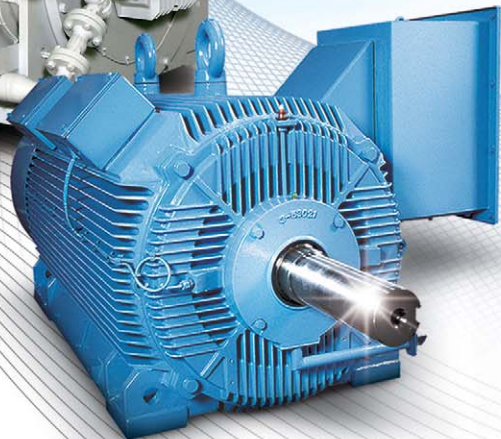




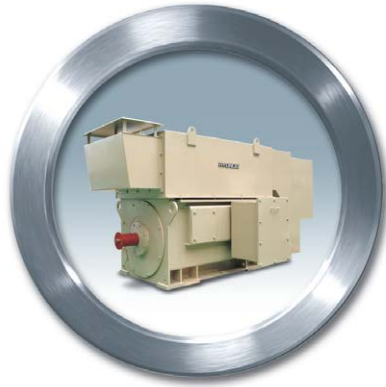
# Induction Motors

Medium & High Voltage



# World-Class Technology

Hyundai Heavy Industries Co., Ltd.  
is known for its world-class technology!  
HHI's Induction Motor Series  
is the latest Hyundai innovaton.



Global Leader in  
**Medium & High Voltage Induction Motors**



# Medium & High Voltage Induction Motors

Hyundai rotating machines have been supplied and tested in accordance with worldwide classification societies, including IEC, NEMA, EN, API, BSI, AS, IS, KS, JIS, IEEE, and JEC for industrial applications and Lloyd, ABS, DNV, and KR for marine use.



## Features . . .

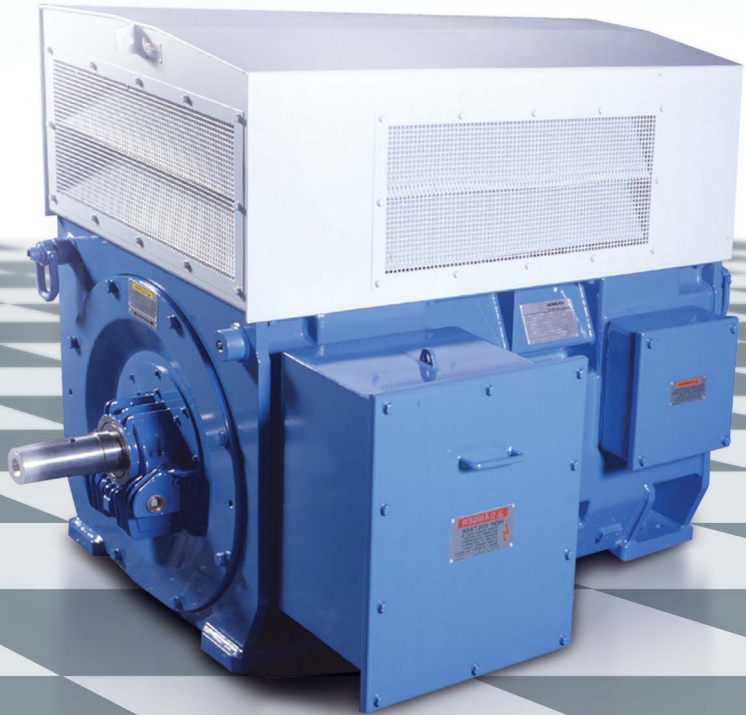
- VPI insulation provides high reliability and a longer life
- Suitable for tropical environment
- Uni-directional cooling fan for high efficiency and low noise
- Vibration free shaft system with rated speed balancing
- Quiet operation with state-of-the-art fluid dynamic analysis
- Heavy duty rotor construction
- Reliable bearing with lower temperature rise and easy maintenance
- Ample space in terminal box for easy cable connection
- Compact size and simple installation

Durability

Low Vibration,  
Low Noise

Environmentally  
Friendly

High  
Efficiency



## CONTENTS

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## Product Line



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.

<b>HLE5 Series</b> (Totally Enclosed Fan-Cooled Squirrel Cage)	<b>HRQ3 Series</b> (Totally Enclosed Air-to-Air Cooled Squirrel Cage)	<b>HRN3 Series</b> (Totally Enclosed Water-to-Air Cooled Squirrel Cage)
		
<b>HLE5</b>	<b>HRQ3</b>	<b>HRN3</b>
<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: 2-8</li> </ul>	<ul style="list-style-type: none"> <li>• Number of Poles: 2-20</li> </ul>	<ul style="list-style-type: none"> <li>• Number of Poles: 2-30</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: 200-1,000 kW (at 60 Hz, 6,600 V, 4-Pole)</li> </ul>	<ul style="list-style-type: none"> <li>• Output Range: 830-8,500 kW (at 60 Hz, 6,600 V, 4-Pole)</li> </ul>	<ul style="list-style-type: none"> <li>• Output Range: 1,030-11,800 kW (at 60 Hz, 6,600 V, 4-Pole)</li> </ul>
<ul style="list-style-type: none"> <li>• Type of Construction: IM B3 (IM V1 Optional)</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>• Frame: 280-450</li> </ul>	<ul style="list-style-type: none"> <li>• Frame: 355-710</li> </ul>	<ul style="list-style-type: none"> <li>• Frame: 400-710</li> </ul>
<ul style="list-style-type: none"> <li>• Degree of Protection: IP 54 (IEC 60034-5)</li> </ul>	<ul style="list-style-type: none"> <li>• Degree of Protection: IP 54 (IEC 60034-5)</li> </ul>	<ul style="list-style-type: none"> <li>• Degree of Protection: IP 54 (IEC 60034-5)</li> </ul>
<ul style="list-style-type: none"> <li>• Method of Cooling: IC 411 (IEC 60034-6)</li> </ul>	<ul style="list-style-type: none"> <li>• Method of Cooling: IC 611 (IEC 60034-6)</li> </ul>	<ul style="list-style-type: none"> <li>• Method of Cooling: IC 81 W (IEC 60034-6)</li> </ul>
<ul style="list-style-type: none"> <li>• Type of Enclosure: Totally Enclosed Fan-Cooled (NEMA MG-1)</li> </ul>	<ul style="list-style-type: none"> <li>• Type of Enclosure: Totally Enclosed Air-to-Air Cooled (NEMA MG-1)</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>• Cooling Water Inlet Temp: Max. 25°C (For other cases, please contact us)</li> </ul>

<b>HRB5 Series</b> (Open Drip-Proof Squirrel Cage)	<b>HRP3 Series</b> (Weather Protected Squirrel Cage)	<b>HLS7 Series</b> (Totally Enclosed Air-to-Air Cooled Wound Rotor)	<b>HRS7 Series</b> (Open Drip-Proof Wound Rotor)
			
<p><b>HRB5</b></p> <ul style="list-style-type: none"> <li>• Rotor Type: Squirrel Cage</li> <li>• Number of Poles : 2-8</li> <li>• Voltage: 2-7.2 kV</li> <li>• Output Range: 120-1,200 kW (at 60 Hz, 6,600 V, 4 Pole)</li> <li>• Type of Construction: IM B3</li> <li>• Frame: 280-450</li> <li>• Degree of Protection: IP 23 (IEC 60034-5)</li> <li>• Method of Cooling: IC 01 (IEC 60034-6)</li> <li>• Type of Enclosure: Open Drip-Proof (NEMA MG-1)</li> </ul>	<p><b>HRP3</b></p> <ul style="list-style-type: none"> <li>• Rotor Type: Squirrel Cage</li> <li>• Number of Poles: 2-30</li> <li>• Voltage: 2-14 kV</li> <li>• Output Range: 1,030-11,800 kW (at 60 Hz, 6,600 V, 4-Pole)</li> <li>• Type of Construction: IM B3</li> <li>• Frame: 280-710</li> <li>• Degree of Protection: IP 23W-IP 24 W (IEC 60034-5)</li> <li>• Method of Cooling: IC 01 (IEC 60034-6)</li> <li>• Type of Enclosure: Weather Protected Type I &amp; II : WPI, WPII (NEMA MG-1)</li> </ul>	<p><b>HLS7</b></p> <ul style="list-style-type: none"> <li>• Rotor Type: Wound Rotor</li> <li>• Number of Poles: 4-12</li> <li>• Voltage: 2-14 kV</li> <li>• Output Range: 470-4,200 kW (at 60 Hz, 6,600 V, 4-Pole)</li> <li>• Type of Construction: IM B3</li> <li>• Frame: 560-900</li> <li>• Degree of Protection: IP 54 (IEC 60034-5)</li> <li>• Method of Cooling: IC 511 (IEC 60034-6)</li> <li>• Type of Enclosure: Totally Enclosed Air-to-Air Cooled (NEMA MG-1)</li> </ul>	<p><b>HRS7</b></p> <ul style="list-style-type: none"> <li>• Rotor Type: Wound Rotor</li> <li>• Number of Poles: 4-12</li> <li>• Voltage: 2-14 kV</li> <li>• Output Range: 260-4,700 kW (at 60 Hz, 6,600 V, 4-Pole)</li> <li>• Type of Construction: IM B3</li> <li>• Frame: 355-710</li> <li>• Degree of Protection: IP 23 (IEC 60034-5)</li> <li>• Method of Cooling: IC 01 (IEC 60034-6)</li> <li>• Type of Enclosure: Open Drip-Proof (NEMA MG-1)</li> </ul>



Hyundai Induction Motors

offer many advantages,

including & High levels of

efficiency, stability,

and durability

## Product Features

### Standard Specifications

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

### Application

• <b>Power Condition</b>	Voltage $\pm 10\%$ , frequency $\pm 5\%$ and 10% max. of combined voltage and frequency with frequency not to exceed 5%
• <b>Environmental Condition</b>	Non-hazardous area
• <b>Permissible Load WK2</b>	NEMA MG1-20.11
• <b>Starting Duty</b>	Two starts in cold condition, One start in hot condition.
• <b>Unit</b>	ISO metric
• <b>Color of Finish Paint</b>	Munsell No. 7.5 BG 6/1.5
• <b>Direction of Rotation</b>	Uni-directional (Bi-directional by request, except for 2- pole motors)
• <b>Method of Starting</b>	Full voltage direct on line (in case of squirrel cage rotor)

### Construction

• <b>Frame</b>	Cast-iron or fabricated steel plate
• <b>End Bracket</b>	Cast-iron or fabricated steel plate
• <b>Shaft</b>	Normalized carbon steel, single extension with keyway & key (Double extension upon request)
• <b>Bearing</b>	Bracket mounting type high-quality anti-friction bearings or sleeve bearings
• <b>Enclosure</b>	ODP, WP I, WP II, TEFC, TEAAC, TEWAC etc.



## De-rating Factors

### Inlet Temperature of Ambient Air

No.	Ambient Temp.	Type	HLE5, HRQ3, HLS7	HRB5, HRP3, HRS7
1	40°		1.0	1.0
2	45°		0.95	0.96
3	50°		0.9	0.91
4	55°		0.84	0.86
5	60°		0.78	0.81

### Site Altitude(S.A.)

No.	S.A.	Type	HLE5, HRQ3, HLS7, HRN3	HRB5, HRP3, HRS7
1	0m < S.A. ≤ 1,000m		1.0	1.0
2	1,000m < S.A. ≤ 1,500m		0.96	0.96
3	1,500m < S.A. ≤ 2,000m		0.92	0.93
4	2,000m < S.A. ≤ 2,500m		0.88	0.90
5	2,500m < S.A. ≤ 3,000m		0.84	0.86
6	3,000m < S.A. ≤ 3,500m		0.80	0.83
7	3,500m < S.A. ≤ 4,000m		0.76	0.80

# 01

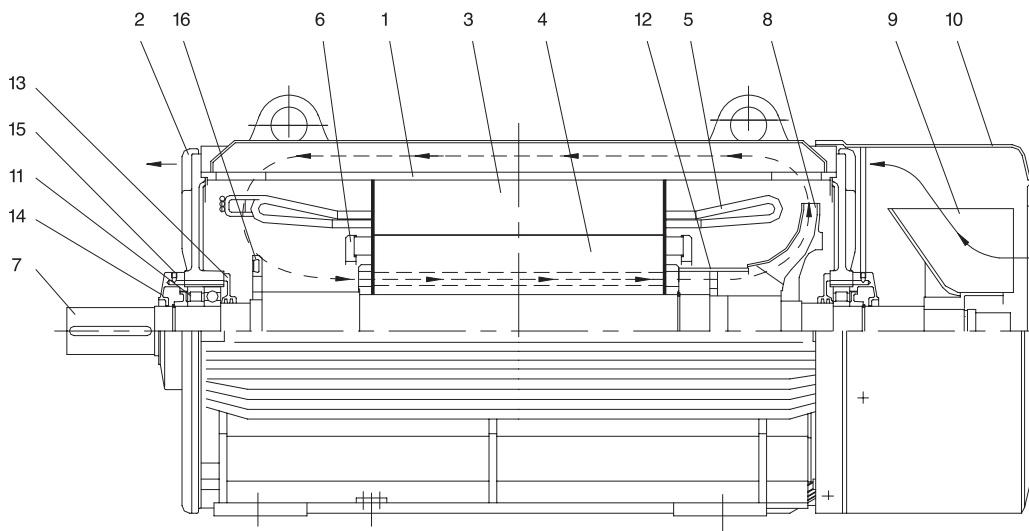


**HLE5 Series** | Totally Enclosed Fan-Cooled Squirrel Cage

## | HLE5 |

- Rotor Type Squirrel Cage
- Number of Poles 2-8
- Voltage 2-7.2 kV
- Output Range 200-1,000 kW (at 60 Hz, 6,600 V, 4-Pole)
- Type of Construction IM B3 (IM V1 Optional)
- Frame 280-450
- Degree of Protection IP 54 (IEC 60034-5)
- Method of Cooling IC 411 (IEC 60034-6)
- Type of Enclosure Totally Enclosed Fan-Cooled (NEMA MG-1)

### Sectional View



#### Parts Name Type - I (Uni-directional cooling circuit)

- |                 |                   |                         |                        |
|-----------------|-------------------|-------------------------|------------------------|
| 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 |

### | 3.0 kV |

Unit: kW

Type	Poles	2p	4p	6p	8p
HLE5	286	165	180	-	-
	288	190	200	155	-
	312	235	230	170	-
	313	260	270	195	135
	314	285	310	230	165
	316	325	325	260	-
	317	-	-	295	200
	318	360	390	320	-
	352	470	525	380	285
	354	560	580	430	315
	400	-	-	-	-
	402	600	655	520	375
	404	650	725	585	435
	452	-	790	630	500
	454	-	870	700	570

### | 6.0 kV |

Unit: kW

Type	Poles	2p	4p	6p	8p
HLE5	286	160	165	-	-
	288	175	185	135	-
	312	210	220	150	-
	313	235	255	175	120
	314	270	290	215	150
	316	295	310	235	-
	317	-	-	270	175
	318	350	370	295	-
	352	440	500	350	265
	354	530	550	400	295
	400	-	-	-	-
	402	570	635	500	340
	404	620	685	560	400
	452	-	750	600	480
	454	-	830	670	540

#### Note

1. Tolerance on "D" and "DA" dimensions will be m6.
2. Transmission element bores are made to an ISO H6 fit.
3. The dimensions printed in bold-face in the dimensional tables as A, B, C, D, E, F, GA, H, and K are comply with IEC rule.
4. Type of bearings.
  - Grease lubricated anti-friction
  - Forced feed oil lubricated sleeve bearings

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
HLE5	286	200	215	-	-
	288	230	240	185	-
	312	255	275	210	-
	313	300	310	235	160
	314	320	350	280	200
	316	350	390	315	-
	317	-	-	360	240
	318	410	465	380	-
	352	490	580	475	340
	354	560	660	550	375
	400	-	690	-	-
	402	-	770	620	465
	404	-	850	700	540
	452	-	950	760	610
	454	-	1050	840	690

## | 4.16 kV |

Unit: kW

Type	Poles	2p	4p	6p	8p
HLE5	286	195	210	-	-
	288	220	230	170	-
	312	250	265	185	-
	313	295	295	220	145
	314	310	335	260	185
	316	340	370	295	-
	317	-	-	335	220
	318	400	445	370	-
	352	480	560	445	330
	354	540	640	520	365
	400	-	-	-	-
	402	-	760	595	440
	404	-	830	670	520
	452	-	930	740	600
	454	-	1030	820	670

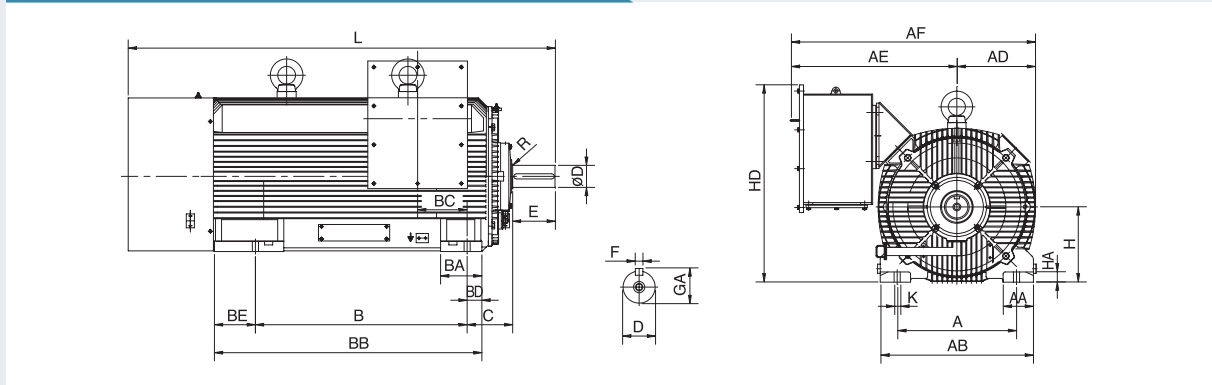
## | 6.6 kV |

Unit: kW

Type	Poles	2p	4p	6p	8p
HLE5	286	190	200	-	-
	288	215	225	165	-
	312	240	260	180	-
	313	275	290	215	140
	314	300	330	260	175
	316	330	370	285	-
	317	-	-	330	210
	318	385	440	350	-
	352	470	550	440	320
	354	530	620	510	360
	400	-	660	-	-
	402	-	750	595	420
	404	-	800	670	500
	452	-	900	720	580
	454	-	1000	800	650

## | HLE5 |

### Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AF	B	BA	BB	BC	BD	BE		
HLE5	286	2 -	457	91	560	325	790	1115	630	200	770	119.5	40	80	
	288	2 -	508	123.5	635	350	805	1155	180	925	243.5	66	351		
	312	2 -												1045	349
	313	2 -												1270	
	314	2 -													
	316	2 -													
	317	6 -													
	318	2 -													
	350	2 -	610	120	730	385	820	1205	900	180	1043	243.5	79.5	63.5	
	352	2 -	686	150	836	435	870	1305	1120	220	1320	206	100	100	
	400	4 -													
	402	2 -													
	404	2 -													
	452	4 -	750	160	920	480	900	1380	1250	220	1450	217	100	100	
454	4 -														

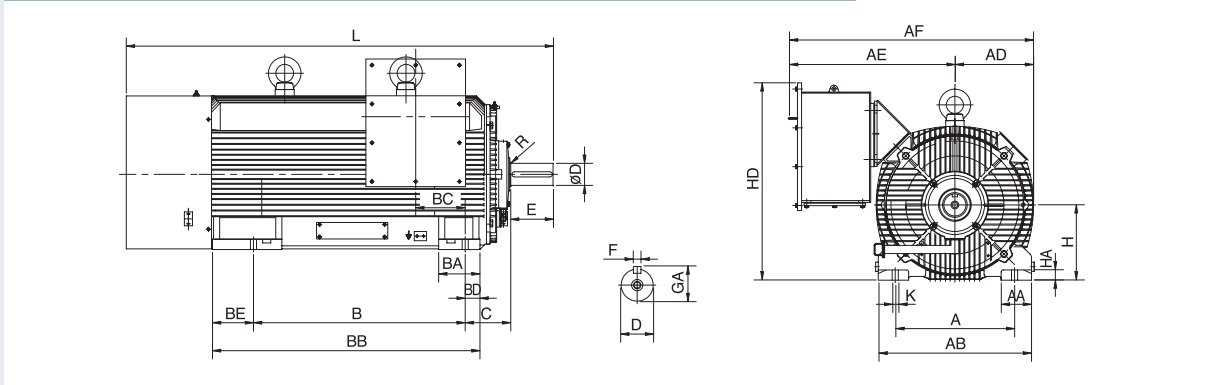
Unit: mm

Type	Poles	C	H	HA	HD	K	L	D	E	F	GA	Weight (kg)	
HLE5	286	190	280	30	850	24	1520	70	140	20	74.5	1290	
							1445	85	170	22	90	1320	
	288	2	216	315	35	900	30	1520	70	140	20	74.5	1340
								1445	85	170	22	90	1380
								1445	85	170	22	90	1470
								1680	75	140	20	79.5	1630
	312	2	216	315	35	900	30	1710	90	170	25	95	1620
								1800	75	140	20	79.5	1830
	313	2	216	315	35	900	30	1830	90	170	25	95	1820
								1800	75	140	20	79.5	1880
	314	2	216	315	35	900	30	1830	90	170	25	95	1920
								2010	75	140	20	79.5	2150
	316	2	216	315	35	900	30	2080	95	210	25	100	2140
								2080	95	210	25	100	2280
	317	6 -	216	315	35	900	30	2010	75	140	20	79.5	2320
								2080	95	210	25	100	2360
	318	2	216	315	35	900	30	2080	95	210	25	100	2800
								2120	110	210	28	116	2910
	352	2	224	355	45	970	30	2080	80	170	22	85	3010
								2120	110	210	28	116	3120
	354	2	224	355	45	970	30	2080	80	170	22	85	3600
								2120	110	210	28	116	3790
	400	4 -	254	400	55	1050	35	2215	120	210	32	127	3600
								2180	85	170	22	90	3850
402	2	254	400	55	1050	35	2215	120	210	32	127	3940	
							2180	85	170	22	90	5200	
404	2	254	400	55	1050	35	2215	120	210	32	127	5500	
							2180	85	170	22	90		
452	4 -	280	450	59	1126	35	2490	130	250	32	137	5200	
							2490	130	250	32	137	5500	

**Note:** For bearing type and tolerances of dimensions, see page 12.

| HLE5 |

Mounting B3 / Degree of Protection IP54, Belt-Pulley Type



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AF	B	BA	BB	BC	BD	BE
HLE5	286-B	4 -	457	91	560	325	790	1115	630	200	770	119.5	80
	288-B	4 -											
	312-B	4 -	508	123.5	635	350	805	1155	180	925	243.5	66	351
	313-B	4 -						508					1045
	314-B	4 -							900	1270			304
	316-B	4 -											
	317-B	6 -											
	318-B	4 -											
	352-B	4 -	610	120	730	385	820	1205	900	180	1043	243.5	79.5
354-B	4 -												

Unit: mm

Type	Poles	C	H	HA	HD	K	L	D	E	F	GA	Weight (kg)		
HLE5	286-B	4	190	280	30	850	24	1445	85	170	22	90	1320	
	288-B	4											1380	
		6											1470	
	312-B	4 -	216	315	35	900	30	1750	100	210	28	106	1620	
	313-B	4 -											1870	1820
	314-B	4 -											1870	1920
	316-B	4 -											2080	2150
	317-B	6 -											2080	2280
	318-B	4 -											2080	2360
352-B	4 -	224	355	45	970	30	2120	110	210	28	116	2910		
354-B	4 -											3120		

Note: For bearing type and tolerances of dimensions, see page 12.

02



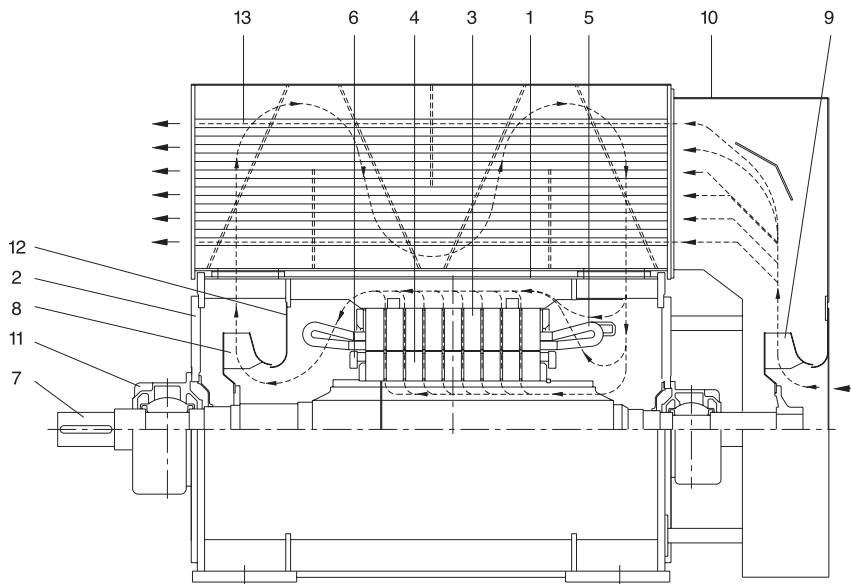
**HRQ3 Series** | Totally Enclosed Air-to-Air Cooled Squirrel Cage



## | HRQ3 |

• Rotor Type	Squirrel Cage
• Number of Pole	2-20
• Voltage	2-14 kV
• Output Range	830-8,500 kW (at 60 Hz, 6,600 V, 4-Pole)
• Type of Construction	IM B3
• Frame	355-710
• Degree of Protection	IP 54 (IEC 60034-5)
• Method of Cooling	IC 611 (IEC 60034-6)
• Type of Enclosure	Totally Enclosed Air-to-Air Cooled (NEMA MG-1)

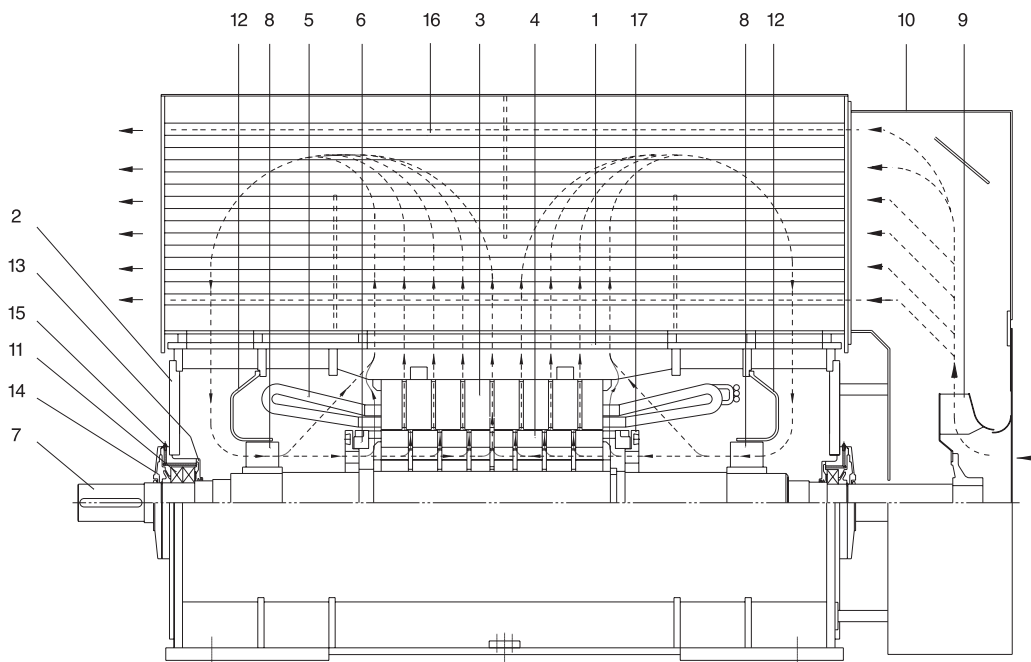
### Sectional View



#### Parts Name Type - I (Uni-directional cooling circuit)

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			

**Sectional View**



**Parts Name** Type - II (Bi-directional cooling circuit)

- |                   |                         |                            |                            |
|-------------------|-------------------------|----------------------------|----------------------------|
| 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 |                         |                            |                            |

## | Rated Power at 50 Hz |

### | 3.0 kV |

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HRQ3	353	330	-	-	-	-	-
	355	360	-	-	-	-	-
	357	420	-	-	-	-	-
	403	-	720	560	430	-	-
	405	640	810	630	480	-	-
	407	700	910	710	540	-	-
	409	-	1020	800	600	-	-
	45S	780	-	-	-	-	-
	45M	880	-	-	-	-	-
	45L	980	-	-	-	-	-
	451	1450	-	-	-	-	-
	453	1570	1110	880	665	435	330
	455	1750	1240	990	745	490	370
	457	-	1390	1110	830	545	415
	459	-	1560	1250	935	615	465
	501	1970	-	-	-	-	-
	503	2130	1670	1390	1040	725	540
	505	2500	1880	1560	1170	810	605
	507	-	2100	1750	1310	910	680
	509	-	2360	1960	1470	1020	765
	561	2870	-	-	-	-	-
	563	3170	2450	2140	1700	1170	940
	565	3600	2730	2430	1910	1310	1060
	567	-	3090	2700	2140	1470	1180
	569	-	-	-	2400	1650	1330
	631	4060	3470	2920	-	-	-
	633	4550	3860	3320	2660	1900	1550
	635	5100	4350	3680	2980	2120	1730
	637	-	4830	4140	3330	2380	1940
	639	-	-	-	3740	2670	2180
715	-	6000	4900	4180	3110	2430	
717	-	6720	5490	4680	3490	2730	
719	-	7520	6150	5250	3910	3060	

※ Bearing type for horizontal motors:  
 Grease-lubricated anti-friction  
 Forced feed oil-lubricated sleeve bearings

## | Rated Power at 50 Hz |

### | 6.0 kV |

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HRQ3	353	310	-	-	-	-	-
	355	340	-	-	-	-	-
	357	400	-	-	-	-	-
	403	-	660	520	400	-	-
	405	550	750	580	450	-	-
	407	660	850	650	500	-	-
	409	-	950	730	560	-	-
	45S	730	-	-	-	-	-
	45M	820	-	-	-	-	-
	45L	920	-	-	-	-	-
	451	1330	-	-	-	-	-
	453	1440	1030	830	620	405	305
	455	1600	1160	930	695	455	345
	457	-	1300	1040	780	510	385
	459	-	1460	1170	875	575	435
	501	1890	-	-	-	-	-
	503	2050	1570	1300	970	680	510
	505	2400	1760	1450	1090	765	570
	507	-	1970	1630	1220	850	640
	509	-	2210	1830	1370	960	720
	561	2710	-	-	-	-	-
	563	2990	2390	2020	1600	1090	880
	565	3400	2660	2280	1790	1220	990
	567	-	3010	2540	2000	1370	1110
	569	-	-	-	2250	1540	1250
	631	3820	3290	2750	-	-	-
	633	4280	3650	3120	2490	1770	1450
	635	4800	4130	3480	2790	1990	1620
	637	-	4570	3900	3120	2230	1820
	639	-	-	-	3500	2500	2040
	715	-	5650	4600	3910	2790	2270
	717	-	6350	5150	4380	3130	2550
	719	-	7100	5800	4910	3510	2860

