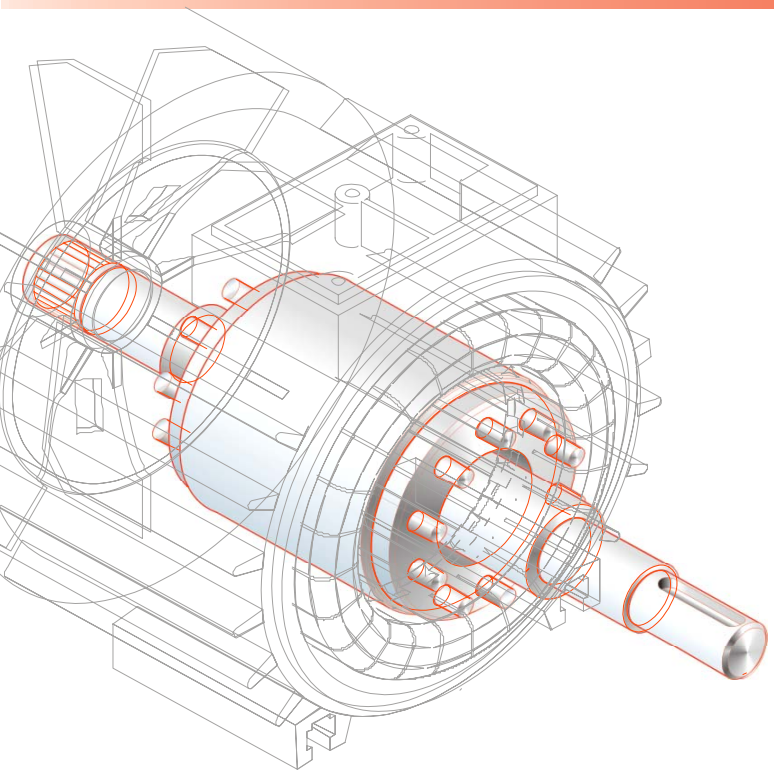


Three-phase squirrel-cage high voltage motors series

Sf 315-450

BASIC EXECUTION - GENERAL CHARACTERISTICS

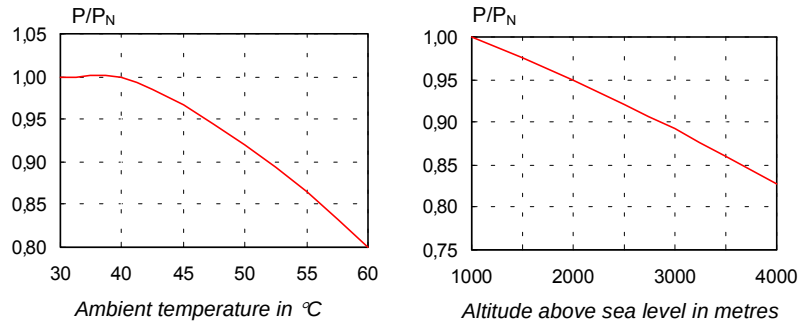
Three-phase squirrel-cage high voltage motors with module construction Sf series have welded frames. Cooling is realized with rural cooler build-up on the frame (cooling system IC611 – air/air).
Two separate cooling circulations systems are used: internal forced by internal ventilator and external forced by external ventilator. The basic scope of production includes motors of mechanical sizes from 315 to 450 of rated power 160-1000kW. The extension of standard high voltage motors Sf type are the motors for power industry suitable for very hard starting conditions (series Sf355 – 710E – acc. to catalogue 29a).

Series / Frame size	**Sf 315**	**Sf 355**	**Sf 400**	**Sf 450**
Voltage and frequency	6000V±5%; 50Hz±2%			
Duty type	continuous, S1			
Class of insulation	F (VPI)			
Ambient temperature	-20 C° … +40 C°			
Altitude	up to 1000 m above sea level			
Degree of protection	IP54 (or IP55) – acc. to IEC 34-5			
Method of cooling	IC611 – acc. to EN 60034-6			
Type of construction	IM1001 (B3) – acc. to EN 60034-7 (vertical execution V1 – acc. To catalogue sheet no. 26f)			
Starting	direct on line			
Number of terminals	3			
Location of main terminal box	on the side (standard right – viewed from DE)			
Bearings	anti-friction (bearings types acc. to table 1)			
Direction of rotation	Both			
Vibration severity grade	N (≤2.8 mm/s) acc. to IEC 34-14			
Thermal winding protection	6×Pt100 (2 pcs/phase)			
Thermal bearing protection	2×Pt100 (1 pc/bearing node)			
Space heaters	on request			
Paint finish	blue - RAL 5010			
Material of frame	welded-steel			
Corrosive protection	for normal ambient conditions			
Standard	IEC 34-1			

APPLICATION AND OPERATIONAL CONDITIONS

Motors Sf series are of general industrial use. They are used for driving various machines and devices which work is of continuous duty without frequent starting and reversing. Because of protection degree motors can work in dusty environment. However the dustiness of air should not extend10 mg/m^3. Ambient air can not contain chemically aggressive contaminants like acid or lye fumes. Ambient air mustn't contain also explosive mixtures or very fine dust particles. For outdoor operation it is recommended to place the motor under a roof protecting it against rain, snow and sunlight.

