2011. 06

HYOSUNG

MV/HV MOTOR NEMA

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Global Top Energy, Machinery & Plant Solution Provider

HYOSUNG CORPORATION
Power & Industrial Systems Performance Group

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About HYOSUNG

Hyosung Power & Industrial Systems PG is a division under Hyosung which consists of seven performance groups(PGs). In addition to establishing itself as a world-class manufacturer of electrical equipments, green technology and industrial machineries, Hyosung is also the largest producer of tire cords and spandex in the global market and the second largest supplier of ATMs in the USA.

01 Our Business

Brief introduction of Hyosung Power & Industrial Systems

Hyosung Power & Industrial Systems Performance Group

Hyosung Power & Industrial Systems Performance Group, a comprehensive energy solution provider, boasts world-leading technology in the global power industry and has secured a competitive capability on par with that of top competitors in transformers, switchgears, motors, decelerators, industrial pumps, and wind energy business.

With globalization as one of our top priorities, we have achieved outstanding increase in sales over the past few years thanks to the enhancement in Hyosung's quality, technology, and brand recognition among overseas clients, which include North America, Europe, the Middle East, and Asia. We expect such robust performance, marked by an increasing number of orders from the overseas market, to continue in the future.

At the heart of our capability to grow as a comprehensive energy solution provider is our global organization structure. Hyosung Power & Industrial Systems Performance Group is divided into four business areas or performance units, depending on the types of flagship products: Power Systems Performance Unit, Industrial Machinery Performance Unit, Hyosung GoodSprings Performance Unit, and the Wind Energy Business Division.

Industrial Machinery Performance Unit

The Industrial Machinery Performance Unit Plays an important role in the infrastructure industry around the globe and is specialized in manufacturing all types of motors, gear reducers, generators, green energy, and industrial machines.

With the ability to produce motors with up to 20,000kW, we possess an automated production line capable of manufacturing more than 40,000 motors every month.

Our accumulated technologies and various experiences have made it possible to develop turnkey-based engineering projects including industrial plant, ropeways, energy solutions, and alternative refueling systems.

In addition, we anticipate that our efforts in innovation among rotary machinery will make significant contributions towards creating energy profitability as well as greater efficiency. With the goal to serve as a world-leading provider of industrial machinery and plant engineering, we will continue to focus on innovative energy conservation technology, enhanced reliability of new products, and development of new technologies.

MV/HV MOTOR-NEMA

CONTENTS

02 Sustainability

Our sustainability principles are the backbone of the way we design and manufacture products

Quality Assurance

Hyosung strives for excellence. We believe excellence can only be achieved through absolute quality and value for customers. In order to create quality products, we believe that all of the actions of every single employee must be focused in the highest level of quality. In order to achieve such levels, we have implemented a quality assurance policy and programs that make our philosophy into a reality.
Our Quality Assurance Policy was founded based on the management policy of the president and meets the demands of ISO 9001. As a globally active company, we are committed to comprehensive and quality management through three quality strategies: quality management system, customer-focused management system, and concentration on core competencies.
The comprehensive quality management system ensures that we completely comply with all compliances and applicable legislation, codes, and standards in addition to implementing efficient operation of our management resources to eliminate unnecessary waste.
Our customer-focused management system clarifies and simplifies our first priority which is customer satisfaction. All of our work is aimed to exceed customer needs and provide exceptional value through quality standards, flexibility, and innovation.
Finally, we concentrate on our core competencies for strict quality control and continual improvement which provides quality products and cost-saving to our clients via advancement in technical capacity and technological innovation.
We implement our policy via a Quality Management Team manages research laboratories, including the Measurement Standard Laboratory, the Chemical Analysis Laboratory and the Material Analysis Laboratory to maintain a strict control over quality.

Environment Protection Policy

Hyosung understands the impact of Hyosung's activities in the environment and works to protect the environment from pollution, manages the environmental impacts of Hyosung's products and technologies, and prevents future pollution and harmful effects in the environment by investing in environmentally-friendly products and solutions.
Based on this eco-philosophy of shared responsibility, Hyosung has implemented a comprehensive environmental protection program that aims to minimize our impact on the environment and conserve resources. Our environmental policy fulfils all requirements of the ISO 14001.

03 R&D

Inspiring innovation, creation and expertise

Hyosung R&D Center identifies innovation, creation, and expertise as core value, and concentrates on world class R&D activities in the 21st century with a philosophy aspiring after customer satisfaction, quality priority, and performance orientation. Hyosung pursues to be the world's best company in the field of heavy electrical machinery, industrial & electrical electronics engineering, and energy system. Ever since establishment in 1978, R&D Center had led the development of domestic technology. Along with the Anyang and Changwon labs, the group has endeavored to produce core technology and world-class products in the areas of heavy electrical machinery, energy system, electrical electronics engineering, and industrial automation system.

Research Areas

Hyosung R&D Center engages in the activities in the field of energy system, solution & service, applied electrical and electronic technology, basic core technology, technology of improved reliability, core components, and new materials.

Energy System
- Renewable energy
  (wind system, wind turbine, wind PCS, solar system, PV PCS, fuel cell, co-generation)
- Electric Vehicle (EV charger, EV motor)

Solution & Service
- Power facility diagnosis algorithm and system
- Power facility lifecycle evaluation system
- Service solution for remote diagnosis for prevention

Applied Electrical & Electronic Technology
- Power conversion system
- Flexible AC transmission system and high voltage direct current
- Power quality solution

Basic Core Technology
- Fortified technology in structural dynamics, electromagnetics, heat transfer analysis, etc.
- Skills for system simulation, analysis and evaluation
- Business support technology

Technology with Improved Reliability
- Test data analysis and testing facility
- Analysis of lifecycle and cause of error
- Reliability assessment (environment-friendliness, durability, long-term degradation, and more)

Core Components and New Materials
- Organic and inorganic insulation materials
- Silicon forming technology
- Intelligent sensor
  (facility diagnosis, CT, PT, VT, LA, and more)

HYOSUNG

Range of Products

Induction Motor I Preventive Maintenance of High Voltage Rotating Machinery

Energy savings and environmental protection through high efficienc

Producer of all types of motors, ranging from low-voltage small motors to ultra-high voltage large scale motors based on the experience and technology built over the years, Hyosung maintains the highest market share in the nation and plays an integral part of Korea's key industries.
With the capacity to produce 27,000 horsepower motor and automatic production lines, Hyosung produces more than 40,000 motors per month, with quality recognition from both domestic and overseas customers.

High Voltage Induction Motor

Hyosung's high voltage induction motors, which are exported across the globe including the Americas, Asia, Europe and the Middle East with outstanding quality recognition, not only have the design capability that satisfies the broad specifications and certifications from NEMA, IEC, and IEEE but also meet customers' diverse needs. They are of low-vibration and low-noise thanks to premium insulators, thorough process control and quality control. Special varnish treatment and double cage structure type enable the motor to endure various load conditions such as wide moment of inertia.