※ Bearing type for horizontal motors:

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

## | Rated Power at 60 Hz |

### | 3.3 kV |

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HRQ3	353	420	-	-	-	-	-
	355	460	-	-	-	-	-
	357	530	-	-	-	-	-
	403	-	890	690	510	-	-
	405	800	1000	770	580	-	-
	407	880	1110	860	650	-	-
	409	-	1230	970	720	-	-
	45S	980	-	-	-	-	-
	45M	1100	-	-	-	-	-
	45L	1230	-	-	-	-	-
	451	1750	-	-	-	-	-
	453	1890	1330	1060	800	525	395
	455	2100	1490	1190	895	585	440
	457	-	1660	1330	1000	660	495
	459	-	1870	1500	1125	740	555
	501	2360	-	-	-	-	-
	503	2560	2010	1670	1250	875	650
	505	3000	2250	1870	1400	980	730
	507	-	2520	2090	1570	1090	820
	509	-	2830	2350	1760	1230	920
	561	3420	-	-	-	-	-
	563	3780	2950	2420	2050	1400	1130
	565	4300	3290	2750	2300	1570	1270
	567	-	3720	3060	2580	1760	1420
	569	-	-	-	2890	1980	1600
	631	4780	4170	3300	-	-	-
	633	5360	4640	3750	3200	2280	1860
	635	6000	5230	4160	3580	2550	2080
	637	-	5800	4690	4010	2860	2330
	639	-	-	-	4500	3210	2620
715	-	-	7200	5800	5020	3580	2850
717	-	-	8100	6500	5620	4010	3190
719	-	-	9050	7300	6300	4500	3580

※ Bearing type for horizontal motors:  
 Grease-lubricated anti-friction  
 Forced feed oil-lubricated sleeve bearings

## | Rated Power at 60 Hz |

### | 4.16 kV |

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HRQ3	353	390	-	-	-	-	-
	355	440	-	-	-	-	-
	357	500	-	-	-	-	-
	403	-	860	660	490	-	-
	405	750	956	740	555	-	-
	407	830	1070	830	625	-	-
	409	-	1190	935	695	-	-
	45S	920	-	-	-	-	-
	45M	1000	-	-	-	-	-
	45L	1150	-	-	-	-	-
	451	1580	-	-	-	-	-
	453	1710	1285	1025	770	505	380
	455	1900	1440	1150	865	565	425
	457	-	1610	1290	965	635	475
	459	-	1810	1450	1085	715	530
	501	2210	-	-	-	-	-
	503	2390	1945	1615	1210	845	630
	505	2800	2180	1810	1355	945	705
	507	-	2440	2025	1520	1055	790
	509	-	2740	2275	1705	1190	890
	561	3190	-	-	-	-	-
	563	3520	2850	2490	1985	1355	1095
	565	4000	3180	2820	2225	1520	1230
	567	-	3600	3140	2495	1705	1375
	569	-	-	-	2795	1915	1550
	631	4460	4030	3400	-	-	-
	633	5000	4490	3850	3090	2205	1800
	635	5600	5060	4280	3460	2470	2015
	637	-	5610	4820	3880	2765	2255
	639	-	-	-	4350	3105	2535
715	-	6990	5630	4860	3480	2700	
717	-	7830	6300	5440	3900	3020	
719	-	8760	7070	6100	4375	3390	

※ Bearing type for horizontal motors:

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

## | Rated Power at 60 Hz |

### | 6.6 kV |

Unit: kW

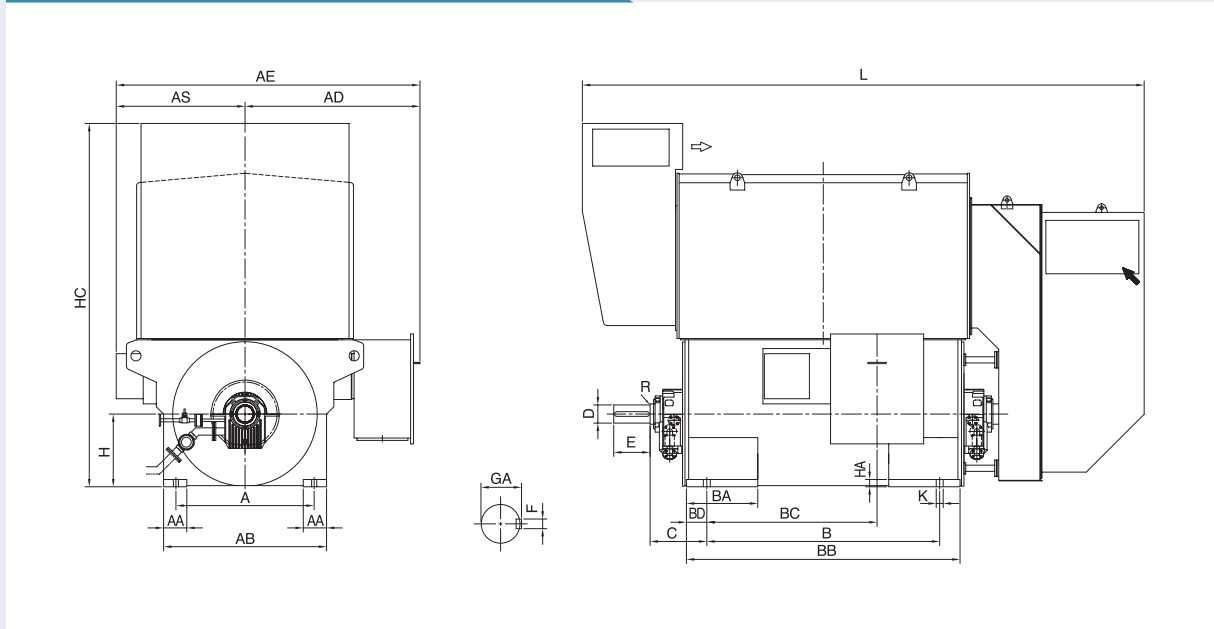
Type	Poles	2P	4P	6P	8P	10P	12P
HRQ3	353	390	-	-	-	-	-
	355	440	-	-	-	-	-
	357	500	-	-	-	-	-
	403	-	830	630	470	-	-
	405	750	930	710	530	-	-
	407	830	1030	800	600	-	-
	409	-	1150	900	670	-	-
	45S	920	-	-	-	-	-
	45M	1000	-	-	-	-	-
	45L	1150	-	-	-	-	-
	451	1580	-	-	-	-	-
	453	1710	1240	990	745	490	370
	455	1900	1390	1110	835	550	410
	457	-	1560	1250	935	615	460
	459	-	1750	1400	1050	690	520
	501	2210	-	-	-	-	-
	503	2390	1880	1560	1170	815	610
	505	2800	2110	1750	1310	915	685
	507	-	2360	1960	1470	1020	765
	509	-	2650	2200	1650	1150	860
	561	3190	-	-	-	-	-
	563	3520	2840	2420	1920	1310	1060
	565	4000	3160	2750	2150	1470	1190
	567	-	3580	3060	2410	1650	1330
	569	-	-	-	2700	1850	1500
	631	4460	3900	3300	-	-	-
	633	5000	4340	3750	2980	2130	1740
	635	5600	4890	4160	3340	2390	1950
	637	-	5420	4690	3750	2670	2180
	639	-	-	-	4200	3000	2450
715	-	6800	5500	4700	3380	2550	
717	-	7600	6160	5260	3790	2850	
719	-	8500	6900	5900	4250	3200	

※ Bearing type for horizontal motors:

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

## | HRQ3 |

### Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRQ3	353	2	<b>690</b>	130	820	923	1446	523	<b>1000</b>	280	1225	750	112.5	<b>364</b>
	355	2												
	357	2									1295		147.5	<b>399</b>
	405	2	<b>830</b>	140	950	983	1574	591	<b>1250</b>	320	1440	875	95	<b>370</b>
	407	2									1500		125	<b>400</b>
	45S	2	<b>870</b>	150	1030	1053	1706	653	<b>1400</b>	320	1630	950	115	<b>442</b>
	45M	2												
	45L	2									1700		150	<b>477</b>

Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	Weight (kg)	
HRQ3	353	2	<b>355</b>	30	1545	2574	$\varnothing 38-46$ Slot	80	170	22	85	2734
	355	2										2828
	357	2				2644						3006
	405	2	<b>400</b>	30	1689	2944	$\varnothing 38-46$ Slot	80	170	22	85	3909
	407	2				3004						4095
	45S	2	<b>450</b>	40	1932	3319	$\varnothing 38-46$ Slot	110	210	28	116	5087
	45M	2										5315
	45L	2				3389						5590

#### Note

1. Tolerance on "D" and "DA" dimensions will be m6.
2. Transmission element bores are made to an ISO H6 fit.
3. The dimensions printed in bold-face in the dimensional tables as A, B, C, D, E, F, GA, H, and K are comply with IEC rule.
4. Type of bearings.
  - Grease lubricated anti-friction
  - Forced feed oil lubricated sleeve bearings

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

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

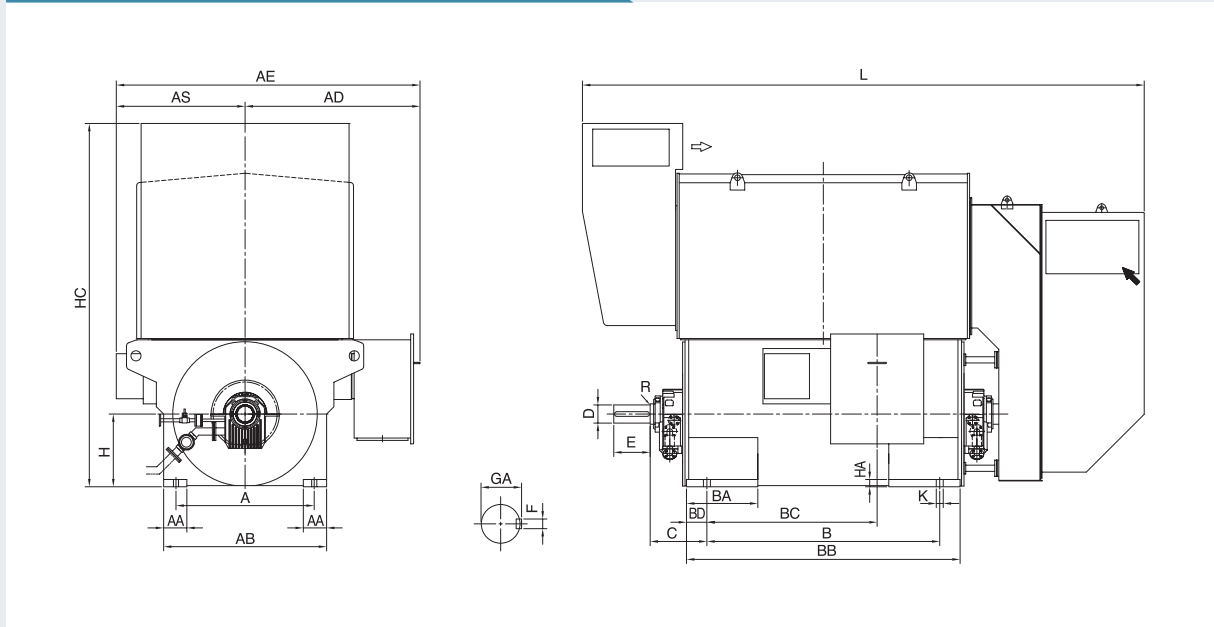
6. "R" dimension of the shaft extension part is as follows:

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



# HRQ3 |

## Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRQ3	451	2	850	150	1000	1210	1970	760	1400	450	1790	1050	195	430
	453	2												
	455	2									1860	1080	230	460

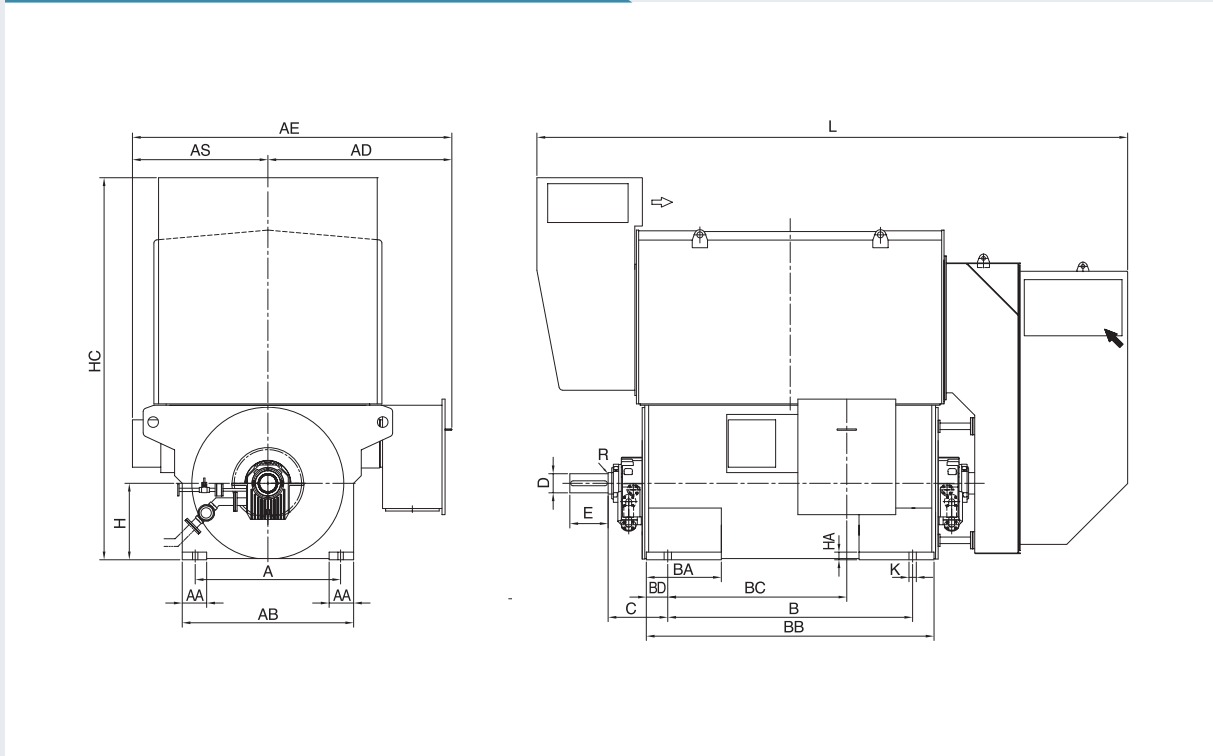
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	Weight (kg)	
HRQ3	451	2	450	45	1950	3410	35	110	210	28	116	6500
	453	2										6800
	455	2				3480						7200

**Note:** For bearing type and tolerances of dimensions, see page 24.

| HRQ3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRQ3	501	2	950	160	1120	1270	2090	820	1600	490	1880	1170	140	390
	503	2												
	505	2									1990	1230	195	460

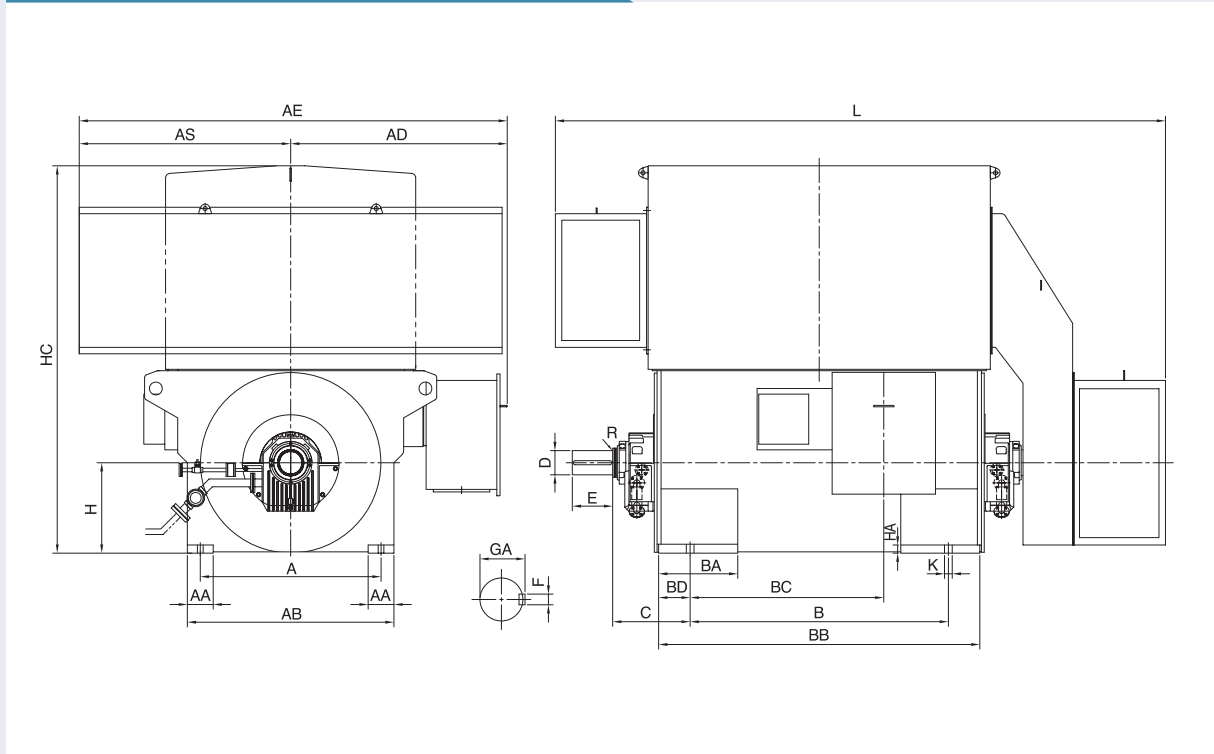
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	weight (kg)	
HRQ3	501	2	500	45	2340	3890	48	125	250	32	132	8300
	503	2										8800
	505	2				4000						9100

**Note:** For bearing type and tolerances of dimensions, see page 24.

| HRQ3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRQ3	561	2	1120	160	1280	1360	2670	1310	1600	490	1990	1200	195	480
	563	2												
	565	2							1800	490	2140	1300	170	450

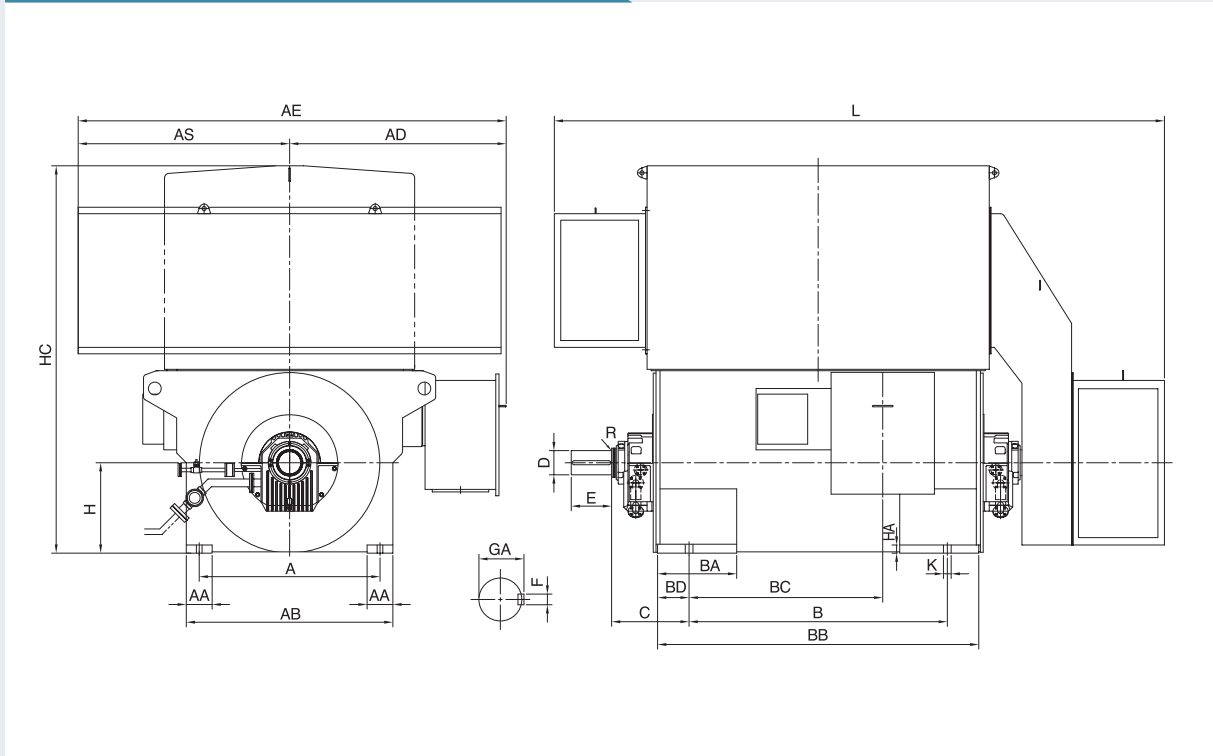
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	Weight (kg)	
HRQ3	561	2	560	50	2400	3780	48	150	250	36	158	10900
	563	2										11500
	565	2				3930						12200

**Note:** For bearing type and tolerances of dimensions, see page 24.

| HRQ3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRQ3	631	2	1250	190	1420	1430	2650	1220	1800	540	2220	1350	210	510
	633	2												
	635	2							2000	540	2320	1500	160	460

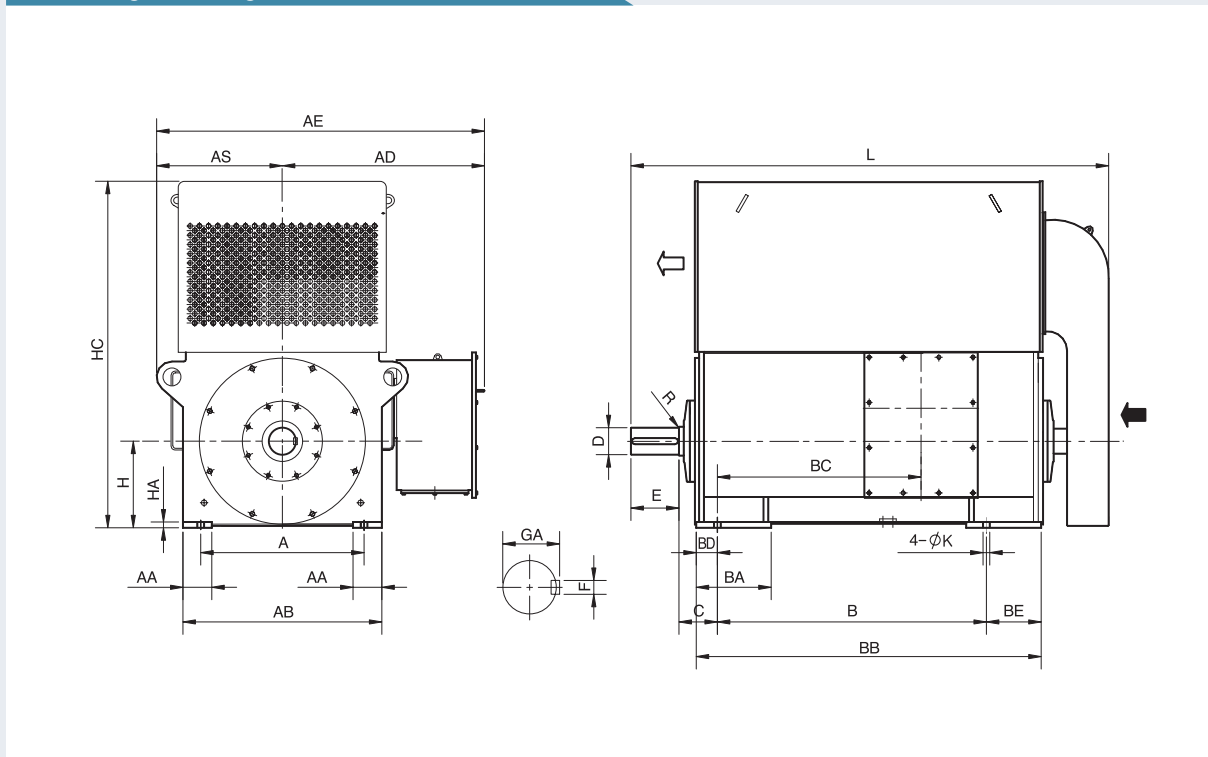
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	Weight (kg)	
HRQ3	631	2	630	55	2530	4610	48	160	300	40	169	15300
	633	2										16000
	635	2				4710						16900

**Note:** For bearing type and tolerances of dimensions, see page 24.

| HRQ3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE					
HRQ3	403	4	800	140	950	1000	1670	670	1120	275	1420	937	177	123				
		6 - 8													1420	937	123	
	405	4													1250	1565	1082	138
		6 - 8													1120	1420	937	123
	407	4													1250	1565	1082	138
		6 - 8													1250	1565	1082	138
409	4	1250	1565	1082	138													
	6 - 8	1250	1565	1082	138													

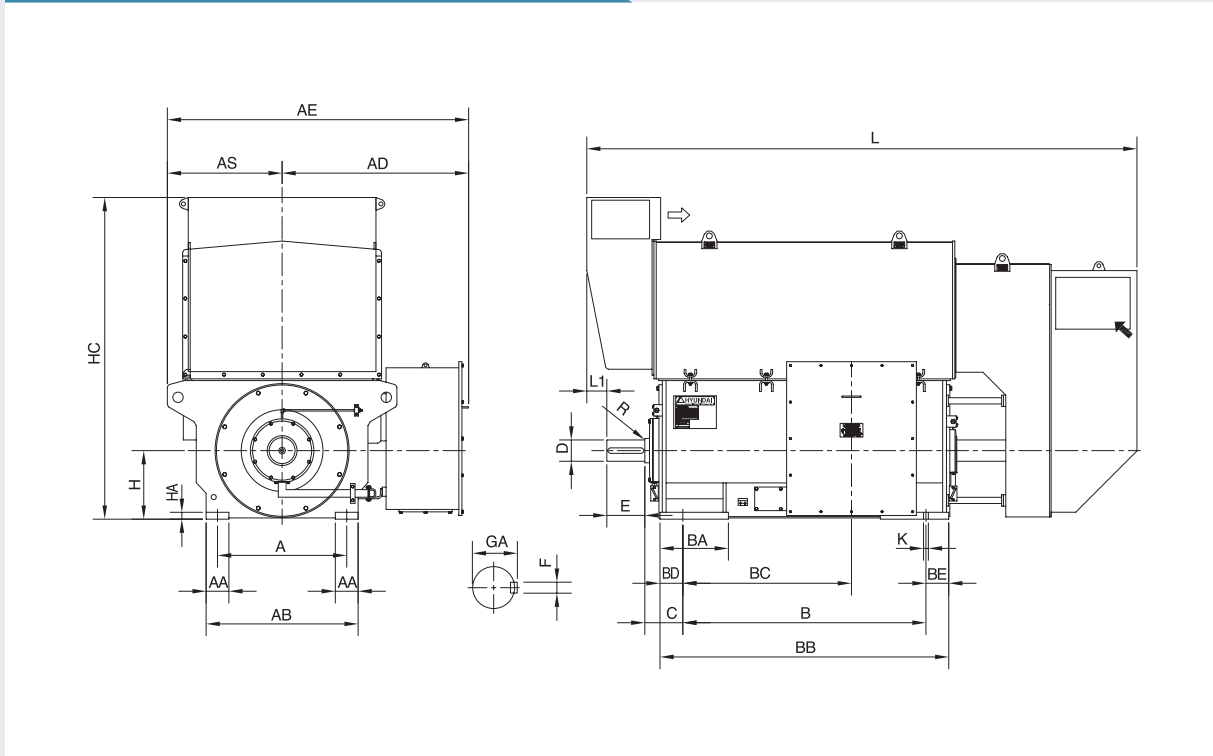
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)
HRQ3	403	270	400	30	1560	35	2420	130	250	32	137	3700
							2420					3730
	405						2570					3980
							2420					3860
	407						2570					4130
							2570					4170
409	2570	4910										
	2570	4340										

Note: For bearing type and tolerances of dimensions, see page 24.

| HRQ3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRQ3	453	4 - 6	850	150	1000	1230	1985	755	1400	450	1700	910	150	150
	455	4 - 6							1400		1700	910		
	457	4 - 6							1600		1900	1110		
	459	4 - 6							1600		1900	1110		

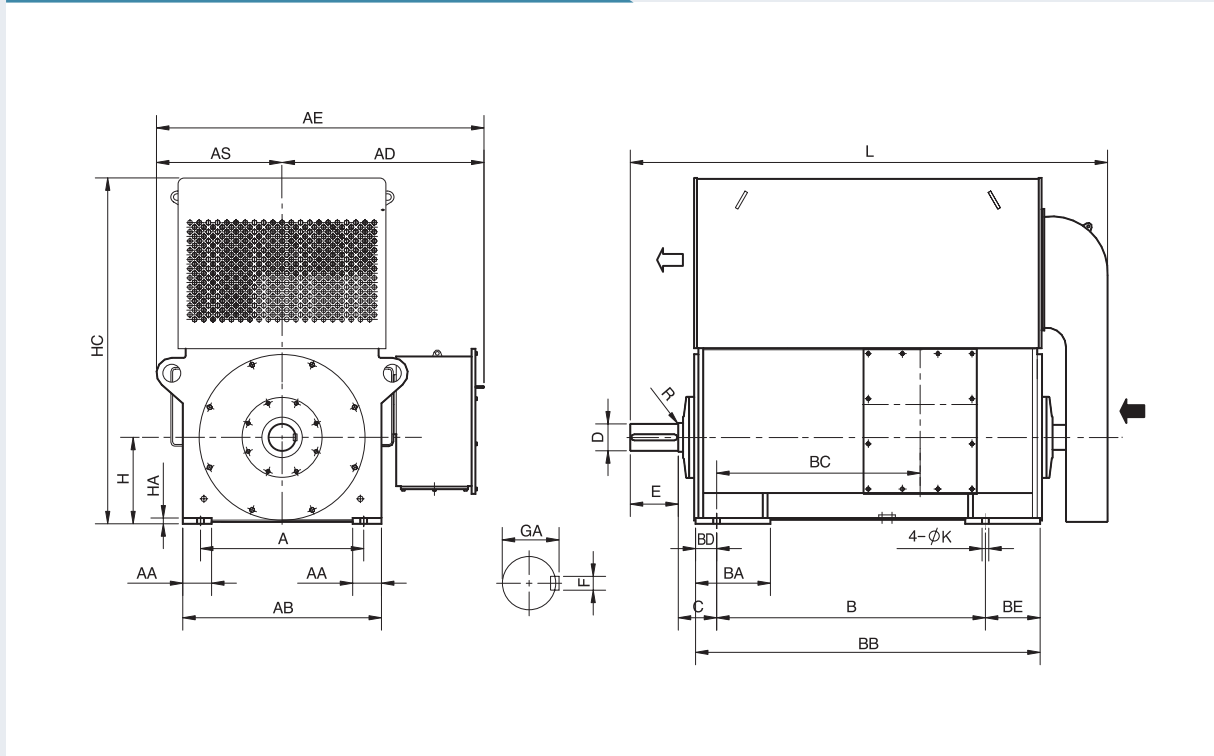
Unit: mm

Type	Poles	C	H	HA	HC	K	L	L1	D	E	F	GA	Weight (kg)	
HRQ3	453	4	250	450	45	2120	35	3430	140	140	250	36	148	6900
		6												6850
	455	4												7050
		6												7050
	457	4						3630						7600
		6												7600
	459	4												7800
		6												7850

