rotor nl®

ROTOR IP23 MOTORS FOR MARINE AND INDUSTRIAL APPLICATIONS

RegalRexnord™

Section 1
Product Details

IP23 motors for Marine and Industry

1.1 PRODUCT DESCRIPTION

23RN motors are built with cast iron construction. The electromagnetic design is based on low loss, high permeability lamination that builds up the core with a high stacking factor and Class F insulated winding with best in class enameled wire, impregnated with modern methods and materials. The motors are designed and manufactured to deliver high power in optimized frame size. IE1 and IE2 designs have a large cooling fan located at the Non Drive End, pulling air from the Drive End though a louvered end shield and delivering it to the non-drive end through the screened end shields. In the IE3 designs air is pulled from Non Drive End and delivered out through the Drive End. Terminal boxes are large to accommodate appropriate sizes of cables. Auxiliary terminal boxes can be provided on request. PTC Alarm and trip are provided by default. 23RN motors are ready for inverter use up to supply voltage 500V. For more details please contact us.

LOD motors are built with fabricated steel frames. Windings are done with formed coils followed by VPI treatment. This promises strong performance under demanding working conditions. Air is pulled from the NDE and released at the DE. Special design techniques are adapted to make the cooling system work efficiently. Large Terminal Boxes are provided to accommodate multiple cable runs often required for low voltage high output designs. PT100 for winding and bearing, Heater and PTC are provided by default. LOD motors are ready for use with VSDs. Please contact us for more details.

1.2 PRODUCT SUMMARY

Type	23RN	23RN – IE3	LOD
Output (kW)	15-600	15-600	600-2000
Enclosure	Open Drip Proof	Open Drip Proof	Open Drip Proof
Construction	Cast Iron	Cast Iron	Fabricated Steel
Efficiency Class	IE1/IE2	IE3	ÌE2/IE3
Mounting	Foot, flange and foot-flange	Foot, flange and foot-flange	Foot, flange and foot-flange
IEC Frame	160-355	160-355	400-630
Voltage (Volts)	200-690	200-690	380-690
Frequency (Hz)	50Hz/60Hz/VSD	50Hz/60Hz/VSD	50Hz/60Hz/VSD
Protection	IP23	IP23	IP23
Insulation	Class F	Class F	Class F
Design Ambient	40°C	40°C	40°C
Working Range	-20°C to 60°C	-20°C to 60°C	-20°C to 60°C
Vibration	Class A	Class A	Class A
Duty	S1-S9	S1-S9	S1-S9
Winding type	Random	Random	Formed

1.3 APPLICABLE STANDARDS

Motors comply to the list of standards indicated in the table below. Any deviation to the standard in terms of performance or dimension will indicated in respective tables on subsequent pages related to motor performance or dimensions. Multiclass Marine approval is available - for more details please contact us.

Efficiency	60034-30-1
Dimension	60072-1
Cooling	60034-6
Terminal marking	60034-8
Noise level	60034-9
Vibration level	60034-14
Protection	60034-5
Test method	60034-2-1
Frequency	50Hz/60Hz/VSD
Marine	92.301

Section 2
Electrical data IP23 Motors

2.1 Electrical Data 23RN IE3 S1

Type	Frame	Poles	Output KW	Voltage	Frequency Hz	Full Load Current A	Efficiency %	Power Factor Cosφ	Breakdown Torque T_m/T_n	Starting Torque T_{st}/T_n	Starting Current I_{st}/I_n	Speed rpm	Approx. Weight kg
23RN-E3	160M	2	15	400	50	26.5	91.9	0.89	2.3	2.0	7.0	2940	162
23RN-E3	160L	2	18.5	400	50	32.5	92.4	0.89	2.3	2.0	7.0	2940	171
23RN-E3	160LX	2	22	400	50	38.1	92.7	0.90	2.3	2.0	8.0	2940	182
23RN-E3	160M	4	11	400	50	20.4	91.4	0.85	2.3	2.0	6.5	1465	170
23RN-E3	160L	4	15	400	50	27.7	92.1	0.85	2.3	2.0	6.5	1465	172
23RN-E3	160LX	4	18.5	400	50	33.9	92.6	0.85	2.3	2.0	6.5	1465	184
23RN-E3	160LX	6	11	400	50	22.3	90.3	0.79	2.2	1.8	6.0	970	171
23RN-E3	180M	2	30	400	50	51.6	93.3	0.90	2.3	2.0	7.0	2950	240
23RN-E3	180L	2	37	400	50	63.3	93.7	0.90	2.3	2.0	7.0	2950	252
23RN-E3	180M	4	22	400	50	39.7	93.0	0.86	2.3	2.0	7.5	1470	236
23RN-E3	180L	4	30	400	50	53.8	93.6	0.86	2.3	2.0	7.5	1470	256
23RN-E3	180M	6	15	400	50	29.3	91.2	0.81	2.3	2.0	6.0	980	228
23RN-E3	180L	6	18.5	400	50	35.9	91.7	0.81	2.3	2.0	6.0	980	242
23RN-E3	200M	2	45	400	50	76.8	94.0	0.90	2.3	2.0	7.0	2940	325
23RN-E3	200L	2	55	400	50	93.5	94.3	0.90	2.3	2.0	7.0	2940	337
23RN-E3	200M	4	37	400	50	65.4	93.9	0.87	2.3	2.0	6.5	1470	337
23RN-E3	200L	4	45	400	50	79.3	94.2	0.87	2.3	2.0	6.5	1470	351
23RN-E3	200M	6	22	400	50	41.5	92.2	0.83	2.3	2.0	6.5	975	302
23RN-E3	200L	6	30	400	50	56.2	92.9	0.83	2.3	2.0	6.5	975	319
23RN-E3	225M	2	75	400	50	127.0	94.7	0.90	2.3	2.0	7.5	2970	410
23RN-E3	225M	4	55	400	50	96.5	94.6	0.87	2.3	2.0	7.5	1480	429
23RN-E3	225M	6	37	400	50	66.6	93.3	0.86	2.3	2.0	6.5	985	383
23RN-E3	250S	2	90	400	50	151.9	95.0	0.90	2.3	2.0	8.0	2970	547
23RN-E3	250M	2	110	400	50	185.3	95.2	0.90	2.3	2.0	8.0	2970	583
23RN-E3	250S	4	75	400	50	131.0	95.0	0.87	2.3	2.0	7.5	1480	564
23RN-E3	250M	4	90	400	50	156.8	95.2	0.87	2.3	2.0	7.5	1480	591
23RN-E3	250S	6	45	400	50	80.6	93.7	0.86	2.3	2.0	6.5	985	513
23RN-E3	250M	6	55	400	50	98.1	94.1	0.86	2.3	2.0	6.5	985	530
23RN-E3	280M	2	132	400	50	224.4	95.4	0.89	2.3	2.0	7.5	2970	785
23RN-E3	280S	4	110	400	50	191.3	95.4	0.87	2.3	2.0	7.5	1480	792
23RN-E3	280M	4	132	400	50	229.1	95.6	0.87	2.3	2.0	7.5	1480	725
23RN-E3	280S	6	75	400	50	133.1	94.6	0.86	2.2	1.8	6.0	980	795
23RN-E3	280M	6	90	400	50	157.3	94.9	0.87	2.2	1.8	6.0	980	725
23RN-E3	315S	2	160	400	50	265.5	95.6	0.91	2.1	1.6	7.8	2965	1095
23RN-E3	315M	2	200	400	50	331.1	95.8	0.91	2.1	1.6	7.8	2965	1110
23RN-E3	315LA	2	250	400	50	413.9	95.8	0.91	2.2	1.6	7.8	2965	1163
23RN-E3	315LB	2	280	400	50	463.6	95.8	0.91	2.3	1.8	7.8	2965	1180
23RN-E3	315LX	2	315	400	50	521.5	95.8	0.91	2.4	1.7	7.8	2970	1378
23RN-E3	315LY	2	355	400	50	587.8	95.8	0.91	2.1	1.5	7.8	2970	1410
23RN-E3	315LZA	2	400	400	50	662.3	95.8	0.91	2.1	1.5	7.8	2970	1580
23RN-E3	315LZA	2	450	400	50	745.0	95.8	0.91	2.2	1.5	7.6	2970	1620
23RN-E3	315S	4	160	400	50	270.9	95.8	0.89	2.2	1.6	7.5	1485	1013
23RN-E3	315M	4	200	400	50	337.9	96.0	0.89	2.2	1.6	7.5	1485	1150
23RN-E3	315LA	4	250	400	50	422.3	96.0	0.89	2.2	1.6	7.5	1485	1245
23RN-E3	315LB	4	280	400	50	473.0	96.0	0.89	2.2	1.6	7.5	1485	1280
23RN-E3	315LX	4	315	400	50	532.1	96.0	0.89	2.2	1.7	7.5	1485	1460
23RN-E3	315LY	4	355	400	50	599.7	96.0	0.89	2.2	1.7	7.5	1485	1590
23RN-E3	315S	6	110	400	50	194.1	95.1	0.86	2.0	1.5	6.8	985	995
23RN-E3	315M	6	132	400	50	229.6	95.4	0.87	2.0	1.6	6.8	985	1300
23RN-E3	315MX	6	160	400	50	274.5	95.6	0.88	2.0	1.6	6.8	985	1350
23RN-E3	315LA	6	180	400	50	308.5	95.7	0.88	2.0	1.6	7.0	985	1460
23RN-E3	315LB	6	200	400	50	342.4	95.8	0.88	2.0	1.6	7.0	985	1210
23RN-E3	315LX	6	225	400	50	385.2	95.8	0.88	2.0	1.7	7.0	985	1360
23RN-E3	315LY	6	250	400	50	428.0	95.8	0.88	2.0	1.7	7.0	985	1480
23RN-E3	315LZB	6	280	400	50	479.4	95.8	0.88	2.0	1.7	7.0	985	1550
23RN-E3	355M	2	500	400	50	837.0	95.8	0.90	1.8	1.3	7.8	2980	1650
23RN-E3	355MX	2	560	400	50	937.5	95.8	0.90	1.8	1.3	7.8	2980	1780
23RN-E3	355L	2	630	400	50	1054.7	95.8	0.90	1.8	1.3	7.8	2980	1880
23RN-E3	355LX	2	710	400	50	1188.6	95.8	0.90	1.8	1.3	7.8	2980	1930
23RN-E3	355S	4	400	400	50	675.7	96.0	0.89	2.0	1.6	7.8	1485	1790
23RN-E3	355SX	4	450	400	50	760.2	96.0	0.89	2.0	1.6	7.8	1485	1830
23RN-E3	355M	4	500	400	50	844.7	96.0	0.89	2.0	1.5	7.5	1485	1890
23RN-E3	355MX	4	560	400	50	946.0	96.0	0.89	2.0	1.4	7.5	1485	2000
23RN-E3	355L	4	630	400	50	1064.3	96.0	0.89	2.0	1.4	7.2	1485	2160
23RN-E3	355LX	4	710	400	50	1199.4	96.0	0.89	2.0	1.4	7.2	1485	2220
23RN-E3	355S	6	315	400	50	539.3	95.8	0.88	2.0	1.4	6.8	988	1730
23RN-E3	355M	6	355	400	50	607.8	95.8	0.88	2.0	1.5	6.8	988	1850
23RN-E3	355MX	6	450	400	50	770.4	95.8	0.88	2.0	1.5	6.8	988	1925
23RN-E3	355L	6	500	400	50	856.1	95.8	0.88	2.0	1.5	6.8	988	2075
23RN-E3	355LX	6	560	400	50	958.8	95.8	0.88	2.0	1.5	6.8	988	2130

