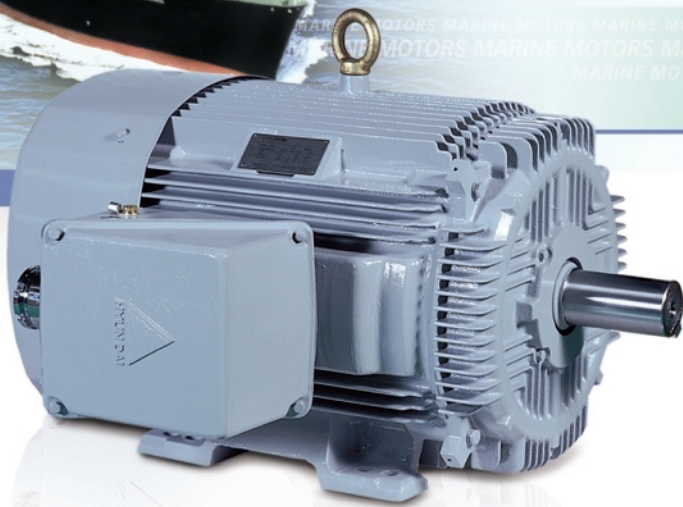




Medium & Low Voltage

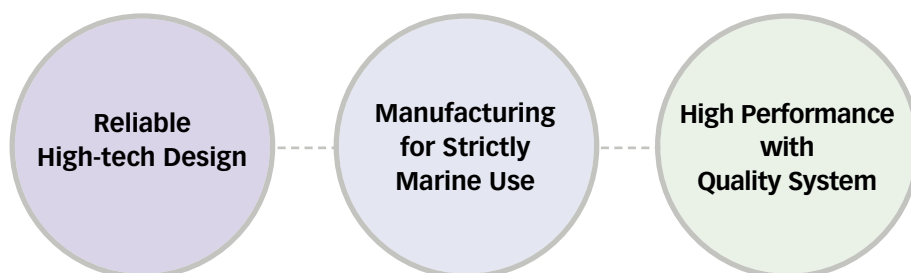
Marine Motors

Three Phase Induction Motors



Marine Motors

Combined with Experience and Technology in the Fields of Motors and Ships



Approved Products by Major Classifications

ABS American Bureau of Shipping	KF Korean Fishing Vessel Society
BV Bureau Veritas	KR Korean Register of Shipping
CCS China Classification Society	LR Lloyd's Register of Shipping
DNV Det Norske Veritas	NK Nippon Kaiji Kyokai
GL Germanischer Lloyd	RINA Registro Italiano Navale



C O N T E N T S

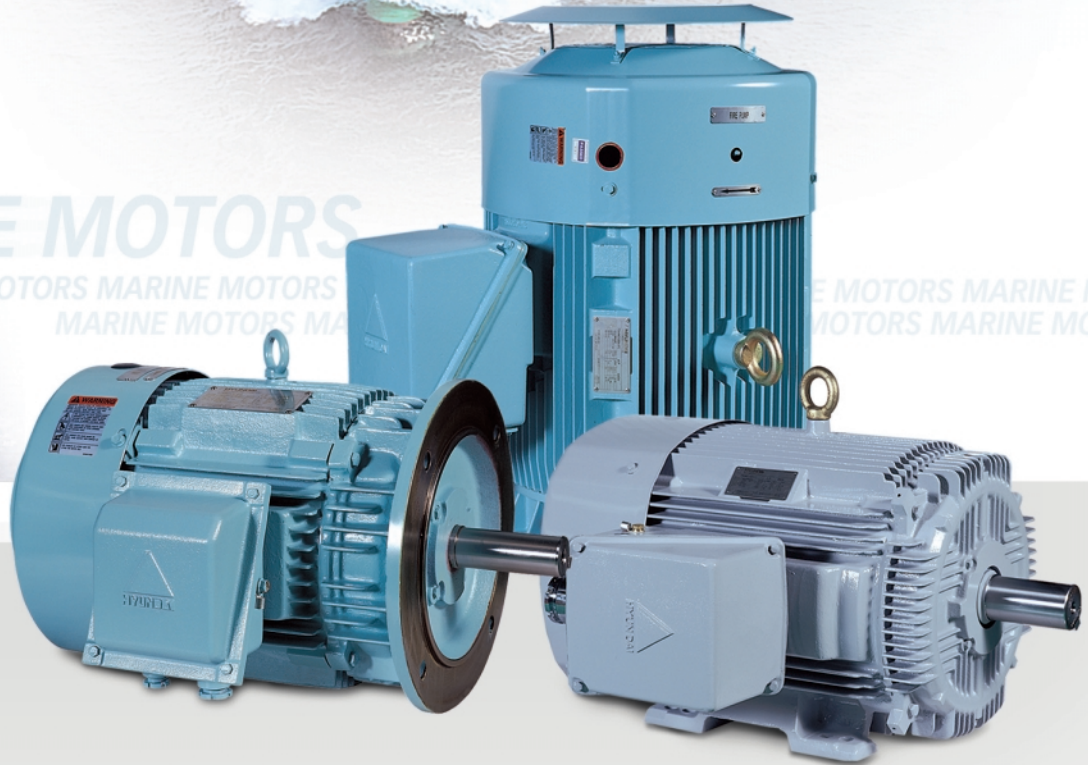
Features	04	Ratings and Dimensions - TEFC, B3	14
Characteristics	04	Ratings and Dimensions - TEFC, B5 and V1	16
Standard Specifications and Options	05	Outline Dimensions - HRA9 & HLA9	18
Motor Characteristic Tables	06	Sectional Drawing	19
Medium Voltage Motors for Thruster	13	Applications	19



MARINE MOTORS

MARINE MOTORS MARINE MOTORS
MARINE MOTORS MA

MARINE MOTORS MARINE MOTORS
MOTORS MARINE MOTORS



Features

Application of IEC Dimensions

Hyundai marine motors are designed and manufactured to meet the internationally interchangeable dimensions and characteristics according to IEC standards.

Insulation System

All Hyundai marine motors are applying a class F insulation system.

Others

- ▶ Aluminum die cast rotor with up to 400 kW
- ▶ Marine-use IP44 and IP22 enclosure for engine room
- ▶ Regreasable antifriction bearing for frame size 225 and above

Characteristics

Rating

Continuous operation in ambient temperatures of specified classification (IEC 60072 and JEM 1277)

Voltage and Frequency Variation

Hyundai standard motors will operate satisfactorily with a voltage variation not exceeding $\pm 10\%$ of the rated voltage, and the frequency varies within $\pm 5\%$ of the rated frequency.

Vibration

Vibration is in accordance with IEC 60034 and NEMA MG-1.

Temperature Rise

- ▶ Maximum allowable temperature : 155 °C
- ▶ Temperature rise limits : 95 °C or 100 °C (by the resistance method)

Noise Level

Hyundai motors are designed in accordance with IEC 60034-9 and JEM 1277 to minimize the noise level

Bearings

All motors are provided with antifriction bearings as standard which are designed for L-10 life of 40,000 hours in a normal direct coupled condition.

Others

Other characteristic values such as efficiency, power factor at rated output, no-load current, slip, current, torque, ect. are in compliance with IEC and JEM.

Special Application

Hyundai motors are flexibly applicable to Steering gear, oil purifier, provision crane, turning gear, auxiliary blower for engine, deck machinery.

Standard Specifications and Options

Items	Standard Specification	Option
Applicable Rules	KR, ABS, LR, DNV, NK, BV, GL, RINA, CR, CCS and Others	
Ambient Conditions	<ul style="list-style-type: none"> • Temperature : 45 °C or 50 °C • Relative Humidity : 95 % 	
Voltage & Frequency	AC 440 V or 220 V for 60 Hz	<ul style="list-style-type: none"> • AC 690 V for 60 Hz • AC 380 V for 50 Hz
Insulation Class	Class F	
Protection	<ul style="list-style-type: none"> • Splash-proof(IP44) • Drip-proof(IP22) 	Water-proof(IP55, 56) Explosion-proof
Cooling	Fan cooled	Natural cooled
Type of Rotor	Squirrel cage or wound rotor	
Bearing	Shielded(pre-lubricated) Ball bearing or open ball bearing	Roller bearing Angular bearing
Grease	Alvania No.2	
Terminals & Gland	Compressed terminals and standard cable gland	
Duty	Continuous rating	Short time rating
Starting Method	Direct-on-line	Star-Delta, Auto T/R
Accessory	Shaft pulley key Earthing lug	Space heater WTD, BTD SPM adapter
Standards	KS, ISO, IEC, JEC, JEM	Others

► ► ► *Technical specifications, designs and dimensions are subject to change without prior notice.*

Motor Characteristic Tables

2 Poles : HM, MNB Type

TEFC, 3-phase, 60 Hz, 440 V, 1.0 S.F, Continuous Duty, Insulation F Class, 45 °C or 50 °C, Relative humidity 95 %, Protection(IP44), Cooling(IC411).