Note: For bearing type and tolerances of dimensions, see page 24.

| HRQ3 |

Mounting B3 / Degree of Protection IP54



Unit : mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRQ3	453	8 - 12	850	160	1035	1155	1740	585	1250	390	1635	885	110	275
	455	8 - 12							1250		1635	885		275
	457	8 - 12							1400		1795	1045		285
	459	8 - 12							1400		1795	1045		285

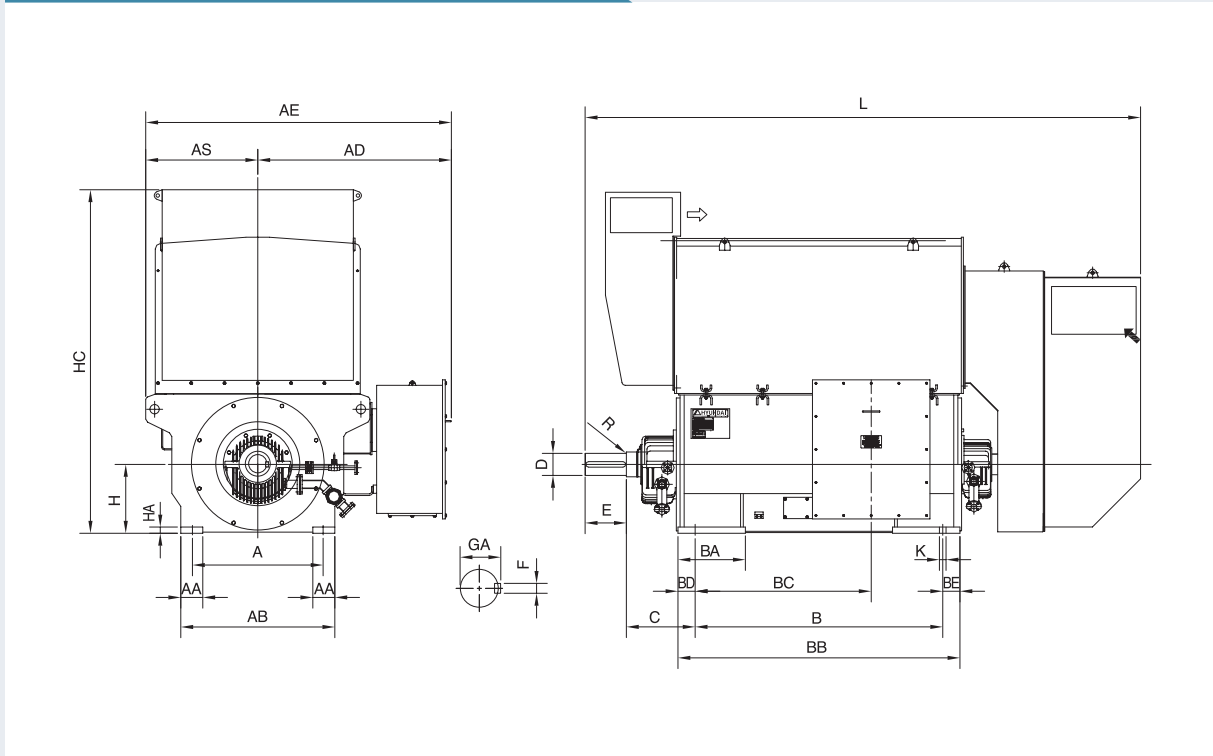
Unit : mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HRQ3	453	8 - 12	200	450	30	1820	35	2430	140	250	36	148	5000
	455	8 - 12						2430					5100
	457	8 - 12						2600					5600
	459	8 - 12						2600					5850

**Note:** For bearing type and tolerances of dimensions, see page 24.

## | HRQ3 |

### Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRQ3	503	4	950	160	1120	1410	2225	815	1600	490	1850	1080	125	125
	505	4							1600		1850	1080		
	507	4							1800		2050	1280		
	509	4							1800		2050	1280		

Unit: mm

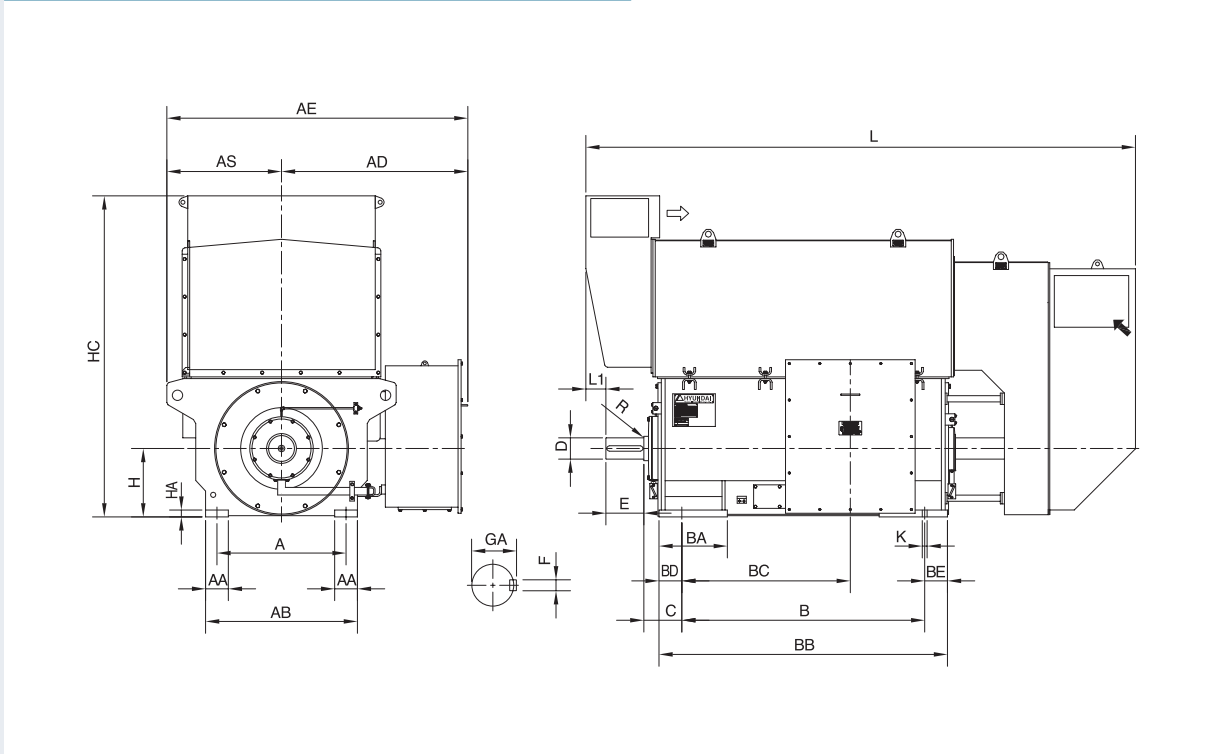
Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HRQ3	503	4	500	500	45	2500	48	4100	160	300	40	169	9200
	505	4						4100					9450
	507	4						4300					10150
	509	4						4300					10500

**Note:** For bearing type and tolerances of dimensions, see page 24.



| HRQ3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRQ3	503	6	950	160	1120	1410	2225	815	1600	490	1850	1080	125	125
	505	6							1600		1850	1080		
	507	6							1800		2050	1280		
	509	6							1800		2050	1280		

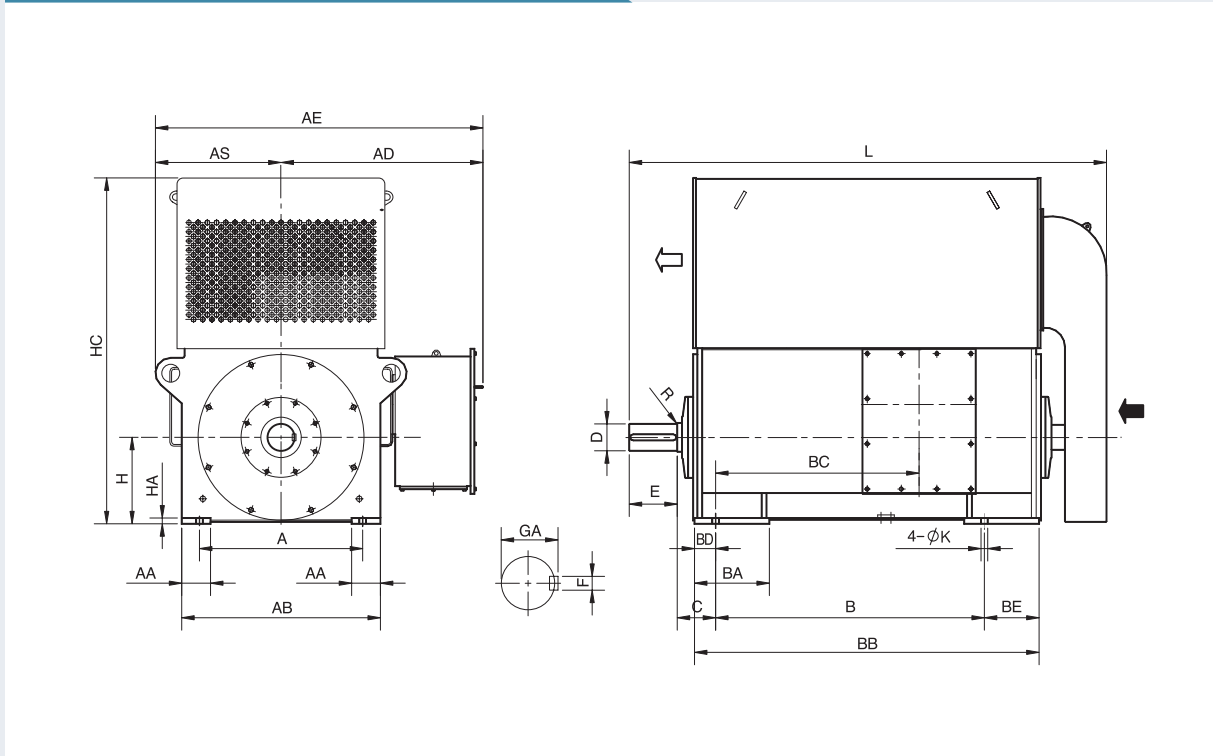
Unit: mm

Type	Poles	C	H	HA	HC	K	L	L1	D	E	F	GA	Weight (kg)	
HRQ3	503	6	250	500	45	2500	48	3950	110	170	300	40	179	8850
	505	6						3950						9100
	507	6						4150						9800
	509	6						4150						10150

Note: For bearing type and tolerances of dimensions, see page 24.

| HRQ3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRQ3	503	8 - 12	950	180	1155	1230	1970	740	1400	345	1755	980	135	220
	505	8 - 12							1400		1755	980		220
	507	8 - 12							1600		1945	1170		210
	509	8 - 12							1600		1945	1170		210

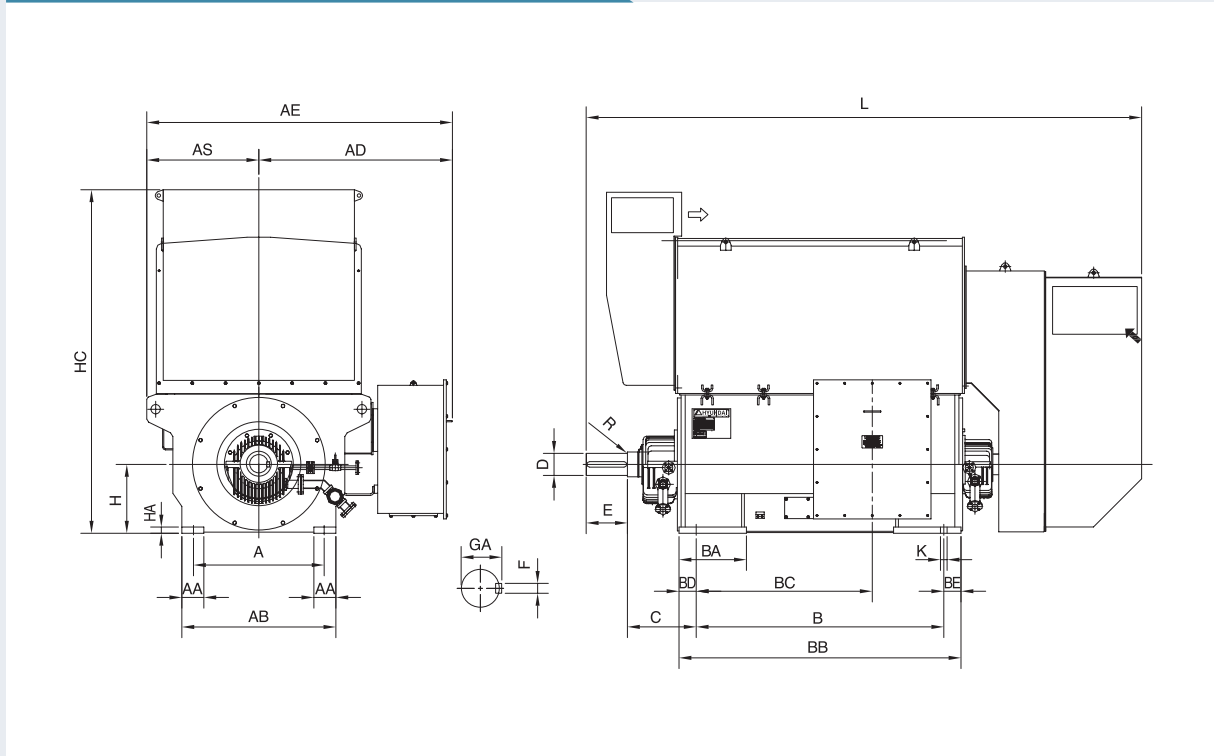
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HRQ3	503	8 - 12	224	500	34	2010	42	2640	170	300	40	179	6800
	505	8 - 12						2640					7050
	507	8 - 12						2830					7650
	509	8 - 12						2830					8100

**Note:** For bearing type and tolerances of dimensions, see page 24.

# HRQ3

## Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE
HRQ3	563	4	1120	160	1280	1510	2415	905	1600	520	1930	1115	165
	565	4							1800		2130	1315	
	567	4							1800		2130	1315	

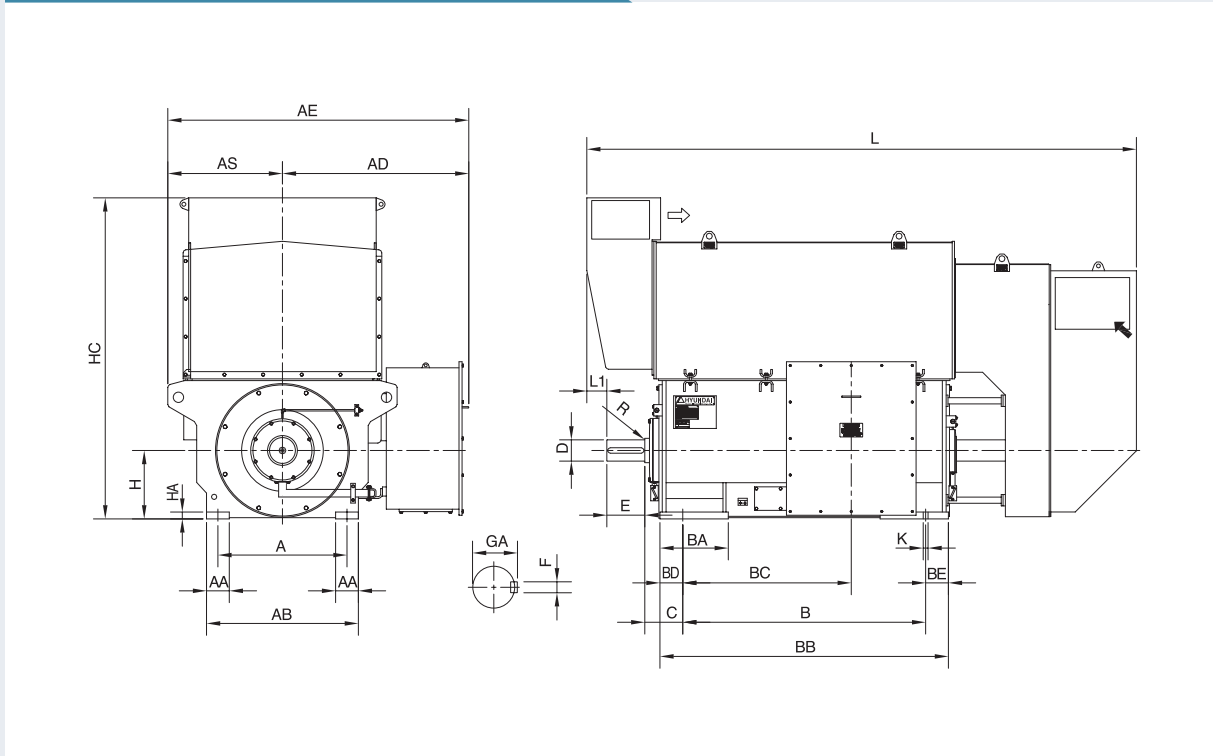
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HRQ3	563	4	560	560	50	2910	48	4500	190	350	45	200	11850
	565	4						4700					12650
	567	4						4700					13050

**Note:** For bearing type and tolerances of dimensions, see page 24.

| HRQ3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRQ3	563	6	1120	160	1280	1510	2415	905	1600	520	1930	1115	165	165
	565	6							1800		2130	1315		
	567	6							1800		2130	1315		

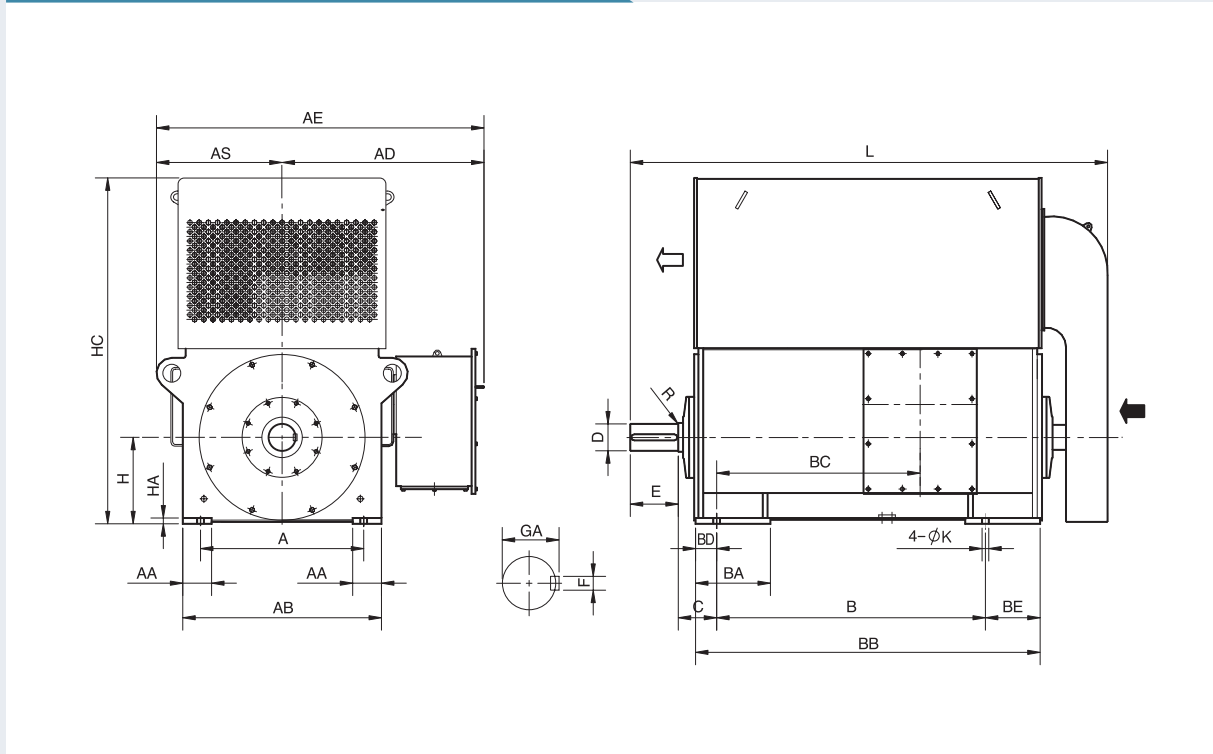
Unit: mm

Type	Poles	C	H	HA	HC	K	L	L1	D	E	F	GA	Weight (kg)	
HRQ3	563	6	280	560	50	2910	48	4380	170	190	350	45	200	11950
	565	6						4580						12800
	567	6						4580						13250

**Note:** For bearing type and tolerances of dimensions, see page 24.

| HRQ3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRQ3	563	8 - 12	1120	180	1285	1300	2080	780	1600	445	1945	1125	170	175
	565	8 - 12							1600		1945	1125		
	567	8 - 12							1800		2145	1325		
	569	8 - 12							1800		2145	1325		

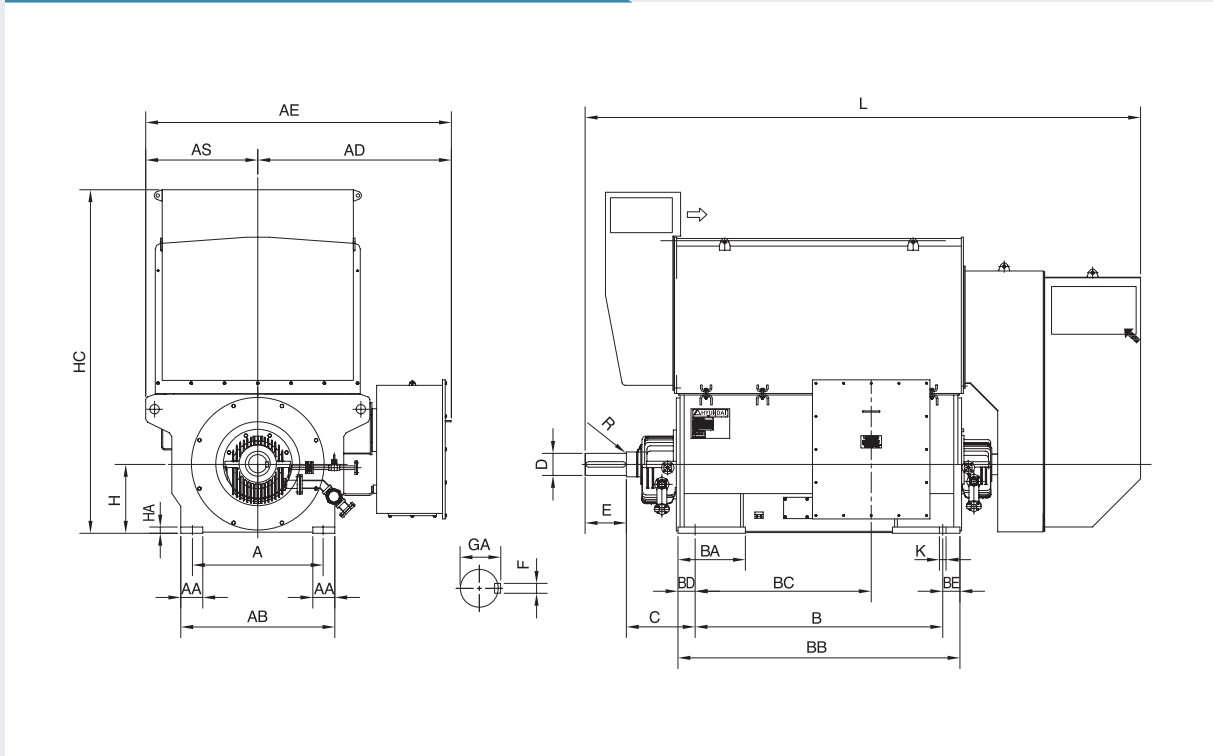
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HRQ3	563	8 - 12	280	560	35	2160	48	3000	190	350	45	200	10000
	565	8 - 12						3000					10300
	567	8 - 12						3200					11100
	569	8 - 12						3200					11600

Note: For bearing type and tolerances of dimensions, see page 24.

| HRQ3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRQ3	631	4	1250	190	1420	1575	2550	975	1800	540	2110	1305	155	155
	633	4							1800		2110	1305		
	635	4							2000		2310	1505		
	637	4							2000		2310	1505		

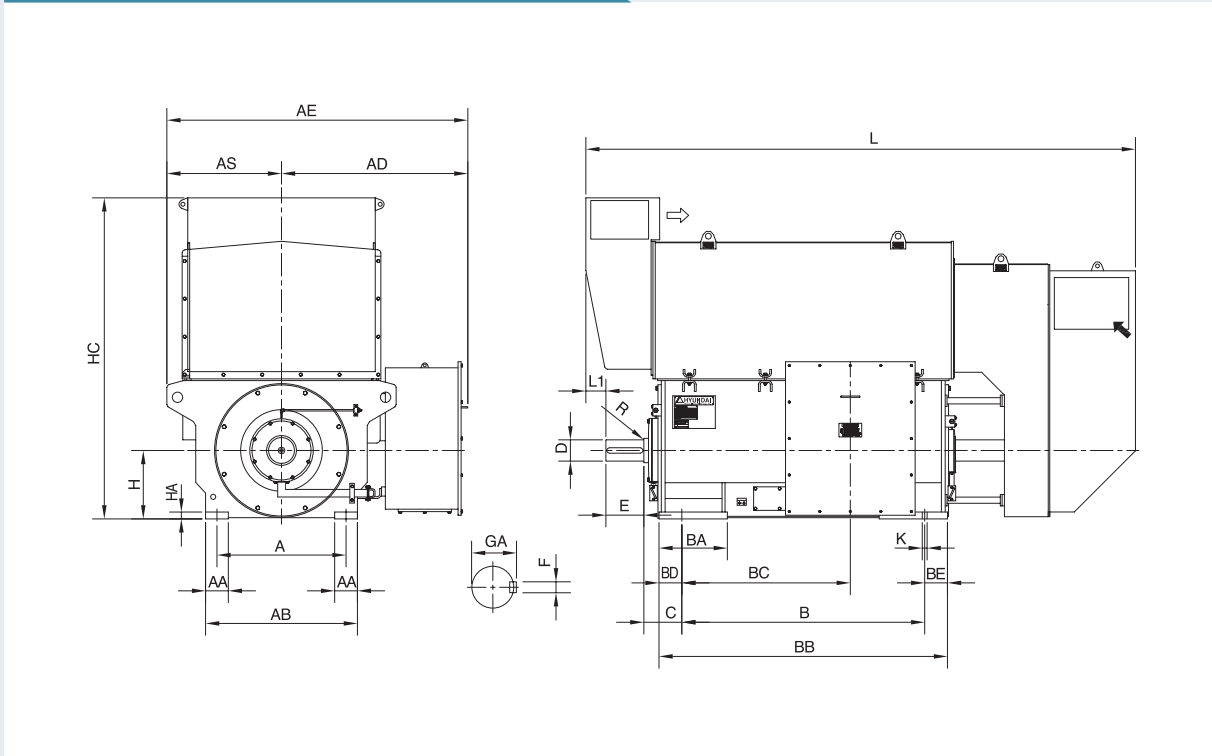
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HRQ3	631	4	600	630	55	3410	48	4900	220	350	50	230	16700
	633	4						4900					17100
	635	4						5100					18300
	637	4						5100					18900

**Note:** For bearing type and tolerances of dimensions, see page 24.

| HRQ3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRQ3	631	6	1250	190	1420	1575	2550	975	1800	540	2110	1305	155	155
	633	6							1800		2110	1305		
	635	6							2000		2310	1505		
	637	6							2000		2310	1505		

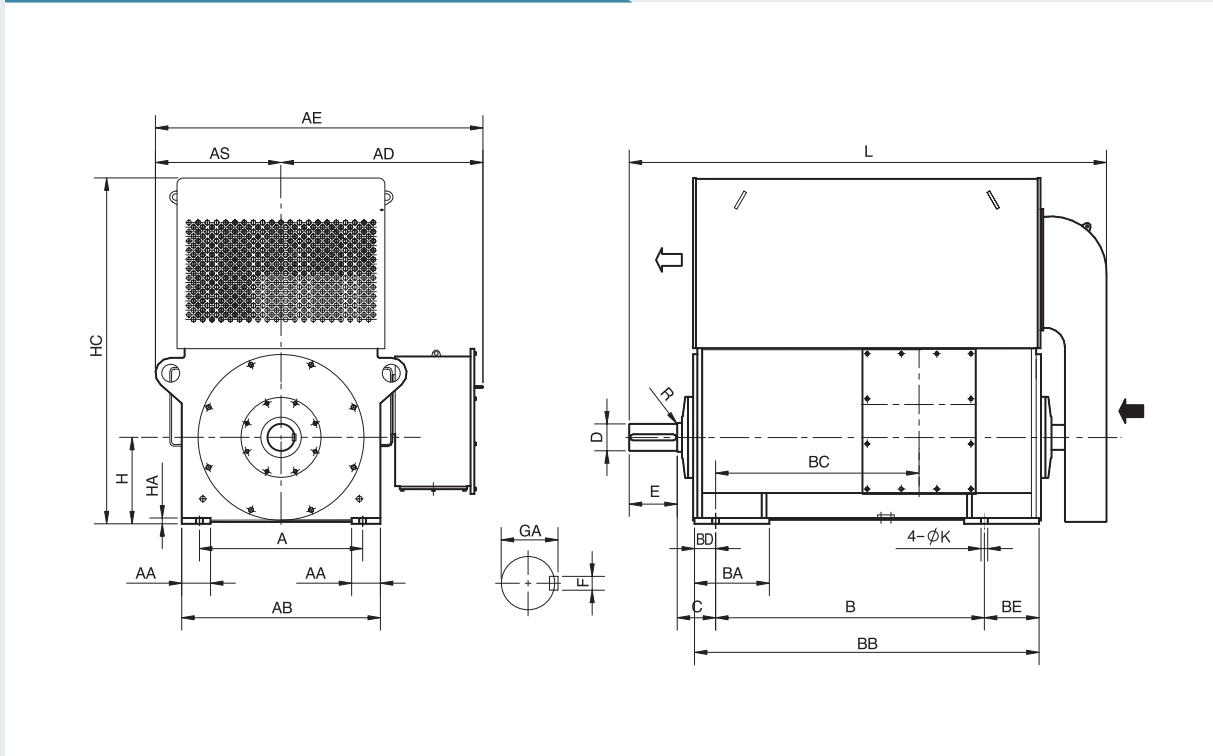
Unit: mm

Type	Poles	C	H	HA	HC	K	L	L1	D	E	F	GA	Weight (kg)	
HRQ3	631	6	280	630	55	3410	48	4870	300	220	350	50	230	16100
	633	6						4870						16600
	635	6						5070						17800
	637	6						5070						18400