CHANGES IN AMBIENT AND SUPPLY CONDITION



Rated motor load is specified at ambient temperature +40°C and operational altitude up to 1000 m above sea level. When temperature and / or altitude are changed motor output should be corrected according to the below characteristics..

BALANCING AND ALLOWABLE VIBRATION LEVEL

Motor's rotor is balanced with half-key installed in free shaft extension.
Permissible vibration speed of uncoupled motor is 2,8 mm/s rms.

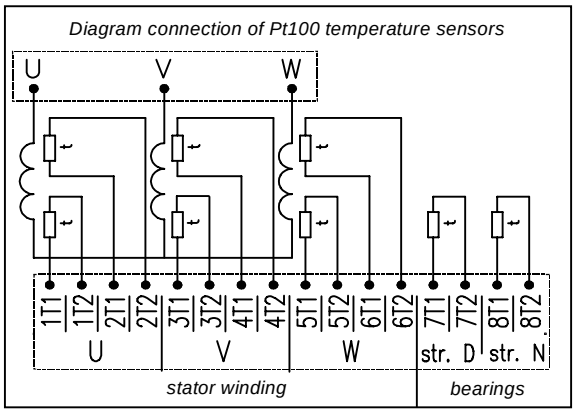
BEARINGS

Motors Sf series are equipped with rolling bearings with possibility of lubricating during operation and special device to remove used grease (taken out „drawer" placed in lower part of external bearing cover).
Bearings lubricant - solid grease ŁT-4S3 (Mobillux EP3).

STANDARD

Mechanical Size	No. of poles	D.E. bearing	N.D.E. bearing
Sf 315	2	6317 C3	6317 C3
	4	6320 MC3	NU320 EM1
	6	6320 C3	NU320 EM1
Sf 355	2	6318 C3	6318 C3
	4 ÷ 8	NU222 EM1 + 6222 MC3	NU222 EM1
Sf 400	4 ÷ 8	NU226 EM1 + 6226 MC3	NU226 EM1
Sf 450	4 ÷ 12	NU226 EM1 + 6226 MC3	NU226 EM1

Thermal winding protection



As the temperature protection against slow-changing overload platinum thermoresistors Pt100 are built in stator's winding and bearing nodes.
6 temperature sensors placed between coils' sides (2 pieces/phase) are mounted on stator winding.

For bearing protection 1 sensor per bearing node is used.

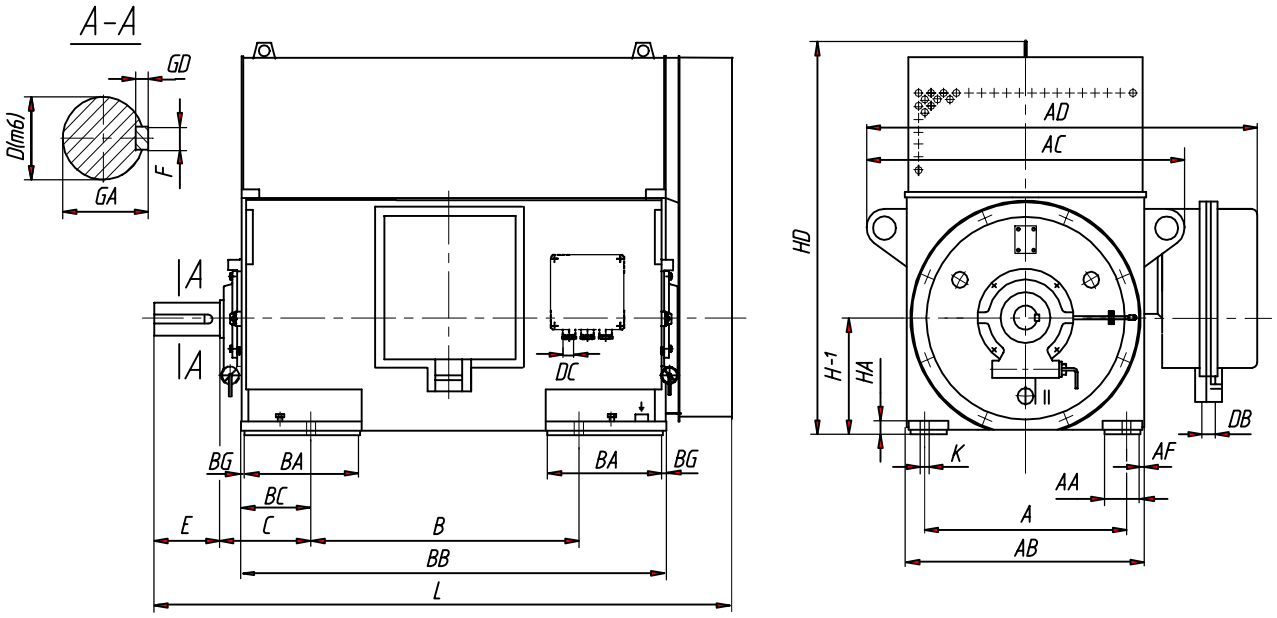
All sensors' terminals are put into auxiliary terminal box, placed next to main terminal box.