Type	Frame No.	Output	Temp. Rise	Full Load AMPS.	Full Load RPM	Efficiency	Power Factor	Start'g Current	Full Load Torque	Locked Rotor Torque	Break Down Torque	Start'g Power Factor	Rotor GD ²
		kW		A	RPM	%	%	A	kgm	%	%	%	kgm ²
HM	71	0.4	F or B	1.0	3400	65.5	80.5	6.0	0.11	220	240	23.0	0.001
	80	0.75	F or B	1.5	3450	79.5	84.5	9.0	0.21	220	240	25.0	0.003
	90L	1.5	F or B	3.1	3420	78.0	81.5	18.6	0.43	200	230	27.0	0.008
	90L	2.2	F or B	4.2	3420	82.5	83.0	25.2	0.63	220	250	27.0	0.009
	112M	3.7	F or B	6.9	3505	85.0	83.0	43.4	1.03	190	270	29.0	0.02
	132S	5.5	F or B	10.0	3525	86.5	83.5	63.0	1.52	170	240	29.0	0.04
	132S	7.5	F or B	13.6	3530	87.5	83.0	85.7	2.07	190	250	30.0	0.05
	160M	11	F	19.3	3560	88.0	85.0	131.2	3.01	200	230	31.0	0.12
	160M	15	F	25.3	3555	89.0	87.5	172.0	4.11	200	230	32.0	0.15
	160L	18.5	F	30.6	3550	89.5	88.5	202.2	5.08	200	250	33.0	0.18
	180M	22	F	36.0	3555	89.5	89.5	234.0	6.03	200	220	32.0	0.34
	180L	26	F	42.1	3555	91.0	89.0	273.7	7.12	140	220	32.0	0.38
	180L	30	F	48.2	3555	91.7	89.0	313.3	8.22	140	220	32.0	0.38
	200L	33	F	51.7	3560	92.0	91.0	336.1	9.03	150	200	32.0	0.64
	200L	37	F	57.1	3560	93.0	91.5	370.8	10.12	150	200	32.0	0.64
	MNB	200L	40	F	61.3	3560	93.0	92.0	398.5	10.94	140	190	34.0
200L		45	F	68.3	3560	93.0	93.0	443.8	12.31	140	190	34.0	0.64
225S		50	F	78.6	3570	91.7	91.0	541.9	13.64	150	250	39.0	1.63
225S		55	F	86.0	3570	91.7	91.5	541.9	15.01	150	250	39.0	1.63
250S		65	F	103.2	3570	91.8	90.0	747.1	17.73	150	230	45.0	2.10
250S		70	F	110.9	3570	91.7	90.3	747.1	19.10	150	230	45.0	2.10
250S		75	F	118.6	3570	91.7	90.5	747.1	20.46	150	230	45.0	2.10
250M		80	F	125.7	3565	92.1	90.7	888.7	21.86	160	250	46.0	2.98
250M		85	F	133.7	3565	92.0	90.7	888.7	23.22	150	230	46.0	2.98
250M		90	F	141.1	3565	92.0	91.0	888.7	24.59	150	230	46.0	2.98
280S		95	F	149.7	3570	92.0	90.5	1120.7	25.92	130	230	31.0	5.16
280S		100	F	157.6	3570	92.0	90.5	1120.7	27.28	130	230	31.0	5.16
280S		105	F	165.5	3570	92.0	90.5	1120.7	28.65	130	230	31.0	5.16
280S		110	F	172.4	3570	92.0	91.0	1120.7	30.01	130	230	31.0	5.16

2 Poles : MNB, MRB Type

TEFC, 3-phase, 60 Hz, 440 V, 1.0 S.F, Continuous Duty, Insulation F Class, 45 °C or 50 °C,
Relative humidity 95 %, Protection(IP44), Cooling(IC411).

Type	Frame No.	Output	Temp. Rise	Full Load AMPS.	Full Load RPM	Efficiency	Power Factor	Start'g Current	Full Load Torque	Locked Rotor Torque	Break Down Torque	Start'g Power Factor	Rotor GD ²
		kW		A	RPM	%	%	A	kgm	%	%	%	kgm ²
MNB	280M	120	F	189.1	3565	92.5	90.0	1337.5	32.79	130	230	33.0	6.06
	280M	125	F	195.9	3565	92.5	90.5	1337.5	34.15	130	230	33.0	6.06
	280M	132	F	205.8	3565	92.5	91.0	1337.5	36.06	130	230	33.0	6.06
	280L	140	F	219.4	3565	92.5	90.5	1511.6	38.25	120	210	32.0	7.18
	280L	145	F	226.0	3565	92.5	91.0	1511.6	39.62	120	210	32.0	7.18
	280L	150	F	232.6	3565	92.5	91.5	1511.6	40.98	120	210	32.0	7.18
	280LL	160	F	256.5	3565	93.0	88.0	1905.5	43.71	120	220	33.0	9.94
	280LL	165	F	263.1	3565	93.0	88.5	1905.5	45.08	120	220	33.0	9.94
	280LL	170	F	269.5	3565	93.0	89.0	1905.5	46.45	120	220	33.0	9.94
	280LL	175	F	275.3	3565	93.0	89.7	1905.5	47.81	120	220	33.0	9.94
280LL	187	F	293.2	3565	93.0	90.0	1905.5	51.09	120	220	33.0	9.94	
MRB	225S	50	B	76.7	3570	93.0	92.0	562.1	13.64	150	250	40.0	1.76
	225S	55	B	83.9	3570	93.0	92.5	562.1	15.01	150	250	40.0	1.76
	250S	65	B	100.7	3570	94.1	90.0	774.3	17.73	150	250	38.0	2.99
	250S	70	B	108.5	3570	94.1	90.0	774.3	19.10	150	250	38.0	2.99
	250S	75	B	115.6	3570	94.1	90.5	774.3	20.46	150	250	38.0	2.99
	250M	80	B	123.3	3570	94.1	90.5	774.3	21.83	140	240	38.0	2.99
	280S	85	B	131.1	3570	94.5	90.0	930.3	23.19	130	230	25.0	5.47
	280S	90	B	138.9	3570	94.5	90.0	930.3	24.55	130	230	25.0	5.47
	280S	95	B	146.6	3570	94.5	90.0	930.3	25.92	120	220	25.0	5.47
	280M	100	B	153.4	3570	94.5	90.5	1124.5	27.28	150	250	26.0	6.08
	280M	110	B	167.8	3570	94.5	91.0	1124.5	30.01	150	250	26.0	6.08
	280L	132	B	200.4	3570	95.0	91.0	1517.1	36.01	150	230	27.0	7.21
	280L	150	B	226.4	3570	95.0	91.5	1517.1	40.92	150	230	27.0	7.21
	280LL	165	B	251.8	3570	95.0	90.5	1994.4	45.02	150	230	28.0	9.94
280LL	175	B	265.6	3570	95.0	91.0	1994.4	47.75	150	230	28.0	9.94	
280LL	180	B	273.2	3570	95.0	91.0	1994.4	49.11	150	230	28.0	9.94	

Motor Characteristic Tables

4 Poles : HM, MNB Type

TEFC, 3-phase, 60 Hz, 440 V, 1.0 S.F, Continuous Duty, Insulation F Class, 45 °C or 50 °C, Relative humidity 95 %, Protection(IP44), Cooling(IC411).