Note: For bearing type and tolerances of dimensions, see page 24.

| HRQ3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRQ3	633	8 - 12	1180	220	1420	1360	2235	875	1800	500	2240	1440	145	295
	635	8 - 12							1800		2240	1440		295
	637	8 - 12							2000		2480	1680		335
	639	8 - 12							2000		2480	1680		335

Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HRQ3	633	8 - 12	315	630	38	2400	48	3320	220	350	50	231	14000
	635	8 - 12						3320					14600
	637	8 - 12						3560					15900
	639	8 - 12						3560					16600

**Note:** For bearing type and tolerances of dimensions, see page 24.





03

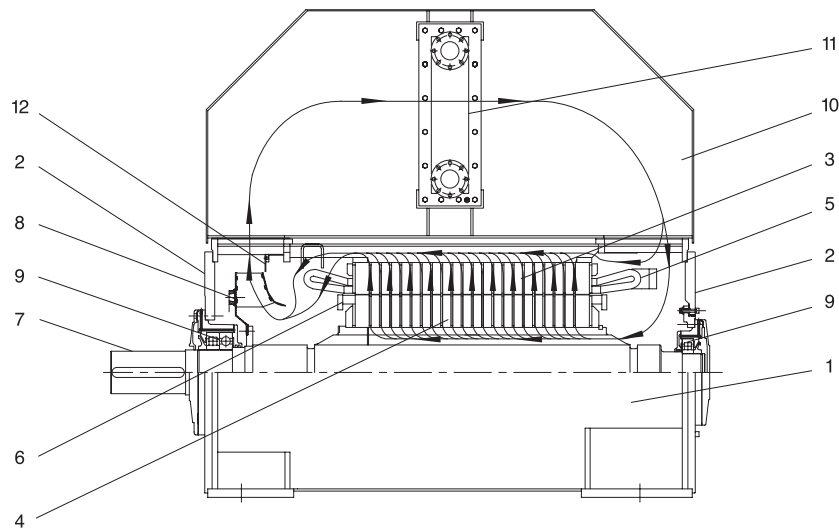


**HRN3 Series** | Totally Enclosed Water-to-Air Cooled Squirrel Cage

## | HRN3 |

• Rotor Type	Squirrel Cage
• Number of Poles	2-30
• Voltage	2-14 kV
• Output Range	1,030-11,800 kW (at 60 Hz, 6,600 V, 4-Pole)
• Type of Construction	IM B3
• Frame	400-710
• Degree of Protection	IP 54 (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 (For temperatures exceeding 25°C, please contact us)

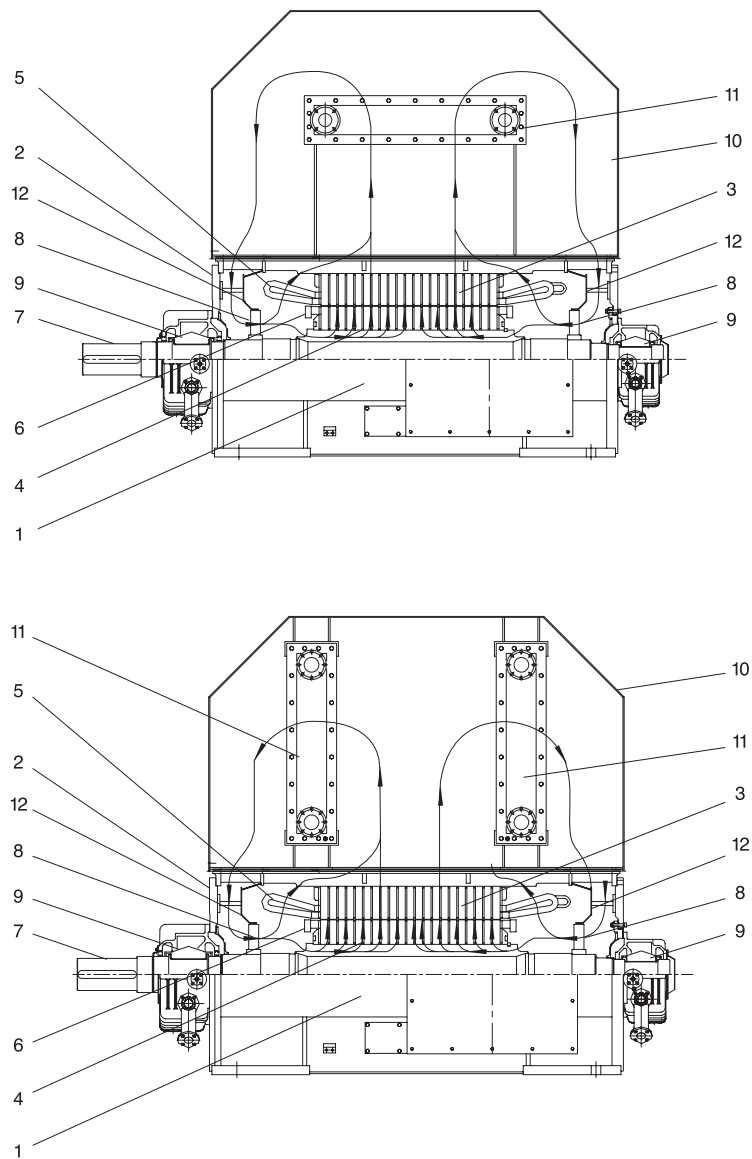
### Sectional View



#### Parts Name Type - I (Uni-directional cooling circuit)

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

**Sectional View**



**Parts Name** Type - II (Bi-directional cooling circuit)

- |                 |                   |                         |                     |
|-----------------|-------------------|-------------------------|---------------------|
| 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 |

## | Rated Power at 50 Hz |

## | 3.0 kV |

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HRN3	403	-	830	630	470	-	-
	405	-	940	710	530	-	-
	407	-	1050	800	600	-	-
	409	-	1180	900	670	-	-
	451	1790	-	-	-	-	-
	453	1940	1450	1110	825	565	385
	455	2150	1630	1240	920	635	430
	457	-	1830	1390	1035	710	485
	459	-	2050	1560	1160	800	545
	501	2440	-	-	-	-	-
	503	2650	2270	1700	1310	930	690
	505	3100	2550	1910	1470	1050	770
	507	-	2850	2140	1650	1170	865
	509	-	3200	2400	1850	1320	970
	561	3580	-	-	-	-	-
	563	3960	3420	2640	2090	1450	1110
	565	4500	3800	2990	2340	1630	1240
	567	-	4300	3330	2620	1830	1390
	569	-	-	-	2940	2050	1560
	631	5020	4880	3700	-	-	-
	633	5620	5420	4200	3290	2270	1770
	635	6300	6120	4670	3690	2550	1980
	637	-	6780	5250	4130	2850	2220
	639	-	-	-	4630	3200	2490
	715	-	8210	6170	5180	3570	2790
	717	-	9190	6910	5800	4000	3120
719	-	10300	7740	6500	4490	3500	

※ Bearing type for horizontal motors:

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

## | Rated Power at 50 Hz |

### | 6.0 kV |

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HRN3	403	-	830	630	470	-	-
	405	-	940	710	530	-	-
	407	-	1050	800	600	-	-
	409	-	1180	900	670	-	-
	451	1660	-	-	-	-	-
	453	1800	1360	1030	765	530	360
	455	2000	1530	1160	860	595	405
	457	-	1710	1300	960	665	455
	459	-	1920	1460	1080	750	510
	501	2320	-	-	-	-	-
	503	2520	2130	1600	1230	870	645
	505	2950	2390	1790	1370	980	725
	507	-	2670	2000	1540	1090	810
	509	-	3000	2250	1730	1230	910
	561	3380	-	-	-	-	-
	563	3740	3300	2610	1950	1360	1030
	565	4250	3680	2970	2190	1530	1160
	567	-	4160	3300	2450	1710	1300
	569	-	-	-	2750	1920	1460
	631	4780	4620	3530	-	-	-
	633	5360	5140	4010	3080	2130	1650
	635	6000	5810	4460	3450	2390	1850
	637	-	6440	5010	3860	2670	2080
	639	-	-	-	4330	3000	2330
	715	-	7850	5850	4840	3350	2600
	717	-	8750	6500	5420	3750	2910
	719	-	9800	7300	6080	4210	3270

※ Bearing type for horizontal motors:

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

## | Rated Power at 60 Hz |

### | 3.3 kV |

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HRN3	403	-	1100	870	650	-	-
	405	-	1210	970	730	-	-
	407	-	1370	1070	820	-	-
	409	-	1550	1200	910	-	-
	451	2200	-	-	-	-	-
	453	2390	1750	1330	985	680	460
	455	2650	1960	1490	1105	765	515
	457	-	2190	1660	1240	855	580
	459	-	2460	1870	1390	960	650
	501	2960	-	-	-	-	-
	503	3200	2740	2050	1580	1120	830
	505	3750	3060	2300	1770	1250	930
	507	-	3430	2580	1990	1410	1040
	509	-	3850	2890	2230	1580	1170
	561	4260	-	-	-	-	-
	563	4710	4110	3170	2510	1750	1330
	565	5350	4580	3600	2810	1960	1490
	567	-	5170	4000	3150	2190	1660
	569	-	-	-	3530	2460	1870
	631	5980	5870	4460	-	-	-
	633	6700	6520	5050	3950	2740	2130
	635	7500	7360	5620	4430	3060	2390
	637	-	8160	6320	4960	3430	2670
	639	-	-	-	5560	3850	3000
	715	-	10000	7600	6210	4300	3340
	717	-	11000	8500	6960	4820	3750
719	-	12500	9550	7800	5400	4200	

※ Bearing type for horizontal motors:

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

## | Rated Power at 60 Hz |

### | 4.16 kV |

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HRN3	403	-	1065	835	625	-	-
	405	-	1170	935	700	-	-
	407	-	1320	1035	790	-	-
	409	-	1500	1160	880	-	-
	451	2040	-	-	-	-	-
	453	2210	1690	1285	955	660	445
	455	2450	1895	1440	1070	740	500
	457	-	2120	1610	1200	830	560
	459	-	2380	1810	1345	930	630
	501	2760	-	-	-	-	-
	503	2990	2650	1985	1530	1085	800
	505	3500	2960	2225	1710	1210	900
	507	-	3320	2495	1920	1365	1005
	509	-	3725	2795	2155	1530	1130
	561	3980	-	-	-	-	-
	563	4400	3980	3070	2425	1690	1285
	565	5000	4420	3480	2720	1895	1440
	567	-	5000	3870	3045	2120	1610
	569	-	-	-	3415	2380	1810
	631	5580	5670	4310	-	-	-
	633	6250	6310	4890	3825	2650	2060
	635	7000	7120	5440	4285	2960	2310
	637	-	7890	6110	4800	3320	2585
	639	-	-	-	5380	3725	2900
	715	-	9670	7380	6010	4180	3240
	717	-	10800	8270	6735	4685	3635
	719	-	12100	9250	7550	5250	4075

※ Bearing type for horizontal motors:

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



## | Rated Power at 60 Hz |

## | 6.6 kV |

Unit: kW

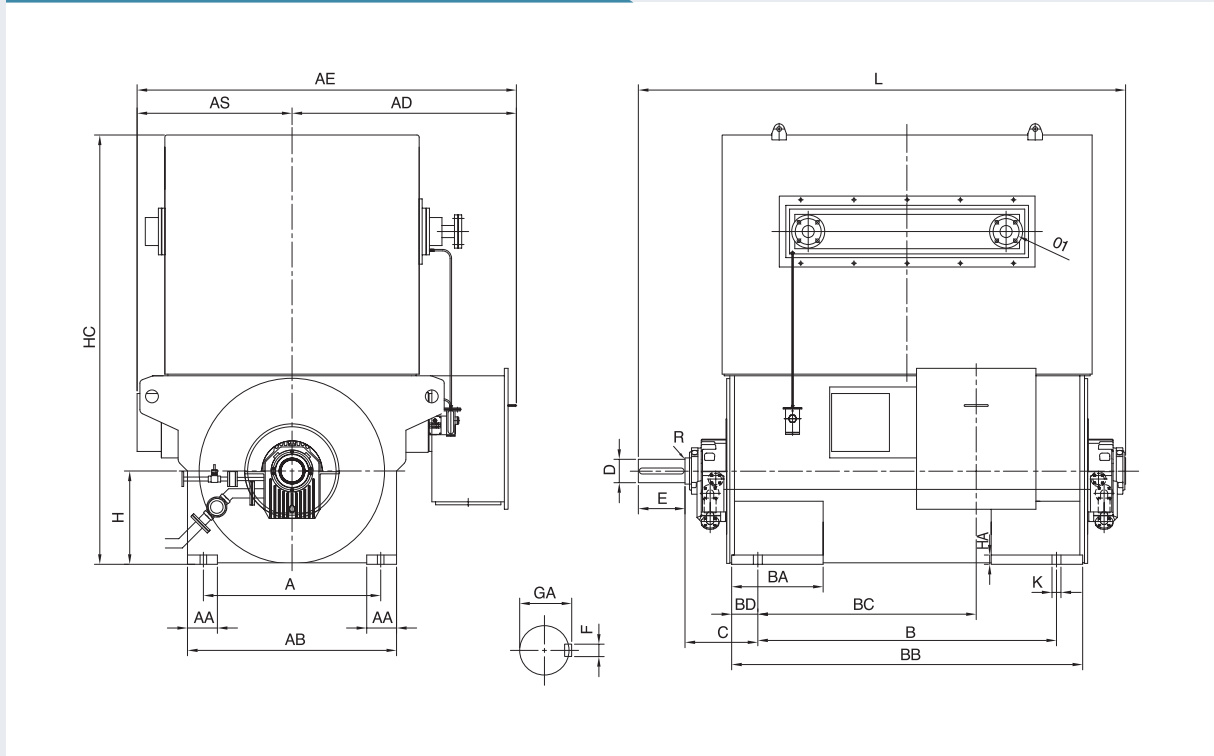
Type	Poles	2P	4P	6P	8P	10P	12P
HRN3	403	-	1030	800	600	-	-
	405	-	1130	900	670	-	-
	407	-	1270	1000	760	-	-
	409	-	1450	1120	850	-	-
	451	2040	-	-	-	-	-
	453	2210	1630	1240	925	640	430
	455	2450	1830	1390	1035	715	485
	457	-	2050	1560	1160	800	540
	459	-	2300	1750	1300	900	610
	501	2760	-	-	-	-	-
	503	2990	2560	1920	1480	1050	775
	505	3500	2860	2150	1650	1170	865
	507	-	3210	2410	1850	1320	970
	509	-	3600	2700	2080	1480	1090
	561	3980	-	-	-	-	-
	563	4400	3910	3110	2340	1630	1240
	565	5000	4350	3520	2630	1830	1390
	567	-	4920	3920	2940	2050	1560
	569	-	-	-	3300	2300	1750
	631	5580	5480	4230	-	-	-
	633	6250	6100	4800	3700	2560	1990
	635	7000	6880	5330	4140	2860	2230
	637	-	7620	6000	4640	3210	2500
	639	-	-	-	5200	3600	2800
715	-	9500	7150	5810	4060	3140	
717	-	10600	8000	6510	4550	3520	
719	-	11800	9000	7300	5100	3950	

※ Bearing type for horizontal motors:

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

## | HRN3 |

### Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRN3	451	2	<b>850</b>	150	1000	1210	1970	760	<b>1400</b>	450	1790	1050	195	<b>430</b>
	453	2												
	455	2									1860	1080	230	<b>460</b>

Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	01	weight (kg)	
HRN3	451	2	<b>450</b>	45	2060	2465	<b>35</b>	<b>110</b>	<b>210</b>	<b>28</b>	<b>116</b>	65A	5200
	453	2											5400
	455	2				2530							5800

#### Note

1. Tolerance on "D" and "DA" dimensions will be m6.
2. Transmission element bores are made to an ISO H6 fit.
3. The dimensions printed in bold-face in the dimensional tables as A, B, C, D, E, F, GA, H, and K are comply with IEC rule.
4. Type of bearings.
  - Grease lubricated anti-friction
  - Forced feed oil lubricated sleeve bearings

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

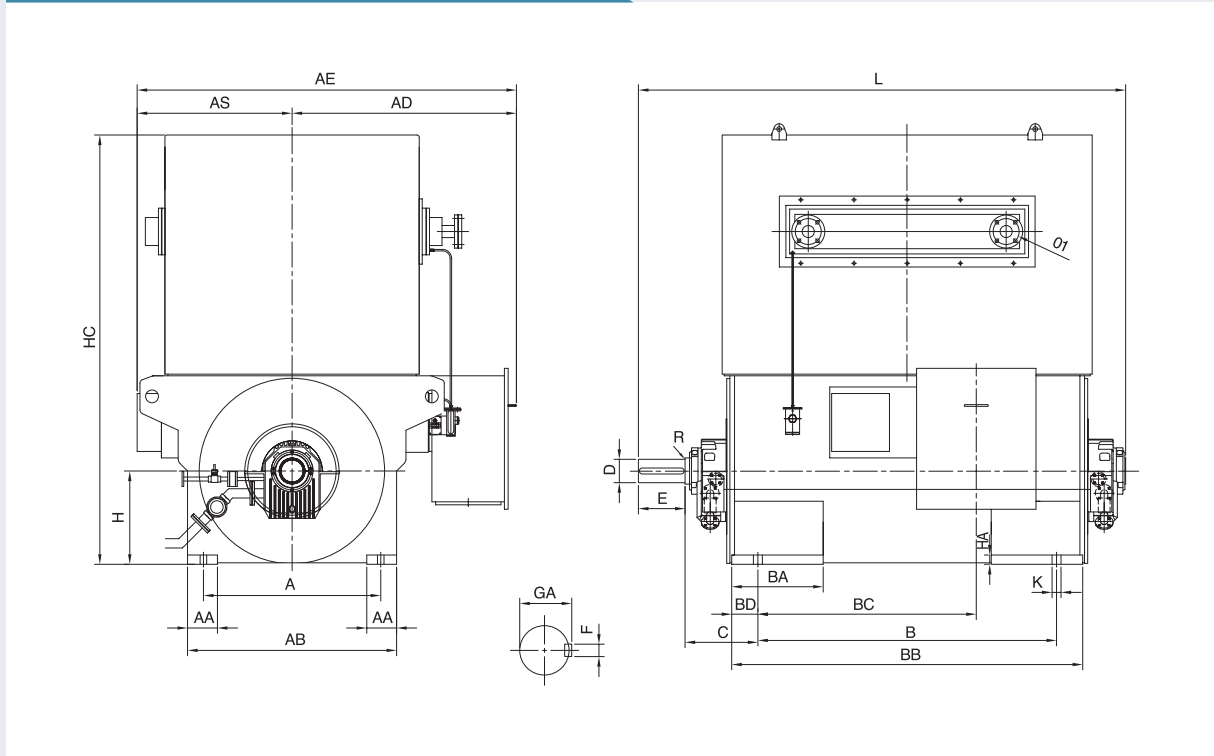
Dimensions	Tolerance (mm)	
A and B	Over 500 up to 750	±1.5
	Over 750 up to 1,000	±1.5
	Over 1,000	±1.5
H	Over 250 up to 600	-1.0
	Over 600 up to 1,000	-1.5

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

| HRN3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C		
HRN3	501	2	950	160	1120	1270	2090	820	1600	490	1880	1170	140	390	
	503	2													
	505	2										1990	1230		195

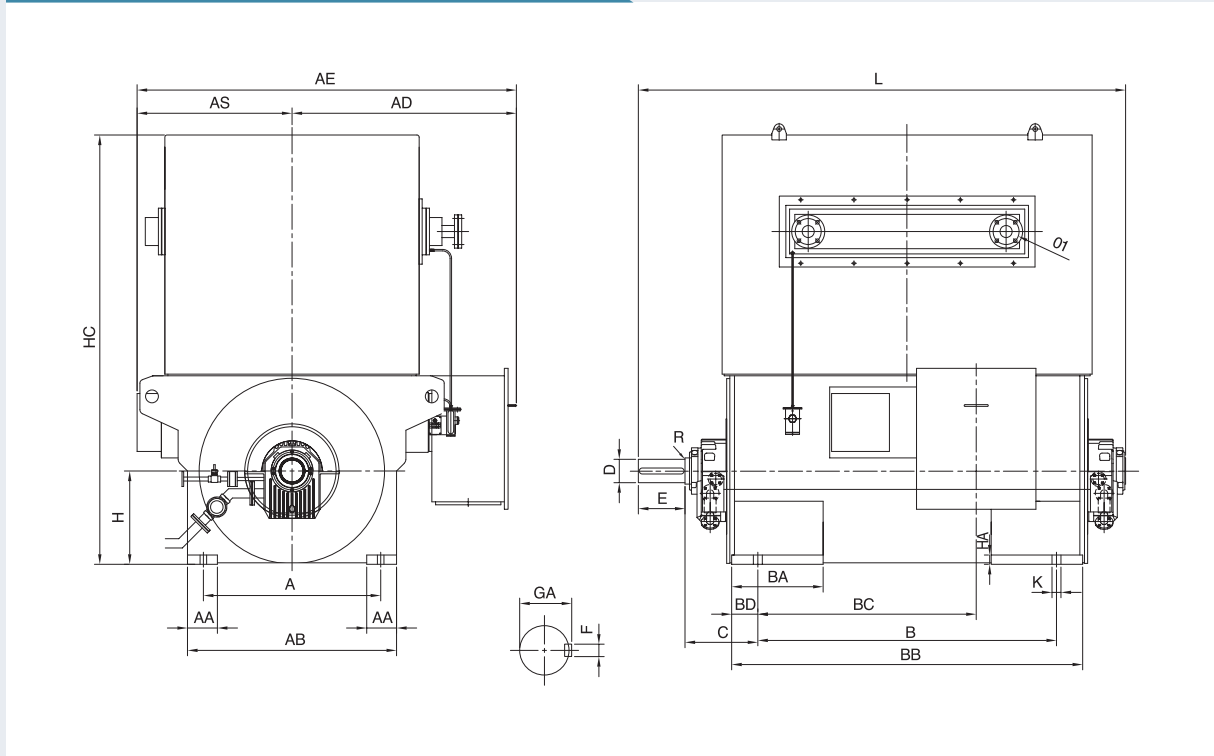
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	01	weight (kg)	
HRN3	501	2	500	45	2300	2610	48	125	250	32	132	80A	6700
	503	2											7000
	505	2				2735							7600

Note: For bearing type and tolerances of dimensions, see page 50.

## | HRN3 |

### Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRN3	561	2	1120	160	1280	1360	2270	910	1600	490	1990	1200	195	480
	563	2												
	565	2							1800	490	2140	1300	170	450

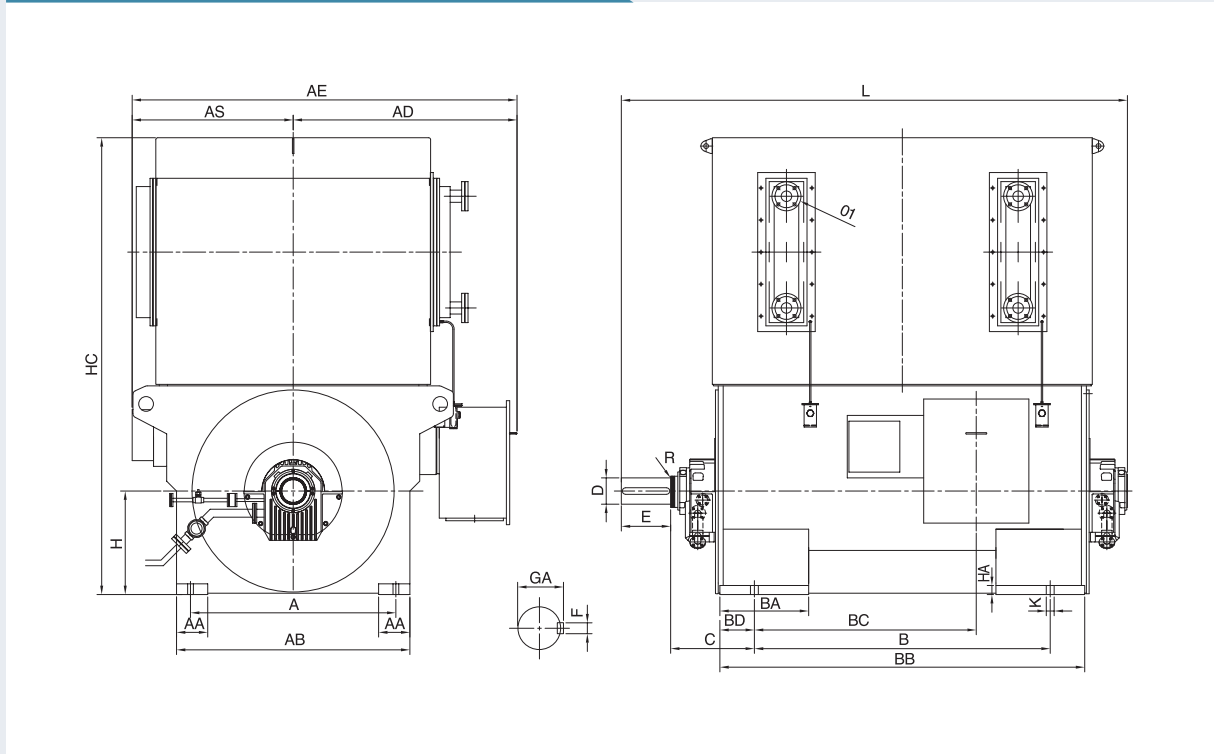
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	01	weight (kg)	
HRN3	561	2	560	50	2550	2790	48	150	250	36	158	100A	8500
	563	2											9000
	565	2				2935							9600

**Note:** For bearing type and tolerances of dimensions, see page 50.

| HRN3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRN3	631	2	1250	190	1420	1430	2490	1060	1800	540	2220	1350	210	510
	633	2												
	635	2							2000	540	2320	1500	160	460

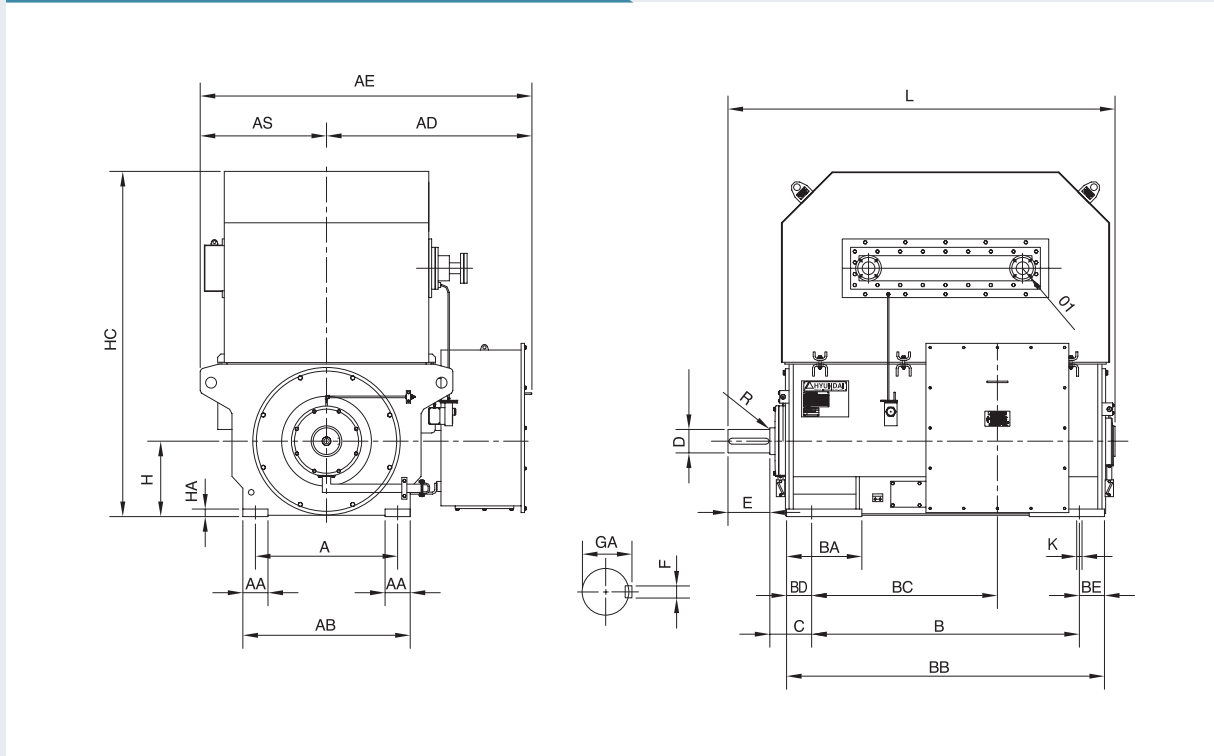
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	01	weight (kg)	
HRN3	631	2	630	55	2780	3080	48	160	300	40	169	80A	11500
	633	2											12600
	635	2				3180							13500

Note: For bearing type and tolerances of dimensions, see page 50.

