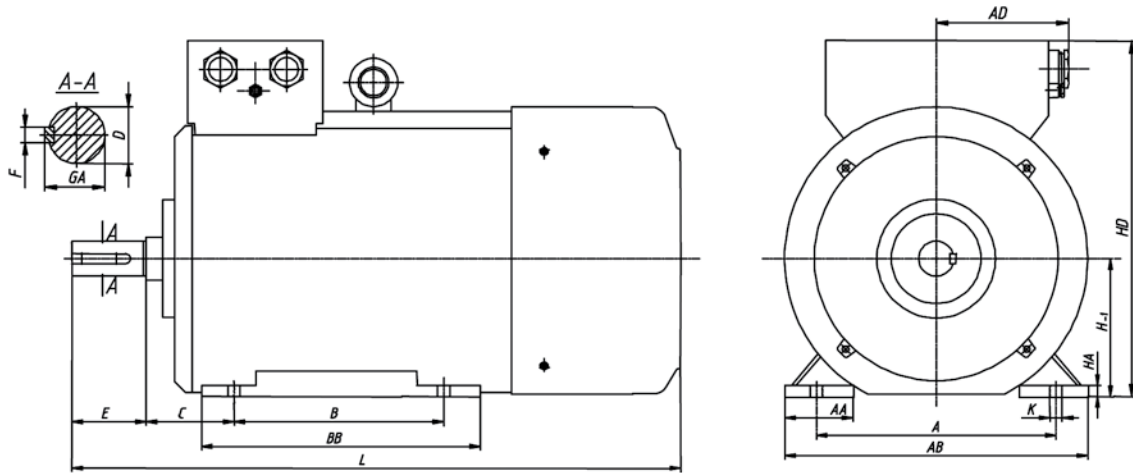
2p=10 n=600 rpm							
SUg 355 S10A	B3	SULg 355 S10A	B35			NU322 P6	6322 P6
SUg 355 S10B	B3	SULg 355 S10B	B35			NU322 P6	6322 P6
SUg 355 M10A	B3	SULg 355 M10A	B35			NU322 P6	6322 P6
SUg 355 M10B	B3	SULg 355 M10B	B35			NU322 P6	6322 P6
SUem 400 M10A	B3					NU324 P6	6322 P6
SUem 400 M10B	B3					NU324 P6	6322 P6
SUem 400 M10C	B3					NU324 P6	6322 P6

2p=12 n=500 rpm							
SUg 355 S12	B3	SULg 355 S12	B35			NU322 P6	6322 P6
SUg 355 M12A	B3	SULg 355 M12A	B35			NU322 P6	6322 P6
SUg 355 M12B	B3	SULg 355 M12B	B35			NU322 P6	6322 P6
SUem 400 S12B	B3					NU324 P6	6322 P6
SUem 400 M12A	B3					NU324 P6	6322 P6
SUem 400 M12B	B3					NU324 P6	6322 P6

