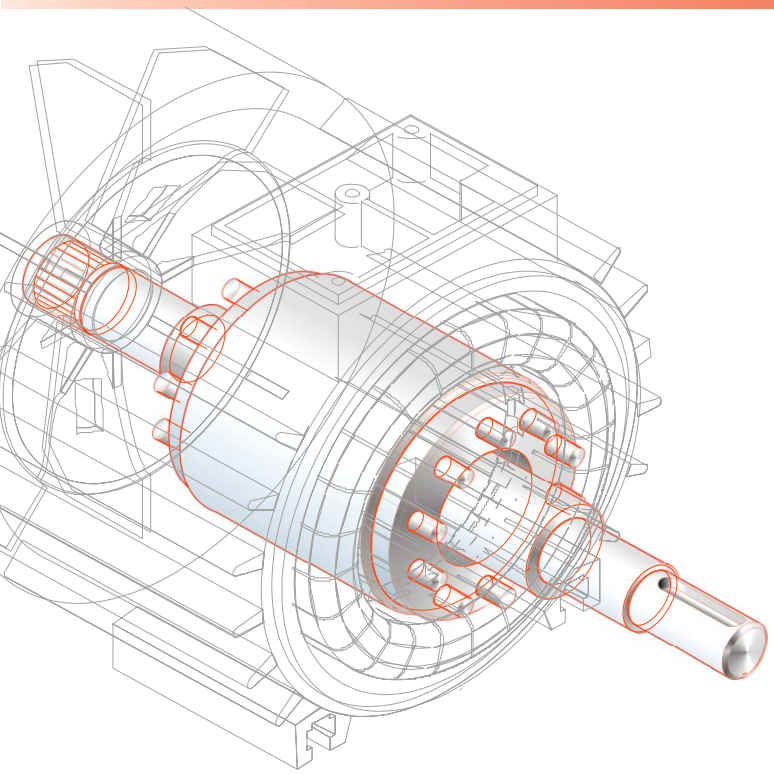


Cantoni GROUP

Three-phase
Squirrel cage
High voltage
Motors series

Sf 315÷710-E

Sfw 560÷710

For Power industry

EMIT

BASIC EXECUTION - GENERAL CHARACTERISTICS

Three-phase squirrel-cage high voltage motors with module construction „Sf-E" and „Sfw" series have welded frames.
Cooling is realized with rural cooler build-up on the frame (cooling system IC611 – air/air or IC81W air/water).
In air coolde motors (IC611) Two separate cooling circulations systems are used internal forced by internal fan and external forced by external fan – series designation „Sf-E".
In water cooled motors (IC81W) internal air circulation is provided by internal fan whereas external cooling medium is water in closed circuit – series designation „Sfw".
Basic production program covers motors of mechanical sizes from 355 up to 710 and power output range 160÷3150kW.

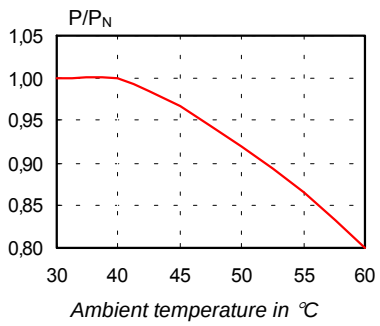
Type / Frame size	**Sf 315÷710**	**Sfw560**	**Sfw710**
Voltage and frequency	6000V±5%; 50Hz±2%		
Duty type	Continuous S1		
Class of insulation	F (VPI)		
Ambient temperature	-20 C° … +40 C°	0 C° … +40 C°	
Altitude	Up to 1000 m a.s.l.		
Degree of protection	IP55		
Method of cooling	IC611	IC81W	
Type of construction	IM1001 (B3)		IM1102 (B3)
Starting	Direct on line		
Number of terminals	3		
Location of main terminal box	On the side (on the right side of frame when viewed from DE as a standard)		
Bearings	Rolling / solid grease (see table 1)	sleeve / forced oil lubrication (see table 1)	
Direction of rotation	one for Sf560÷710 - 1500 rpm both for the rest	one – according to order	
Vibration severity grade	N (≤2.8 mm/s)		
Thermal winding protection	6×Pt100 (2 pcs./phase)		
Thermal bearing protection	2×Pt100 (1 pcs./bearing node)		
Space heaters	On request		
Paint finish	Blue - RAL 5010		
Material of frame	Welded steel		
Corrosive protection	for normal ambient conditions		
Standard	PN-IEC 60034-1		