## | HRN3 |

### Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRN3	403	4	800	140	950	1000	1670	670	1120	275	1420	760	177	123
		6 - 8							1120		1420	760		123
	405	4							1250		1565	905		138
		6 - 8							1120		1420	760		123
	407	4							1250		1565	905		138
		6 - 8							1250		1565	905		138
	409	4							1250		1565	905		138
		6 - 8							1250		1565	905		138

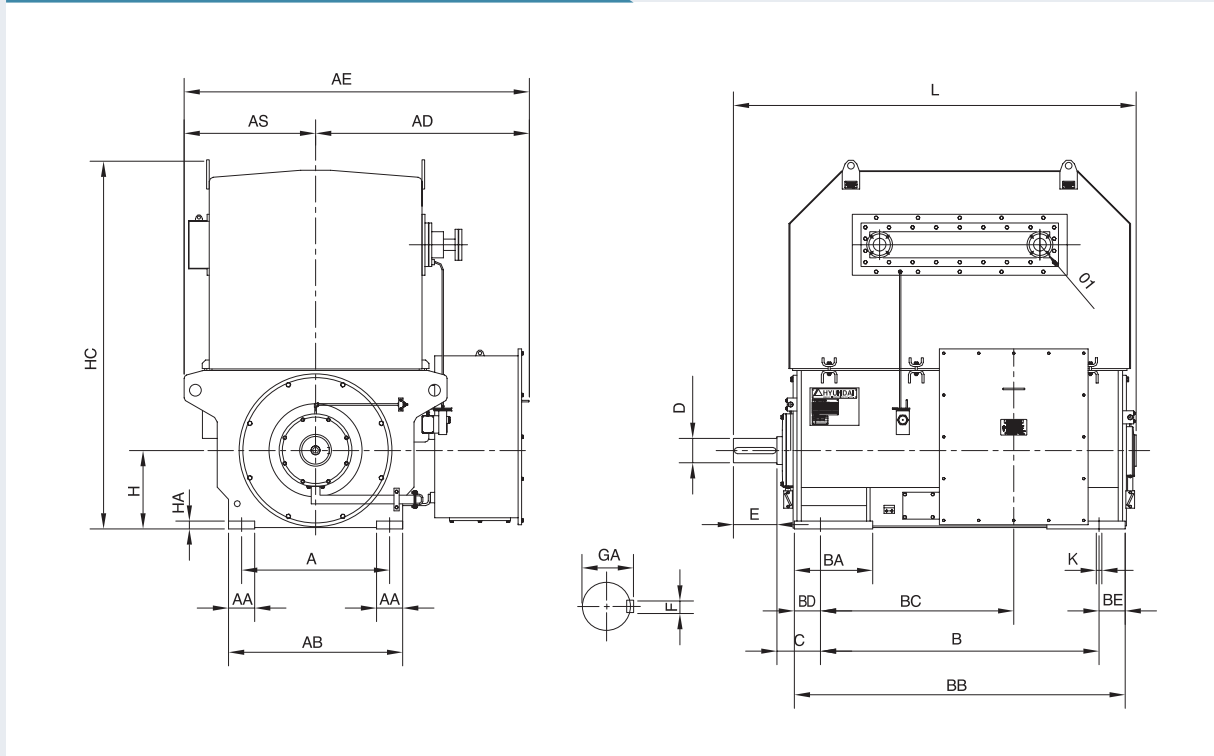
Unit: mm

Type	Poles	C	H	HA	HC	K	L	01	D	E	F	GA	weight (kg)	
HRN3	403	4	270	400	30	1560	35	1810	50A	130	250	32	137	3300
		6 - 8						1810						4000
	405	4						1970						4230
		6 - 8						1810						4110
	407	4						1970						4400
		6 - 8						1970						4420
	409	4						1970						5200
		6 - 8						1970						4600

**Note:** For bearing type and tolerances of dimensions, see page 50.

| HRN3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRN3	453	4 - 6	850	150	1000	1230	1985	755	1400	450	1700	910	150	150
	455	4 - 6							1400		1700	910		
	457	4 - 6							1600		1900	1110		
	459	4 - 6							1600		1900	1110		

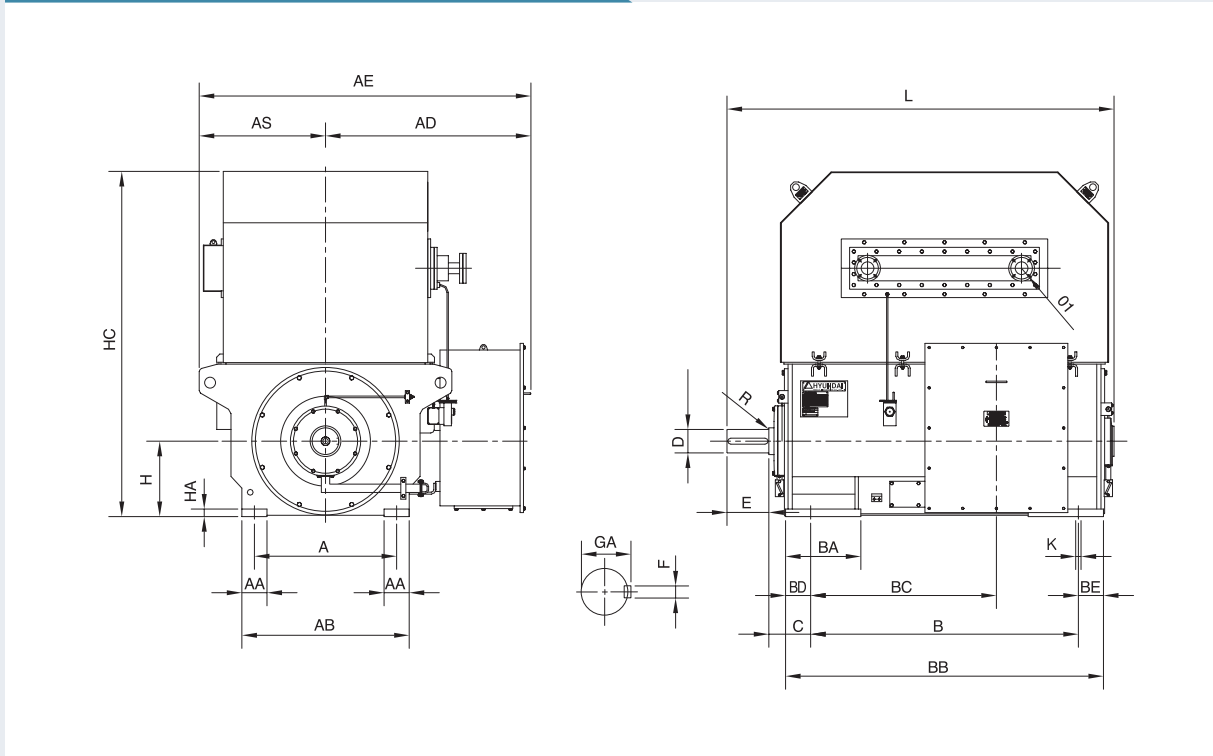
Unit: mm

Type	Poles	C	H	HA	HC	K	L	01	D	E	F	GA	weight (kg)	
HRN3	453	4	250	450	45	2120	35	2120	65A	140	250	36	148	5400
		6						2120						5400
	455	4						2120						5600
		6						2120						5600
	457	4						2320						6000
		6						2320						6000
	459	4						2320						6250
		6						2320						6300

Note: For bearing type and tolerances of dimensions, see page 50.

## | HRN3 |

### Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRN3	453	8 - 12	850	160	1035	1155	1740	585	1250	390	1635	885	110	275
	455	8 - 12							1250		1635	885		275
	457	8 - 12							1400		1795	1045		285
	459	8 - 12							1400		1795	1045		285

Unit: mm

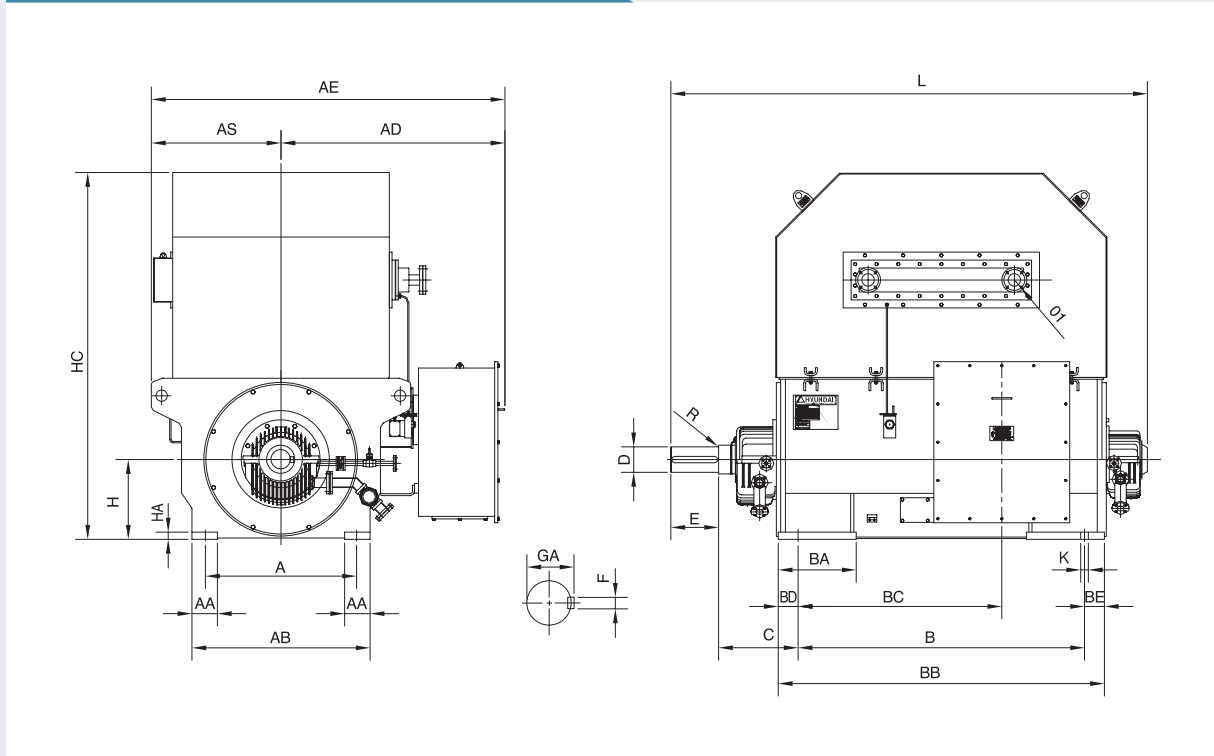
Type	Poles	C	H	HA	HC	K	L	01	D	E	F	GA	weight (kg)	
HRN3	453	8 - 12	200	450	30	1820	35	2090	65A	140	250	36	148	5400
	455	8 - 12						2090						5500
	457	8 - 12						2250						6000
	459	8 - 12						2250						6250

**Note:** For bearing type and tolerances of dimensions, see page 50.



| HRN3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRN3	503	4	950	160	1120	1410	2225	815	1600	490	1850	1080	125	125
	505	4							1600		1850	1080		
	507	4							1800		2050	1280		
	509	4							1800		2050	1280		

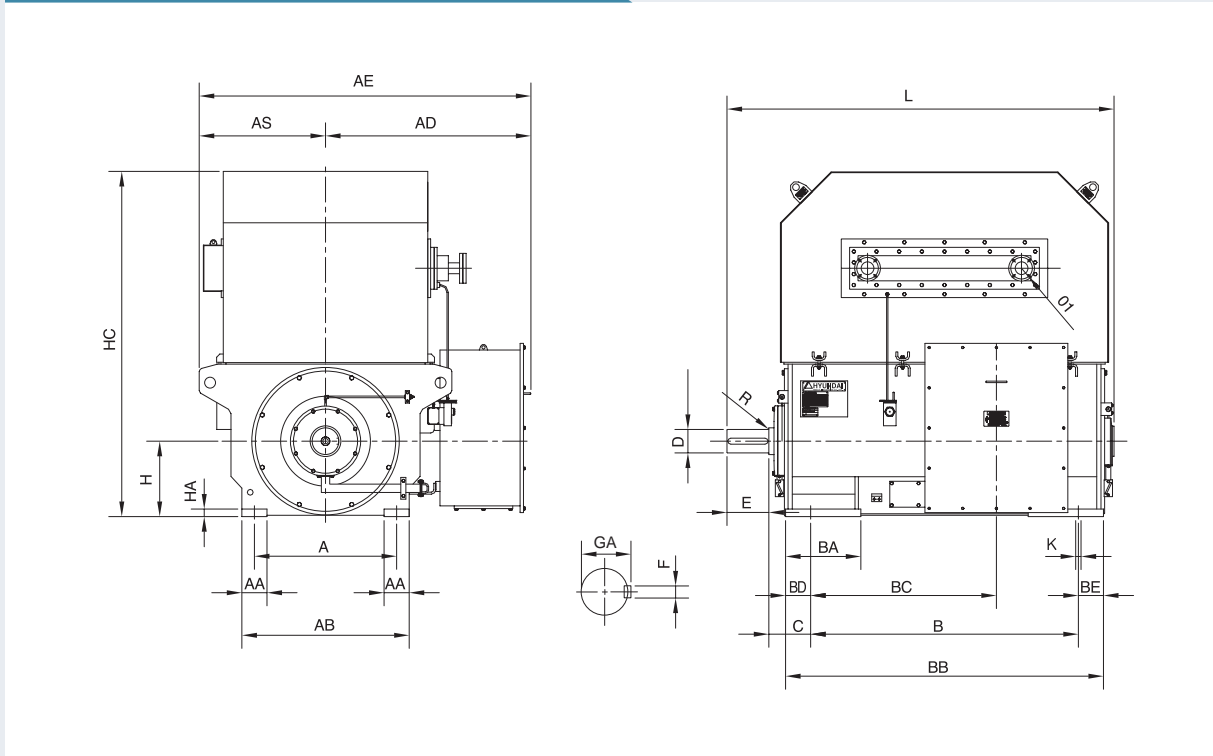
Unit: mm

Type	Poles	C	H	HA	HC	K	L	O1	D	E	F	GA	weight (kg)	
HRN3	503	4	500	500	45	2360	48	2800	65A	160	300	40	169	7050
	505	4						2800						7300
	507	4						3000						7850
	509	4						3000						8200

Note: For bearing type and tolerances of dimensions, see page 50.

## | HRN3 |

### Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRN3	503	6	950	160	1120	1410	2225	815	1600	490	1850	1080	125	125
	505	6							1600		1850	1080	125	125
	507	6							1800		2050	1280	125	125
	509	6							1800		2050	1280	125	125

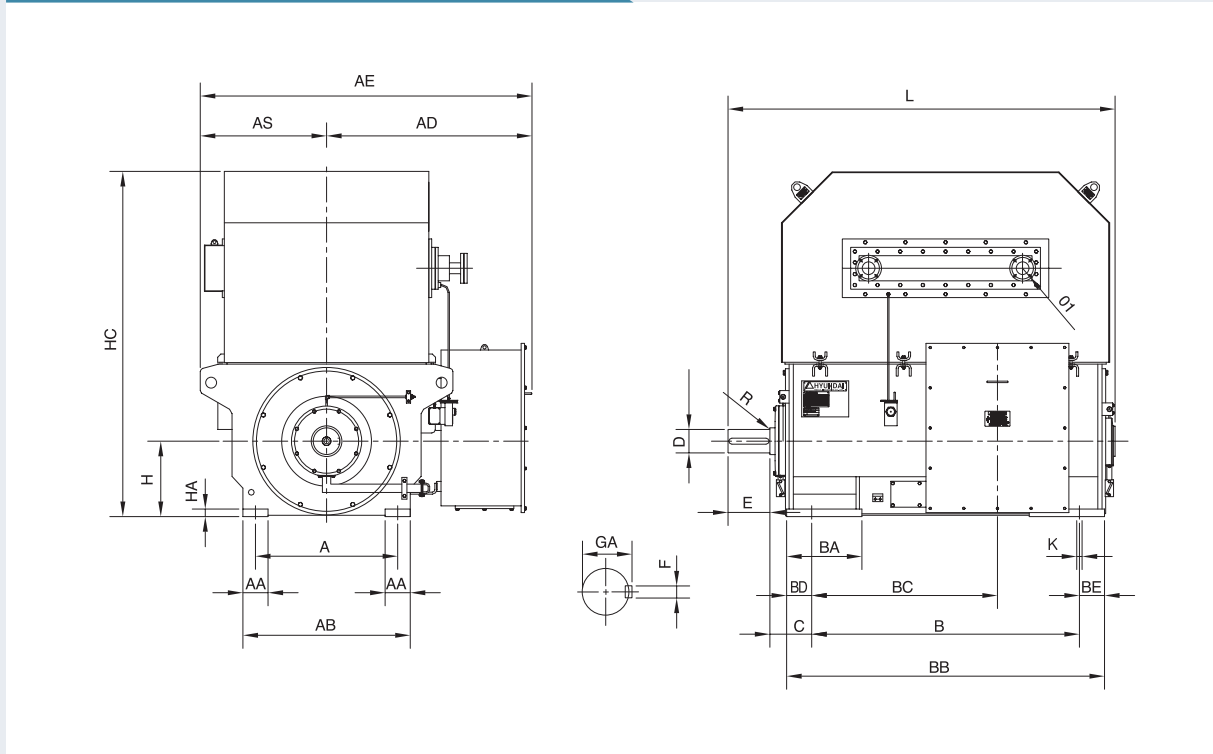
Unit: mm

Type	Poles	C	H	HA	HC	K	L	01	D	E	F	GA	weight (kg)	
HRN3	503	6	250	500	45	2360	48	2360	65A	170	300	40	179	6650
	505	6						2360						6900
	507	6						2560						7500
	509	6						2560						7850

**Note:** For bearing type and tolerances of dimensions, see page 50.

| HRN3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRN3	503	8 - 12	950	180	1155	1230	1970	740	1400	345	1755	980	135	220
	505	8 - 12							1400		1755	980		220
	507	8 - 12							1600		1945	1170		210
	509	8 - 12							1600		1945	1170		210

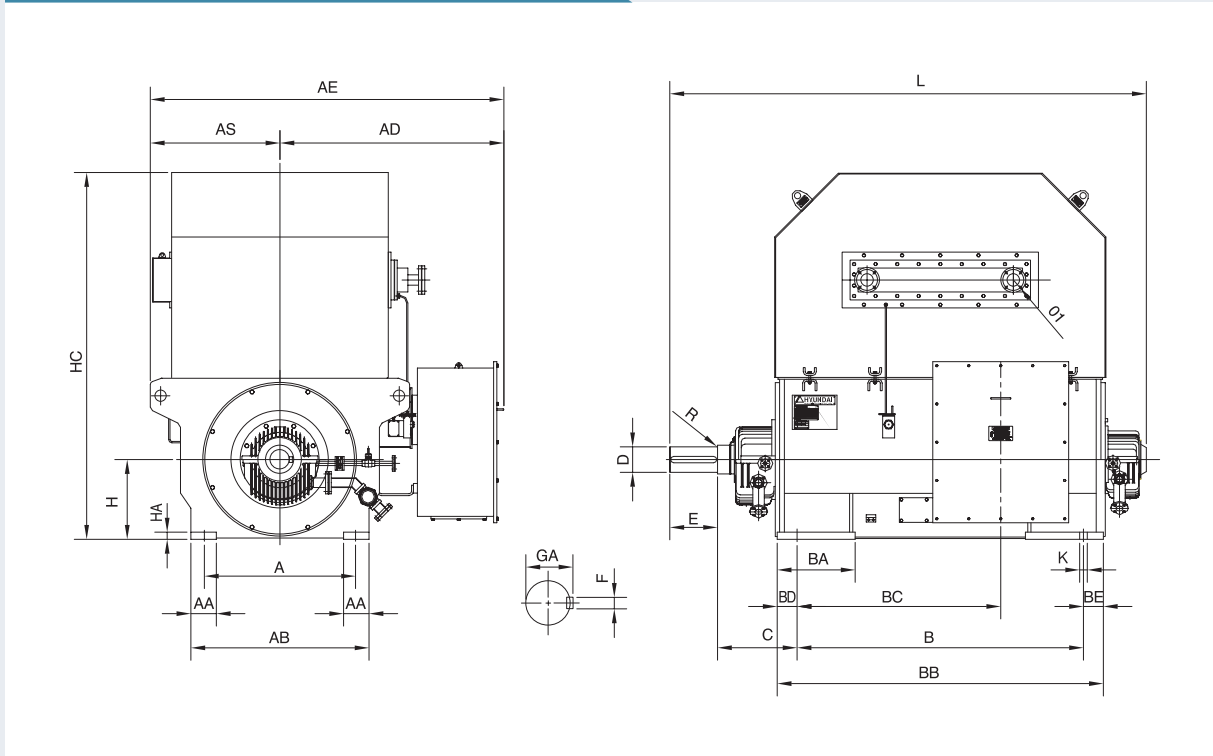
Unit: mm

Type	Poles	C	H	HA	HC	K	L	01	D	E	F	GA	weight (kg)	
HRN3	503	8 - 12	224	500	34	2010	42	2230	65A	170	300	40	179	6450
	505	8 - 12						2230						6650
	507	8 - 12						2420						7400
	509	8 - 12						2420						7750

Note: For bearing type and tolerances of dimensions, see page 50.

| HRN3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRN3	563	4	1120	160	1280	1500	3000	905	1600	520	1930	1115	165	165
	565	4							1800		2130	1315		
	567	4							1800		2130	1315		

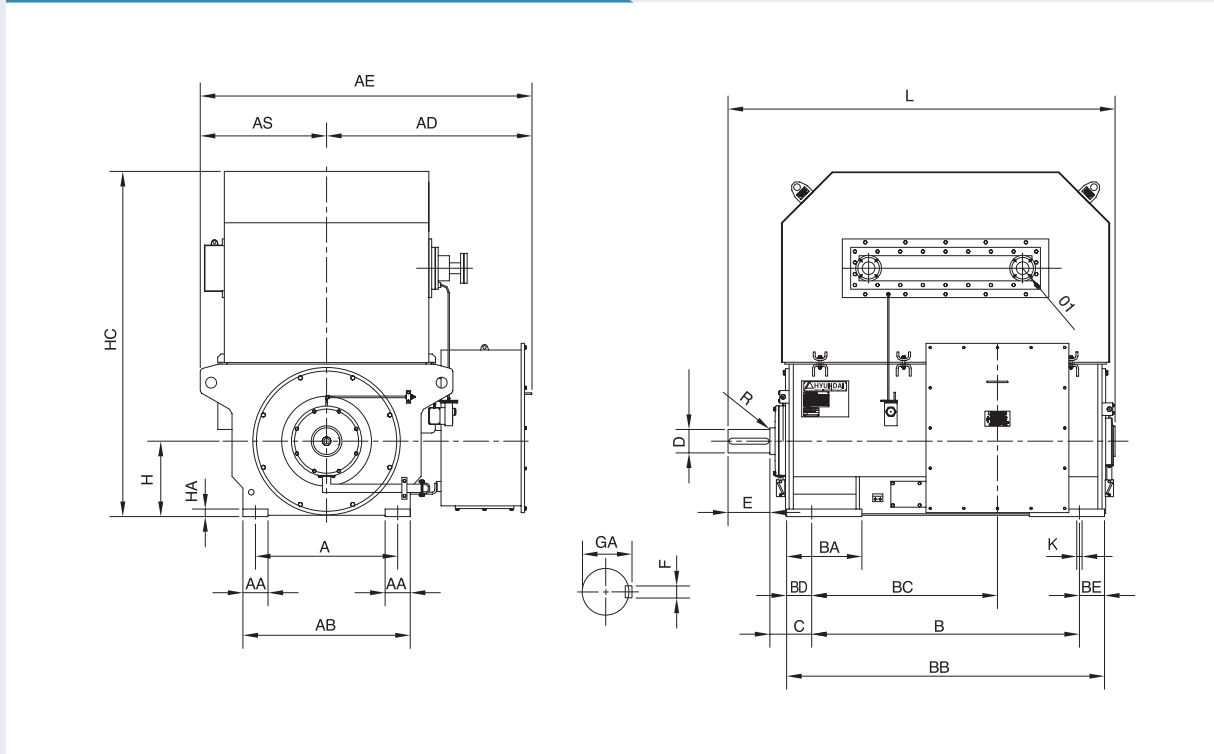
Unit: mm

Type	Poles	C	H	HA	HC	K	L	01	D	E	F	GA	weight (kg)	
HRN3	563	4	560	560	50	2600	48	2970	80A	190	350	45	200	9150
	565	4						3170						9750
	567	4						3170						10150

**Note:** For bearing type and tolerances of dimensions, see page 50.

| HRN3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRN3	563	6	1120	160	1280	1500	3000	905	1600	520	1930	1115	165	165
	565	6						1800			2130	1315		
	567	6						1800			2130	1315		

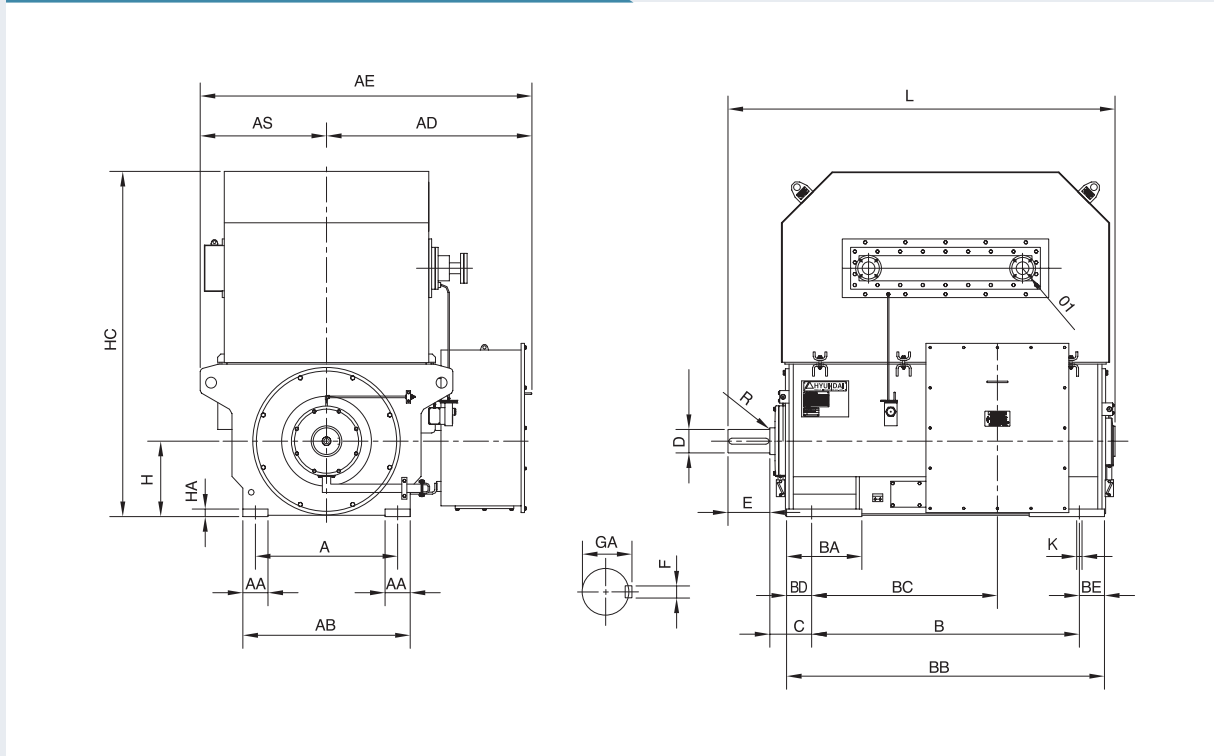
Unit: mm

Type	Poles	C	H	HA	HC	K	L	01	D	E	F	GA	weight (kg)	
HRN3	563	6	280	560	50	2600	48	2500	80A	190	350	45	200	9250
	565	6					2700							9900
	567	6					2700							10350

**Note:** For bearing type and tolerances of dimensions, see page 50.

## | HRN3 |

### Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRN3	563	8 - 12	1120	180	1285	1300	2080	780	1600	445	1945	1125	170	175
	565	8 - 12							1600		1945	1125		
	567	8 - 12							1800		2145	1325		
	569	8 - 12							1800		2145	1325		

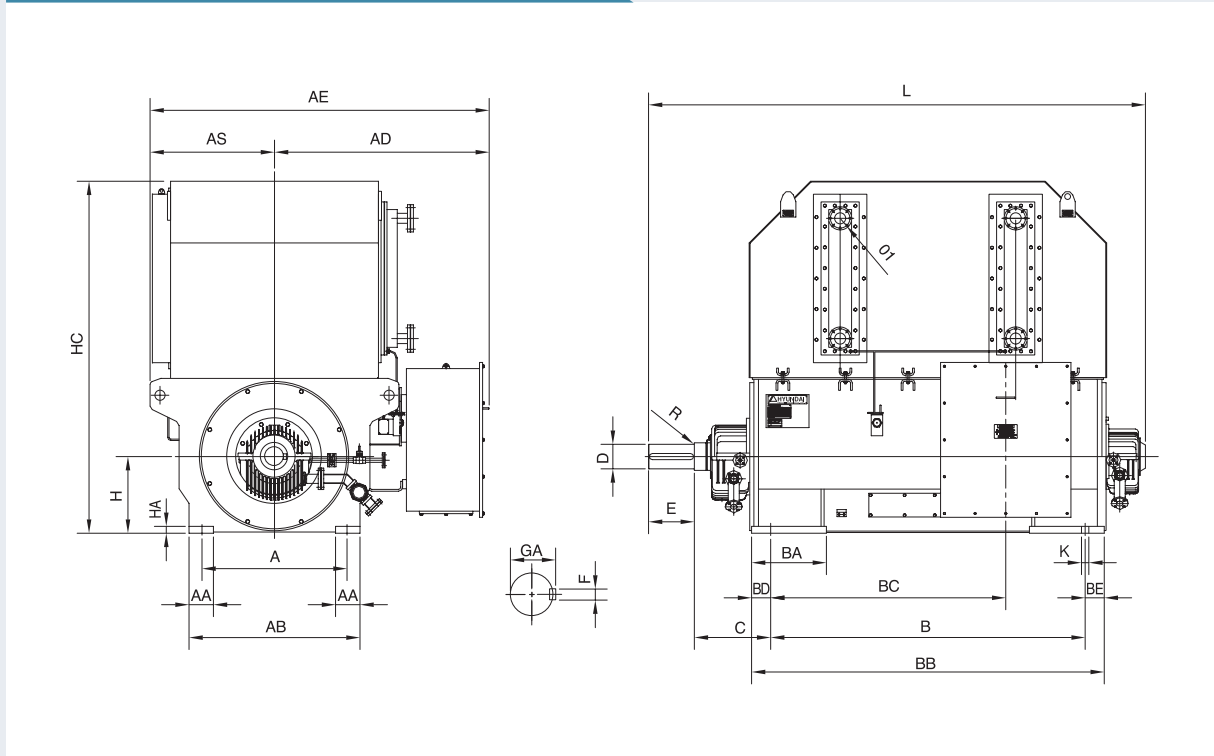
Unit: mm

Type	Poles	C	H	HA	HC	K	L	01	D	E	F	GA	weight (kg)	
HRN3	563	8 - 12	280	560	35	2160	48	2500	80A	190	350	45	200	9300
	565	8 - 12						2500						9600
	567	8 - 12						2700						10300
	569	8 - 12						2700						10800

**Note:** For bearing type and tolerances of dimensions, see page 50.

| HRN3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRN3	631	4	1250	190	1420	1570	3140	975	1800	540	2110	1305	155	155
	633	4							1800		2110	1305		
	635	4							2000		2310	1505		
	637	4							2000		2310	1505		

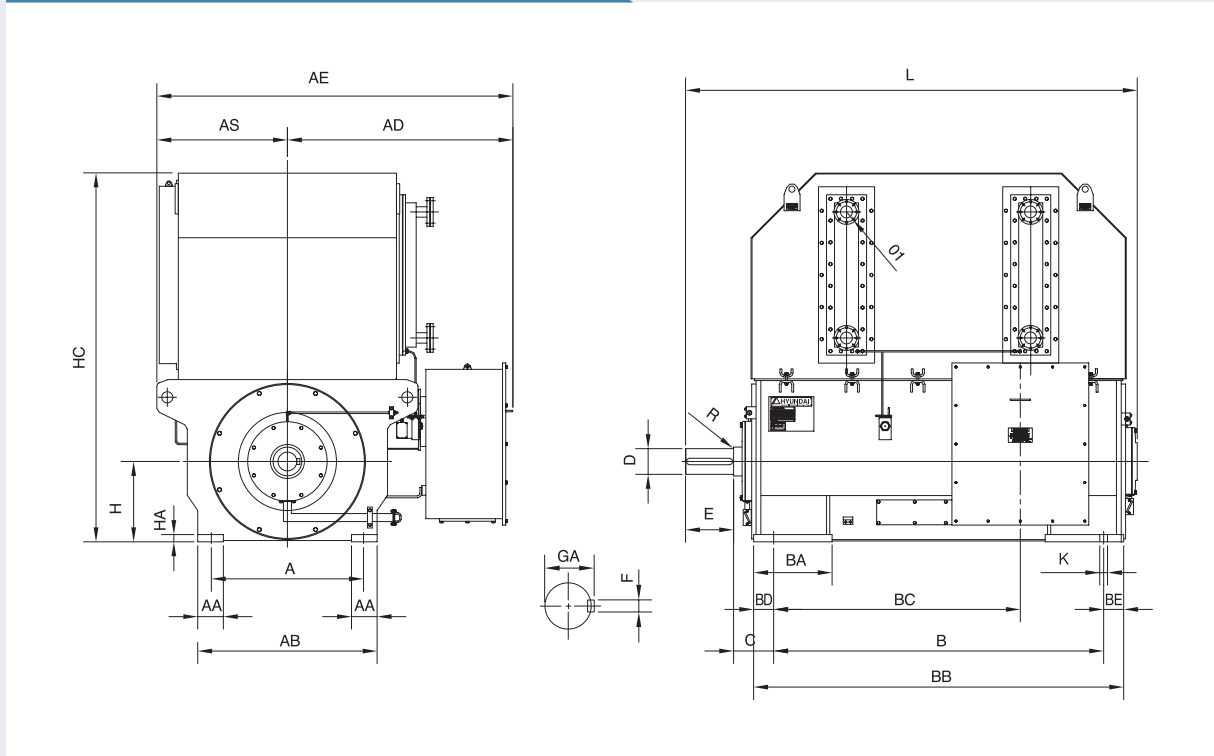
Unit: mm

Type	Poles	C	H	HA	HC	K	L	01	D	E	F	GA	weight (kg)	
HRN3	631	4	600	630	55	2830	48	3280	100A	220	350	50	230	12400
	633	4						3280						12800
	635	4						3480						13700
	637	4						3480						14300

Note: For bearing type and tolerances of dimensions, see page 50.