Type	Frame No.	Output	Temp. Rise	Full Load	Full Load	Efficiency	Power Factor	Start'g Current	Full Load	Locked Rotor Torque	Break Down Torque	Start'g Power Factor	Rotor
		kW		AMPS.	RPM				Torque				GD ²
				A	RPM	%	%	A	kgm	%	%	%	kgm ²
HM	71	0.4	F or B	1.2	1700	68.0	64.0	7.2	0.23	220	240	20.0	0.003
	80	0.75	F or B	1.7	1710	71.5	80.0	10.2	0.43	220	240	24.0	0.007
	90L	1.5	F or B	3.2	1720	79.5	77.5	19.2	0.85	220	250	26.0	0.014
	100L	2.2	F or B	4.2	1715	83.5	81.5	26.5	1.25	190	240	26.0	0.04
	112M	3.7	F or B	6.9	1730	84.5	83.5	43.5	2.08	180	250	27.0	0.05
	132S	5.5	F or B	10.3	1755	85.0	82.5	64.9	3.05	200	240	28.0	0.12
	132M	7.5	F or B	14.1	1760	87.0	80.5	88.8	4.15	210	250	28.0	0.12
	160M	11	F	20.0	1770	88.0	82.0	126.0	6.05	190	230	30.0	0.25
	160L	15	F	26.8	1770	89.0	82.5	168.8	8.25	200	220	31.0	0.34
	180M	18.5	F	32.8	1770	89.0	83.2	206.6	10.18	210	240	32.0	0.47
	180M	22	F	38.4	1775	90.0	83.5	257.3	12.07	210	240	34.0	0.57
	180L	26	F	45.1	1775	91.2	83.0	293.2	14.27	180	200	35.0	0.67
	180L	30	F	51.4	1775	91.7	83.5	334.1	16.46	180	200	36.0	0.67
	200L	33	F	56.9	1775	91.7	83.0	369.8	18.11	160	210	37.0	1.40
	200L	37	F	62.8	1775	92.0	84.0	408.4	20.30	160	210	37.0	1.40
	200L	40	F	67.9	1775	92.0	84.0	441.3	21.95	150	200	38.0	1.60
	200L	45	F	75.5	1775	92.0	85.0	490.8	24.69	150	200	38.0	1.60
	MNB	225S	50	F	83.8	1765	91.8	85.3	598.3	27.59	200	250	49.6
225S		55	F	92.1	1765	91.7	85.5	598.3	30.35	200	250	44.0	3.16
250S		60	F	98.9	1765	92.0	86.5	794.6	33.11	180	240	37.0	4.19
250S		65	F	106.2	1765	92.3	87.0	794.6	35.87	180	240	37.0	4.19
250S		70	F	114.2	1765	92.1	87.3	794.6	38.63	170	220	37.0	4.19
250S		75	F	122.3	1765	92.0	87.5	794.6	41.39	160	210	37.0	4.19
250M		80	F	129.4	1765	92.7	87.5	941.0	44.15	160	210	37.0	6.94
250M		85	F	137.5	1765	92.7	87.5	941.0	46.91	160	210	37.0	6.94
250M		90	F	144.8	1765	92.7	88.0	941.0	49.67	160	210	37.0	6.94
280S		95	F	152.2	1770	93.3	87.8	1195.2	52.28	160	240	32.0	7.38
280S		100	F	160.0	1770	93.1	88.1	1195.2	55.03	150	230	32.0	7.38
280S		105	F	168.2	1770	93.0	88.1	1195.2	57.78	140	210	32.0	7.38
280S		110	F	175.8	1770	93.0	88.3	1195.2	60.53	140	210	32.0	7.38
280M		120	F	192.4	1770	93.0	88.0	1423.0	66.03	160	220	31.0	10.13
280M		125	F	199.3	1770	93.0	88.5	1423.0	68.79	160	220	31.0	10.13
280M		132	F	209.3	1770	93.0	89.0	1423.0	72.64	160	220	31.0	10.13
280L		140	F	222.0	1770	93.5	88.5	1599.4	77.04	160	220	32.0	12.01
280L		145	F	228.6	1770	93.5	89.0	1599.4	79.79	160	220	32.0	12.01
280L	150	F	235.2	1770	93.5	89.5	1599.4	82.54	160	220	32.0	12.01	
280LL	160	F	254.6	1770	93.7	88.0	1905.9	88.05	180	240	31.0	17.27	
280LL	165	F	259.3	1770	93.7	89.1	1905.9	90.80	180	240	31.0	17.27	
280LL	170	F	267.2	1770	93.7	89.1	1905.9	93.55	170	230	31.0	17.27	
280LL	175	F	274.7	1770	93.6	89.3	1905.9	96.30	170	230	31.0	17.27	
280LL	187	F	293.2	1770	93.5	89.5	1905.9	102.90	160	220	31.0	17.27	

4 Poles : MRB, HLE, HLB Type

TEFC, 3-phase, 60 Hz, 440 V, 1.0 S.F, Continuous Duty, Insulation F Class, 45 °C or 50 °C,
Relative humidity 95 %, Protection(IP44), Cooling(IC411).

Type	Frame No.	Output	Temp. Rise	Full Load AMPS.	Full Load RPM	Efficiency	Power Factor	Start'g Current	Full Load Torque	Locked Rotor Torque	Break Down Torque	Start'g Power Factor	Rotor GD ²
		kW		A	RPM	%	%	A	kgm	%	%	%	kgm ²
MRB	225S	50	B	81.6	1780	94.1	85.5	561.8	27.36	200	230	38.0	3.43
	225S	55	B	89.2	1780	94.1	86.0	561.8	30.10	200	230	38.0	3.43
	250S	60	B	97.9	1780	94.1	85.5	782.6	32.83	200	230	38.0	5.88
	250S	65	B	105.4	1780	94.1	86.0	782.6	35.57	200	230	38.0	5.88
	250S	75	B	120.9	1780	94.1	86.5	782.6	41.04	200	230	38.0	5.88
	250M	80	B	129.0	1780	94.1	86.5	782.6	43.78	190	220	38.0	5.88
	280S	85	B	135.7	1785	94.5	87.0	928.3	46.38	200	230	37.0	8.43
	280S	90	B	142.8	1785	94.5	87.5	928.3	49.11	200	230	37.0	8.43
	280S	95	B	150.8	1785	94.5	87.5	928.3	51.84	190	220	37.0	8.43
	280M	100	B	157.9	1785	95.0	87.5	1128.7	54.57	190	230	38.0	11.05
	280M	110	B	172.7	1785	95.0	88.0	1128.7	60.02	190	230	38.0	11.05
	280L	132	B	207.2	1785	95.0	88.0	1618.5	72.03	180	230	39.0	12.01
	280L	150	B	235.4	1785	95.0	88.0	1618.5	81.85	180	230	39.0	12.01
	280LL	165	B	259.0	1785	95.0	88.0	2050.8	90.03	180	220	40.0	17.27
	280LL	175	B	273.1	1785	95.0	88.5	2050.8	95.49	180	220	40.0	17.27
280LL	180	B	280.9	1785	95.0	88.5	2050.8	98.22	180	220	40.0	17.27	
HLE4	284	190	F	298.10	1786	94.5	88.5	2496.2	103.62	230	250	30.4	4.27
	284	200	F	312.03	1786	94.5	89.0	2496.2	109.07	230	250	30.4	4.27
	286	210	F	325.80	1786	94.5	89.5	2715.3	114.52	230	250	30.2	4.88
	286	220	F	339.42	1786	94.5	90.0	2715.3	119.98	230	250	30.2	4.88
	288	230	F	358.83	1786	94.5	89.0	3085.6	125.43	230	250	30.3	5.49
	288	240	F	372.34	1786	94.5	89.5	3085.6	130.88	230	250	30.3	5.49
	288	250	F	385.70	1786	94.5	90.0	3085.6	136.34	230	250	30.3	5.49
HLB4	314	260	F	403.50	1786	95.0	89.0	3523.6	141.79	230	250	29.0	6.10
	314	270	F	416.68	1786	95.0	89.5	3523.6	147.25	230	250	29.0	6.10
	314	280	F	429.71	1786	95.0	90.0	3523.6	152.70	230	250	29.0	6.10
	314	290	F	452.60	1787	95.0	88.5	4004.0	158.06	230	250	29.4	6.10
	314	300	F	465.58	1787	95.0	89.0	4004.0	163.51	230	250	29.4	6.10
	315	310	F	478.41	1786	95.0	89.5	3964.1	169.06	230	250	29.4	6.85
	315	315	F	483.43	1786	95.0	90.0	3964.1	171.79	230	250	29.4	6.85
	35S	325	F	507.23	1785	95.0	88.5	4211.2	177.34	230	250	26.0	9.30
	35S	335	F	519.90	1785	95.0	89.0	4211.2	182.80	230	250	26.0	9.30
	350	345	F	538.44	1786	95.0	88.5	4683.0	188.15	230	250	26.4	10.30
	350	355	F	550.94	1786	95.0	89.0	4683.0	193.60	230	250	26.4	10.30
	352	365	F	563.29	1786	95.0	89.5	4776.7	199.05	230	250	26.3	11.50
	352	375	F	575.51	1786	95.0	90.0	4776.7	204.51	230	250	26.3	11.50
	352	380	F	589.73	1785	95.0	89.0	5033.8	207.35	230	250	26.5	11.50
	352	390	F	601.87	1785	95.0	89.5	5033.8	212.81	230	250	26.5	11.50
	352	400	F	613.88	1785	95.0	90.0	5033.8	218.26	230	250	26.5	11.50
	354	410	F	632.74	1785	95.0	89.5	5283.2	223.72	230	250	26.7	13.90
354	420	F	644.57	1785	95.0	90.0	5283.2	229.18	230	250	26.7	13.90	
354	425	F	652.24	1785	95.0	90.0	5283.2	231.90	230	250	26.7	13.90	
354	430	F	663.60	1786	95.0	89.5	5939.2	234.50	230	250	27.2	13.90	
354	440	F	675.26	1786	95.0	90.0	5939.2	239.96	230	250	27.2	13.90	
354	450	F	690.61	1786	95.0	90.0	5939.2	245.41	230	250	27.2	13.90	

Motor Characteristic Tables

6 Poles : HM, MNB Type

TEFC, 3-phase, 60 Hz, 440 V, 1.0 S.F, Continuous Duty, Insulation F Class, 45 °C or 50 °C,
Relative humidity 95 %, Protection(IP44), Cooling(IC411).

