



# Induction Motors

Medium & High Voltage



# MEDIUM & HIGH VOLTAGE INDUCTION MOTORS

Hyundai Electric & Energy Systems Co., Ltd.  
is known for its environment-friendly technology!

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# HYUNDAI MOTORS PROMISE PROMINENT FEATURES

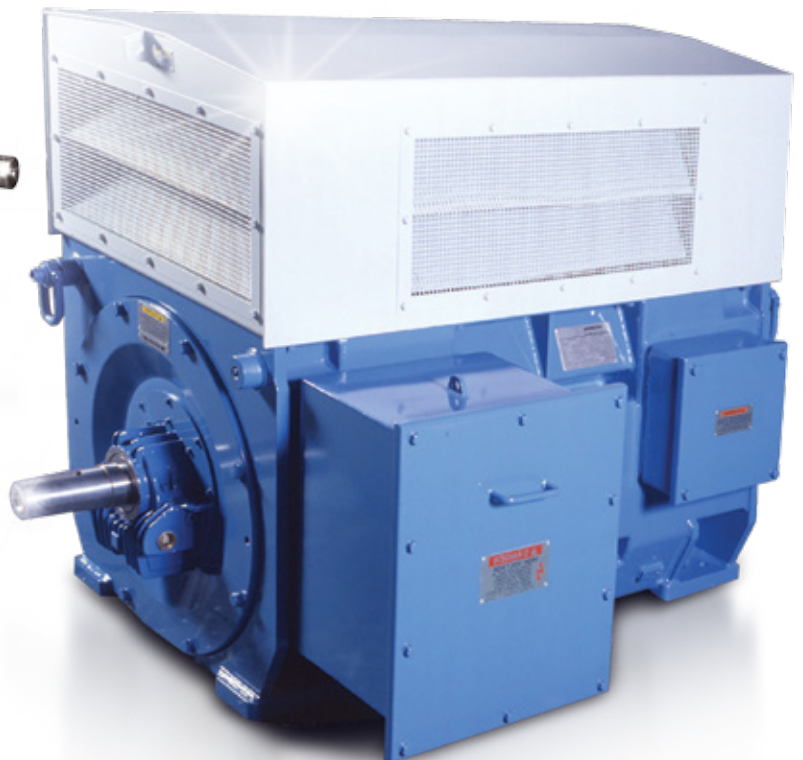
\* VPI insulation provides high reliability and a longer life

\* Uni-directional cooling fan for high efficiency and low noise

\* Vibration free shaft system with rated speed balancing

\* Heavy duty rotor construction

\* Compact size and simple installation






We offer seven models of Hyundai Induction Motors, each of which is designed for a high level of efficiency, low vibration, low noise and simple installation.

## Product Line

Totally Enclosed Fan Cooled	Totally Enclosed Air to Air Cooled	Totally Enclosed Air to Air Cooled
		
<b>HLE6</b>	<b>HIQ1 (4p~) / HRQ3 (2p)</b>	<b>HRQ3 - Vertical</b>
<ul style="list-style-type: none"> <li>• Rotor Type: Squirrel Cage</li> <li>• Number of Poles: 2-12 (Above 12 Pole as Option)</li> <li>• Voltage: 2-11 kV (Above 11 kV, please inquiry)</li> <li>• Output Range: 120-1,100 kW (at 60 Hz, 6,600 V, 4 Pole)</li> <li>• Type of Construction: IM B3 (IM V1 as Optional)</li> <li>• Frame: 280-450</li> <li>• Degree of Protection: IP 55 (IEC 60034-5) (Above IP 55, please inquiry)</li> <li>• Method of Cooling: IC 411 (IEC 60034-6)</li> <li>• Type of Enclosure: Totally Enclosed Fan-Cooled (NEMA MG-1)</li> </ul>	<ul style="list-style-type: none"> <li>• Rotor Type: Squirrel Cage</li> <li>• Number of Poles: 2-16 (Above 16 Pole, please inquiry)</li> <li>• Voltage: 2-14 kV</li> <li>• Output Range: 880-10,800 kW (at 60 Hz, 6,600 V, 4 Pole) (Above 10,800 kW as Option)</li> <li>• Type of Construction: IM B3</li> <li>• Frame: 355-710</li> <li>• Degree of Protection: IP 55 (IEC 60034-5) (Above IP 55, please inquiry)</li> <li>• Method of Cooling: IC 611 (IEC 60034-6)</li> <li>• Type of Enclosure: Totally Enclosed Air to Air Cooled (NEMA MG-1)</li> </ul>	<ul style="list-style-type: none"> <li>• Rotor Type: Squirrel Cage</li> <li>• Number of Poles: 4-16 (Above 16 Pole, please inquiry)</li> <li>• Voltage: 2-14 kV</li> <li>• Output Range: 810-6,070 kW (at 60 Hz, 6,600 V, 4 Pole) (Above 6,070 kW as Option)</li> <li>• Type of Construction: IM V10</li> <li>• Frame: 400-630</li> <li>• Degree of Protection: IP 55 (IEC 60034-5) (Above IP 55, please inquiry)</li> <li>• Method of Cooling: IC 611 (IEC 60034-6)</li> <li>• Type of Enclosure: Totally Enclosed Air to Air Cooled (NEMA MG-1)</li> </ul>

Totally Enclosed Water to Air Cooled	Open Drip Proof	Weather Protected	Weather Protected
			
<p><b>HIN1 (4p~) / HRN3 (2p)</b></p>	<p><b>HRE5</b></p>	<p><b>HIP1 (4p~) / HRP3 (2p)</b></p>	<p><b>HRP3 - Vertical</b></p>
<ul style="list-style-type: none"> <li>• Rotor Type: Squirrel Cage</li> </ul>	<ul style="list-style-type: none"> <li>• Rotor Type: Squirrel Cage</li> </ul>	<ul style="list-style-type: none"> <li>• Rotor Type: Squirrel Cage</li> </ul>	<ul style="list-style-type: none"> <li>• Rotor Type: Squirrel Cage</li> </ul>
<ul style="list-style-type: none"> <li>• Number of Poles: 2-16 (Above 16 Pole, please inquiry)</li> </ul>	<ul style="list-style-type: none"> <li>• Number of Poles: 2-8 (Above 8 Pole, please inquiry)</li> </ul>	<ul style="list-style-type: none"> <li>• Number of Poles: 2-16 (Above 16 Pole, please inquiry)</li> </ul>	<ul style="list-style-type: none"> <li>• Number of Poles: 4-16 (Above 16 Pole, please inquiry)</li> </ul>
<ul style="list-style-type: none"> <li>• Voltage: 2-14 kV</li> </ul>	<ul style="list-style-type: none"> <li>• Voltage: 2-7.2 kV</li> </ul>	<ul style="list-style-type: none"> <li>• Voltage: 2-14 kV</li> </ul>	<ul style="list-style-type: none"> <li>• Voltage: 2-14 kV</li> </ul>
<ul style="list-style-type: none"> <li>• Output Range: 1,130-13,800 kW (at 60 Hz, 6,600 V, 4 Pole) (Above 13,800 kW as Option)</li> </ul>	<ul style="list-style-type: none"> <li>• Output Range: 280-1,400 kW (at 60 Hz, 6,600 V, 4 Pole)</li> </ul>	<ul style="list-style-type: none"> <li>• Output Range: 1,130-13,800 kW (at 60 Hz, 6,600 V, 4 Pole) (Above 13,800 kW as Option)</li> </ul>	<ul style="list-style-type: none"> <li>• Output Range: 1,140-8,840 kW (at 60 Hz, 6,600 V, 4 Pole) (Above 8,840 kW as Option)</li> </ul>
<ul style="list-style-type: none"> <li>• Type of Construction: IM B3</li> </ul>	<ul style="list-style-type: none"> <li>• Type of Construction: IM B3</li> </ul>	<ul style="list-style-type: none"> <li>• Type of Construction: IM B3</li> </ul>	<ul style="list-style-type: none"> <li>• Type of Construction: IM V10</li> </ul>
<ul style="list-style-type: none"> <li>• Frame: 400-710</li> </ul>	<ul style="list-style-type: none"> <li>• Frame: 280-450</li> </ul>	<ul style="list-style-type: none"> <li>• Frame: 280-710</li> </ul>	<ul style="list-style-type: none"> <li>• Frame: 400-630</li> </ul>
<ul style="list-style-type: none"> <li>• Degree of Protection: IP 55 (IEC 60034-5) (Above IP 55, please inquiry)</li> </ul>	<ul style="list-style-type: none"> <li>• Degree of Protection: IP 23 (IEC 60034-5)</li> </ul>	<ul style="list-style-type: none"> <li>• Degree of Protection: IP 23 W-IP 24 W (IEC 60034-5)</li> </ul>	<ul style="list-style-type: none"> <li>• Degree of Protection: IP 23 W-IP 24 W (IEC 60034-5)</li> </ul>
<ul style="list-style-type: none"> <li>• Method of Cooling: IC 81W (IEC 60034-6)</li> </ul>	<ul style="list-style-type: none"> <li>• Method of Cooling: IC 01 (IEC 60034-6)</li> </ul>	<ul style="list-style-type: none"> <li>• Method of Cooling: IC 01 (IEC 60034-6)</li> </ul>	<ul style="list-style-type: none"> <li>• Method of Cooling: IC 01 (IEC 60034-6)</li> </ul>
<ul style="list-style-type: none"> <li>• Type of Enclosure: Totally Enclosed Water to Air Cooled (NEMA MG-1)</li> </ul>	<ul style="list-style-type: none"> <li>• Type of Enclosure: Open Drip Proof (NEMA MG-1)</li> </ul>	<ul style="list-style-type: none"> <li>• Type of Enclosure: Weather Protected Type I &amp; II : WPI, WPII (NEMA MG-1)</li> </ul>	<ul style="list-style-type: none"> <li>• Type of Enclosure: Weather Protected Type I &amp; II : WPI, WPII (NEMA MG-1)</li> </ul>
<ul style="list-style-type: none"> <li>• Cooling Water Inlet Temp: Max. 25 °C (Other case, please inquiry)</li> </ul>			



Hyundai Induction Motors

offer many advantages,

including & High levels of

efficiency, stability,

and durability

## Product Features

### Standard Specifications

- **Applicable Standard** IEC, NEMA, EN, API, BSI, AS, IS, KS, JIS, IEEE, JEC, Lloyd, ABS, DNV, KR
- **Voltage** 2,000-14,000 V
- **Frequency** 50 Hz, 60 Hz
- **Time Duty** Continuous duty (S1)
- **Service Factor** 1.0
- **Ambient Temperature** -20 to +40 °C (Besides, please inquiry)  
(Cooling Water Inlet Temp. Max. 25 °C for TEWAC type),  
(0-40 °C for self cooling sleeve bearing)
- **Insulation Class** F
- **Temperature Rise** 80 °C (Resistance method)

### Application

- **Power Condition** Voltage  $\pm 10\%$ , frequency  $\pm 5\%$  and 10 % max. of combined voltage and frequency with frequency not to exceed 5 %
- **Environment Condition** Non-hazardous area
- **Permissible Load WK2** NEMA MG1-20.11
- **Starting Duty** Two times from cold condition, One time from hot condition
- **Threads** ISO metric
- **Color of Finish Paint** Munsell No. 7.5 BG 6/1.5
- **Direction of Rotation** Uni-direction (Bi-direction is possible by requirement except for 2 pole)
- **Method of Starting** Full voltage direct on line (in case of squirrel cage rotor)

### Construction

- **Frame** Cast iron or fabricated steel plate
- **End Bracket** Cast iron or fabricated steel plate
- **Shaft** Normalized carbon steel, Single extension with keyway & key (Double extension is possible by requirement)
- **Bearing** High-quality anti-friction or Split sleeve bearings
- **Enclosure** ODP, WP I, WP II, TEFC, TEAAC, TEWAC etc.

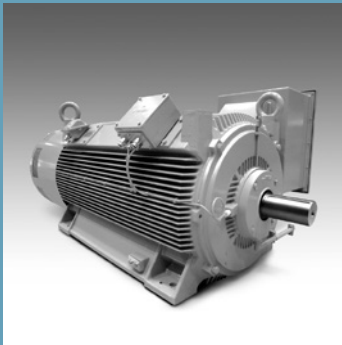
## Derating Factors

### Ambient Air Inlet Temperature

No.	Ambient Temp. (Water Temp.)	Type	HLE6, HIQ1, HIN1, HRQ3, HRN3	HIP1, HRE5, HRP3
1	40 °C (25 °C)		1.0	1.0
2	45 °C (30 °C)		0.95	0.96
3	50 °C (35 °C)		0.9	0.91
4	55 °C (40 °C)		0.84	0.86
5	60 °C (45 °C)		0.78	0.81

### Site Altitude

No.	Site Altitude	Type	HLE6, HIQ1, HRQ3	HIP1, HRE5, HRP3
1	0 m < S.A. ≤ 1,000 m		1.0	1.0
2	1,000 m < S.A. ≤ 1,500 m		0.96	0.96
3	1,500 m < S.A. ≤ 2,000 m		0.92	0.93
4	2,000 m < S.A. ≤ 2,500 m		0.88	0.90
5	2,500 m < S.A. ≤ 3,000 m		0.84	0.86
6	3,000 m < S.A. ≤ 3,500 m		0.80	0.83
7	3,500 m < S.A. ≤ 4,000 m		0.76	0.80



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# HLE6 Series

Totally Enclosed Fan Cooled, Squirrel Cage

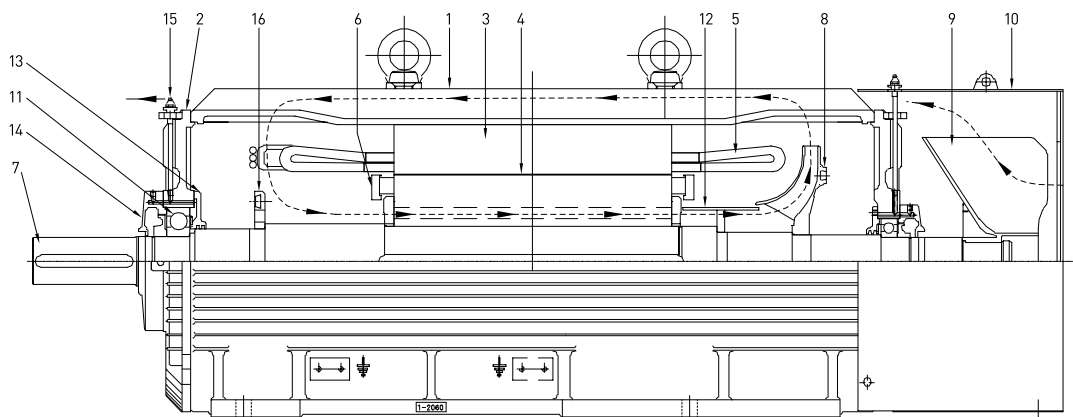
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## | HLE6 |

- Rotor Type Squirrel Cage
- Number of Poles 2-12
- Voltage 2-11 kV
- Output Range 120-1,100 kW (at 60 Hz, 6,600 V, 4 Pole)
- Type of Construction IM B3 (IM V1 as Optional)
- Frame 280-450
- Degree of Protection IP 55 (IEC 60034-5)
- Method of Cooling IC 411 (IEC 60034-6)
- Type of Enclosure Totally Enclosed Fan-Cooled (NEMA MG-1)

### Sectional View and Parts Name



#### Parts Name

- |                 |                         |                         |                         |
|-----------------|-------------------------|-------------------------|-------------------------|
| 1. Stator Frame | 5. Stator Winding       | 9. External Cooling Fan | 13. Inner Bearing Cover |
| 2. End Shield   | 6. Rotor End Ring       | 10. Fan Cover           | 14. Outer Bearing Cover |
| 3. Stator Core  | 7. Shaft                | 11. Bearing             | 15. Grease Nipple       |
| 4. Rotor Core   | 8. Internal Cooling Fan | 12. Air Guide           | 16. Balance-Ring        |

## | Rated Power at 50 Hz | - Horizontal (B3)

### 3.0 kV

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HLE6	282	-	-	-	-	-	-
	284	-	-	-	-	-	-
	286	170	185	-	-	-	-
	288	195	205	170	-	-	-
	311	240	250	190	-	-	-
	312	270	300	220	140	-	-
	313	320	340	240	170	-	-
	314	360	360	270	190	-	-
	316	-	380	305	225	-	-
	318	-	410	340	240	-	-
	351	450	490	360	270	-	-
	352	490	530	395	295	250	-
	353	520	550	420	320	-	-
	354	560	590	450	345	280	170
	401	610	620	505	405	300	230
	402	660	670	550	450	325	250
	403	710	710	570	470	340	265
	404	750	750	600	500	365	285
	451	-	780	640	540	420	345
	452	800	840	680	570	455	375
453	850	890	720	620	480	405	
454	910	940	770	660	510	430	

### 6.0 kV

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HLE6	282	-	-	-	-	-	-
	284	-	-	-	-	-	-
	286	165	170	-	-	-	-
	288	180	190	150	-	-	-
	311	220	230	170	-	-	-
	312	260	280	200	130	-	-
	313	310	315	230	160	-	-
	314	350	350	250	180	-	-
	316	-	370	280	200	-	-
	318	-	395	310	215	-	-
	351	430	460	350	260	-	-
	352	470	500	380	280	230	-
	353	510	530	400	300	-	-
	354	550	560	430	330	255	155
	401	590	600	485	380	275	200
	402	640	650	525	415	300	220
	403	690	680	550	450	315	230
	404	740	720	580	480	340	250
	451	-	750	615	520	390	320
	452	770	800	650	550	425	350
453	820	850	695	595	450	375	
454	880	900	740	630	480	400	

#### Note

- Tolerance on "D" and "DA" dimension will be m6.
- The bores of the transmission elements should be made to an ISO fit H6.
- The dimensions printed in bold face in the table to IEC : A, B, C, D, E, F, GA, H, K are certified.
- Type of bearings.
  - Greased lubricated anti-friction
  - Oil lubricated sleeve bearing

- The following tolerances are applicable to dimensions A, B, and H

Dimensions	Tolerance (mm)	
A and B	Over 500 up to 750	±1.5
	Over 750 up to 1,000	±2.0
	Over 1,000	±2.5
H	Over 250 up to 600	-1.0
	Over 600 up to 1,000	-1.5

- "R" dimension of the shaft extension part is as follows

Shaft Diameter (mm)	R (mm)
50-80	1.6
85-120	2.5
130-190	4.0

### | Rated Power at 60 Hz | - Horizontal (B3)

#### 3.3 kV

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HLE6	282	110	150	-	-	-	-
	284	160	190	160	-	-	-
	286	210	225	180	-	-	-
	288	240	250	205	120	-	-
	311	270	290	240	145	-	-
	312	325	355	260	170	-	-
	313	385	395	300	210	-	-
	314	425	440	335	230	-	-
	316	-	460	375	270	-	-
	318	-	490	400	285	-	-
	351	480	540	450	330	-	-
	352	510	580	495	355	280	190
	353	550	630	520	380	-	-
	354	600	670	560	420	315	220
	401	680	720	610	500	395	315
	402	740	780	660	550	430	340
	403	790	820	700	570	450	355
	404	850	870	740	600	480	380
	451	900	940	780	650	495	440
	452	960	1,000	820	700	540	480
453	1,030	1,070	870	750	585	510	
454	1,100	1,150	930	800	620	540	

#### 4.16 kV

Unit: kW

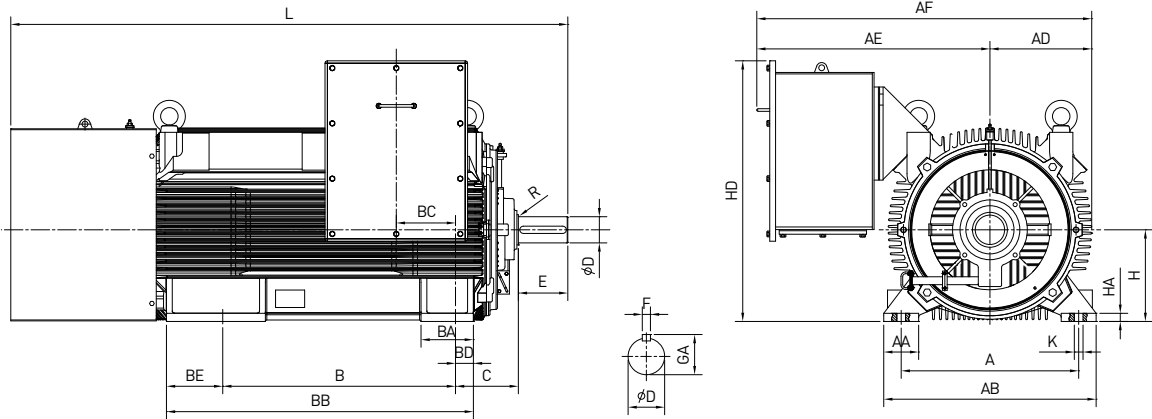
Type	Poles	2P	4P	6P	8P	10P	12P
HLE6	282	105	145	-	-	-	-
	284	155	185	150	-	-	-
	286	205	220	165	-	-	-
	288	230	240	190	105	-	-
	311	260	285	215	135	-	-
	312	315	345	255	165	-	-
	313	375	385	300	195	-	-
	314	415	425	330	225	-	-
	316	-	445	350	245	-	-
	318	-	480	385	260	-	-
	351	480	530	435	325	-	-
	352	510	570	470	345	280	190
	353	540	610	495	375	-	-
	354	590	650	530	410	315	210
	401	670	710	600	475	370	305
	402	730	770	640	525	400	330
	403	780	805	680	560	420	345
	404	840	850	720	600	450	370
	451	880	920	760	650	480	425
	452	950	980	800	685	520	460
453	1,020	1,050	850	735	555	480	
454	1,090	1,120	910	790	590	510	

#### 6.6 kV

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HLE6	282	100	120	-	-	-	-
	284	150	150	130	-	-	-
	286	200	210	150	-	-	-
	288	225	235	185	100	-	-
	311	250	280	210	130	-	-
	312	310	340	250	150	-	-
	313	370	380	290	190	-	-
	314	410	420	320	220	-	-
	316	-	440	340	240	-	-
	318	-	470	370	255	-	-
	351	470	520	430	320	-	-
	352	500	560	460	340	255	185
	353	530	600	490	370	-	-
	354	580	640	520	400	280	210
	401	650	700	590	470	345	275
	402	720	750	630	510	375	300
	403	770	790	670	550	400	325
	404	830	830	710	580	430	350
	451	870	910	750	630	470	415
	452	940	970	790	670	510	450
453	1,000	1,030	840	720	545	470	
454	1,070	1,100	900	770	580	500	

## Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AF	B	BA	BB	BC	BD	BE	
HLE6	286	2 -	457	91	560	325	790	1,115	630	180	730	119.5	40	60
	288	2 -												
	311	2 -	610	120	730	350	805	1,155	710	180	925	203.5	61.5	153.5
	312	2 -												
	313	2 -							800		1,055			193.5
	314	2 -												
	316	4 -							900		1,195			233.5
	318	4 -												
	351	2 -	686	150	840	405	830	1,235	1,000	200	1,270	203.5	61.5	208.5
	352	2 -												
	353	2 -												
	354	2 -												
	401	2 -	750	150	900	455	870	1,325	1,120	220	1,365	166	90	155
	402	2 -												
	403	2 -												
	404	2 -												
451	4 -	850	180	1,030	480	950	1,430	1,250	220	1,535	177	88	197	
452	4 -													
453	4 -													
454	4 -													

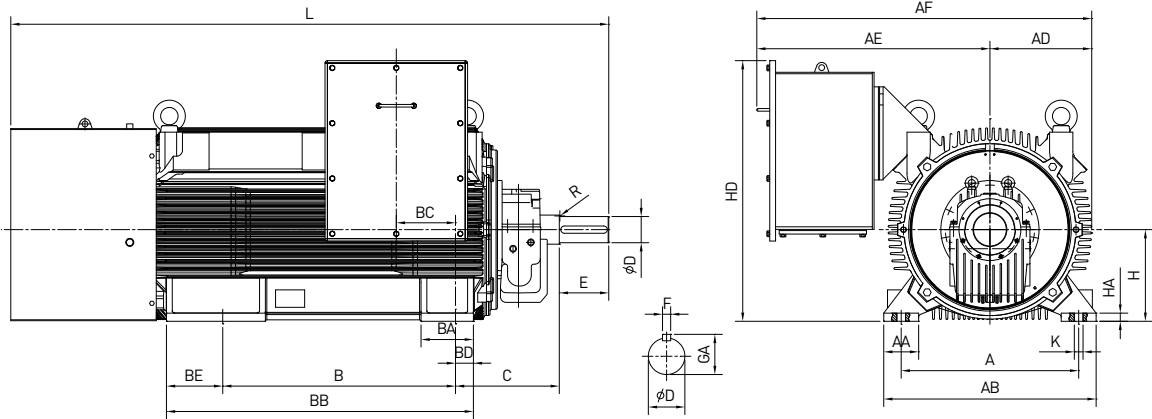
Note: For the bearing type and tolerances of dimensions, see page 10.

Unit: mm

Type	Poles	C	H	HA	HD	K	L	D	E	F	GA	Weight (kg)	
HLE6	286	2	190	280	30	850	24	1,520	70	140	20	74.5	1,290
	4	1,445						85	170	22	90	1,320	
	288	2	190	280	30	850	24	1,520	70	140	20	74.5	1,340
		4						1,445	85	170	22	90	1,380
		6						1,445	85	170	22	90	1,470
	311	2	216	315	28	900	30	1,670	65	140	18	69	1,580
		4 -						1,700	90	170	25	95	1,600
	312	2	216	315	28	900	30	1,670	65	140	18	69	1,690
		4 -						1,700	90	170	25	95	1,690
	313	2	216	315	28	900	30	1,800	65	140	18	69	1,850
		4 -						1,830	90	170	25	95	1,890
	314	2	216	315	28	900	30	1,800	65	140	18	69	1,930
		4 -						1,830	90	170	25	95	1,990
	316	4 -	216	315	28	900	30	1,970	90	170	25	95	2,200
	318	4 -						1,970	90	170	25	95	2,300
	351	2	224	355		970	30	2,000	75	140	20	79.5	2,580
		4 -						2,080	100	210	28	106	2,900
	352	2	224	355		970	30	2,000	75	140	20	79.5	2,650
		4 -						2,080	100	210	28	106	3,030
	353	2	224	355		970	30	2,000	75	140	20	79.5	2,720
		4 -						2,080	100	210	28	106	3,130
	354	2	224	355		970	30	2,000	75	140	20	79.5	2,800
		4 -						2,080	100	210	28	106	3,250
	401	2	254	400	35	1,050	35	2,110	80	170	22	85	3,310
		4 -						2,220	110	210	28	116	3,650
	402	2	254	400	35	1,050	35	2,110	80	170	22	85	3,430
		4 -						2,220	110	210	28	116	3,780
	403	2	254	400	35	1,050	35	2,110	80	170	22	85	3,530
4 -		2,220						110	210	28	116	3,900	
404	2	254	400	35	1,050	35	2,110	80	170	22	85	3,630	
	4 -						2,220	110	210	28	116	4,030	
451	4 -	280	450	40	1,120	35	2,490	130	210	32	137	5,020	
452	4 -						2,490	130	210	32	137	5,210	
453	4 -						2,490	130	210	32	137	5,370	
454	4 -						2,490	130	210	32	137	5,520	

**Note:** For the bearing type and tolerances of dimensions, see page 10.

## Mounting B3 / Degree of Protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AF	B	BA	BB	BC	BD	BE	
HLE6	451	2 -	850	180	1,030	480	950	1,430	1,250	220	1,535	177	88	197
	452	2 -												
	453	2 -												
	454	2 -												

Unit: mm

Type	Poles	C	H	HA	HD	K	L	D	E	F	GA	Weight (kg)	
HLE6	451	2	425	450	40	1,120	35	2,580	90	170	25	95	4,840
	452	2											4,870
	453	2											4,990
	454	2											5,120

**Note:** For the bearing type and tolerances of dimensions, see page 10.

## | Rated Power at 50 Hz | - Vertical ( V1 )

### 3.0 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P
HLE6	282	-	-	-	-	-
	284	-	-	-	-	-
	286	185	-	-	-	-
	288	205	170	-	-	-
	311	250	190	-	-	-
	312	300	220	140	-	-
	313	340	240	170	-	-
	314	360	270	190	-	-
	351	490	360	270	-	-
	352	530	395	295	250	-
	353	550	420	320	-	-
	354	590	450	345	280	170
	401	620	505	405	300	230
	402	670	550	450	325	250
	403	710	570	470	340	265
	404	750	600	500	365	285

### 6.0 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P
HLE6	282	-	-	-	-	-
	284	-	-	-	-	-
	286	170	-	-	-	-
	288	190	150	-	-	-
	311	230	170	-	-	-
	312	280	200	130	-	-
	313	315	230	160	-	-
	314	350	250	180	-	-
	351	460	350	260	-	-
	352	500	380	280	230	-
	353	530	400	300	-	-
	354	560	430	330	255	155
	401	600	485	380	275	200
	402	650	525	415	300	220
	403	680	550	450	315	230
	404	720	580	480	340	250

#### Note

1. Tolerance on "D" and "DA" dimension will be m6.
2. The bores of the transmission elements should be made to an ISO fit H6.
3. The dimensions printed in bold face in the table to IEC : A, B, C, D, E, F, GA, H, K are certified.
4. Type of bearings.
  - Greased lubricated anti-friction

5. The following tolerances are applicable to dimensions A, B, and H

Dimensions	Tolerance (mm)	
A and B	Over 500 up to 750	±1.5
	Over 750 up to 1,000	±2.0
	Over 1,000	±2.5
H	Over 250 up to 600	-1.0
	Over 600 up to 1,000	-1.5

6. "R" dimension of the shaft extension part is as follows

Shaft Diameter (mm)	R (mm)
50-80	1.6
85-120	2.5
130-190	4.0

**| Rated Power at 60 Hz | - Vertical ( V1 )**

**3.3 kV**

Unit: kW

Type	Poles	4P	6P	8P	10P	12P
HLE6	282	150	-	-	-	-
	284	190	160	-	-	-
	286	225	180	-	-	-
	288	250	205	120	-	-
	311	290	240	145	-	-
	312	355	260	170	-	-
	313	395	300	210	-	-
	314	440	335	230	-	-
	351	540	450	330	-	-
	352	580	495	355	280	190
	353	630	520	380	-	-
	354	670	560	420	315	220
	401	720	610	500	395	315
	402	780	660	550	430	340
	403	820	700	570	450	355
	404	870	740	600	480	380

**4.16 kV**

Unit: kW

Type	Poles	4P	6P	8P	10P	12P
HLE6	282	145	-	-	-	-
	284	185	150	-	-	-
	286	220	165	-	-	-
	288	240	190	105	-	-
	311	285	215	135	-	-
	312	345	255	165	-	-
	313	385	300	195	-	-
	314	425	330	225	-	-
	351	530	435	325	-	-
	352	570	470	345	280	190
	353	610	495	375	-	-
	354	650	530	410	315	210
	401	710	600	475	370	305
	402	770	640	525	400	330
	403	805	680	560	420	345
	404	850	720	600	450	370

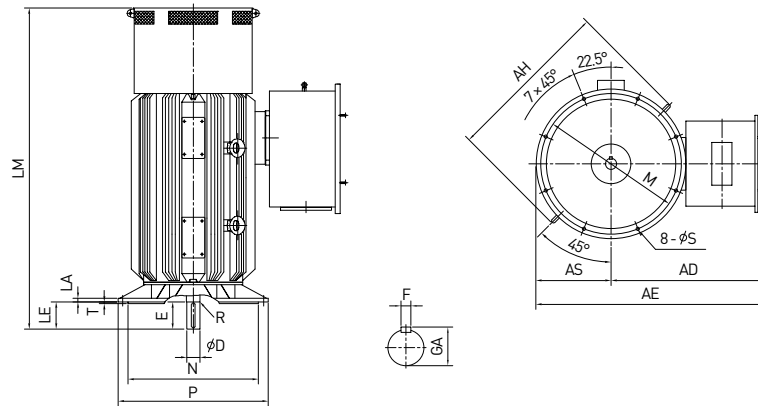
**6.6 kV**

Unit: kW

Type	Poles	4P	6P	8P	10P	12P
HLE6	282	120	-	-	-	-
	284	150	130	-	-	-
	286	210	150	-	-	-
	288	235	185	100	-	-
	311	280	210	130	-	-
	312	340	250	150	-	-
	313	380	290	190	-	-
	314	420	320	220	-	-
	351	520	430	320	-	-
	352	560	460	340	255	185
	353	600	490	370	-	-
	354	640	520	400	280	210
	401	700	590	470	345	275
	402	750	630	510	375	300
	403	790	670	550	400	325
	404	830	710	580	430	350



Mounting V1 / Degree of Protection IP55, Anti-Friction Bearing Type



If the external thrust is applied, please enquire. (This motor only withstand wight of the rotor of motor with coupling)

Unit: mm

Type	Poles	AD	AE	AH	AS	LA	LE	LM	M	N	
HLE6	286	4 -	930	1,330	890	400	25	170	1,620	740	680
	288	4 -									
	311	4 -	940	1,340	930	400	25	170	1,890	740	680
	312	4 -									
	313	4 -									
	314	4 -									
	351	4 -	970	1,420	1,135	450	25	210	2,315	840	780
	352	4 -									
	353	4 -									
	354	4 -									
	401	4 -	1,035	1,535	1,280	500	25	210	2,410	940	880
	402	4 -									
403	4 -										
404	4 -										

Unit: mm

Type	Poles	P	S	T	D	E	F	GA	Weight (kg)	
HLE6	286	4 -	800	23	6	85	170	22	90	1,400
	288	4 -								1,550
	311	4 -	800	23	6	90	170	25	95	1,710
	312	4 -								1,800
	313	4 -								2,000
	314	4 -								2,100
	351	4 -	900	23	6	100	210	28	106	3,160
	352	4 -								3,290
	353	4 -								3,390
	354	4 -								3,510
	401	4 -	1,000	23	6	110	210	28	116	3,850
	402	4 -								3,980
403	4 -	4,100								
404	4 -	4,230								

Note: For the bearing type and tolerances of dimensions, see page 15.