Please contact us for 60Hz information

Section 2
Electrical data IP23 Motors

2.2 23RN IE1/IE2 2 & 4 poles S1

TYPE	kW 50Hz	kW 60Hz	rpm 50Hz	rpm 60Hz	380V A	400V A	415V A	460V A	Power Factor Cosφ	Class	100% Load	75% Load	50% Load	Torque Nm	Starting Current I_{st}/I_n	Starting torque T_{st}/T_n	Breakdown Torque T_m/T_n	Approx. Weight kg
23RN160M02	15	18	2930	3520	29.5	28	26.7	29.2	0.89	IE1	89.3	89.9	89.2	48.9	7	2	2.3	132
23RN160L02	18.5	22.2	2930	3520	35.1	33.3	31.7	34.7	0.89	IE1	90.9	91.7	91.4	60.3	7.5	2.1	2.5	141
23RN160LX02	22	26.4	2930	3520	41.6	39.5	37.6	41.2	0.89	IE1	91.2	92.1	92	71.7	7.9	2.1	2.5	152
23RN180M02	30	36	2935	3520	56.8	54	51.4	56.3	0.89	IE1	90.7	90.8	89.4	97.6	7	2.2	2.8	210
23RN180L02	37	44.4	2940	3530	66.3	63	60	65.7	0.89	IE1	91.1	91.1	89.8	120	7	2.2	2.8	222
23RN200M02	45	54	2945	3530	83.7	79.5	75.7	82.9	0.89	IE1	91.9	92.2	91.1	146	7	2.1	2.7	285
23RN200L02	55	66	2945	3530	104	98	94	103	0.88	IE1	91.4	91.5	90.3	178	7	2.1	2.7	297
23RN225M02	75	90	2950	3540	139	132	126	138	0.89	IE1	92.5	92.7	92	243	7.5	2.1	2.8	367
23RN250S02	90	108	2960	3550	163	155	148	162	0.9	IE1	93.8	93.7	92.6	290	7.8	2.4	3	507
23RN250M02	110	132	2965	3560	197	187	178	195	0.9	IE1	94.4	94.5	93.6	354	7.8	2.4	3	543
23RN280M02	132	158	2960	3550	243	231	220	241	0.88	IE1	93.9	94	93.2	426	7.5	2.2	3	700
23RN315S02(A)	160	192	2970	3560	289	275	262	287	0.89	IE1	94.6	94.3	93	514	6.5	1.6	2.8	942
23RN315M02(A)	200	240	2965	3560	363	345	329	360	0.89	IE1	94.9	95	94.2	644	7.2	1.6	2.8	970
23RN315LA02(A)	250	300	2965	3560	452	429	409	447	0.89	IE1	95.1	95.4	94.9	805	7.2	1.6	2.8	1035
23RN315LB02(A)	280	336	2970	3560	500	475	452	495	0.9	IE1	95.3	95.4	94.8	900	7	1.8	2.8	1084
23RN315LX02(A)	315	378	2970	3560	591	561	534	585	0.9	IE1	95.6	95.6	94.9	1013	7	1.9	3	1180
23RN315LY02(B)	355	426	2965	3560	621	590	562	615	0.91	IE1	95.4	95.7	95.4	1143	7	1.5	2.1	1286
23RN315XLA02(B)	400	480	2970	3560	699	664	632	693	0.91	IE1	95.8	95.9	95.5	1286	7	1.8	3	1350
23RN315XLB02(B)	450	540	2970	3560	787	748	712	780	0.91	IE1	96	96.4	96.3	1447	7	1.5	2.1	1420
23RN355M02	500	600	2970	3560	858	815	776	850	0.92	IE1	96.2	95.9	94.5	1608	6.5	1.3	2.7	1620
23RN355MX02	560	672	2975	3570	959	911	868	950	0.92	IE1	96.4	96.1	94.7	1798	6.5	1.7	2.6	1780
23RN355L02	630	756	2975	3570	1078	1024	975	1.068	0.92	IE1	96.5	96.2	94.8	2022	6.5	1.3	2.7	1855
23RN355LX02	710	852	2975	3570	1215	1154	1099	1.204	0.92	IE1	96.6	96.3	94.9	2279	6.5	1.3	2.7	1880
23RN160M04	11	13.2	1450	1740	23.2	22	21	22.9	0.82	IE1	88.5	89.4	88.9	72.5	6.5	2	2.3	140
23RN160L04	15	18	1460	1750	31.6	30	28.6	31.3	0.83	IE1	89.5	90.2	89.5	98.1	6.5	2	2.5	142
23RN160LX04	18.5	22.2	1460	1750	37.9	36	34.3	37.5	0.83	IE1	90.6	91.3	90.9	121	6.5	2	2.5	154
23RN180M04	22	26.4	1460	1750	41.8	39.7	37.8	41.4	0.88	IE1	91.5	91.8	90.9	144	7.5	2.7	3.2	206
23RN180L04	30	36	1455	1750	56.8	54	51.4	56.3	0.88	IE1	91.8	92.3	91.8	197	7.5	2.7	3.2	226
23RN200M04	37	44.4	1465	1760	71.5	67.9	64.7	70.8	0.86	IE1	91.8	92	90.9	241	6.5	2.1	2.6	297
23RN200L04	45	54	1465	1760	86.8	82.5	78.6	86	0.86	IE1	91.9	92.3	91.4	293	6.5	2.1	2.6	311
23RN225M04	55	66	1470	1760	103	98	93	102	0.88	IE1	93	93.3	92.6	357	7.2	1.99	2.5	389
23RN250S04	75	90	1475	1770	139	132	126	138	0.88	IE1	93.1	93.4	92.6	486	7.2	2.13	2.6	524
23RN250M04	90	108	1475	1770	164	156	149	163	0.89	IE1	93.5	93.8	93.3	583	7.5	2.32	2.8	551
23RN280S04	110	132	1475	1770	209	199	190	208	0.86	IE1	94.5	94.9	94.4	712	7.4	2.27	2.88	735
23RN280M04	132	158	1470	1760	251	238	227	248	0.86	IE1	93.2	93.4	92.6	858	7	2.13	2.7	742
23RN315S04(A)	160	192	1480	1780	299	284	270	296	0.87	IE1	95	95.1	94.5	1032	6.2	1.45	2.1	968
23RN315M04(A)	200	240	1480	1780	373	354	337	369	0.87	IE1	95.3	95.5	94.9	1291	6.2	1.67	2.3	1064
23RN315LA04(A)	250	300	1480	1780	458	435	414	454	0.88	IE1	95.4	95.7	95.4	1613	6.2	1.61	2.1	1165
23RN315LB04(A)	280	336	1480	1780	518	492	469	513	0.87	IE1	95.5	95.9	95.7	1807	6	1.44	2.3	1205
23RN315LX04(B)	315	378	1480	1780	576	547	521	571	0.88	IE1	95.8	96.1	95.9	2033	6.5	1.66	2.3	1364
23RN315LY04(B)	355	426	1480	1780	656	623	593	650	0.87	IE1	95.9	96	95.6	2291	7	1.76	2.7	1498
23RN315XLB04(B)	400	480	1480	1780	747	710	676	741	0.86	IE1	95.8	96.2	95.9	2581	6.7	1.6	2.5	1506
23RN355M04	450	540	1485	1780	823	782	753	790	0.87	IE1	95.5	95.9	95.4	2896	4.5	1.39	2.2	1620
23RN355MX04	500	600	1485	1780	899	854	813	891	0.88	IE1	96	95.7	94.3	3215	6	1.57	2.3	1790
23RN355MY04	560	672	1485	1780	1006	956	910	997	0.88	IE1	96.1	95.8	94.4	3601	6	1.64	2.3	1945
23RN355L04	630	756	1485	1780	1131	1074	1023	1.12	0.88	IE1	96.2	95.9	94.5	4052	6.5	1.48	2.1	2095
23RN355LX04	710	852	1485	1780	1273	1209	1151	1.261	0.88	IE1	96.3	96	94.6	4566	6.5	1.58	2.4	2130