Type	Frame No.	Output	Temp. Rise	Full Load AMPS.	Full Load RPM	Efficiency	Power Factor	Start'g Current	Full Load Torque	Locked Rotor Torque	Break Down Torque	Start'g Power Factor	Rotor GD ²
		kW		A	RPM	%	%	A	kgm	%	%	%	kgm ²
HM	80	0.4	F or B	1.2	1130	72.5	60.0	7.2	0.34	220	240	14.0	0.006
	90L	0.75	F or B	2.0	1130	72.5	68.5	12.0	0.65	210	250	17.0	0.011
	100L	1.5	F or B	3.5	1140	79.5	71.0	21.0	1.28	170	200	21.0	0.04
	112M	2.2	F or B	4.9	1155	82.0	71.5	30.9	1.86	170	250	22.0	0.05
	132S	3.7	F or B	7.8	1170	84.0	74.0	49.1	3.08	180	210	23.0	0.12
	132M	5.5	F or B	11.0	1165	86.0	76.0	69.3	4.60	180	200	23.0	0.16
	160M	7.5	F	14.6	1175	86.5	78.0	92.0	6.22	200	240	27.0	0.31
	160L	11	F	21.0	1170	87.5	78.5	132.3	9.16	200	240	28.0	0.41
	180M	15	F	28.0	1170	88.0	80.0	176.4	12.49	210	250	31.0	0.57
	180L	18.5	F	33.5	1170	89.5	81.0	217.8	15.40	230	260	31.0	0.57
	180L	22	F	39.8	1175	89.5	81.0	258.7	18.24	200	240	31.0	0.58
	200L	30	F	53.0	1180	91.7	81.0	344.5	24.76	140	190	32.0	2.00
200L	37	F	65.4	1175	91.7	81.0	425.1	30.67	140	190	33.0	2.50	
MNB	225S	40	F	70.8	1176	91.0	81.5	498.5	33.13	170	200	44.0	4.79
	225S	45	F	79.1	1176	91.0	82.0	498.5	37.27	170	200	44.0	4.79
	250S	50	F	86.2	1180	91.7	83.0	597.4	41.27	160	200	40.0	6.15
	250S	55	F	94.8	1180	91.7	83.0	597.4	45.40	160	200	40.0	6.15
	250M	65	F	112.5	1180	92.5	82.0	813.3	53.65	190	230	40.0	8.23
	250M	70	F	121.1	1180	92.5	82.0	813.3	57.78	170	200	40.0	8.23
	250M	75	F	129.1	1180	92.4	82.5	813.3	61.91	170	200	40.0	8.23
	280S	80	F	133.6	1180	93.0	84.5	971.0	66.03	140	200	36.0	13.02
	280S	85	F	141.9	1180	93.0	84.5	971.0	70.16	130	200	36.0	13.02
	280S	90	F	149.4	1180	93.0	85.0	971.0	74.29	130	200	36.0	13.02
	280M	95	F	156.8	1180	93.0	85.5	1173.1	78.42	140	200	30.0	16.19
	280M	100	F	165.0	1180	93.0	85.5	1173.1	82.54	130	200	30.0	16.19
	280M	105	F	173.3	1180	93.0	85.5	1173.1	86.67	130	200	30.0	16.19
	280M	110	F	180.5	1180	93.0	86.0	1173.1	90.80	130	200	30.0	16.19
	280L	120	F	199.2	1180	93.0	85.0	1364.3	99.05	130	200	37.0	19.40
	280L	125	F	206.3	1180	93.0	85.5	1364.3	103.18	130	200	37.0	19.40
	280L	132	F	216.6	1180	93.0	86.0	1364.3	108.96	130	200	37.0	19.40
	280LL	140	F	231.1	1180	93.5	85.0	1542.1	115.56	130	200	37.0	25.34
280LL	145	F	238.0	1180	93.5	85.5	1542.1	119.69	130	200	37.0	25.34	
280LL	150	F	244.8	1180	93.5	86.0	1542.1	123.81	130	200	37.0	25.34	

6 Poles : MRB, HLE, HLB Type

TEFC, 3-phase, 60 Hz, 440 V, 1.0 S.F, Continuous Duty, Insulation F Class, 45 °C or 50 °C,
Relative humidity 95 %, Protection(IP44), Cooling(IC411).

Type	Frame No.	Output	Temp. Rise	Full Load AMPS.	Full Load RPM	Efficiency	Power Factor	Start'g Current	Full Load Torque	Locked Rotor Torque	Break Down Torque	Start'g Power Factor	Rotor GD ²
		kW		A	RPM	%	%	A	kgm	%	%	%	kgm ²
MRB	250S	45	B	74.9	1185	92.7	85.0	472.1	36.99	200	230	40.0	4.60
	250M	50	B	82.5	1185	93.0	85.5	568.5	41.10	180	230	34.0	7.64
	250M	55	B	90.2	1185	93.0	86.0	568.5	45.21	180	230	34.0	7.64
	280S	65	B	106.6	1185	93.6	85.5	794.7	53.43	200	230	28.0	12.11
	280S	75	B	122.3	1185	93.6	86.0	794.7	61.65	200	230	28.0	12.11
	280S	80	B	130.4	1185	93.6	86.0	794.7	65.76	180	220	28.0	12.11
	280M	85	B	137.0	1185	94.1	86.5	943.1	69.86	200	230	28.0	14.83
	280M	90	B	145.1	1185	94.1	86.5	943.1	73.97	200	230	28.0	14.83
	280M	95	B	153.2	1185	94.1	86.5	943.1	78.08	190	220	28.0	14.83
	280L	100	B	160.5	1185	94.5	86.5	1147.8	82.19	170	250	29.0	17.58
	280L	110	B	176.6	1185	94.5	86.5	1147.8	90.41	170	250	29.0	17.58
	280LL	132	B	210.7	1185	94.5	87.0	1556.1	108.50	170	230	27.0	24.43
280LL	150	B	239.4	1185	94.5	87.0	1556.1	123.29	170	230	27.0	24.43	
HLE4	284	160	F	282.72	1189	94.0	79.0	2421.0	131.07	230	250	31.8	5.54
	284	170	F	298.50	1189	94.0	79.5	2421.0	139.26	230	250	31.8	5.54
	284	180	F	314.08	1189	94.0	80.0	2421.0	147.45	230	250	31.8	5.54
	284	185	F	322.81	1189	94.0	80.0	2421.0	151.55	230	250	31.8	5.54
	286	190	F	329.47	1190	94.0	80.5	2585.0	155.51	230	250	32.4	6.29
	286	200	F	344.67	1190	94.0	81.0	2585.0	163.70	230	250	32.4	6.29
	288	210	F	361.90	1190	94.0	81.0	2826.1	171.88	230	250	32.2	7.03
	288	220	F	376.81	1190	94.0	81.5	2826.1	180.07	230	250	32.2	7.03
HLB4	314	230	F	404.26	1191	94.5	79.0	3471.3	188.09	230	250	28.2	8.90
	314	240	F	419.18	1191	94.5	79.5	3471.3	196.27	230	250	28.2	8.90
	314	250	F	433.92	1191	94.5	80.0	3471.3	204.45	230	250	28.2	8.90
	315	260	F	456.98	1191	94.5	79.0	3985.1	212.63	230	250	28.7	9.92
	315	270	F	471.58	1191	94.5	79.5	3985.1	220.81	230	250	28.7	9.92
	315	280	F	485.99	1191	94.5	80.0	3985.1	228.98	230	250	28.7	9.92
	35S	290	F	512.96	1190	94.5	78.5	3954.7	237.36	230	250	27.5	10.81
	35S	300	F	527.29	1190	94.5	79.0	3954.7	245.55	230	250	27.5	10.81
	350	310	F	534.71	1190	94.5	80.5	4049.9	253.73	230	250	27.8	12.10
	350	315	F	539.98	1190	94.5	81.0	4049.9	257.82	230	250	27.8	12.10
	352	325	F	564.65	1191	95.0	79.5	4684.9	265.79	230	250	28.2	13.70
	352	335	F	578.39	1191	95.0	80.0	4684.9	273.96	230	250	28.2	13.70
	352	345	F	591.95	1191	95.0	80.5	4721.7	282.14	230	250	28.2	13.70
	352	355	F	605.35	1191	95.0	81.0	4721.7	290.32	230	250	28.2	13.70
	354	365	F	622.40	1191	95.0	81.0	5211.4	298.50	230	250	28.3	16.60
	354	375	F	635.53	1191	95.0	81.5	5211.4	306.68	230	250	28.3	16.60
354	380	F	652.00	1191	95.0	80.5	5390.1	310.76	230	250	27.9	16.60	
354	390	F	660.95	1191	95.0	81.5	5390.1	318.94	230	250	27.9	16.60	
354	400	F	673.77	1191	95.0	82.0	5390.1	327.12	230	250	27.9	16.60	

Motor Characteristic Tables

8 Poles : HM, MNB, MRB Type

TEFC, 3-phase, 60 Hz, 440 V, 1.0 S.F, Continuous Duty, Insulation F Class, 45 °C or 50 °C, Relative humidity 95 %, Protection(IP44), Cooling(IC411).