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# HRQ3, HIQ1 Series

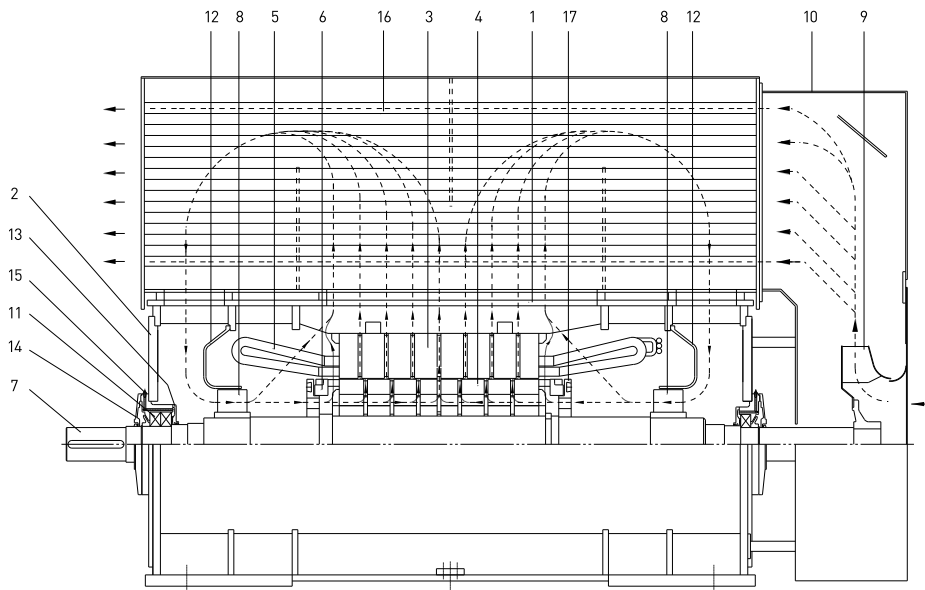
Totally Enclosed Air-to-Air Cooled Squirrel Cage

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### | HRQ3, HIQ1 | Type - I (Bi-directional cooling circuit)

• Rotor Type	Squirrel Cage
• Number of Pole	2-4
• Voltage	2-14 kV
• Output Range	430-10,800 kW (at 60 Hz, 6,600 V, 4 Pole)
• Type of Construction	IM B3
• Frame	315-710
• Degree of Protection	IP 55 (IEC 60034-5)
• Method of Cooling	IC 611 (IEC 60034-6)
• Type of Enclosure	Totally Enclosed Air to Air Cooled (NEMA MG-1)

#### Sectional View and Parts Name



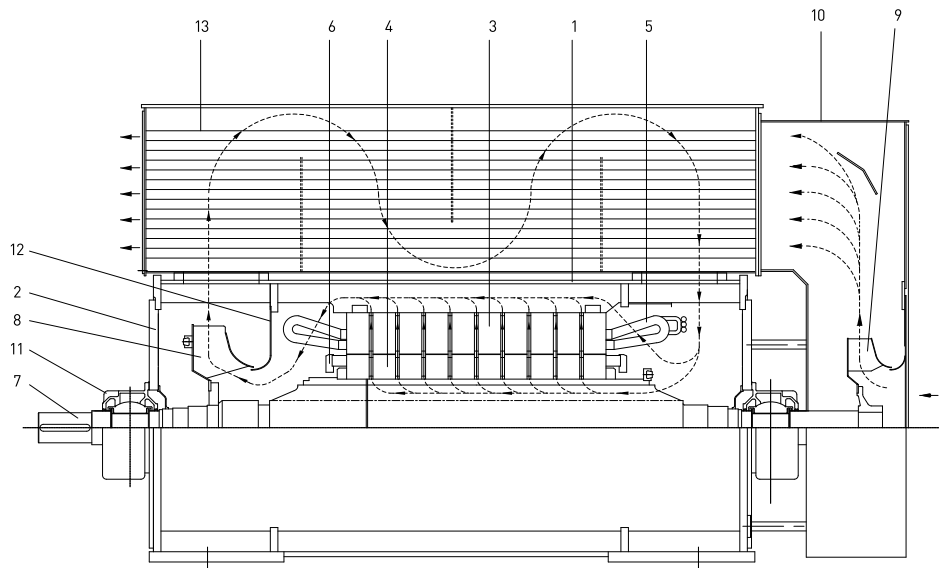
#### Parts Name

1. Stator Frame	6. Rotor End Ring	10. Fan Cover	14. External Bearing Cover
2. End Shield	7. Shaft	11. Bearing	15. Grease Nipple
3. Stator Core	8. Internal Cooling Fan	12. Air Guide Plate	16. Heat-Exchange Pipe
4. Rotor Core	9. External Cooling Fan	13. Internal Bearing Cover	17. Balance-Ring
5. Stator Winding			

**| HRQ3, HIQ1 | Type - II (Uni-directional cooling circuit)**

• Rotor Type	Squirrel Cage
• Number of Pole	6-16
• Voltage	2-14 kV
• Output Range	680-8,500 kW (at 60 Hz, 6,600 V, 6 Pole)
• Type of Construction	IM B3
• Frame	400-710
• Degree of Protection	IP 55 (IEC 60034-5)
• Method of Cooling	IC 611 (IEC 60034-6)
• Type of Enclosure	Totally Enclosed Air to Air Cooled (NEMA MG-1)

**Sectional View and Parts Name**



**Parts Name**

1. Stator Frame	5. Stator Winding	8. Internal Cooling Fan	11. Bearing
2. End Shield	6. Rotor End Ring	9. External Cooling Fan	12. Air Guide Plate
3. Stator Core	7. Shaft	10. Fan Cover	13. Heat-Exchange Pipe
4. Rotor Core			

## | HRQ3 2P Series |

### HRQ3 (60Hz)

Unit: kW

Type	Poles	2P	
		3.3 kV	6.6 kV
HRQ3	313	480	430
	315	520	470
	317	610	550
	355	1,000	900
	357	1,060	950
	403	1,120	1,000
	405	1,250	1,120
	407	1,400	1,250
	451	1,750	1,580
	453	1,890	1,710
	455	2,100	1,900
	501	2,520	2,360
	503	2,730	2,560
	505	3,200	3,000
	561	3,780	3,500
	563	4,180	3,870
	565	4,750	4,400
	631	5,260	4,860
	633	5,890	5,450
	635	6,500	6,100
711	6,850	6,400	
713	7,670	7,160	
715	8,570	8,000	

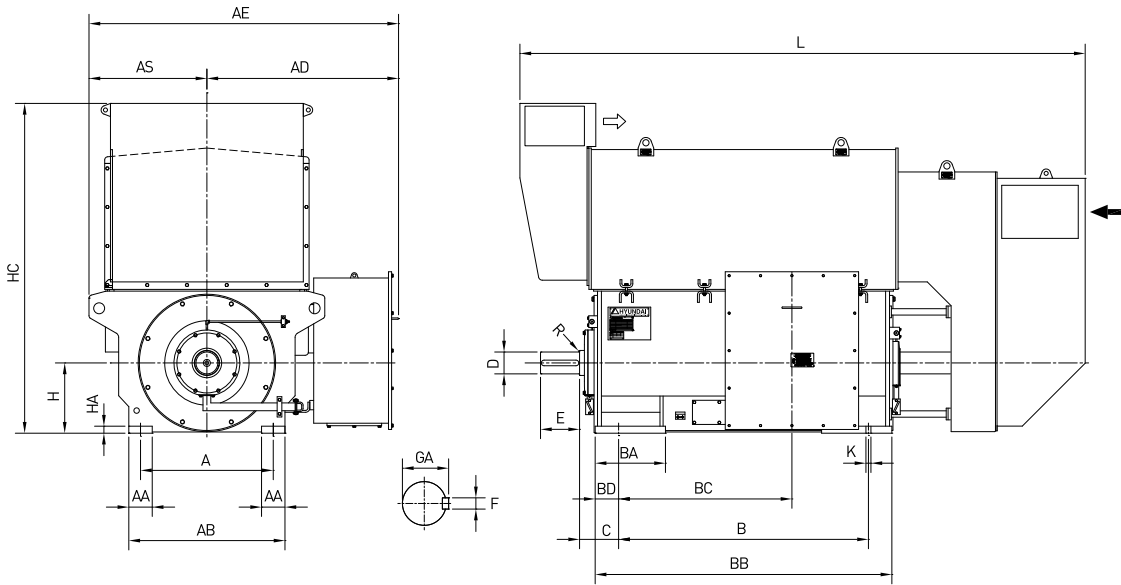
### HRQ3 (50Hz)

Unit: kW

Type	Poles	2P	
		3.3 kV	6.6 kV
HRQ3	313	390	350
	315	430	390
	317	500	450
	355	800	720
	357	890	800
	403	940	840
	405	1,050	940
	407	1,170	1,050
	451	1,520	1,370
	453	1,650	1,480
	455	1,830	1,650
	501	2,010	1,930
	503	2,180	2,090
	505	2,550	2,450
	561	3,110	2,950
	563	3,430	3,250
	565	3,900	3,700
	631	4,620	4,300
	633	5,180	4,820
	635	5,700	5,300
711	5,920	5,580	
713	6,630	6,250	
715	7,430	7,000	

| HRQ3 |

**Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type**



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRQ3	313	2	<b>690</b>	130	820	885	1,410	525	<b>1,000</b>	280	1,240	720	120	280
	315	2												
	317	2												

Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	Weight (kg)	
HRQ3	313	2	<b>315</b>	30	1,350	2,410	38-48	<b>80</b>	<b>140</b>	<b>22</b>	<b>85</b>	2,450
	315	2					Slot					2,550
	317	2										2,700

**Note**

- Tolerance on "D" and "DA" dimension will be m6.
- The bores of the transmission elements should be made to an ISO fit H6.
- The dimensions printed in bold face in the table to IEC : A, B, C, D, E, F, GA, H, K are certified.
- Type of bearings.
  - \* : Self cooled sleeve bearing dimension (60 Hz)
  - \*\* : Self cooled sleeve bearing dimension (50 Hz)

5. The following tolerances are applicable to dimensions A, B, and H.

Dimensions	Tolerance (mm)	
A and B	Over 500 up to 750	±1.5
	Over 750 upto 1,000	±2.0
	Over 1,000	±2.5
H	Over 250 up to 600	-1.0
	Over 600 up to 1,000	-1.5

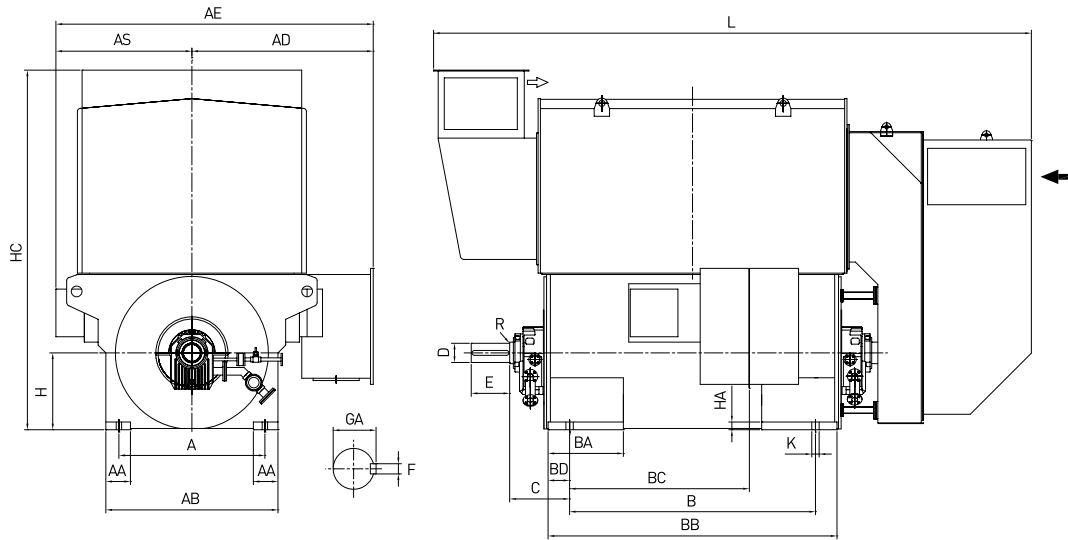
6. "R" dimension of the shaft extension part is as follows.

Shaft Diameter (mm)	R (mm)
50 - 80	1.6
85 - 120	2.5
130 - 190	4.0



## | HRQ3 |

### Mounting B3 / Degree of protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRQ3	451	2	850	150	1,000	1,180	1,920	740	1,400	450	1,790	1,050	195	450
	453													*530
	455													480
	501	2	950	160	1,120	1,280	2,130	850	1,600	490	1,880	1,170	140	390
	503													*475
	505													460
														*530

Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	Weight (kg)					
HRQ3	451	2	450	45	1,950	3,410	35	110	210	28	116	6,500				
	453					*3,455						*90	*170	*25	*95	6,800
	455					3,480										7,200
	501	2	500	45	2,340	3,890	48	125	250	32	132	8,300				
	503					*3,800						*100	*210	*28	*106	8,800
	505					4,000										9,100
					*3,900											

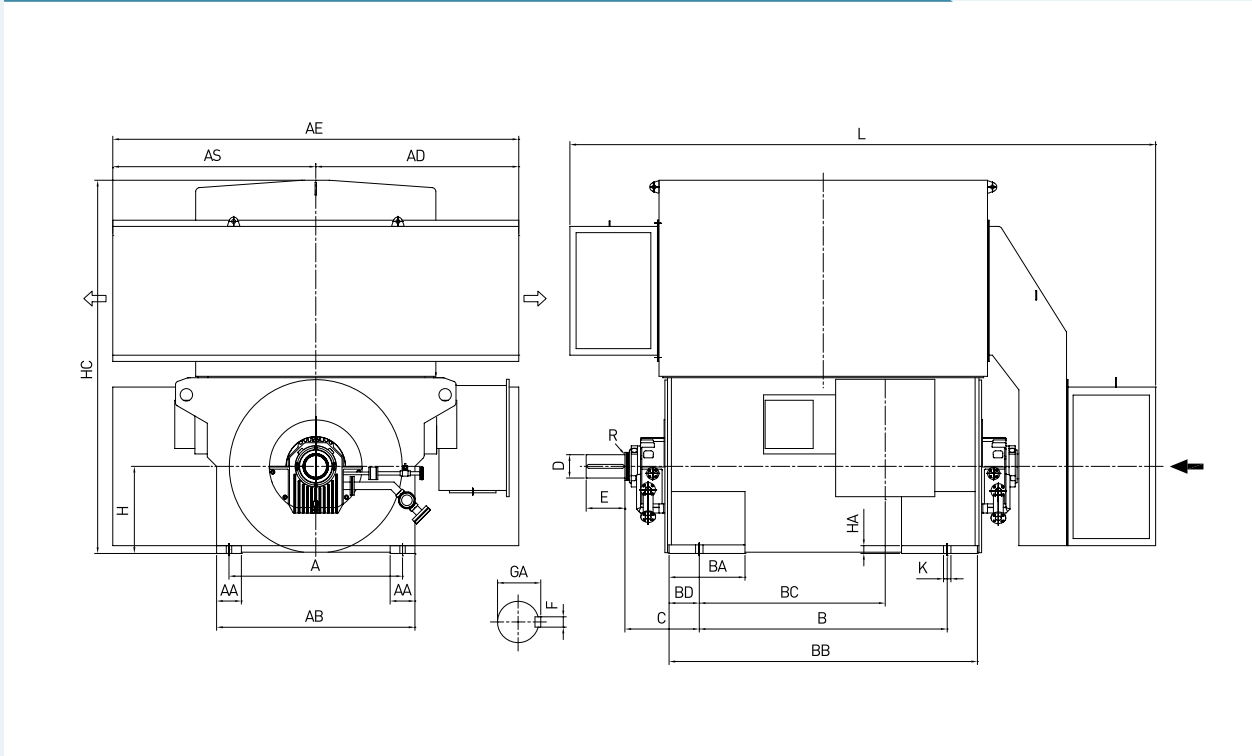
**Note:** - For the bearing type and tolerances of dimensions, see page 22.

\* : Self cooled sleeve bearing dimension



| HRQ3 |

Mounting B3 / Degree of protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C
HRQ3	561	1,120	160	1,280	1,330	2,530	1,200	1,600	490	1,990	1,200	195	500
	563												
	565												
	631	1,250	190	1,420	1,400	2,620	1,220	1,800	540	2,220	1,350	210	510
	633												
	635												
								2,000	540	2,320	1,500	160	460

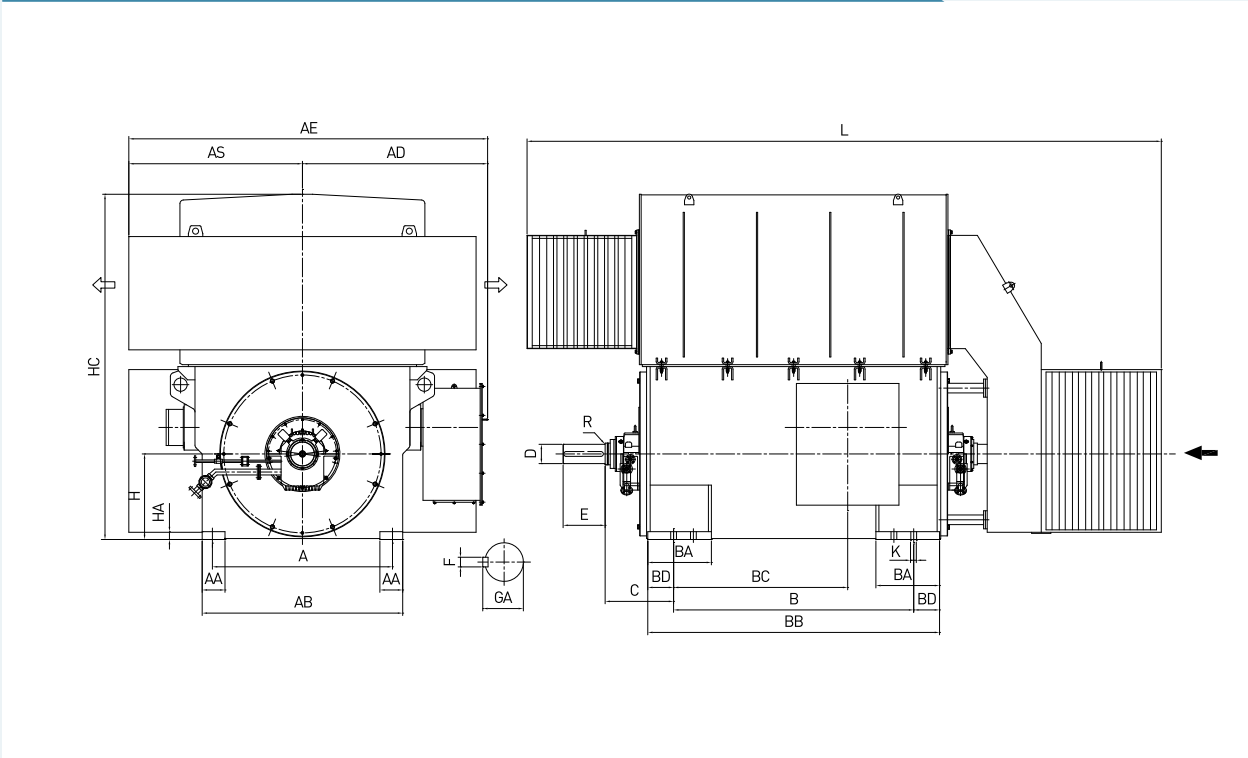
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	Weight (kg)
HRQ3	561	560	50	2,410	3,810	48	150	250	36	158	10,900
	563										11,500
	565										12,200
	631	630	65	2,530	4,610	48	160	300	40	169	15,300
	633										16,000
	635										16,900
					4,710						

**Note:** For the bearing type and tolerances of dimensions, see page 22.

| HRQ3 |

Mounting B3 / Degree of Protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRQ3	711	2	1,500	190	1,670	1,700	3,145	1,445	2,000	515	2,350	1,450	175	510
	713	2												
	715	2								530	2,430	1,450	215	570

Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	Weight (kg)	
HRQ3	711	2	710	65	2,865	5,210	48	160	350	40	169	21,200
	713	2										21,900
	715	2				5,290						22,500

**Note:** For the bearing type and tolerances of dimensions, see page 22.

## | Rated Power at 50 Hz |

## 3.0 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIQ1	403	790	620	460	-	-	-	-
	405	880	700	510	-	-	-	-
	407	990	780	580	-	-	-	-
	409	1,110	880	650	-	-	-	-
	453	1,240	940	740	500	390	-	-
	455	1,390	1,060	830	560	430	-	-
	457	1,560	1,180	930	630	490	-	-
	459	1,750	1,330	1,050	710	550	-	-
	503	2,020	1,580	1,210	870	630	460	-
	505	2,270	1,770	1,360	980	700	520	-
	507	2,540	1,990	1,520	1,090	790	580	-
	509	2,850	2,230	1,710	1,230	890	660	-
	563	3,420	2,540	2,090	1,550	1,230	770	610
	565	3,830	2,850	2,340	1,730	1,370	860	680
	567	4,290	3,190	2,620	1,940	1,540	970	760
	569	4,810	3,580	2,940	2,180	1,730	1,090	860
	633	5,130	3,920	3,160	2,510	1,900	1,330	980
	635	5,750	4,390	3,530	2,810	2,120	1,490	1,100
	637	6,440	4,910	3,960	3,150	2,380	1,660	1,240
	639	7,220	5,510	4,440	3,530	2,670	1,870	1,390
715	7,750	6,170	4,720	3,610	2,760	2,040	1,570	
717	8,680	6,910	5,290	4,050	3,090	2,280	1,750	
719	9,730	7,750	5,930	4,540	3,470	2,560	1,970	

**Note:** - Bearing type of horizontal motors:

- Grease lubricated anti-friction
- Forced feed oil lubrication sleeve bearings

| Rated Power at 50 Hz |

**6.0 kV**

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIQ1	403	740	590	430	-	-	-	-
	405	820	660	480	-	-	-	-
	407	920	740	540	-	-	-	-
	409	1,040	830	610	-	-	-	-
	453	1,160	880	700	470	370	-	-
	455	1,300	990	780	530	410	-	-
	457	1,460	1,110	880	590	460	-	-
	459	1,640	1,250	990	670	520	-	-
	503	1,900	1,480	1,130	810	590	440	-
	505	2,120	1,660	1,270	910	660	490	-
	507	2,380	1,860	1,420	1,020	750	550	-
	509	2,670	2,090	1,600	1,150	840	620	-
	563	3,200	2,380	1,950	1,450	1,150	720	570
	565	3,580	2,670	2,190	1,620	1,290	810	640
	567	4,010	2,990	2,450	1,820	1,440	910	720
	569	4,500	3,350	2,750	2,040	1,620	1,020	810
	633	4,800	3,660	2,950	2,340	1,770	1,240	920
	635	5,380	4,100	3,300	2,630	1,990	1,390	1,030
	637	6,020	4,590	3,700	2,940	2,230	1,560	1,160
	639	6,750	5,150	4,150	3,300	2,500	1,750	1,300
715	7,250	5,770	4,420	3,380	2,590	1,910	1,470	
717	8,120	6,470	4,950	3,790	2,900	2,140	1,650	
719	9,100	7,250	5,550	4,250	3,250	2,400	1,850	

**Note:** - Bearing type of horizontal motors:

- Grease lubricated anti-friction
- Forced feed oil lubrication sleeve bearings

## | Rated Power at 60 Hz |

## 3.3 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIQ1	403	940	720	570	-	-	-	-
	405	1,060	810	640	-	-	-	-
	407	1,180	910	720	-	-	-	-
	409	1,330	1,020	810	-	-	-	-
	453	1,490	1,170	930	610	480	-	-
	455	1,670	1,310	1,040	680	540	-	-
	457	1,870	1,470	1,160	760	600	-	-
	459	2,100	1,650	1,310	860	680	-	-
	503	2,510	1,910	1,540	1,060	840	560	-
	505	2,810	2,140	1,720	1,180	940	630	-
	507	3,150	2,400	1,930	1,330	1,060	710	-
	509	3,530	2,690	2,170	1,490	1,190	800	-
	563	4,030	3,110	2,640	1,880	1,440	940	760
	565	4,520	3,490	2,950	2,110	1,610	1,060	850
	567	5,060	3,910	3,310	2,360	1,810	1,180	950
	569	5,670	4,380	3,710	2,650	2,030	1,330	1,070
	633	5,970	4,790	3,870	3,010	2,190	1,620	1,250
	635	6,680	5,370	4,340	3,370	2,460	1,810	1,400
	637	7,490	6,010	4,860	3,770	2,750	2,030	1,570
	639	8,390	6,740	5,450	4,230	3,090	2,280	1,760
715	9,200	7,240	5,790	4,590	3,360	2,470	2,000	
717	10,310	8,110	6,490	5,150	3,760	2,760	2,240	
719	11,550	9,090	7,270	5,770	4,220	3,100	2,510	

**Note:** - Bearing type of horizontal motors:

- Grease lubricated anti-friction
- Forced feed oil lubrication sleeve bearings

## | Rated Power at 60 Hz |

### 4.16 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIQ1	403	920	700	560	-	-	-	-
	405	1,030	780	620	-	-	-	-
	407	1,160	880	700	-	-	-	-
	409	1,300	990	790	-	-	-	-
	453	1,450	1,140	900	590	460	-	-
	455	1,620	1,280	1,010	660	520	-	-
	457	1,820	1,430	1,130	750	580	-	-
	459	2,040	1,610	1,270	840	660	-	-
	503	2,440	1,860	1,500	1,030	820	550	-
	505	2,730	2,080	1,680	1,150	920	620	-
	507	3,060	2,330	1,880	1,290	1,030	690	-
	509	3,430	2,620	2,110	1,450	1,160	780	-
	563	3,920	3,030	2,560	1,820	1,400	920	740
	565	4,390	3,390	2,860	2,040	1,570	1,030	820
	567	4,910	3,800	3,210	2,290	1,750	1,160	920
	569	5,510	4,260	3,600	2,570	1,970	1,300	1,040
	633	5,800	4,660	3,770	2,920	2,130	1,580	1,210
	635	6,500	5,220	4,220	3,270	2,390	1,760	1,360
	637	7,280	5,840	4,730	3,660	2,670	1,980	1,520
	639	8,160	6,550	5,300	4,110	3,000	2,220	1,710
715	8,950	7,040	5,630	4,470	3,260	2,390	1,940	
717	10,020	7,890	6,310	5,000	3,660	2,680	2,170	
719	11,230	8,840	7,070	5,610	4,100	3,010	2,440	

**Note:** - Bearing type of horizontal motors:

- Grease lubricated anti-friction
- Forced feed oil lubrication sleeve bearings

## | Rated Power at 60 Hz |

## 6.6 kV

Unit: kW

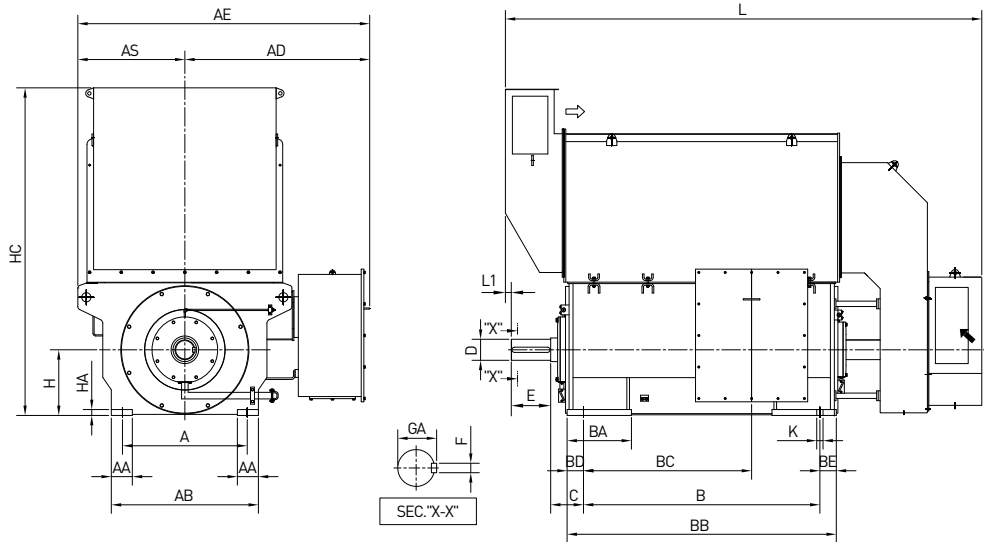
Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIQ1	403	880	680	540	-	-	-	-
	405	990	760	600	-	-	-	-
	407	1,110	850	670	-	-	-	-
	409	1,250	960	760	-	-	-	-
	453	1,400	1,100	870	570	450	-	-
	455	1,570	1,230	980	640	510	-	-
	457	1,750	1,380	1,090	720	570	-	-
	459	1,970	1,550	1,230	810	640	-	-
	503	2,340	1,790	1,440	990	790	530	-
	505	2,630	2,000	1,610	1,110	890	590	-
	507	2,940	2,250	1,810	1,250	1,000	660	-
	509	3,300	2,520	2,030	1,400	1,120	750	-
	563	3,770	2,910	2,460	1,760	1,350	880	710
	565	4,220	3,260	2,760	1,970	1,510	990	790
	567	4,730	3,660	3,090	2,210	1,690	1,110	890
	569	5,300	4,100	3,470	2,480	1,900	1,250	1,000
	633	5,580	4,480	3,630	2,810	2,050	1,520	1,170
	635	6,250	5,020	4,060	3,150	2,300	1,700	1,310
	637	7,000	5,620	4,550	3,530	2,580	1,910	1,470
	639	7,850	6,300	5,100	3,960	2,890	2,140	1,650
715	8,600	6,770	5,420	4,300	3,140	2,310	1,870	
717	9,640	7,580	6,070	4,820	3,520	2,580	2,090	
719	10,800	8,500	6,800	5,400	3,950	2,900	2,350	

**Note:** - Bearing type of horizontal motors:

- Grease lubricated anti-friction
- Forced feed oil lubrication sleeve bearings

## | HIQ1 |

### Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE
HIQ1	403	4	830	140	950	1,130	1,805	675	1,250	275	1,500	892	125
	405	4											
	407	4						1,400		1,650	1,042		125
	409	4											
	453	4	850	150	1,000	1,165	1,875	710	1,400	450	1,660	1,052	110
	455	4											
	457	4						1,600		1,820	1,212		110
	459	4											

Unit: mm

Type	Poles	C	H	HA	HC	K	L	L1	D	E	F	GA	Weight (kg)	
HIQ1	403	4	250	400	30	1,930	35x45	2,810	65	120	210	32	127	4,900
	405	4					Slot							5,100
	407	4						2,960						5,400
	409	4												5,600
	453	4	250	450	45	2,284	35x45	3,100	30	140	250	36	148	6,300
	455	4					Slot							6,500
	457	4						3,260						6,900
	459	4												7,100

#### Note

1. Tolerance on "D" and "DA" dimension will be m6.
2. The bores of the transmission elements should be made to an ISO fit H6.
3. The dimensions printed in bold face in the table to IEC : A, B, C, D, E, F, GA, H, K are certified.

4. Tolerances on dimension A, B, and H.

Dimensions	Tolerance (mm)	
A and B	Over 500 up to 750	±1.5
	Over 750 upto 1,000	±2.0
	Over 1,000	±2.5
H	Over 250 up to 600	-1.0
	Over 600 up to 1,000	-1.5

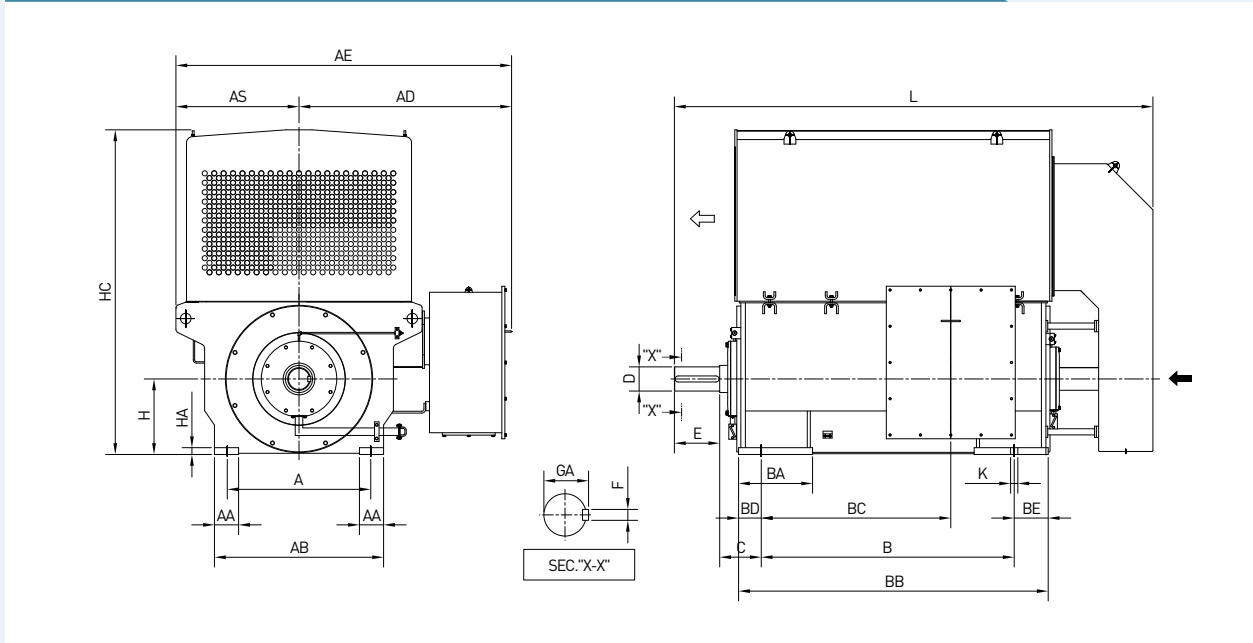
5. "R" dimension of the shaft extension part is as follows.

Shaft Diameter (mm)	R (mm)
50 - 80	1.6
85 - 120	2.5
130 - 190	4.0



| HIQ1 |

Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIQ1	403	6 - 16	830	140	950	1,130	1,805	675	1,250	275	1,500	892	125	125
	405	6 - 16												
	407	6 - 16							1,400		1,650	1,042		
	409	6 - 16												
	453	6 - 16	850	150	1,000	1,165	1,875	710	1,400	450	1,660	1,052	110	150
	455	6 - 16												
	457	6 - 16							1,600		1,820	1,212		110
459	6 - 16													

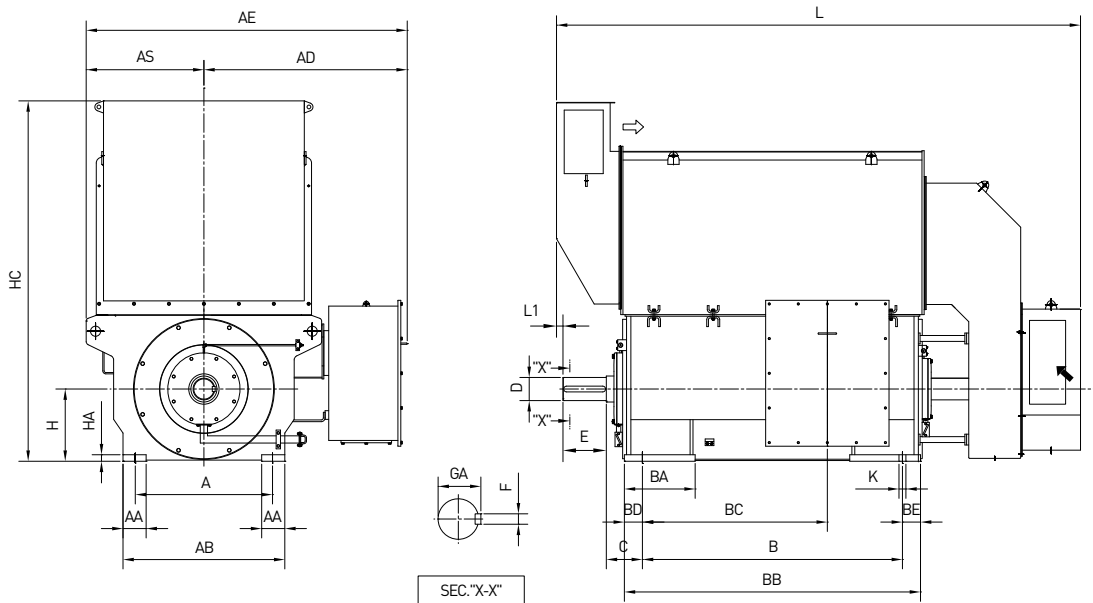
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HIQ1	403	6 - 16	250	400	30	1,715	35x45	2,350	120	210	32	127	4,800
	405	6 - 16					Slot						5,000
	407	6 - 16						2,500					5,300
	409	6 - 16											5,400
	453	6 - 16	250	450	45	1,900	35x45	2,665	140	250	36	148	6,000
	455	6 - 16					Slot						6,200
	457	6 - 16						2,815					6,600
459	6 - 16											6,800	

Note: For tolerances of dimensions, see page 32.