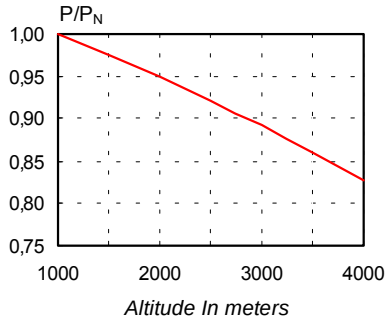
ZASTOSOWANIE I WARUNKI PRACY

Motors of Sf-E and Sfw series are suitable for work in conditions occurring in drives used for own needs of power plants (pumps, fans, coals mills, conveyors, etc.) and in all drives with hard starting conditions. These motors can operate in SZR fast systems. They can be restarted with full phase opposition and 100% of residual voltage. Durability of motors amounts to ca. 5000 start-ups and 1000 reverses.

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.

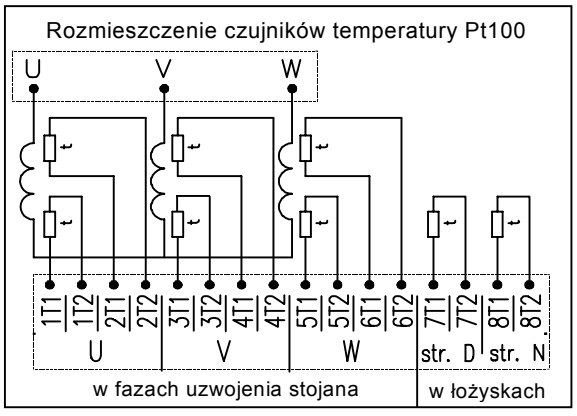
ŁOŻYSKOWANIE

Motors of Sf315÷710-E 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).
In 2-pole (3000 rpm) motors series „Sfw560÷710" sleeve bearings (made by RENK AG) with forced oil lubrication are used. Machine oil with viscosity class is used for bearings lubrication.
Bearing types are show In table 1.