## | HRN3 |

### Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRN3	631	6	1250	190	1420	1570	3140	975	1800	540	2110	1305	155	155
	633	6							1800		2110	1305		
	635	6							2000		2310	1505		
	637	6							2000		2310	1505		

Unit: mm

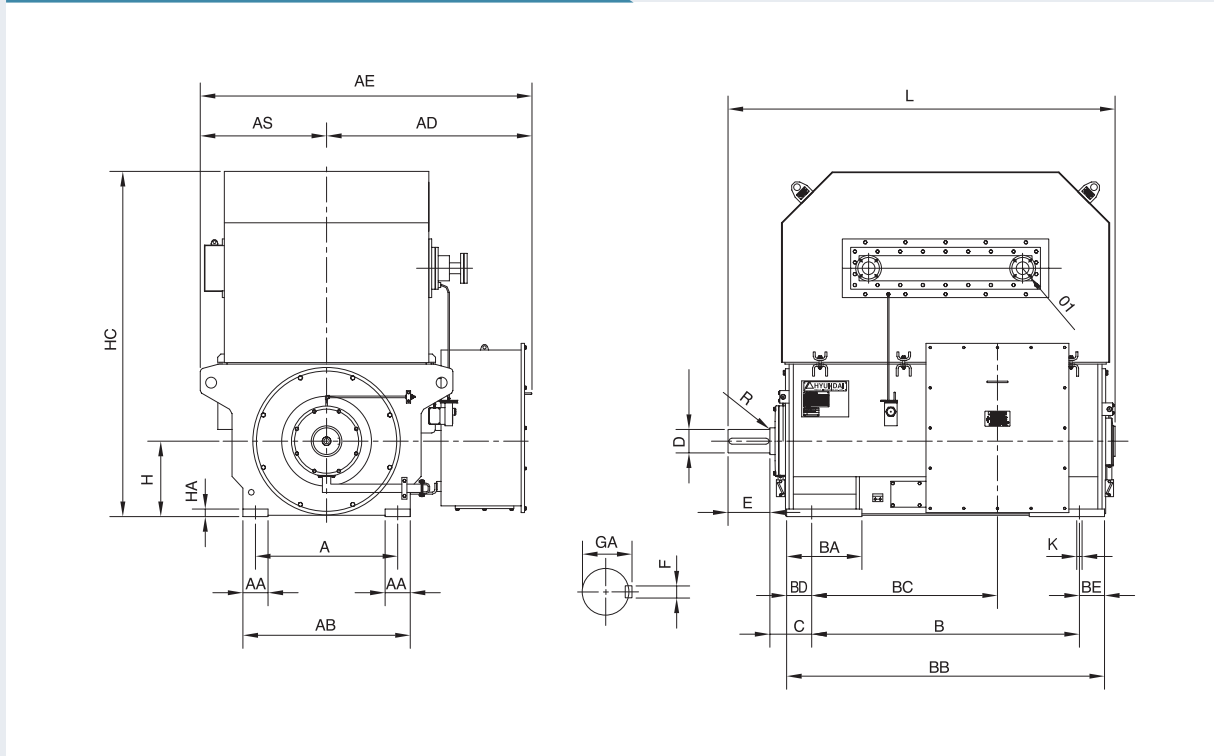
Type	Poles	C	H	HA	HC	K	L	O1	D	E	F	GA	weight (kg)	
HRN3	631	6	280	630	55	2830	48	2690	100A	220	350	50	230	11800
	633	6						2690						12300
	635	6						2890						13200
	637	6						2890						13800

**Note:** For bearing type and tolerances of dimensions, see page 50.



| HRN3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRN3	633	8 - 12	1180	220	1420	1360	2235	875	1800	500	2240	1440	145	295
	635	8 - 12							1800		2240	1440		295
	637	8 - 12							2000		2480	1680		335
	639	8 - 12							2000		2480	1680		335

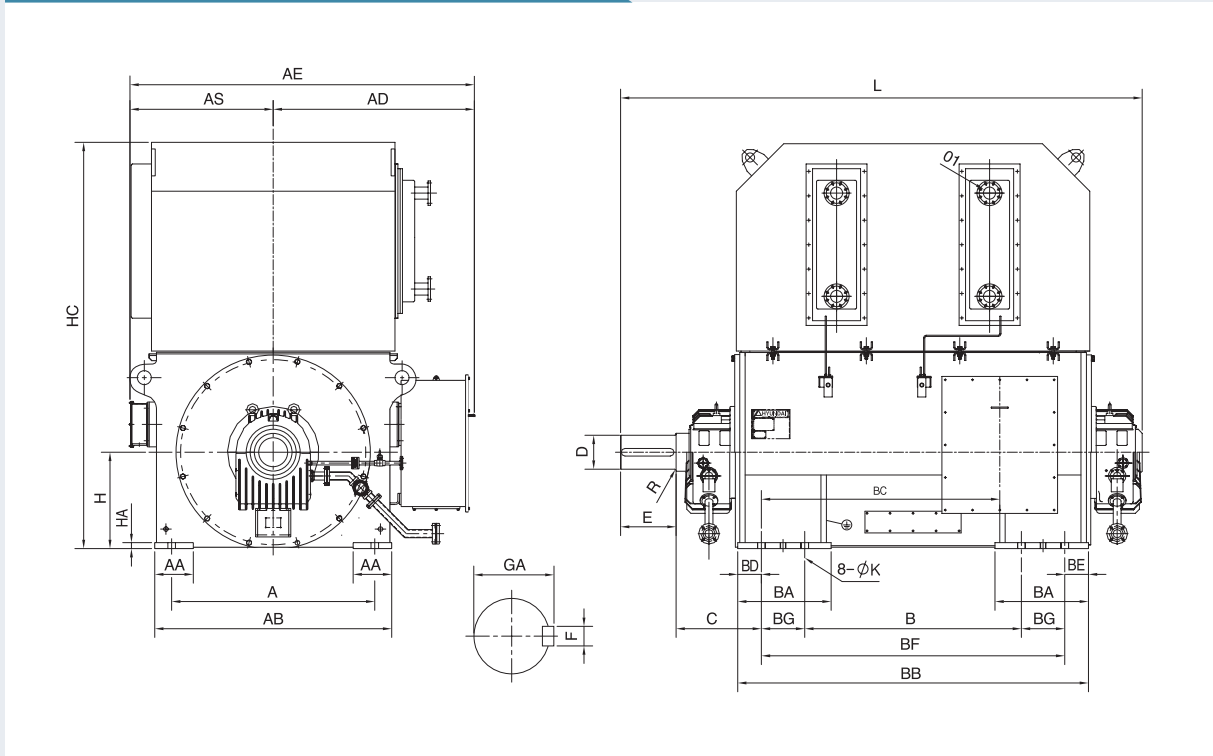
Unit: mm

Type	Poles	C	H	HA	HC	K	L	01	D	E	F	GA	weight (kg)	
HRN3	633	8 - 12	315	630	38	2400	48	2860	100A	220	350	50	231	12900
	635	8 - 12						2860						13500
	637	8 - 12						3100						14600
	639	8 - 12						3100						15300

Note: For bearing type and tolerances of dimensions, see page 50.

## | HRN3 |

### Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	BF	BG	
HRN3	715	4 - 6	1500	285	1750	1850	3700	1060	1400	690	2390	1560	175	175	2040	320
	717	4 - 6							1600		2590	1760				
	719	4 - 6							1600		2590	1760				

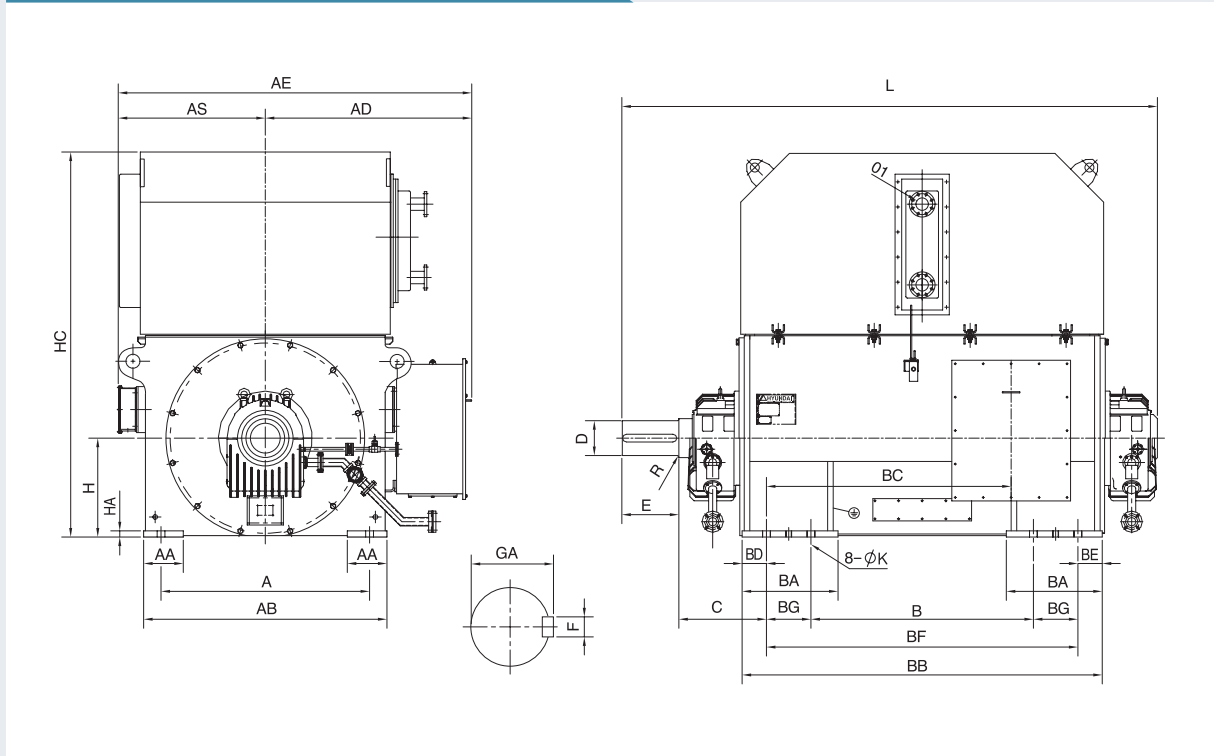
Unit: mm

Type	Poles	C	D	E	F	GA	H	HA	HC	K	L	01	weight (kg)	
HRN3	715	4	630	250	410	56	262	710	44	3120	56	3650	150A	19800
		6										3650		19400
	717	4										3850		21100
		6										3850		20700
	719	4										3850		22000
		6										3850		21800

**Note:** For bearing type and tolerances of dimensions, see page 50.

| HRN3 |

Mounting B3 / Degree of Protection IP54



Unit: mm

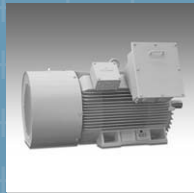
Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	BF	BG	
HRN3	715	8 - 12	1500	285	1750	1850	3700	1060	1400	690	2390	1560	175	175	2040	320
	717	8 - 12							1600		2590	1760				
	719	8 - 12							1600		2590	1760				

Unit: mm

Type	Poles	C	D	E	F	GA	H	HA	HC	K	L	01	weight (kg)	
HRN3	715	8 - 12	630	250	410	56	262	710	44	3120	56	3650	150A	20000
	717	8 - 12										3850		21500
	719	8 - 12										3850		22500

Note: For bearing type and tolerances of dimensions, see page 50.

04

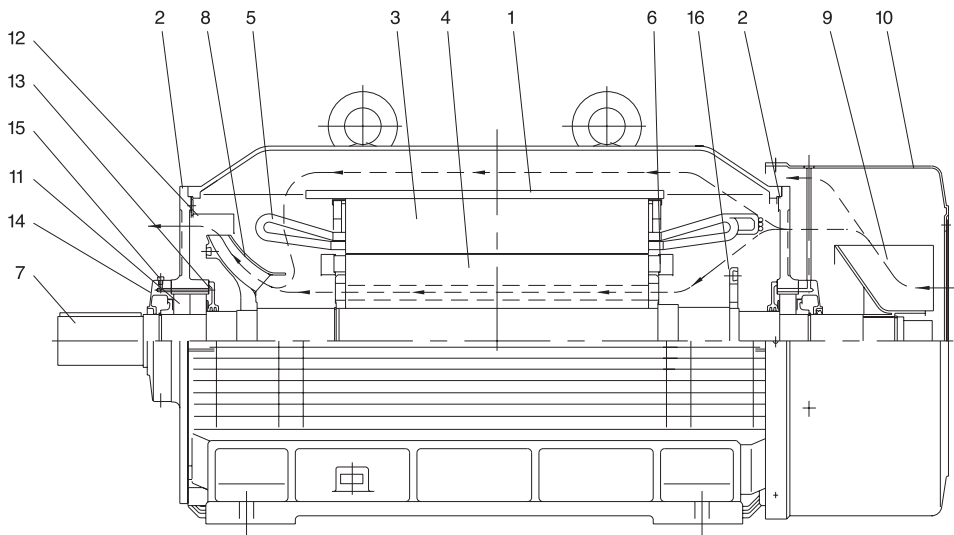


**HRB5 Series** | Open Drip-Proof Squirrel Cage

## | HRB5 |

• Rotor Type	Squirrel Cage
• Number of Poles	2-8
• Voltage	2-7.2 kV
• Output Range	120-1,200 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



#### 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 |

### | 3.3 kV |

Unit: kW

Type	Poles	2p	4p	6p	8p
HRB5	288	-	-	-	-
	310	-	210	125	93
	312	-	240	150	110
	314	165	280	200	135
	316	250	325	225	155
	318	300	375	265	187
	352	350	430	350	225
	354	415	525	415	275
	402	460	630	480	310
	404	580	700	575	360
	452	-	875	690	490
	454	-	1000	750	560

### | 6.6 kV |

Unit: kW

Type	Poles	2p	4p	6p	8p
HRB5	288	-	-	-	-
	310	-	190	-	-
	312	-	230	150	-
	314	165	275	190	-
	316	250	315	225	-
	318	300	360	265	185
	352	350	416	350	210
	354	415	500	415	270
	402	460	630	480	310
	404	580	690	575	360
	452	-	875	690	490
	454	-	1000	750	560

#### Note

1. Tolerance on "D" and "DA" dimensions will be m6.
2. Transmission element bores are made to an ISO H6 fit.
3. The dimensions printed in bold-face in the dimensional tables as A, B, C, D, E, F, GA, H, and K are comply with IEC rule.
4. Type of bearings.
  - Grease lubricated anti-friction
  - Forced feed oil lubricated sleeve bearings

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
HRB5	288	-	150	110	-
	310	-	250	150	110
	312	-	290	180	130
	314	200	340	235	165
	316	300	390	265	185
	318	350	450	320	225
	352	420	525	420	280
	354	500	630	500	330
	402	560	770	580	375
	404	700	850	690	430
	452	-	1100	830	590
	454	-	1250	900	675

### | 4.16 kV |

Unit: kW

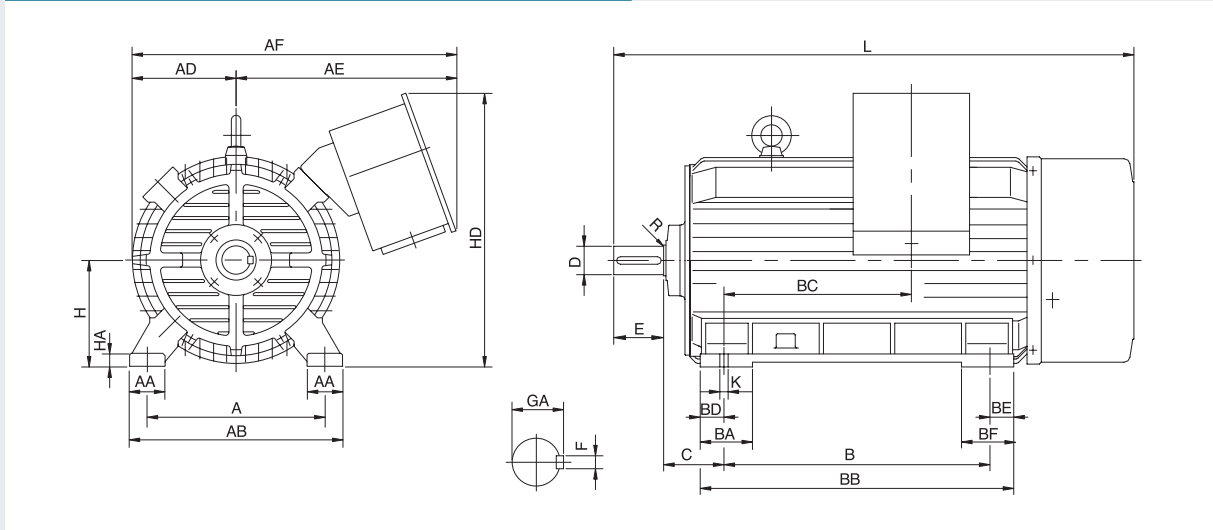
Type	Poles	2p	4p	6p	8p
HRB5	288	-	140	105	-
	310	-	245	145	105
	312	-	285	180	125
	314	200	335	230	160
	316	300	385	265	185
	318	350	440	320	225
	352	420	515	420	270
	354	500	620	500	325
	402	560	765	580	375
	404	700	840	690	430
	452	-	1080	830	590
	454	-	1230	900	675

### | 6.6 kV |

Unit: kW

Type	Poles	2p	4p	6p	8p
HRB5	288	-	-	-	-
	310	-	230	130	-
	312	-	280	180	-
	314	200	330	230	-
	316	300	380	265	185
	318	350	430	320	225
	352	420	500	420	250
	354	500	600	500	320
	402	560	760	580	375
	404	700	830	690	430
	452	-	1050	830	590
	454	-	1200	900	675

## Mounting B3 / Degree of Protection IP23



Unit : mm

Type	Poles	A	AA	AB	AD	AE	AF	B	BA	BB	BC	BD	BE	BF
HRB5	288	4 - 457	110	560	325	530	855	630 (508)	140	740	336	34.5	75.5 (197.5)	250
	310	4 - 508	120	628	350	865	1215	508	180	690	510	90	92	180
	312	4 -												
	314	2 -												
	316	2 -						630		810	550		90	
	318	2 -												
	352	2 - 610	120	730	365	875	1240	900	180	1070	720	85	85	180
	354	2 -												
	402	2 - 686	150	836	418	897	1315	1000	220	1200	806	100	100	220
	404	2 -												
452	4 - 750	150	900	450	930	1380	1120	220	1320	851	100	100	220	
454	4 -													

Unit : mm

Type	Poles	C	H	HA	HD	K	L	D	E	F	GA	Weight (kg)
HRB5	288	4 - 190	280	32	700	24	1220	85	170	24	93	1100
	310	4 - 216	315	35	960	28	1625	90	170	25	95	1250
	312	4 -					1625	90	170	25	95	1280
	314	2					1595	70	140	20	74.5	1350
		4 -					1625	90	170	25	95	1380
	316	2					1705	70	140	20	74.5	1500
		4 -					1735	90	170	25	95	1530
	318	2					1705	70	140	20	74.5	1620
		4 -					1735	90	170	25	95	1670
	352	2 - 200	355	45	1010	28	1860	75	140	20	79.5	1950
		4 -					1930	100	210	28	106	2000
	354	2					1860	75	140	20	79.5	2200
		4 -					1930	100	210	28	106	2250
	402	2 - 224	400	55	1080	35	2030	80	170	22	85	2600
		4 -					2070	110	210	28	116	2680
	404	2					2030	80	170	22	85	2800
	4 -					2070	110	210	28	116	2880	
452	4 - 254	450	55	1160	35	2210	120	210	32	127	3800	
454	4 -										4000	

Note: For bearing type and tolerances of dimensions, see page 70.





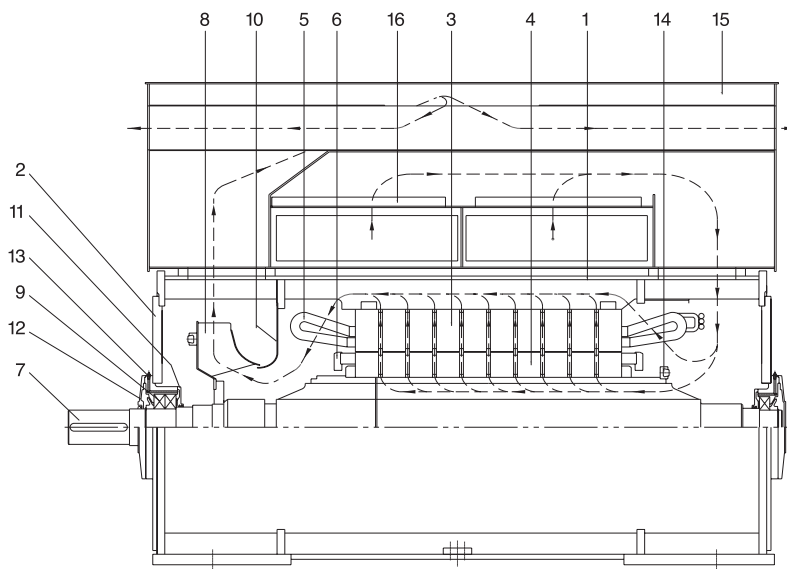
Weather Protected Squirrel Cage | **HRP3 Series**

05

**| HRP3|**

- Rotor Type Squirrel Cage
- Number of Poles 2-30
- Voltage 2-14 kV
- Output Range 1,030-11,800 kW (at 60 Hz, 6,600 V, 4-Pole)
- Type of Construction IM B3
- Frame 280-710
- Degree of Protection IP 23 W-IP24 W (IEC 60034-5)
- Method of Cooling IC 01 (IEC 60034-6)
- Type of Enclosure Weather Protected Type I & II: WP I , WP II (NEMA MG-1)

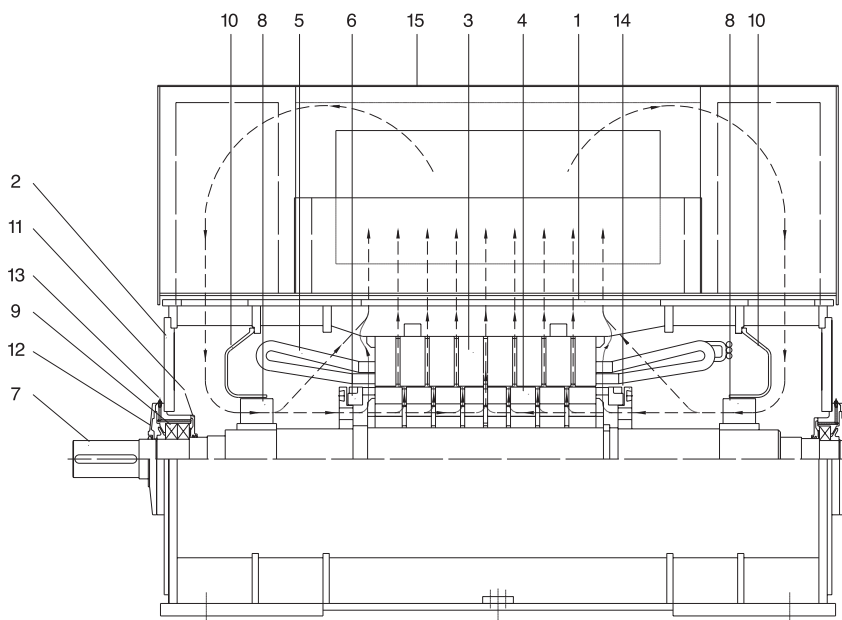
**Sectional View**



**Parts Name** Type - I (Uni-directional cooling circuit)

- |                 |                         |                            |                   |
|-----------------|-------------------------|----------------------------|-------------------|
| 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    |

Sectional View



**Parts Name** Type - II (Bi-directional cooling circuit)

- |                 |                         |                            |                   |
|-----------------|-------------------------|----------------------------|-------------------|
| 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 |                   |

## | Rated Power at 50 Hz |

### | 3.0 kV |

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HRP3	283	300	-	-	-	-	-
	285	370	-	-	-	-	-
	287	450	-	-	-	-	-
	289	530	-	-	-	-	-
	313	600	-	-	-	-	-
	315	670	-	-	-	-	-
	317	750	-	-	-	-	-
	355	930	-	-	-	-	-
	357	1120	-	-	-	-	-
	403	1300	830	630	470	-	-
	405	1490	940	710	530	-	-
	407	1570	1050	800	600	-	-
	409	-	1180	900	670	-	-
	451	1790	-	-	-	-	-
	453	1940	1450	1110	825	565	385
	455	2150	1630	1240	920	635	430
	457	-	1830	1390	1035	710	485
	459	-	2050	1560	1160	800	545
	501	2440	-	-	-	-	-
	503	2650	2270	1700	1310	930	690
	505	3100	2550	1910	1470	1050	770
	507	-	2850	2140	1650	1170	865
	509	-	3200	2400	1850	1320	970
	561	3580	-	-	-	-	-
	563	3960	3420	2640	2090	1450	1110
	565	4500	3800	2990	2340	1630	1240
	567	-	4300	3330	2620	1830	1390
	569	-	-	-	2940	2050	1560
	631	5020	4880	3700	-	-	-
	633	5620	5420	4200	3290	2270	1770
	635	6300	6120	4670	3690	2550	1980
	637	-	6780	5250	4130	2850	2220
639	-	-	-	4630	3200	2490	
715	-	8210	6170	5180	3570	2790	
717	-	9190	6910	5800	4000	3120	
719	-	10300	7740	6500	4490	3500	

※ Bearing type for horizontal motors:  
 Grease-lubricated anti-friction  
 Forced feed oil-lubricated sleeve bearings

## | Rated Power at 50 Hz |

### | 6.0 kV |

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HRP3	283	220	-	-	-	-	-
	285	300	-	-	-	-	-
	287	370	-	-	-	-	-
	289	450	-	-	-	-	-
	313	530	-	-	-	-	-
	315	600	-	-	-	-	-
	317	670	-	-	-	-	-
	355	750	-	-	-	-	-
	357	930	-	-	-	-	-
	403	1120	830	630	470	-	-
	405	1300	940	710	530	-	-
	407	1490	1050	800	600	-	-
	409	-	1180	900	670	-	-
	451	1660	-	-	-	-	-
	453	1800	1360	1030	765	530	360
	455	2000	1530	1160	860	595	405
	457	-	1710	1300	960	665	455
	459	-	1920	1460	1080	750	510
	501	2320	-	-	-	-	-
	503	2520	2130	1600	1230	870	645
	505	2950	2390	1790	1370	980	725
	507	-	2670	2000	1540	1090	810
	509	-	3000	2250	1730	1230	910
	561	3380	-	-	-	-	-
	563	3740	3300	2610	1950	1360	1030
	565	4250	3680	2970	2190	1530	1160
	567	-	4160	3300	2450	1710	1300
	569	-	-	-	2750	1920	1460
	631	4780	4620	3530	-	-	-
	633	5360	5140	4010	3080	2130	1650
	635	6000	5810	4460	3450	2390	1850
	637	-	6440	5010	3860	2670	2080
639	-	-	-	4330	3000	2330	
715	-	7850	5850	4840	3350	2600	
717	-	8750	6500	5420	3750	2910	
719	-	9800	7300	6080	4210	3270	

※ Bearing type for horizontal motors:  
 Grease-lubricated anti-friction  
 Forced feed oil-lubricated sleeve bearings

## | Rated Power at 60 Hz |

### | 3.3 kV |

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HRP3	283	370	-	-	-	-	-
	285	450	-	-	-	-	-
	287	530	-	-	-	-	-
	289	600	-	-	-	-	-
	313	670	-	-	-	-	-
	315	750	-	-	-	-	-
	317	930	-	-	-	-	-
	355	1120	-	-	-	-	-
	357	1300	-	-	-	-	-
	403	1490	1100	870	650	-	-
	405	1680	1210	970	730	-	-
	407	1865	1370	1070	820	-	-
	409	-	1550	1200	910	-	-
	451	2200	-	-	-	-	-
	453	2390	1750	1330	985	680	460
	455	2650	1960	1490	1105	765	515
	457	-	2190	1660	1240	855	580
	459	-	2460	1870	1390	960	650
	501	2960	-	-	-	-	-
	503	3200	2740	2050	1580	1120	830
	505	3750	3060	2300	1770	1250	930
	507	-	3430	2580	1990	1410	1040
	509	-	3850	2890	2230	1580	1170
	561	4260	-	-	-	-	-
	563	4710	4110	3170	2510	1750	1330
	565	5350	4580	3600	2810	1960	1490
	567	-	5170	4000	3150	2190	1660
	569	-	-	-	3530	2460	1870
	631	5980	5870	4460	-	-	-
	633	6700	6520	5050	3950	2740	2130
	635	7500	7360	5620	4430	3060	2390
	637	-	8160	6320	4960	3430	2670
639	-	-	-	5560	3850	3000	
715	-	10000	7600	6210	4300	3340	
717	-	11000	8500	6960	4820	3750	
719	-	12500	9550	7800	5400	4200	

※ Bearing type for horizontal motors:  
 Grease-lubricated anti-friction  
 Forced feed oil-lubricated sleeve bearings