**HIQ1 |**

**Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type**



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIQ1	503	4	950	160	1,120	1,240	2,055	815	1,600	490	1,820	1,050	110	110
	505	4												
	507	4						1,800			2,020	1,250		
	509	4												

Unit: mm

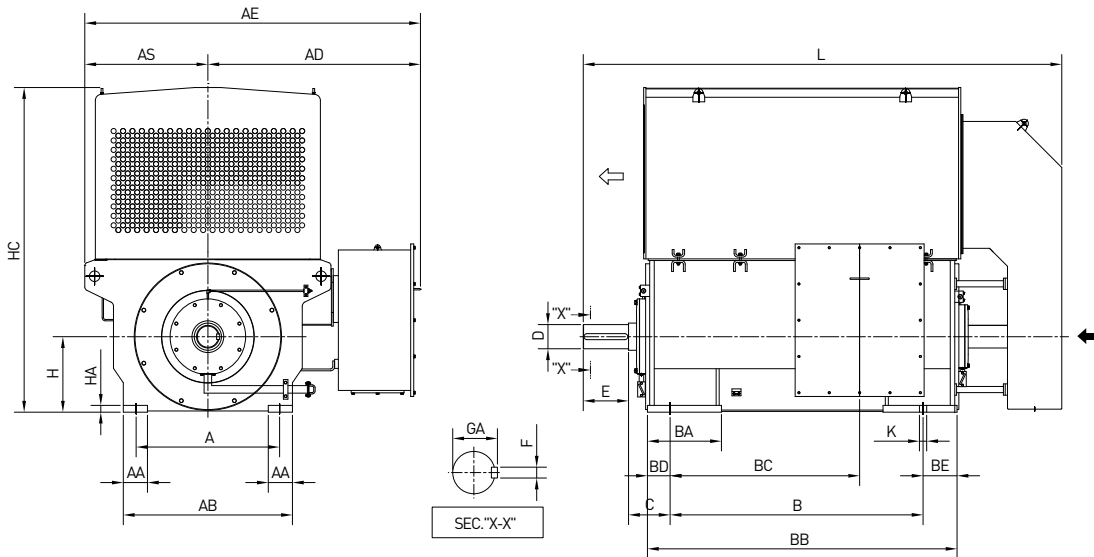
Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HIQ1	503	4	250	500	45	2,540	48x58 Slots	3,370	150	250	36	158	8,200
	505	4											8,500
	507	4						3,570	160	300	40	169	9,200
	509	4											9,500

**Note:** For tolerances of dimensions, see page 32.



## | HIQ1 |

### Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIQ1	503	8 - 16	950	160	1,120	1,240	2,055	815	1,600	490	1,820	1,070	110	110
	505	8 - 16												
	507	8 - 16												
	509	8 - 16												

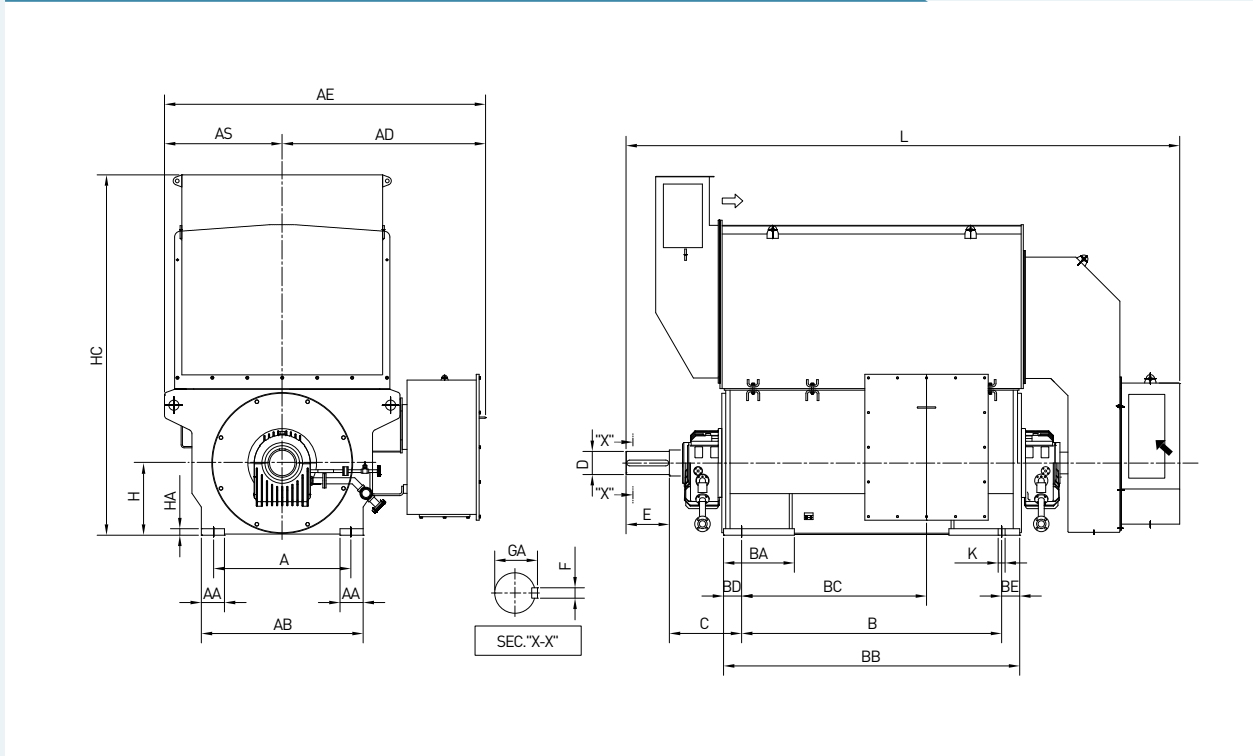
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)						
HIQ1	503	8 - 16	250	500	45	2,090	48x58 Slots	2,950	150	250	36	158	7,900					
	505	8 - 16											8,200					
	507	8 - 16											3,150	160	300	40	169	8,900
	509	8 - 16											9,200					

**Note:** For tolerances of dimensions, see page 32.

| HIQ1 |

Mounting B3 / Degree of Protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIQ1	563	4	1,180	180	1,320	1,450	2,355	905	1,800	520	2,030	1,265	115	115
	565	4												
	567	4						2,000			2,230	1,465		
	569	4												

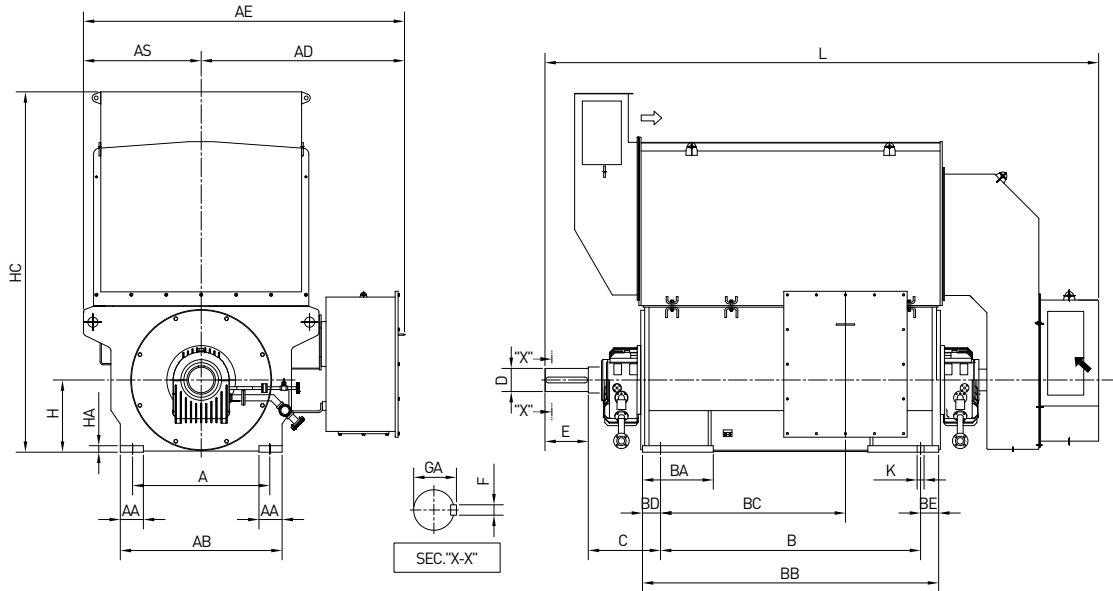
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HIQ1	563	4	475	560	50	2,670	48x58 Slot	3,890	170	300	40	179	11,600
	565	4										12,100	
	567	4					4,140	190	350	45	200	13,000	
	569	4										13,500	

**Note:** For tolerances of dimensions, see page 32.

## | HIQ1 |

### Mounting B3 / Degree of Protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIQ1	633	4	1,400	250	1,540	1,540	2,515	975	2,000	540	2,230	1,465	115	115
	635	4												
	637	4						2,240			2,470	1,705		
	639	4												

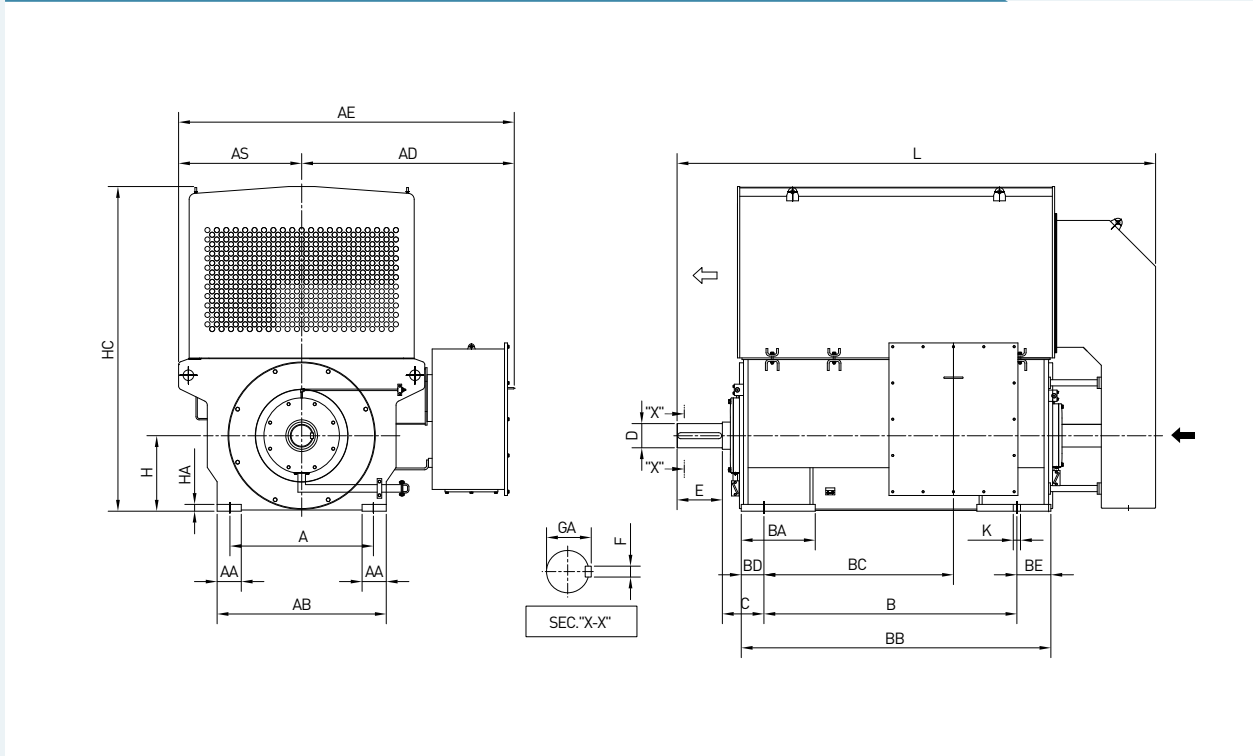
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HIQ1	633	4	475	630	55	2,940	48x58 Slot	4,260	200	350	45	210	15,800
	635	4											16,400
	637	4						4,500					17,700
	639	4											18,400

**Note:** For tolerances of dimensions, see page 32.

# HIQ1 |

## Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIQ1	563	6	1,180	180	1,320	1,450	2,355	905	1,800	520	2,090	1,290	150	140
	565	6												
	567	6						2,000			2,300	1,500		150
	569	6												

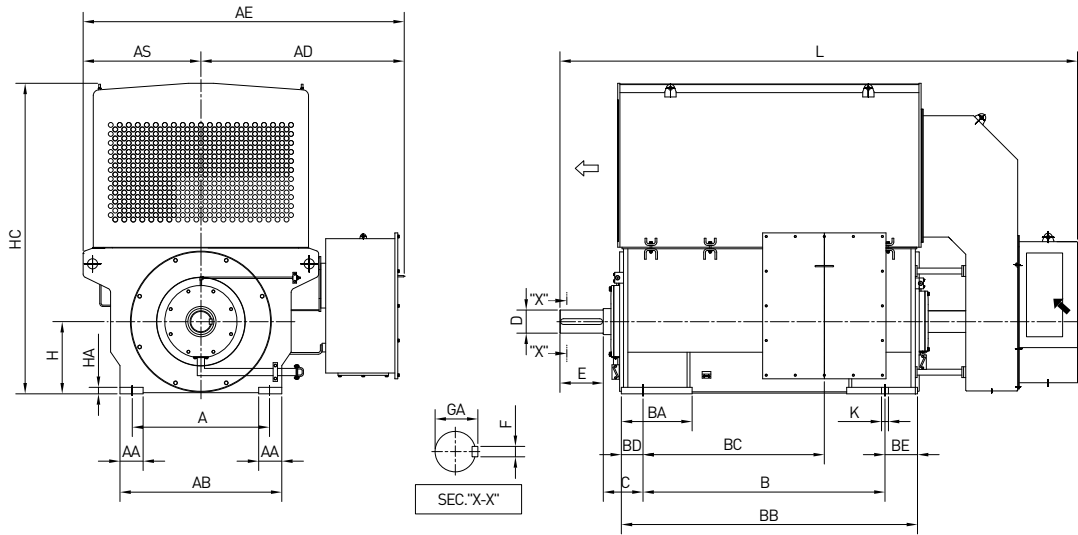
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HIQ1	563	6	335	560	50	2,280	48x58 Slot	3,420	170	300	40	179	11,200
	565	6											11,700
	567	6						3,680	190	350	45	200	12,600
	569	6											13,100

**Note:** For tolerances of dimensions, see page 32.

**| HIQ1 |**

**Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type**



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE
HIQ1	633	6	1,400	230	1,540	1,540	2,515	975	2,000	540	2,320	1,515	150
	635	6											
	637	6						2,240		2,540	1,735		
	639	6											150

Unit: mm

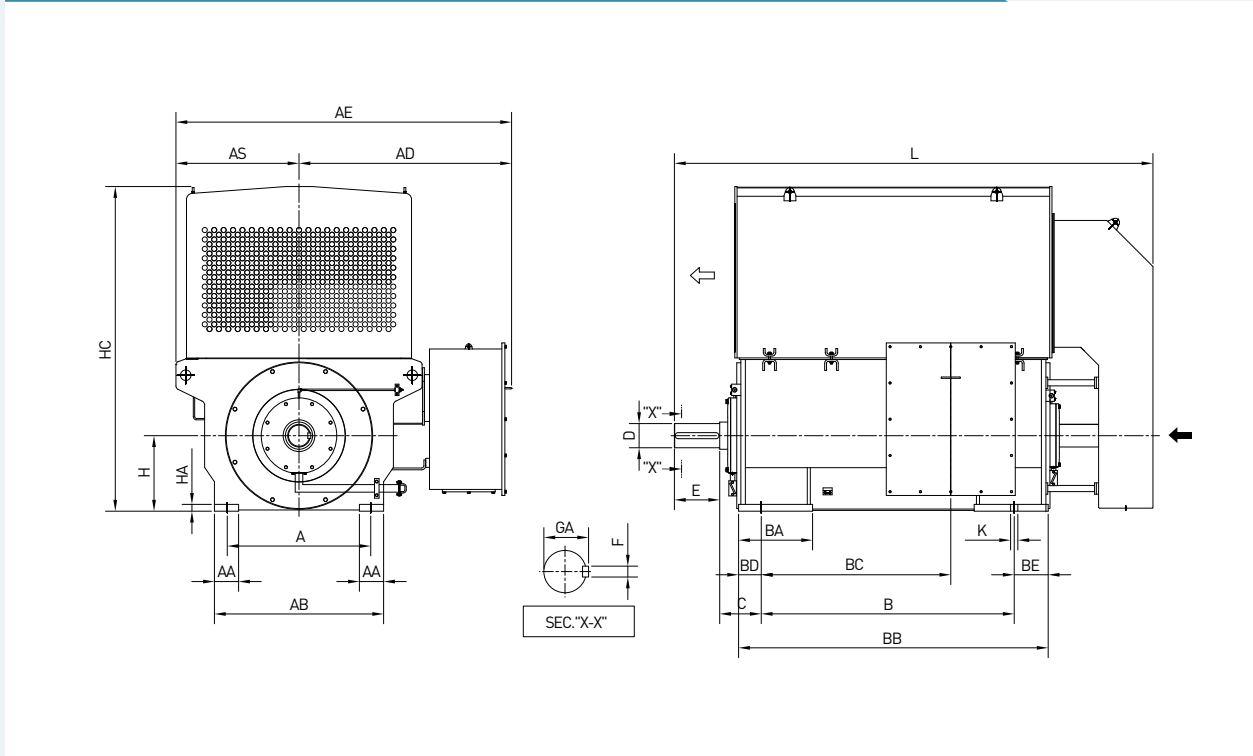
Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HIQ1	633	6	335	630	55	2,580	48x58 Slot	4,100	200	350	45	210	15,400
	635	6											16,000
	637	6						4,320					17,300
	639	6											17,800

**Note:** For tolerances of dimensions, see page 32.



HIQ1 |

Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIQ1	563	8 - 16	1,180	180	1,320	1,450	2,355	905	1,800	520	2,090	1,290	150	140
	565	8 - 16												
	567	8 - 16							2,000		2,300	1,500		150
	569	8 - 16												
	633	8 - 16	1,400	230	1,500	1,540	2,515	975	2,000	540	2,320	1,515	150	170
	635	8 - 16												
	637	8 - 16							2,240		2,540	1,735		150
	639	8 - 16												

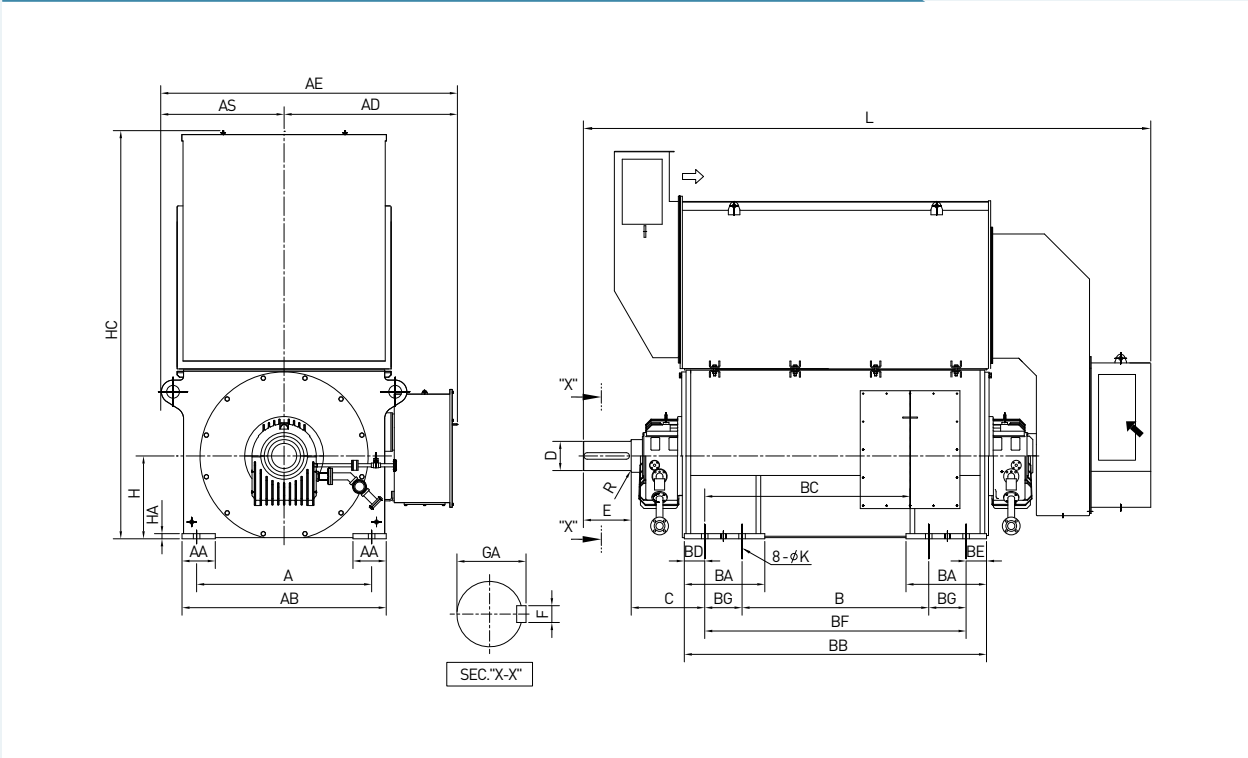
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HIQ1	563	8 - 16	335	560	50	2,240	48x58	3,310	170	300	40	179	11,100
	565	8 - 16					Slot						11,600
	567	8 - 16						3,570	190	350	45	200	12,600
	569	8 - 16											13,000
	633	8 - 16	335	630	55	2,450	48x58	3,620	200	350	45	210	15,100
	635	8 - 16											15,700
	637	8 - 16						3,840	200	350	45	210	16,900
	639	8 - 16											17,600

Note: For tolerances of dimensions, see page 32.

**| HIQ1 |**

**Mounting B3 / Degree of Protection IP55, Sleeve Bearing Type**



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	BF	BG	
HIQ1	715	4	1,500	285	1,750	1,490	2,550	1,060	1,400	690	2,360	1,535	175	185	2,000	300
	717	4							1,600		2,590	1,765	175	175	2,240	320
	719	4														

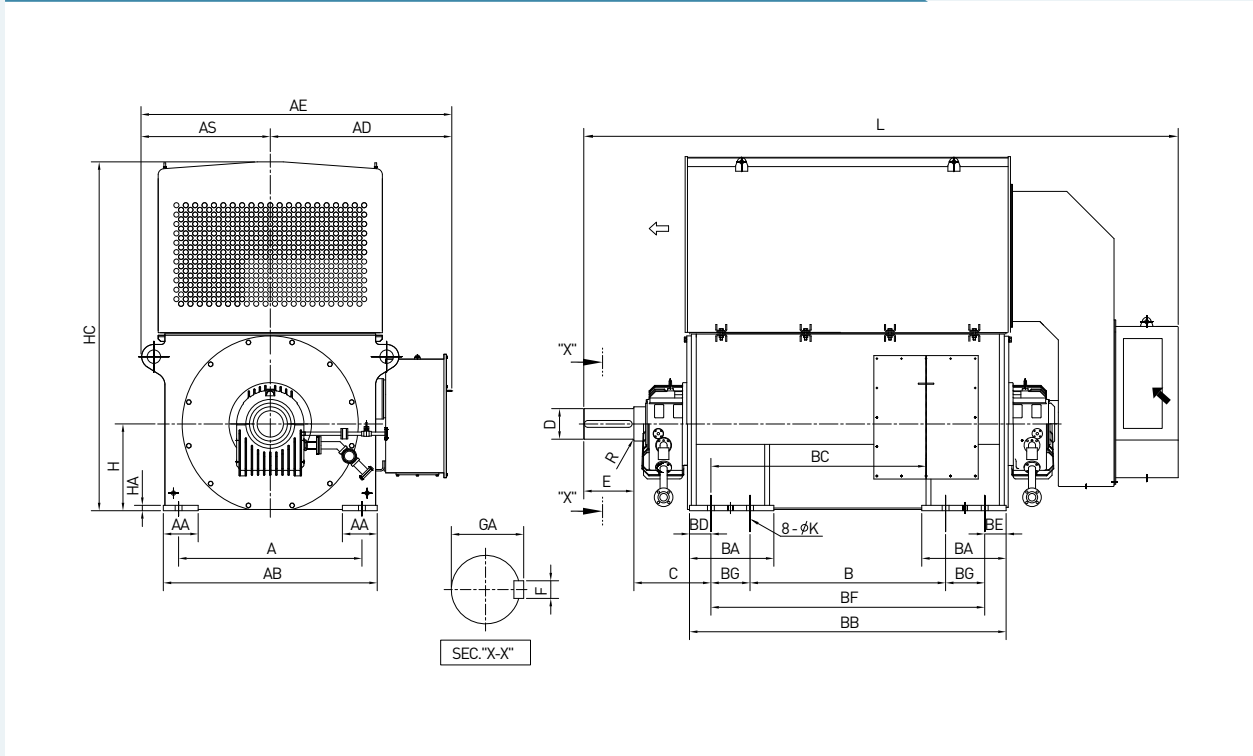
Unit: mm

Type	Poles	C	D	E	F	GA	H	HA	HC	K	L	Weight (kg)	
HIQ1	715	4	600	220	350	50	231	710	44	3,290	56x66	4,630	21,300
	717	4		240	410	56	252				Slot	4,920	22,800
	719	4											23,600

**Note:** For tolerances of dimensions, see page 32.

# HIQ1 |

## Mounting B3 / Degree of Protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	BF	BG	
HIQ1	715	6	1,500	285	1,750	1,490	2,550	1,060	1,400	700	2,460	1,580	230	230	2,000	300
	717	6							1,600		2,700	1,820	230	230	2,240	320
	719	6														

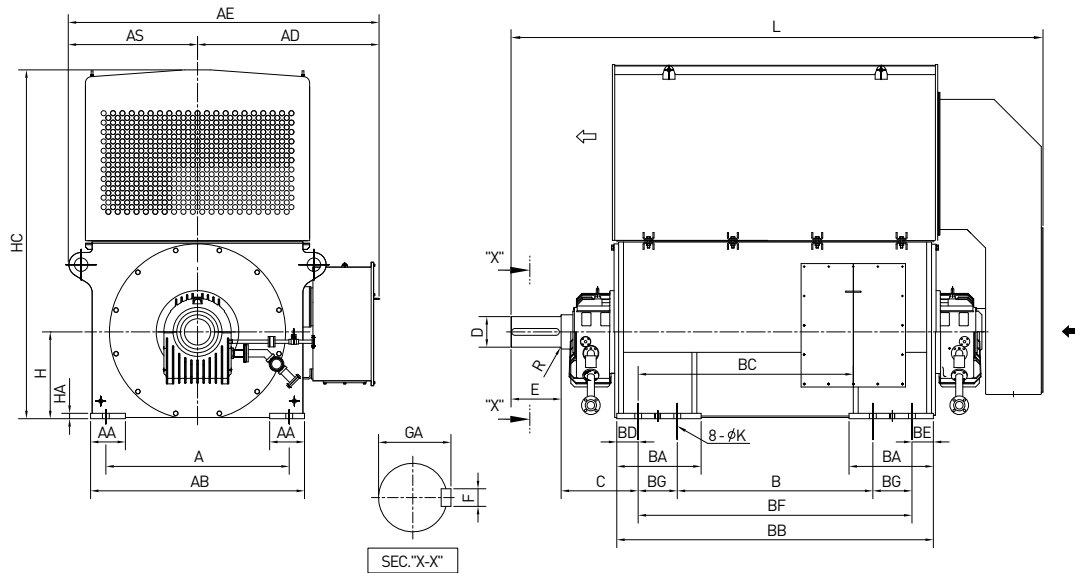
Unit: mm

Type	Poles	C	D	E	F	GA	H	HA	HC	K	L	Weight (kg)	
HIQ1	715	6	670	240	410	56	252	710	44	2,900	56x66	4,800	21,900
	717	6								Slot	5,040	22,700	
	719	6									5,040	23,600	

**Note:** For tolerances of dimensions, see page 32.

## | HIQ1 |

### Mounting B3 / Degree of Protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	BF	BG	
HIQ1	715	8 - 16	1,500	285	1,750	1,490	2,550	1,060	1,400	700	2,460	1,580	230	230	2,000	300
	717	8 - 16							1,600		2,700	1,820	230	230	2,240	320
	719	8 - 16														

Unit: mm

Type	Poles	C	D	E	F	GA	H	HA	HC	K	L	Weight (kg)	
HIQ1	715	8 - 16	670	240	410	56	252	710	44	2,780	56x66	4,300	21,500
	717	8 - 16									Slot	4,540	23,200
	719	8 - 16										4,540	24,000

**Note:** For tolerances of dimensions, see page 32.

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# HRQ3 Series-Vertical

Totally Enclosed Air to Air Cooled, Squirrel Cage

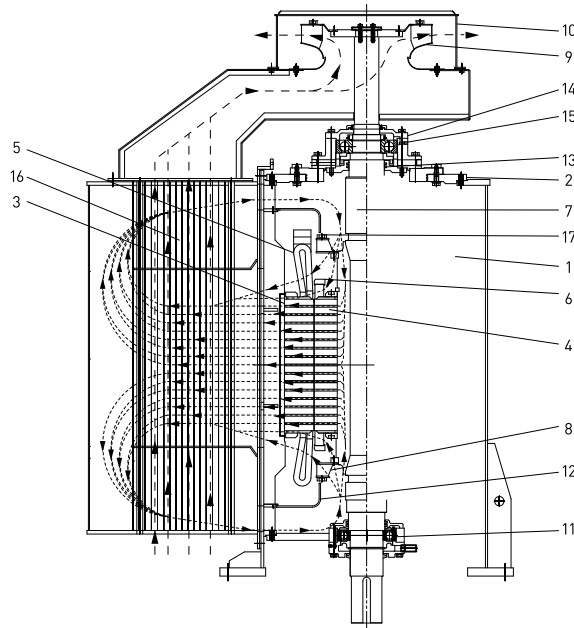
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## HRQ3 - Vertical | Type - I (Bi-directional cooling circuit)

• Rotor Type	Squirrel Cage
• Number of Pole	4-6
• Voltage	2-14 kV
• Output Range	810-6,070 kW (at 60 Hz, 6,600 V, 4 Pole)
• Type of Construction	IM V10
• Frame	400-630
• Degree of Protection	IP 55 (IEC 60034-5)
• Method of Cooling	IC 611 (IEC 60034-6)
• Type of Enclosure	Totally Enclosed Air to Air Cooled (NEMA MG-1)

### Sectional View and Parts Name



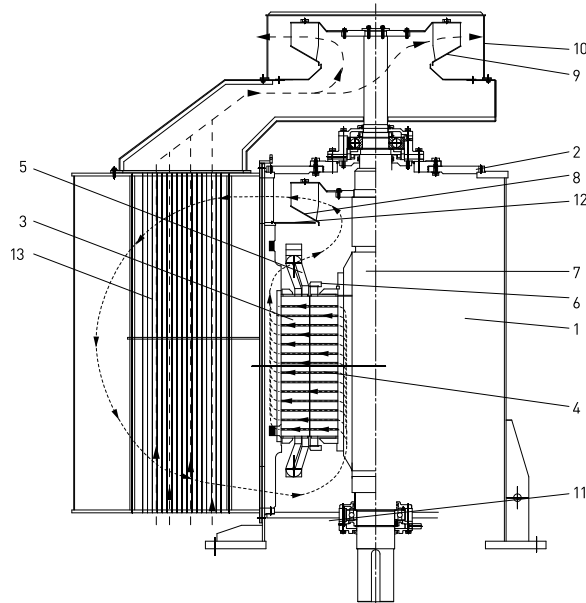
#### Parts Name

1. Stator Frame	6. Rotor End Ring	10. Fan Cover	14. External Bearing Cover
2. End Shield	7. Shaft	11. Bearing	15. Grease Nipple
3. Stator Core	8. Internal Cooling Fan	12. Air Guide Plate	16. Heat-Exchange Pipe
4. Rotor Core	9. External Cooling Fan	13. Internal Bearing Cover	17. Balance-Ring
5. Stator Winding			

## | HRQ3 - Vertical | Type - II (Uni-directional cooling circuit)

• Rotor Type	Squirrel Cage
• Number of Pole	8-16
• Voltage	2-14 kV
• Output Range	490-4,410 kW (at 60 Hz, 6,600 V, 4 Pole)
• Type of Construction	IM V10
• Frame	400-630
• Degree of Protection	IP 55 (IEC 60034-5)
• Method of Cooling	IC 611 (IEC 60034-6)
• Type of Enclosure	Totally Enclosed Air to Air Cooled (NEMA MG-1)

### Sectional View and Parts Name



#### Parts Name

1. Stator Frame	5. Stator Winding	8. Internal Cooling Fan	11. Bearing
2. End Shield	6. Rotor End Ring	9. External Cooling Fan	12. Air Guide Plate
3. Stator Core	7. Shaft	10. Fan Cover	13. Heat-Exchange Pipe
4. Rotor Core			

## | Rated Power at 50 Hz |

### 3.3 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HRQ3	403	-	-	440	-	-	-	-
	405	730	560	500	-	-	-	-
	407	820	630	560	-	-	-	-
	409	930	700	630	-	-	-	-
	40L	1,050	790	-	-	-	-	-
	453	-	-	690	450	340	-	-
	455	1,240	990	780	510	380	-	-
	457	1,390	1,100	870	570	420	-	-
	459	1,540	1,240	980	640	480	-	-
	45L	1,700	1,380	-	-	-	-	-
	503	-	-	1,090	760	560	-	-
	505	1,790	1,510	1,220	850	630	-	-
	507	1,990	1,700	1,370	950	710	-	-
	509	2,240	1,890	1,540	1,070	800	-	-
	50L	2,490	2,120	-	-	-	-	-
	563	-	-	1,790	1,230	980	725	550
	565	2,920	2,560	2,000	1,370	1,100	800	610
	567	3,270	2,860	2,250	1,540	1,240	885	690
	569	3,650	3,190	2,520	1,730	1,390	965	770
	633	3,860	3,340	2,790	1,990	1,620	1,210	970
635	4,340	3,710	3,120	2,230	1,810	1,355	1,090	
637	4,830	4,150	3,500	2,500	2,030	1,525	1,220	
639	5,410	4,640	3,920	2,800	2,280	1,710	1,370	

### 6.6 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HRQ3	403	-	-	410	-	-	-	-
	405	630	510	460	-	-	-	-
	407	710	570	510	-	-	-	-
	409	800	640	580	-	-	-	-
	40L	910	720	-	-	-	-	-
	453	-	-	640	420	320	-	-
	455	1,150	900	720	470	350	-	-
	457	1,290	1,000	810	530	400	-	-
	459	1,430	1,130	910	600	450	-	-
	45L	1,580	1,260	-	-	-	-	-
	503	-	-	1,010	710	530	-	-
	505	1,750	1,400	1,130	790	590	-	-
	507	1,950	1,580	1,270	890	660	-	-
	509	2,190	1,750	1,430	1,000	750	-	-
	50L	2,440	1,970	-	-	-	-	-
	563	-	-	1,670	1,140	930	640	500
	565	2,810	2,440	1,880	1,280	1,040	720	570
	567	3,140	2,730	2,100	1,430	1,160	810	640
	569	3,510	3,040	2,360	1,610	1,310	910	720
	633	3,670	3,220	2,610	1,860	1,520	1,120	900
635	4,130	3,580	2,920	2,080	1,700	1,260	1,000	
637	4,590	4,010	3,270	2,330	1,910	1,420	1,120	
639	5,150	4,480	3,670	2,620	2,140	1,590	1,260	



## | Rated Power at 60 Hz |

## 3.3 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HRQ3	403	-	-	530	-	-	-	-
	405	960	700	590	-	-	-	-
	407	1,080	780	660	-	-	-	-
	409	1,220	880	750	-	-	-	-
	40L	1,380	990	-	-	-	-	-
	453	-	-	830	540	410	-	-
	455	1,500	1,190	940	610	460	-	-
	457	1,680	1,320	1,050	680	510	-	-
	459	1,860	1,490	1,180	770	580	-	-
	45L	2,050	1,660	-	-	-	-	-
	503	-	-	1,300	910	680	-	-
	505	2,260	1,870	1,460	1,020	760	-	-
	507	2,510	2,110	1,640	1,150	850	-	-
	509	2,820	2,340	1,840	1,290	960	-	-
	50L	3,140	2,630	-	-	-	-	-
	563	-	-	2,150	1,470	1,190	830	660
	565	3,520	3,030	2,410	1,650	1,330	935	740
	567	3,930	3,380	2,700	1,840	1,500	1,050	830
	569	4,390	3,770	3,030	2,070	1,680	1,175	930
	633	4,640	4,010	3,350	2,390	1,950	1,470	1,170
635	5,220	4,450	3,760	2,680	2,190	1,645	1,310	
637	5,800	4,990	4,210	3,000	2,450	1,850	1,470	
639	6,500	5,570	4,720	3,370	2,750	2,070	1,650	

## 4.16 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HRQ3	403	-	-	510	-	-	-	-
	405	910	670	580	-	-	-	-
	407	1,020	750	650	-	-	-	-
	409	1,150	840	730	-	-	-	-
	40L	1,300	950	-	-	-	-	-
	453	-	-	800	530	390	-	-
	455	1,460	1,160	900	590	430	-	-
	457	1,640	1,290	1,000	660	490	-	-
	459	1,820	1,450	1,130	750	550	-	-
	45L	2,000	1,620	-	-	-	-	-
	503	-	-	1,270	880	660	-	-
	505	2,210	1,830	1,420	980	740	-	-
	507	2,450	2,060	1,590	1,100	830	-	-
	509	2,760	2,290	1,790	1,240	930	-	-
	50L	3,070	2,570	-	-	-	-	-
	563	-	-	2,080	1,430	1,150	810	640
	565	3,400	2,960	2,330	1,600	1,290	910	720
	567	3,800	3,300	2,610	1,790	1,440	1,025	810
	569	4,250	3,680	2,930	2,010	1,620	1,150	910
	633	4,530	3,920	3,240	2,320	1,890	1,425	1,130
635	5,100	4,360	3,630	2,590	2,120	1,595	1,270	
637	5,660	4,880	4,070	2,910	2,370	1,795	1,420	
639	6,350	5,450	4,560	3,260	2,660	2,010	1,600	

## | Rated Power at 60 Hz |

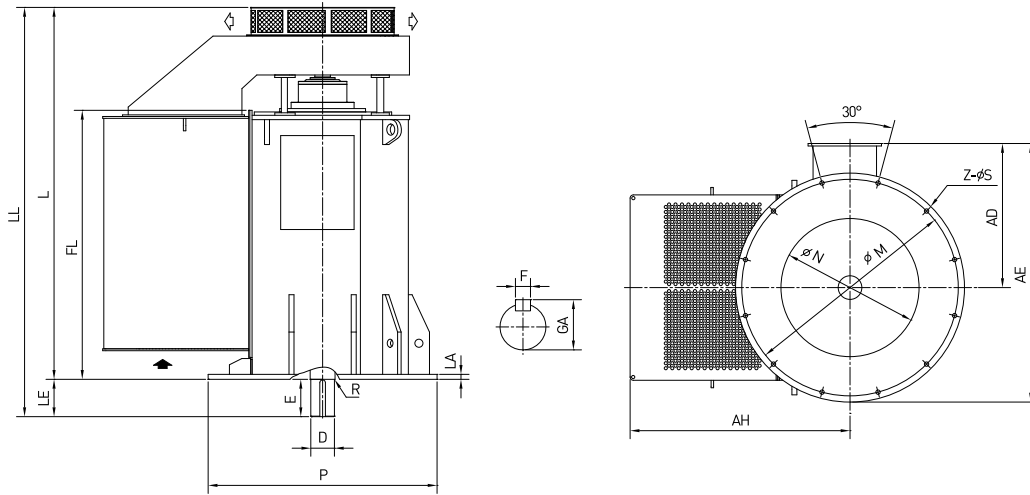
### 6.6 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HRQ3	403	-	-	490	-	-	-	-
	405	810	620	550	-	-	-	-
	407	910	690	620	-	-	-	-
	409	1,020	770	700	-	-	-	-
	40L	1,160	870	-	-	-	-	-
	453	-	-	780	510	380	-	-
	455	1,400	1,110	870	570	430	-	-
	457	1,570	1,240	980	640	480	-	-
	459	1,740	1,390	1,100	720	540	-	-
	45L	1,920	1,550	-	-	-	-	-
	503	-	-	1,230	850	640	440	-
	505	2,110	1,750	1,370	950	710	500	-
	507	2,350	1,970	1,540	1,070	800	560	-
	509	2,640	2,190	1,730	1,200	900	630	-
	50L	2,940	2,460	-	-	-	-	-
	563	-	-	2,010	1,380	1,110	775	610
	565	3,190	2,810	2,250	1,540	1,250	870	690
	567	3,570	3,140	2,520	1,730	1,400	980	770
	569	3,990	3,500	2,830	1,940	1,570	1,100	870
	633	4,330	3,760	3,130	2,240	1,820	1,355	1,080
635	4,870	4,180	3,510	2,510	2,040	1,515	1,210	
637	5,410	4,680	3,930	2,810	2,290	1,705	1,350	
639	6,070	5,230	4,410	3,150	2,570	1,910	1,520	

| HRQ3 |

Mounting V10 / Degree of protection IP55, Anti-Friction Bearing Type



Unit: mm

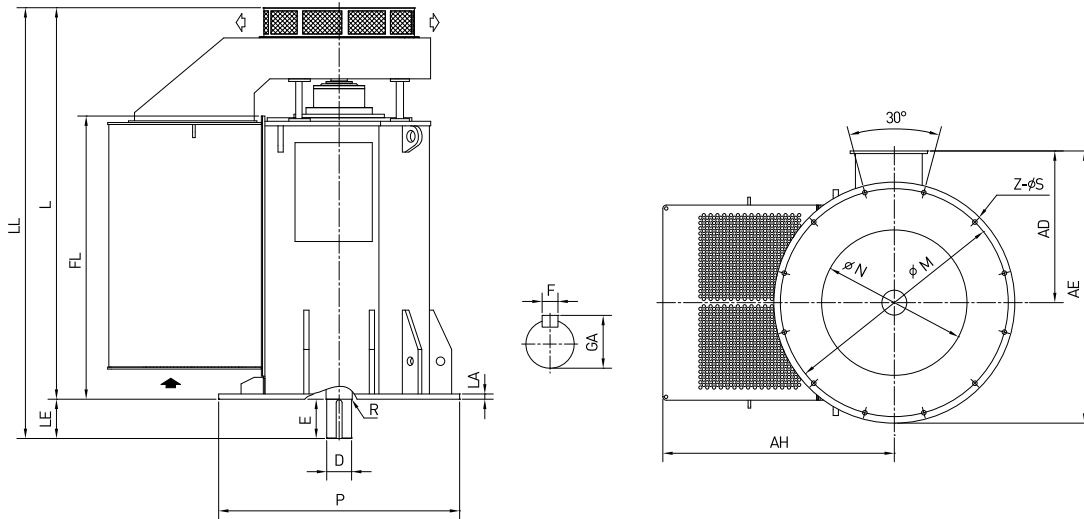
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRQ3	403	8	970	1,595	2,160	35	200	2,420	2,620	1,740	1,170	860
	405	4										
	6											
	8											
	407	4	970	1,595	2,160	35	200	2,590	2,790	1,910	1,170	860
	6											
	8											
	409	4										
	6											
	8											
	40L	4										
	6											