TABLE 1

Mechanical Size	No. of poles	D.E. bearing	N.D.E. bearing
Sf 315 Y	6	6320 C3	NU320 EM1
Sf 355 X;Y	2	6318 C3	6318 C3
	4 ÷ 8	NU222 EM1 + 6222 MC3	NU222 EM1
Sf 400 X;Y	4 ÷ 8	NU226 EM1 + 6226 MC3	NU226 EM1
Sf 450 X;Y	4 ÷ 8	NU226 EM1 + 6226 MC3	NU226 EM1
Sfw 560	2	EFZLB 9-100	EFZLQ 9-100
Sf 560 X;Y	4 ÷ 12	NU226 EM1 + 6226 MC3	NU226 EM1
Sf 560 H	4 ÷ 12	NU232 EM1 + 6232 MC3	NU226 EM1
Sfw 710	2	EFZLK 14-140	EFZLQ 11-125
Sf 710 X;Y	8 ÷ 12	NU238 EM1 + 6238 MC3	NU232 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	TYPE	Rated power	Speed of rotation	Rated torque	Rated efficiency	Power factor	Rated current	Starting torque	Starting current	Breakdown torque	Moment of inertia	Mass
		P_N	n_N	M_N	η	$\cos\varphi$	I_N	M_R/M_N	I_R/I_N	M_{MAX}/M_N	J	m
		kW	Rpm	Nm	%	-	A	-	-	-	kgm^2	kg
					2p=2	3000 rpm						
1.	Sf 355 Y2-E	250	2976	802	94,3	0,88	29,0	1,1	5,9	3,0	4,9	1970
2.	Sf 355 Y2-E	280	2973	899	94,5	0,89	31,9	0,9	5,3	2,7	4,9	1970
3.	Sf 355 Y2-E	315	2974	1016	94,4	0,89	36,2	0,9	5,7	2,5	4,9	1970
4.	Sfw 560 J2A-G	1250	2985	3999	96,2	0,90	139	0,5	6,0	2,1	29	5850
5.	Sfw 560 J2B-G	1400	2988	4474	96,9	0,90	155	0,5	6,2	2,4	29	5850
6.	Sfw 710-2A	2250	2986	7196	96,6	0,90	249	0,4	4,8	1,9	79	8400
7.	Sfw 710-2B	2500	2988	7990	96,7	0,90	276	0,5	5,5	2,1	91	8680
8.	Sfw 710-2C	2800	2989	8946	97,0	0,90	309	0,6	6,2	2,3	110	9500
9.	Sfw 710-2D	3150	2987	10071	97,1	0,90	347	0,45	5,5	2,1	110	9500
					2p=4	1500 rpm						
10.	Sf 355 X4A-E	200	1484	1288	93,5	0,86	23,9	1,9	6,0	2,4	7,3	2100
11.	Sf 355 X4B-E	250	1484	1610	94,2	0,86	29,7	1,9	5,9	2,4	8,3	2220
12.	Sf 355 Y4-E	315	1483	2030	94,7	0,87	36,8	2,0	5,9	2,3	9,4	2430
13.	Sf 400 X4-E	400	1478	2586	94,3	0,89	45,9	1,2	5,0	2,1	17,0	3250
14.	Sf 400 Y4-E	500	1479	3230	94,7	0,89	57,1	1,25	5,2	2,1	20,6	3510
15.	Sf 450 X4-E	650	1484	4185	94,8	0,86	76,7	1,7	6,0	2,3	32,8	4230
16.	Sf 450 Y4-E	850	1483	5477	95,2	0,86	100	1,7	5,7	2,1	36,3	4540
17.	Sf 560 X4-E	1000	1491	6408	95,9	0,91	110	0,8	6,5	2,5	60,0	5980
18.	Sf 560 Y4-E	1250	1491	8011	96,2	0,91	138	0,8	6,5	2,5	68,5	6400
19.	Sf 560 Y4B-E	1400	1490	8978	96,2	0,91	154	0,7	6,0	2,2	68,5	6400
20.	Sf 560 H4-E	1600	1490	10255	96,4	0,89	180	0,7	5,9	2,1	78,0	7100
21.	Sf 560 H4B-E	1800	1490	11537	96,6	0,90	200	0,8	6,0	2,2	85,5	7750
22.	Sf 560 H4C-E	2000	1492	12802	97,0	0,91	218	0,7	6,3	2,3	105	8100
23.	Sfw 710-4A *	2200	1495	14053	97,3	0,90	242	0,5	6,1	2,3	135	8755
24.	Sfw 710-4B *	2500	1495	15969	97,5	0,90	275	0,6	6,5	2,4	151	9300
25.	Sfw 710-4C *	2800	1495	17886	97,5	0,90	307	0,6	6,5	2,4	160	9555
26.	Sfw 710-4D *	3150	1495	20122	97,6	0,90	345	0,6	6,5	2,4	171	9980

* - dimensional drawing of Sfw710-4 A,B,C,D type motors available on request.