2.3 23RN IE1/IE2 6 & 8 poles S1

TYPE	kW 50Hz	kW 60Hz	rpm 50Hz	rpm 60Hz	380V A	400V A	415V A	460V A	Power Factor Cosφ	Class	100% Load	75% Load	50% Load	Torque Nm	Starting Current I_{st}/I_n	Starting torque T_{st}/T_n	Breakdown Torque T_m/T_n	Approx. Weight kg
23RN160LX06	11	13.2	975	1170	24.2	23	21.9	24	0.77	IE1	87.6	87.8	86.2	108	6	1.8	2.5	141
23RN180M06	15	18	975	1170	31.6	30	28.6	31.3	0.81	IE1	89.1	89.1	87.5	147	6	2.3	2.8	198
23RN180L06	18.5	22.2	975	1170	38.9	37	35.2	38.6	0.82	IE1	89.8	90.3	89.5	181	6	2.3	2.8	212
23RN200M06	22	26.4	980	1180	45.3	43	41	44.8	0.82	IE1	91	91	89.6	214	6.5	2.1	2.7	262
23RN200L06	30	36	980	1180	61.1	58	55.2	60.5	0.82	IE1	91	91.2	90.4	292	6.5	2.1	2.7	279
23RN225M06	37	44.4	980	1180	71.5	67.9	64.7	70.8	0.86	IE1	91.5	91.8	90.8	361	6.5	2.1	2.6	343
23RN250S06	45	54	985	1180	89.1	84.6	80.6	88.2	0.84	IE1	91.6	91.5	90.1	436	6.5	2.2	2.7	473
23RN250M06	55	66	985	1180	108	103	98	107	0.84	IE1	91.4	91.5	90.4	533	6.5	2.2	2.7	490
23RN280S06	75	90	985	1180	152	144	137	150	0.82	IE1	92.7	93.2	92.6	727	6	2	2.3	675
23RN280M06	90	108	985	1180	176	167	159	174	0.84	IE1	93.5	94	93.7	873	6	2	2.3	745
23RN315S06(A)	110	132	990	1190	218	207	197	216	0.82	IE1	94.2	94.6	94	1061	5.5	1.6	2	925
23RN315M06(A)	132	158	990	1190	262	249	237	260	0.82	IE1	94.6	95	94.4	1273	5.5	1.7	2.1	965
23RN315MX06(A)	160	192	990	1190	319	303	289	316	0.81	IE1	94.9	95.2	94.9	1543	6	1.8	2.1	1083
23RN315LA06(A)	180	216	990	1190	355	337	321	351	0.82	IE1	95	95.3	95	1736	6	1.8	2.1	1127
23RN315LB06(A)	200	240	990	1190	389	370	352	386	0.83	IE1	94.9	95.3	95.2	1929	6	1.8	2.4	1165
23RN315LX06(B)	225	270	990	1190	438	416	396	434	0.83	IE1	95.2	95.5	95.2	2170	6	1.8	2.2	1335
23RN315LY06(B)	250	300	990	1190	487	463	441	483	0.83	IE1	95.1	95.7	95.6	2412	6	1.9	2.2	1371
23RN315XLB06(B)	280	336	990	1190	542	515	490	537	0.83	IE1	94.5	94.2	92.8	2701	6	1.9	2.25	1462
23RN355S06	315	378	990	1190	618	587	559	612	0.82	IE1	94.5	94.2	92.8	3039	5	1.5	1.9	1620
23RN355M06	355	426	990	1190	693	658	627	686	0.82	IE1	95	94.7	93.3	3425	5.3	1.6	2	1730
23RN355MX06	400	480	990	1190	780	741	706	773	0.82	IE1	95	94.7	93.3	3859	5.5	1.6	2	1850
23RN355MY06	450	540	990	1190	878	834	794	870	0.82	IE1	95	94.7	93.3	4341	5.5	1.6	2	1925
23RN355L06	500	600	990	1190	971	922	878	962	0.82	IE1	95.5	95.2	93.8	4823	6	1.7	2.2	2075
23RN180M08	11	13.2	715	860	26.3	25	23.8	26.1	0.76	IE1	84	83.7	82.5	147	4.5	1.8	2.5	185
23RN180L08	15	18	715	860	34.7	33	31.4	34.4	0.77	IE1	84.5	84.2	83	200	4.5	1.9	2.6	200
23RN200M08	18.5	22.2	720	860	43.2	41	39	42.8	0.77	IE1	84.5	84.2	83	245	5.1	2	2.6	240
23RN200L08	22	26.4	720	860	50.5	48	45.7	50.1	0.77	IE1	86	85.7	84.5	292	5.2	2.1	2.8	260
23RN225M08	30	36	725	870	67.4	64	61	66.8	0.77	IE1	88	87.7	86.4	395	5.2	2.1	2.7	355
23RN250S08	37	44.4	730	880	83.2	79	75.2	82.4	0.77	IE1	88.1	87.8	86.5	484	4.9	2.1	2.6	420
23RN250M08	45	54	730	880	101	96	91	100	0.77	IE1	88.3	88	86.7	589	5.1	2.2	2.7	440
23RN280S08	55	66	730	880	118	112	107	117	0.78	IE1	90.5	90.2	88.9	720	5.7	2.1	2.8	675
23RN280M08	75	90	730	880	163	155	148	162	0.77	IE1	90.7	90.4	89.1	981	5.9	2.1	2.9	745
23RN315S08(A)	90	108	735	880	188	179	170	187	0.79	IE1	92	91.7	90.4	1169	5.6	1.5	2.3	955
23RN315M08(A)	110	132	735	880	226	215	205	224	0.8	IE1	92.5	92.2	90.9	1429	5.7	1.4	2.3	1120
23RN315MX08(A)	132	158	735	880	267	254	242	265	0.81	IE1	92.8	92.5	91.2	1715	5.2	1.6	2.3	1250
23RN315LA08(B)	160	192	735	880	315	299	285	312	0.83	IE1	93	92.7	91.4	2079	5.8	1.6	2.4	1385
23RN315LX08(B)	200	240	735	880	396	376	358	392	0.82	IE1	93.5	93.2	91.8	2599	5.3	1.3	2.2	1420
23RN315LY08(B)	225	270	735	880	444	422	402	440	0.82	IE1	93.7	93.4	92	2923	5.9	1.5	2.5	1465
23RN355M08	250	300	740	890	525	499	475	520	0.77	IE1	94	93.7	92.3	3226	5	1.4	2	1760
23RN355MX08	280	336	740	890	584	555	529	579	0.77	IE1	94.5	94.2	92.8	3614	5	1.4	2	1925
23RN355L08	315	378	740	890	641	609	580	635	0.79	IE1	94.5	94.2	92.8	4065	5	1.4	2	2080