Type	Frame No.	Output	Temp. Rise	Full Load AMPS.	Full Load RPM	Efficiency	Power Factor	Start'g Current	Full Load Torque	Locked Rotor Torque	Break Down Torque	Start'g Power Factor	Rotor GD ²
		kW		A	RPM	%	%	A	kgm	%	%	%	kgm ²
HM	112M	1.5	F or B	4.2	860	79.0	59.0	18.9	1.70	170	200	13.0	0.05
	132S	2.2	F or B	5.7	865	81.0	63.0	30.2	2.48	170	200	14.0	0.14
	132M	3.7	F or B	9.0	865	83.0	65.0	47.7	4.17	160	200	14.0	0.24
	160M	5.5	F	12.8	865	85.0	66.5	70.4	6.19	160	200	16.0	0.37
	160L	7.5	F	17.2	870	85.5	67.0	94.6	8.40	160	190	19.0	0.47
	180M	11	F	24.9	865	86.5	67.0	137.0	12.39	150	190	21.0	0.57
	180L	15	F	33.8	870	87.0	67.0	185.9	16.79	140	190	24.0	0.57
	200L	18.5	F	34.7	875	87.5	80.0	190.9	20.59	130	190	24.0	1.88
	200L	22	F	40.3	875	88.5	81.0	221.7	24.49	120	190	28.0	2.24
MNB	225S	25	F or B	46.3	880	91.5	77.5	320.2	27.67	120	200	42.0	4.60
	255S	30	F or B	55.2	880	91.5	78.0	320.2	33.20	120	200	42.0	4.60
	250S	37	F or B	66.5	880	92.0	79.5	385.4	40.95	130	200	41.0	7.06
	250M	40	F or B	71.4	880	92.5	79.6	463.3	44.27	125	200	40.0	8.26
	250M	45	F or B	79.9	880	92.5	80.0	463.3	49.81	125	200	40.0	8.26
	280S	50	F or B	87.3	880	92.7	81.2	553.3	55.34	120	200	36.0	9.89
	280S	55	F or B	95.4	880	92.7	81.7	553.3	60.88	120	200	36.0	9.89
	280M	65	F or B	113.2	880	93.0	81.1	749.2	71.94	125	200	36.0	13.08
	280M	70	F or B	121.2	880	93.0	81.6	749.2	77.48	125	200	36.0	13.08
	280M	75	F or B	129.2	880	93.0	82.0	749.2	83.01	125	200	36.0	13.08
	280L	80	F	136.0	880	93.0	83.1	877.7	88.55	110	200	35.0	17.67
	280L	85	F	143.6	880	93.0	83.6	877.7	94.08	110	200	35.0	17.67
	280L	90	F	151.3	880	93.0	84.0	877.7	99.61	110	200	35.0	17.67
	280LL	95	F	161.5	880	93.3	82.8	1069.3	105.15	110	200	35.0	20.91
	280LL	100	F	169.0	880	93.3	83.3	1069.3	110.68	110	200	35.0	20.91
	280LL	105	F	176.4	880	93.3	83.8	1069.3	116.22	110	200	35.0	20.91
280LL	110	F	184.4	880	93.3	84.0	1069.3	121.75	110	200	35.0	20.91	
MRB	280L	90	B	151.3	880	93.0	84.0	877.7	99.61	110	200	35.0	17.67
	280LL	110	B	184.4	880	93.3	84.0	1069.3	121.75	110	200	34.0	20.91

Medium Voltage Motors for Thruster

Unit : kW

TEFC (IP54)

S2 - 60 min., F/100K

3.3 kV / 60 Hz

Model	6P	8P	
HLA9	630	1200	880
	632	1350	1000
	634	1500	1100
	636	1700	1250
	638	1900	1400
	710	2150	1550
	712	2400	1750
	714	2700	2000
	716	3050	2250
	800	3350	2450
	802	3700	2700
	804	4100	3000
	806	4500	3350

6.6 kV / 60 Hz

Model	6P	8P	
HLA9	630	1100	800
	632	1200	900
	634	1350	1000
	636	1500	1100
	638	1700	1250
	710	1900	1400
	712	2150	1600
	714	2400	1800
	716	2700	2000
	800	2950	2200
	802	3350	2500
	804	3600	2700
	806	4000	3000

S2 - 60 min., F/90K(95K)

3.3 kV / 60 Hz

Model	6P	8P	
HLA9	630	1050	750
	632	1150	820
	634	1250	900
	636	1400	1000
	638	1600	1150
	710	1900	1350
	712	2100	1500
	714	2350	1700
	716	2650	1900
	800	3050	2200
	802	3400	2450
	804	3750	2700
	806	4200	3000

6.6 kV / 60 Hz

Model	6P	8P	
HLA9	630	950	690
	632	1050	770
	634	1150	840
	636	1300	950
	638	1450	1050
	710	1700	1250
	712	1900	1400
	714	2150	1550
	716	2400	1750
	800	2700	2000
	802	3000	2200
	804	3350	2450
	806	3750	2750

S2 - 30 min., F/100K

3.3 kV / 60 Hz

Model	6P	8P	
HLA9	630	1450	1050
	632	1600	1150
	634	1800	1300
	636	2000	1400
	638	2200	1550
	710	2550	1850
	712	2850	2050
	714	3200	2300
	716	3600	2600
	800	4000	2900
	802	4500	3250
	804	5000	3600
	806	5500	4000

6.6 kV / 60 Hz

Model	6P	8P	
HLA9	630	1300	950
	632	1450	1050
	634	1600	1150
	636	1800	1300
	638	2000	1450
	710	2300	1700
	712	2600	1900
	714	2900	2100
	716	3300	2400
	800	3600	2650
	802	4100	3000
	804	4500	3300
	806	5000	3700

S2 - 30 min., F/90K(95K)

3.3 kV / 60 Hz

Model	6P	8P	
HLA9	630	1250	900
	632	1350	1000
	634	1500	1100
	636	1700	1250
	638	1900	1400
	710	2250	1650
	712	2500	1850
	714	2850	2050
	716	3150	2300
	800	3550	2600
	802	4000	2900
	804	4450	3250
	806	4900	3600

6.6 kV / 60 Hz

Model	6P	8P	
HLA9	630	1150	830
	632	1250	900
	634	1400	1000
	636	1550	1100
	638	1750	1250
	710	2050	1500
	712	2250	1650
	714	2550	1850
	716	2850	2050
	800	3300	2400
	802	3600	2650
	804	4050	2950
	806	4500	3300

DP (IP22)

S2 - 60 minute

3.3 kV / 60 Hz

Model	6P	8P	
HRA9	401	640	500
	403	800	630
	405	950	745
	451	1180	920
	453	1400	1100
	455	1600	1250
	501	1770	1400
	503	2000	1600
	505	2250	1800
	507	2500	2000

6.6 kV / 60 Hz

Model	6P	8P	
HRA9	401	600	470
	403	750	590
	405	900	700
	451	1070	840
	453	1270	990
	455	1450	1140
	501	1580	1250
	503	1770	1400
	505	1980	1560
	507	2200	1750

S2 - 30 minute

3.3 kV / 60 Hz

Model	6P	8P	
HRA9	401	660	520
	403	825	650
	405	980	770
	451	1200	1000
	453	1450	1150
	455	1650	1350
	501	1900	1550
	503	2100	1800
	505	2350	2000
	507	2600	2200

6.6 kV / 60 Hz

Model	6P	8P	
HRA9	401	620	485
	403	770	610
	405	930	720
	451	1150	900
	453	1350	1050
	455	1500	1250
	501	1850	1400
	503	2000	1600
	505	2250	1800
	507	2500	2200