TECHNICAL DATA:

6000V/50Hz

Item	Motor type	Rated power	Rated speed	Rated torque	Efficiency	Power factor	Rated current	Staarting torque	Starting current	Breakdown torque	Rotor inertia	Mass
		P_N	n_N	M_N	η	$\cos\varphi$	I_N	T_R/T_N	I_R/I_N	T_{MAX}/T_N	J	m
		kW	rpm	Nm	%	-	A	-	-	-	kgm^2	kg
					2p=2	3000 rpm						
1.	Sf 315 XK2	160	2972	514	92,9	0,90	18,4	1,0	6,0	2,7	2,0	1360
2.	Sf 315 X2	200	2972	643	93,6	0,90	22,8	1,1	6,3	2,7	2,2	1450
3.	Sf 315 Y2	250	2971	804	94,2	0,90	28,4	1,1	6,3	2,7	2,4	1540
4.	Sf 355 Y2B	315	2971	1013	93,6	0,91	35,6	1,0	6,0	2,7	3,7	1930
5.	Sf 355 Y2	400	2974	1285	95,1	0,91	44,5	1,0	6,4	2,7	4,2	2100
					2p=4	1500 rpm						
6.	Sf 315 XK4	160	1485	1029	93,5	0,86	19,1	1,1	5,2	2,2	4,2	1400
7.	Sf 315 X4	200	1484	1288	93,5	0,87	23,7	1,2	5,7	2,6	4,8	1510
8.	Sf 315 Y4	250	1485	1609	94,3	0,87	29,3	1,3	6,0	2,8	5,5	1680
9.	Sf 355 X4	315	1485	2027	94,0	0,87	37,1	1,3	5,7	2,3	7,8	2060
10.	Sf 355 Y4	400	1486	2572	94,9	0,87	46,6	1,4	6,0	2,5	9,4	2310
11.	Sf 400 X4	500	1487	3213	95,1	0,90	56,2	1,0	6,0	2,5	17,0	3140
12.	Sf 400 Y4	630	1486	4051	95,4	0,90	70,6	0,9	5,8	2,4	18,5	3240
13.	Sf 450 X4	800	1489	5134	95,7	0,90	89,4	1,0	6,2	2,6	32,8	4080
14.	Sf 450 Y4	1000	1489	6417	95,9	0,90	111,0	1,0	6,2	2,6	36,3	4240
					2p=6	1000 rpm						
15.	Sf 315 X6	160	989	1546	93,6	0,83	19,8	1,1	5,5	2,5	6,8	1540
16.	Sf 315 Y6	200	989	1932	94,0	0,82	24,7	1,3	5,6	2,5	7,8	1720
17.	Sf 355 X6	250	989	2415	94,0	0,83	30,8	1,4	5,6	2,4	10,6	2080
18.	Sf 355 Y6	315	990	3040	94,6	0,83	38,6	1,5	6,0	2,4	13,1	2400
19.	Sf 400 X6	400	990	3861	94,8	0,84	48,3	1,2	5,8	2,3	21,8	3100
20.	Sf 400 Y6	500	990	4826	95,1	0,84	60,2	1,3	6,0	2,5	25,9	3390
21.	Sf 450 X6	630	992	6068	95,0	0,89	71,7	1,0	6,0	2,4	51,6	4100
22.	Sf 450 Y6	800	991	7713	95,3	0,89	90,8	1,0	5,6	2,3	56,7	4310
					2p=8	750 rpm						
23.	Sf 355 X8	160	741	2063	93,2	0,78	21,2	1,3	5,5	2,5	10,6	2080
24.	Sf 355 Y8	200	741	2579	93,8	0,78	26,3	1,4	5,7	2,5	13,1	2400
25.	Sf 400 X8	250	742	3219	93,6	0,81	31,7	1,1	5,8	2,6	23,4	2980
26.	Sf 400 Y8	315	742	4056	93,9	0,81	39,9	1,1	5,7	2,5	26,0	3160
27.	Sf 450 X8	400	743	5144	94,4	0,83	49,1	1,1	6,0	2,5	49,6	3870
28.	Sf 450 Y8	500	744	6421	94,7	0,83	61,2	1,3	6,1	2,5	56,7	4120
29.	Sf 450 Y8B	650	742	8366	95,1	0,85	77,4	1,3	5,6	2,1	65,0	4450
					2p=10	600 rpm						
30.	Sf 450 X10A	160	595	2569	93,2	0,77	21,5	1,1	6,0	2,9	40,2	3320
31.	Sf 450 X10B	200	594	3217	94,5	0,79	25,8	1,1	5,9	2,8	43,2	3430
32.	Sf 450 X10C	250	594	4021	94,6	0,80	31,8	1,2	6,0	2,7	48,9	3600
33.	Sf 450 X10D	315	593	5076	93,8	0,80	40,4	1,1	5,9	2,5	54,5	3800
34.	Sf 450 Y10	400	593	6445	94,1	0,81	50,5	1,1	6,0	2,5	64,4	4090
35.	Sf 450 Y10B	500	593	8052	94,8	0,82	63,5	1,0	5,6	2,3	78,3	4300
					2p=12	500 rpm						
36.	Sf 450 X12A	160	495	3087	94,0	0,79	20,7	0,9	5,7	2,6	41,3	3490
37.	Sf 450 X12B	200	494	3866	94,0	0,79	25,9	0,9	5,5	2,6	47,0	3630
38.	Sf 450 X12C	250	494	4833	94,3	0,79	32,3	0,9	5,7	2,6	51,0	3720
39.	Sf 450 Y12	315	494	6089	94,5	0,81	39,6	0,9	5,7	2,6	61,5	3980
40.	Sf 450 Y12B	400	494	7779	95,0	0,81	50,0	0,9	5,8	2,6	73,5	4300