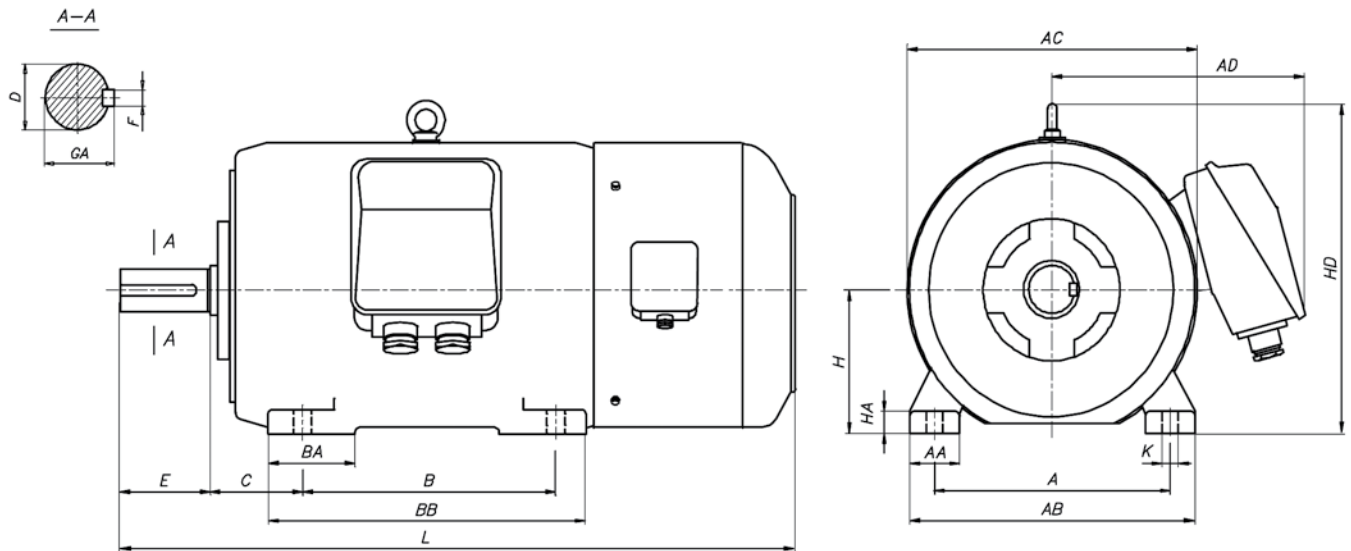


**MOUNTING AND OVERALL DIMENSIONS**

**FOOT MOUNTED MOTORS – MOUNTING ARRANGEMENT IM B3**



Type	A	B	C	D	E	F	GA	H	HA	K	AA	AB	AD	BB	HD	L
SUg 200 L4÷8	318	305	133	55	110	16	59	200	32	19	80	400	225	380	480	930
SUg 225 M4÷8	356	311	149	60	140	18	64	225	35	19	85	445	240	400	540	1030
SUg 250 M4÷8	406	349	168	70	140	20	74,5	250	36	24	90	495	280	420	590	1190
SUg 280 S4÷8	457	368	190	80	170	22	85	280	40	24	100	560	305	470	675	1240
SUg 280 M4÷8	457	419	190	80	170	22	85	280	40	24	100	560	305	520	675	1290
SUf 280 S4÷8	457	368	190	80	170	22	85	280	40	24	100	560	305	470	675	1210
SUf 280 M4÷8	457	419	190	80	170	22	85	280	40	24	100	560	305	520	675	1260