Section 2
Electrical data IP23 Motors

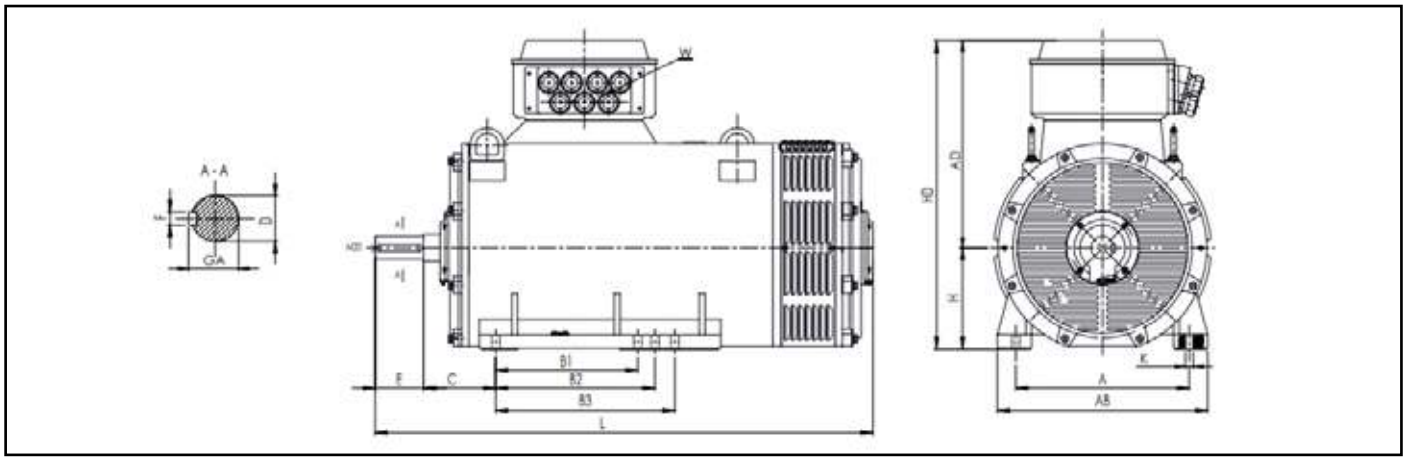
2.4 LOD 4 6 & 8 poles S1

Type	Pole	50Hz kW	60Hz kW	kW 50Hz	kW 50Hz	Nominal Current A @400V 50Hz	Nominal Voltage V	Starting Current I_{st}/I_n	Starting torque T_{st}/T_n	Breakdown Torque T_m/T_n	Rotor Inertia kgmsq	Slip p.u.	Efficiency %	Cosφ p.u.	Approx. Weight kg
LOD 4001-4	4	710	816.5	850	990	1239	400	5.2	0.76	2.4	16.8	0.0087	94.0	0.88	3415
LOD 4002-4	4	800	920	960	1120	1396	400	5.8	0.9	2.51	18.9	0.008	94.0	0.88	3559
LOD 4003-4	4	900	1035	1080	1260	1567	400	6.75	1.12	2.78	21.4	0.0071	94.2	0.88	3729
LOD 4501-4	4	1000	1150	1200	1400	997	690	7.02	1.09	2.58	27.7	0.0066	94.3	0.89	4222
LOD 4502-4	4	1120	1288	1340	1565	1114	690	7.4	1.2	2.64	30.5	0.0065	94.5	0.89	4405
LOD 5001-4	4	1250	1437.5	1500	1750	1242	690	6.3	1.02	2.62	34.4	0.0075	94.6	0.89	5502
LOD 4001-6	6	500	575	600	700	903	400	6.8	1.32	2.76	19.4	0.0079	94.0	0.85	3358
LOD 4002-6	6	560	644	670	780	1012	400	7	1.42	2.8	21.8	0.0073	94.0	0.85	3496
LOD 4003-6	6	630	724.5	755	880	1137	400	7.2	1.54	2.9	24.7	0.0079	94.1	0.85	3692
LOD 4501-6	6	710	816.5	850	990	1280	400	6.2	1.2	2.65	30.0	0.0074	94.2	0.85	4060
LOD 4502-6	6	800	920	960	1120	1442	400	6.7	1.29	2.72	33.2	0.0075	94.2	0.85	4249
LOD 4503-6	6	900	1035	1080	1260	1621	400	7.1	1.38	2.85	36.5	0.0075	94.3	0.85	4431
LOD 5001-6	6	1000	1150	1200	1400	1030	690	6.3	1.22	2.5	37.7	0.0083	94.5	0.86	5297
LOD 5002-6	6	1120	1288	1340	1565	1153	690	6.5	1.31	2.55	43.1	0.0081	94.5	0.86	5596
LOD 5003-6	6	1250	1437.5	1500	1750	1286	690	6.8	1.42	2.62	48.4	0.0075	94.6	0.86	5880
LOD 5601-6	6	1400	1610	1680	1960	1437	690	7.21	1.24	2.67	53.2	0.0069	94.8	0.86	6775
LOD 5602-6	6	1600	1840	1920	2240	1642	690	6.96	1.19	2.56	57.9	0.0073	94.8	0.86	7054
LOD 6301-6	6	1800	2070	2160	2520	1845	690	6.78	1.02	2.6	60.5	0.006	94.9	0.86	8326
LOD 6302-6	6	2000	2300	2400	2800	2050	690	6.7	0.97	2.56	67.9	0.0062	94.9	0.86	8686
LOD 6303-6	6	2240	2576	2685	3135	2294	690	6.55	1	2.58	75.3	0.0063	95.0	0.86	9091
LOD 6304-6	6	2500	2875	3000	3500	2560	690	6.83	1.04	2.62	80.6	0.0061	95.0	0.86	9364
LOD 5001-8	8	710	816.5	850	990	1351	400	5.7	1.1	2.45	36.8	0.0083	92.5	0.82	5062
LOD 5002-8	8	800	920	960	1120	1522	400	6.1	1.2	2.53	40.1	0.0078	92.5	0.82	5228
LOD 5003-8	8	900	1035	1080	1260	1709	400	6.6	1.32	2.61	45.8	0.0074	92.7	0.82	5510
LOD 5601-8	8	1000	1150	1200	1400	1086	690	6.88	1.2	2.6	54.1	0.0075	92.8	0.83	6503
LOD 5602-8	8	1120	1288	1340	1565	1217	690	6.87	1.17	2.53	59.4	0.0076	92.8	0.83	6693
LOD 5603-8	8	1250	1437.5	1500	1750	1355	690	7.06	1.28	2.67	64.7	0.0075	93.0	0.83	7026
LOD 6301-8	8	1400	1610	1680	1960	1516	690	6.7	1.07	2.54	71.0	0.0067	91.1	0.83	8779
LOD 6302-8	8	1600	1840	1920	2240	1731	690	6.72	1.09	2.56	79.8	0.0068	93.2	0.83	9163
LOD 6303-8	8	1800	2070	2160	2520	1947	690	7.02	1.2	2.63	88.5	0.0065	93.2	0.83	9510

Electrical performances are based on V1 mounting system. For other mounting systems please consult us.