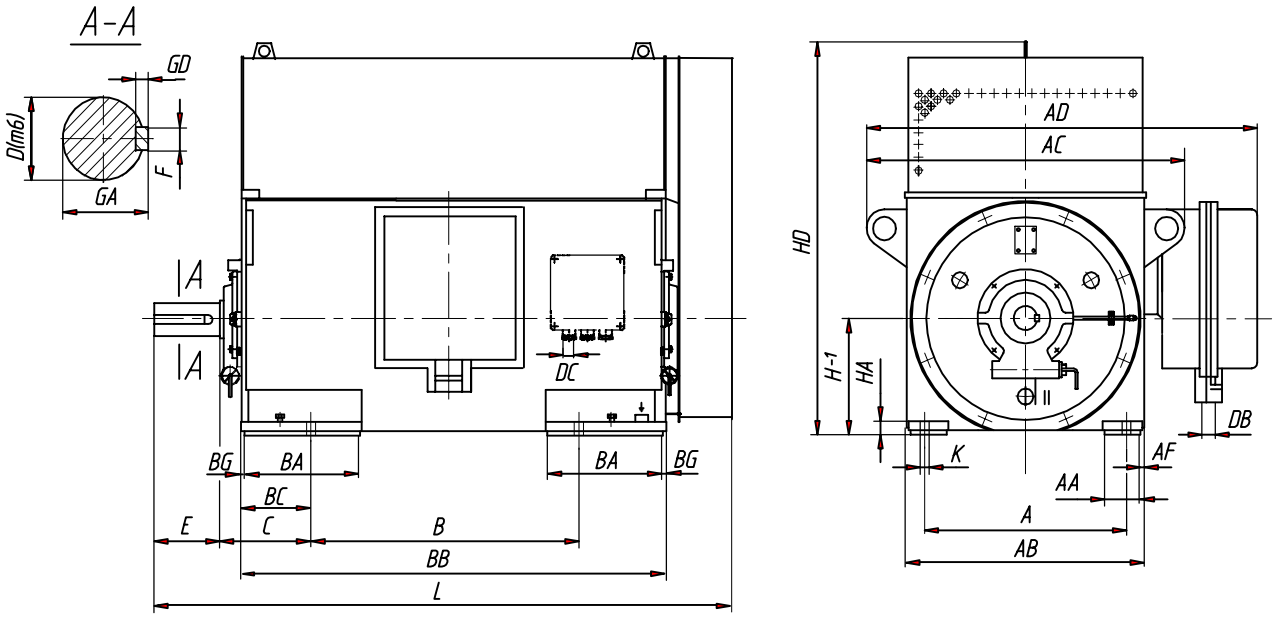
					2p=6	1000 rpm						
27.	Sf 315 Y6-E	160	981	1557	93,0	0,82	20,2	1,4	5,0	2,1	7,3	1660
28.	Sf 355 X6-E	200	985	1940	93,7	0,82	25	2,0	5,8	2,4	11,5	2240
29.	Sf 355 Y6-E	250	985	2425	93,9	0,82	31,2	2,0	5,8	2,4	13,1	2450
30.	Sf 400 X6-E	315	982	3065	93,8	0,81	39,9	1,8	5,2	2,3	21,8	3150
31.	Sf 400 Y6-E	400	982	3892	94,2	0,81	50,5	1,85	5,3	2,3	25,9	3540
32.	Sf 450 X6-E	500	987	4840	94,8	0,86	59	1,7	6,0	2,3	51,6	4270
33.	Sf 450 Y6-E	630	986	6105	95,0	0,86	74,2	1,6	5,6	2,1	56,7	4560
34.	Sf 560 X6-E	800	993	7698	95,5	0,88	92	0,9	6,5	2,4	86,0	6020
35.	Sf 560 Y6-E	1000	993	9622	95,9	0,88	114	0,9	6,5	2,4	98,0	6440
36.	Sf 560 H6-E	1250	994	12009	96,7	0,89	140	0,7	6,2	1,9	136	7880
37.	Sf 560 H6-E	1400	995	13437	96,8	0,88	158	0,8	6,2	2,0	136	7880
38.	Sf 560 H6B-E	1500	995	14396	97,0	0,89	167	0,9	6,6	2,2	153	8300
39.	Sf 560 H6C-E	1700	996	16300	97,1	0,89	189	0,6	6,3	2,1	153	8330