## | Rated Power at 60 Hz |

### | 4.16 kV |

Unit: kW

Type	Poles	2P	4P	6P	8P	10P	12P
HRP3	283	370	-	-	-	-	-
	285	450	-	-	-	-	-
	287	530	-	-	-	-	-
	289	600	-	-	-	-	-
	313	670	-	-	-	-	-
	315	750	-	-	-	-	-
	317	930	-	-	-	-	-
	355	1120	-	-	-	-	-
	357	1300	-	-	-	-	-
	403	1490	1065	835	625	-	-
	405	1680	1170	935	700	-	-
	407	1865	1320	1035	790	-	-
	409	-	1500	1160	880	-	-
	451	2040	-	-	-	-	-
	453	2210	1690	1285	955	660	445
	455	2450	1895	1440	1070	740	500
	457	-	2120	1610	1200	830	560
	459	-	2380	1810	1345	930	630
	501	2760	-	-	-	-	-
	503	2990	2650	1985	1530	1085	800
	505	3500	2960	2225	1710	1210	900
	507	-	3320	2495	1920	1365	1005
	509	-	3725	2795	2155	1530	1130
	561	3980	-	-	-	-	-
	563	4400	3980	3070	2425	1690	1285
	565	5000	4420	3480	2720	1895	1440
	567	-	5000	3870	3045	2120	1610
	569	-	-	-	3415	2380	1810
	631	5580	5670	4310	-	-	-
	633	6250	6310	4890	3825	2650	2060
	635	7000	7120	5440	4285	2960	2310
	637	-	7890	6110	4800	3320	2585
639	-	-	-	5380	3725	2900	
715	-	9670	7380	6010	4180	3240	
717	-	10800	8270	6735	4685	3635	
719	-	12100	9250	7550	5250	4075	

※ Bearing type for horizontal motors:  
 Grease-lubricated anti-friction  
 Forced feed oil-lubricated sleeve bearings

## | Rated Power at 60 Hz |

### | 6.6 kV |

Unit: kW

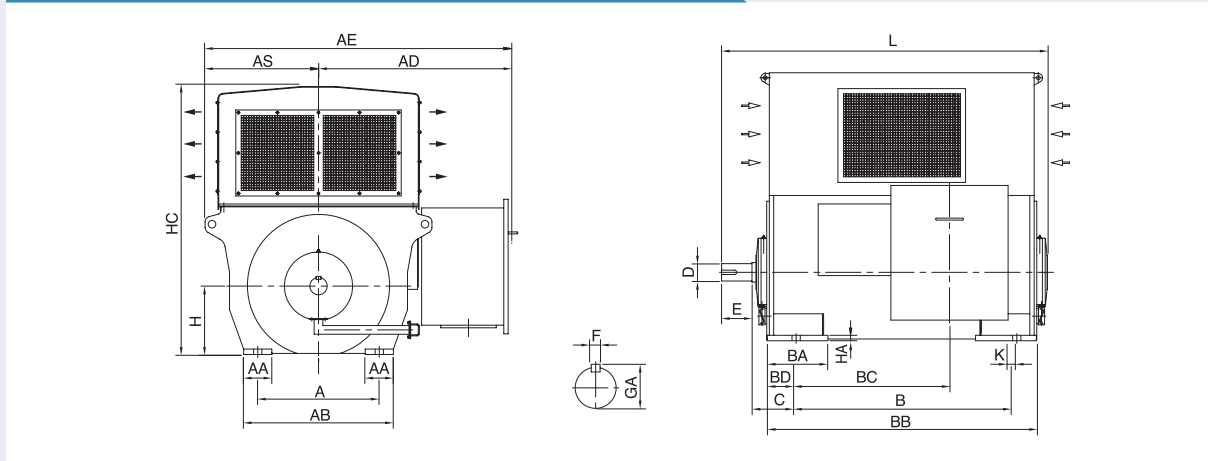
Type	Poles	2P	4P	6P	8P	10P	12P
HRP3	283	370	-	-	-	-	-
	285	450	-	-	-	-	-
	287	530	-	-	-	-	-
	289	600	-	-	-	-	-
	313	670	-	-	-	-	-
	315	750	-	-	-	-	-
	317	930	-	-	-	-	-
	355	1120	-	-	-	-	-
	357	1300	-	-	-	-	-
	403	1490	1030	800	600	-	-
	405	1680	1130	900	670	-	-
	407	1865	1270	1000	760	-	-
	409	-	1450	1120	850	-	-
	451	2040	-	-	-	-	-
	453	2210	1630	1240	925	640	430
	455	2450	1830	1390	1035	715	485
	457	-	2050	1560	1160	800	540
	459	-	2300	1750	1300	900	610
	501	2760	-	-	-	-	-
	503	2990	2560	1920	1480	1050	775
	505	3500	2860	2150	1650	1170	86
	507	-	3210	2410	1850	1320	970
	509	-	3600	2700	2080	1480	1090
	561	3980	-	-	-	-	-
	563	4400	3910	3110	2340	1630	1240
	565	5000	4350	3520	2630	1830	1390
	567	-	4920	3920	2940	2050	1560
	569	-	-	-	3300	2300	1750
	631	5580	5480	4230	-	-	-
	633	6250	6100	4800	3700	2560	1990
	635	7000	6880	5330	4140	2860	2230
	637	-	7620	6000	4640	3210	2500
639	-	-	-	5200	3600	2800	
715	-	9500	7150	5810	4060	3140	
717	-	10600	8000	6510	4550	3520	
719	-	11800	9000	7300	5100	3950	

※ Bearing type for horizontal motors:  
 Grease-lubricated anti-friction  
 Forced feed oil-lubricated sleeve bearings



| HRP3 |

Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRP3	283	2	<b>630</b>	120	750	848	1330	482	<b>800</b>	270	1100	620	150	<b>224</b>
	285	2												
	287	2						<b>900</b>			1200	670		
	289	2												
	313	2	<b>690</b>	130	820	884	1406	522	<b>1000</b>	280	1240	720	120	<b>200</b>
	315	2												
	317	2												
	355	2	<b>830</b>	140	950	943	1533	590	<b>1120</b>	280	1450	780	165	<b>375</b>
	357	2												
	403	2	<b>870</b>	150	1030	990	1643	653	<b>1250</b>	320	1550	875	150	<b>400</b>
405	2													
407	2													

Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	Weight (kg)	
HRP3	283	2	<b>280</b>	25	1139	1370	<b>38</b>	<b>70</b>	<b>140</b>	<b>20</b>	<b>74.5</b>	1450
	285	2										
	287	2				1470						1550
	289	2										1600
	313	2	<b>315</b>	25	1234	1515	<b>38</b>	<b>80</b>	<b>140</b>	<b>22</b>	<b>85</b>	1850
	315	2										1950
	317	2										2100
	355	2	<b>355</b>	30	1364	2020	<b>38</b>	<b>90</b>	<b>170</b>	<b>25</b>	<b>95</b>	2550
	357	2										2700
	403	2	<b>400</b>	30	1454	2192	<b>38</b>	<b>110</b>	<b>210</b>	<b>28</b>	<b>116</b>	3700
405	2										3850	
407	2										4000	

**Note**

1. Tolerance on "D" and "DA" dimensions will be m6.
2. Transmission element bores are made to an ISO H6 fit.
3. The dimensions printed in bold-face in the dimensional tables as A, B, C, D, E, F, GA, H, and K are comply with IEC rule.
4. Type of bearings.
  - Grease lubricated anti-friction
  - Forced feed oil lubricated sleeve bearings

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

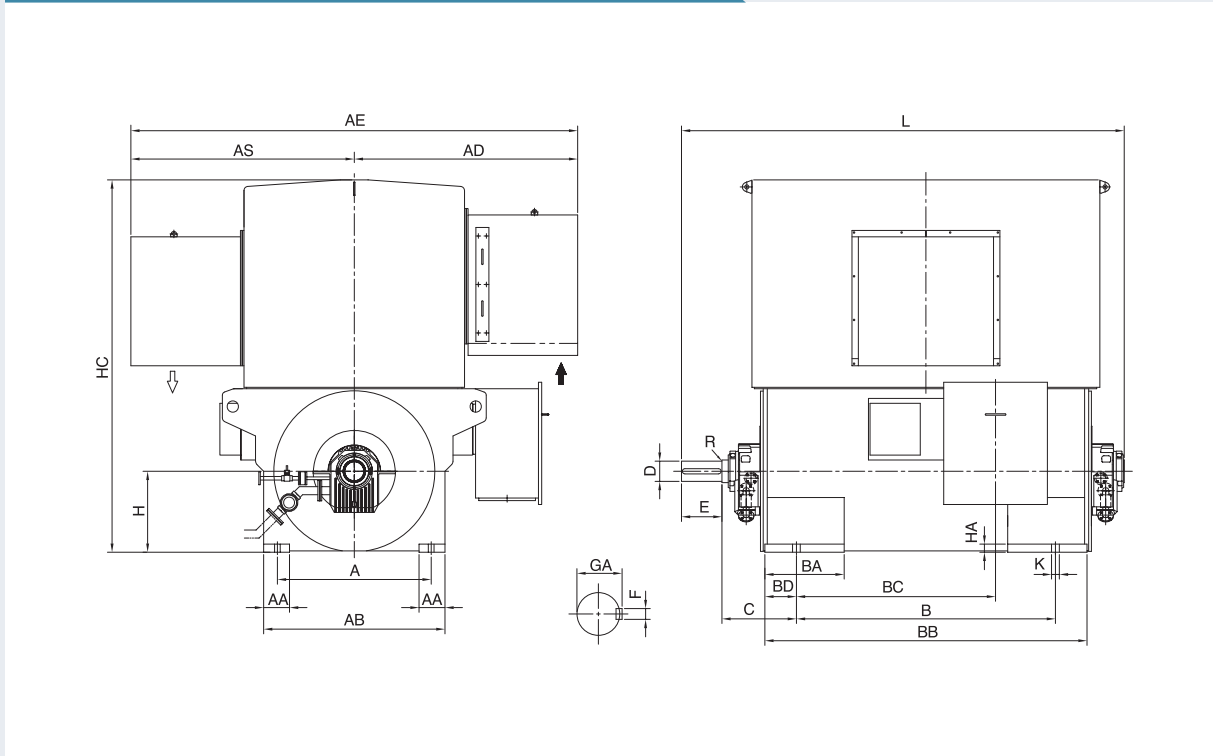
Dimensions	Tolerance (mm)	
A and B	Over 500 up to 750	±1.5
	Over 750 up to 1,000	±1.5
	Over 1,000	±1.5
H	Over 250 up to 600	-1.0
	Over 600 up to 1,000	-1.5

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



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRP3	451	2	850	150	1000	1260	2520	1260	1400	450	1790	1050	195	430
	453	2												
	455	2									1860	1080	230	460

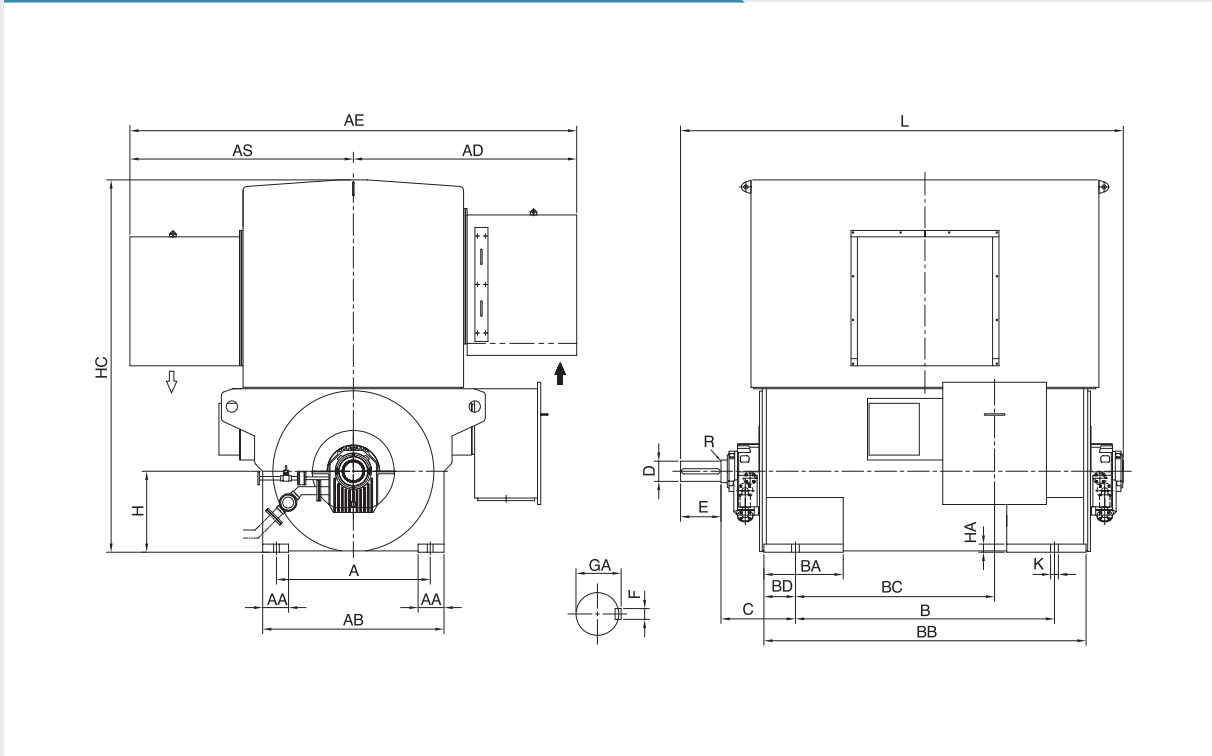
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	weight (kg)	
HRP3	451	2	450	45	2060	2465	35	110	210	28	116	5200
	453	2										5400
	455	2				2530						5800

**Note:** For bearing type and tolerances of dimensions, see page 81.

# HRP3

## Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRP3	501	2	950	160	1120	1380	2760	1380	1600	490	1880	1170	140	390
	503	2												
	505	2									1990	1230	195	460

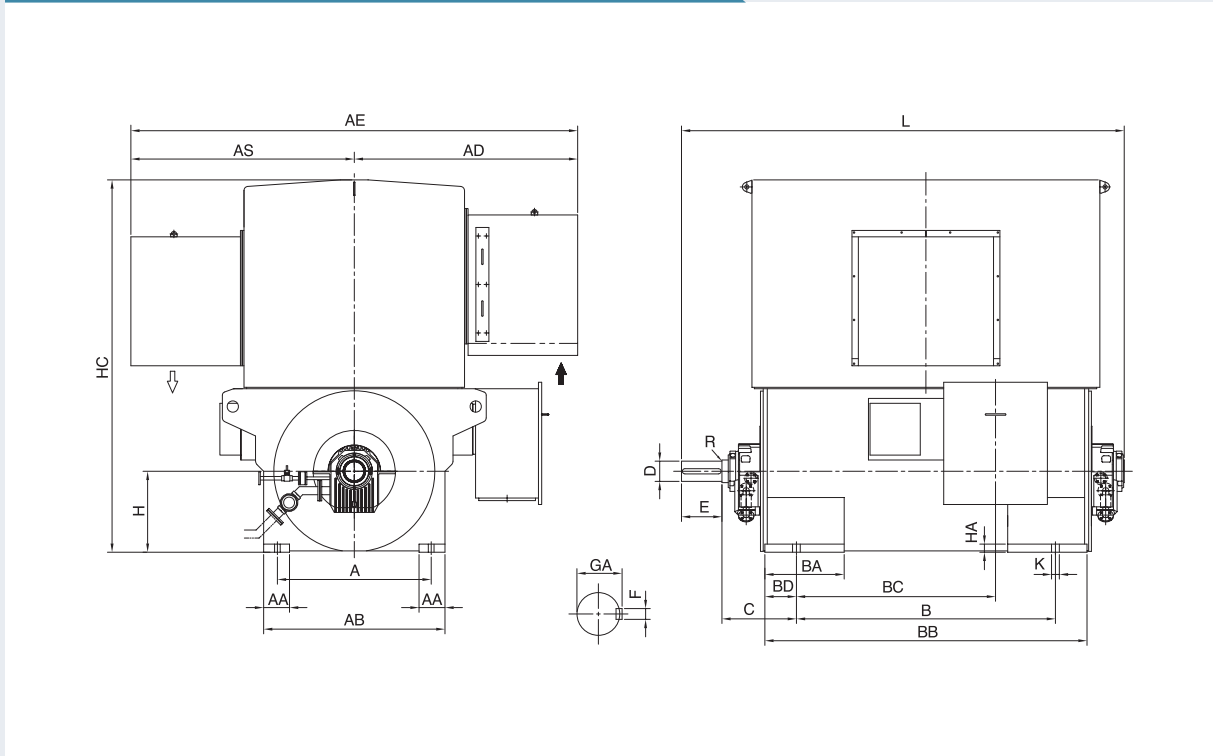
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	weight (kg)	
HRP3	501	2	500	45	2300	2610	48	125	250	32	132	6700
	503	2										7000
	505	2				2735						7600

**Note:** For bearing type and tolerances of dimensions, see page 81.

## | HRP3 |

### Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRP3	561	2	1120	160	1280	1470	2940	1470	1600	490	1990	1200	195	480
	563	2												
	565	2							1800	490	2140	1300	170	450

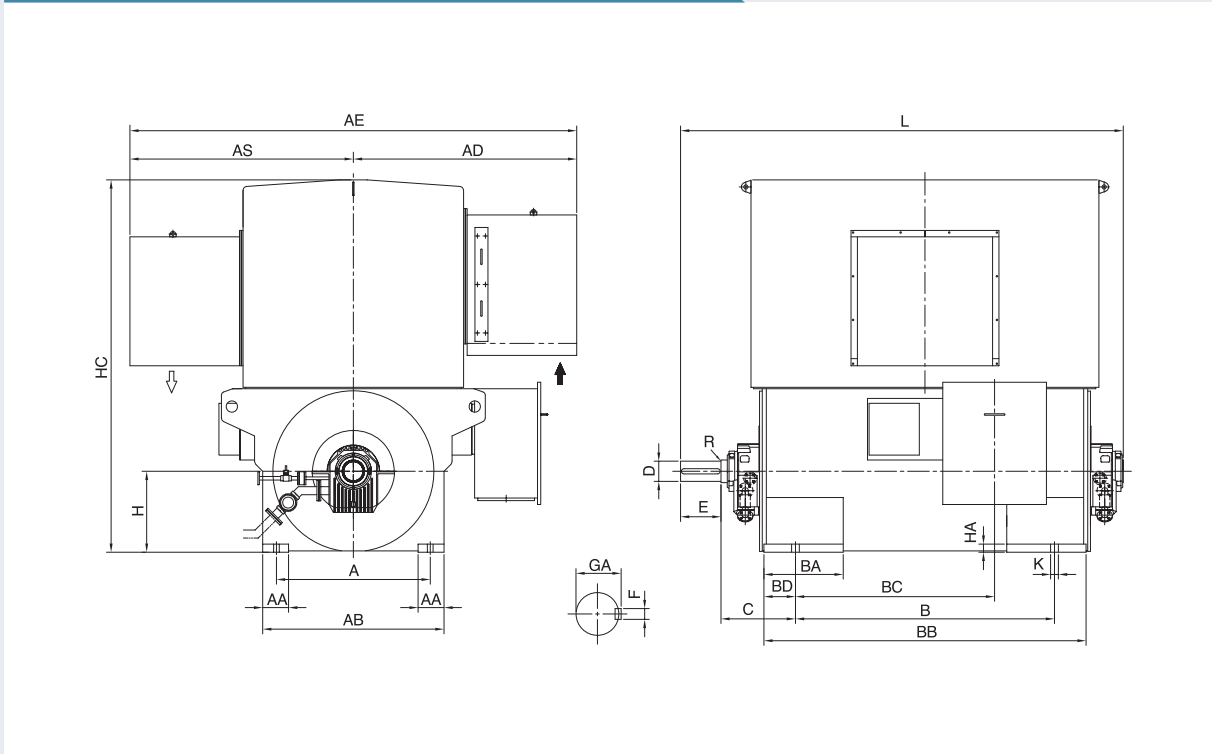
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	weight (kg)	
HRP3	561	2	560	50	2550	2790	48	150	250	36	158	8500
	563	2										9000
	565	2				2935						9600

**Note:** For bearing type and tolerances of dimensions, see page 81.

# HRP3

## Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	C	
HRP3	631	2	1250	190	1420	1530	3060	1530	1800	540	2220	1350	210	510
	633	2												
	635	2							2000	540	2320	1500	160	460

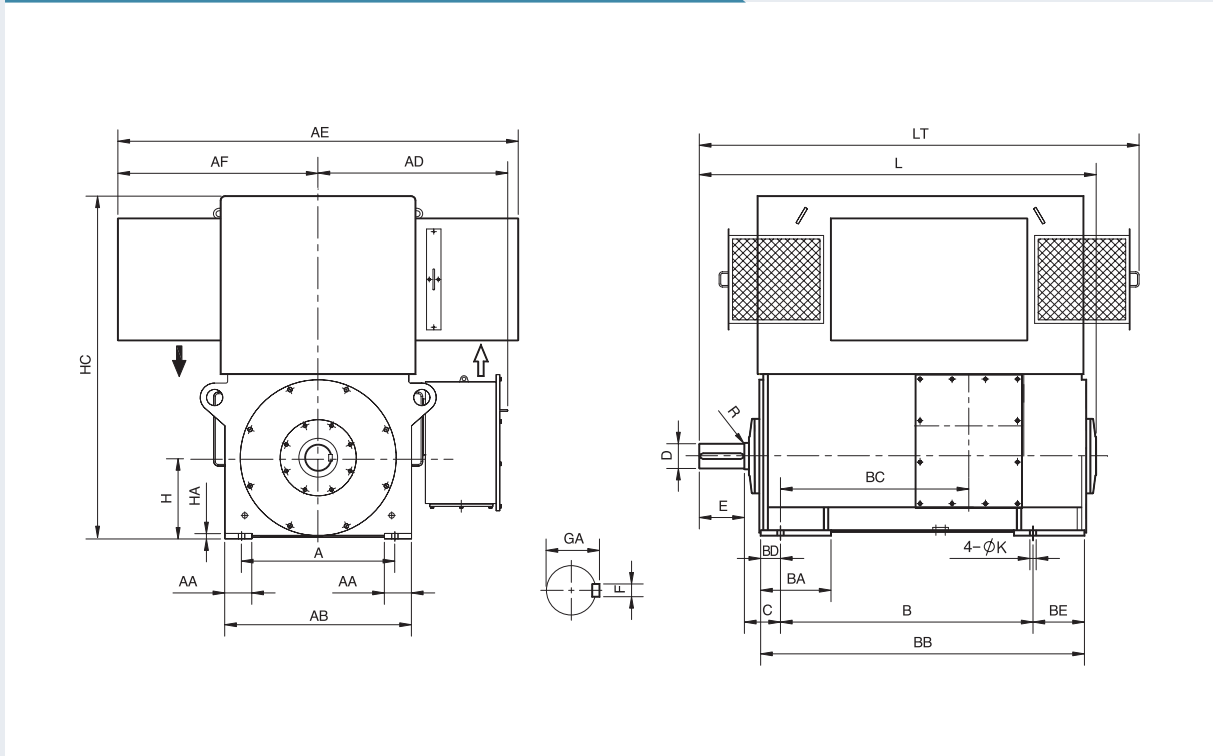
Unit: mm

Type	Poles	H	HA	HC	L	K	D	E	F	GA	weight (kg)	
HRP3	631	2	630	55	2780	3080	48	160	300	40	169	11500
	633	2										12600
	635	2				3180						13500

**Note:** For bearing type and tolerances of dimensions, see page 81.

## | HRP3 |

### Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AF	B	BA	BB	BC	BD	BE
HRP3	403	4	800	140	950	1150	2240	1120	275	1420	760	177	123
		6 - 8											123
	405	4											138
		6 - 8											123
	407	4											138
		6 - 8											138
	409	4											138
		6 - 8											138

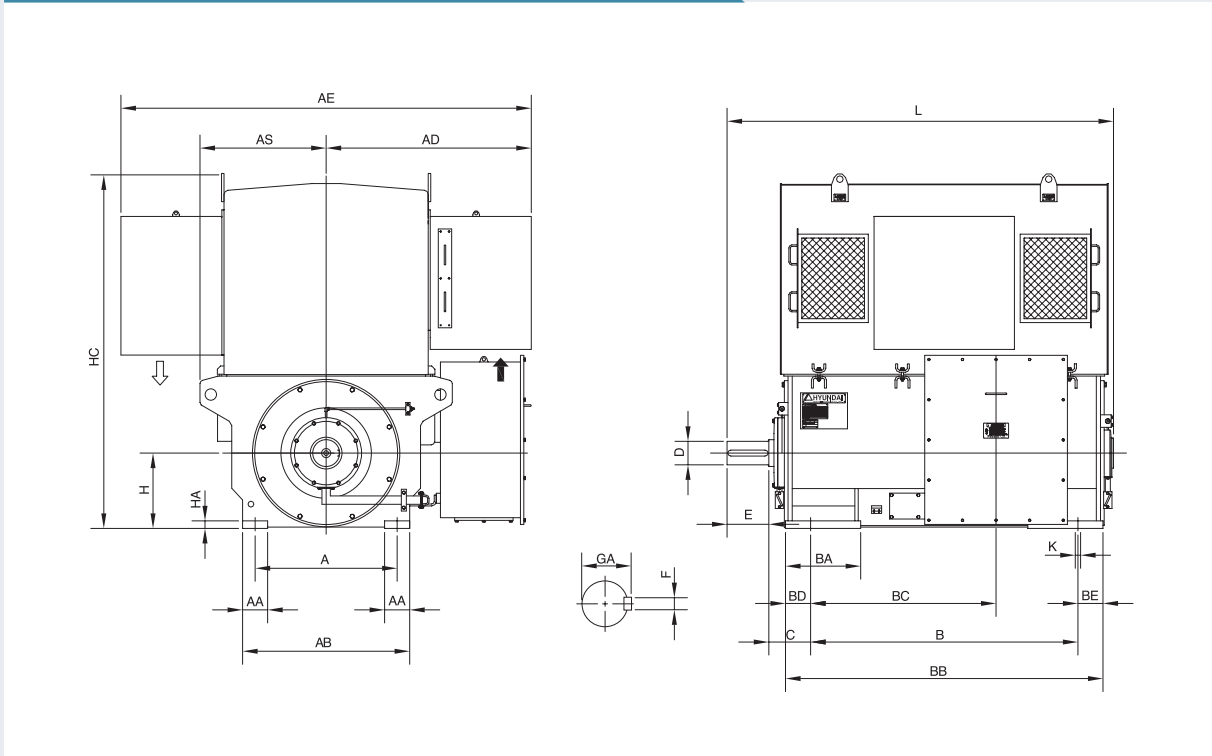
Unit: mm

Type	Poles	C	H	HA	HC	K	L	LT	D	E	F	GA	weight (kg)	
HRP3	403	270	400	30	1800	35	1810	1910	130	250	32	137	3200	
													6 - 8	3880
	405												4	4130
													6 - 8	4010
	407												4	4280
													6 - 8	4320
	409												4	5060
													6 - 8	4490

**Note:** For bearing type and tolerances of dimensions, see page 81.

| HRP3 |

Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AF	B	BA	BB	BC	BD	BE	
HRP3	453	4 - 6	850	150	1000	1230	2460	755	1400	450	1700	910	150	150
	455	4 - 6							1400		1700	910		
	457	4 - 6							1600		1900	1110		
	459	4 - 6							1600		1900	1110		

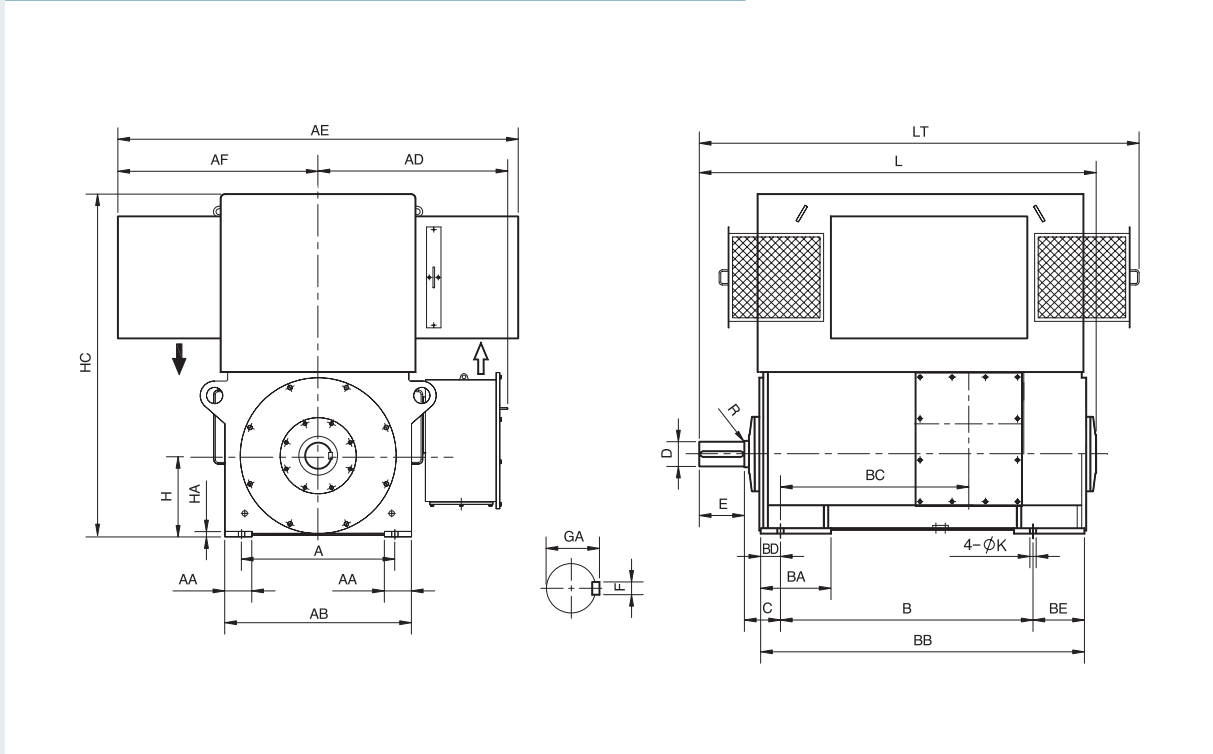
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	weight (kg)	
HRP3	453	4	250	450	45	2120	35	2120	140	250	36	148	5050
		6						2120					5050
	455	4						2120					5250
		6						2120					5250
	457	4						2320					5650
		6						2320					5650
	459	4						2320					5850
		6						2320					5900

Note: For bearing type and tolerances of dimensions, see page 81.

| HRP3 |

Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AF	B	BA	BB	BC	BD	BE	
HRP3	453	8 - 12	850	160	1035	1155	2310	1155	1250	390	1635	885	110	275
	455	8 - 12							1250		1635	885		275
	457	8 - 12							1400		1795	1045		285
	459	8 - 12							1400		1795	1045		285