Low Voltage Induction Motor

Hyosung's low voltage induction motor, which boasts the biggest domestic market share, adopts the local KS and international standards and applies the highly reliable class F and H insulation types that are resistant to both heat and moisture. The use of carefully selected electric materials, precision parts and bearings reduces mechanical loss and minimizes both vibration and noise. The product lineup ranges from vertical-type motor, outdoor-type motor, explosion-proof motor, flame-proof motor, dust explosion-proof motor, inverter motor, motor for ship and pole change motor, all of which are based on TEFC and DP type. Such a wide variety allows customers to choose one that suits all purposes at all places.

■ High Efficiency Motor

Hyosung is leading the electric energy savings and low carbon energy technology through high efficiency motor business expansion. High efficiency motor refers to one that meets the standard efficiency as specified in the KS and below 600V. Its relatively improved electrical efficiency compared to general motors contributes to reduced emission of carbon dioxide.
Optimum design of core and windings and use of premium materials cut loss by 20~30% while improved protection grade (IP55) makes it more resistant to water and environment. The use of varnish to protect the windings from inverter surge voltage allows for inverter duty (20~60Hz/90Hz) and its two-way use with 50/60Hz makes quick delivery to both domestic and export markets possible. Moreover, the improved product rigidity, processing precision and reduced mechanical/electrical load through structural analysis decreases vibration by around 55% compared to the existing products.

■ Aluminum Motor

Hyosung's aluminum motor employs optimum design using aluminum frame and bracket, which boast outstanding cooling effect such as thermal conductivity and heat radiance. This has made it to reduce both volume and weight by 15~45% compared to casting motors.

■ Explosion-proof Motor

Explosion-proof motor is used to prevent either human or facilities disasters triggered by explosions, which chemical plants and others that use electric equipment are vulnerable to as they use explosive gas and steam. Hyosung takes advantage of its superb technology and state-of-the-art facilities to produce highly safe and reliable explosion-proof motors that satisfy international standards (IEC).

Preventive Maintenance of High Voltage Rotating Machinery

With the know-how and technology acquired over the last four decades of producing rotating machinery, Hyosung supplies various technical services related to preventive maintenance for not only its products but others' as well. Special vehicles loaded with high voltage motor diagnosis system assure quick and accurate diagnosis while diagnosis database pushes up customers' reliability towards the facilities and efficiency to maximum.

- Diagnose insulation fire of high voltage motor
- Diagnose bearing and other machinery parts
- Predict motor's remaining lifespan
- Disassemble and inspect motor
- Replace motor windings and strengthen insulation

HYOSUNG

Overview




Strength Power

Core Technology
- Quality Proof Design
- High Reliability Insulation System

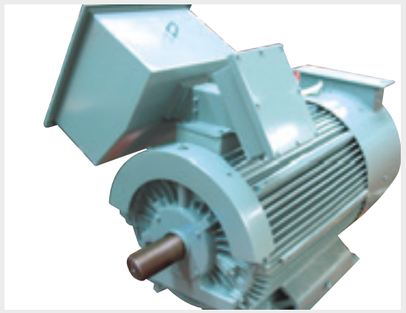
Low Vibration & Noise Level
- Realization of low vibration and noise through magnetic analysis & structural analysis

HYOSUNG

Full Compliance with IEC, IEEE std.
- Plentiful experience & Environmental experience
- Various certificate from other countries, which meet international std.

Quick Delivery
- Enough Manufacturing Capacity
- Optimization in Engineering and Manufacturing

MV/HV Motor Product Line



HSFC/ VSFC
(Total Enclosed Fan-Cooled Squirrel Cage)

- Rotor Type : Squirrel Cage
- Number of Poles : 2 ~ 12 Poles
- Voltage : 2,300 / 4,160 V
- Output Range : 200 ~ 800 HP
- Frame : 5000 ~ 6800 Fr.
- Protection Grade : IP54 (NEMA MG 1 Part 5)
- Method of Cooling : IC411 (NEMA MG 1 Part 6)
- Enclosure : Totally Enclosed Fan-Cooled

HSDP/ VSDP
(Open Drip-Proof Squirrel Cage)

- Rotor Type : Squirrel Cage
- Number of Poles : 2 ~ 12 Poles
- Voltage : 2,300 / 4,160 V
- Output Range : 200 ~1500 HP
- Frame : 5000 ~ 6800 Fr.
- Protection Grade : IP22 (NEMA MG 1 Part 5)
- Method of Cooling : IC01 (NEMA MG 1 Part 6)
- Enclosure : Open Drip-Proof

HSTC/ VSTC
(Totally Enclosed Tube Cooled Squirrel Cage)

- Rotor Type : Squirrel Cage
- Number of Poles : 2 ~ 12 Poles
- Voltage : 2,300 / 4,160 V
- Output Range : 350 ~ 5000 HP
- Frame : 5800 ~ 9600 Fr.
- Protection Grade : IP54 (NEMA MG 1 Part 5)
- Method of Cooling : IC611 (NEMA MG 1 Part 6)
- Enclosure : Totally Enclosed Air-to-Air Cooled

HSWP I / HSWP II · VSWP I / VSWP II
(Weather Protected Squirrel Cage)

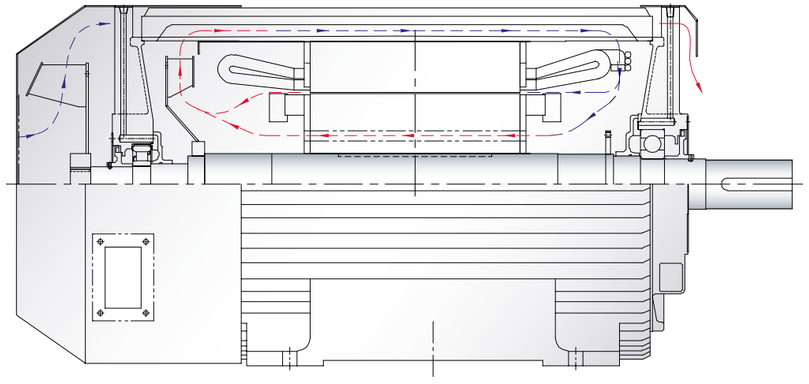
- Rotor Type : Squirrel Cage
- Number of Poles : 2 ~ 12 Poles
- Voltage : 2,300 / 4,160 V
- Output Range : 600 ~ 5000 HP
- Frame : 5800 ~ 9600 Fr.
- Protection Grade : IP23, IP24 (NEMA MG 1 Part 5)
- Method of Cooling : IC01 (NEMA MG 1 Part 6)
- Enclosure : Weather Protected Type I & II