TECHNICAL DATA

6000V/50Hz

Item	TYPE	Rated power	Speed of rotation	Rated torque	Rated efficiency	Power factor	Rated current	Starting torque	Starting current	Breakdown torque	Moment of inertia	Mass
		P_N	n_N	M_N	η	$\cos\varphi$	I_N	M_R/M_N	I_R/I_N	M_{MAX}/M_N	J	m
		kW	rpm	Nm	%	-	A	-	-	-	kgm^2	kg
					2p=8	750 rpm						
40.	Sf 355 Y8-EA	160	744	2053	94,4	0,73	22,3	2,3	6,7	2,7	13,1	2430
41.	Sf 355 Y8-EA	200	742	2574	93,8	0,76	27,0	2,2	5,9	2,3	13,1	2430
42.	Sf 450 X8A-E	200	740	2582	93.0	0.78	26.5	1.9	5.7	2.2	39.0	3640
43.	Sf 450 X8B-E	250	739	3232	93.5	0.79	32.6	1.9	5.5	2.1	44.0	3800
44.	Sf 450 X8C-E	315	739	4073	93.9	0.79	40.9	1.9	5.4	2.1	50.0	4020
45.	Sf 450 Y8-E	400	739	5172	94.3	0.79	51.7	1.9	5.4	2.1	57.0	4370
46.	Sf 560 X8-E	500	744	6418	95,1	0,86	58,8	0,9	5,8	2,2	89,0	5650
47.	Sf 560 Y8-E	630	744	8086	95,4	0,86	73,9	1,0	6,0	2,2	97,0	6090
48.	Sf 560 H8-E	800	746	10240	96,5	0,86	92,9	0,8	6,1	2,2	134	7200
49.	Sf 560 H8B-E	1000	746	12801	96,8	0,86	116	0,8	5,6	2,1	168	8000
50.	Sf 560 H8C-E	1250	745	16023	96,8	0,86	145	0,7	5,1	1,9	182	8260
51.	Sf 710 X8	1400	746	17922	96,7	0,87	160	0,6	6,5	2,0	215	9870
52.	Sf 710 X8B	1600	746	20482	96,7	0,87	183	0,8	6,9	2,1	215	9870
53.	Sf 710 Y8	1800	746	23043	96,8	0,87	206	0,8	6,8	2,1	240	10340
54.	Sf 710 Y8B	2000	746	25603	96,9	0,87	228	0,8	6,9	2,1	275	11000
					2p=10	600 rpm						
55.	Sf 560 X10-E	560	595	8988	95,8	0,82	68,5	1,1	6,0	2,2	136	5900
56.	Sf 560 Y10-E	630	595	10112	95,9	0,82	77,0	1,2	6,4	2,3	156	6240
57.	Sf 560 H10-E	800	596	12819	96,0	0,83	96,7	1,1	6,0	2,2	180	6620
58.	Sf 710 X10	1000	595	16050	96,1	0,84	119	0,8	5,1	1,9	247	9400
59.	Sf 710 Y10	1250	596	20029	96,2	0,84	149	1,0	6,0	2,1	316	10400
60.	Sf 710 Y10B	1400	595	22471	96,2	0,84	167	1,0	6,0	2,1	344	10700
					2p=12	500 rpm						
61.	Sf 560 X12-E	500	495	9646	95,6	0,82	61,5	0,8	5,8	2,2	136	5800
62.	Sf 560 X12-E	560	494	10826	95,4	0,83	68,1	0,75	5,2	2,0	136	5800
63.	Sf 560 Y12-E	630	494	12179	95,5	0,83	76,6	0,8	5,3	2,0	160	6200
64.	Sf 560 H12-E	800	495	15434	95,7	0,83	97,0	0,8	5,5	2,0	215	7680
65.	Sf 710 X12	1000	496	19254	95,9	0,78	129	0,6	5,5	1,9	290	10050
66.	Sf 710 Y12	1250	497	23058	96,2	0,80	150	0,6	5,3	1,8	316	10500
67.	Sf 710 Y12B	1350	497	25940	96,2	0,78	173	0,7	5,7	1,9	344	10900