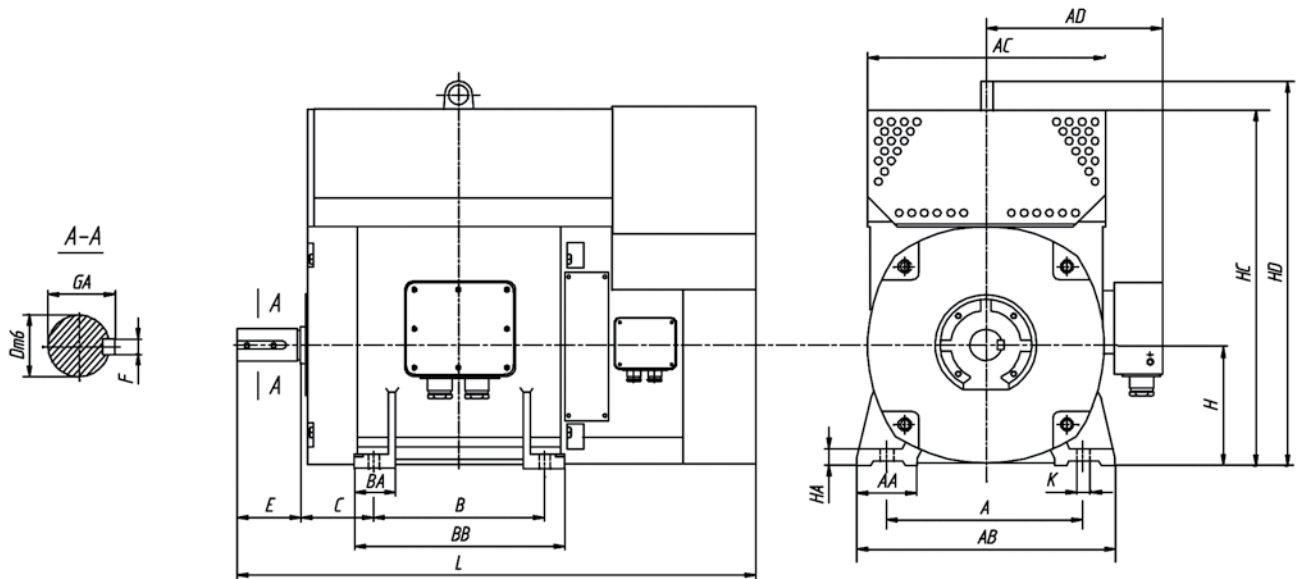


Type	A	B	C	D	E	F	GA	H	HA	K	AA	AB	AC	AD	BA	BB	HD	L
SUg 315 S4÷8	508	406	216	80	170	22	85	315	45	28	134	640	694	585	150	500	750	1402
SUg 315 M4÷8	508	457	216	80	170	22	85	315	45	28	134	640	694	585	150	550	750	1453
SUg 355 S4÷12	610	500	254	100	210	28	106	355	50	28	158	720	764	620	170	600	848	1607
SUg 355 M4÷12	610	560	254	100	210	28	106	355	50	28	158	720	764	620	205	730	848	1667
SUg 355 L4	610	630	254	100	210	28	106	355	50	28	158	720	764	620	205	730	848	1737

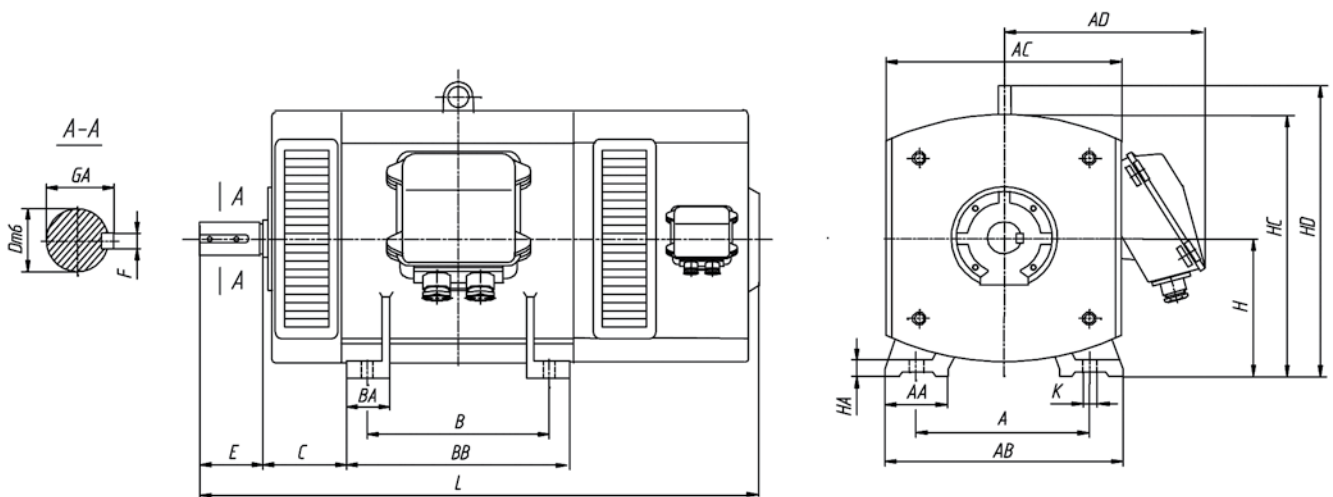


**MOUNTING AND OVERALL DIMENSIONS**

**FOOT MOUNTED MOTORS – MOUNTING ARRANGEMENT IM B3**



Type	A	B	C	D	E	F	GA	H	HA	K	AA	AB	AC	AD	BA	BB	HC	HD	L
SUem 400 S	686	560	280	110	210	28	116	400	50	35	155	850	790	590	175	700	1250	1340	1715
SUem 400 M	686	630	280	110	210	28	116	400	50	35	155	850	790	590	175	770	1250	1340	1785