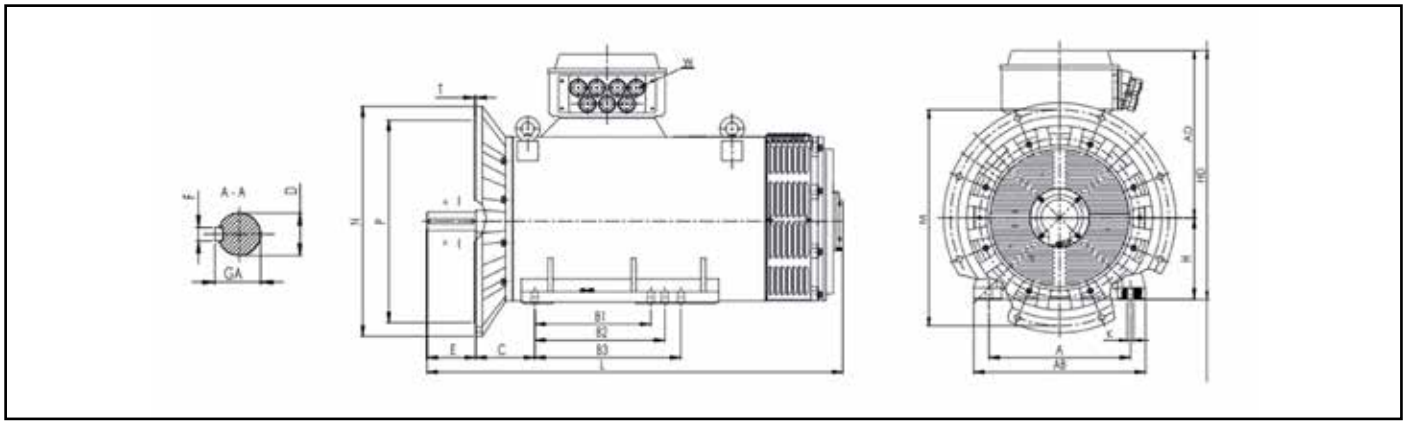
Section 3
Outline Dimension Drawing IN MILLIMETERS

3.1 23RN IMB3 IE/IE2



Type	H	A	AB	B1	B2	B3	C	AD	HD=H+AD	K	L	W	D	E	F	GA
23RN160M, L	160	254	294	210	254	-	108	280	440	Ø14	700	2xM50x1,5	48 k6	110	14 N9/h9	51.5
23RN180M, L	180	279	350	241	279	-	121	310	490	Ø15	758	2xM50x1,5	55 m6	110	16 N9/h9	59
23RN200M, L	200	318	390	267	305	-	133	350	550	Ø19	800	2xM63x1,5	60 m6	140	18 N9/h9	64
23RN225M, L 2P	225	356	445	311	-	-	149	400	625	Ø19	890	2xM63x1,5	60 m6	140	18 N9/h9	64
23RN225M, L 4-8P	225	356	445	311	-	-	149	400	625	Ø19	890	2xM63x1,5	65 m6	140	18 N9/h9	69
23RN250S, M 2P	250	406	490	311	349	-	168	480	730	Ø24	960	2xM63x1,5	65 m6	140	18 N9/h9	69
23RN250S, M 4-8P	250	406	490	311	349	-	168	480	730	Ø24	960	2xM63x1,5	75 m6	140	20 N9/h9	79.5
23RN280S, M, L 2P	280	457	550	368	419	-	190	505	785	Ø24	1055	2xM63x1,5	65 m6	140	18 N9/h9	69
23RN280S, M, L 4-8P	280	457	550	368	419	-	190	505	785	Ø24	1055	2xM63x1,5	80 m6	170	22 N9/h9	85
23RN315S, M, L 2P	315	508	620	406	457	508	216	556	871	Ø28	1263	3x M63x1,5	70 m6	140	20 N9/h9	74.5
23RN315S, M, L 4-8P	315	508	620	406	457	508	216	555	870	Ø28	1260	3x M63x1,5	90m6	170	25 BN9/h9	95
23RN355S, M, L 2P	355	610	740	500	560	630	254	735	1090	Ø28	1760	7x M63x1,5	80 m6	170	22 N9/h9	85
23RN355S, M, L 4-8P	355	610	740	500	560	630	254	735	1090	Ø28	1800	7x M63x1,5	100 m6	200	28 N9/h9	106