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRQ3	403	8	1,250	2	28	12	130	200	32	137	4,900
	405	4									5,200
	6										5,050
	8										5,050
	407	4	1,250	2	28	12	130	200	32	137	5,300
	6										5,200
	8										5,200
	409	4									5,750
	6		5,600								
	8		5,600								
	40L	4									5,950
	6										5,800

## | HRQ3 |

### Mounting V10 / Degree of protection IP55, Anti-Friction Bearing Type



Unit: mm

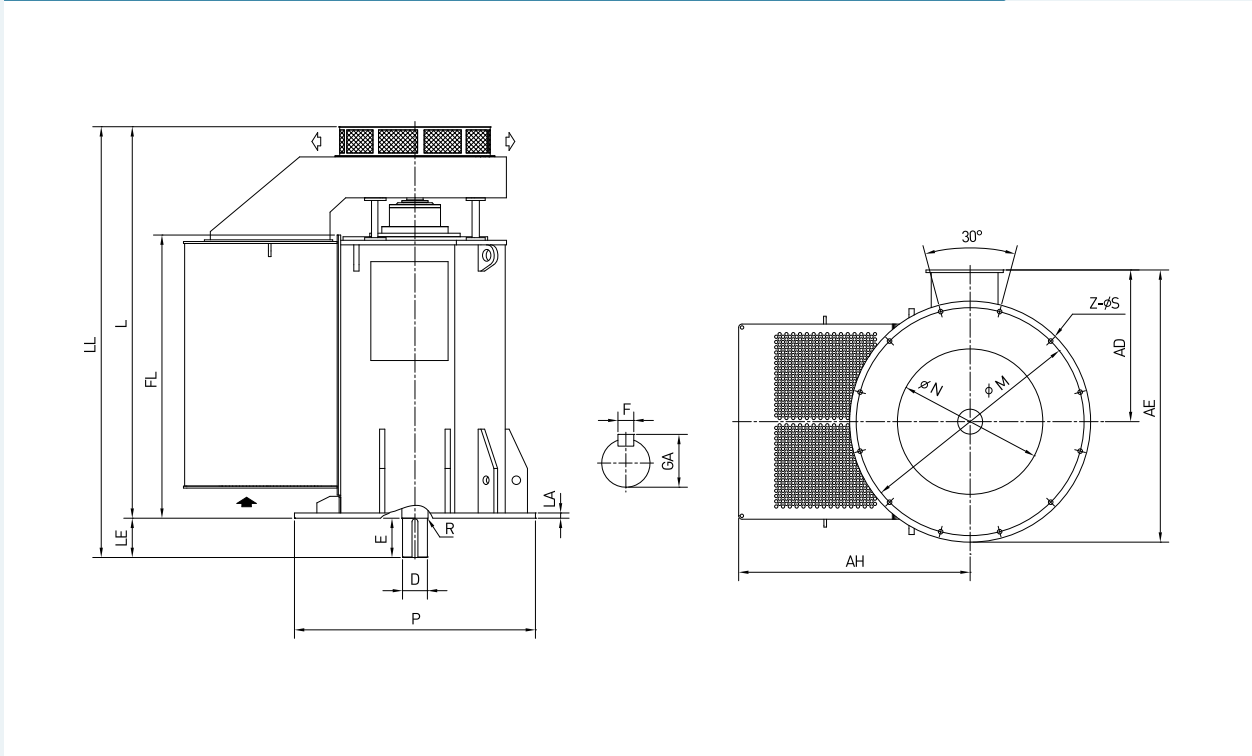
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRQ3	455	1,150	1,850	2,680	35	200	2,730	2,930	2,000	1,280	940	
	6											
	457	4										
		6										
	459	4	1,150	1,850	2,680	35	200	2,890	3,090	2,160	1,280	940
		6										
45L	4											
	6											

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRQ3	455	1,360	2	28	12	150	200	36	158	6,750	
	6									6,750	
	457	4									
		6	7,000								
	459	4	1,360	2	28	12	150	200	36	158	7,450
		6									7,500
45L	4										
	6	7,700									
										7,750	

| HRQ3 |

Mounting V10 / Degree of protection IP55, Anti-Friction Bearing Type



Unit: mm

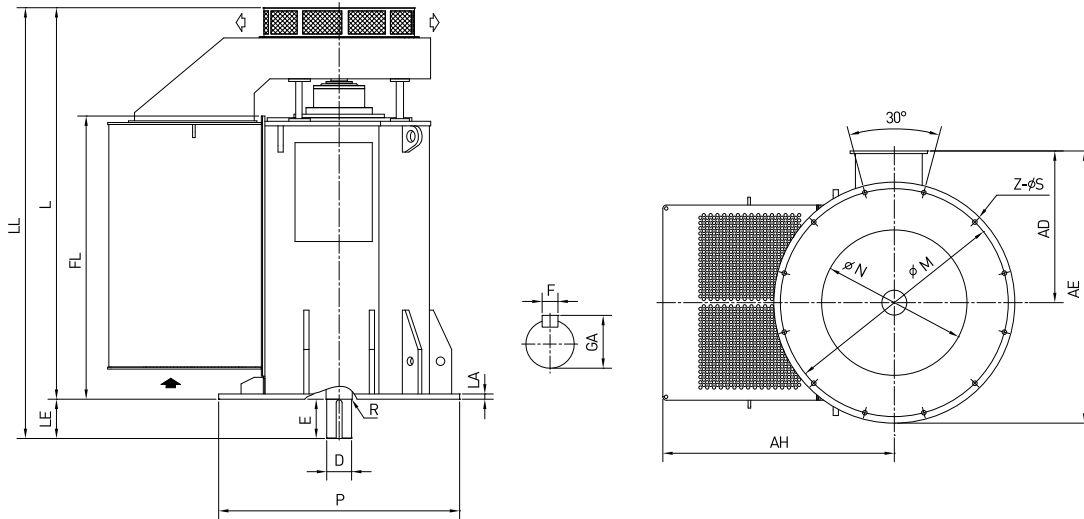
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRQ3	453	8 - 16	1,150	1,850	2,680	35	200	2,670	2,870	1,940	1,280	940
	455	8 - 16										
	457	8 - 16						2,790	2,990	2,060		
	459	8 - 16										

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRQ3	453	8 - 16	1,360	2	28	12	150	200	36	158	6,950
	455	8 - 16									7,200
	457	8 - 16									7,650
	459	8 - 16									7,900

## | HRQ3 |

### Mounting V10 / Degree of protection IP55, Anti-Friction Bearing Type



Unit: mm

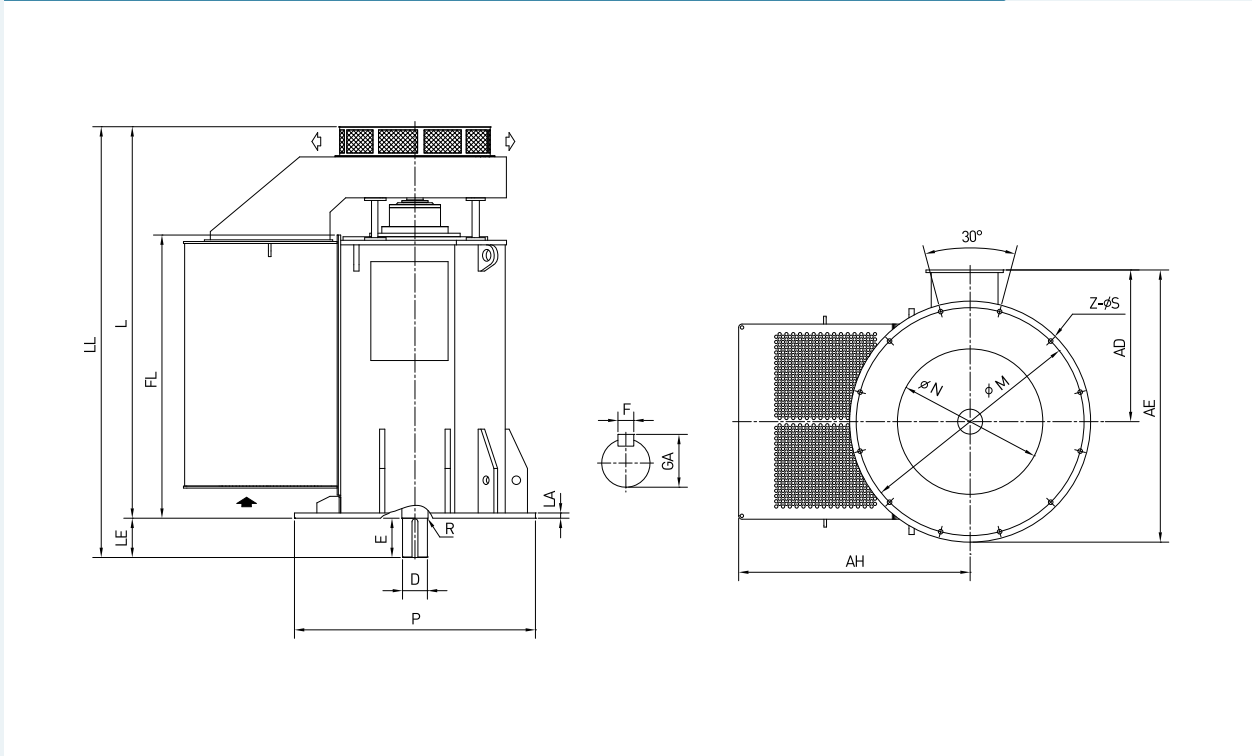
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRQ3	505	4	1,210	2,010	2,850	35	240	2,860	3,100	2,080	1,420	1,050
		6										
	507	4										
		6										
	509	4										
		6										
50L	4											
	6											

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRQ3	505	4	1,500	2	28	12	170	240	40	179	8,610
		6									8,660
	507	4									
		6									9,020
	509	4									
		6									9,740
50L	4										
	6	10,010									
										10,150	

| HRQ3 |

Mounting V10 / Degree of protection IP55, Anti-Friction Bearing Type



Unit: mm

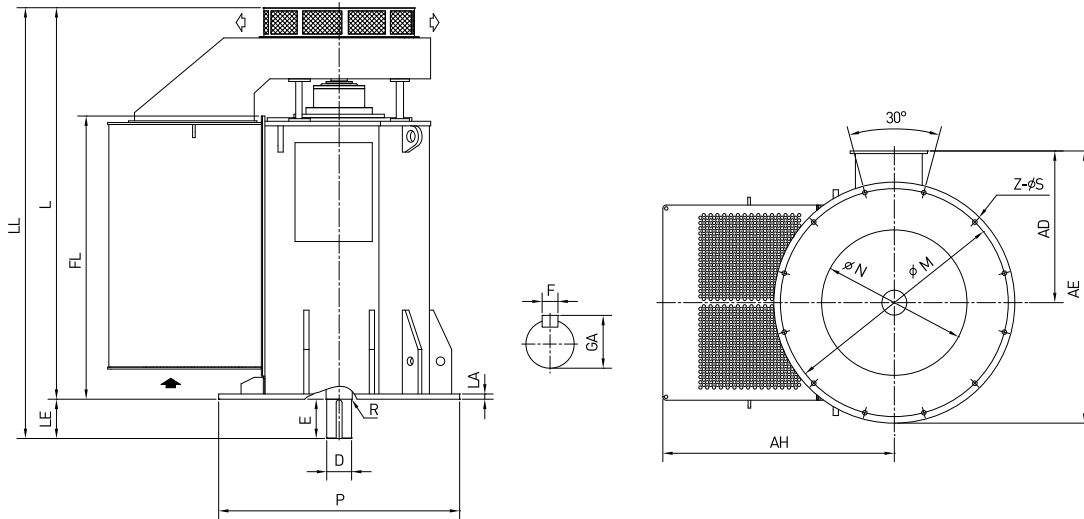
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRQ3	503	8 - 12	1,210	2,010	2,850	35	240	2,860	3,100	2,080	1,420	1,050
	505	8 - 12										
	507	8 - 12						3,060	3,300	2,280		
	509	8 - 12										

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRQ3	503	8 - 12	1,500	2	28	12	170	240	40	179	8,660
	505	8 - 12									8,950
	507	8 - 12									9,840
	509	8 - 12									10,210

## | HRQ3 |

### Mounting V10 / Degree of protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRQ3	563	4	1,290	2,190	3,040	40	280	2,950	3,230	2,120	1,580	1,160
	6											
	565	4	1,290	2,190	3,040	40	280	3,170	3,450	2,320	1,580	1,160
		6										
	569	4	1,290	2,190	3,040	40	280	3,170	3,450	2,320	1,580	1,160
		6										

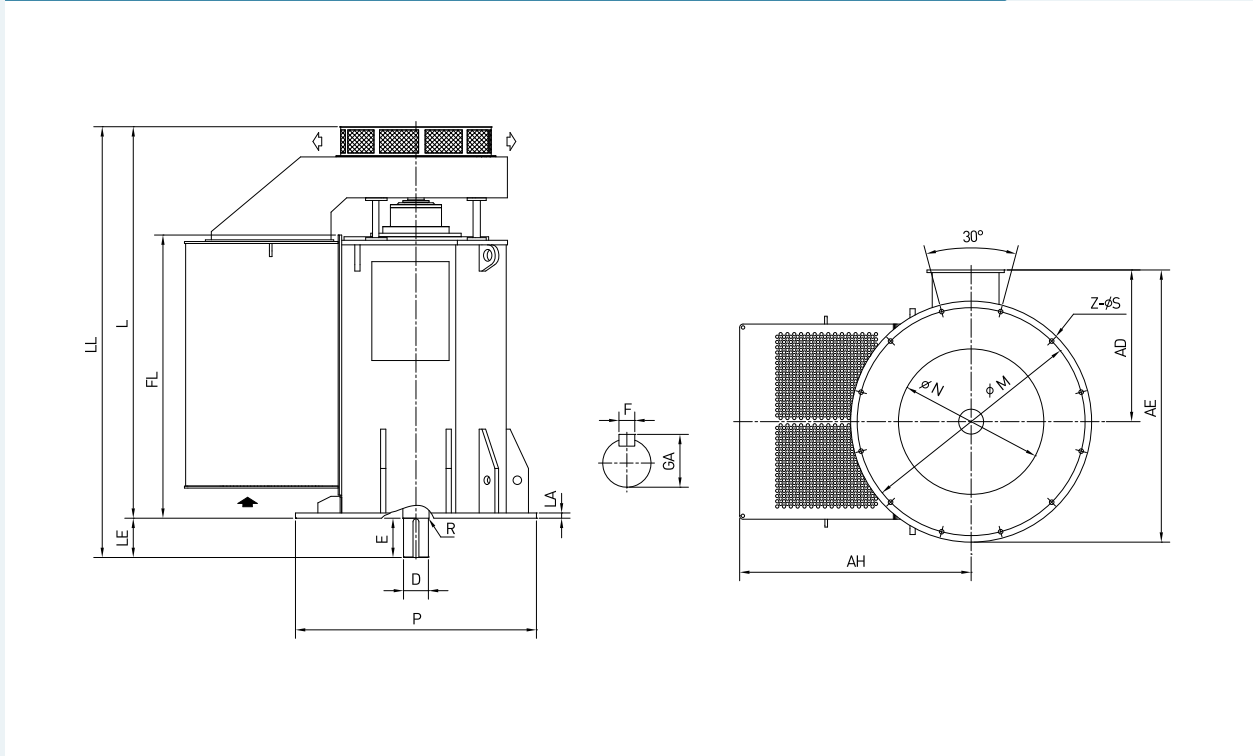
Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRQ3	563	4	1,680	2	35	12	190	280	45	200	11,400
	6										11,500
	565	4	1,680	2	35	12	190	280	45	200	11,850
		6									11,950
	567	4	1,680	2	35	12	190	280	45	200	12,650
		6									12,800
569	4	1,680	2	35	12	190	280	45	200	13,050	
	6									13,300	



| HRQ3 |

Mounting V10 / Degree of protection IP55, Anti-Friction Bearing Type



Unit: mm

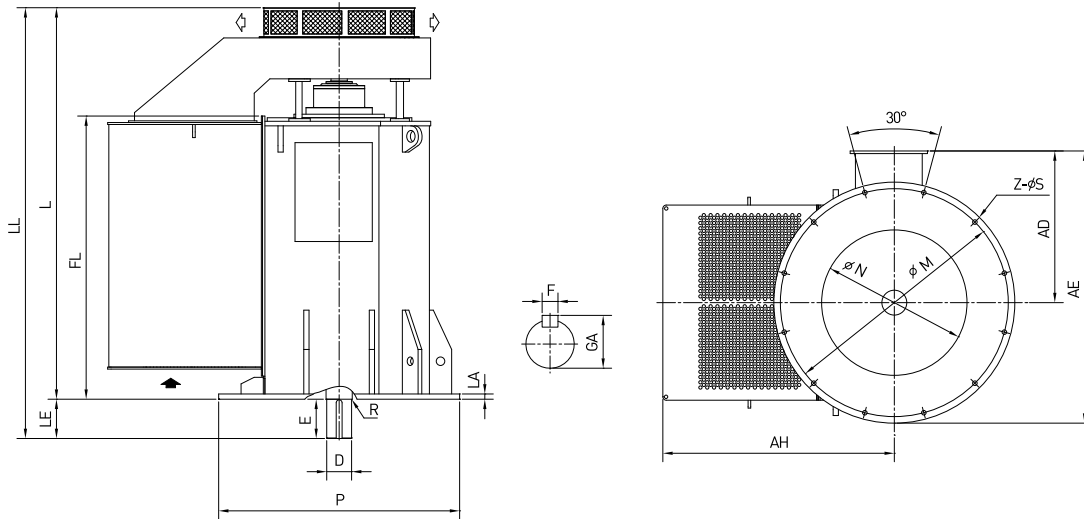
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRQ3	563	8 - 10	1,290	2,190	3,040	40	280	2,890	3,170	2,090	1,580	1,160
		12 - 14										
	565	8 - 10	1,290	2,190	3,040	40	280	3,090	3,370	2,290	1,580	1,160
		12 - 14										
	567	8 - 10	1,290	2,190	3,040	40	280	3,090	3,370	2,290	1,580	1,160
		12 - 14										
569	8 - 10	1,290	2,190	3,040	40	280	3,090	3,370	2,290	1,580	1,160	
	12 - 14											

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRQ3	563	8 - 10	1,680	2	35	12	190	280	45	200	11,000
		12 - 14									11,100
	565	8 - 10	1,680	2	35	12	190	280	45	200	11,300
		12 - 14									11,400
	567	8 - 10	1,680	2	35	12	190	280	45	200	12,200
		12 - 14									12,300
569	8 - 10	1,680	2	35	12	190	280	45	200	12,600	
	12 - 14									12,700	

## | HRQ3 |

### Mounting V10 / Degree of protection IP55, Anti-Friction Bearing Type



Unit: mm

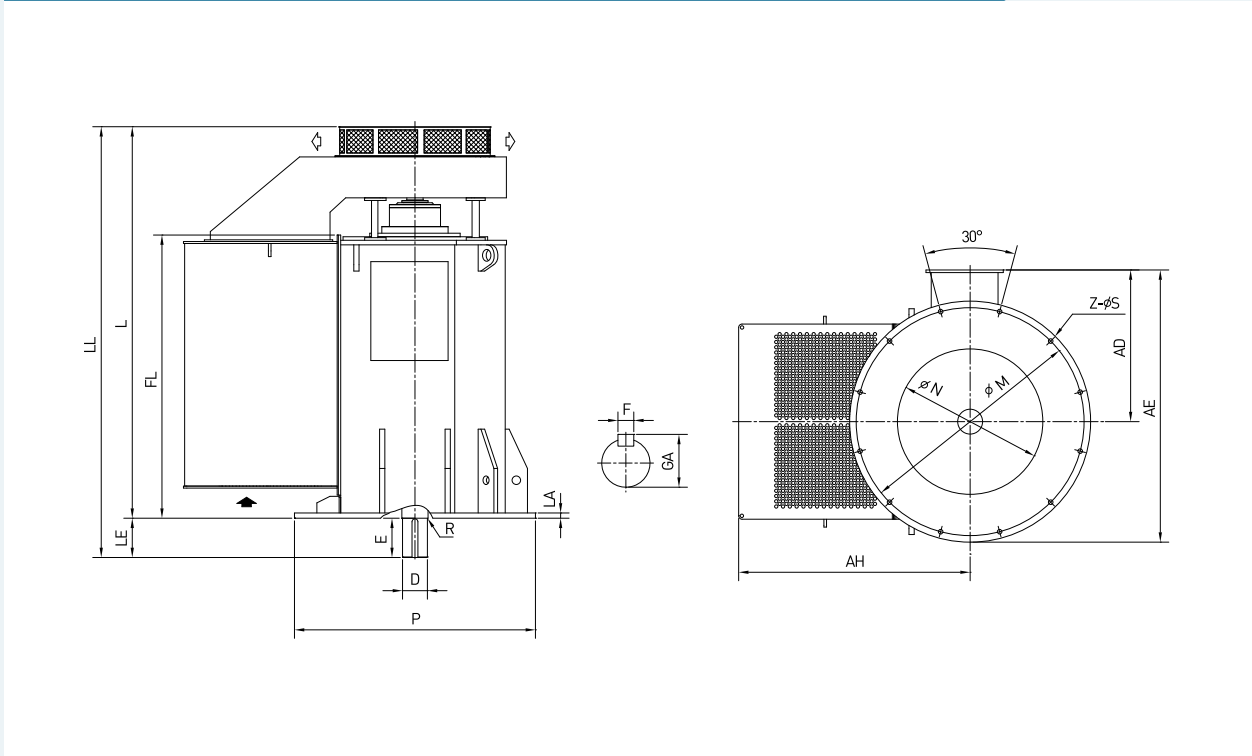
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRQ3	633	4	1,350	2,350	3,270	40	280	3,280	3,560	2,410	1,700	1,300
		6										
	635	4	1,350	2,350	3,270	40	280	3,490	3,770	2,620	1,700	1,300
		6										
	639	4	1,350	2,350	3,270	40	280	3,490	3,770	2,620	1,700	1,300
		6										

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRQ3	633	4	1,800	4	35	12	200	280	45	210	15,320
		6									15,470
	635	4	1,800	4	35	12	220	280	50	231	15,890
		6									15,980
	637	4	1,800	4	35	12	220	280	50	231	16,890
		6									17,070
639	4	1,800	4	35	12	220	280	50	231	17,540	
	6									17,740	

| HRQ3 |

Mounting V10 / Degree of protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRQ3	633	8 - 10	1,350	2,350	3,270	40	280	3,200	3,480	2,390	1,700	1,300
		12 - 14										
	635	8 - 10	1,350	2,350	3,270	40	280	3,490	3,770	2,620	1,700	1,300
		12 - 14										
	637	8 - 10	1,350	2,350	3,270	40	280	3,490	3,770	2,620	1,700	1,300
		12 - 14										
639	8 - 10	1,350	2,350	3,270	40	280	3,490	3,770	2,620	1,700	1,300	
	12 - 14											

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRQ3	633	8 - 10	1,800	4	35	12	200	280	45	210	14,900
		12 - 14									15,000
	635	8 - 10	1,800	4	35	12	220	280	50	231	15,400
		12 - 14									15,500
	637	8 - 10	1,800	4	35	12	220	280	50	231	16,700
		12 - 14									16,800
639	8 - 10	1,800	4	35	12	220	280	50	231	17,400	
	12 - 14									17,500	



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# HRN3, HIN1 Series

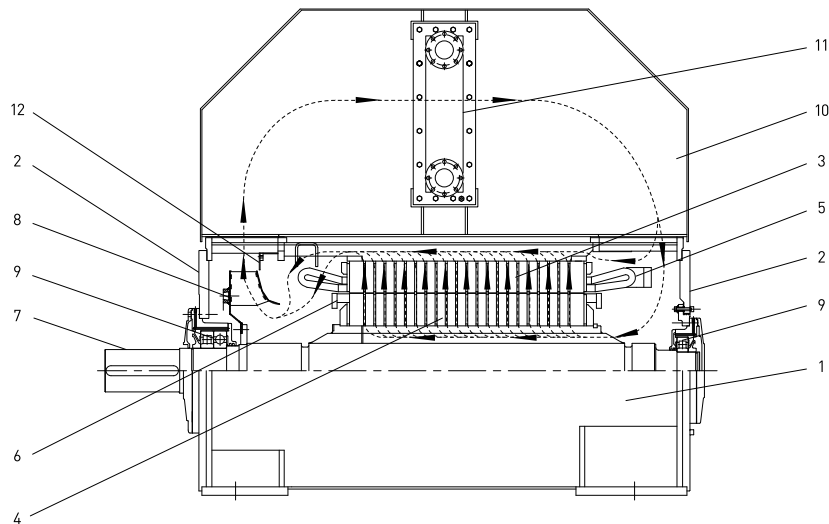
Totally Enclosed Water to Air Cooled, Squirrel Cage

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## | HRN3, HIN1 | Type - I (Uni-directional cooling circuit)

• Rotor Type	Squirrel Cage
• Number of Poles	2-16
• Voltage	2-14 kV
• Output Range	1,130-13,800 kW (at 60 Hz, 6,600 V, 4 Pole)
• Type of Construction	IM B3
• Frame	400-710
• Degree of Protection	IP 55 (IEC 60034-5)
• Method of Cooling	IC 81W (IEC 60034-6)
• Type of Enclosure	Totally Enclosed Water to Air Cooled (NEMA MG-1)
• Cooling Water Inlet Temp.	Max. 25 °C (Other case, please inquiry)

### Sectional View and Parts Name

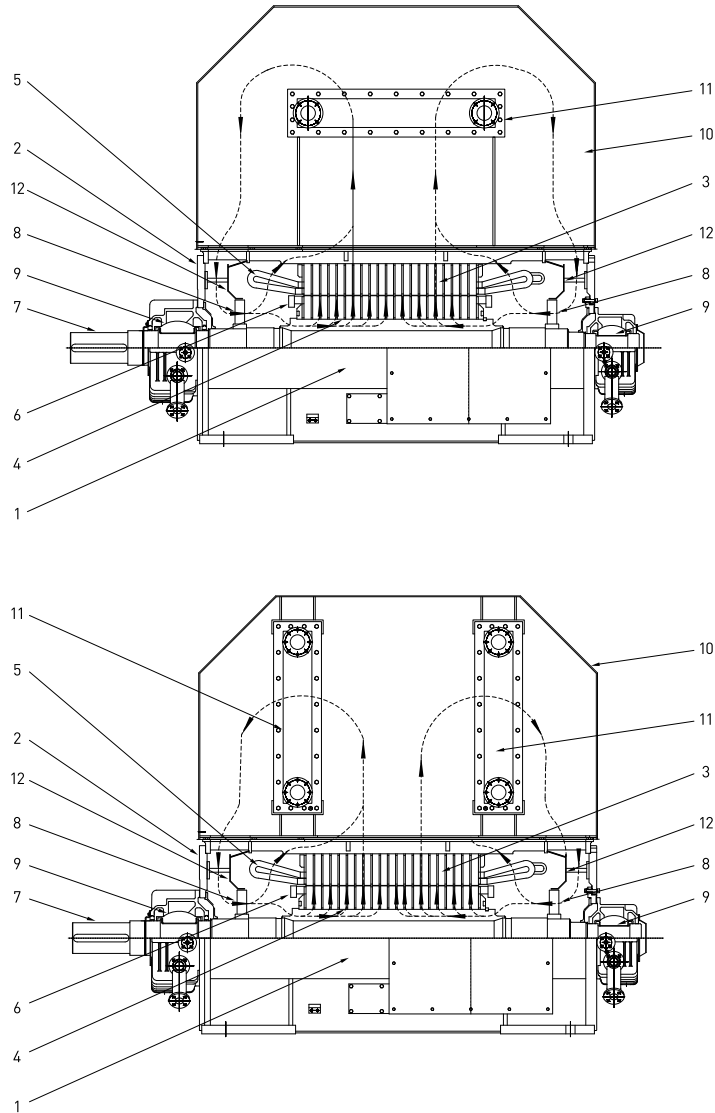


#### Parts Name

1. Stator Frame	4. Rotor Core	7. Shaft	10. Air Housing
2. End Shield	5. Stator Winding	8. Internal Cooling Fan	11. Air Cooler
3. Stator Core	6. Rotor End Ring	9. Bearing	12. Air Guide Plate

| HRN3, HIN1 | Type - II (Bi-directional cooling circuit)

Sectional View and Parts Name



**Parts Name**

- |                 |                   |                         |                     |
|-----------------|-------------------|-------------------------|---------------------|
| 1. Stator Frame | 4. Rotor Core     | 7. Shaft                | 10. Air Housing     |
| 2. End Shield   | 5. Stator Winding | 8. Internal Cooling Fan | 11. Air Cooler      |
| 3. Stator Core  | 6. Rotor End Ring | 9. Bearing              | 12. Air Guide Plate |

## | HRN3 2P Series |

### HRN3 (60Hz)

Unit: kW

Type	Poles	2P	
		3.3kV	6.6kV
HRN3	403	1,490	1,300
	405	1,680	1,490
	407	1,865	1,680
	451	2,200	2,040
	453	2,390	2,210
	455	2,650	2,450
	501	3,030	2,960
	503	3,280	3,200
	505	3,840	3,750
	561	4,620	4,300
	563	5,100	4,750
	565	5,800	5,400
	631	6,540	6,020
	633	7,320	6,740
	635	7,700	7,350
	711	8,560	8,000
	713	9,580	8,950
	715	10,710	10,000

### HRN3 (50Hz)

Unit: kW

Type	Poles	2P	
		3.3kV	6.6kV
HRN3	403	1,300	1,120
	405	1,490	1,300
	407	1,570	1,490
	451	1,830	1,700
	453	1,980	1,850
	455	2,200	2,050
	501	2,480	2,360
	503	2,690	2,560
	505	3,150	3,000
	561	3,820	3,660
	563	4,220	4,050
	565	4,800	4,600
	631	5,660	5,420
	633	6,340	6,070
	635	6,900	6,600
	711	7,180	6,840
	713	8,050	7,670
	715	9,030	8,600

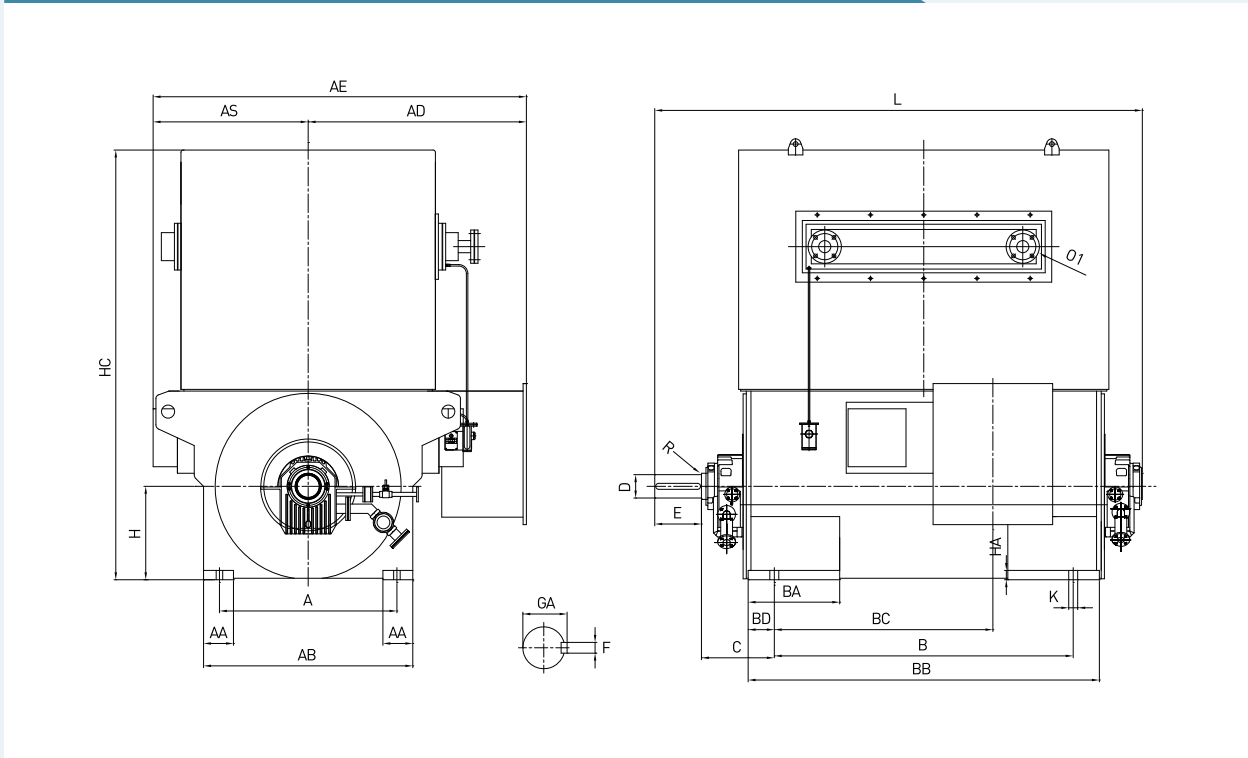






## | HRN3 |

### Mounting B3 / Degree of Protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRN3	561	2	1,120	160	1,280	1,330	2,235	905	1,600	490	1,990	1,200	195	500
	563	2												
	565	2							1,800	490	2,140	1,300	170	480

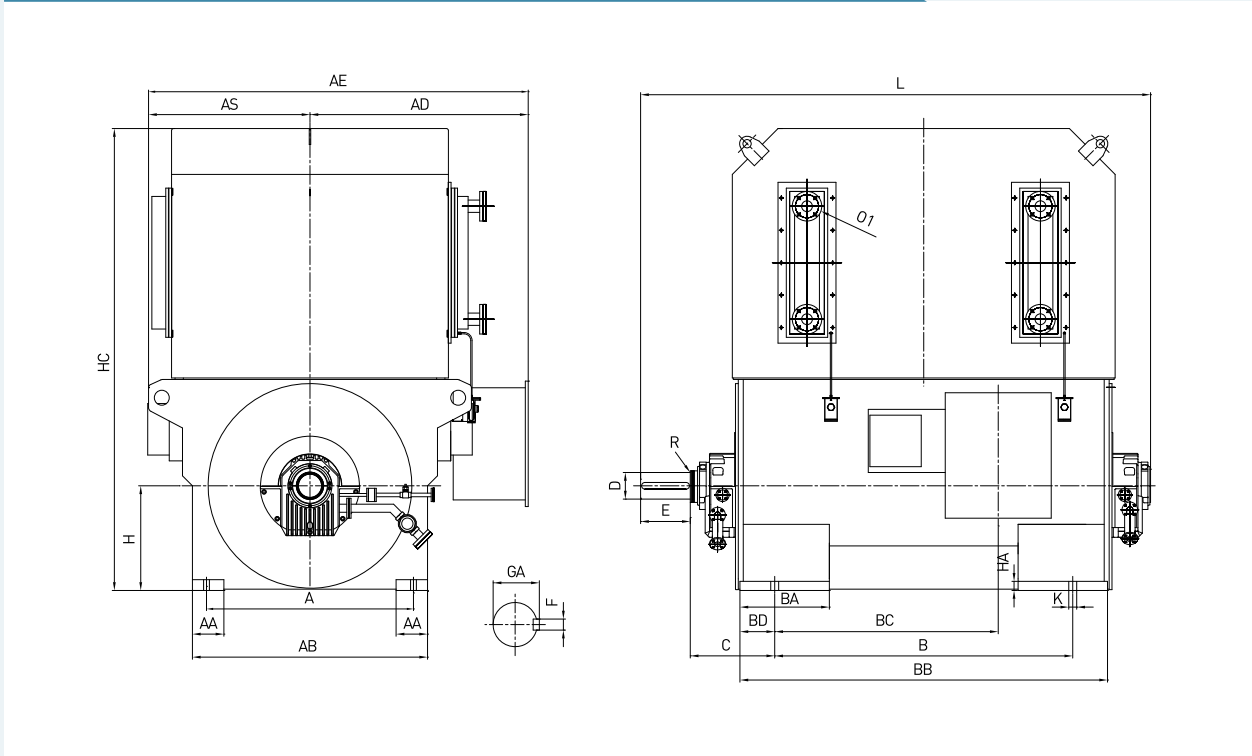
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	O1	Weight (kg)	
HRN3	561	2	560	50	2,420	2,800	48	150	250	36	158	100A	8,500
	563	2											9,000
	565	2				2,980							9,600

Note: For tolerances of dimensions, see page 64.

| HRN3 |

Mounting B3 / Degree of Protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRN3	631	2	1,250	190	1,420	1,400	2,375	975	1,800	540	2,220	1,350	210	510
	633	2												
	635	2							2,000	540	2,320	1,500	160	460

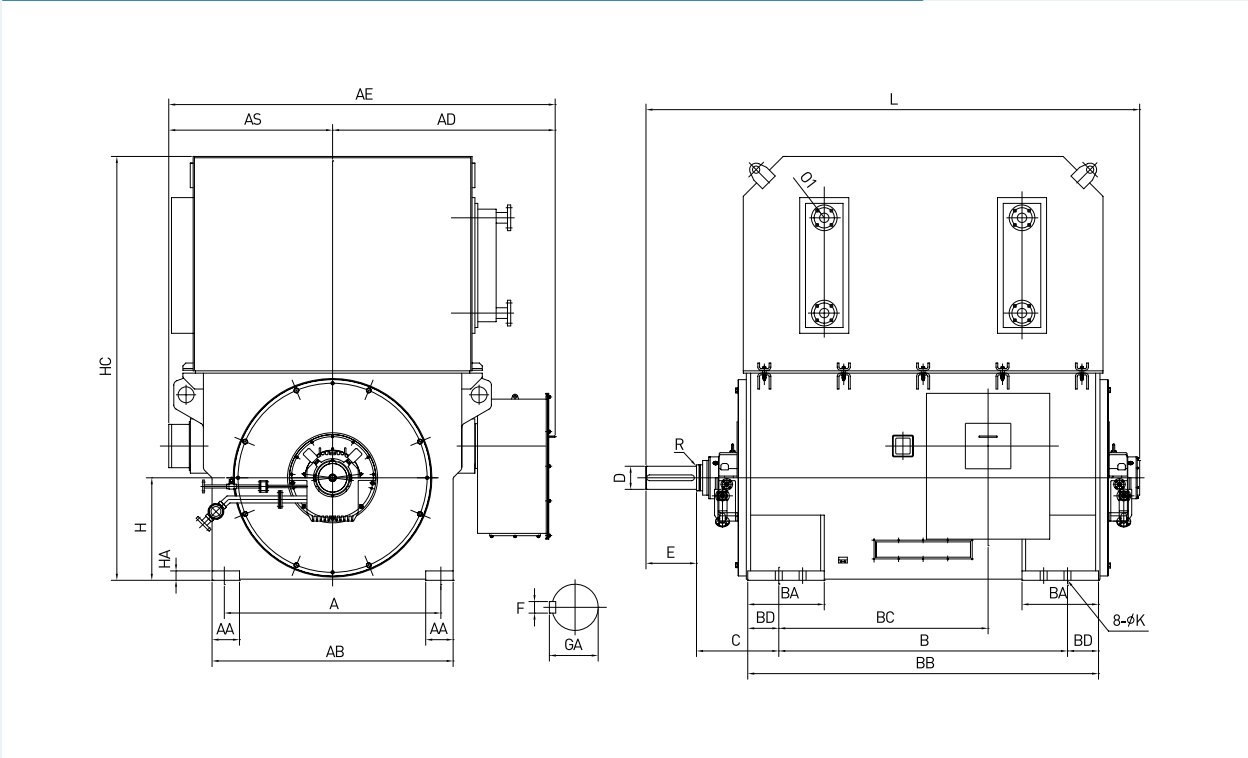
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	O1	Weight (kg)	
HRN3	631	2	630	65	2,780	3,080	48	160	300	40	169	80A	11,500
	633	2											12,600
	635	2				3,180							13,500

Note: For tolerances of dimensions, see page 64.

| HRN3 |

Mounting B3 / Degree of Protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRN3	711	2	1,500	190	1,670	1,700	2,835	1,135	2,000	515	2,350	1,450	175	510
	713	2												
	715	2								530	2,430	1,450	215	570

Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	O1	Weight (kg)	
HRN3	711	2	710	65	2,970	3,325	48	160	350	40	169	80A	16,270
	713	2											16,900
	715	2				3,420							17,500

Note: For tolerances of dimensions, see page 64.