Total Enclosed Fan-Cooled Squirrel Cage

Specifications

- **Enclosure** : Totally Enclosed Fan-Cooled
- **Rotor Type** : Squirrel Cage Motor
- **Number of Poles** : 2 ~ 12 Poles
- **Voltage** : 2,300 / 4,160 V
- **Output Range** : 200 ~ 800 HP
- **Frame Size** : 5000 ~ 6800 Fr.
- **Protection Grade** : IP54 (NEMA MG 1 Part 5)
- **Method of Cooling** : IC411 (NEMA MG 1 Part 6)
- **Insulation / Temp. rise** : F / F

Sectional Drawing for Ventilation

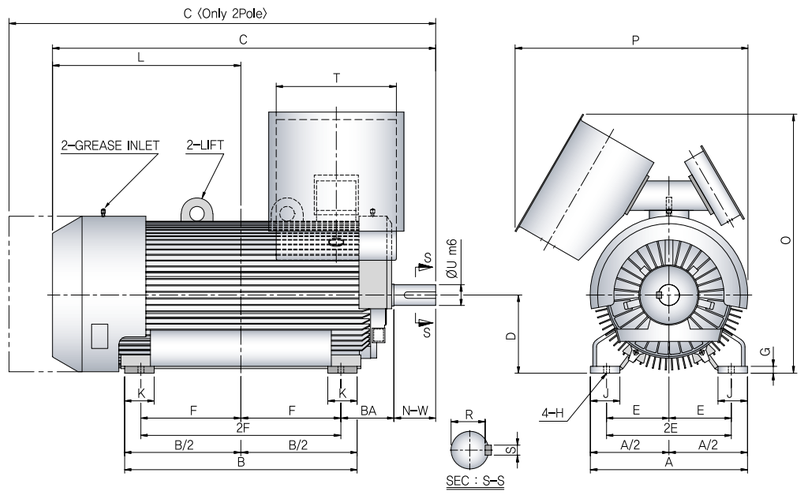


Frame Assignment

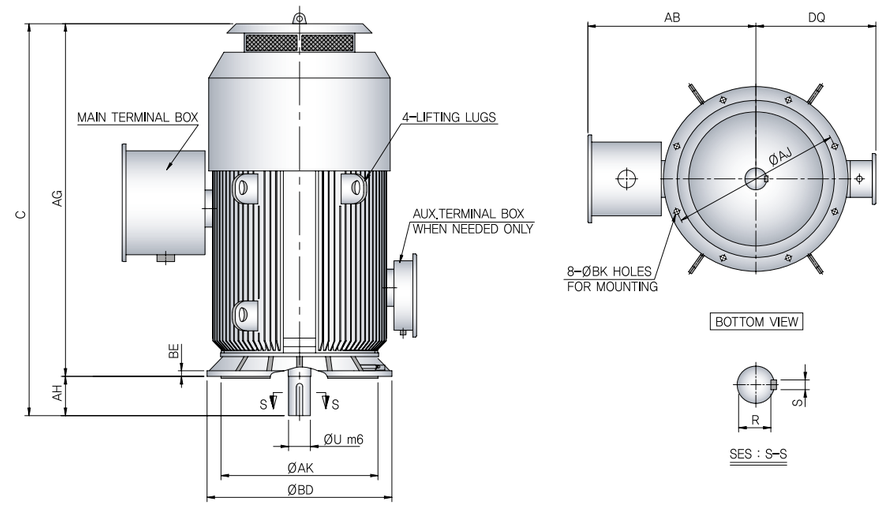
60Hz, 2,300 / 4,160 V

HSFC/ VSFC							
POWER (HP)	VOLT (V)	POLES					
		2	4	6	8	10	12
200	2300	5008H	5008	5008	5010	5010	5808
	4160						
250	2300			5010	5808	5808	5810
	4160						
300	2300	5010H	5010		5810	5810	
	4160						
350	2300	5808H	5808	5808			6808
	4160						
400	2300	5810H				6808	
	4160						
450	2300		5810	5810	6808		
	4160						
500	2300	5811H					6810
	4160						
600	2300	6810H	6808	6808	6810	-	-
	4160						
700	2300				-	-	
	4160	6811H					
800	2300			6810			
	4160						

HSFC (Horizontal Squirrel Cage Fan Cooled)



VSFC (Vertical Squirrel Cage Fan Cooled)



*The bearing type and shaft dimension may be changed in a case with Thrust by driven equipment

DIMENSIONS

OUTLINE SIZE

UNIT : inch

FRAME	DRIVE END U	DRIVE END N-W	A	B	C	D	E	F	G	H	J	K	L	O	P	T	BA	Approx. WT.(lbs)
5008H	2.375	4.750	25.20	30.30	61.25	12.50	10.00	12.50	1.10	0.94	4.72	4.72	35.50	41.70	37.40	19.70	8.50	2300
5008	3.375	6.750	25.20	30.30	55.25	12.50	10.00	12.50	1.10	0.94	4.72	4.72	27.50	41.70	37.40	19.70	8.50	2500
5010H	2.375	4.750	25.20	37.30	67.65	12.50	10.00	16.00	1.10	0.94	4.72	4.72	38.40	41.70	37.40	19.70	8.50	2800
5010	3.375	6.750	25.20	37.30	61.65	12.50	10.00	16.00	1.10	0.94	4.72	4.72	30.40	41.70	37.40	19.70	8.50	2900
5808H	2.875	5.750	28.80	34.80	68.95	14.50	11.50	14.00	1.26	0.94	5.90	5.90	39.20	45.30	39.10	19.70	10.00	3600
5808	3.875	7.750	28.80	34.80	63.15	14.50	11.50	14.00	1.26	0.94	5.90	5.90	31.40	45.30	39.10	19.70	10.00	4000
5810H	2.875	5.750	28.80	42.80	76.45	14.50	11.50	18.00	1.26	0.94	5.90	5.90	42.70	45.30	39.10	19.70	10.00	4100
5810	3.875	7.750	28.80	42.80	70.55	14.50	11.50	18.00	1.26	0.94	5.90	5.90	34.80	45.30	39.10	19.70	10.00	4400
6808H	2.875	5.750	33.90	43.60	70.05	17.00	13.50	18.00	1.45	1.06	6.70	7.90	34.80	51.50	44.00	19.70	11.50	6600
6808	4.250	8.250	33.90	43.60	72.55	17.00	13.50	18.00	1.45	1.06	6.70	7.90	34.80	51.50	44.00	19.70	11.50	6800
6810H	2.875	5.750	33.90	52.50	87.75	17.00	13.50	22.50	1.45	1.06	6.70	7.90	48.00	51.50	44.00	19.70	11.50	6900
6810	4.250	8.250	33.90	52.50	82.25	17.00	13.50	22.50	1.45	1.06	6.70	7.90	40.00	51.50	44.00	19.70	11.50	7200