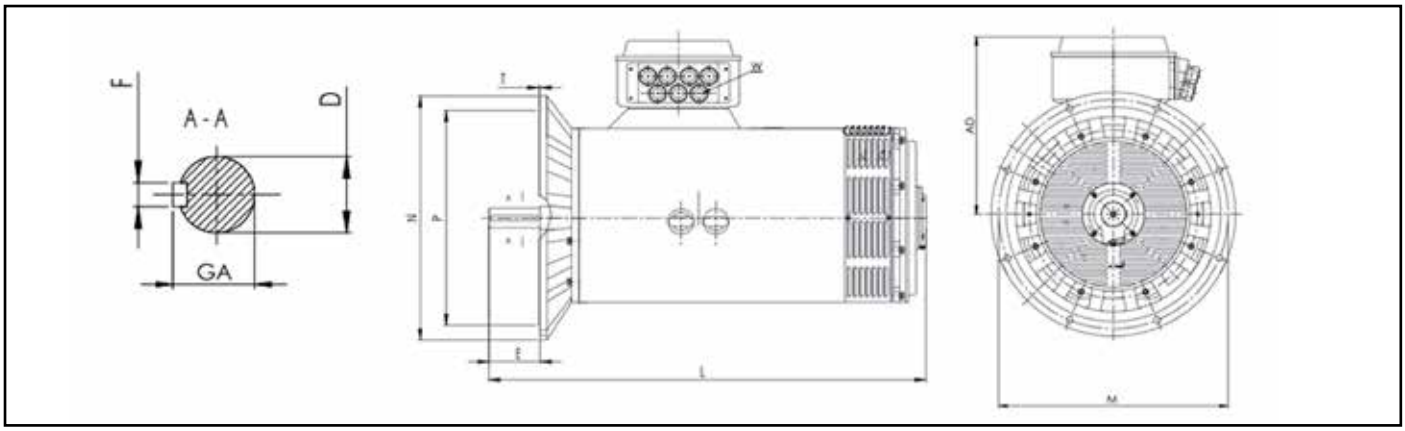
3.2 23RN IMB3/B5 IE1/IE2



Type	H	A	AB	B1	B2	B3	C	AD	HD=H+AD	K	L	W	D	E	F	GA	M	P	N	T
23RN160M, L	160	254	294	210	254	-	108	277	437	Ø14	700	2x M50x1,5	48 k6	110	14 N9/h9	51.5	300	250	350	5
23RN180M, L	180	279	350	241	279	-	121	310	490	Ø15	758	2x M50x1,5	55 m6	110	16 N9/h9	59	350	300	400	5
23RN200M, L	200	318	390	267	305	-	133	350	550	Ø19	800	2x M50x1,5	60 m6	140	18 N9/h9	64	400	350	450	5
23RN225M, L 2P	225	356	440	311	-	-	149	400	625	Ø19	886	2x M63x1,5	60 m6	140	18 N9/h9	64	500	400	550	5
23RN225M, L 4-8P	225	356	440	311	-	-	149	400	625	Ø19	886	2x M63x1,5	65 m6	140	18 N9/h9	69	500	400	550	5
23RN250S, M 2P	250	406	490	311	349	-	168	474	724	Ø24	955	2x M63x1,5	65 m6	140	18 N9/h9	69	600	550	660	6
23RN250S, M 4-8P	250	406	490	311	349	-	168	474	724	Ø24	955	2x M63x1,5	75 m6	140	20 N9/h9	79.5	600	550	660	6
23RN280S, M, L 2P	280	457	550	368	419	-	190	503	783	Ø24	1055	2x M63x1,5	65 m6	140	18 N9/h9	69	600	550	660	6
23RN280S, M, L 4-8P	280	457	550	368	419	-	190	503	783	Ø24	1055	2x M63x1,5	80 m6	140	22 N9/h9	85	600	550	660	6
23RN315S, M, L 2P	315	508	620	406	457	508	216	555	870	Ø28	1260	3x M63x1,5	70 m6	140	20 N9/h9	74.5	740	680	800	6
23RN315S, M, L 4-8P	315	508	620	406	457	508	216	555	870	Ø28	1260	3x M63x1,5	90 m6	170	25 N9/h9	95	740	680	800	6
23RN355S, M, L 2P	355	610	740	500	560	630	254	735	1090	Ø28	1760	7x M63x1,5	80 m6	170	22 N9/h9	85	940	880	1000	6
23RN355S, M, L 4-8P	355	610	740	500	560	630	254	735	1090	Ø28	1800	7x M63x1,5	100 m6	210	28 N9/h9	106	940	880	1000	6

Section 3
Outline Dimension Drawing IN MILLIMETERS

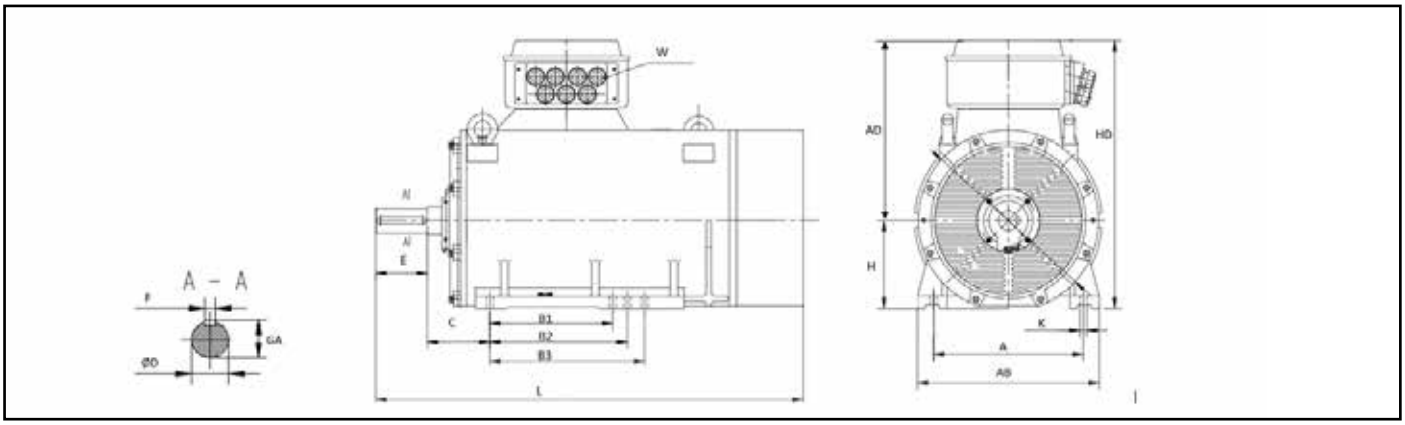
3.3 23RN IMB5/V1 IE1/IE2



Type	H	A	AB	B1	B2	B3	C	AD	HD=H+AD	K	L	W	D	E	F	GA	M	P	N	T
23RN160M, L	-	-	-	-	-	-	-	276	-	-	700	2x M50x1,5	48 k6	110	14 N9/h9	51.5	300	250	350	5
23RN180M, L	-	-	-	-	-	-	-	302	-	-	758	2x M50x1,5	55 m6	110	16 N9/h9	59	350	300	400	5
23RN200M, L	-	-	-	-	-	-	-	353	-	-	800	2x M63x1,5	60 m6	125	18 N9/h9	64	400	350	450	5
23RN225M, L 2P	-	-	-	-	-	-	-	400	-	-	890	2x M63x1,5	60 m6	140	18 N9/h9	64	500	450	550	5
23RN225M, L 4-8P	-	-	-	-	-	-	-	394	-	-	886	2x M63x1,5	65 m6	140	18 N9/h9	69	500	450	550	5
23RN250S, M 2P	-	-	-	-	-	-	-	474	-	-	960	2x M63x1,5	65 m6	140	18 N9/h9	69	600	550	660	6
23RN250S, M 4-8P	-	-	-	-	-	-	-	475	-	-	960	2x M63x1,5	75 m6	140	20 N9/h9	79.5	600	550	660	6
23RN280S, M, L 2P	-	-	-	-	-	-	-	485	-	-	1055	2x M63x1,5	65 m6	140	18 N9/h9	69	600	550	660	6
23RN280S, M, L 4-8P	-	-	-	-	-	-	-	485	-	-	1055	2x M63x1,5	80 m6	170	22 N9/h9	85	600	550	660	6
23RN315S, M, L 2P	-	-	-	-	-	-	-	550	-	-	1445	3x M63x1,5	70 m6	140	20 N9/h9	74.5	740	680	800	6
23RN315S, M, L 4-8P	-	-	-	-	-	-	-	556	-	-	1490	3x M63x1,5	90m6	170	25 BN9/h9	95	740	680	800	6
23RN355S, M, L 2P	-	-	-	-	-	-	-	727	-	-	1760	7x M63x1,5	80 m6	170	22 N9/h9	85	940	880	1000	6
23RN355S, M, L 4-8P	-	-	-	-	-	-	-	727	-	-	1800	7x M63x1,5	100 m6	200	28 N9/h9	106	940	880	1000	6

Please contact us for suitability of B5 mounting without support.