Ratings and Dimensions - TEFC, B3

Unit : mm

Frame	Output (kW)				Dimension										
					Overall						Shaft				
	2P	4P	6P	8P	AC	H ³⁾	HB	HC	L	LB	D ¹⁾	E	Key way ²⁾		
													F	GE	
71	0.4	0.4	0.2	-	145	71	138	140	234	102	14	30	5	3	5 × 5 × 20
80	0.75	0.75	0.4	0.2	169	80	167	167	271	131	19	40	6	3.5	6 × 6 × 25
90L	1.5 2.2	1.5	0.75	0.4	198	90	189	189	318	150	24	50	8	4	8 × 7 × 35
100L	-	2.2	1.5	0.75	191	100	223	213	368	175	28	60	8	4	8 × 7 × 45
112M	3.7	3.7	2.2	1.5	216	112	234	239	389	189	28	60	8	4	8 × 7 × 45
132S	5.5 7.5	5.5	3.7	2.2	256	132	279	278	460	221	38	80	10	5	10 × 8 × 63
132M	-	7.5	5.5	3.7	256	132	279	278	498	240	38	80	10	5	10 × 8 × 63
160M	11 15	11	7.5	5.5	312	160	333	334	606	283	42	110	12	5	12 × 8 × 80
160L	18.5	15	11	7.5	312	160	333	334	650	305	42	110	12	5	12 × 8 × 80
180M	22	18.5 22	15	11	342	180	373	374	676	324	48	110	14	5.5	14 × 9 × 80
180L	30	30	18.5 22	15	342	180	373	374	714	343	55	110	16	6	16 × 10 × 80
200L	37 45	-	-	-	411	200	403	405	771	375.5	55	110	16	6	16 × 10 × 80
	-	37 45	30 37	18.5 22	411	200	403	405	801	375.5	60	140	18	7	18 × 11 × 110
200LL	37 45	-	-	-	411	200	403	405	821	400.5	55	110	16	6	16 × 10 × 80
	-	37 45	30 37	18.5 22	411	200	403	405	851	400.5	60	140	18	7	18 × 11 × 110
225S	55	-	-	-	463	225	470	456	824	409.5	55	110	16	6	16 × 10 × 80
	-	55	45	30	463	225	470	456	854	409.5	65	140	18	7	18 × 11 × 110
250S	75	-	-	-	512	250	528	506	915	462.5	55	110	16	6	16 × 10 × 80
	-	75	55	37	512	250	528	506	945	462.5	75	140	20	7.5	20 × 12 × 110
250M	90	-	-	-	512	250	528	506	915	462.5	55	110	16	6	16 × 10 × 80
	-	90	75	45	512	250	528	506	945	462.5	75	140	20	7.5	20 × 12 × 110
280S	110	-	-	-	569	280	589	559	1031	521.5	55	110	16	6	16 × 10 × 80
	-	110	90	55	569	280	589	559	1091	521.5	85	170	22	9	22 × 14 × 140
280M	132	-	-	-	569	280	589	559	1031	521.5	55	110	16	6	16 × 10 × 80
	-	132	110	75	569	280	589	559	1091	521.5	85	170	22	9	22 × 14 × 140
280L	160	-	-	-	569	280	589	559	1120	566	55	110	16	6	16 × 10 × 80
	-	160	132	90	569	280	589	559	1180	566	85	170	22	9	22 × 14 × 140
280LL	200	-	-	-	569	280	589	559	1250	632.5	55	110	16	6	16 × 10 × 80
	-	200	150	110	569	280	589	559	1310	632.5	85	170	22	9	22 × 14 × 140
284	-	200	185	-	650	280	845	588	1445	965.5	85	170	22	9	22 × 14 × 160
286	-	220	200	-	650	280	845	588	1445	965.5	85	170	22	9	22 × 14 × 160
288	-	250	220	-	650	280	845	588	1445	965.5	85	170	22	9	22 × 14 × 160
314	-	280	250	-	700	315	900	658	1550	1014	85	170	22	9	22 × 14 × 160
315	-	315	280	-	700	315	900	658	1550	1014	85	170	22	9	22 × 14 × 160
35S	-	335	300	-	740	355	955	712	1810	1180	100	210	28	10	28 × 16 × 200
350	-	355	315	-	740	355	955	712	1810	1180	100	210	28	10	28 × 16 × 200
352	-	400	355	-	740	355	955	712	1810	1180	100	210	28	10	28 × 16 × 200
354	-	450	400	-	740	355	955	712	1810	1180	100	210	28	10	28 × 16 × 200

※ 1) Dimension D tolerance : ~ φ 28 : j6, ~ φ 48 : k6, φ 55~ : m6 2) Key way tolerance : N9 3) Dimension H tolerance : H ≤ 250 mm : 0, -0.5, H ≥ 280 mm : 0, -1.0

Fig. A

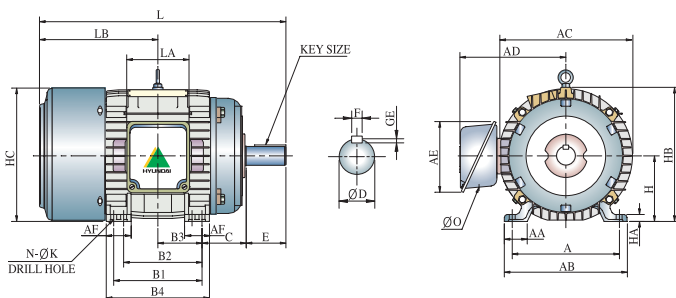
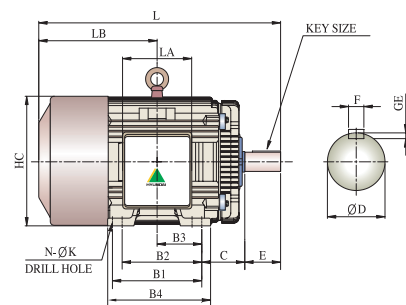


Fig. B





Unit : mm

Frame	Mounting											Conduit Box					Approx Wt. (kg)	Fig.
	A	AA	AB	HA	B1	B2	B3	B4	C	K ⁴⁾	N	AD	AE	LA	O			
															Hole	PF		
71	112	30	145	7	90	-	45	112	45	7	4	144	90	70	10	0.75	15	A
80	125	30	158	10	100	-	50	125	50	10	4	149	90	88	13	0.75	18	
90L	140	45	172	12	125	-	62.5	156	56	10	4	164	90	88	13	0.75	20	
100L	160	44	194	12	140	-	70	166	63	12	4	175	105	88	22	0.5	30	
112M	190	49	226	13	140	(114)	70	166	70	12	8	188	115	105	28	0.75	46	
132S	216	50	264	14	140	-	70	172	89	12	4	218	146	125	35	1	61	
132M	216	50	264	14	178	(140)	89	210	89	12	8	218	146	125	35	1	74	
160M	254	50	285	16	210	-	105	243	108	15	4	287	193	150	44	1.25	116	
160L	254	50	285	16	254	(210)	127	287	108	15	8	287	193	150	44	1.25	135	
180M	279	57	315	18	241	-	120.5	280	121	15	4	301	193	150	50	1.5	172	
180L	279	57	315	18	279	(241)	139.5	325	121	15	8	301	193	150	50	1.5	181	
200L	318	60	364	23	305	(267)	152.5	350	133	19	8	362	260	180	60	2	297	
	318	60	364	23	305	(267)	152.5	350	133	19	8	362	260	180	60	2	297	
200LL	318	60	364	23	(355)	305	177.5	350	133	19	8	362	260	180	60	2	320	
	318	60	364	23	(355)	305	177.5	350	133	19	8	362	260	180	60	2	320	
225S	356	69	410	25	(311)	286	155.5	379	149	19	8	407	260	180	60	2	360	
	356	69	410	25	(311)	286	155.5	379	149	19	8	407	260	180	60	2	370	
250S	406	77	468	30	(349)	311	174.5	418	168	24	8	497	296	270	76	2.5	450	
	406	77	468	30	(349)	311	174.5	418	168	24	8	497	296	270	76	2.5	490	
250M	406	77	468	30	349	(311)	174.5	418	168	24	8	497	296	270	76	2.5	480	
	406	77	468	30	349	(311)	174.5	418	168	24	8	497	296	270	76	2.5	525	
280S	457	78	521	36	(419)	368	209.5	488	190	24	8	527	296	270	76	2.5	700	
	457	78	521	36	(419)	368	209.5	488	190	24	8	527	296	270	76	2.5	710	
280M	457	78	521	36	419	(368)	209.5	488	190	24	8	527	296	270	76	2.5	790	
	457	78	521	36	419	(368)	209.5	488	190	24	8	527	296	270	76	2.5	800	
280L	457	78	521	36	508	(457)	254	577	190	24	8	527	296	270	76	2.5	850	
	457	78	521	36	508	(457)	254	577	190	24	8	527	296	270	76	2.5	860	
280LL	457	78	521	36	635	508	317.5	704	190	24	8	527	296	270	76	2.5	1100	
	457	78	521	36	635	508	317.5	704	190	24	8	527	296	270	76	2.5	1130	
284	457	91	560	30	630	-	119.5	730	190	24	4	600	615	505	-	-	1250	
286	457	91	560	30	630	-	119.5	730	190	24	4	600	615	505	-	-	1330	
288	457	91	560	30	630	-	119.5	730	190	24	4	600	615	505	-	-	1410	
314	508	120	628	35	457	-	150	637	216	28	4	695	615	505	-	-	1470	
315	508	120	628	35	457	-	150	637	216	28	4	695	615	505	-	-	1560	
35S	610	120	730	45	800	-	220	970	200	28	4	750	615	505	-	-	1700	
350	610	120	730	45	800	-	220	970	200	28	4	750	615	505	-	-	1800	
352	610	120	730	45	800	-	220	970	200	28	4	750	615	505	-	-	1950	
354	610	120	730	45	800	-	220	970	200	28	4	750	615	505	-	-	2200	

※ 4) Foot hole tolerance : φ K ≥200LL : 0 ~ +0.43, φ K ≤225S : 0 ~ +0.52

Fig. B

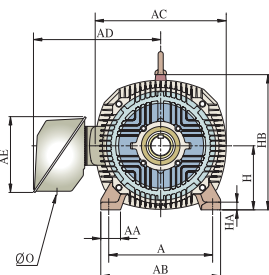
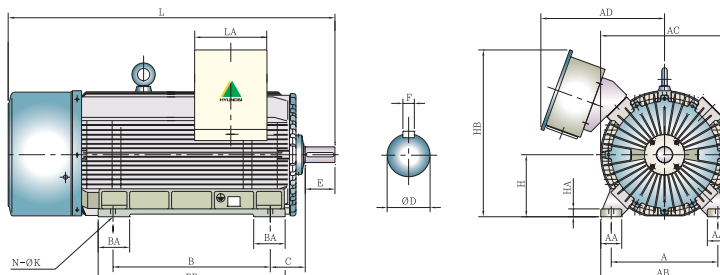