KEY SIZE

UNIT : inch

FRAME	S	R	KEY SIZE
5000H	0.625	2.021	0.625 × 0.625 × 3.000
5000	0.875	2.880	0.875 × 0.875 × 5.000
5800H	0.750	2.450	0.750 × 0.750 × 4.000
5800	1.000	3.309	1.000 × 1.000 × 6.000
6800H	0.750	2.450	0.750 × 0.750 × 4.000
6800	1.000	3.690	1.000 × 1.000 × 6.500

DIMENSIONS

OUTLINE SIZE

UNIT : inch

FRAME	DRIVE END U	DRIVE END AH	ØBD	ØAK	C	AG	BE	ØAJ	AB	DQ	ØBK	Approx. WT.(lbs)
5008 PU30	3.375	6.750	30.50	22.00	62.66	55.91	1.000	26.00	25.98	29.13	0.875	3300
5009 PU30	3.375	6.750	30.50	22.00	65.81	59.06	1.000	26.00	25.98	29.13	0.875	3500
5010 PU30	3.375	6.750	30.50	22.00	69.74	62.99	1.000	26.00	25.98	29.13	0.875	3850
5809 PU36	3.875	7.750	36.00	26.00	73.10	65.35	1.125	32.00	31.97	31.50	1.000	5150
5810 PU36	3.875	7.750	36.00	26.00	77.44	69.69	1.125	32.00	31.97	31.50	1.000	5500
5811 PU36	3.875	7.750	36.00	26.00	81.37	73.62	1.125	32.00	31.97	31.50	1.000	5850
6809 P42	4.250	8.250	42.00	33.75	85.02	76.77	1.375	39.00	38.98	34.25	1.125	7350
6810 P42	4.250	8.250	42.00	33.75	90.14	81.89	1.375	39.00	38.98	34.25	1.125	8450
6811 P42	4.250	8.250	42.00	33.75	95.26	87.01	1.375	39.00	38.98	34.25	1.125	9600

KEY SIZE

UNIT : inch

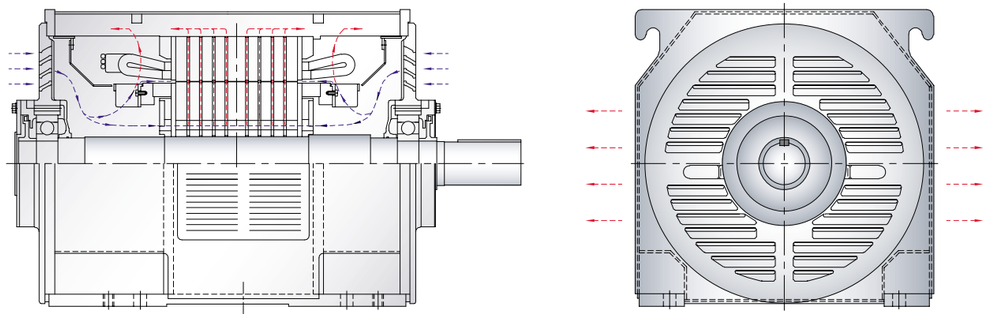
FRAME	S	R	KEY SIZE
5000	0.875	2.880	0.875 × 0.875 × 5.000
5800	1.000	3.309	1.000 × 1.000 × 6.000
6800	1.000	3.690	1.000 × 1.000 × 6.500

Open Drip-Proof Squirrel Cage

Specifications

- **Enclosure** : Open Drip-Proof
- **Rotor Type** : Squirrel Cage Motor
- **Number of Poles** : 2 ~ 12 Poles
- **Voltage** : 2,300 / 4,160 V
- **Output Range** : 200 ~ 1500 HP
- **Frame Size** : 5000 ~ 6800 Fr.
- **Protection Grade** : IP22 (NEMA MG 1 Part 5)
- **Method of Cooling** : IC01 (NEMA MG 1 Part 6)
- **Insulation / Temp. rise** : F / F

Sectional Drawing for Ventilation



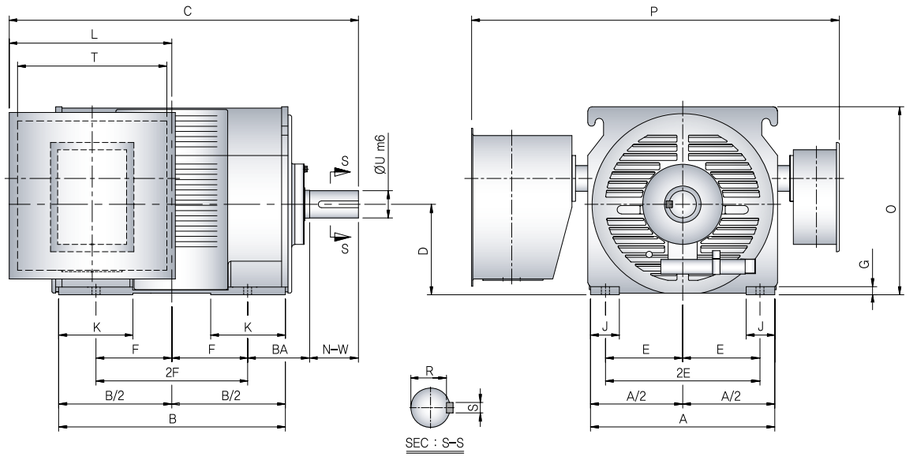
Frame Assignment

60Hz, 2,300 / 4,160 V

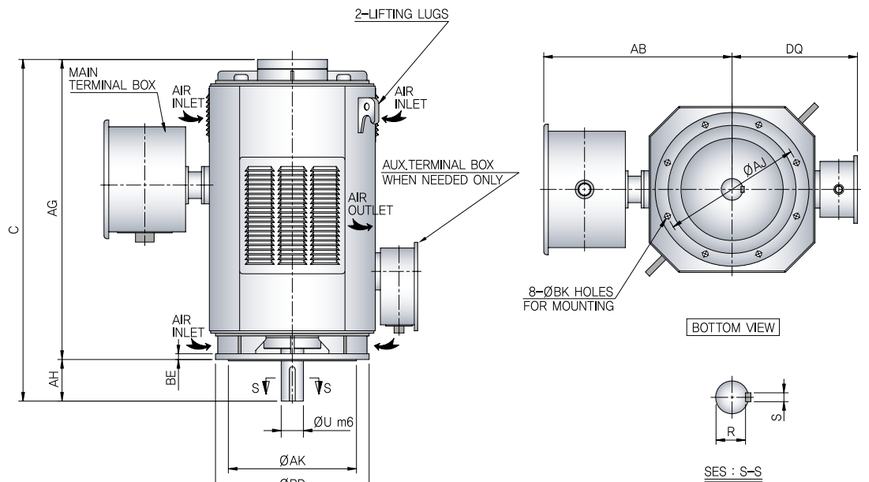
HSDP/ VSDP							
POWER (HP)	VOLT (V)	POLES					
		2	4	6	8	10	12
200	2300	-	-	-	5008	5008	5010
	4160						
250	2300			5008		5010	
	4160						
300	2300		5008		5010	5808	5808
	4160						
350	2300	5008H		5010			5810
	4160						
400	2300	5010H			5808	5810	
	4160						
450	2300	5810H	5010				6808
	4160						
500	2300				5810	6808	
	4160						
600	2300		5808	5808	6808		6810
	4160						
700	2300		5810	5810		6810	
	4160						
800	2300	5811H					
	4160						
900	2300	6810H		6808	6810		
	4160						
1000	2300		6808				-
	4160						
1250	2300	6811H		6810	-	-	
	4160						
1500	2300		6810				
	4160						