3.4 23RN IMB3 IE3

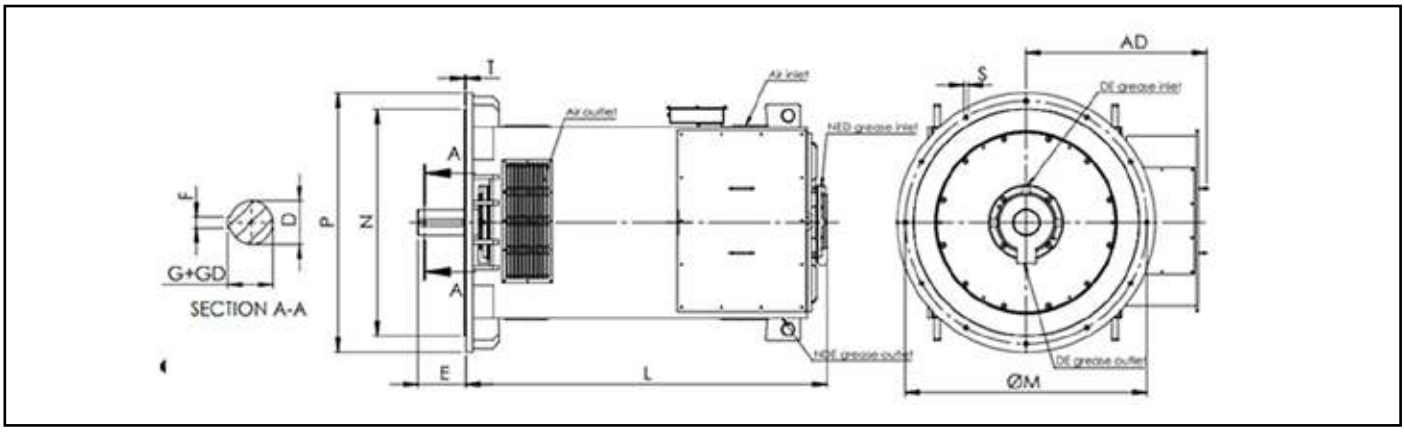


Efficiency Class IE3

Type	H	A	AB	B1	B2	B3	C	AD	HD=H+AD	K	L	W	D	E	F	GA
23RN160M, L E3	160	245	294	254	304	-	108	267	427	14	815	2x M50x1,5	48k6	110	14N9/h9	51.5
23RN180M, L E3	180	279	350	241	179	-	121	310	490	15	870	2x M50x1,5	55m6	110	16N9/h9	59
23RN200M, L E3	200	318	390	267	305	-	133	350	550	19	915	2x M63x1,5	60m6	140	18N9/h9	64
23RN225M, L 2P E3	225	356	440	311	-	-	149	400	625	19	1050	2x M63x1,5	60m6	140	18N9/h9	64
23RN225M, L 4-8P E3	225	356	440	311	-	-	149	400	625	19	1050	2x M63x1,6	60m7	141	18N9/h9	64
23RN250S, M 2P E3	250	406	490	311	349	-	168	480	730	24	1110	2x M63x1,5	65m6	140	18N9/h9	69
23RN250S, M 4-8P E3	250	406	490	311	349	-	168	480	730	24	1110	2x M63x1,5	75m6	140	20N9/h9	79.5
23RN280S, M, L 2P E3	280	457	550	368	419	-	190	503	783	24	1220	2x M63x1,5	65m6	140	18N9/h9	69
23RN280S, M, L 4-8P E3	280	457	550	368	419	-	190	503	783	24	1250	2x M63x1,5	80m6	170	22N9/h9	85
23RN315S, M 2P E3	315	508	620	406	457	508	216	548	863	28	1330	3x M63x1,5	90m6	170	25N9/h9	95
23RN315S, M, L 4-8P E3	315	508	620	406	457	508	216	548	863	28	1300	3x M63x1,5	70m6	140	20N9/h9	74.5
23RN315S, L 2P E3	315	508	620	406	457	508	216	548	863	28	1480	3x M63x1,5	80m6	140	22N9/h9	85
23RN355S, M, L 2P E3	355	610	740	500	560	630	254	735	1090	28	1700	7x M63x1,5	80m6	170	22N9/h9	112
23RN355S, M, L 4-8P E3	355	610	740	500	560	630	254	735	1090	28	1740	7x M63x1,5	100m6	210	28N9/h9	106

Section 3
Outline Dimension Drawing IN MILLIMETERS

3.5 LOD IMV1

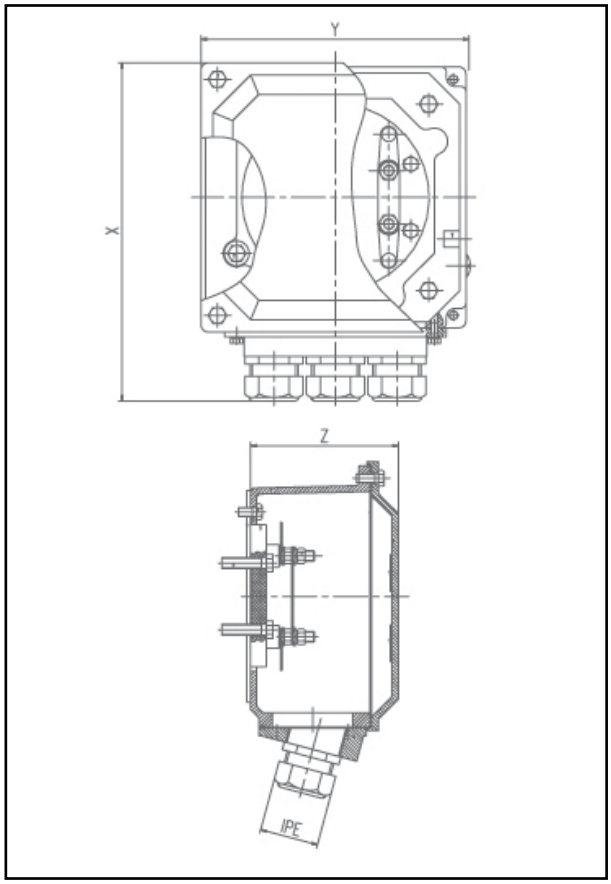


Type	L	E	P	N	T	φM	S	AD	⊠D	F	G+GD
LOD400	1900	210	1150	1000h6	6	1080	8xφ28	970	110m6	28h9/N9	116
LOD450	2000	210	1250	1120h6	7	1180	8x φ28	987	120m6	32Hh9/N9	127
LOD500	2135	250	1400	1250h6	8	1320	8x φ28	1089	140m6	36h9/N9	148
LOD560	2242	800	1600	1400h6	8	1500	12x φ28	1120	160m6	40h9/N9	169
LOD630	2418	800	1800	1600h6	9	1700	12x φ28	1236	180m6	45h9/N9	190

Section 4
Terminal Box IN MILLIMETERS

4.1 23RN IMB3

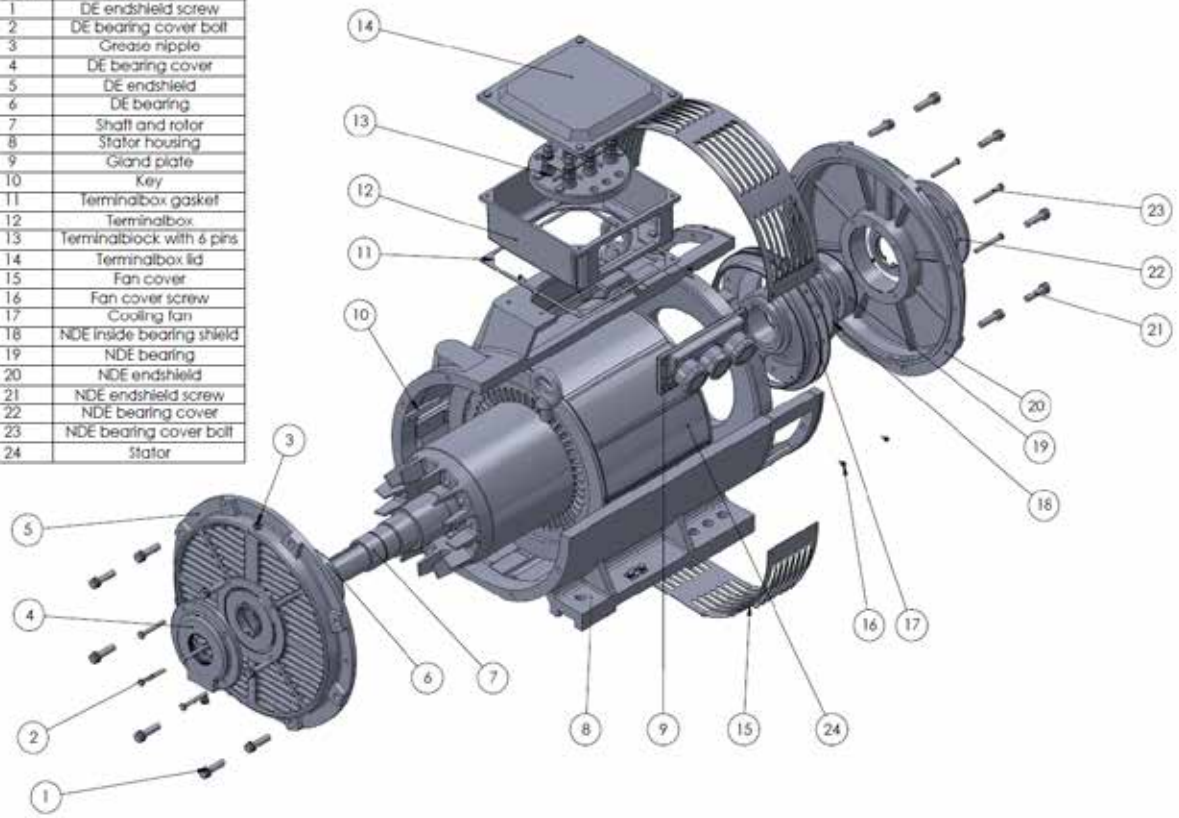
Type	Poles	X	Y	Z	IPE
23RN160 M	2 - 8	425	48k6	110	160
23RN160 L / Lx	2 - 8				
23RN180 M	2 - 8	488	55m6	110	180
23RN180 L	2 - 8				
23RN200 M	2 - 8	545	60m6	140	200
23RN200 L	2 - 8				
23RN225 M	2	615	60m6	140	225
23RN225 M	4 - 8		65m6		
23RN250 S	2	665	65m6	140	250
23RN250 S	4 - 8		75m6		
23RN250 M	2		65m6		
23RN250 M	4 - 8		75m6		
23RN280 S	2	740	65m6	140	280
23RN280 S	4 - 8		80m6	170	
23RN280 M	2		65m6	140	
23RN280 M	4 - 8		80m6	170	
23RN315 (A)	2	900	70m6	140	315
23RN315 (A)	4 - 8		90m6	170	
23RN315 (B)	2		80m6	140	
23RN315 (B)	4 - 8		90m6	170	
23RN355 M	2	1000	80m6	170	355
23RN355 M	4 - 8		100m6	210	
23RN355 L	2		80m6	170	
23RN355 L	4 - 8		100m6	210	