Fig. C



Ratings and Dimensions - TEFC, B5 and V1

Unit : mm

Frame	KS & JIS Frame Number	Output (kW)				Dimension								
		2P	4P	6P	8P	Overall				Shaft			Key Size	
						AC	L	LB	LC	D ¹⁾	E	Key way ²⁾		
F	GE													
71	FF130	0.4	0.4	0.2	0.1	122	247	217	112	14	30	5	5	5 × 5 × 25
80	FF165	0.75	0.75	0.4	0.2	131	293	253	127	19	40	6	6	6 × 6 × 30
90L	FF165	1.5 2.2	1.5	0.75	0.4	150	341	291	154	24	50	8	7	8 × 7 × 45
100L	FF215	-	2.2	1.5	0.75	191	368	308	175	28	60	8	4	8 × 7 × 45
112M	FF215	3.7	3.7	2.2	1.5	251	414	354	189	28	60	8	4	8 × 7 × 45
132S	FF265	5.5 7.5	5.5	3.7	2.2	292	495	415	221	38	80	10	5	10 × 8 × 63
132M	FF265	-	7.5	5.5	3.7	292	533	453	240	38	80	10	5	10 × 8 × 63
160M	FF300	11 15	11	7.5	5.5	347	660	550	283	42	110	12	5	12 × 8 × 80
160L	FF300	18.5	15	11	7.5	347	664	514	305	42	110	12	5	12 × 8 × 80
180M	FF350	22	18.5 22	15	11	387	669	609	324	48	110	14	5.5	14 × 9 × 80
180L	FF350	30	30	18.5 22	15	387	757	647	343	55	110	16	6	16 × 10 × 80
200L	FF400	37 45	-	-	-	405	771	661	375.5	55	110	16	6	16 × 10 × 80
		-	37 45	30 37	18.5 22	405	801	661	375.5	60	140	18	7	18 × 11 × 110
200LL	FF400	37 45	-	-	-	405	821	711	400.5	55	110	16	6	16 × 10 × 80
		-	37 45	30 37	18.5 22	405	851	711	400.5	60	140	18	7	18 × 11 × 110
225S	FF500	55	-	-	-	450	824	714	409.5	55	110	16	6	16 × 10 × 80
		-	55	45	30	450	854	714	409.5	65	140	18	7	18 × 11 × 110
250S	FF500	75	-	-	-	500	915	805	462.5	55	110	16	6	16 × 10 × 80
		-	75	55	37	500	945	805	462.5	75	140	20	7.5	20 × 12 × 110
250M	FF500	90	-	-	-	500	915	805	462.5	55	110	16	6	16 × 10 × 80
		-	90	75	45	500	945	805	462.5	75	140	20	7.5	20 × 12 × 110
280S	FF600	110	-	-	-	570	1031	921	521.5	55	110	16	6	16 × 10 × 80
		-	110	90	55	570	1091	921	521.5	85	170	22	9	22 × 14 × 140
280M	FF600	132	-	-	-	570	1031	921	521.5	55	110	16	6	16 × 10 × 80
		-	132	110	75	570	1091	921	521.5	85	170	22	9	22 × 14 × 140
280L	FF600	160	-	-	-	570	1120	1010	566	55	110	16	6	16 × 10 × 80
		-	160	132	90	570	1180	1010	566	85	170	22	9	22 × 14 × 140
280LL	FF600	200	-	-	-	570	1247	1137	629.5	55	110	16	6	16 × 10 × 80
		-	187	150	110	570	1307	1137	629.5	85	170	22	9	22 × 14 × 140
284	FF680	-	200	185	-	650	1560	1390	-	85	170	22	9	22 × 14 × 160
286	FF680	-	220	200	-	650	1560	1390	-	85	170	22	9	22 × 14 × 160
288	FF680	-	250	220	-	650	1560	1390	-	85	170	22	9	22 × 14 × 160
314	FF680	-	280	250	-	700	1720	1550	-	85	170	22	9	22 × 14 × 160
315	FF680	-	315	280	-	700	1720	1550	-	85	170	22	9	22 × 14 × 160
35S	FF680	-	335	300	-	732	2020	1810	-	100	210	28	10	28 × 16 × 200
350	FF680	-	355	315	-	732	2020	1810	-	100	210	28	10	28 × 16 × 200
352	FF680	-	400	355	-	732	2020	1810	-	100	210	28	10	28 × 16 × 200
354	FF680	-	450	400	-	732	2020	1810	-	100	210	28	10	28 × 16 × 200

※ 1) Dimension D tolerance : ~ φ 28 : j6, ~ φ 48 : k6, φ 55- : m6 2) Key way tolerance : N9

Fig. A

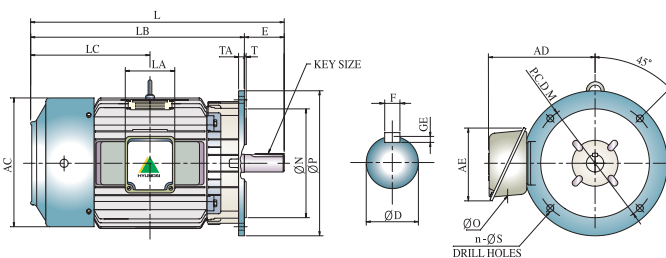
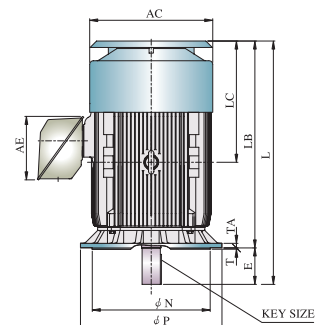
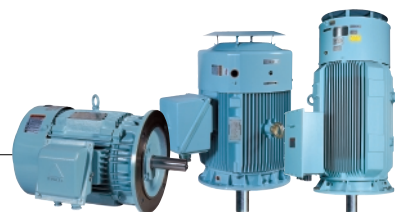


Fig. B





Unit : mm

Frame	KS & JIS Frame Number	Flange							Conduit Box					Approx Wt. (kg)	Fig.
		M	N ³⁾	P	n	S	TA	T	AD	AE	LA	O			
												Hole	PF		
71	FF130	130	110	160	4	10	10	3.5	-	95	72	10	0.75	10	A
80	FF165	165	130	200	4	12	12	3.5	-	97	86	13	0.75	12	
90L	FF165	165	130	200	4	12	12	3.5	-	97	86	13	0.75	14	
100L	FF215	215	180	250	4	15	13	4	175	105	88	22	0.75	30	
112M	FF215	215	180	250	4	15	13	4	188	115	105	28	0.75	46	
132S	FF265	265	230	300	4	15	16	4	218	146	125	35	1	61	
132M	FF265	265	230	300	4	15	16	4	218	146	125	35	1	74	
160M	FF300	300	250	350	4	19	16	5	287	193	150	44	1.25	116	
160L	FF300	300	250	350	4	19	16	5	287	193	150	44	1.25	135	
180M	FF350	350	300	400	4	19	16	5	301	193	150	50	1.5	172	
180L	FF350	350	300	400	4	19	16	5	301	193	150	50	1.5	181	
200L	FF400	400	350	450	8	19	21	5	362	260	180	60	2	297	
		400	350	450	8	19	21	5	362	260	180	60	2	297	
200LL	FF400	400	350	450	8	19	21	5	362	260	180	60	2	297	
		400	350	450	8	19	21	5	362	260	180	60	2	297	
225S	FF500	500	450	550	8	19	21	5	387	260	180	60	2	400	
		500	450	550	8	19	21	5	387	260	180	60	2	410	
250S	FF500	500	450	550	8	19	22	5	474	296	270	76	2.5	500	
		500	450	550	8	19	22	5	474	296	270	76	2.5	535	
250M	FF500	500	450	550	8	19	22	5	474	296	270	76	2.5	530	
		500	450	550	8	19	22	5	474	296	270	76	2.5	565	
280S	FF600	600	550	660	8	24	25	5	510	296	270	76	2.5	780	
		600	550	660	8	24	25	5	510	296	270	76	2.5	790	
280M	FF600	600	550	660	8	24	25	5	510	296	270	76	2.5	870	
		600	550	660	8	24	25	5	510	296	270	76	2.5	880	
280L	FF600	600	550	660	8	24	25	5	510	296	270	76	2.5	930	
		600	550	660	8	24	25	5	510	296	270	76	2.5	940	
280LL	FF600	600	550	660	8	24	25	5	510	296	270	76	2.5	1180	
		600	550	660	8	24	25	5	510	296	270	76	2.5	1210	
284	FF680	740	680	800	8	23	25	6	610	615	505	-	-	1320	
286	FF680	740	680	800	8	23	25	6	610	615	505	-	-	1400	
288	FF680	740	680	800	8	23	25	6	610	615	505	-	-	1480	
314	FF680	740	680	800	8	23	25	6	630	615	505	-	-	1580	
315	FF680	740	680	800	8	23	25	6	630	615	505	-	-	1670	
355	FF680	740	680	800	8	23	25	6	650	615	505	-	-	1830	
350	FF680	740	680	800	8	23	25	6	650	615	505	-	-	1930	
352	FF680	740	680	800	8	23	25	6	650	615	505	-	-	2080	
354	FF680	740	680	800	8	23	25	6	650	615	505	-	-	2330	