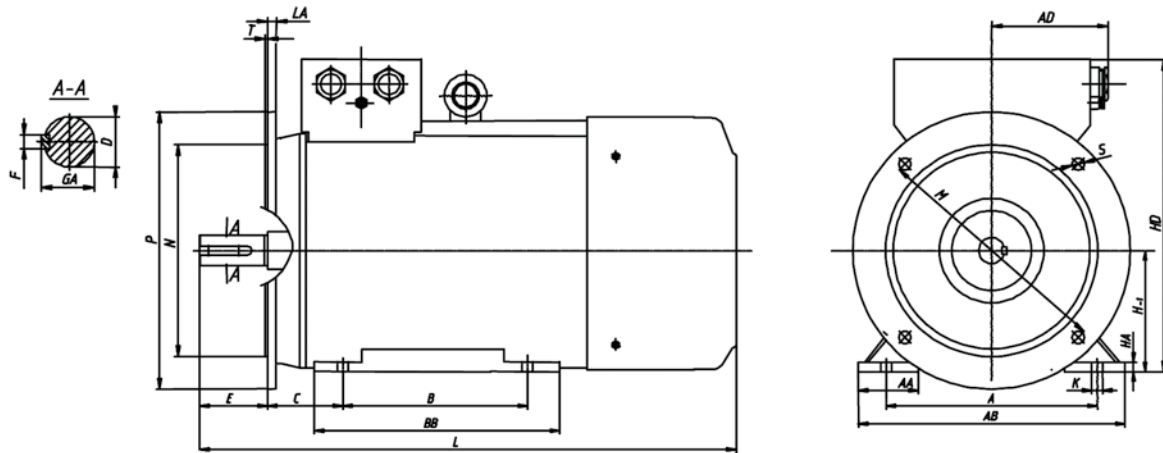


Type	A	AA	AB	AC	AD	B	BA	BB	C	D	E	F	GA	H	HA	HC	HD	K	L
SCUe 315 S	508	130	620	637	480	406	120	490	216	90	170	25	95	315	30	620	718	28	1293
SCUe 315 M	508	130	620	637	480	457	120	540	216	90	170	25	95	315	30	620	718	28	1343
SCUe 355 S	610	130	730	674	498	500	130	590	254	100	210	28	106	355	35	695	810	28	1482
SCUe 355 M	610	130	730	674	498	560	130	650	254	100	210	28	106	355	35	695	810	28	1542
SCUe 400 S	686	155	850	790	590	560	175	700	280	110	210	28	116	400	50	795	920	35	1490
SCUe 400 M	686	155	850	790	590	630	175	770	280	110	210	28	116	400	50	795	920	35	1560