## | Rated Power at 50 Hz |

## 3.0 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIN1	403	990	760	550	-	-	-	-
	405	1,110	860	620	-	-	-	-
	407	1,250	960	690	-	-	-	-
	409	1,400	1,080	780	-	-	-	-
	453	1,590	1,170	880	630	450	-	-
	455	1,780	1,310	980	700	510	-	-
	457	2,000	1,470	1,100	790	570	-	-
	459	2,240	1,650	1,240	890	640	-	-
	503	2,510	1,850	1,480	1,020	730	520	-
	505	2,810	2,070	1,650	1,140	820	580	-
	507	3,150	2,320	1,850	1,280	910	660	-
	509	3,530	2,600	2,080	1,440	1,030	740	-
	563	4,180	2,920	2,430	1,750	1,360	870	680
	565	4,680	3,270	2,720	1,960	1,530	980	760
	567	5,250	3,660	3,050	2,190	1,710	1,090	850
	569	5,880	4,110	3,420	2,460	1,920	1,230	960
	633	6,390	4,560	3,650	2,880	2,120	1,480	1,100
	635	7,150	5,110	4,080	3,230	2,380	1,650	1,230
	637	8,010	5,730	4,580	3,620	2,660	1,850	1,380
	639	8,980	6,420	5,130	4,060	2,990	2,080	1,550
715	9,800	7,670	5,790	4,430	3,220	2,360	1,780	
717	10,980	8,590	6,490	4,960	3,600	2,650	2,000	
719	12,300	9,630	7,270	5,560	4,040	2,970	2,240	

**Note:** - Bearing type of horizontal motors:  
 Grease lubricated anti-friction  
 Forced feed oil lubrication sleeve bearings

## | Rated Power at 50 Hz |

### 6.0 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIN1	403	930	710	510	-	-	-	-
	405	1,040	800	580	-	-	-	-
	407	1,160	900	650	-	-	-	-
	409	1,310	1,010	730	-	-	-	-
	453	1,490	1,100	820	590	420	-	-
	455	1,670	1,230	920	660	470	-	-
	457	1,870	1,380	1,030	750	530	-	-
	459	2,100	1,550	1,160	840	600	-	-
	503	2,340	1,720	1,380	960	690	490	-
	505	2,630	1,930	1,550	1,070	770	550	-
	507	2,940	2,160	1,740	1,200	860	620	-
	509	3,300	2,430	1,950	1,350	970	700	-
	563	3,910	2,740	2,270	1,630	1,280	810	640
	565	4,380	3,060	2,550	1,830	1,430	910	710
	567	4,910	3,430	2,850	2,050	1,600	1,020	800
	569	5,500	3,850	3,200	2,300	1,800	1,150	900
	633	5,970	4,270	3,410	2,700	1,990	1,380	1,030
	635	6,690	4,780	3,820	3,020	2,230	1,550	1,150
	637	7,500	5,350	4,280	3,390	2,500	1,740	1,290
	639	8,400	6,000	4,800	3,800	2,800	1,950	1,450
715	9,160	7,170	5,420	4,140	3,010	2,210	1,670	
717	10,260	8,030	6,070	4,640	3,370	2,480	1,870	
719	11,500	9,000	6,800	5,200	3,780	2,780	2,100	

**Note:** - Bearing type of horizontal motors:

- Grease lubricated anti-friction
- Forced feed oil lubrication sleeve bearings

## | Rated Power at 60 Hz |

## 3.3 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIN1	403	1,210	920	680	-	-	-	-
	405	1,350	1,030	760	-	-	-	-
	407	1,510	1,160	850	-	-	-	-
	409	1,700	1,300	960	-	-	-	-
	453	1,880	1,440	1,100	740	540	-	-
	455	2,110	1,610	1,230	820	610	-	-
	457	2,360	1,810	1,380	920	680	-	-
	459	2,650	2,030	1,550	1,040	770	-	-
	503	3,000	2,370	1,780	1,280	910	670	-
	505	3,360	2,650	2,000	1,440	1,020	750	-
	507	3,760	2,970	2,240	1,610	1,140	840	-
	509	4,220	3,330	2,510	1,810	1,280	950	-
	563	5,170	3,740	3,070	2,200	1,700	1,120	890
	565	5,790	4,190	3,440	2,470	1,910	1,250	1,000
	567	6,490	4,690	3,850	2,760	2,140	1,410	1,120
	569	7,270	5,260	4,320	3,100	2,400	1,580	1,260
	633	7,670	5,750	4,650	3,610	2,630	1,940	1,480
	635	8,590	6,440	5,210	4,040	2,940	2,170	1,650
	637	9,620	7,210	5,830	4,530	3,300	2,430	1,850
	639	10,780	8,080	6,540	5,080	3,700	2,730	2,080
715	11,760	8,690	7,240	5,520	4,000	3,050	2,470	
717	13,170	9,740	8,110	6,180	4,480	3,410	2,760	
719	14,760	10,910	9,090	6,930	5,020	3,830	3,100	

**Note:** - Bearing type of horizontal motors:  
 Grease lubricated anti-friction  
 Forced feed oil lubrication sleeve bearings

## | Rated Power at 60 Hz |

### 4.16 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIN1	403	1,170	890	660	-	-	-	-
	405	1,310	1,000	740	-	-	-	-
	407	1,470	1,120	830	-	-	-	-
	409	1,650	1,260	930	-	-	-	-
	453	1,820	1,400	1,060	710	520	-	-
	455	2,040	1,570	1,190	800	580	-	-
	457	2,290	1,750	1,330	900	660	-	-
	459	2,570	1,970	1,500	1,010	740	-	-
	503	2,910	2,300	1,730	1,250	880	650	-
	505	3,260	2,580	1,940	1,400	980	730	-
	507	3,660	2,890	2,170	1,570	1,100	820	-
	509	4,100	3,240	2,440	1,760	1,240	920	-
	563	5,030	3,630	2,980	2,140	1,660	1,080	860
	565	5,630	4,070	3,340	2,390	1,860	1,210	970
	567	6,310	4,560	3,750	2,680	2,080	1,360	1,080
	569	7,070	5,110	4,200	3,010	2,340	1,530	1,220
	633	7,450	5,590	4,520	3,510	2,550	1,890	1,430
	635	8,350	6,260	5,070	3,930	2,860	2,120	1,610
	637	9,350	7,010	5,670	4,410	3,200	2,370	1,800
	639	10,480	7,860	6,360	4,940	3,590	2,660	2,020
715	11,430	8,450	7,040	5,360	3,890	2,960	2,390	
717	12,810	9,460	7,890	6,000	4,350	3,320	2,680	
719	14,350	10,600	8,840	6,730	4,880	3,720	3,010	

**Note:** - Bearing type of horizontal motors:

- Grease lubricated anti-friction
- Forced feed oil lubrication sleeve bearings



## | Rated Power at 60 Hz |

## 6.6 kV

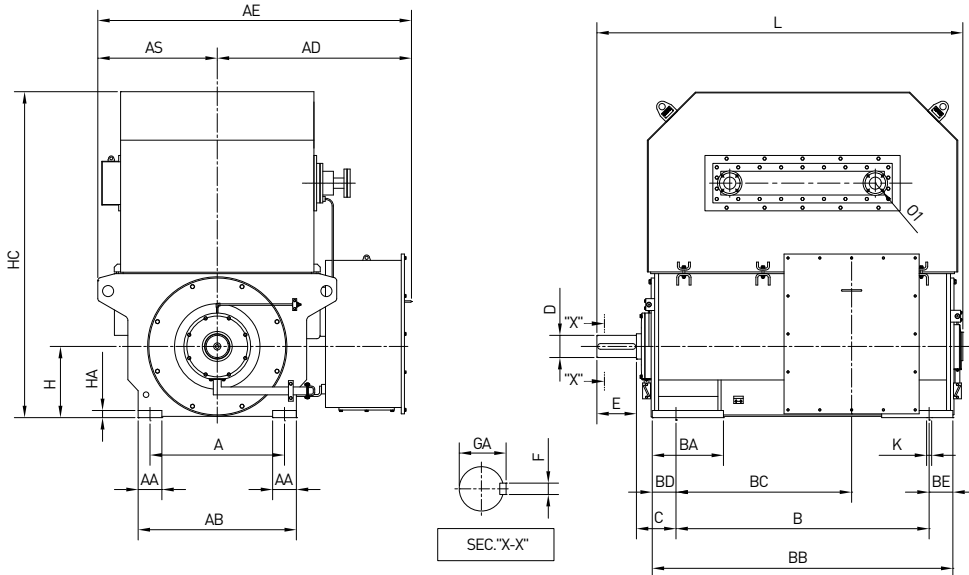
Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIN1	403	1,130	860	640	-	-	-	-
	405	1,260	970	710	-	-	-	-
	407	1,410	1,080	800	-	-	-	-
	409	1,590	1,220	900	-	-	-	-
	453	1,760	1,350	1,030	690	510	-	-
	455	1,970	1,510	1,150	780	570	-	-
	457	2,210	1,690	1,290	870	640	-	-
	459	2,480	1,900	1,450	980	720	-	-
	503	2,810	2,220	1,670	1,210	850	630	-
	505	3,140	2,480	1,870	1,350	950	700	-
	507	3,520	2,780	2,090	1,510	1,070	790	-
	509	3,950	3,120	2,350	1,700	1,200	890	-
	563	4,840	3,500	2,870	2,060	1,600	1,050	830
	565	5,420	3,920	3,220	2,310	1,790	1,170	940
	567	6,070	4,390	3,600	2,580	2,000	1,320	1,050
	569	6,800	4,920	4,040	2,900	2,250	1,480	1,180
	633	7,170	5,380	4,350	3,380	2,460	1,820	1,380
	635	8,030	6,020	4,870	3,780	2,750	2,040	1,550
	637	9,000	6,750	5,460	4,240	3,080	2,280	1,740
	639	10,080	7,560	6,120	4,750	3,460	2,560	1,950
715	11,000	8,130	6,770	5,160	3,740	2,850	2,310	
717	12,320	9,100	7,580	5,780	4,190	3,190	2,580	
719	13,800	10,200	8,500	6,480	4,700	3,580	2,900	

**Note:** - Bearing type of horizontal motors:  
 Grease lubricated anti-friction  
 Forced feed oil lubrication sleeve bearings

## | HIN1 |

### Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIN1	403	4	830	140	950	1,130	1,805	675	1,250	275	1,500	892	125	125
	405	4												
	407	4												
	409	4						1,400		1,650	1,042			
	453	4	850	150	1,000	1,165	1,875	710	1,400	450	1,660	1,052	110	150
	455	4												
	457	4												
	459	4							1,600		1,820	1,212		110

Unit: mm

Type	Poles	C	H	HA	HC	K	L	O1	D	E	F	GA	Weight (kg)	
HIN1	403	4	250	400	30	1,650	35x45	1,990	50A	120	210	32	127	4,400
	405	4												4,500
	407	4						2,180		130	250	32	137	4,800
	409	4												5,000
	453	4	250	450	45	1,755	35x45	2,180	65A	140	250	36	148	5,600
	455	4												5,800
	457	4						2,340		150	250	36	158	6,200
	459	4												6,400

#### Note

1. Tolerance on "D" and "DA" dimension will be m6.
2. The bores of the transmission elements should be made to an ISO fit H6.
3. The dimensions printed in bold face in the table to IEC : A, B, C, D, E, F, GA, H, K are certified.

4. Tolerances on dimension A, B, and H.

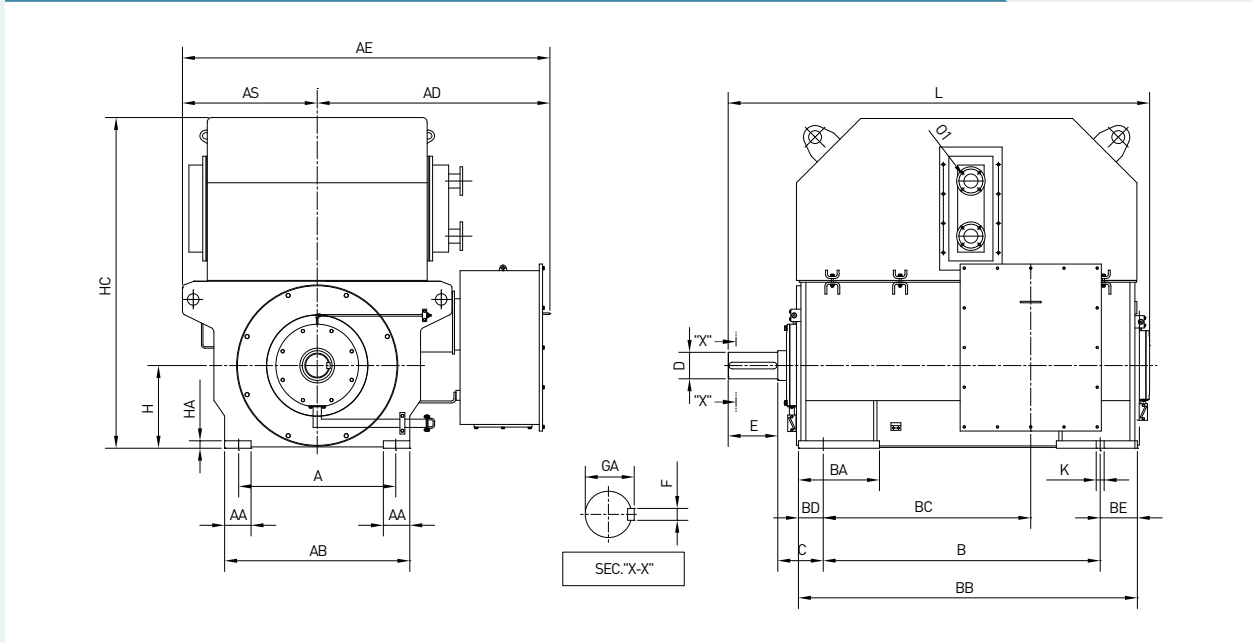
Dimensions	Tolerance (mm)	
A and B	Over 500 up to 750	±1.5
	Over 750 upto 1,000	±2.0
	Over 1,000	±2.5
H	Over 250 up to 600	-1.0
	Over 600 up to 1,000	-1.5

5. "R" dimension of the shaft extension part is as follows.

Shaft Diameter (mm)	R (mm)
50 - 80	1.6
85 - 120	2.5
130 - 190	4.0

| HIN1 |

Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIN1	403	6 - 16	830	140	950	1,130	1,805	675	1,250	275	1,500	892	125	125
	405													
	407													
	409													
	453	6 - 16	850	150	1,000	1,165	1,875	710	1,400	450	1,660	1,052	110	150
	455													
	457													
	459													

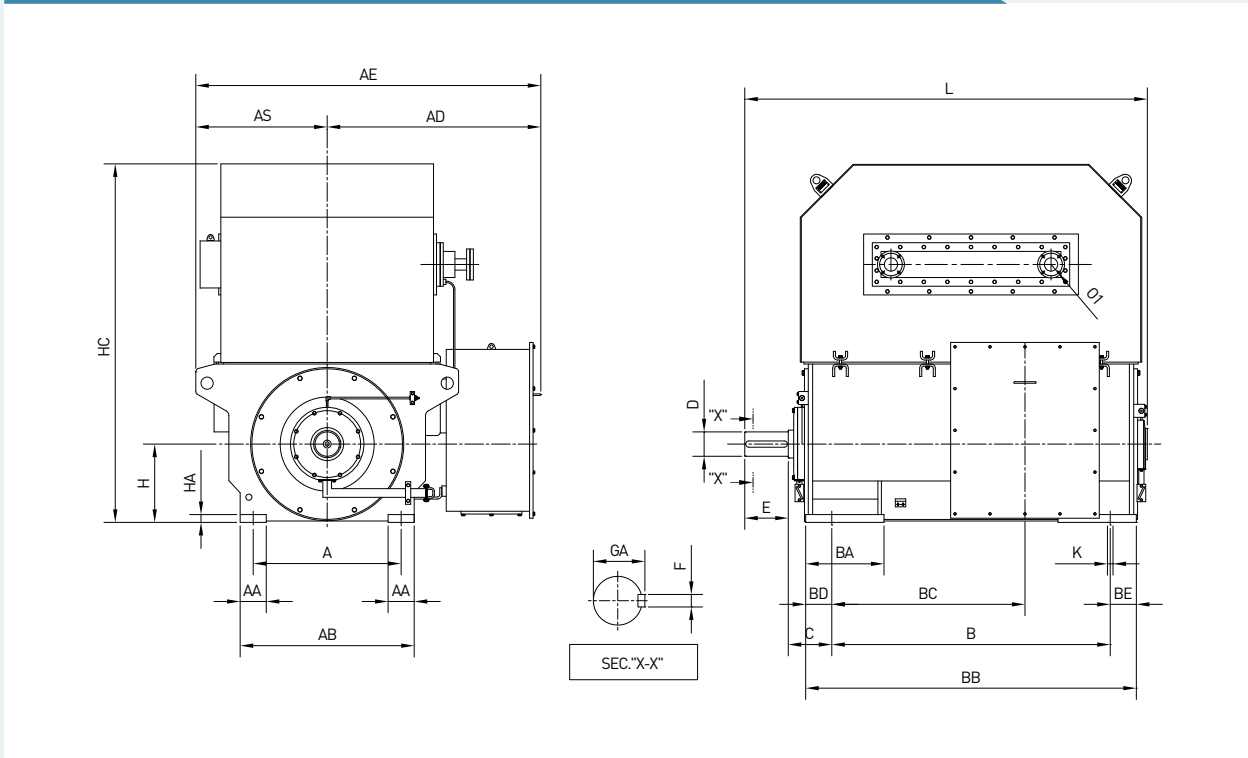
Unit: mm

Type	Poles	C	H	HA	HC	K	L	O1	D	E	F	GA	Weight (kg)
HIN1	403	250	400	30	1,730	35x45 Slot	1,990	50A	120	210	32	127	4,400
	405												4,500
	407												4,700
	409												4,800
	453	250	450	45	1,895	35x45 Slot	2,180	65A	140	250	36	148	5,300
	455												5,500
	457												5,800
	459												6,000

Note: For tolerances of dimensions, see page 74.

## | HIN1 |

### Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIN1	503	4	950	160	1,120	1,240	2,055	815	1,600	490	1,820	1,050	110	110
	505	4												
	507	4						1,800			2,020	1,250		
	509	4												

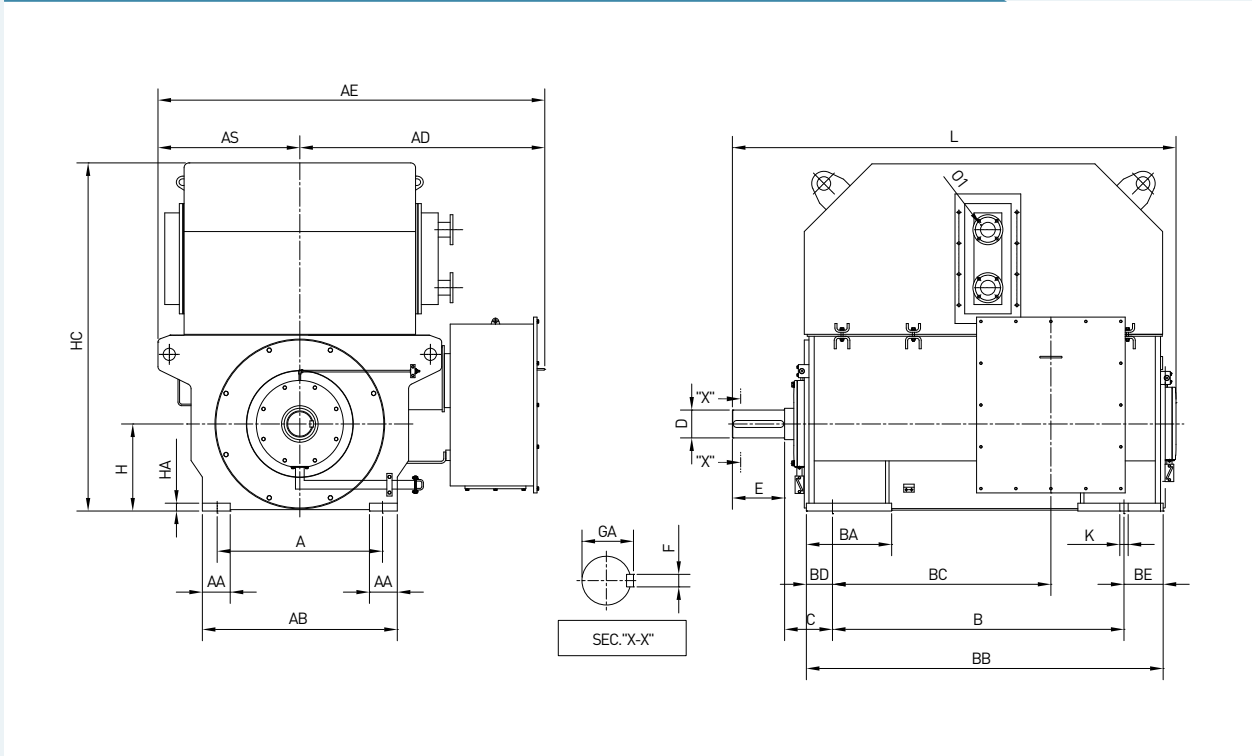
Unit: mm

Type	Poles	C	H	HA	HC	K	L	O1	D	E	F	GA	Weight (kg)	
HIN1	503	4	250	500	45	2,360	48x58 Slots	2,490	65A	150	250	36	158	6,900
	505	4												7,200
	507	4						2,690		160	300	40	169	7,800
	509	4												8,100

**Note:** For tolerances of dimensions, see page 74.

| HIN1 |

Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIN1	503	6	950	160	1,120	1,240	2,055	815	1,600	490	1,820	1,070	110	110
	505	6												
	507	6							1,800	490	2,020	1,270		
	509	6												

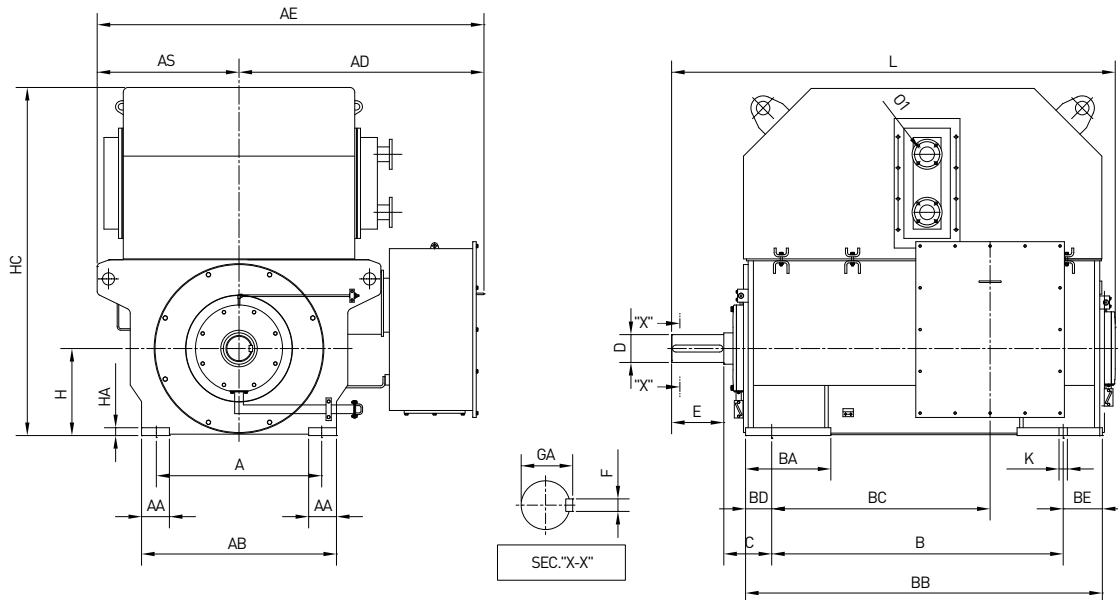
Unit: mm

Type	Poles	C	H	HA	HC	K	L	O1	D	E	F	GA	Weight (kg)	
HIN1	503	6	250	500	45	2,150	48x58	2,490	65A	150	250	36	158	7,100
	505	6					Slots							
	507	6						2,690	65A	160	300	40	169	8,000
	509	6												

**Note:** For tolerances of dimensions, see page 74.

## | HIN1 |

### Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE				
HIN1	503	8 - 16	950	160	1,120	1,240	2,055	815	1,600	490	1,820	1,070	110	110			
	505	8 - 16															
	507	8 - 16													1,800	2,020	1,270
	509	8 - 16															

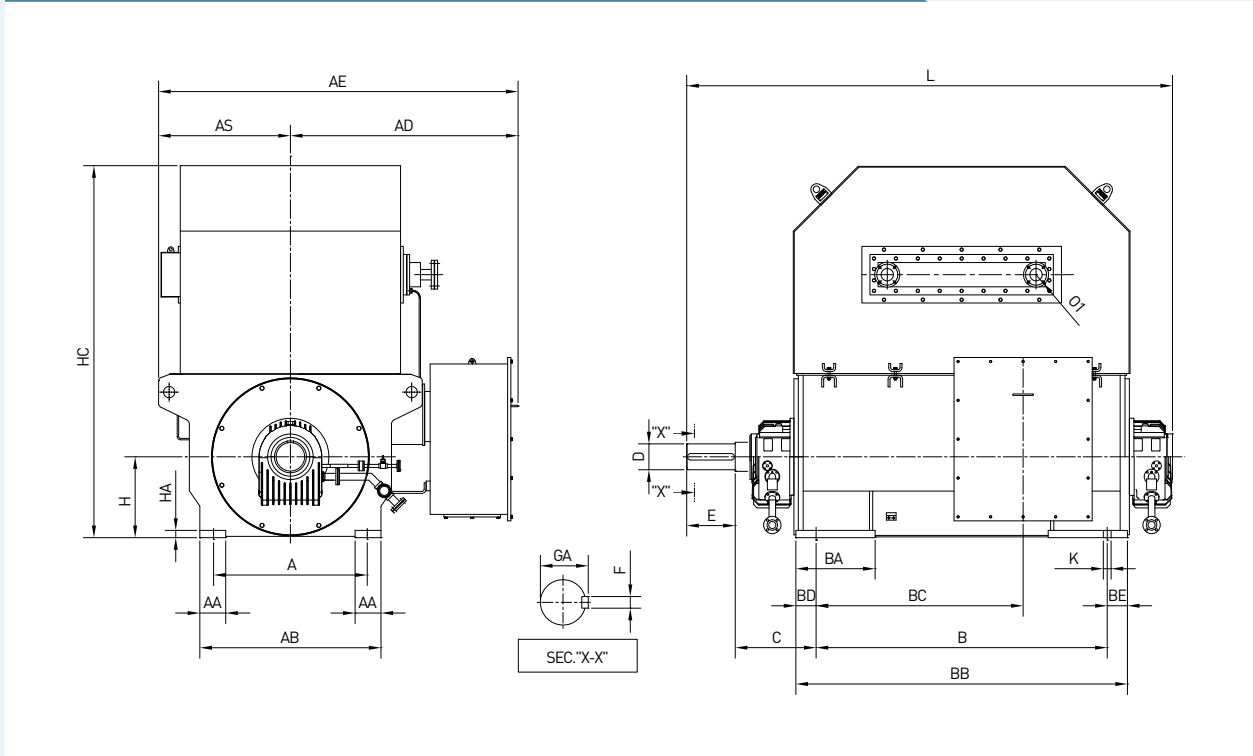
Unit: mm

Type	Poles	C	H	HA	HC	K	L	O1	D	E	F	GA	Weight (kg)						
HIN1	503	8 - 16	250	500	45	2,150	48x58 Slots	2,490	65A	150	250	36	158	7,100					
	505	8 - 16												7,400					
	507	8 - 16												2,690	160	300	40	169	8,000
	509	8 - 16												8,300					

**Note:** For tolerances of dimensions, see page 74.

| HIN1 |

Mounting B3 / Degree of Protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIN1	563	4	1,180	180	1,320	1,450	2,355	905	1,800	520	2,030	1,265	115	115
	565	4												
	567	4						2,000			2,230	1,465		
	569	4												

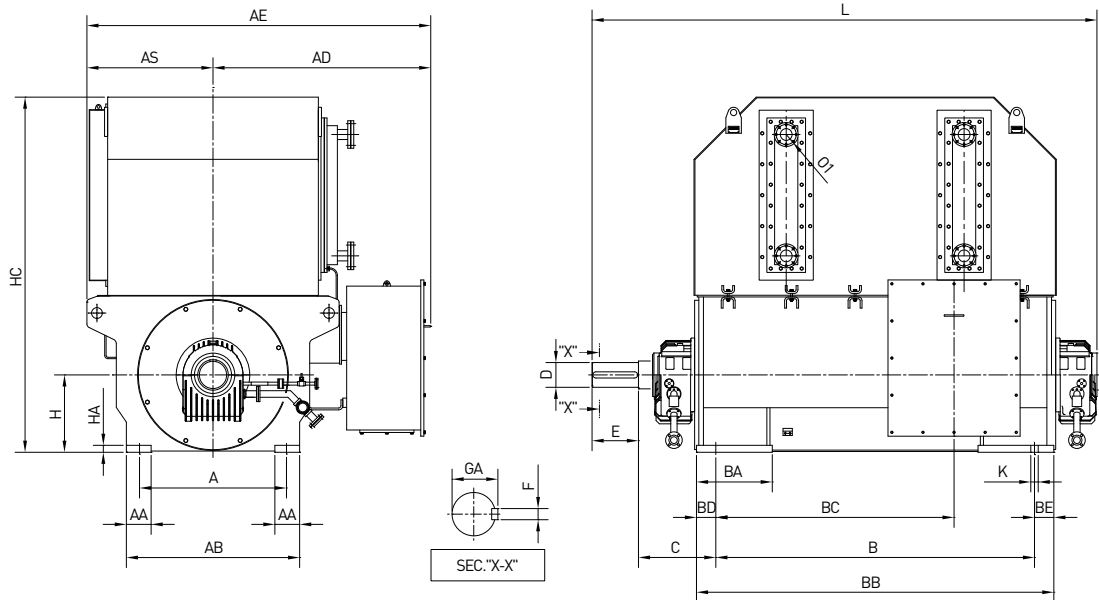
Unit: mm

Type	Poles	C	H	HA	HC	K	L	O1	D	E	F	GA	Weight (kg)	
HIN1	563	4	475	560	50	2,650	48x58	3,040	80A	190	350	45	200	9,700
	565	4					Slot							10,200
	567	4						3,240		200	350	45	210	11,000
	569	4												11,500

Note: For tolerances of dimensions, see page 74.

## | HIN1 |

### Mounting B3 / Degree of Protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIN1	633	4	1,400	250	1,540	1,540	2,515	975	2,000	540	2,230	1,465	115	115
	635	4												
	637	4						2,240			2,470	1,705		
	639	4												

Unit: mm

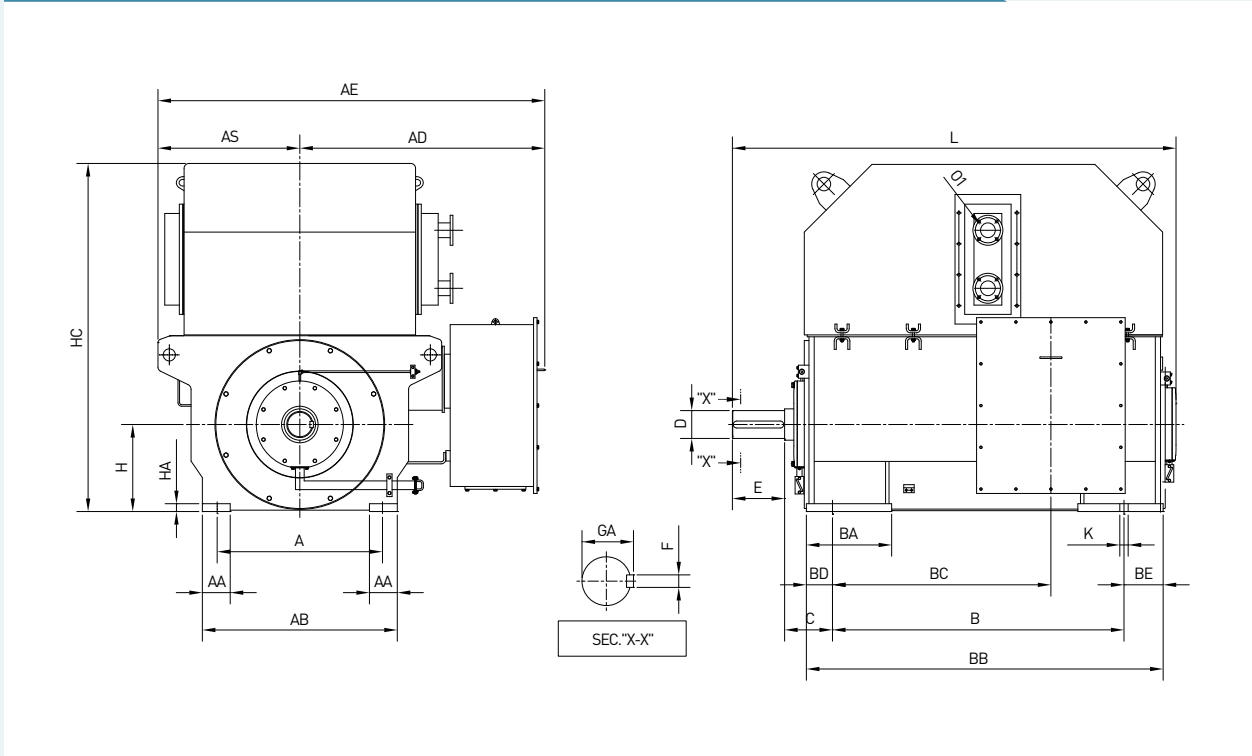
Type	Poles	C	H	HA	HC	K	L	O1	D	E	F	GA	Weight (kg)	
HIN1	633	4	475	630	55	2,900	48x58 Slot	3,240	100A	220	350	50	231	13,900
	635	4												14,500
	637	4					3,480							15,400
	639	4												16,100

**Note:** For tolerances of dimensions, see page 74.



| HIN1 |

Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIN1	563	6	1,180	180	1,320	1,450	2,355	905	1,800	520	2,090	1,290	150	140
	565	6												
	567	6						2,000		2,300	1,500		150	
	569	6												
	633	6	1,400	250	1,540	1,540	2,515	975	2,000	540	2,320	1,515	150	170
	635	6												
	637	6						2,240						
639	6													

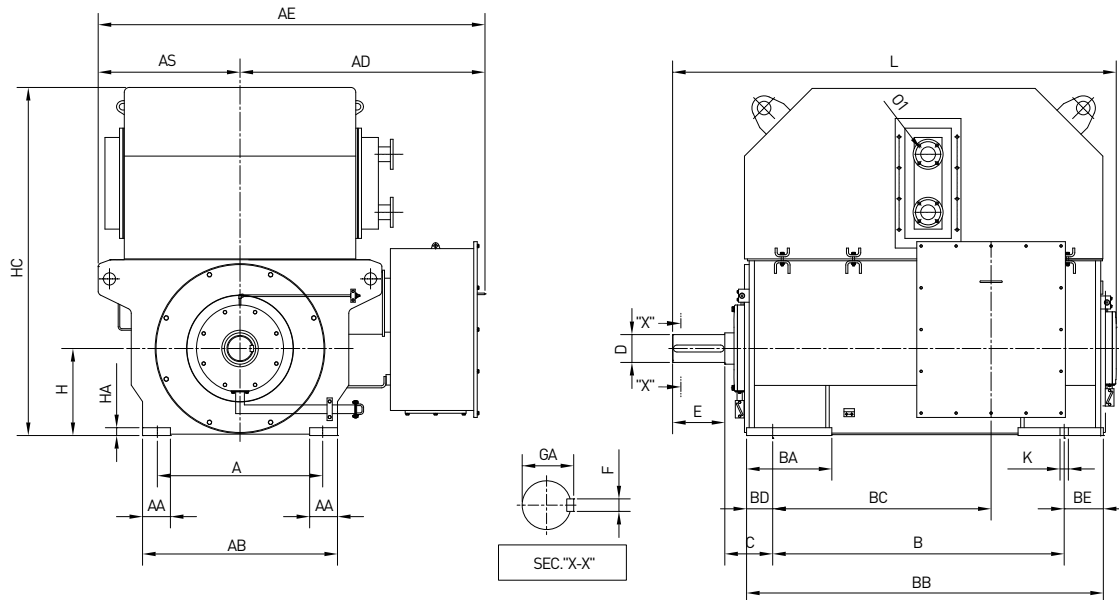
Unit: mm

Type	Poles	C	H	HA	HC	K	L	O1	D	E	F	GA	Weight (kg)						
HIN1	563	6	335	560	50	2,210	48x58	2,750	80A	190	350	45	200	9,700					
	565	6				Slot													10,300
	567	6					2,960								200	350	45	210	11,100
	569	6												11,500					
	633	6	335	630	55	2,500	48x58	3,020	100A	220	350	50	231	13,600					
	635	6				Slot													14,200
	637	6					3,240								220	350	50	231	15,200
639	6																	15,700	

Note: For tolerances of dimensions, see page 74.