※ 3) Dimension N tolerance : - φ 450 : j6, - φ 550 : js6

Fig. B

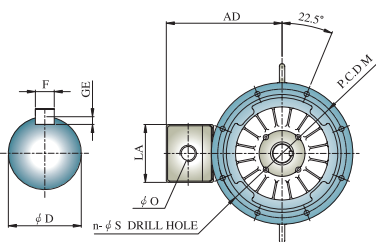
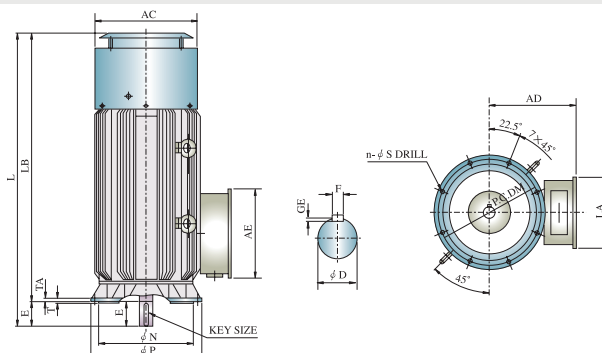
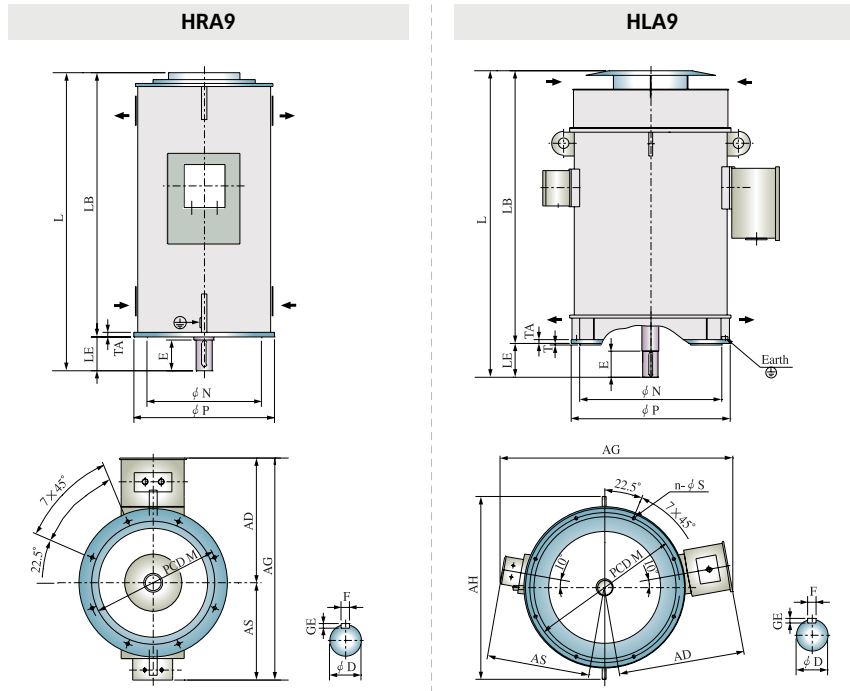


Fig. C



Outline Dimensions - HRA9 & HLA9



HRA9

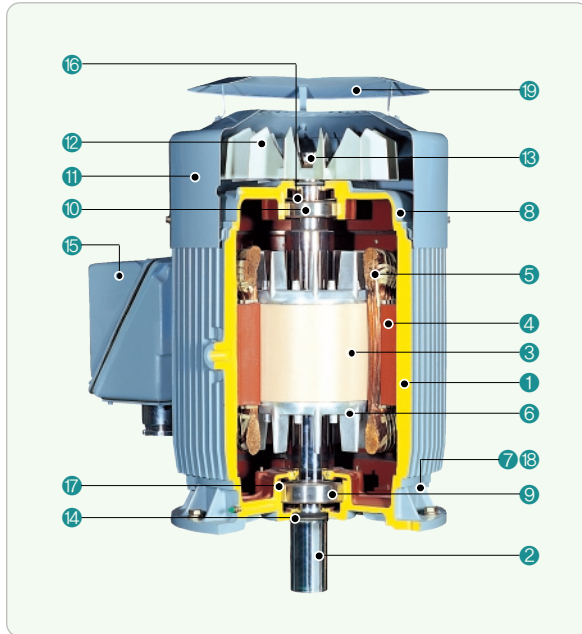
Frame No.	AD	AG	AS	D	E	Key way		L	LB	LE	M	N	P	n	S	T	TA
						F	GE										
401	940	1575	635	130	250	32	18	1745	1485	260	960	795	1070	8	24		30
403				140				1870	1610								
405				150				1910	1650								
451	980	1655	675	150	300	36	20	1910	1650	310	1080	885	1150	8	28		30
453				160				2080	1770								
455				170				2130	1820								
501	1030	1755	725	170	300	40	22	2130	1820	310	1180	985	1250	8	28		30
503				180				2320	2010								
505				180				2320	2010								
507																	

HLA9

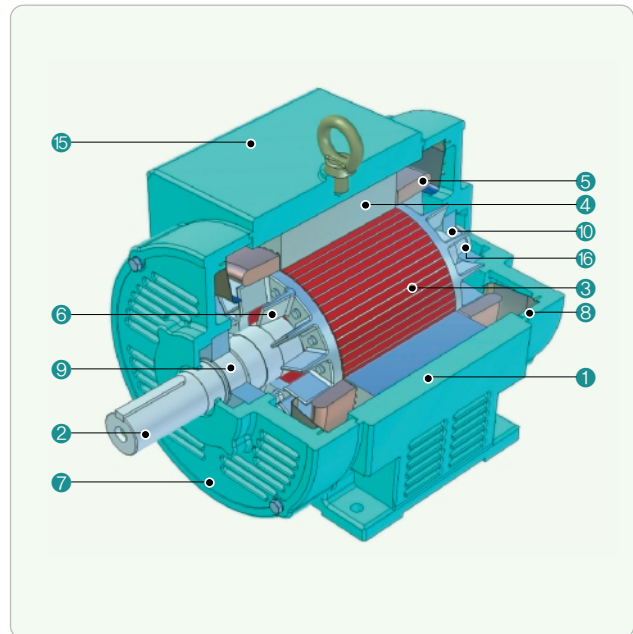
Frame No.	AD	AG	AS	D	E	Key way		L	LB	LE	M	N	P	n	S	T	TA
						F	GE										
630	1150	2020	810	120	250	32	18	1995	1060	135	1180	1120	1250	8	6		36
632								2125	1990								
634								2195	2060								
636								2275	2140								
638								2365	2230								
710	1185	2090	845	140	250	36	20	2160	2012	148	1320	1250	1400	8	28		39
712								2220	2072								
714								2290	2142								
716								2370	2230								
800								2325	2135								
802	1290	2280	890	160	300	40	22	2395	2205	190	1500	1400	1600	10		8	42
804								2475	2285								
806								2600	2410								

Sectional Drawing

Totally Enclosed Fan Cooled(IP44)



Open Drip-proof(IP22)

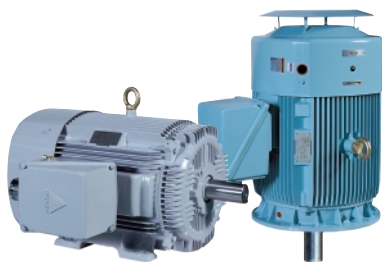


► **Parts Description**

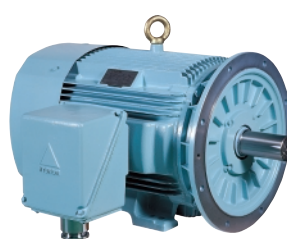
- | | | |
|------------------|----------------------------|----------------------|
| 1 Frame | 8 Bracket(O.D.E) | 15 Terminal Box |
| 2 Shaft | 9 Bearing(D.E) | 16 Wave Spring |
| 3 Rotor Core | 10 Bearing(O.D.E) | 17 Inner Bearing Cap |
| 4 Stator Core | 11 Fan Cover | 18 Flange |
| 5 Stator Coil | 12 Fan | 19 Canopy |
| 6 Bar & End Ring | 13 Fan Clamp | |
| 7 Bracket(D.E) | 14 V-Ring or Slinger(IP55) | |

Applications

Engine Room Pump Motor



Engine Aux. Blower Motor



Steering Gear Motor



LO Pump Motor



Bow Thruster Motor