Section 5
Exploded View

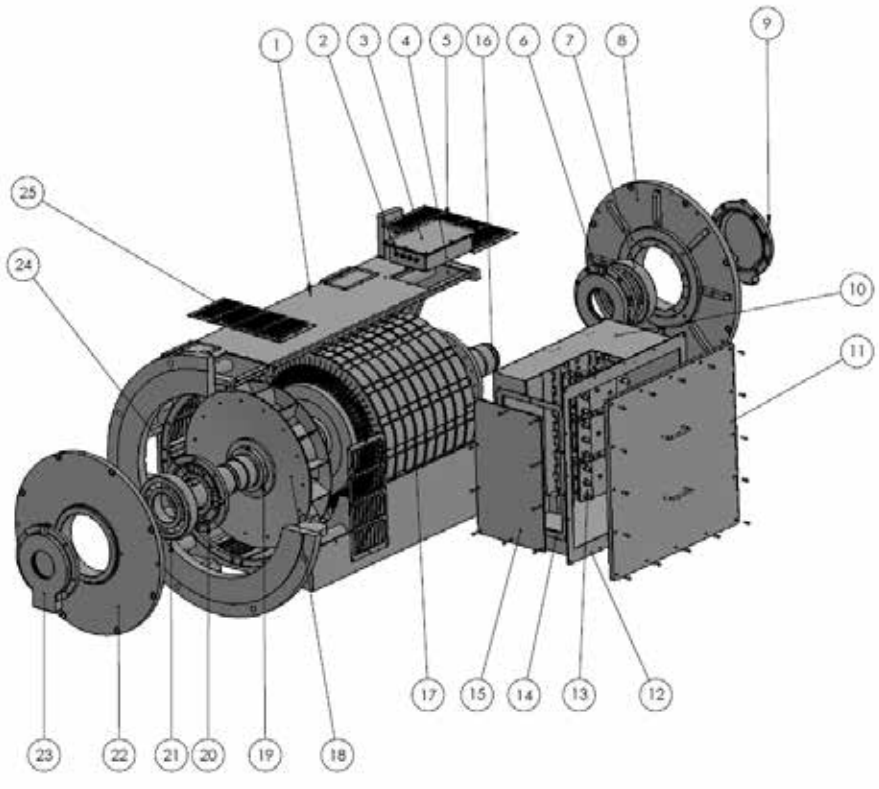
5.1 23RN IE1/IE2 Indicative

Number	Description
1	DE endshield screw
2	DE bearing cover bolt
3	Grease nipple
4	DE bearing cover
5	DE endshield
6	DE bearing
7	Shaft and rotor
8	Stator housing
9	Gland plate
10	Key
11	Terminalbox gasket
12	Terminalbox
13	Terminalblock with 6 pins
14	Terminalbox lid
15	Fan cover
16	Fan cover screw
17	Cooling fan
18	NDE inside bearing shield
19	NDE bearing
20	NDE endshield
21	NDE endshield screw
22	NDE bearing cover
23	NDE bearing cover bolt
24	Stator



5.2 LOD Indicative

Part	Description
1	Stator housing
2	Aux. terminalbox glands
3	Aux. terminalbox cover
4	Aux. terminalbox
5	NDE air cover
6	NDE inner bearing cover
7	NDE bearing
8	NDE shield
9	NDE outer bearing cover
10	Terminalbox
11	Terminalbox cover
12	Terminalbox cover seal
13	Terminalboard
14	Terminalbox blind plate seal
15	Terminalbox blind plate
16	Rotor
17	Stator
18	Fan
19	Locking nut for fan
20	DE inner bearing cover
21	DE bearing
22	DE flange cover
23	DE outer bearing cover
24	Key
25	DE air cover



Section 6
Bearing Data

6.0 23RN and LOD

TYPE	Drive End Bearing	Non Drive End Bearing	Mounting
23RN160-2	6310C3	6309C3	B3 &V1 standard
23RN160-4~12	6310C3(NU310)	6309C3	B3 &V1 standard
23RN180-2	6312C3	6311C3	B3 &V1 standard
23RN180-4~12	6312C3(NU312)	6311C3	B3 &V1 standard
23RN200-2	6313C3	6312C3	B3 &V1 standard
23RN200-4~12	6313C3(NU313)	6312C3	B3 &V1 standard
23RN225-2	6314C3	6313C3	B3 &V1 standard
23RN225-4~12	6314C3(NU314)	6313C3	B3 &V1 standard
23RN250-2	6314C3	6314C3	B3 &V1 standard
23RN250-4~12	6317C3(NU317)	6314C3	B3 &V1 standard
23RN280-2	6314C3	6314C3	B3 &V1 standard
23RN280-4~12	6318C3(NU318)	6318C3	B3 &V1 standard
23RN315-2	6317C3	6317C3	B3 &V1 standard
23RN315-4~12	6319C3(NU319)	6319C3	B3 &V1 standard
23RN355-2	6319C3	6319C3	B3 standard
23RN355-4~12	6322C3(NU322)	6322C3	B3 standard
23RN355-4~12	6322C3(NU322)	7322B	V1 Standard
LOD400-4~12	6326C3	7326B	V1 Standard
LOD450-4~12	6328C3	7328B	V1 Standard
LOD500-4~12	6330C3	7330B	V1 Standard
LOD560-4~12	6334C3	7334B	V1 Standard
LOD630-4~12	6338C3	7338B	V1 Standard
LOD400-4~12	6326C3	6326C3	B3 Standard
LOD450-4~12	6328C3	6328C3	B3 Standard
LOD500-4~12	6330C3	6330C3	B3 Standard
LOD560-4~12	6334C3	6334C3	B3 Standard
LOD630-4~12	6338C3	6338C3	B3 Standard

For motors requiring bearing insulation due to use with VSDs please consult us.

Section 7
Environmental temperatures for marine motors and maximum temperature increase of the winding

Marine Classification	Environmental temperature	Maximum DT winding °K at insulation class	
	°C	F	H
IEC* 34-1	40	105	135
IEC 92.301	50	90	115
American Bureau of Shipping*	45	100	120
Bureau Veritas*	45	100	120
China Classification Society*	45	100	120
China Corporation Register*	45	95	110
DNV/GL*	45	100	120
Korean Register of Shipping*	45	100	120
Lloyd's Register of Shipping*	45	95	110
Nippon Kaji Kyokai*	45	100	120
Registro Italiano Navale*	45	100	120

The temperature increase of the winding is determined by the resistance method.
Specific regulations apply to marine motors with regard to the mechanical model.

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