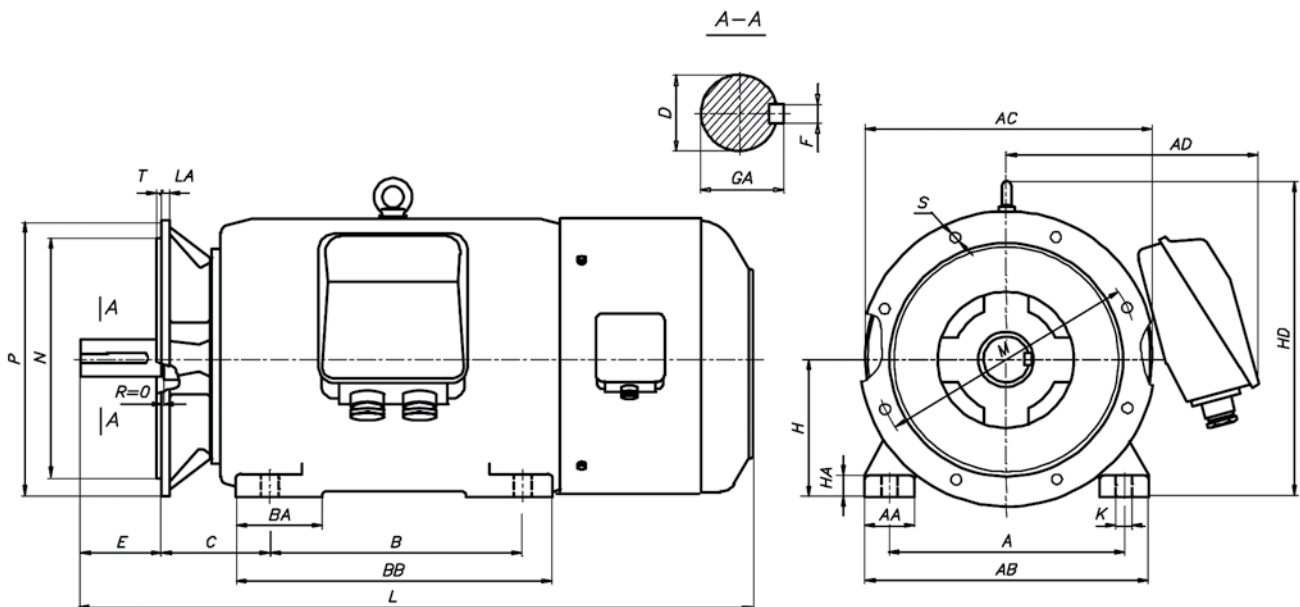


**MOUNTING AND OVERALL DIMENSIONS**

**FOOT/FLANGE MOUNTED MOTORS – MOUNTING ARRANGEMENT IM B35**



Type	A	B	C	D	E	F	GA	H	K	M	N	P	T	AA	AB	AD	BB	HA	HD	L	LA	S	
																						∅	Qua.
SULg 200 L	318	305	133	55	110	16	59,0	200	19	350	300	400	5	80	400	225	380	32	480	930	16,5	18	4
SULg 225 M	356	311	149	60	140	18	64,0	225	19	400	350	450	5	85	445	240	400	35	540	1030	18,0	18	8
SULg 250 M	406	349	168	70	140	20	74,5	250	24	500	450	550	5	90	495	280	420	36	590	1190	19,0	18	8
SULg 280 S	457	368	190	80	170	22	85,0	280	24	500	450	550	5	100	560	305	470	40	675	1240	20,0	18	8
SULg 280 M	457	419	190	80	170	22	85,0	280	24	500	450	550	5	100	560	305	520	40	675	1290	20,0	18	8