HSDP/VSDP

HSDP (Horizontal Squirrel Cage Drip Proof)



VSDP (Vertical Squirrel Cage Drip Proof)



*The bearing type and shaft dimension may be changed in a case with Thrust by driven equipment

DIMENSIONS

OUTLINE SIZE

UNIT : inch

FRAME	DRIVE END		A	B	C	D	E	F	G	H	J	K	L	O	P	T	BA	Approx. WT.(lbs)
	U	N-W																
5008H	2.375	4.750	25.30	35.10	50.35	12.50	10.00	12.50	1.10	0.94	3.94	15.00	24.60	25.90	51.60	19.70	8.50	2650
5008	3.375	6.750	25.30	35.10	52.35	12.50	10.00	12.50	1.10	0.94	3.94	15.00	24.60	25.90	51.60	19.70	8.50	3000
5010H	2.375	4.750	25.30	41.40	56.95	12.50	10.00	16.00	1.10	0.94	3.94	15.00	27.70	25.90	51.60	19.70	8.50	3300
5010	3.375	6.750	25.30	41.40	58.95	12.50	10.00	16.00	1.10	0.94	3.94	15.00	27.70	25.90	51.60	19.70	8.50	3650
5808H	2.875	5.750	28.90	41.30	55.55	14.50	11.50	14.00	1.10	0.94	4.72	15.00	25.80	29.70	54.40	19.70	10.00	3900
5808	3.875	7.750	28.90	41.30	57.55	14.50	11.50	14.00	1.10	0.94	4.72	15.00	25.80	29.70	54.40	19.70	10.00	4150
5810H	2.875	5.750	28.90	48.80	63.35	14.50	11.50	18.00	1.10	0.94	4.72	15.00	29.60	29.70	54.40	19.70	10.00	4950
5810	3.875	7.750	28.90	48.80	65.35	14.50	11.50	18.00	1.10	0.94	4.72	15.00	29.60	29.70	54.40	19.70	10.00	5150
6808H	3.375	6.750	32.30	49.20	65.75	17.00	13.50	18.00	1.38	1.06	5.52	17.70	29.50	34.40	60.00	19.70	11.50	5900
6808	4.875	9.750	32.30	49.20	68.75	17.00	13.50	18.00	1.38	1.06	5.52	17.70	29.50	34.40	60.00	19.70	11.50	6200
6810H	3.375	6.750	32.30	59.00	75.25	17.00	13.50	22.50	1.38	1.06	5.52	17.70	34.50	34.40	60.00	19.70	11.50	7350
6810	4.875	9.750	32.30	59.00	78.25	17.00	13.50	22.50	1.38	1.06	5.52	17.70	34.50	34.40	60.00	19.70	11.50	7650

KEY SIZE

UNIT : inch

FRAME	S	R	KEY SIZE
5000H	0.625	2.021	0.625 × 0.625 × 3.000
5000	0.875	2.880	0.875 × 0.875 × 5.000
5800H	0.750	2.450	0.750 × 0.750 × 4.000
5800	1.000	3.309	1.000 × 1.000 × 6.000
6800H	0.875	2.880	0.875 × 0.875 × 5.000
6800	1.250	4.169	1.250 × 1.250 × 8.000

DIMENSIONS

OUTLINE SIZE

UNIT : inch

FRAME	DRIVE END		ØBD	ØAK	C	AG	BE	ØAJ	AB	DQ	ØBK	Approx. WT.(lbs)
	ØU	AH										
5008 PU30	3.375	6.750	30.50	22.00	53.76	47.01	1.000	26.00	25.12	20.59	0.875	3050
5009 PU30	3.375	6.750	30.50	22.00	56.75	50.00	1.000	26.00	25.12	20.59	0.875	3250
5010 PU30	3.375	6.750	30.50	22.00	60.77	54.02	1.000	26.00	25.12	20.59	0.875	3450
5809 PU36	3.875	7.750	36.00	26.00	60.27	52.52	1.125	32.00	27.20	22.68	1.000	4050
5809 PU36	3.875	7.750	36.00	26.00	64.29	56.54	1.125	32.00	27.20	22.68	1.000	4550
5810 PU36	3.875	7.750	36.00	26.00	68.30	60.55	1.125	32.00	27.20	22.68	1.000	5000
6808 P42	4.875	9.750	36.00	26.00	73.92	64.17	1.375	32.00	32.80	25.12	1.125	6200
6809 P42	4.875	9.750	36.00	26.00	77.94	68.19	1.375	32.00	32.80	25.12	1.125	6850
6810 P42	4.875	9.750	36.00	26.00	82.98	73.23	1.375	32.00	32.80	25.12	1.125	7700

KEY SIZE

UNIT : inch

FRAME	S	R	KEY SIZE
5000	0.875	2.880	0.875 × 0.875 × 5.000
5800	1.000	3.309	1.000 × 1.000 × 6.000
6800	1.250	4.169	1.250 × 1.250 × 8.000

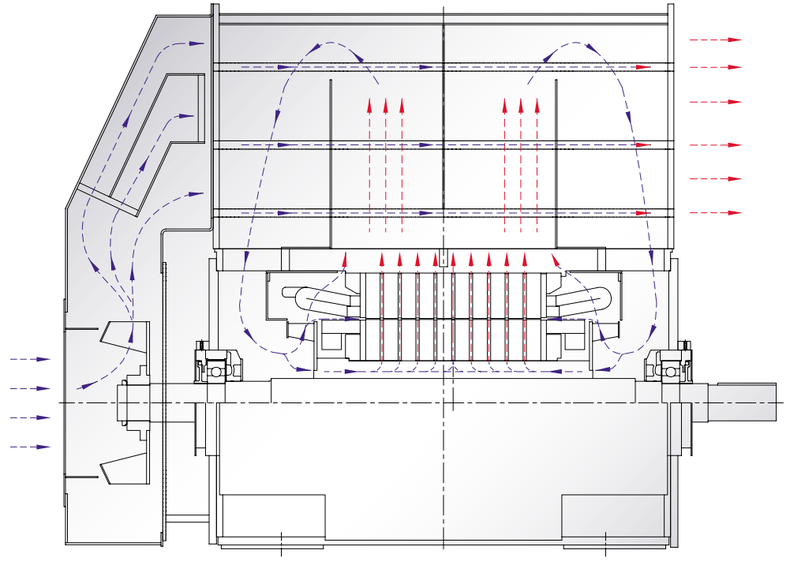
HYOSUNG

Totally Enclosed Tube Cooled Squirrel Cage

Specifications

- **Enclosure** : Totally Enclosed Air-to-Air Cooled
- **Rotor Type** : Squirrel Cage Motor
- **Number of Poles** : 2 ~ 12 Poles
- **Voltage** : 2,300 / 4,160 V
- **Output Range** : 350 ~ 5000 HP
- **Frame Size** : 5800 ~ 9600 Fr.
- **Protection Grade** : IP54 (NEMA MG 1 Part 5)
- **Method of Cooling** : IC611 (NEMA MG 1 Part 6)
- **Insulation / Temp. rise** : F / F