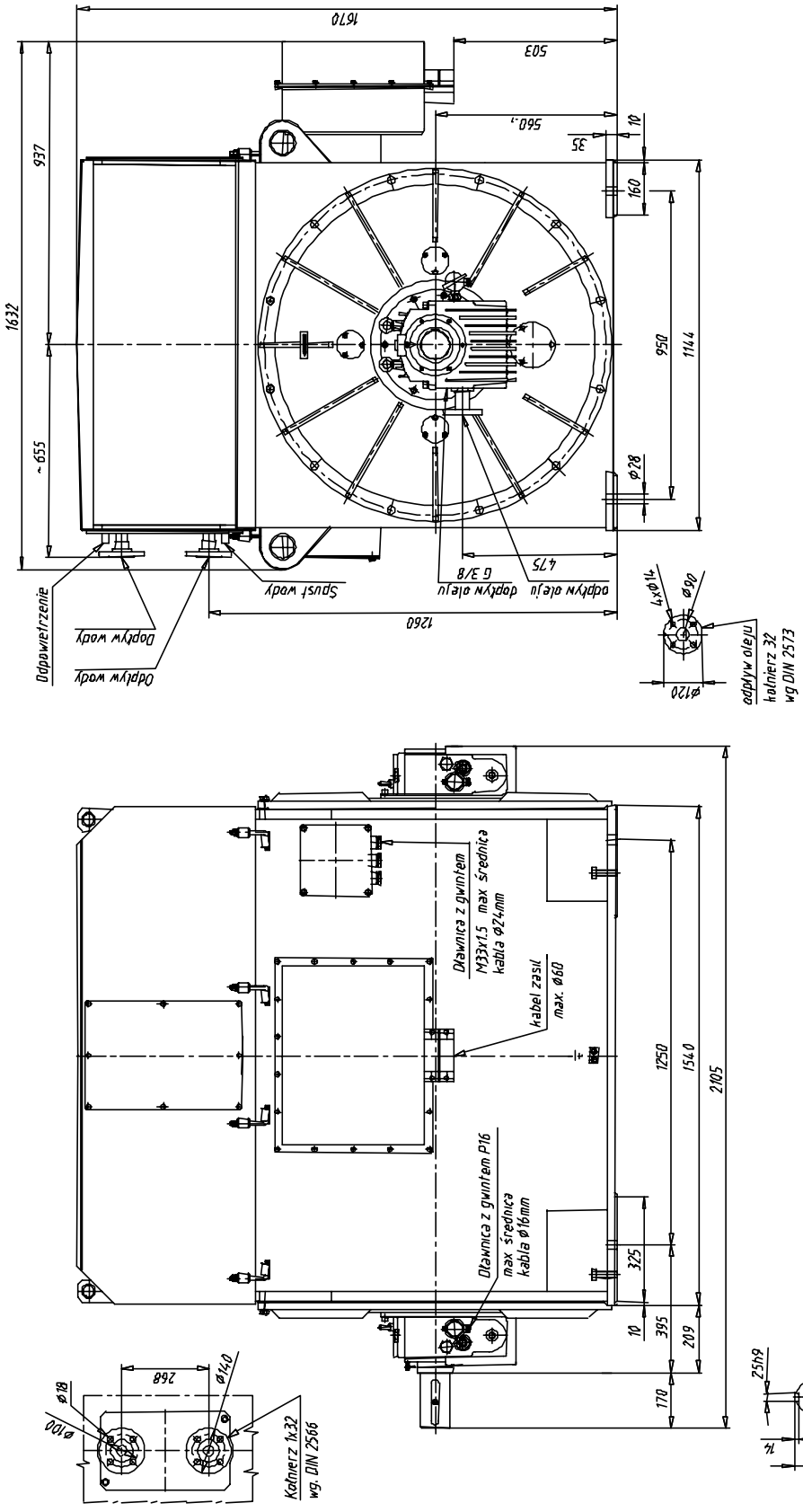
OVERALL AND MOUNTING DIMENSIONS



MECHANICAL CONSTRUCTION: IM1001 (B3)