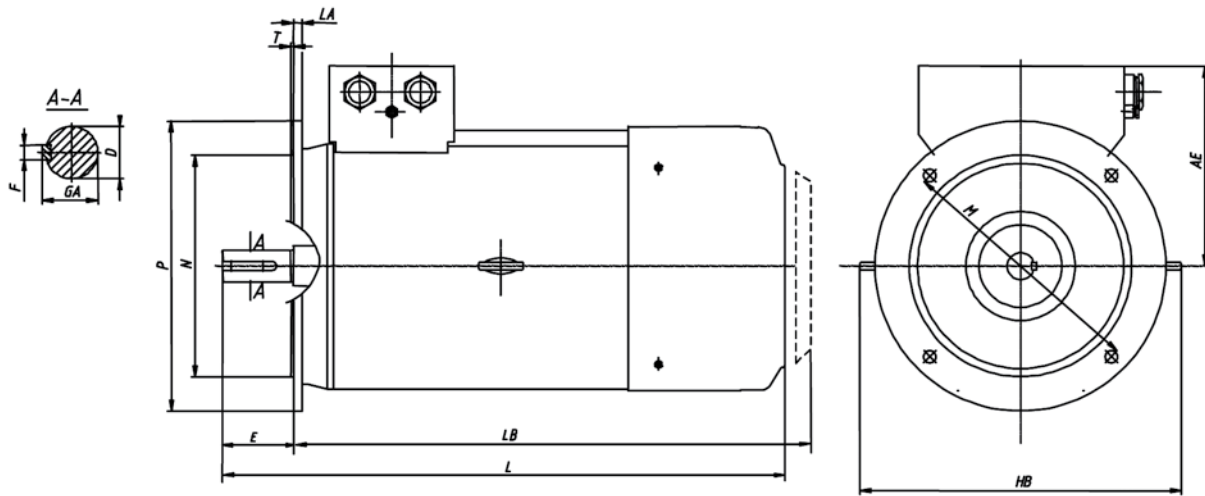


Type	A	B	C	D	E	F	GA	H	HA	K	AA	AB	AC	AD	BA	BB	HD	L	LA	M	N	P	T	S	
																								∅	Qua.
SULg 315 S	508	406	216	80	170	22	85,5	315	45	28	134	640	694	585	150	500	750	1402	22	600	550	660	6	22	8
SULg 315 M	508	457	216	80	170	22	85,5	315	45	28	134	640	694	585	150	550	750	1453	22	600	550	660	6	22	8
SULg 355 S	610	500	254	100	210	28	106	355	50	28	158	720	764	620	170	600	848	1607	24	740	680	800	6	22	8
SULg 355 M	610	560	254	100	210	28	106	355	50	28	158	720	764	620	205	730	848	1667	24	740	680	800	6	22	8
SULg 355 L	610	630	254	100	210	28	106	355	50	28	158	720	764	620	205	730	848	1737	24	740	680	800	6	22	8



**MOUNTING AND OVERALL DIMENSIONS**

**FLANGE MOUNTED MOTORS – MOUNTING ARRANGEMENT IM B5, IMV6, IMV3**



Type	D	E	F	GA	M	N	P	T	AE	HB	L	LA	LB <sup>2</sup>	S	
														∅	Quan.
SUKg 200 L	55	110	16	59,0	350	300	400	5	275	560	930	16.5	810	18	4
SUKg 225 M	60	140	18	64,0	400	350	450	5	300	630	1030	18	965	18	8
SUKg 250 M <sup>1</sup>	70	140	20	74,5	500	450	550	5	330	680	1190	19	1125	18	8
SUKg 280 S <sup>1</sup>	80	170	22	85,0	500	450	550	5	360	790	1240	20	1155	18	8
SUKg 280 M <sup>1</sup>	80	170	22	85,0	500	450	550	5	360	790	1290	20	1205	18	8

<sup>1</sup> – only vertical position IMV1 and IMV3

<sup>2</sup> – IM V1, V5 and V15 motors have protection cover



## SAFETY

### GENERAL RULES AND PRESCRIPTIONS



Although the three-phase asynchronous motors illustrated in this catalogue comply perfectly with all the safety standards and regulations in force. However certain danger areas inevitably remain due to the presence of voltage and moving parts. As per internationally-approved IEC 364 Standards, installation and maintenance operations must be performed exclusively by qualified personnel. Failure to respect the above can raise the risk of damage and injury. We recommend observing all the local standards and regulations in force and scrupulously respecting the instructions for motor operation provided.

### ELECTRICAL CONNECTION



Before performing any operations on the motor, make sure that no voltage is present and that the motor cannot be accidentally switched on. This precaution also applies to any accessories installed for the motor such as anti-condensate devices, servo-assisted ventilation, etc... Before connecting power supply to the motor, make sure that the mains voltage and frequency match the data listed on the motor's rating plate, paying particular attention to the accepted ranges of tolerance, while bearing in mind that the power line must be sized to the power of the user (CEI 64-8 Standards).

**Always make the ground connection!**

### MOTOR INSTALLATION SITE



**Vemat** motors are designed for use in industrial surroundings as per harmonised EN 60034 Standards. Other installations (e.g. places where children are present), may require the installation of additional protections directly at the site of motor operation. Special attention must be paid to the surrounding conditions at the motor installation site, such as the degree of insulation necessary against penetration by water. **Vemat** motors come with IP55 Protection rating; for areas where greater protection is required, consult this catalogue's Accessories section or contact our Technical Office directly.

### GUARANTEE

The guarantee provided by VEMAT SPA expires after one year from invoice date of our products. It only covers the replacement or repair free of charge of defective units or parts provided that VEMAT admit that said faults or defects are to be ascribed to manufacturing processes. The customer does not have to feel entitled to cancel or reduce the outstanding orders because of defective materials previously supplied. VEMAT will not be responsible

for the payment of any charges related to goods to be replaced or repaired under guarantee. Returns of materials will only be accepted if both back and forth transport charges will be covered by the customer. Our guarantee becomes completely null and void if units result altered or repaired. Our guarantee does not cover defects or faults which could be attributed to external factors, insufficient maintenance, overload, improper selection, mounting errors or shipping damages.

### COMPLAINTS

Complaints for defective material must be effected in writing and within the legal terms or they will be considered null. In case of complaints the buyer is not anyhow entitled to stop or delay payments.

**Catalogue data is not binding.  
This catalogue invalidates and replaces all previous issues.**





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