DIMENSIONAL DRAWING OF SQUIRREL-CAGE MV MOTORS SF 315÷450 SERIES



MECHANICAL CONSTRUCTION: IM1001 (B3)

Motor type	A	AA	AB	AC	AD	AF	B	BA	BB	BC	BG	C	D	DB	DC	E	F	GA	GD	H	HA	HD	K	L
Sf 315 XK2; X-2	560	100	660	882	1110	11	710	320	1170	181	10	224	70	55	15	140	20	74,5	12	315	31	1085	28	1730
Sf 315 Y2	560	100	660	882	1110	11	800	320	1170	181	10	224	70	55	15	140	20	74,5	12	315	31	1085	28	1730
Sf 315 X4÷6	560	100	660	882	1110	11	710	320	1170	181	10	224	90	55	15	170	25	95	14	315	31	1085	28	1610
Sf 315 Y4÷6	560	100	660	882	1110	11	800	320	1250	181	10	224	90	55	15	170	25	95	14	315	31	1085	28	1700
Sf 355 Y2B; Y2	630	100	750	972	1195	10	900	320	1273	203	10	254	75	55	15	140	20	79,5	12	355	28	1303	28	1930
Sf 355 X4÷8	630	100	750	972	1195	10	800	320	1273	203	10	254	100	55	15	210	28	106	16	355	28	1303	28	1860
Sf 355 Y4÷8	630	100	750	972	1195	10	900	320	1373	203	10	254	100	55	15	210	28	106	16	355	28	1303	28	1960
Sf 400 X4÷8	710	130	866	1092	1306	10	900	490	1540	203	10	280	110	55	15	210	28	116	16	400	32	1400	35	2136
Sf 400 Y4÷8	710	130	866	1092	1306	10	1000	490	1540	203	10	280	110	55	15	210	28	116	16	400	32	1400	35	2136
Sf 450 X4÷12	800	130	980	1198	1415	10	1000	390	1540	238	10	315	120	55	15	210	32	127	18	450	32	1603	35	2146
Sf 450 Y4÷12	800	130	980	1198	1415	10	1120	390	1540	238	10	315	120	55	15	210	32	127	18	450	32	1603	35	2146