Sectional Drawing for Ventilation

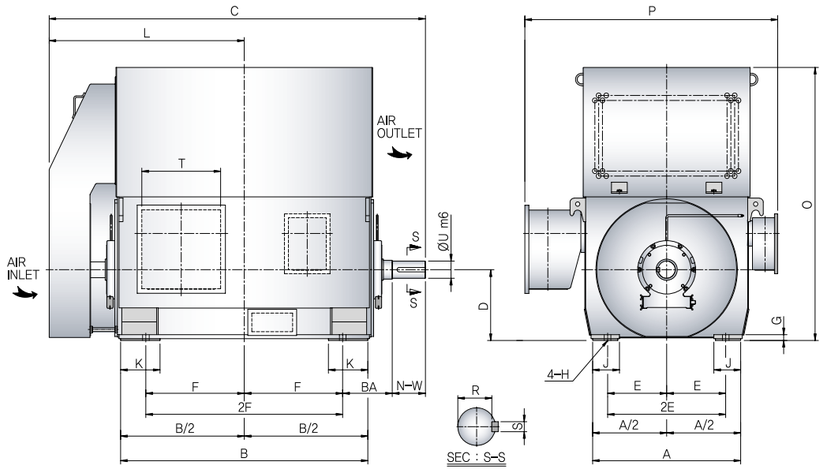


Frame Assignment

60Hz, 2,300 / 4,160 V

HSTC							
POWER (HP)	VOLT (V)	POLES					
		2	4	6	8	10	12
350	2300	5810	5808	5808	5808	5810	5810
	4160						
400	2300	5811	5810	5810	5810	5811	5811
	4160					6808	6810
450	2300			5811	5811		
	4160		5811			6810	6811
500	2300	6810		6808	6808		
	4160		6808				7108
600	2300			6810	6810	7108	
	4160		6810				7110
700	2300				7108		
	4160			6811		7110	8008
800	2300	7108	6811			8008	8010
	4160			7108	7110		
900	2300	7110	7108			8010	8808
	4160			7110	8008	8808	8810
1000	2300	8008	7110			8810	9608
	4160			8008	8010	9608	9610
1250	2300	8010		8010	8808		
	4160		8008	8808	8810	9610	-
1500	2300	8808	8808	8810	9608		
	4160		8010	9608	9610	-	
1750	2300	8810	8810	9610	-		
	4160		9608	-			
2000	2300	9608	9610				
	4160		-				
2250	2300	9610					
	4160	-					
2500	2300						
	4160						
3000	2300						
	4160						
3500	2300						
	4160						
4000	2300						
	4160						
4500	2300						
	4160						
5000	2300						
	4160						

HSTC (Horizontal Squirrel Cage Tube Cooled)



*The bearing type and shaft dimension may be changed in case of 2P

DIMENSIONS

OUTLINE SIZE

UNIT : inch

FRAME	DRIVE END U	DRIVE END N-W	A	B	C	D	E	F	G	H	J	K	L	O	P	T	BA	Approx. WT.(lbs)
5808	3.875	7.740	28.00	41.30	57.54	14.50	11.50	14.00	1.34	0.94	5.12	7.09	25.80	55.90	54.50	19.70	10.00	5500
5810	3.875	7.740	28.00	46.20	87.00	14.50	11.50	18.00	1.34	0.94	5.12	7.09	51.26	55.90	54.50	19.70	10.00	6000
5811	3.875	7.740	28.00	50.20	80.34	14.50	11.50	20.00	1.34	0.94	5.12	7.09	42.60	55.90	54.50	19.70	10.00	6400
6808	4.125	8.260	35.40	47.20	79.26	17.00	13.50	18.00	1.46	1.06	6.30	7.09	41.50	67.70	61.60	19.70	11.50	7500
6810	4.125	8.260	35.40	56.30	88.36	17.00	13.50	22.50	1.46	1.06	6.30	7.09	46.10	67.70	61.60	19.70	11.50	9050
6811	4.125	8.260	35.40	61.80	93.56	17.00	13.50	25.00	1.46	1.06	6.30	7.87	48.80	67.70	61.60	19.70	11.50	9500
7108	4.125	8.260	37.00	56.30	88.36	17.75	14.80	22.50	1.46	1.06	6.30	7.09	46.10	68.50	63.20	19.70	11.50	11450
7110	4.125	8.260	37.00	61.80	93.56	17.75	14.80	25.00	1.46	1.06	6.30	7.87	48.80	68.50	63.20	19.70	11.50	12550
8008	4.875	9.760	42.80	61.80	97.96	20.00	16.70	24.60	1.46	1.65	7.09	11.00	50.40	78.00	69.70	19.70	13.20	13650
8010	4.875	9.760	42.80	69.70	105.06	20.00	16.70	27.60	1.46	1.65	7.09	11.00	54.50	78.00	69.70	19.70	13.20	15000
8808	4.875	9.760	46.50	61.80	100.36	22.00	18.70	24.60	1.58	1.65	7.87	11.00	52.00	81.50	75.20	19.70	14.00	18100
8810	4.875	9.760	46.50	69.70	107.06	22.00	18.70	27.60	1.58	1.65	7.87	11.00	55.70	81.50	75.20	19.70	14.00	20300
9608	4.875	9.760	52.00	61.80	102.86	24.00	20.90	24.60	1.73	1.65	8.66	12.60	54.50	83.80	79.90	19.70	14.00	22050
9610	4.875	9.760	52.00	69.70	109.86	24.00	20.90	27.60	1.73	1.65	8.66	12.60	58.50	83.80	79.90	19.70	14.00	26500