## | HIN1 |

### Mounting B3 / Degree of Protection IP55, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE
HIN1	563	8 - 16	1,180	180	1,320	1,450	2,355	905	1,800	520	2,090	1,290	150
	565	8 - 16											
	567	8 - 16							2,000	540	2,300	1,500	150
	569	8 - 16											
	633	8 - 16	1,400	250	1,540	1,540	2,515	975	2,000	540	2,320	1,515	150
	635	8 - 16											
	637	8 - 16							2,240	540	2,540	1,735	150
	639	8 - 16											

Unit: mm

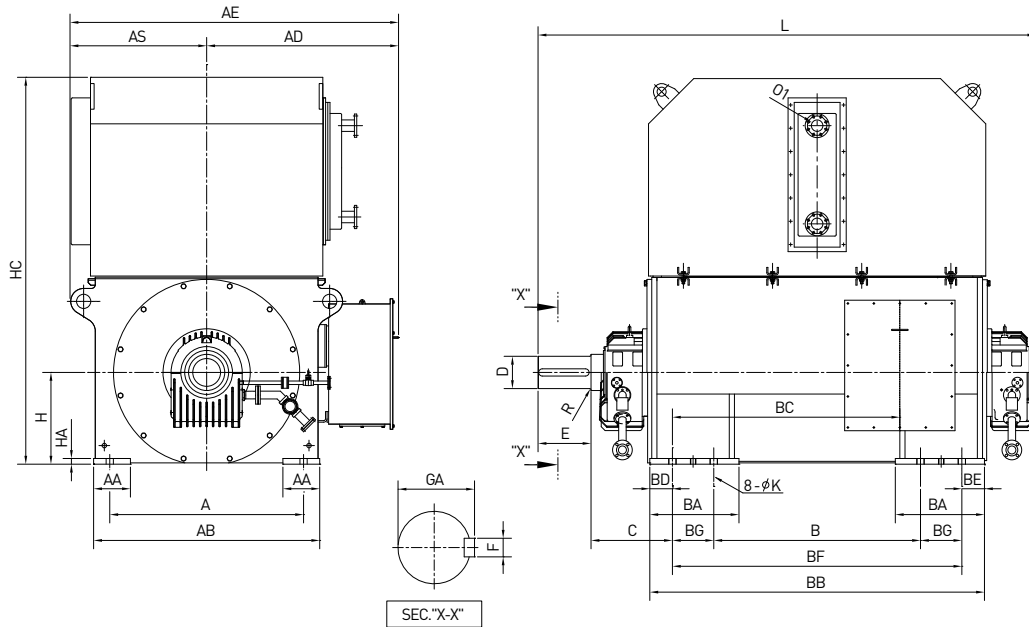
Type	Poles	C	H	HA	HC	K	L	O1	D	E	F	GA	Weight (kg)	
HIN1	563	8 - 16	335	560	50	2,210	48x58	2,750	80A	190	350	45	200	9,700
	565	8 - 16					Slot							
	567	8 - 16						2,960	200	350	45	210	11,100	
	569	8 - 16												
	633	8 - 16	335	630	55	2,500	48x58	3,020	100A	220	350	50	231	13,700
	635	8 - 16					Slot							
	637	8 - 16						3,240	220	350	50	231	15,300	
	639	8 - 16												

Note: For tolerances of dimensions, see page 74.



## | HIN1 |

### Mounting B3 / Degree of Protection IP55, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	BF	BG				
HIQ1	715	6 - 16	1,500	285	1,750	1,490	2,550	1,060	1,400	700	2,460	1,580	230	230	2,000	300			
	717	6 - 16							1,600		2,700						1,820	2,240	320
	719	6 - 16																	

Unit: mm

Type	Poles	C	D	E	F	GA	H	HA	HC	K	L	O1	Weight (kg)	
HIQ1	715	6 - 16	670	250	410	56	262	710	44	3,120	56x66	3,720	150A	19,500
	717	6 - 16									Slot	3,960		21,000
	719	6 - 16									3,960	21,800		

**Note:** For tolerances of dimensions, see page 74.

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# HRE5 Series

Open Drip Proof, Squirrel Cage

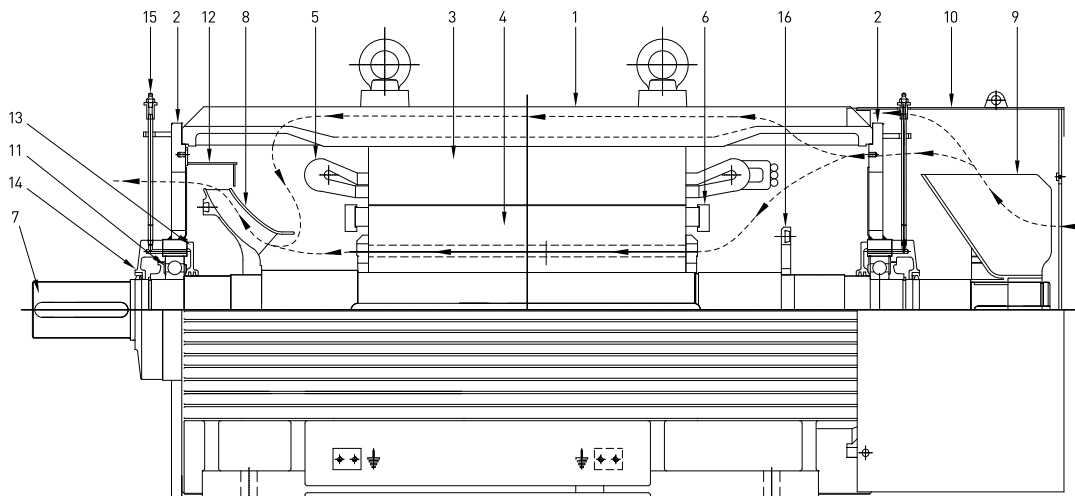
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## | HRE5 |

- Rotor Type Squirrel Cage
- Number of Poles 2-8
- Voltage 2-7.2 kV
- Output Range 280-1,400 kW (at 60 Hz, 6,600 V, 4 Pole)
- Type of Construction IM B3
- Frame 280-450
- Degree of Protection IP 23 (IEC 60034-5)
- Method of Cooling IC 01 (IEC 60034-6)
- Type of Enclosure Open Drip Proof (NEMA MG-1)

### Sectional View and Parts Name



#### Parts Name

- |                 |                         |                         |                            |
|-----------------|-------------------------|-------------------------|----------------------------|
| 1. Stator Frame | 5. Stator Winding       | 9. External Cooling Fan | 13. Internal Bearing Cover |
| 2. End Shield   | 6. Rotor End Ring       | 10. Fan Cover           | 14. External Bearing Cover |
| 3. Stator Core  | 7. Shaft                | 11. Bearing             | 15. Grease Nipple          |
| 4. Rotor Core   | 8. Internal Cooling Fan | 12. Air Guide Plate     | 16. Balance Ring           |

## | Rated Power at 50 Hz |

### 3.0 kV

Unit: kW

Type	Poles	2P	4P	6P	8P
HRE5	286	-	250	-	-
	288	230	280	180	-
	312	-	310	210	-
	313	-	350	250	170
	314	370	400	300	210
	316	-	450	330	-
	317	-	-	380	250
	318	-	540	410	-
	350	590	-	-	-
	352	-	710	500	350
	354	-	810	580	400
	400	700	-	-	-
	402	-	950	650	460
	404	-	1,010	740	540
	452	-	1,090	820	640
	454	-	1,210	910	720

### 6.0 kV

Unit: kW

Type	Poles	2P	4P	6P	8P
HRE5	286	-	230	-	-
	288	210	260	160	-
	312	-	300	190	-
	313	-	330	230	140
	314	360	380	280	180
	316	-	430	300	-
	317	-	-	350	220
	318	-	510	370	-
	350	560	-	-	-
	352	-	670	470	330
	354	-	760	540	370
	400	630	-	-	-
	402	-	890	630	420
	404	-	950	710	500
	452	-	1,040	790	610
	454	-	1,160	880	690

**Note**

1. Tolerance on "D" and "DA" dimension will be m6.
2. The bores of the transmission elements should be made to an ISO fit H6.
3. The dimensions printed in bold face in the table to IEC : A, B, C, D, E, F, GA, H, K are certified.
4. Type of bearings.
  - Greased lubricated anti-friction

5. The following tolerances are applicable to dimensions A, B, and H

Dimensions	Tolerance (mm)	
A and B	Over 500 up to 750	±1.5
	Over 750 up to 1,000	±1.5
	Over 1,000	±1.5
H	Over 250 up to 600	-1.0
	Over 600 up to 1,000	-1.5

6. "R" dimension of the shaft extension part is as follows

Shaft Diameter (mm)	R (mm)
50-80	1.6
85-120	2.5
130-190	4.0

**| Rated Power at 60 Hz |**

**3.3 kV**

Unit: kW

Type	Poles	2P	4P	6P	8P
HRE5	286	-	300	-	-
	288	280	340	220	-
	312	-	380	250	-
	313	-	410	300	200
	314	420	480	360	250
	316	-	540	400	-
	317	-	-	460	310
	318	-	640	490	-
	350	620	-	-	-
	352	-	810	650	420
	354	-	920	750	480
	400	740	-	-	-
	402	-	1,110	790	570
	404	-	1,190	880	680
	452	-	1,320	990	780
	454	-	1,470	1,100	880

**4.16 kV**

Unit: kW

Type	Poles	2P	4P	6P	8P
HRE5	286	-	290	-	-
	288	265	325	205	-
	312	-	365	235	-
	313	-	400	280	180
	314	410	465	340	230
	316	-	520	370	-
	317	-	-	430	275
	318	-	620	460	-
	350	610	-	-	-
	352	-	780	615	410
	354	-	885	710	470
	400	730	-	-	-
	402	-	1,070	770	540
	404	-	1,140	865	640
	452	-	1,285	960	755
	454	-	1,420	1,070	845

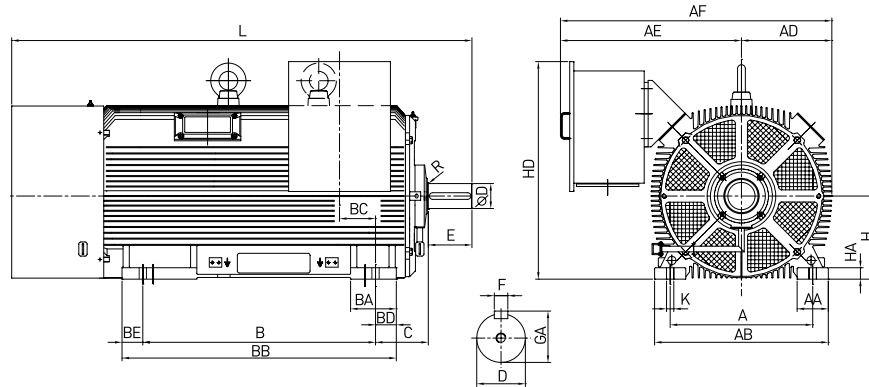
**6.6 kV**

Unit: kW

Type	Poles	2P	4P	6P	8P
HRE5	286	-	280	-	-
	288	260	320	200	-
	312	-	360	230	-
	313	-	390	270	170
	314	400	450	330	220
	316	-	510	360	-
	317	-	-	420	270
	318	-	610	450	-
	350	600	-	-	-
	352	-	760	600	400
	354	-	870	700	460
	400	720	-	-	-
	402	-	1,050	750	530
	404	-	1,120	850	630
	452	-	1,260	945	740
	454	-	1,400	1,050	830



Mounting B3 / Degree of Protection IP23, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AF	B	BA	BB	BC	BD	BE	
HRE5	286	2 -	457	91	560	325	830	1,155	630	200	770	120	60	80
	288	2 -												
	312	2 -	508	124	635	350	880	1,230	508	180	925	244	66	351
	313	2 -							630		1,045			349
	314	2 -												
	316	2 -							900		1,270			304
	317	6 -												
	318	2 -												
	350	2 -	610	120	730	385	900	1,285	900	180	1,043	244	79.5	63.5
	352	2 -												
	354	2 -												
	400	4	686	150	836	435	945	1,380	1,120	220	1,320	206	100	100
402	2 -													
404	2 -													
452	4 -	750	160	920	480	975	1,455	1,250	220	1,450	217	100	100	
454	4 -													

Unit: mm

Type	Poles	C	H	HA	HD	K	L	D	E	F	GA	Weight (kg)	
HRE5	286	2	190	280	30	915	24	1,520	70	140	20	74.5	1,290
		4						1,445	85	170	22	90	1,320
	288	2						1,520	70	140	20	74.5	1,340
		4						1,445	85	170	22	90	1,380
		6											1,470
	312	2	216	315	35	965	30	1,690	75	140	20	79.5	1,630
		4 -						1,720	90	170	25	95	1,620
	313	2						1,800	75	140	20	79.5	1,830
		4 -						1,840	90	170	25	95	1,820
	314	2						1,800	75	140	20	79.5	1,880
		4 -						1,840	90	170	25	95	1,920
	316	2						2,010	75	140	20	79.5	2,150
	4 -						2,090	95	210	25	100	2,140	
317	6 -						2,090	95	210	25	100	2,280	
318	2						2,010	75	140	20	79.5	2,320	
	4 -						2,090	95	210	25	100	2,360	
352	2	224	355	45	1,030	30	2,080	80	170	22	85	2,800	
	4 -						2,125	110	210	28	116	2,910	
354	2						2,085	80	170	22	85	3,010	
	4 -						2,125	110	210	28	116	3,120	
400	4	254	400	55	1,120	35	2,215	120	210	32	127	3,600	
402	2						2,180	85	170	22	90	3,600	
	4 -						2,220	120	210	32	127	3,790	
404	2						2,180	85	170	22	90	3,850	
	4 -						2,220	120	210	32	127	3,940	
452	4 -	280	450	59	1,200	35	2,490	130	250	32	137	5,200	
454	4 -											5,500	

Note: For the bearing type and tolerance of dimensions, see page 87.



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# HRP3, HIP1 Series

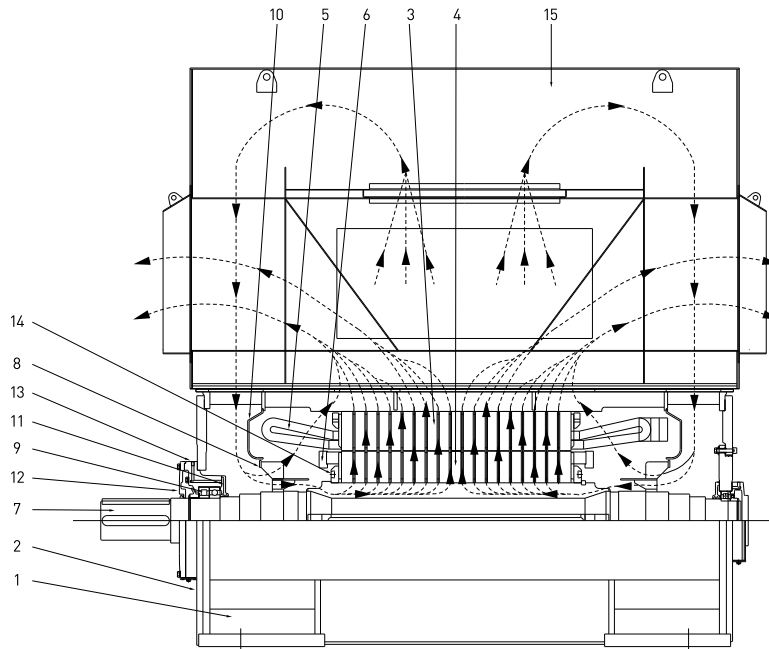
Weather Protected, Squirrel Cage

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### | HRP3, HIP1 | Type - I (Bi-directional cooling circuit)

• Rotor Type	Squirrel Cage
• Number of Pole	2-4
• Voltage	2-14 kV
• Output Range	1,130-13,800 kW (at 60 Hz, 6,600 V, 4 Pole)
• Type of Construction	IM B3
• Frame	280-710
• Degree of Protection	IP 23W-IP 24W (IEC 60034-5)
• Method of Cooling	IC 01 (IEC 60034-6)
• Type of Enclosure	Weather Protected Type I & II : WPI, WPII (NEMA MG-1)

#### Sectional View and Parts Name



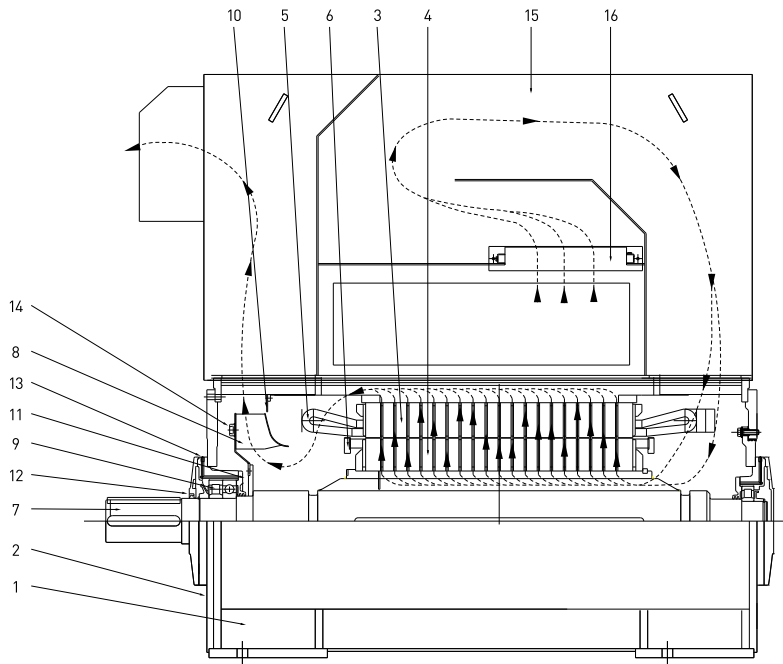
#### Parts Name

1. Stator Frame	5. Stator Winding	9. Bearing	13. Grease Nipple
2. End Shield	6. Rotor End Ring	10. Air Guide Plate	14. Balance Ring
3. Stator Core	7. Shaft	11. Internal Bearing Cover	15. Air Housing
4. Rotor Core	8. Internal Cooling Fan	12. External Bearing Cover	

## | HRP3, HIP1 | Type - II (Uni-directional cooling circuit)

• Rotor Type	Squirrel Cage
• Number of Pole	6-16
• Voltage	2-14 kV
• Output Range	860-10,200 kW (at 60 Hz, 6,600 V, 4 Pole)
• Type of Construction	IM B3
• Frame	280-710
• Degree of Protection	IP 23W-IP 24W (IEC 60034-5)
• Method of Cooling	IC 01 (IEC 60034-6)
• Type of Enclosure	Weather Protected Type I & II : WPI, WPII (NEMA MG-1)

### Sectional View and Parts Name



#### Parts Name

1. Stator Frame	5. Stator Winding	9. Bearing	13. Grease Nipple
2. End Shield	6. Rotor End Ring	10. Air Guide Plate	14. Balance Ring
3. Stator Core	7. Shaft	11. Internal Bearing Cover	15. Air Housing
4. Rotor Core	8. Internal Cooling Fan	12. External Bearing Cover	16. Air Filter

## | HRP3 2P Series |

### HRP3 (60Hz)

Unit: kW

Type	Poles	2P	
		3.3kV	6.6kV
HRP3	283	370	300
	285	450	370
	287	530	450
	289	600	530
	313	670	600
	315	750	670
	317	820	750
	355	1,120	970
	357	1,300	1,120
	403	1,490	1,300
	405	1,680	1,490
	407	1,865	1,680
	451	2,200	2,040
	453	2,390	2,210
	455	2,650	2,450
	501	3,030	2,960
	503	3,280	3,200
	505	3,840	3,750
	561	4,620	4,300
	563	5,100	4,750
	565	5,800	5,400
	631	6,540	6,020
	633	7,320	6,740
	635	7,700	7,350
711	8,560	8,000	
713	9,580	8,950	
715	10,710	10,000	

### HRP3 (50Hz)

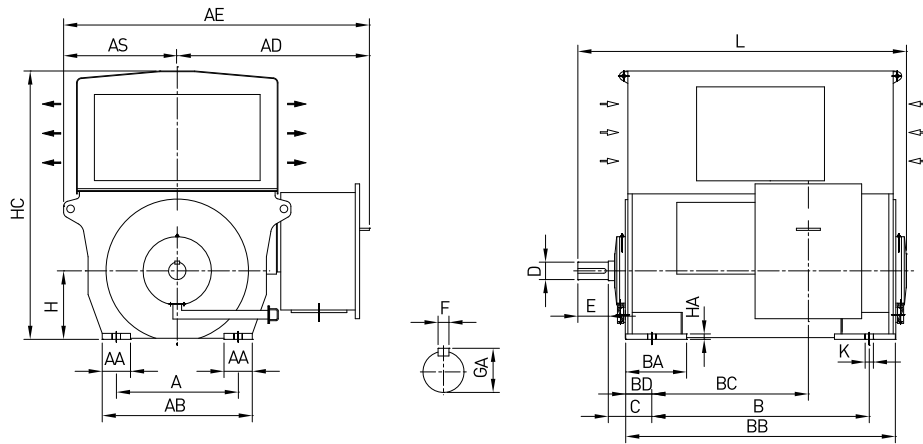
Unit: kW

Type	Poles	2P	
		3.3kV	6.6kV
HRP3	283	300	250
	285	370	300
	287	450	370
	289	530	450
	313	600	530
	315	670	600
	317	750	670
	355	930	820
	357	1,120	930
	403	1,300	1,120
	405	1,490	1,300
	407	1,680	1,490
	451	1,830	1,700
	453	1,980	1,850
	455	2,200	2,050
	501	2,480	2,360
	503	2,690	2,560
	505	3,150	3,000
	561	3,820	3,660
	563	4,220	4,050
	565	4,800	4,600
	631	5,660	5,420
	633	6,340	6,070
	635	6,900	6,600
711	7,180	6,840	
713	8,050	7,670	
715	9,030	8,600	

**Note:** - Bearing type of horizontal motors:  
 Grease lubricated anti-friction  
 Forced feed oil lubrication sleeve bearings

## | HRP3 |

### Mounting B3 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRP3	283	2	<b>630</b>	120	750	1,000	1,905	905	<b>800</b>	270	1,100	620	150	<b>224</b>
	285	2												
	287	2							<b>900</b>		1,200	670		
	289	2												
	313	2	<b>690</b>	130	820	2,000	2,940	940	<b>1,000</b>	280	1,240	720	120	<b>200</b>
	315	2												
	317	2												

Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	Weight (kg)	
HRN3	283	2	280	30	1,580	1,370	38	70	140	20	74.5	1,600
	285	2										1,600
	287	2				1,470						1,700
	289	2										1,750
	313	2	<b>315</b>	30	1,640	1,515	38	80	140	22	85	2,000
	315	2										2,100
	317	2										2,250

#### Note

- Tolerance on "D" and "DA" dimension will be m6.
- The bores of the transmission elements should be made to an ISO fit H6.
- The dimensions printed in bold face in the table to IEC : A, B, C, D, E, F, GA, H, K are certified.
- Type of bearings
  - \* : Self cooled sleeve bearing dimension (60 Hz)
  - \*\* : Self cooled sleeve bearing dimension (50 Hz)

5. The following tolerances are applicable to dimensions A, B, and H.

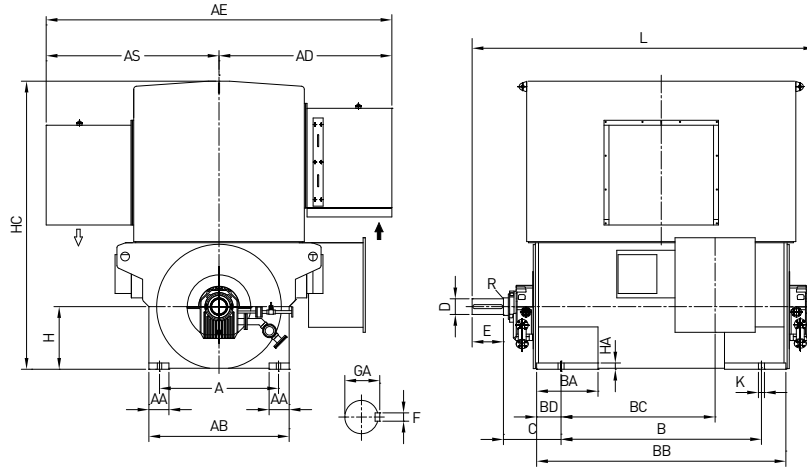
Dimensions	Tolerance (mm)	
A and B	Over 500 up to 750	±1.5
	Over 750 up to 1,000	±1.5
	Over 1,000	±1.5
H	Over 250 up to 600	-1.0
	Over 600 up to 1,000	-1.5

6. "R" dimension of the shaft extension part is as follows.

Shaft Diameter (mm)	R (mm)
50 - 80	1.6
85 - 120	2.5
130 - 190	4.0

| HRP3 |

Mounting B3 / Degree of Protection IP23W, IP24W, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRP3	355	2	830	140	950	943	1,533	590	1,120	320	1,450	780	165	375
	357	2							*1,120		*1,450			*375
	403	2	870	150	1,030	1,150	1,803	653	**1,120		**1,450			**475
	405	2							1,250	320	1,550	875	150	400
	407	2							*1,250		*1,550			*400
	451	2	850	150	1,000	1,260	2,520	1,260	**1,370		**1,670			**400
	453	2							1,400	450	1,790	1,050	195	450
	455	2												*530
	501	2	950	160	1,120	1,380	2,760	1,380	1,600	490	1,880	1,170	140	390
	503	2												*475
505	2									1,860	1,080	230	480	
													*560	
										1,990	1,230	195	460	
													*530	

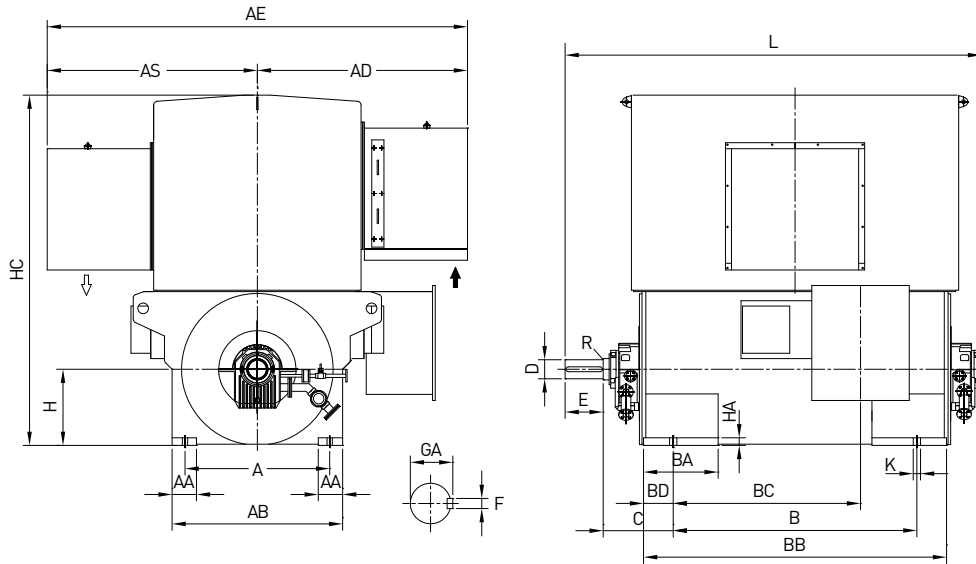
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	Weight [kg]	
HRP3	355	2	355	30	1,364	2,020	38	90	170	25	95	2,550
	357	2						*90	*170	*25	*95	2,700
	403	2	400	35	1,454	2,192	38	**90	**170	**25	**95	3,700
	405	2						110	210	28	116	3,850
	407	2						*90	*170	*25	*95	4,000
	451	2	450	45	2,060	2,465	35	**90	**170	**25	**95	5,200
	453	2			*2,630			*100			*106	5,400
	455	2			2,530							5,800
					*2,695							
	501	2	500	45	2,300	2,610	48	125	250	32	132	6,700
503	2			*2,725			*110	*210	*28	*116	7,000	
505	2			2,735							7,600	
				*2,835								

Note: For the bearing type and tolerances of dimensions, see page 94.

## | HRP3 |

### Mounting B3 / Degree of Protection IP23W, IP24W, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRP3	561	2	1,120	160	1,280	1,470	2,940	1,470	1,600	490	1,990	1,200	195	500
	563	2												
	565	2							1,800	490	2,140	1,300	170	480
	631	2	1,250	190	1,420	1,530	3,060	1,530	1,800	540	2,220	1,350	210	510
	633	2												
	635	2							2,000	540	2,320	1,500	160	460

Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	Weight (kg)	
HRP3	561	2	560	50	2,550	2,800	48	150	250	36	158	8,500
	563	2										9,000
	565	2				2,980						9,600
	631	2	630	65	2,780	3,080	48	160	300	40	169	11,500
	633	2										12,600
	635	2				3,180						13,500

**Note:** For the bearing type and tolerances of dimensions, see page 94.





| Rated Power at 50 Hz |

**3.0 kV**

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIP1	403	990	760	550	-	-	-	-
	405	1,110	860	620	-	-	-	-
	407	1,250	960	690	-	-	-	-
	409	1,400	1,080	780	-	-	-	-
	453	1,590	1,170	880	630	450	-	-
	455	1,780	1,310	980	700	510	-	-
	457	2,000	1,470	1,100	790	570	-	-
	459	2,240	1,650	1,240	890	640	-	-
	503	2,510	1,850	1,480	1,020	730	520	-
	505	2,810	2,070	1,650	1,140	820	580	-
	507	3,150	2,320	1,850	1,280	910	660	-
	509	3,530	2,600	2,080	1,440	1,030	740	-
	563	4,180	2,920	2,430	1,750	1,360	870	680
	565	4,680	3,270	2,720	1,960	1,530	980	760
	567	5,250	3,660	3,050	2,190	1,710	1,090	850
	569	5,880	4,110	3,420	2,460	1,920	1,230	960
	633	6,390	4,560	3,650	2,880	2,120	1,480	1,100
	635	7,150	5,110	4,080	3,230	2,380	1,650	1,230
	637	8,010	5,730	4,580	3,620	2,660	1,850	1,380
	639	8,980	6,420	5,130	4,060	2,990	2,080	1,550
715	9,800	7,670	5,790	4,430	3,220	2,360	1,780	
717	10,980	8,590	6,490	4,960	3,600	2,650	2,000	
719	12,300	9,630	7,270	5,560	4,040	2,970	2,240	

**Note:** - Bearing type of horizontal motors:

- Grease lubricated anti-friction
- Forced feed oil lubrication sleeve bearings

## | Rated Power at 50 Hz |

## 6.0 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIP1	403	930	710	510	-	-	-	-
	405	1,040	800	580	-	-	-	-
	407	1,160	900	650	-	-	-	-
	409	1,310	1,010	730	-	-	-	-
	453	1,490	1,100	820	590	420	-	-
	455	1,670	1,230	920	660	470	-	-
	457	1,870	1,380	1,030	750	530	-	-
	459	2,100	1,550	1,160	840	600	-	-
	503	2,340	1,720	1,380	960	690	490	-
	505	2,630	1,930	1,550	1,070	770	550	-
	507	2,940	2,160	1,740	1,200	860	620	-
	509	3,300	2,430	1,950	1,350	970	700	-
	563	3,910	2,740	2,270	1,630	1,280	810	640
	565	4,380	3,060	2,550	1,830	1,430	910	710
	567	4,910	3,430	2,850	2,050	1,600	1,020	800
	569	5,500	3,850	3,200	2,300	1,800	1,150	900
	633	5,970	4,270	3,410	2,700	1,990	1,380	1,030
	635	6,690	4,780	3,820	3,020	2,230	1,550	1,150
	637	7,500	5,350	4,280	3,390	2,500	1,740	1,290
	639	8,400	6,000	4,800	3,800	2,800	1,950	1,450
715	9,160	7,170	5,420	4,140	3,010	2,210	1,670	
717	10,260	8,030	6,070	4,640	3,370	2,480	1,870	
719	11,500	9,000	6,800	5,200	3,780	2,780	2,100	

**Note:** - Bearing type of horizontal motors:  
 Grease lubricated anti-friction  
 Forced feed oil lubrication sleeve bearings

| Rated Power at 60 Hz |

**3.3 kV**

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIP1	403	1,210	920	680	-	-	-	-
	405	1,350	1,030	760	-	-	-	-
	407	1,510	1,160	850	-	-	-	-
	409	1,700	1,300	960	-	-	-	-
	453	1,880	1,440	1,100	740	540	-	-
	455	2,110	1,610	1,230	820	610	-	-
	457	2,360	1,810	1,380	920	680	-	-
	459	2,650	2,030	1,550	1,040	770	-	-
	503	3,000	2,370	1,780	1,280	910	670	-
	505	3,360	2,650	2,000	1,440	1,020	750	-
	507	3,760	2,970	2,240	1,610	1,140	840	-
	509	4,220	3,330	2,510	1,810	1,280	950	-
	563	5,170	3,740	3,070	2,200	1,700	1,120	890
	565	5,790	4,190	3,440	2,470	1,910	1,250	1,000
	567	6,490	4,690	3,850	2,760	2,140	1,410	1,120
	569	7,270	5,260	4,320	3,100	2,400	1,580	1,260
	633	7,670	5,750	4,650	3,610	2,630	1,940	1,480
	635	8,590	6,440	5,210	4,040	2,940	2,170	1,650
	637	9,620	7,210	5,830	4,530	3,300	2,430	1,850
	639	10,780	8,080	6,540	5,080	3,700	2,730	2,080
715	11,760	8,690	7,240	5,520	4,000	3,050	2,470	
717	13,170	9,740	8,110	6,180	4,480	3,410	2,760	
719	14,760	10,910	9,090	6,930	5,020	3,830	3,100	

**Note:** - Bearing type of horizontal motors:

- Grease lubricated anti-friction
- Forced feed oil lubrication sleeve bearings

## | Rated Power at 60 Hz |

## 4.16 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIP1	403	1,170	890	660	-	-	-	-
	405	1,310	1,000	740	-	-	-	-
	407	1,470	1,120	830	-	-	-	-
	409	1,650	1,260	930	-	-	-	-
	453	1,820	1,400	1,060	710	520	-	-
	455	2,040	1,570	1,190	800	580	-	-
	457	2,290	1,750	1,330	900	660	-	-
	459	2,570	1,970	1,500	1,010	740	-	-
	503	2,910	2,300	1,730	1,250	880	650	-
	505	3,260	2,580	1,940	1,400	980	730	-
	507	3,660	2,890	2,170	1,570	1,100	820	-
	509	4,100	3,240	2,440	1,760	1,240	920	-
	563	5,030	3,630	2,980	2,140	1,660	1,080	860
	565	5,630	4,070	3,340	2,390	1,860	1,210	970
	567	6,310	4,560	3,750	2,680	2,080	1,360	1,080
	569	7,070	5,110	4,200	3,010	2,340	1,530	1,220
	633	7,450	5,590	4,520	3,510	2,550	1,890	1,430
	635	8,350	6,260	5,070	3,930	2,860	2,120	1,610
	637	9,350	7,010	5,670	4,410	3,200	2,370	1,800
	639	10,480	7,860	6,360	4,940	3,590	2,660	2,020
715	11,430	8,450	7,040	5,360	3,890	2,960	2,390	
717	12,810	9,460	7,890	6,000	4,350	3,320	2,680	
719	14,350	10,600	8,840	6,730	4,880	3,720	3,010	

**Note:** - Bearing type of horizontal motors:  
 Grease lubricated anti-friction  
 Forced feed oil lubrication sleeve bearings

| Rated Power at 60 Hz |

**6.6 kV**

Unit: kW

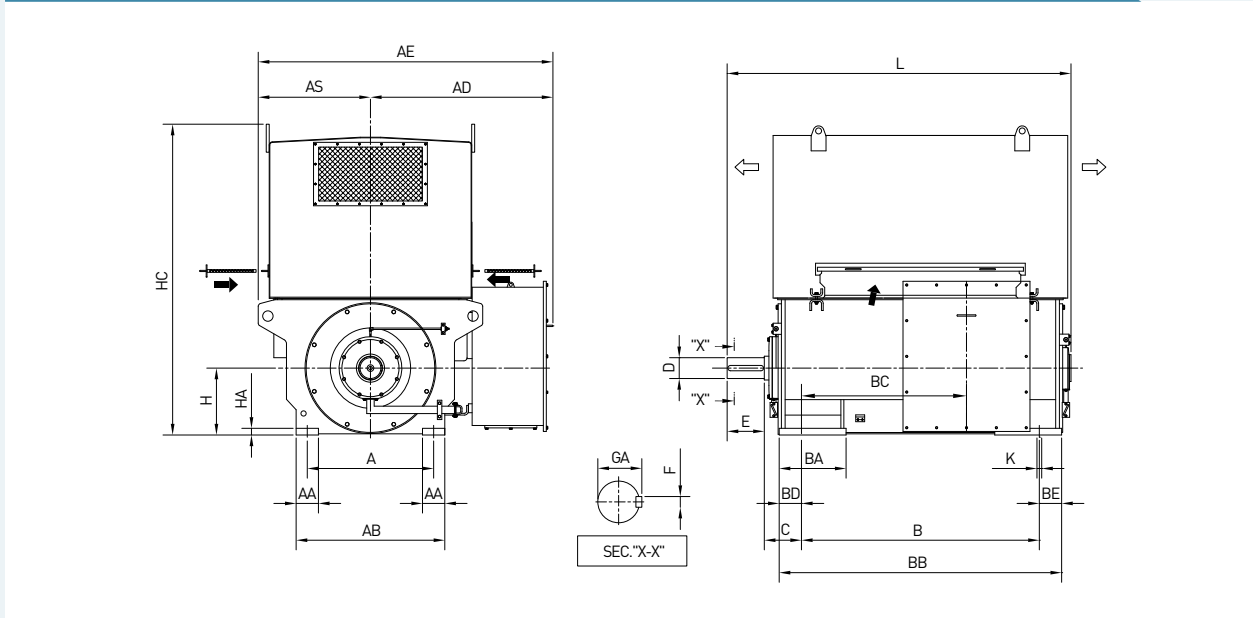
Type	Poles	4P	6P	8P	10P	12P	14P	16P
HIP1	403	1,130	860	640	-	-	-	-
	405	1,260	970	710	-	-	-	-
	407	1,410	1,080	800	-	-	-	-
	409	1,590	1,220	900	-	-	-	-
	453	1,760	1,350	1,030	690	510	-	-
	455	1,970	1,510	1,150	780	570	-	-
	457	2,210	1,690	1,290	870	640	-	-
	459	2,480	1,900	1,450	980	720	-	-
	503	2,810	2,220	1,670	1,210	850	630	-
	505	3,140	2,480	1,870	1,350	950	700	-
	507	3,520	2,780	2,090	1,510	1,070	790	-
	509	3,950	3,120	2,350	1,700	1,200	890	-
	563	4,840	3,500	2,870	2,060	1,600	1,050	830
	565	5,420	3,920	3,220	2,310	1,790	1,170	940
	567	6,070	4,390	3,600	2,580	2,000	1,320	1,050
	569	6,800	4,920	4,040	2,900	2,250	1,480	1,180
	633	7,170	5,380	4,350	3,380	2,460	1,820	1,380
	635	8,030	6,020	4,870	3,780	2,750	2,040	1,550
	637	9,000	6,750	5,460	4,240	3,080	2,280	1,740
	639	10,080	7,560	6,120	4,750	3,460	2,560	1,950
715	11,000	8,130	6,770	5,160	3,740	2,850	2,310	
717	12,320	9,100	7,580	5,780	4,190	3,190	2,580	
719	13,800	10,200	8,500	6,480	4,700	3,580	2,900	

**Note:** - Bearing type of horizontal motors:

- Grease lubricated anti-friction
- Forced feed oil lubrication sleeve bearings

# | HIP1 |

## Mounting B3 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIP1	403	4	830	140	950	1,130	1,805	675	1,250	275	1,500	892	125	125
	405	4												
	407	4						1,400		1,650	1,042			
	409	4												
	453	4	850	150	1,000	1,165	1,875	710	1,400	450	1,660	1,052	110	150
	455	4												
	457	4						1,600		1,820	1,212			110
	459	4												

Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HIP1	403	4	250	400	30	1,890	35x45	1,990	120	210	32	127	4,000
	405	4					Slot						4,200
	407	4						2,180	130	250	32	137	4,500
	409	4											4,600
	453	4	250	450	45	2,065	35x45	2,180	140	250	36	148	5,000
	455	4					Slot						5,200
	457	4						2,340	150	250	36	158	5,600
	459	4											5,800

**Note**

1. Tolerance on "D" and "DA" dimension will be m6.
2. The bores of the transmission elements should be made to an ISO fit H6.
3. The dimensions printed in bold face in the table to IEC : A, B, C, D, E, F, GA, H, K are certified.