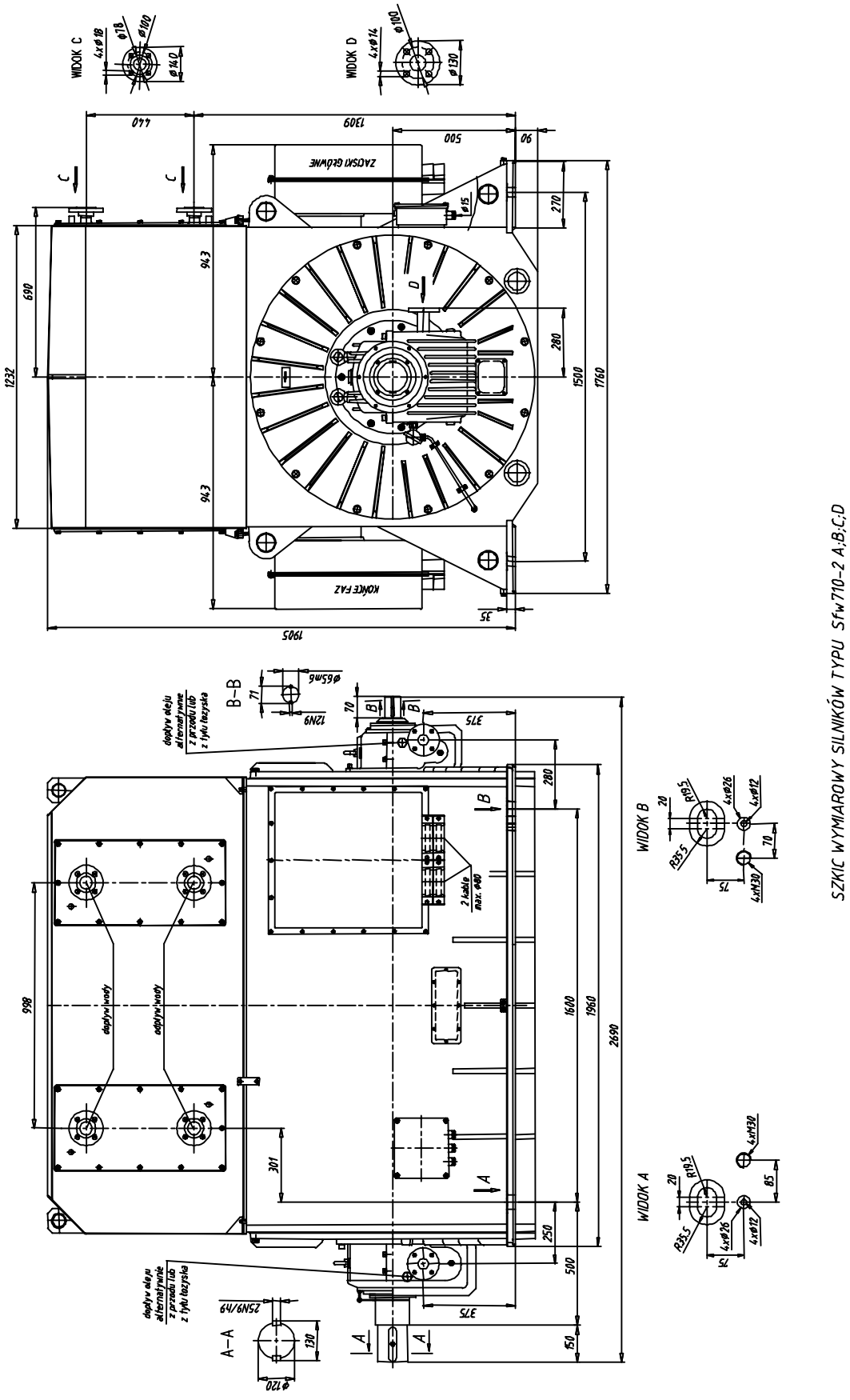
Typ silnika	Liczba biegunów	A	AA	AB	AC	AD	AF	B	BA	BB	BC	BG	C	D	DB	DC	E	F	GA	GD	H	HA	HD	K	L
Sf 315 Y-E	6	560	100	660	882	1110	11	800	320	1250	181	10	224	90	55	15	170	25	95	14	315	31	1085	28	1700
Sf 355 X-E	4÷8	630	100	750	972	1195	10	800	320	1273	203	10	254	100	55	15	210	28	106	16	355	28	1303	28	1860
Sf 355 Y-E	2	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 Y-E	4÷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 X-E	4÷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 Y-E	4÷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 X-E	4÷8	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 Y-E	4÷8	800	130	980	1198	1415	10	1120	390	1540	238	10	315	120	55	15	210	32	127	18	450	32	1603	35	2146
Sf 560 X-E	4÷8	1000	160	1144	1388	1592	10	1120	325	1540	202	10	280	120	55	15	210	32	127	18	560	30	1833	42	2151
Sf 560 Y-E	4÷8	1000	160	1144	1388	1592	10	1120	325	1540	202	10	280	120	55	15	210	32	127	18	560	30	1833	42	2151
Sf 560 YB-E	4	1000	160	1144	1388	1592	10	1120	325	1540	202	10	280	125	55	15	210	32	132	18	560	30	1833	42	2151
Sf 560 H-E	4÷8	1000	160	1144	1388	1592	10	1400	370	1868	234	10	315	140	55	15	250	36	148	20	560	30	1833	42	2520
Sf 560 HB-E	4÷8	1000	160	1144	1388	1592	10	1400	370	1868	234	10	315	140	55	15	250	36	148	20	560	30	1833	42	2520
Sf 710 X	8÷12	1250	200	1420	1596	1829	10	1250	500	1835	268	10	450	180	55	15	300	45	190	25	710	35	2300	42	2690
Sf 710 Y	8÷12	1250	200	1420	1596	1829	10	1250	500	1835	268	10	450	180	55	15	300	45	190	25	710	35	2300	42	2690

OVERALL AND MOUNTING DIMENSIONS



SZKIC WYMIAROWY SILNIKÓW TYPU SfW560 J2A-G, J2B-G

OVERALL AND MOUNTING DIMENSIONS



SZKIC WYMIAROWY SILNIKÓW TYPU Sfw710-2 A;B;C;D