KEY SIZE

UNIT : inch

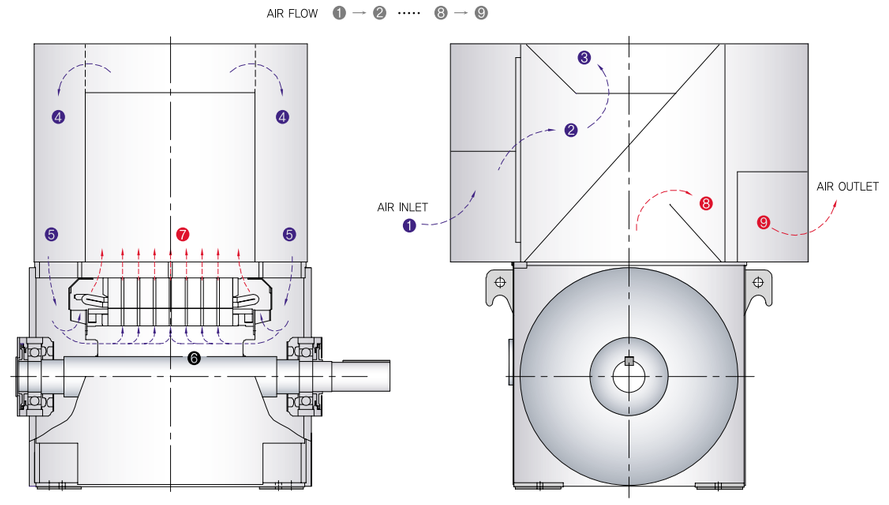
FRAME	S	R	KEY SIZE
5800	1.000	3.309	1.000 × 1.000 × 6.000
6800	1.000	3.690	1.000 × 1.000 × 8.000
7100	1.000	3.690	1.000 × 1.000 × 8.000
8000	1.250	4.169	1.250 × 1.250 × 8.000
8800	1.250	4.169	1.250 × 1.250 × 8.000
9600	1.250	4.169	1.250 × 1.250 × 8.000

Weather Protected Squirrel Cage

Specifications

- **Enclosure** : Weather Protected Type Ⅰ & Ⅱ
- **Rotor Type** : Squirrel Cage Motor
- **Number of Poles** : 2 ~ 12 Poles
- **Voltage** : 2,300 / 4,160 V
- **Output Range** : 600 ~ 5000 HP
- **Frame Size** : 5800 ~ 9600 Fr.
- **Protection Grade** : IP23, IP24 (NEMA MG 1 Part 5)
- **Method of Cooling** : IC01 (NEMA MG 1 Part 6)
- **Insulation / Temp. rise** : F / F

Sectional Drawing for Ventilation

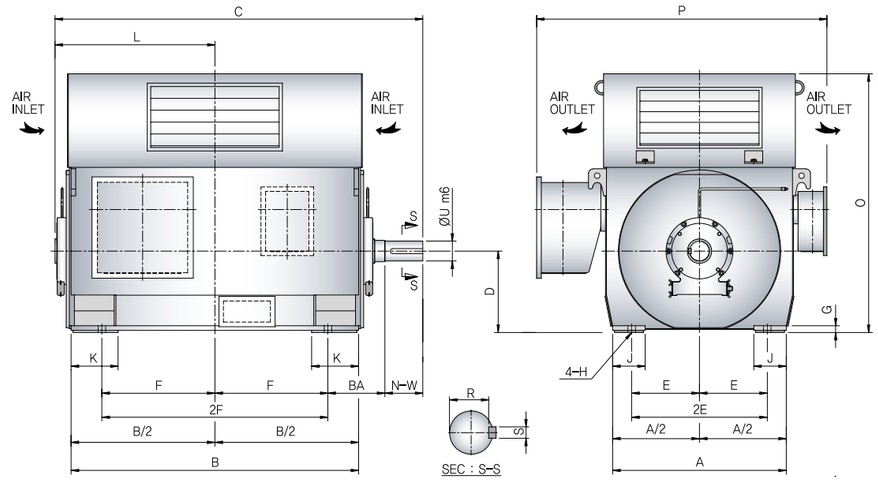


Frame Assignment

60Hz, 2,300 / 4,160 V

HSWP I, HSWP II							
POWER (HP)	VOLT (V)	POLES					
		2	4	6	8	10	12
600	2300	5811	5810	5810	5810	6810	6811
	4160						
700	2300				5811	6811	
	4160		5811	5811			
800	2300						7108
	4160						
900	2300	6810	6810	6810	6811	7108	
	4160			6811			
1000	2300	6811	6811				7110
	4160						
1250	2300	7108		7108	7110	7110	8008
	4160					8008	8010
1500	2300		7108		8008		8808
	4160	7110				8010	
1750	2300		7110	7110			8810
	4160						
2000	2300	8010		8008	8010	8808	
	4160						
2250	2300		8008	8010	8808	8810	
	4160						9608
2500	2300						
	4160						
3000	2300	8808	8010	8808	8810	9608	9610
	4160						
3500	2300	8810	8808			9610	-
	4160						
4000	2300		8810	8810	9608	-	
	4160						
4500	2300				9610		
	4160	9608					
5000	2300			9608			
	4160						

HSWP I (Horizontal Squirrel Cage Weather Protected I)



*The bearing type and shaft dimension may be changed in case of 2P

DIMENSIONS

OUTLINE SIZE

UNIT : inch

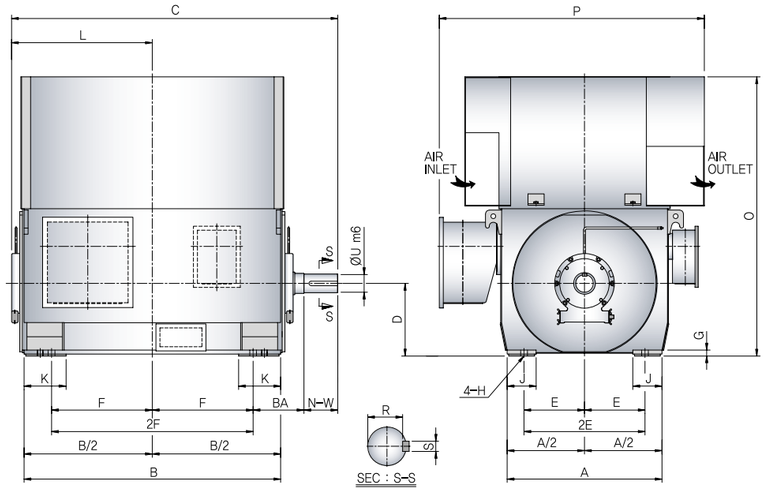
FRAME	DRIVE END U	DRIVE END N-W	A	B	C	D	E	F	G	H	J	K	L	O	P	T	BA	Approx. WT.(lbs)
5808	3.875	7.740	28.00	41.30	57.14	14.50	11.50	14.00	1.34	0.94	5.12	7.09	25.40	48.60	54.50	19.70	10.00	4850
5810	3.875	7.740	28.00	46.20	62.94	14.50	11.50	18.00	1.34	0.94	5.12	7.09	27.20	48.60	54.50	19.70	10.00	5750
5811	3.875	7.740	28.00	50.20	66.94	14.50	11.50	20.00	1.34	0.94	5.12	7.09	29.20	48.60	54.50	19.70	10.00	6150
6808	4.125	8.260	35.40	47.20	65.56	17.00	13.50	18.00	1.46	1.06	6.30	7.09	27.80	55.60	61.60	19.70	11.50	6500
6810	4.125	8.260	35.40	56.30	74.56	17.00	13.50	22.50	1.46	1.06	6.30	7.09	32.30	55.60	61.60	19.70	11.50	7400
6811	4.125	8.260	35.40	61.80	79.76	17.00	13.50	25.00	1.46	1.06	6.30	7.87	35.00	55.60	61.60	19.70	11.50	8250
7108	4.125	8.260	37.00	56.30	74.56	17.75	14.80	22.50	1.46	1.06	6.30	7.09	32.30	56.40	63.20	19.70	11.50	9250
7110	4.125	8.260	37.00	61.80	79.76	17.75	14.80	25.00	1.46	1.06	6.30	7.87	35.00	56.40	63.20	19.70	11.50	10150
8008	4.875	9.760	42.80	61.80	82.76	20.00	16.70	24.60	1.46	1.65	7.09	11.00	35.20	69.70	69.70	19.70	13.20	11250
8010	4.875	9.760	42.80	69.70	89.76	20.00	16.70	27.60	1.46	1.65	7.09	11.00	39.20	69.70	69.70	19.70	13.20	12550
8808	4.875	9.760	46.50	61.80	83.96	22.00	18.70	24.60	1.58	1.65	7.87	11.00	35.60	78.70	75.20	19.70	14.00	15850
8810	4.875	9.760	46.50	69.70	90.96	22.00	18.70	27.60	1.58	1.65	7.87	11.00	39.60	78.70	75.20	19.70	14.00	18100
9608	4.875	9.760	52.00	61.80	83.96	24.00	20.90	24.60	1.73	1.65	8.66	12.60	35.60	82.60	79.90	19.70	14.00	19850
9610	4.875	9.760	52.00	69.70	90.96	24.00	20.90	27.60	1.73	1.65	8.66	12.60	39.60	82.60	79.90	19.70	14.00	22050