4. Tolerances on dimension A, B, and H.

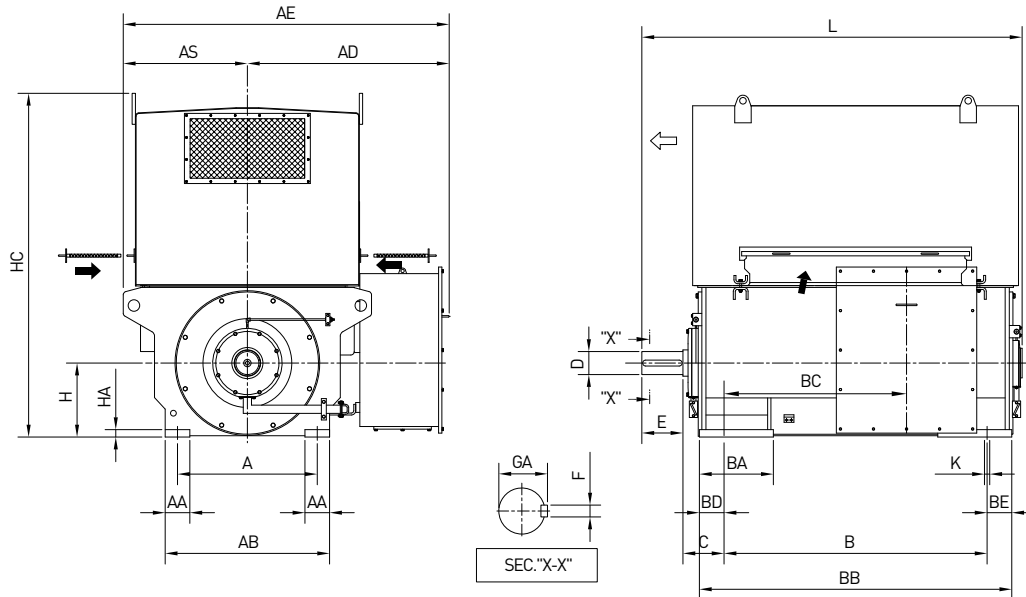
Dimensions	Tolerance (mm)	
A and B	Over 500 up to 750	±1.5
	Over 750 upto 1,000	±2.0
	Over 1,000	±2.5
H	Over 250 up to 600	-1.0
	Over 600 up to 1,000	-1.5

5. "R" dimension of the shaft extension part is as follows.

Shaft Diameter (mm)	R (mm)
50-80	1.6
85-120	2.5
130-190	4.0

| HIP1 |

Mounting B3 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE
HIP1	403	830	140	950	1,130	1,805	675	1,250	275	1,500	892	125	125
	405												
	407												
	409												
	453	850	150	1,000	1,165	1,875	710	1,400	450	1,660	1,052	110	150
	455												
	457												
	459												

Unit: mm

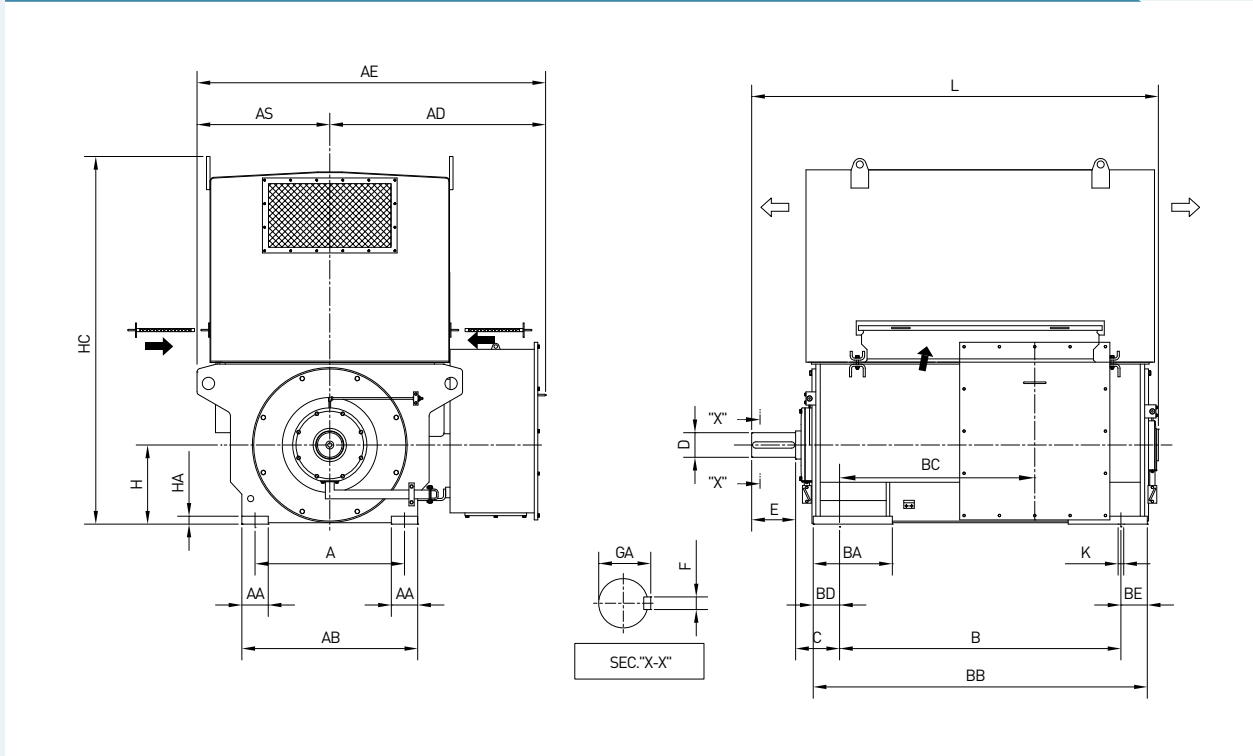
Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)
HIP1	403	250	400	30	1,880	35x45 Slot	1,990	120	210	32	127	4,000
	405						2,180	130	250	32	137	4,100
	407						2,180	130	250	32	137	4,400
	409						2,180	130	250	32	137	4,500
	453	250	450	45	2,055	35x45 Slot	2,180	140	250	36	148	4,900
	455						2,340	150	250	36	158	5,100
	457						2,340	150	250	36	158	5,400
	459						2,340	150	250	36	158	5,600

Note: For tolerances of dimensions, see page 103.



# | HIP1 |

## Mounting B3 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIP1	503	4	950	160	1,120	1,240	2,055	815	1,600	490	1,820	1,050	110	110
	505	4												
	507	4						1,800			2,020	1,250		
	509	4												

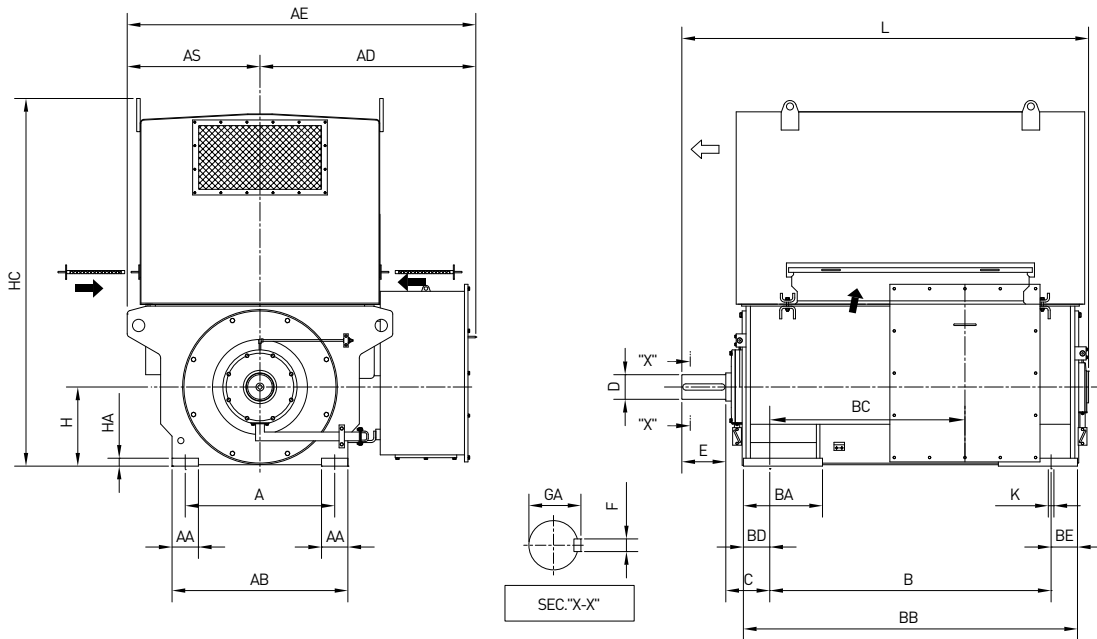
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight [kg]	
HIP1	503	4	250	500	45	2,270	48x58	2,490	150	250	36	158	6,600
	505	4					Slots						6,900
	507	4						2,690	160	300	40	169	7,500
	509	4											7,800

**Note:** For tolerances of dimensions, see page 103.

## | HIP1 |

### Mounting B3 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIP1	503	6	950	160	1,120	1,240	2,055	815	1,600	490	1,820	1,070	110	110
	505	6												
	507	6						1,800			2,020	1,270		
	509	6												

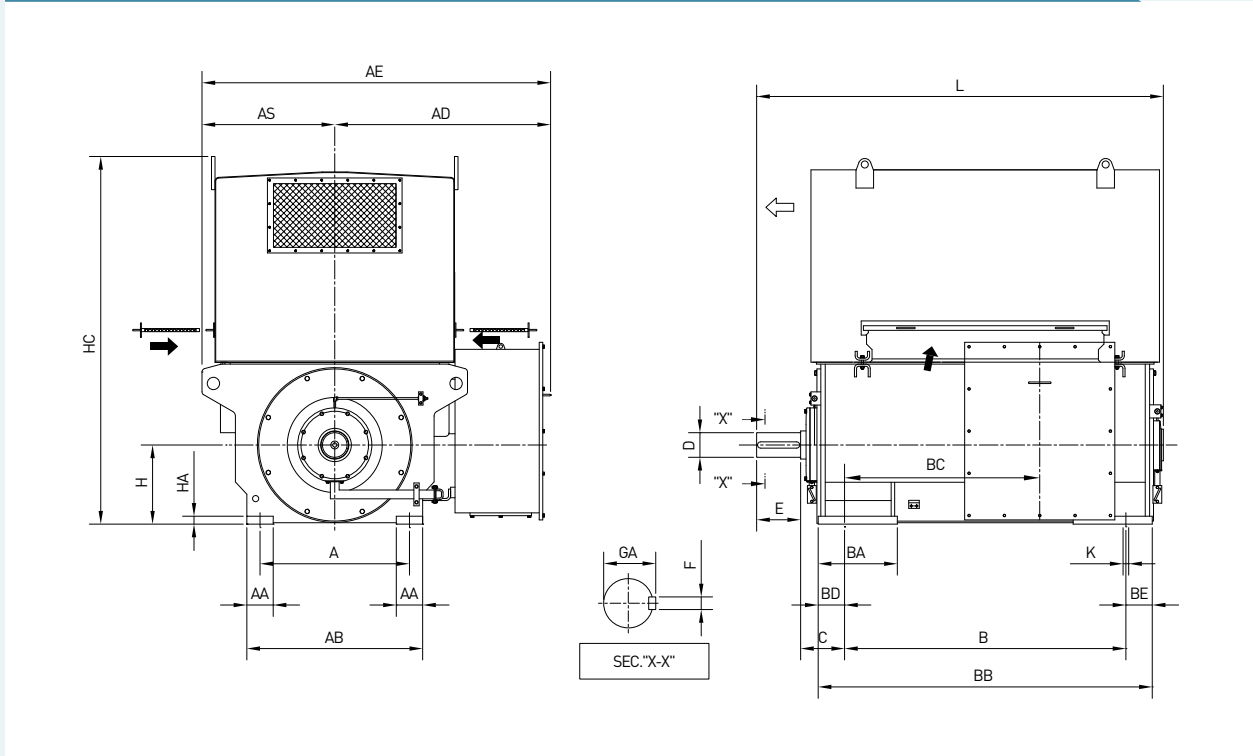
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HIP1	503	6	250	500	45	2,290	48x58 Slots	2,490	150	250	36	158	6,700
	505	6											6,900
	507	6						2,690	160	300	40	169	7,500
	509	6											7,800

**Note:** For tolerances of dimensions, see page 103.

# | HIP1 |

## Mounting B3 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIP1	503	8 - 16	950	160	1,120	1,240	2,055	815	1,600	490	1,820	1,070	110	110
	505	8 - 16												
	507	8 - 16						1,800			2,020	1,270		
	509	8 - 16												

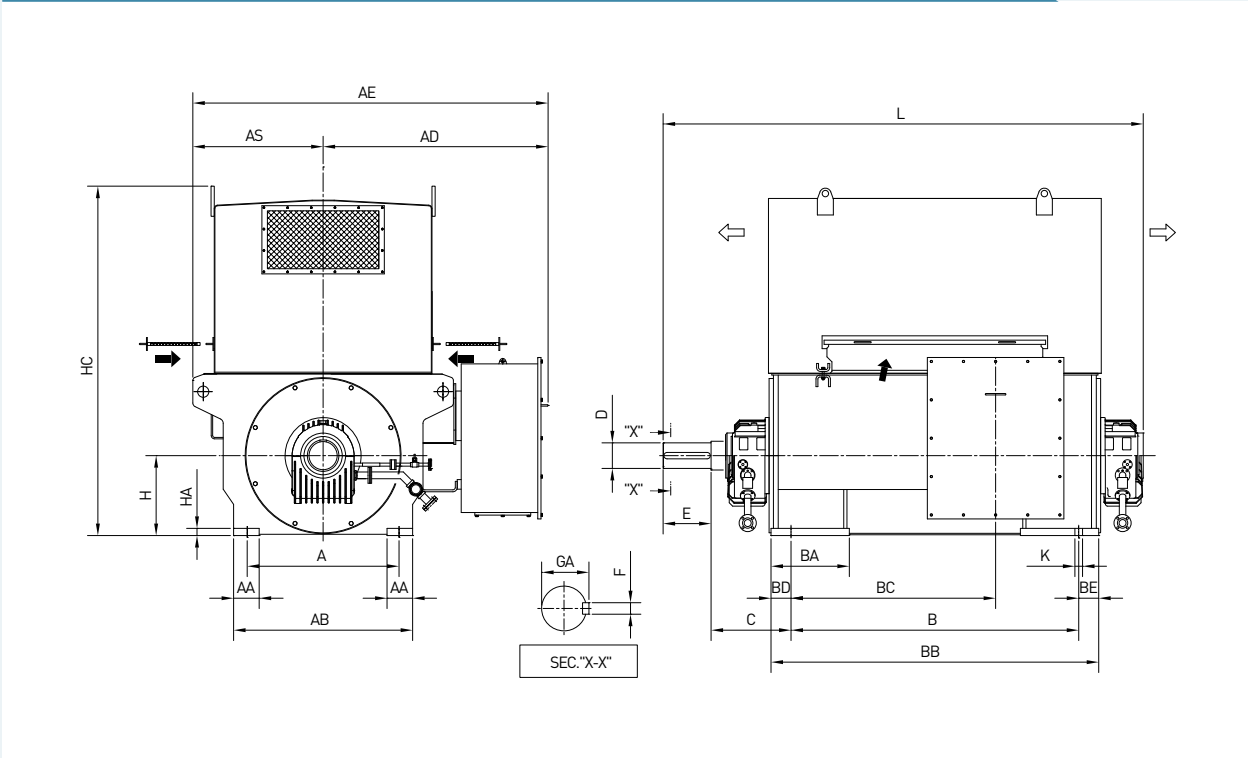
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight [kg]	
HIP1	503	8 - 16	250	500	45	2,290	48x58	2,490	150	250	36	158	6,700
	505	8 - 16					Slots						7,000
	507	8 - 16						2,690	160	300	40	169	7,500
	509	8 - 16											7,800

**Note:** For tolerances of dimensions, see page 103.

## | HIP1 |

### Mounting B3 / Degree of Protection IP23W, IP24W, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIP1	563	4	1,180	180	1,320	1,450	2,355	905	1,800	520	2,030	1,265	115	115
	565	4												
	567	4						2,000			2,230	1,465		
	569	4												

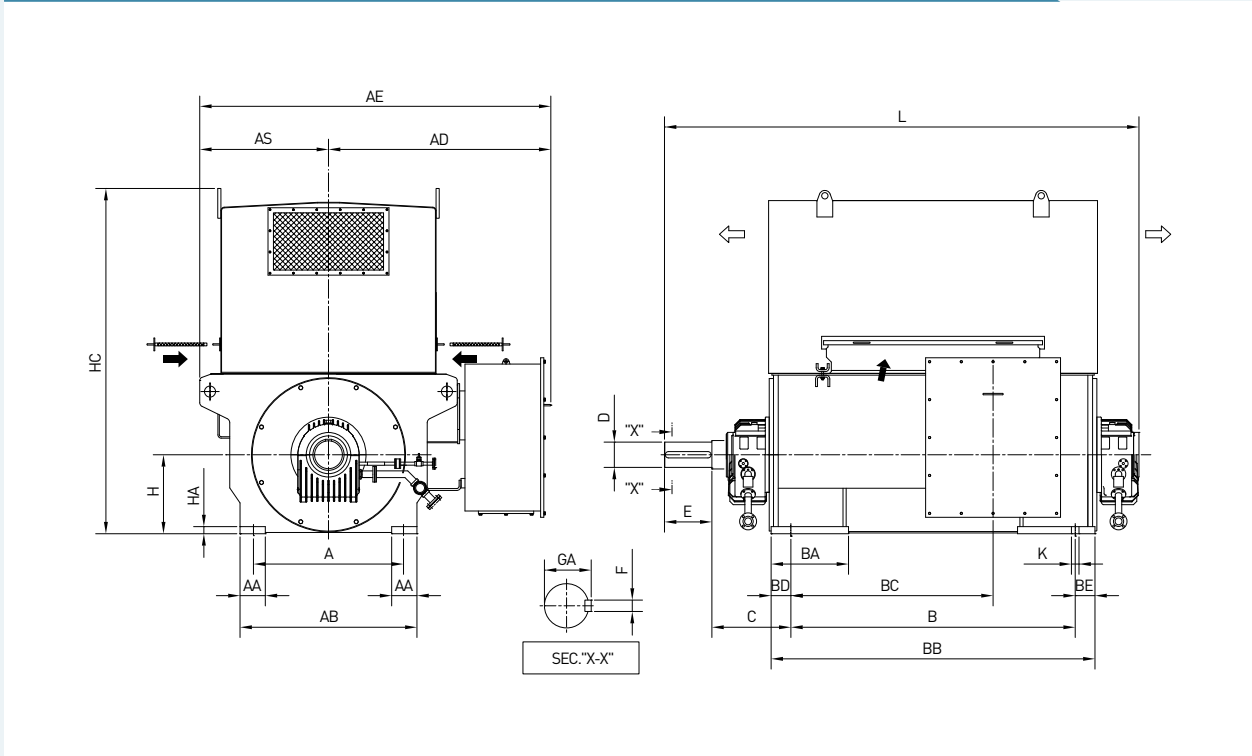
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HIP1	563	4	475	560	50	2,530	48x58 Slot	3,040	190	350	45	200	9,300
	565	4										9,800	
	567	4						3,240	200	350	45	210	10,600
	569	4										11,100	

**Note:** For tolerances of dimensions, see page 103.

| HIP1 |

Mounting B3 / Degree of Protection IP23W, IP24W, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIP1	633	4	1,400	250	1,540	1,540	2,515	975	2,000	540	2,230	1,465	115	115
	635	4												
	637	4						2,240		2,470	1,705			
	639	4												

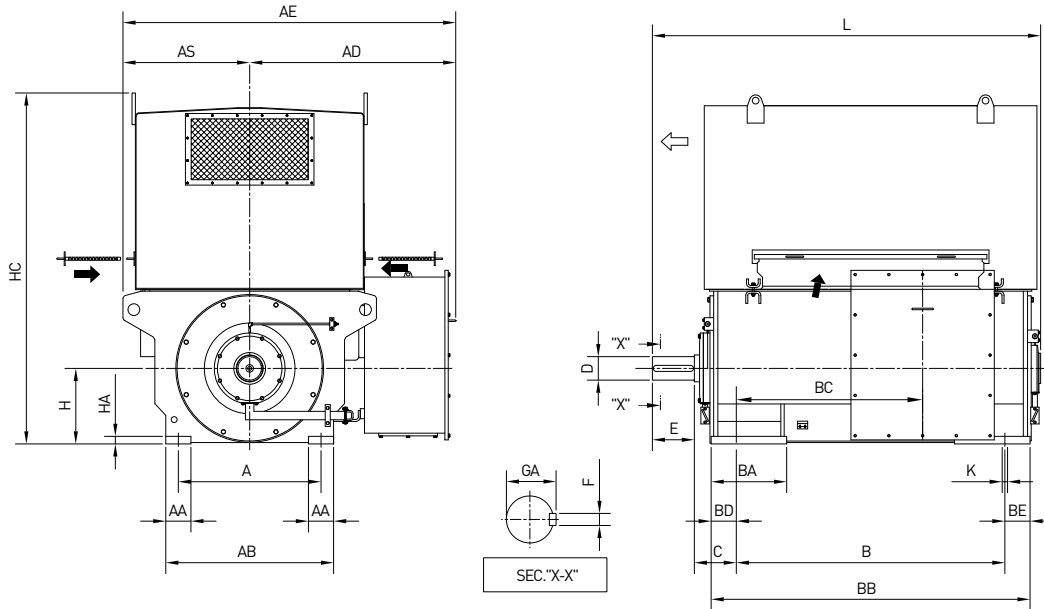
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight [kg]	
HIP1	633	4	475	630	55	2,780	48x58 Slot	3,240	220	350	50	231	12,900
	635	4											13,500
	637	4						3,480	220	350	50	231	14,500
	639	4											15,200

Note: For tolerances of dimensions, see page 103.

**| HIP1 |**

**Mounting B3 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type**



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIP1	563	6	1,180	180	1,320	1,450	2,355	905	1,800	520	2,090	1,290	150	140
	565	6												
	567	6						2,000			2,300	1,500		150
	569	6												
	633	6	1,400	230	1,540	1,540	2,515	975	2,000	540	2,320	1,515	150	170
	635	6												
	637	6							2,240			2,540	1,735	
639	6													

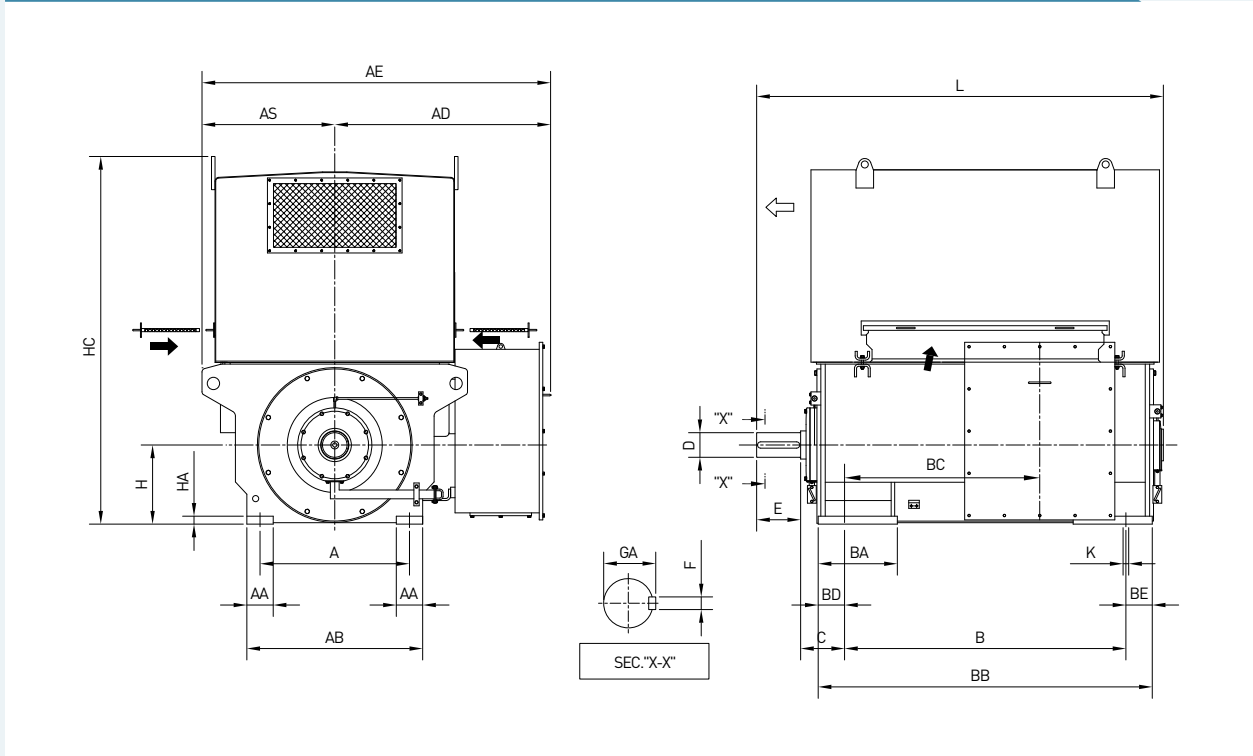
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HIP1	563	6	335	560	50	2,530	48x58	2,750	190	350	45	200	9,400
	565	6					Slot						9,900
	567	6						2,960	200	350	45	210	10,700
	569	6											11,100
	633	6	335	630	55	2,780	48x58	2,990	220	350	50	231	12,700
	635	6											13,300
	637	6											14,400
639	6						3,210	220	350	50	231	14,900	

**Note:** For tolerances of dimensions, see page 103.

# HIP1 |

## Mounting B3 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HIP1	563	8 - 16	1,180	180	1,320	1,450	2,355	905	1,800	520	2,090	1,290	150	140
	565	8 - 16												
	567	8 - 16							2,000		2,300	1,500		150
	569	8 - 16												
	633	8 - 16	1,400	230	1,540	1,540	2,515	975	2,000	540	2,320	1,515	150	170
	635	8 - 16												
	637	8 - 16							2,240		2,540	1,735		150
	639	8 - 16												

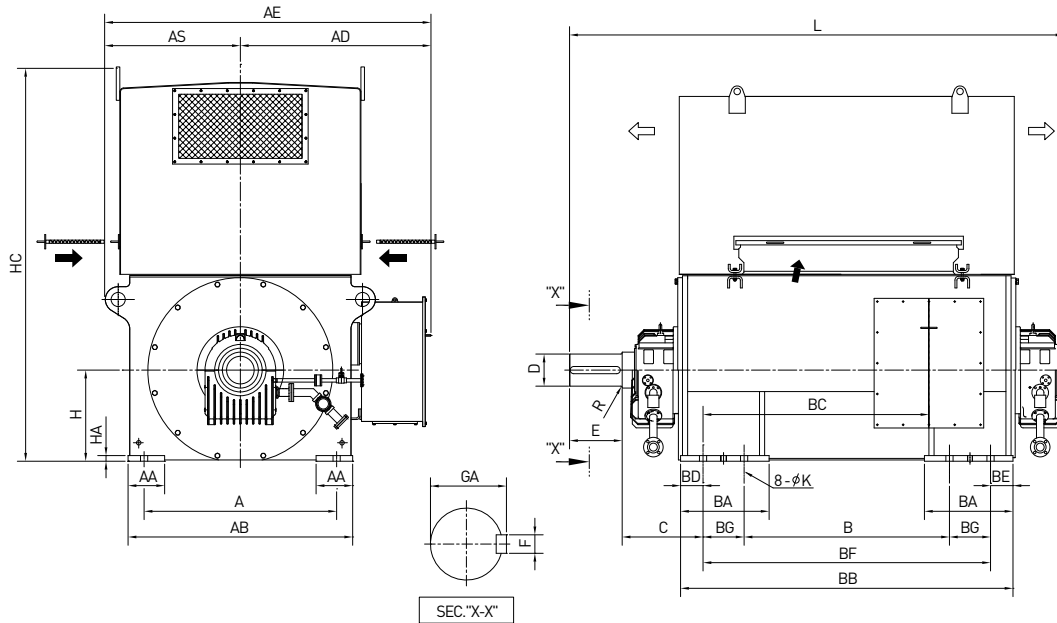
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HIP1	563	8 - 16	335	560	50	2,530	48x58	2,750	190	350	45	200	9,300
	565	8 - 16					Slot						9,900
	567	8 - 16						2,960	200	350	45	210	10,700
	569	8 - 16											11,100
	633	8 - 16	335	630	55	2,780	48x58	2,990	220	350	50	231	12,800
	635	8 - 16											13,400
	637	8 - 16						3,210	220	350	50	231	14,500
	639	8 - 16											15,100

**Note:** For tolerances of dimensions, see page 103.

| HIP1 |

Mounting B3 / Degree of Protection IP23W, IP24W, Sleeve Bearing Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	BF	BG	
HIP1	715	4	1,500	285	1,750	1,490	2,550	1,060	1,400	690	2,360	1,535	175	185	2,000	300
	717	4							1,600		2,590	1,765	175	175	2,240	320
	719	4														

Unit: mm

Type	Poles	C	D	E	F	GA	H	HA	HC	K	L	Weight (kg)	
HIP1	715	4	600	250	410	56	262	710	44	3,210	56x66	3,650	18,100
	717	4									Slot	3,850	19,500
	719	4										3,850	20,300

Note: For tolerances of dimensions, see page 103.