KEY SIZE

UNIT : inch

FRAME	S	R	KEY SIZE
5800	1.000	3.309	1.000 × 1.000 × 6.000
6800	1.000	3.690	1.000 × 1.000 × 8.000
7100	1.000	3.690	1.000 × 1.000 × 8.000
8000	1.250	4.169	1.250 × 1.250 × 8.000
8800	1.250	4.169	1.250 × 1.250 × 8.000
9600	1.250	4.169	1.250 × 1.250 × 8.000

HSWP Ⅱ (Horizontal Squirrel Cage Weather Protected Ⅱ)



*The bearing type and shaft dimension may be changed in case of 2P

DIMENSIONS

OUTLINE SIZE

UNIT : inch

FRAME	DRIVE END U	DRIVE END N-W	A	B	C	D	E	F	G	H	J	K	L	O	P	T	BA	Approx. WT.(lbs)
5808	3.875	7.740	28.00	41.30	57.14	14.50	11.50	14.00	1.34	0.94	5.12	7.09	25.40	52.80	55.10	19.70	10.00	5050
5810	3.875	7.740	28.00	46.20	62.94	14.50	11.50	18.00	1.34	0.94	5.12	7.09	27.20	52.80	55.10	19.70	10.00	5950
5811	3.875	7.740	28.00	50.20	66.94	14.50	11.50	20.00	1.34	0.94	5.12	7.09	29.20	52.80	55.10	19.70	10.00	6400
6808	4.125	8.260	35.40	47.20	65.56	17.00	13.50	18.00	1.46	1.06	6.30	7.09	27.80	68.10	65.70	19.70	11.50	6750
6810	4.125	8.260	35.40	56.30	74.56	17.00	13.50	22.50	1.46	1.06	6.30	7.09	32.30	68.10	65.70	19.70	11.50	7700
6811	4.125	8.260	35.40	61.80	79.76	17.00	13.50	25.00	1.46	1.06	6.30	7.87	35.00	68.10	65.70	19.70	11.50	8600
7108	4.125	8.260	37.00	56.30	74.56	17.75	14.80	22.50	1.46	1.06	6.30	7.09	32.30	68.90	66.50	19.70	11.50	9650
7110	4.125	8.260	37.00	61.80	79.76	17.75	14.80	25.00	1.46	1.06	6.30	7.87	35.00	68.90	66.50	19.70	11.50	10550
8008	4.875	9.760	42.80	61.80	89.16	20.00	16.70	31.00	1.46	1.65	7.09	11.00	35.20	77.20	72.50	19.70	13.20	11700
8010	4.875	9.760	42.80	69.70	97.16	20.00	16.70	35.00	1.46	1.65	7.09	11.00	39.20	77.20	72.50	19.70	13.20	13050
8808	4.875	9.760	46.50	61.80	90.36	22.00	18.70	31.00	1.58	1.65	7.87	11.00	35.60	89.40	80.70	19.70	14.00	16500
8810	4.875	9.760	46.50	69.70	98.36	22.00	18.70	35.00	1.58	1.65	7.87	11.00	39.60	89.40	80.70	19.70	14.00	18800
9608	4.875	9.760	52.00	61.80	83.96	24.00	20.90	24.60	1.73	1.65	8.66	12.60	35.60	93.30	85.20	19.70	14.00	20650
9610	4.875	9.760	52.00	69.70	90.96	24.00	20.90	27.60	1.73	1.65	8.66	12.60	39.60	93.30	85.20	19.70	14.00	22900

KEY SIZE

UNIT : inch

FRAME	S	R	KEY SIZE
5800	1.000	3.309	1.000 × 1.000 × 6.000
6800	1.000	3.690	1.000 × 1.000 × 8.000
7100	1.000	3.690	1.000 × 1.000 × 8.000
8000	1.250	4.169	1.250 × 1.250 × 8.000
8800	1.250	4.169	1.250 × 1.250 × 8.000
9600	1.250	4.169	1.250 × 1.250 × 8.000

Product Development History

Year	Milestones
2007	Supplied 4,900kW 6P 6.0kV motor for Europe
2006	Supplied 3,900kW 12P 11kV motor for Middle East
2004	Developed 10MVA MG-SET
2003	Manufactured 2,800kW 18P 6,600V motor
2002	Developed 6,000rpm vector inverter motor (560HP 2P) Developed 9,000kW 6P wound rotor motor
2001	Developed Q-Class motor (ESWP, CCWP)
2000	Manufactured 2,150kW, 22P, 13.2kV motor

Year	Milestones
1999	Developed 4,400kW 10P wound rotor motor
1988	Developed heavy weight torpedo propulsion motor (C.R.M)
1987	Manufactured A.C 250kW traction motor (C class) Developed 8,500kW 4P motor for BFP
1996	Fabricated the 3 millionth motor
1995	13.2kV motor for nuclear power plant (1,600HP, 24P, 13.2kV)
1994	Developed Vector Inverter Motor
1993	Developed wound rotor pole change motor (1,500kW / 750kW, 6/12P)

Global Network