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# HRP3 Series-Vertical

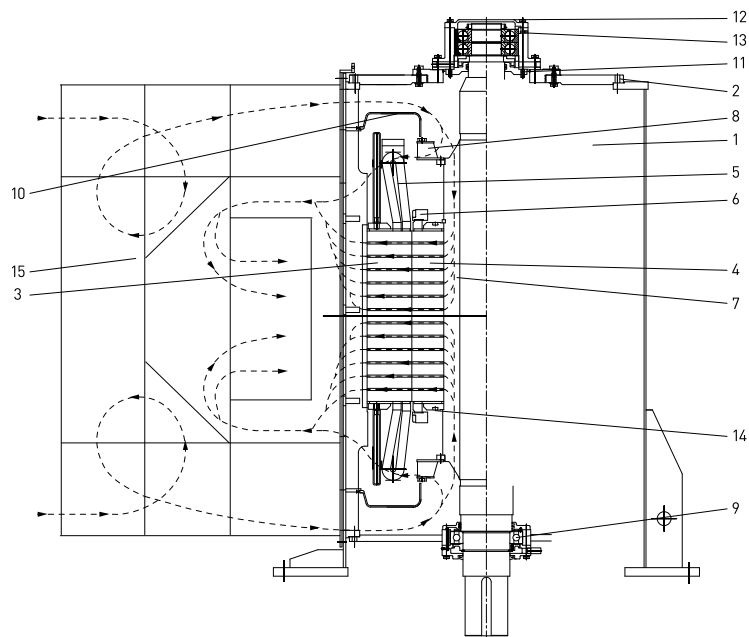
Weather Protected, Squirrel Cage

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## HRP3 | Type - I (Bi-directional cooling circuit)

• Rotor Type	Squirrel Cage
• Number of Poles	4-6
• Voltage	2-14 kV
• Output Range	1,140-8,840 kW (at 60 Hz, 6,600 V, 4 Pole)
• Type of Construction	IM V10
• Frame	400-630
• Degree of Protection	IP 23W-IP 24W (IEC 60034-5)
• Method of Cooling	IC 01 (IEC 60034-6)
• Type of Enclosure	Weather Protected Type I & II : WPI, WPPI (NEMA MG-1)

### Sectional View and Parts Name



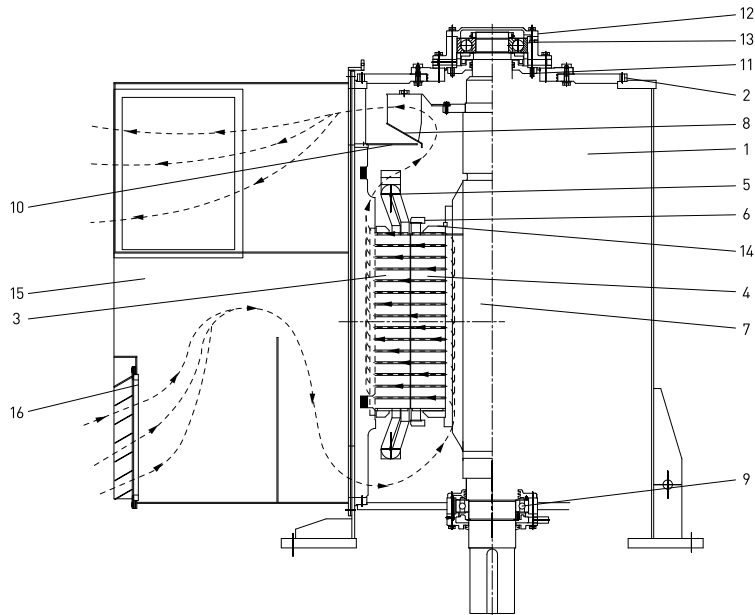
#### Parts Name

1. Stator Frame	5. Stator Winding	9. Bearing	13. Grease Nipple
2. End Shield	6. Rotor End Ring	10. Air Guide Plate	14. Balance Ring
3. Stator Core	7. Shaft	11. Internal Bearing Cover	15. Air Housing
4. Rotor Core	8. Internal Cooling Fan	12. External Bearing Cover	

## | HRP3 | Type - II (Uni-directional cooling circuit)

• Rotor Type	Squirrel Cage
• Number of Poles	8-16
• Voltage	2-14 kV
• Output Range	610-5,290 kW (at 60 Hz, 6,600 V, 4 Pole)
• Type of Construction	IM V10
• Frame	400-630
• Degree of Protection	IP 23W-IP 24W (IEC 60034-5)
• Method of Cooling	IC 01 (IEC 60034-6)
• Type of Enclosure	Weather Protected Type I & II : WPI, WPII (NEMA MG-1)

### Sectional View and Parts Name



#### Parts Name

1. Stator Frame	5. Stator Winding	9. Bearing	13. Grease Nipple
2. End Shield	6. Rotor End Ring	10. Air Guide Plate	14. Balance Ring
3. Stator Core	7. Shaft	11. Internal Bearing Cover	15. Air Housing
4. Rotor Core	8. Internal Cooling Fan	12. External Bearing Cover	16. Air Filter

## | Rated Power at 50 Hz |

## 3.3 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HRP3	403	-	-	550	-	-	-	-
	405	960	720	620	-	-	-	-
	407	1,080	800	690	-	-	-	-
	409	1,220	900	780	-	-	-	-
	40L	1,380	1,010	-	-	-	-	-
	453	-	-	860	560	420	-	-
	455	1,630	1,230	970	630	470	-	-
	457	1,830	1,370	1,080	710	530	-	-
	459	2,030	1,540	1,220	800	600	-	-
	45L	2,230	1,720	-	-	-	-	-
	503	-	-	1,360	940	710	-	-
	505	2,350	1,850	1,530	1,060	790	-	-
	507	2,610	2,080	1,710	1,180	890	-	-
	509	2,940	2,320	1,920	1,330	1,000	-	-
	50L	3,270	2,600	-	-	-	-	-
	563	-	-	2,140	1,470	1,180	775	650
	565	4,060	3,220	2,400	1,650	1,320	870	730
	567	4,540	3,590	2,690	1,840	1,480	980	820
	569	5,070	4,000	3,020	2,070	1,660	1,100	920
	633	5,420	4,230	3,340	2,390	1,940	1,475	1,160
635	6,100	4,700	3,740	2,670	2,170	1,650	1,300	
637	6,780	5,260	4,190	3,000	2,430	1,855	1,460	
639	7,600	5,880	4,700	3,360	2,730	2,080	1,640	

## 6.6 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HRP3	403	-	-	510	-	-	-	-
	405	880	680	570	-	-	-	-
	407	1,000	760	640	-	-	-	-
	409	1,120	850	720	-	-	-	-
	40L	1,270	960	-	-	-	-	-
	453	-	-	800	530	390	-	-
	455	1,520	1,120	900	590	440	-	-
	457	1,710	1,240	1,000	660	500	-	-
	459	1,890	1,400	1,130	750	560	-	-
	45L	2,080	1,560	-	-	-	-	-
	503	-	-	1,260	880	660	-	-
	505	2,440	1,880	1,410	990	740	-	-
	507	2,720	2,120	1,580	1,110	830	-	-
	509	3,060	2,350	1,780	1,250	930	-	-
	50L	3,400	2,640	-	-	-	-	-
	563	-	-	2,010	1,370	1,110	675	610
	565	4,160	3,180	2,250	1,530	1,250	760	680
	567	4,650	3,550	2,520	1,720	1,400	855	760
	569	5,190	3,960	2,830	1,930	1,570	960	860
	633	5,350	4,210	3,130	2,230	1,820	1,310	1,070
635	6,020	4,680	3,500	2,500	2,040	1,465	1,200	
637	6,690	5,240	3,920	2,800	2,280	1,650	1,340	
639	7,500	5,850	4,400	3,140	2,560	1,850	1,510	

## | Rated Power at 60 Hz |

### 3.3 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HRP3	403	-	-	660	-	-	-	-
	405	1,270	900	740	-	-	-	-
	407	1,430	1,010	830	-	-	-	-
	409	1,610	1,130	930	-	-	-	-
	40L	1,820	1,270	-	-	-	-	-
	453	-	-	1,040	680	510	-	-
	455	1,980	1,490	1,170	760	570	-	-
	457	2,220	1,650	1,310	850	640	-	-
	459	2,460	1,860	1,470	960	720	-	-
	45L	2,700	2,070	-	-	-	-	-
	503	-	-	1,630	1,140	850	-	-
	505	2,970	2,300	1,830	1,280	950	-	-
	507	3,300	2,590	2,050	1,430	1,070	-	-
	509	3,710	2,880	2,300	1,610	1,200	-	-
	50L	4,130	3,230	-	-	-	-	-
	563	-	-	2,580	1,760	1,430	990	790
	565	4,890	3,800	2,890	1,970	1,600	1,115	880
	567	5,460	4,240	3,240	2,210	1,790	1,250	990
	569	6,100	4,730	3,630	2,480	2,010	1,400	1,110
	633	6,520	5,080	4,020	2,870	2,340	1,745	1,400
635	7,340	5,640	4,510	3,220	2,630	1,960	1,570	
637	8,160	6,320	5,050	3,600	2,940	2,190	1,760	
639	9,140	7,060	5,660	4,040	3,300	2,450	1,980	

### 4.16 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HRP3	403	-	-	640	-	-	-	-
	405	1,220	870	720	-	-	-	-
	407	1,370	980	810	-	-	-	-
	409	1,550	1,090	910	-	-	-	-
	40L	1,750	1,230	-	-	-	-	-
	453	-	-	1,000	660	480	-	-
	455	1,930	1,450	1,120	740	540	-	-
	457	2,170	1,610	1,250	830	600	-	-
	459	2,400	1,810	1,410	930	680	-	-
	45L	2,640	2,020	-	-	-	-	-
	503	-	-	1,580	1,100	820	-	-
	505	2,930	2,260	1,770	1,230	920	-	-
	507	3,260	2,540	1,990	1,380	1,030	-	-
	509	3,670	2,830	2,230	1,550	1,160	-	-
	50L	4,080	3,170	-	-	-	-	-
	563	-	-	2,490	1,710	1,380	955	770
	565	4,830	3,750	2,790	1,920	1,540	1,075	860
	567	5,400	4,190	3,130	2,150	1,730	1,205	970
	569	6,030	4,670	3,510	2,410	1,940	1,350	1,090
	633	6,450	5,020	3,890	2,780	2,270	1,690	1,360
635	7,260	5,580	4,360	3,110	2,540	1,890	1,530	
637	8,070	6,250	4,880	3,490	2,840	2,125	1,710	
639	9,040	6,980	5,470	3,910	3,190	2,380	1,920	

## | Rated Power at 60 Hz |

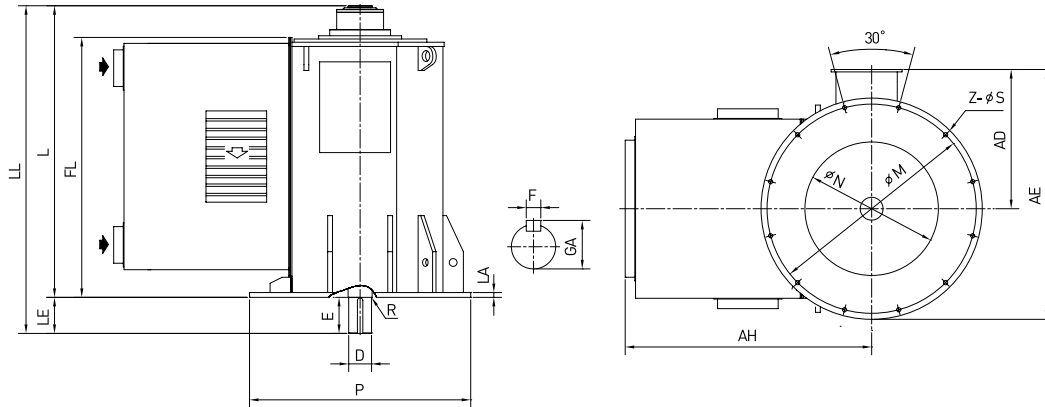
## 6.6 kV

Unit: kW

Type	Poles	4P	6P	8P	10P	12P	14P	16P
HRP3	403	-	-	610	-	-	-	-
	405	1,140	830	690	-	-	-	-
	407	1,280	930	770	-	-	-	-
	409	1,440	1,040	870	-	-	-	-
	40L	1,630	1,170	-	-	-	-	-
	453	-	-	970	640	470	-	-
	455	1,850	1,380	1,090	710	530	-	-
	457	2,080	1,540	1,220	800	590	-	-
	459	2,300	1,730	1,370	900	670	-	-
	45L	2,530	1,930	-	-	-	-	-
	503	-	-	1,530	1,060	790	550	-
	505	2,880	2,180	1,720	1,190	890	610	-
	507	3,200	2,450	1,920	1,330	1,000	690	-
	509	3,600	2,730	2,160	1,500	1,120	770	-
	50L	4,000	3,060	-	-	-	-	-
	563	-	-	2,410	1,650	1,330	885	740
	565	4,730	3,670	2,700	1,840	1,490	995	820
	567	5,280	4,090	3,020	2,070	1,670	1,115	920
	569	5,900	4,560	3,390	2,320	1,880	1,250	1,040
	633	6,310	4,910	3,760	2,690	2,190	1,585	1,290
	635	7,100	5,460	4,210	3,010	2,450	1,775	1,450
	637	7,890	6,110	4,720	3,370	2,750	2,000	1,620
	639	8,840	6,830	5,290	3,780	3,080	2,240	1,820

## | HRP3 |

### Mounting V10 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRP3	403	8	970	1,595	2,160	35	200	1,950	2,150	1,740	1,170	860
	405	4										
		6										
		8										
	407	4										
		6										
		8										
	409	4	970	1,595	2,160	35	200	2,100	2,300	1,910	1,170	860
		6										
		8										
	40L	4										
		6										

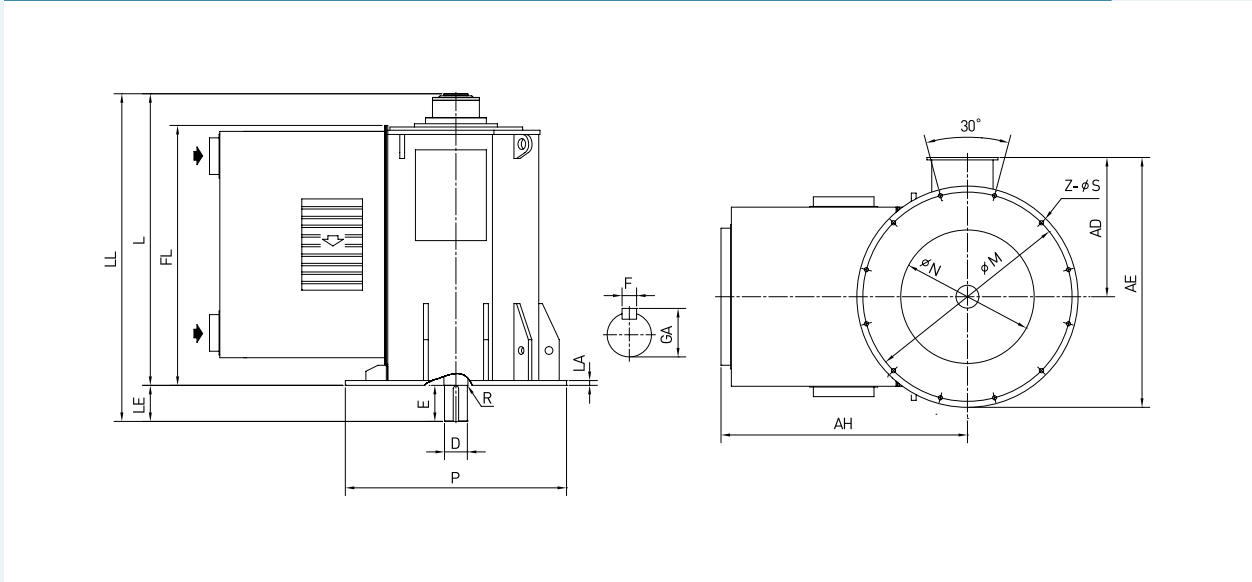
Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRP3	403	8	1,250	2	28	12	130	200	32	137	4,000
	405	4									4,250
		6									4,150
		8									4,150
	407	4									4,400
		6									4,300
		8									4,300
	409	4	1,250	2	28	12	130	200	32	137	4,800
		6									4,700
		8									4,700
	40L	4									5,000
		6									4,900



| HRP3 |

Mounting V10 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

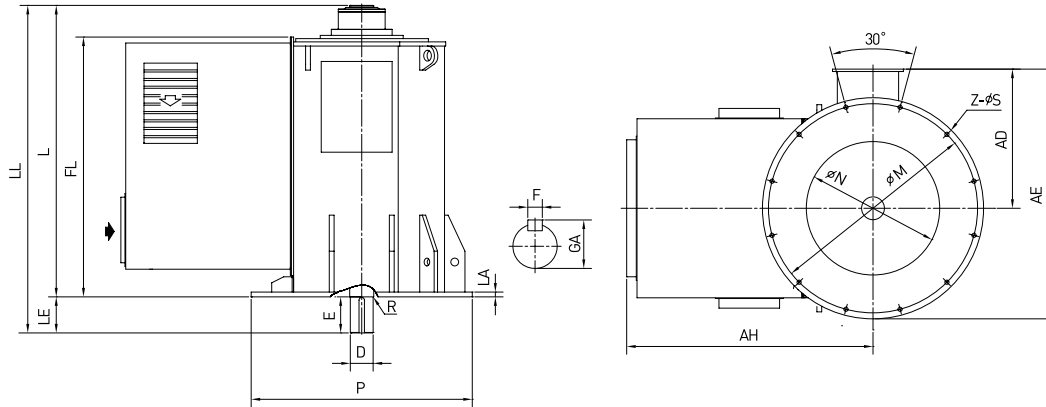
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRP3	455	4	1,150	1,850	2,680	35	200	2,200	2,400	2,000	1,280	940
	6											
	457	4										
		6										
	459	4										
		6										
45L	4											
	6											

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRP3	455	4	1,360	2	28	12	150	200	36	158	5,600
	6										5,550
	457	4									5,800
		6									5,800
	459	4									6,200
		6									6,250
45L	4	6,450									
	6	6,550									

## | HRP3 |

### Mounting V10 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

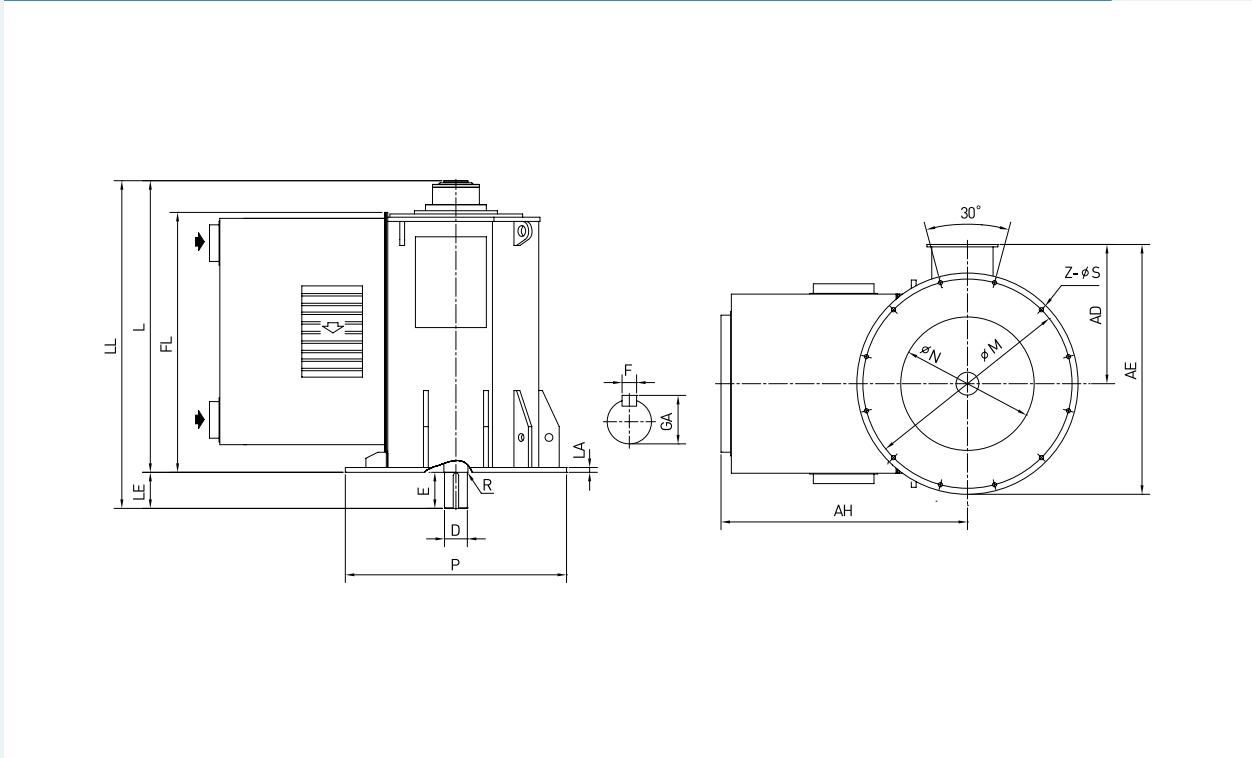
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N
HRP3	453	1,150	1,850	2,680	35	200	2,140	2,340	1,940	1,280	940
	455										
	457						2,250	2,450	2,060		
	459										

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)
HRP3	453	1,360	2	28	12	150	200	36	158	5,800
	455									6,000
	457									6,450
	459									6,750

| HRP3 |

Mounting V10 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

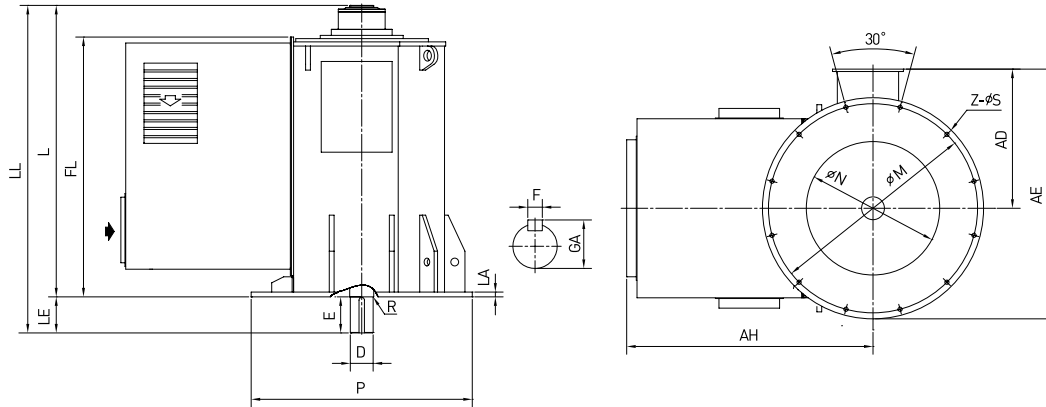
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRP3	505	4	1,210	2,010	2,850	35	240	2,330	2,570	2,080	1,420	1,050
		6										
	507	4	1,210	2,010	2,850	35	240	2,530	2,770	2,280	1,420	1,050
		6										
	50L	4	1,210	2,010	2,850	35	240	2,530	2,770	2,280	1,420	1,050
		6										

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRP3	505	4	1,500	2	28	12	170	240	40	179	7,110
		6									7,160
	507	4	1,500	2	28	12	170	240	40	179	7,400
		6									7,510
	50L	4	1,500	2	28	12	170	240	40	179	7,960
		6									8,060
50L	4	1,500	2	28	12	170	240	40	179	8,330	
	6									8,470	

## | HRP3 |

### Mounting V10 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

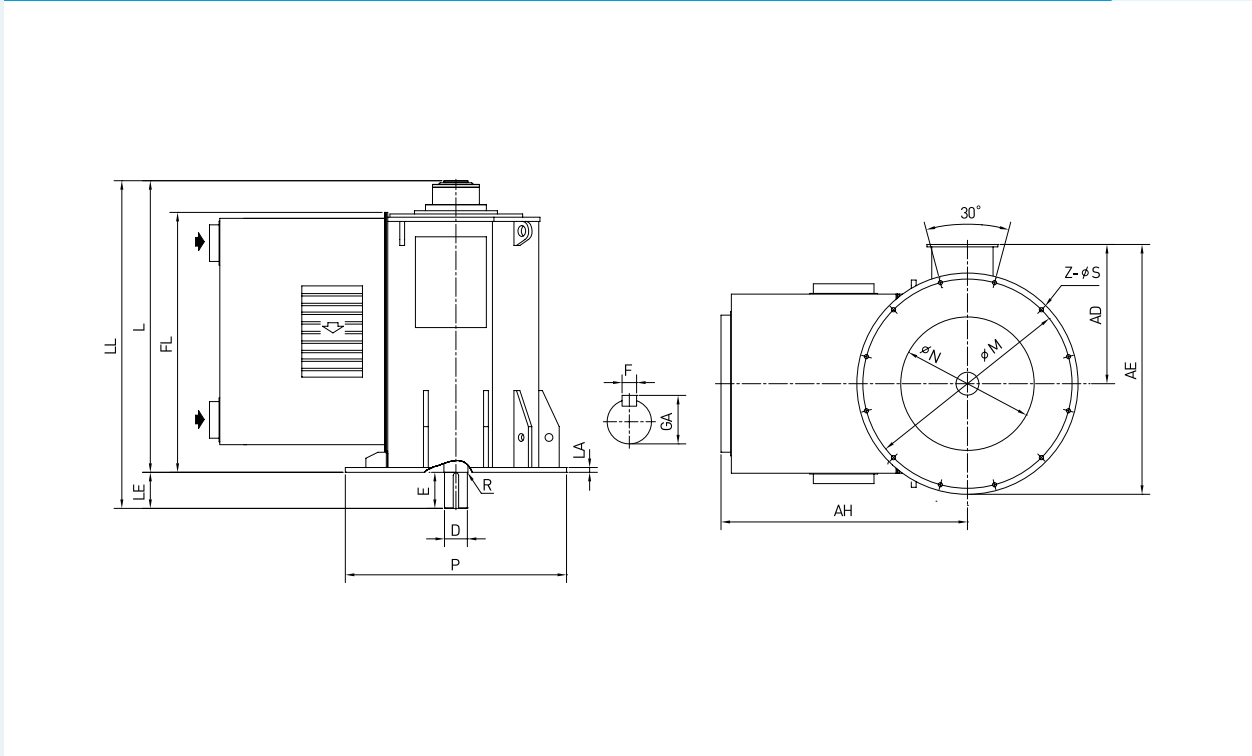
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRP3	503	8 - 16	1,210	2,010	2,850	35	240	2,250	2,490	2,000	1,420	1,050
	505							2,440	2,680	2,190		
	507											
	509											

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)
HRP3	503	1,500	2	28	12	170	240	40	179	7,210
	505									7,560
	507									8,260
	509									8,670

| HRP3 |

Mounting V10 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

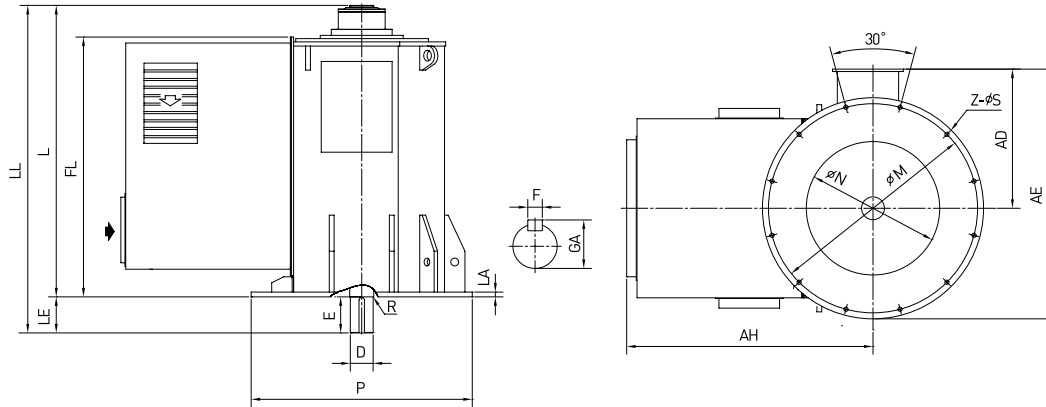
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRP3	563	4	1,290	2,190	3,040	40	280	2,300	2,580	2,120	1,580	1,160
		6										
	565	4	1,290	2,190	3,040	40	280	2,600	2,880	2,320	1,580	1,160
		6										
	567	4	1,290	2,190	3,040	40	280	2,600	2,880	2,320	1,580	1,160
		6										
569	4	1,290	2,190	3,040	40	280	2,600	2,880	2,320	1,580	1,160	
	6											

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRP3	563	4	1,680	2	35	12	190	280	45	200	9,750
		6									9,900
	565	4	1,680	2	35	12	190	280	45	200	10,250
		6									10,300
	567	4	1,680	2	35	12	190	280	45	200	10,850
		6									11,000
569	4	1,680	2	35	12	190	280	45	200	11,250	
	6									11,500	

## | HRP3 |

### Mounting V10 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

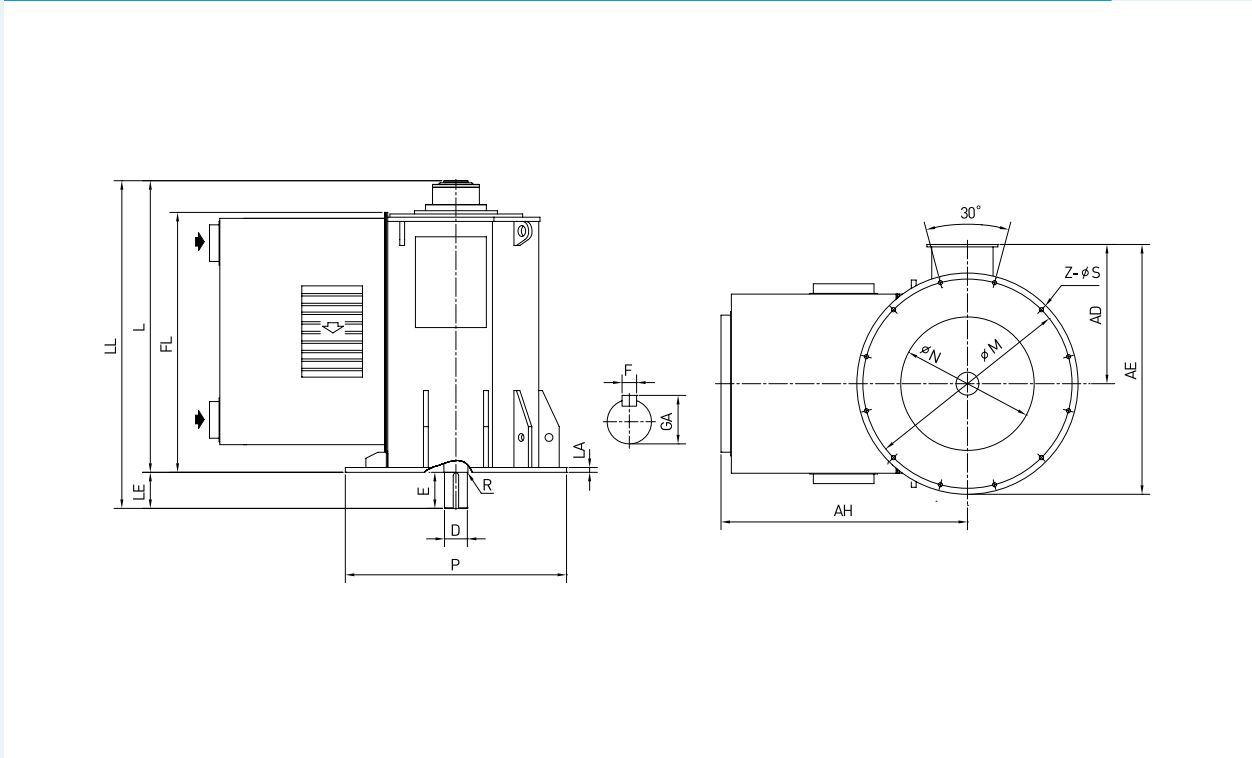
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRP3	563	8 - 10	1,290	2,190	3,040	40	280	2,300	2,580	2,090	1,580	1,160
		12 - 16										
	565	8 - 10	1,290	2,190	3,040	40	280	2,600	2,880	2,290	1,580	1,160
		12 - 16										
	569	8 - 10	1,290	2,190	3,040	40	280	2,600	2,880	2,290	1,580	1,160
		12 - 16										

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRP3	563	8 - 10	1,680	2	35	12	190	280	45	200	9,550
		12 - 16									9,650
	565	8 - 10	1,680	2	35	12	190	280	45	200	9,900
		12 - 16									10,000
	567	8 - 10	1,680	2	35	12	190	280	45	200	10,800
		12 - 16									10,850
569	8 - 10	1,680	2	35	12	190	280	45	200	11,250	
	12 - 16									11,250	

| HRP3 |

Mounting V10 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

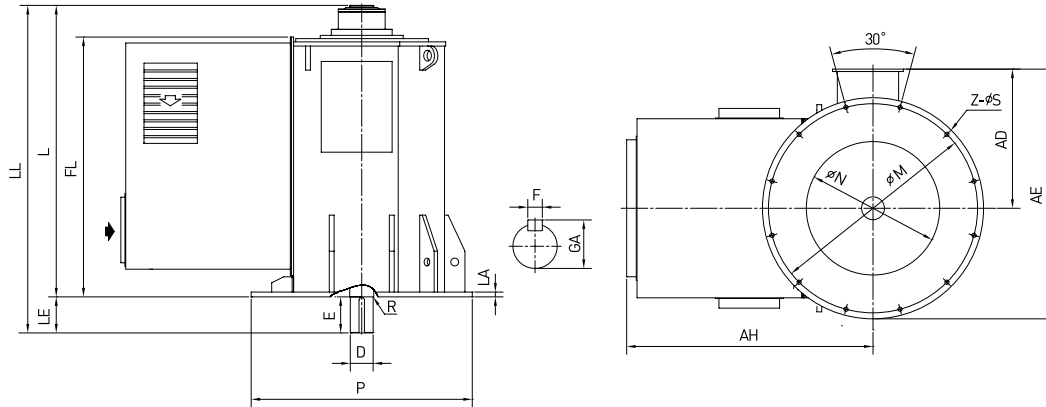
Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRP3	633	4	1,350	2,350	3,270	40	280	2,700	2,980	2,410	1,700	1,300
		6										
	635	4	1,350	2,350	3,270	40	280	2,900	3,180	2,620	1,700	1,300
		6										
	639	4	1,350	2,350	3,270	40	280	2,900	3,180	2,620	1,700	1,300
		6										

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRP3	633	4	1,800	4	35	12	200	280	45	210	13,090
		6									13,240
	635	4	1,800	4	35	12	220	280	50	231	13,660
		6									13,750
	637	4	1,800	4	35	12	220	280	50	231	14,600
		6									14,780
639	4	1,800	4	35	12	220	280	50	231	15,250	
	6									15,450	

## | HRP3 |

### Mounting V10 / Degree of Protection IP23W, IP24W, Anti-Friction Bearing Type



Unit: mm

Type	Poles	AD	AE	AH	LA	LE	L	LL	FL	M	N	
HRP3	633	8 - 10	1,350	2,350	3,270	40	280	2,700	2,980	2,390	1,700	1,300
		12 - 16										
	635	8 - 10	1,350	2,350	3,270	40	280	2,900	3,180	2,620	1,700	1,300
		12 - 16										
	639	8 - 10	1,350	2,350	3,270	40	280	2,900	3,180	2,620	1,700	1,300
		12 - 16										

Unit: mm

Type	Poles	P	R	S	Z	D	E	F	GA	Weight (kg)	
HRP3	633	8 - 10	1,800	4	35	12	200	280	45	210	13,250
		12 - 16									13,250
	635	8 - 10	1,800	4	35	12	220	280	50	231	13,800
		12 - 16									13,800
	637	8 - 10	1,800	4	35	12	220	280	50	231	14,800
		12 - 16									14,850
	639	8 - 10	1,800	4	35	12	220	280	50	231	15,500
		12 - 16									15,550





# Order Specification

Output (kW)	Phase	Speed	Voltage (V)	Frequency(Hz)	Quantity	Service Factor	Application	Motor Delivery

APPLICABLE STANDARD (CODES)    IEC    NEMA    IEEE    API    BS    Special (Specify)

**1. DUTY**

- Continuous \*
- Time rated (Specify) \_\_\_\_\_

**\*\* 2. ROTOR**

- Squirrel Cage
- Wound

**3. INSULATION CLASS**

- Class B
- Class F \*
- Special (Specify) \_\_\_\_\_

**4. TEMPERATURE RISE (By resistance method)**

- Class B \*
- Class F
- Special (Specify) \_\_\_\_\_

**\*\* 5. TYPE OF MOUNTING**

- B3/Horizontal-Foot
- V1, V10/Vertical
- Special (Specify) \_\_\_\_\_

**6. ENVIRONMENT**

- High Humidity    Dusty    Tropical
- Special (Specify) \_\_\_\_\_

**7. AMBIENT TEMPERATURE**

- Max. 40°C \*
- Special (Specify) \_\_\_\_\_

**8. ALTITUDE**

- Standard (Less than 1000m A.S.L.) \*
- Special (Specify) \_\_\_\_\_

**\*\* 9. AREA CLASSIFICATION**

- Non-Hazardous Area \*
- Hazardous Area
  - Class I, Zone 1 / Class I, Division 1
  - Class I, Zone 2 / Class I, Division 2
  - Gas Group, Ignition Temp. \_\_\_\_\_
  - Special (Specify) \_\_\_\_\_

**\*\* 10. ENCLOSURE**

- TEFC (IC411)    TEAAC (IC511)
- TEAAC (IC611)    TEWAC (IC81W)
- WPI (IC01)    WPII (IC01)
- ODP (IC01)
- Explosion Proof
  - Ex-nA    Ex-d    Ex-p
  - Ex-e    Certification \_\_\_\_\_
- Special (Specify) \_\_\_\_\_

**11. PROTECTION DEGREE**

- IP54    IP55    IP23
- IPW23    IPW24
- Special (Specify) \_\_\_\_\_

**12. LOCATION**

- Indoor    Outdoor
- Special (Specify) \_\_\_\_\_

**\*\* 13. STARTING METHOD**

- Full voltage (Direct on line) \*    Star-Delta
- Secondary rheostat (For wound)
- Reduce Voltage ( % Tap.) \_\_\_\_\_
- V.V.V.F. (Speed Range) \_\_\_\_\_
- Current Source (Maker) \_\_\_\_\_
- Voltage Source (Maker) \_\_\_\_\_
- Soft Starter

**14. STARTING DUTY**

- Not Exceeding NEMA MG 1-20.43 (Cold : 2, Hot : 1)
- Special (Specify) \_\_\_\_\_

**15. MAX. INRUSH CURRENT**

- 650% \*    600%    550%
- Special (Specify) \_\_\_\_\_

**\*\* 16. LOAD INERTIA (Referred to Motor Shaft)**

- Not Exceeding NEMA MG 1-20.42 \*
- Actual WK2 (lb-ft<sup>2</sup>) \_\_\_\_\_
- Actual GD2 (kg-m<sup>2</sup>) \_\_\_\_\_
- Speed-torque curve of load attached
  - Starting Condition - Valve Closed
  - Starting Condition - Valve Open

**17. SHAFT EXTENSION**

- Single \*    Double

**18. COUPLING METHOD**

- Direct Connected \*    Belt
- Special (Specify) \_\_\_\_\_

**19. MOTOR ROTATION (Viewed from Drive End)**

- C.W. \*    C.C.W.
- Bi-directional

**20. LOCATION OF MAIN TERMINAL BOX (Viewed from Drive End)**

- Right \*    Left
- Special (Specify) \_\_\_\_\_

**21. LOCATION OF AUX. TERMINAL BOX (Viewed from Drive End)**

- Right    Left \*
- Special (Specify) \_\_\_\_\_

**\*\* 22. BEARING TYPE**

- Anti-friction Bearing
- Split Sleeve Bearing
- Tilting Pad Bearing
- Special (Specify) \_\_\_\_\_

23. BEARING LUBRICATION TYPE

- Grease Lubricated
- Self Cooled Oil Lubricated
- Forced Feed Oil Lubricated
- Special (Specify) \_\_\_\_\_

24. CABLE ENTRY OPENING

- Blind Steel Plate             Threaded
- Cable Gland Type
- Special (Specify) \_\_\_\_\_

25. PAINTING COLOR

- Munsell No : 7.5 BG 6/1.5, Light Grey \*
- Special (Specify) \_\_\_\_\_

26. TEST AND INSPECTION

- Un-witnessed Routine Test \*
- Special (Specify) \_\_\_\_\_

\*\* 27. EXTERNAL THRUST (VERTICAL MOTOR ONLY)

- No Thrust
- Normal Down Thrust (Kg or LBS) \_\_\_\_\_
- Max. Down Thrust (Kg or LBS) \_\_\_\_\_
- Momentary Up Thrust (Kg or LBS) \_\_\_\_\_

HHI's standard is to withstand the thrust of the rotor and coupling of motor only.

28. WINDING TEMPERATURE DETECTORS

- Not required
- Required. Quantity per phase \_\_\_\_\_
  - PT 100 ohm, Single
  - PT 100 ohm, Dual
  - PTC
  - Special (Specify) \_\_\_\_\_
    - 4 - 20 mA transmitters (Type) \_\_\_\_\_

29. BEARING TEMPERATURE DETECTORS

- Not required
- Required. Quantity per bearing \_\_\_\_\_
  - PT 100 ohm, Single
  - PT 100 ohm, Dual
  - Thermocouples (Type) \_\_\_\_\_
  - Dial type Indicators
    - Without Contact
    - With Contact
  - Special (Specify) \_\_\_\_\_
    - 4 - 20 mA transmitters (Type) \_\_\_\_\_

30. ANTI-CONDENSATION HEATER

- Not required
- Required (Phase, Volts) \_\_\_\_\_

\*\* 31. COOLING WATER (For TEWAC Motor)

- Fresh Water
- Sea Water
- Water Inlet Temp. (Max.) \_\_\_\_\_

32. REQUIRED SPARE PARTS

- Bearing (Anti-friction)
- Sleeve Bearing Shell
- Special (Specify) \_\_\_\_\_

33. APPLICABLE CUSTOMER'S SPEC.

- YES                       NO

Attached : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

34. SPECIAL REQUIREMENTS

\_\_\_\_\_  
 \_\_\_\_\_

NOTE

1. The asterisk (\*) marks shown on below information are our (Hyundai) standard.
2. The asterisk (\*\*) marks must fill up. We can not figure out the motor type and price without these information.


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