Unit: mm

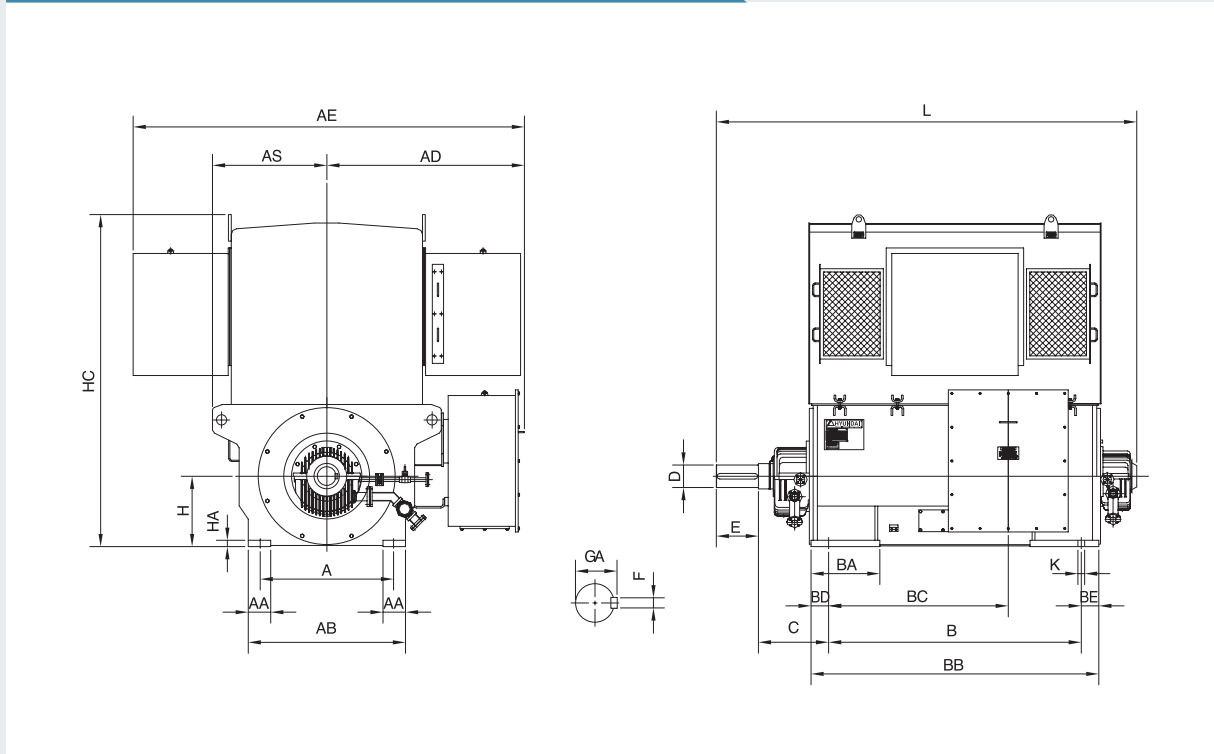
Type	Poles	C	H	HA	HC	K	L	LT	D	E	F	GA	weight (kg)	
HRP3	453	8-12	200	450	30	2030	35	2090	2390	140	250	36	148	5250
	455	8-12						2090	2390					5350
	457	8-12						2250	2450					5850
	459	8-12						2250	2450					6100

**Note:** For bearing type and tolerances of dimensions, see page 81.



# HRP3

## Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AF	B	BA	BB	BC	BD	BE	
HRP3	503	4	950	160	1120	1410	2820	815	1600	490	1850	1080	125	125
	505	4							1600		1850	1080		
	507	4							1800		2050	1280		
	509	4							1800		2050	1280		

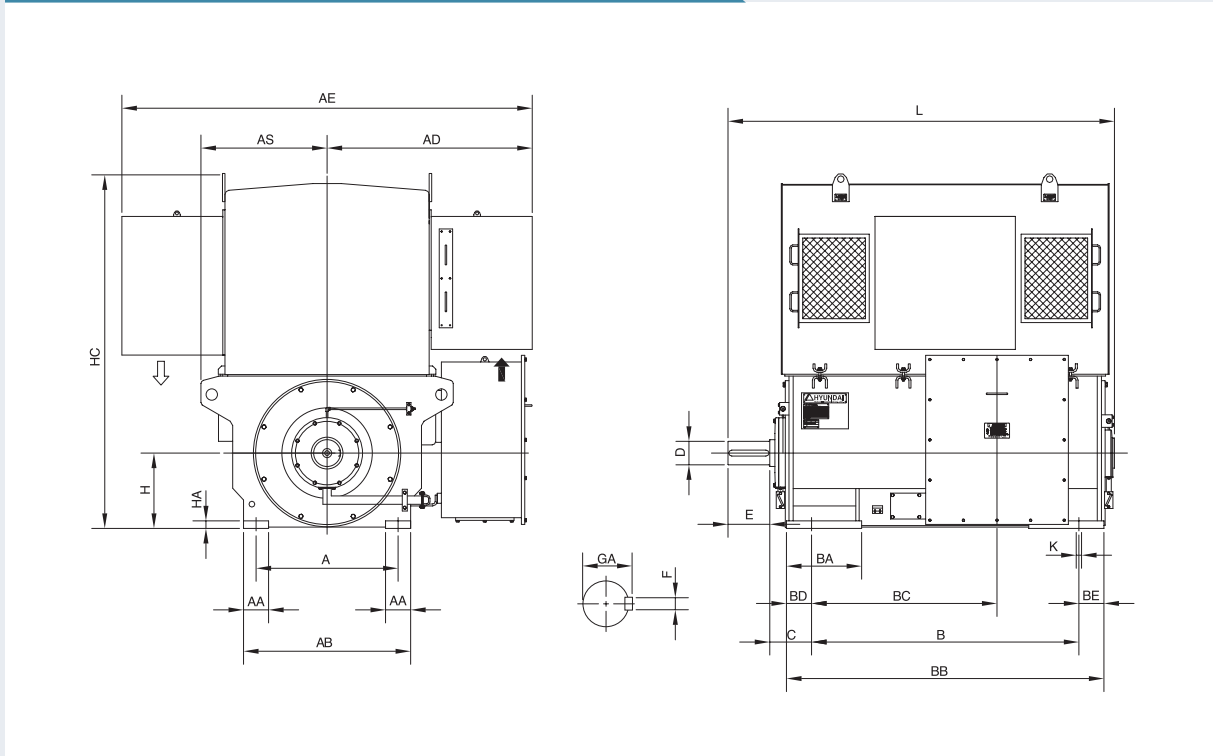
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	weight (kg)	
HRP3	503	4	500	500	45	2360	48	2800	160	300	40	169	6550
	505	4						2800					6800
	507	4						3000					7300
	509	4						3000					7650

Note: For bearing type and tolerances of dimensions, see page 81.

## | HRP3 |

### Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRP3	503	6	<b>950</b>	160	1120	1410	2820	815	<b>1600</b>	490	1850	1080	125	125
	505	6							<b>1600</b>		1850	1080		
	507	6							<b>1800</b>		2050	1280		
	509	6							<b>1800</b>		2050	1280		

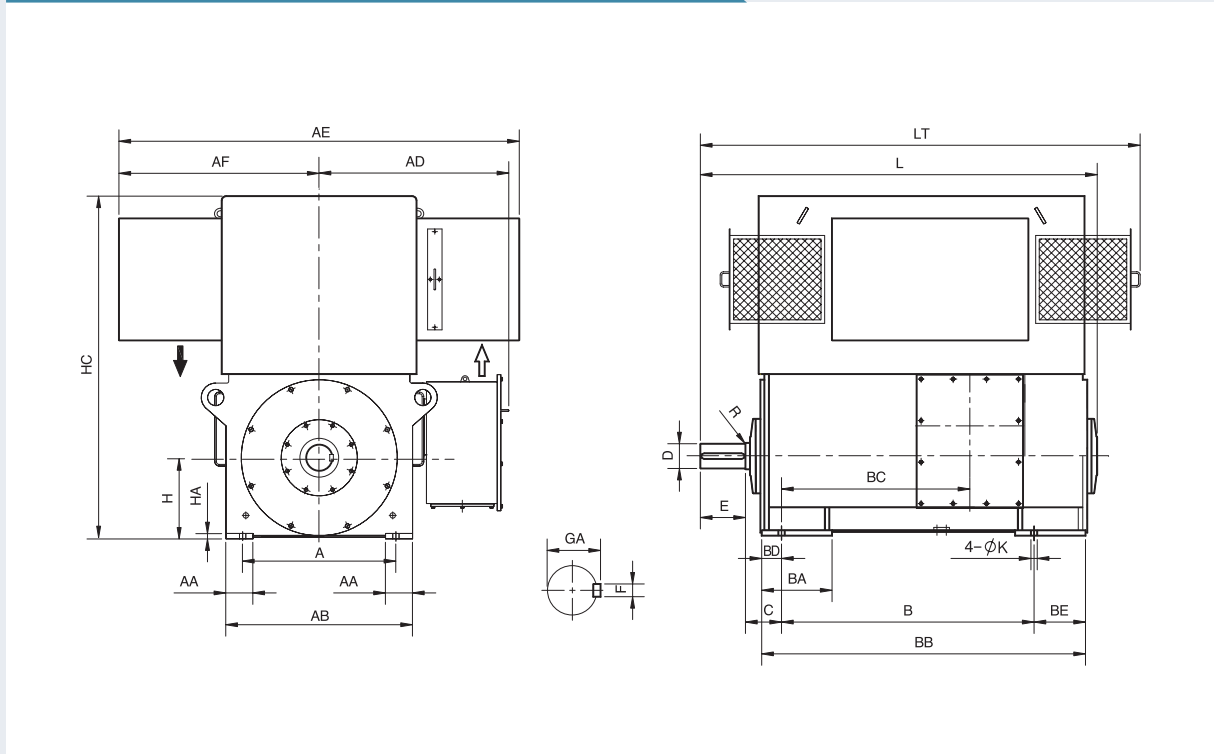
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	weight (kg)	
HRP3	503	6	<b>250</b>	<b>500</b>	45	2360	<b>48</b>	2360	<b>170</b>	<b>300</b>	<b>40</b>	<b>179</b>	6150
	505	6					2360						6400
	507	6					2560						6950
	509	6					2560						7300

**Note:** For bearing type and tolerances of dimensions, see page 81.

# HRP3

## Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AF	B	BA	BB	BC	BD	BE	
HRP3	503	8 - 12	950	180	1155	1230	2780	1390	1400	345	1755	980	135	355
	505	8 - 12							1400		1755	980		220
	507	8 - 12							1600		1945	1170		210
	509	8 - 12							1600		1945	1170		210

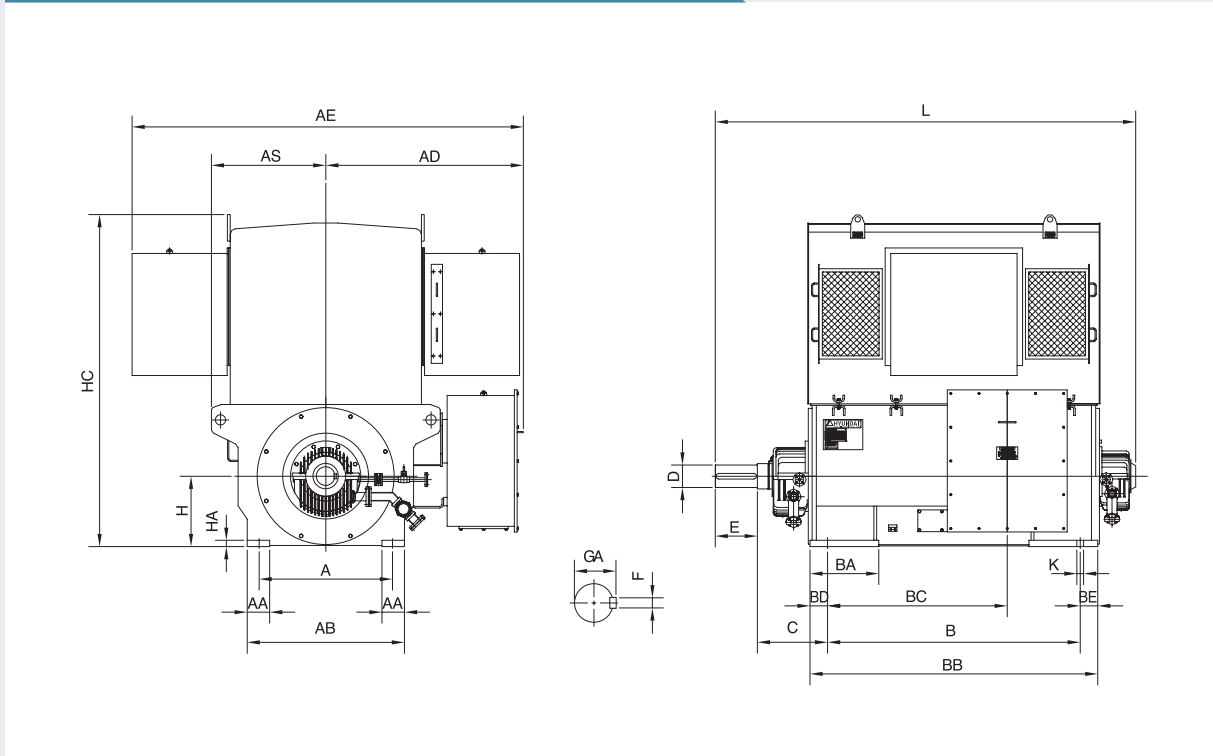
Unit: mm

Type	Poles	C	H	HA	HC	K	L	LT	D	E	F	GA	weight (kg)	
HRP3	503	8 - 12	224	500	34	2290	42	2230	2530	170	300	40	179	6200
	505	8 - 12						2230	2530					6400
	507	8 - 12						2420	2620					7150
	509	8 - 12						2420	2620					7500

**Note:** For bearing type and tolerances of dimensions, see page 81.

| HRP3 |

Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRP3	563	4	1120	160	1280	1500	3000	905	1600	520	1930	1115	165	165
	565	4							1800		2130	1315		
	567	4							1800		2130	1315		

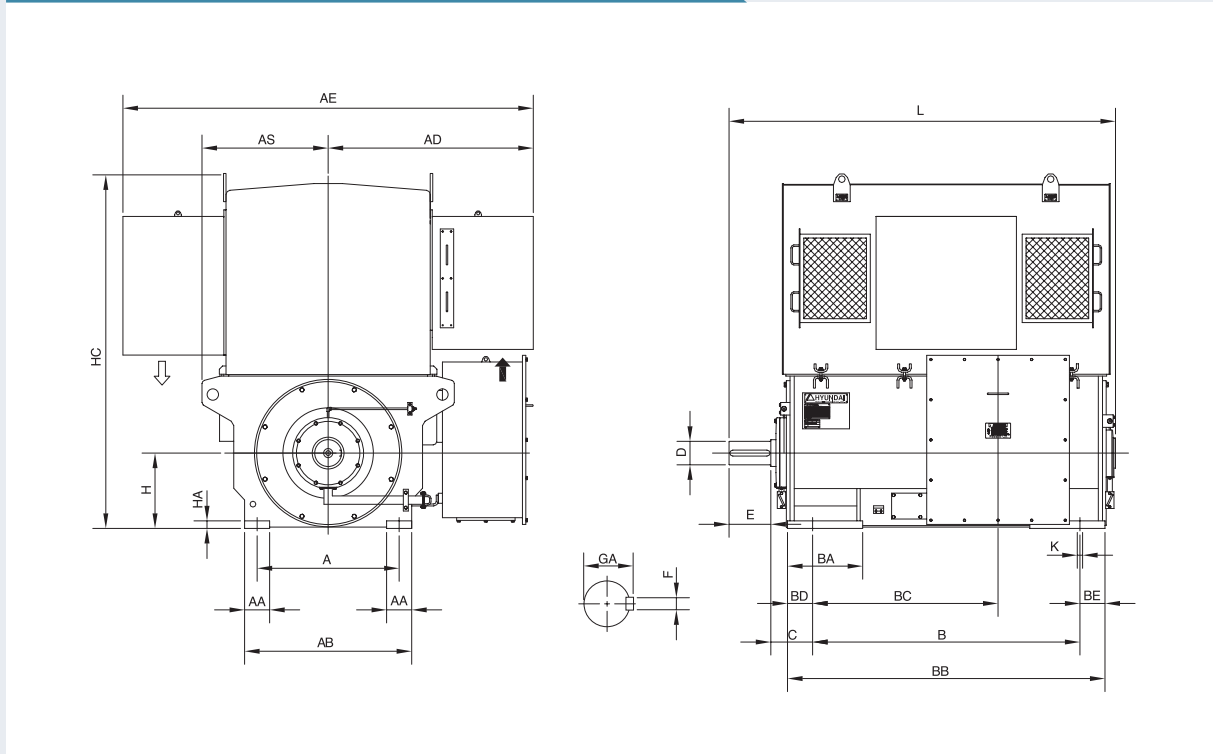
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	weight (kg)	
HRP3	563	4	560	560	50	2600	48	2970	190	350	45	200	8950
	565	4						3170					9500
	567	4						3170					9950

**Note:** For bearing type and tolerances of dimensions, see page 81.

| HRP3 |

Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRP3	563	6	1120	160	1280	1500	3000	905	1600	520	1930	1115	165	165
	565	6							1800		2130	1315		
	567	6							1800		2130	1315		

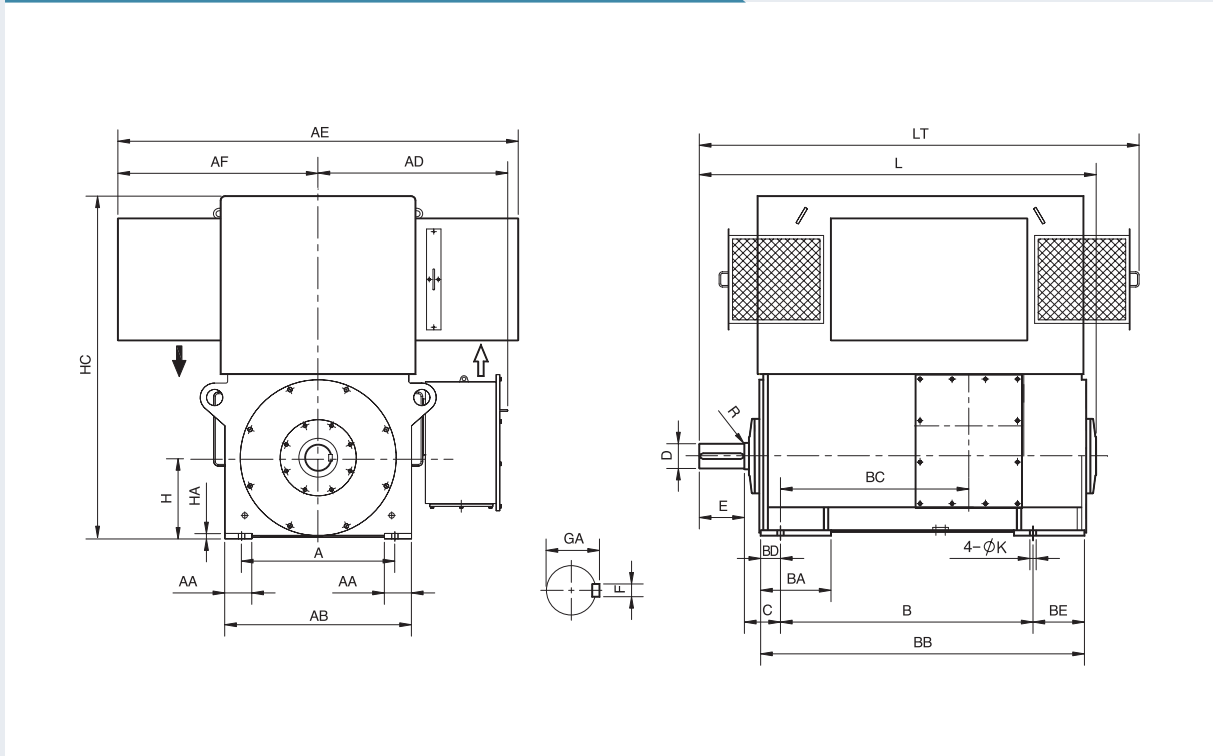
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	weight (kg)	
HRP3	563	6	280	560	50	2600	48	2500	190	350	45	200	9000
	565	6						2700					9700
	567	6						2700					10100

Note: For bearing type and tolerances of dimensions, see page 81.

| HRP3 |

Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AF	B	BA	BB	BC	BD	BE	
HRP3	563	8 - 12	1120	180	1285	1300	3250	1625	1600	445	1945	1125	170	175
	565	8 - 12							1600		1945	1125		
	567	8 - 12							1800		2145	1325		
	569	8 - 12							1800		2145	1325		

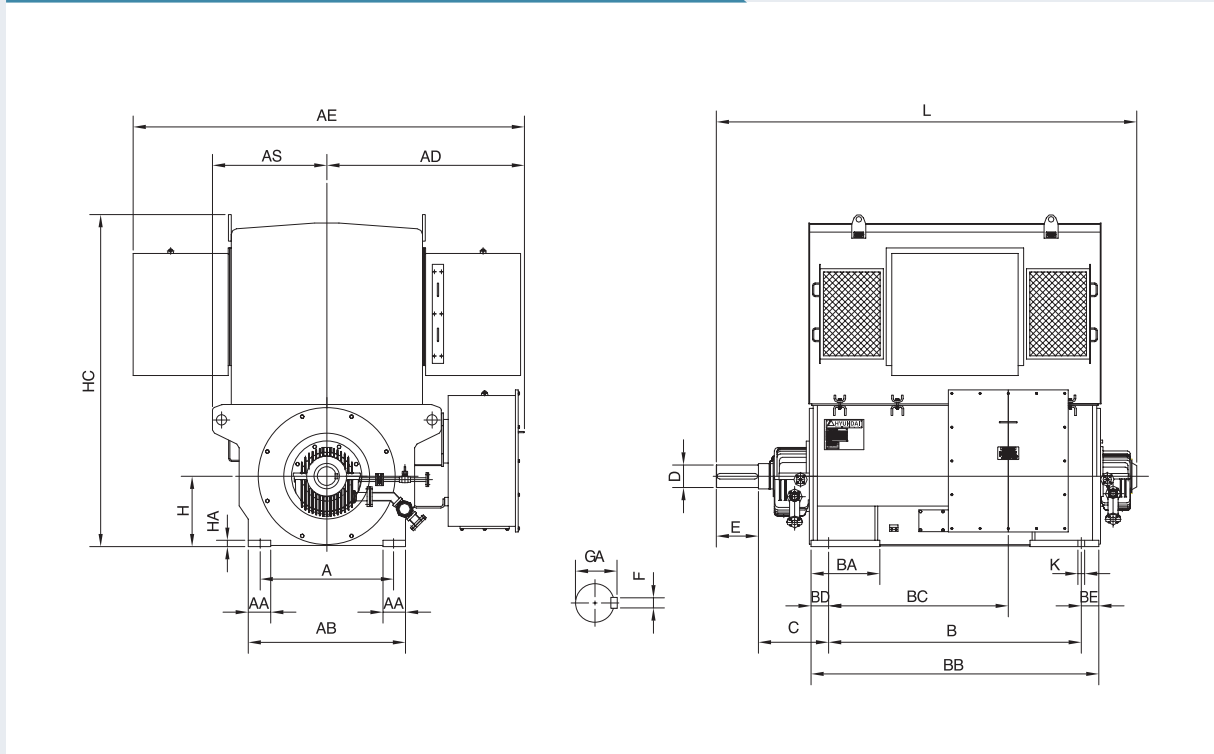
Unit: mm

Type	Poles	C	H	HA	HC	K	L	LT	D	E	F	GA	weight (kg)	
HRP3	563	8 - 12	280	560	35	2510	48	2500	2800	190	350	45	200	9050
	565	8 - 12						2500	2800					9350
	567	8 - 12						2700	2900					10050
	569	8 - 12						2700	2900					10550

**Note:** For bearing type and tolerances of dimensions, see page 81.

# HRP3

## Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRP3	631	4	1250	190	1420	1570	3140	975	1800	540	2110	1305	155	155
	633	4							1800		2110	1305		
	635	4							2000		2310	1505		
	637	4							2000		2310	1505		

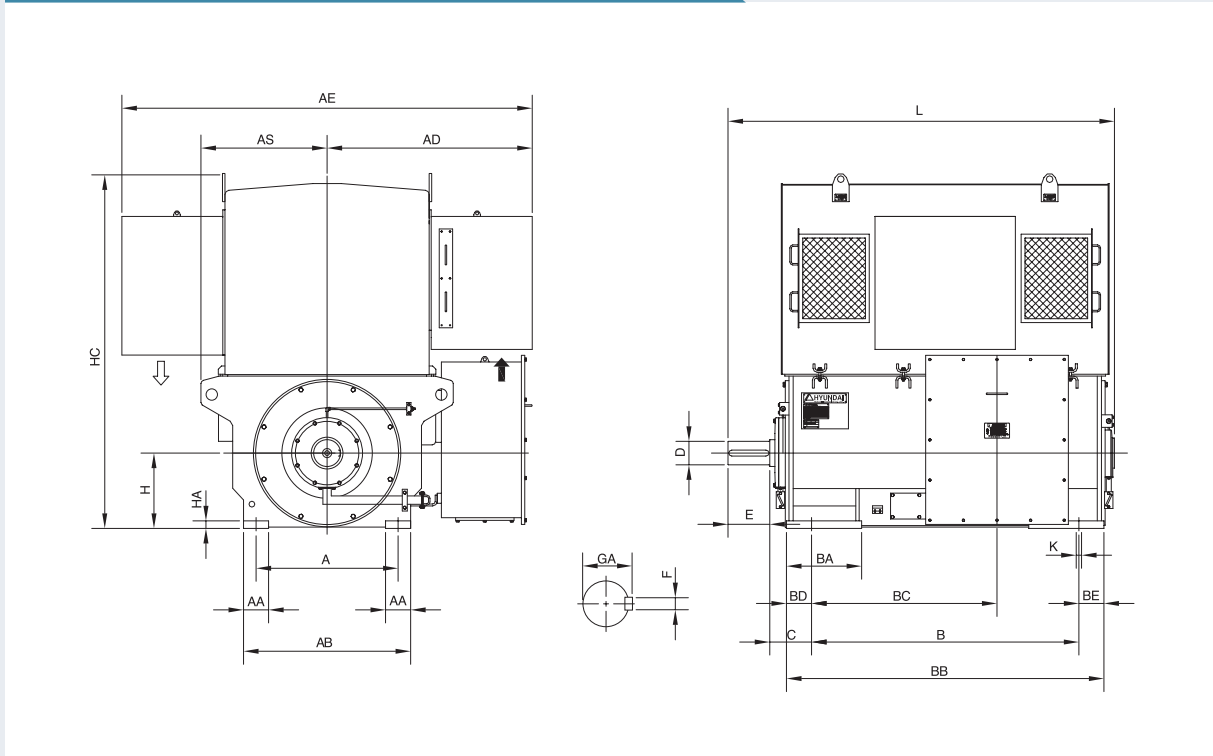
Unit: mm

Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	Weight (kg)	
HRP3	631	4	600	630	55	2830	48	3280	220	350	50	230	12200
	633	4						3280					12600
	635	4						3480					13500
	637	4						3480					14100

**Note:** For bearing type and tolerances of dimensions, see page 81.

| HRP3 |

Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	
HRP3	631	6	1250	190	1420	1570	3140	975	1800	540	2110	1305	155	155
	633	6							1800		2110	1305		
	635	6							2000		2310	1505		
	637	6							2000		2310	1505		

Unit: mm

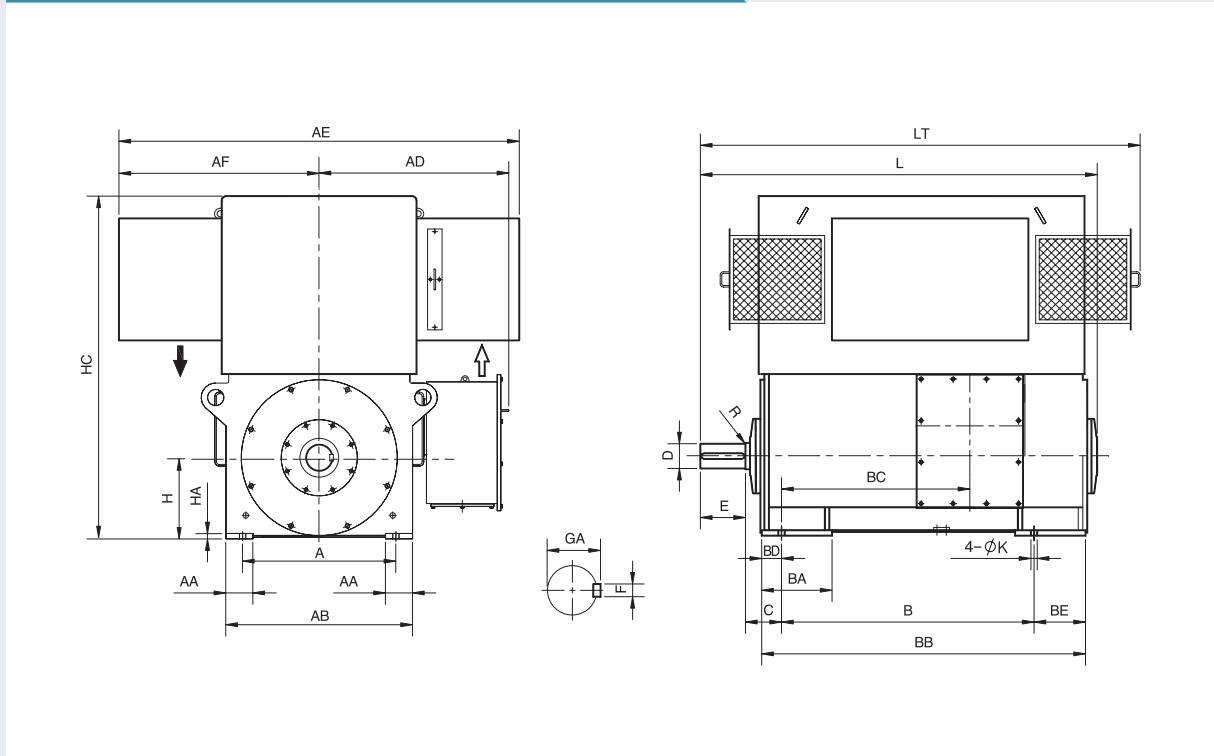
Type	Poles	C	H	HA	HC	K	L	D	E	F	GA	weight (kg)	
HRP3	631	6	280	630	55	2830	48	2690	220	350	50	230	11600
	633	6						2690					12100
	635	6						2890					13000
	637	6						2890					13600

**Note:** For bearing type and tolerances of dimensions, see page 81.



# HRP3

## Mounting B3 / Degree of Protection IP23W, IP24W



Unit: mm

Type	Poles	A	AA	AB	AD	AE	AF	B	BA	BB	BC	BD	BE	
HRP3	633	8 - 12	1180	220	1420	1360	3800	1900	1800	500	2240	1440	145	295
	635	8 - 12							1800		2240	1440		295
	637	8 - 12							2000		2480	1680		335
	639	8 - 12							2000		2480	1680		335

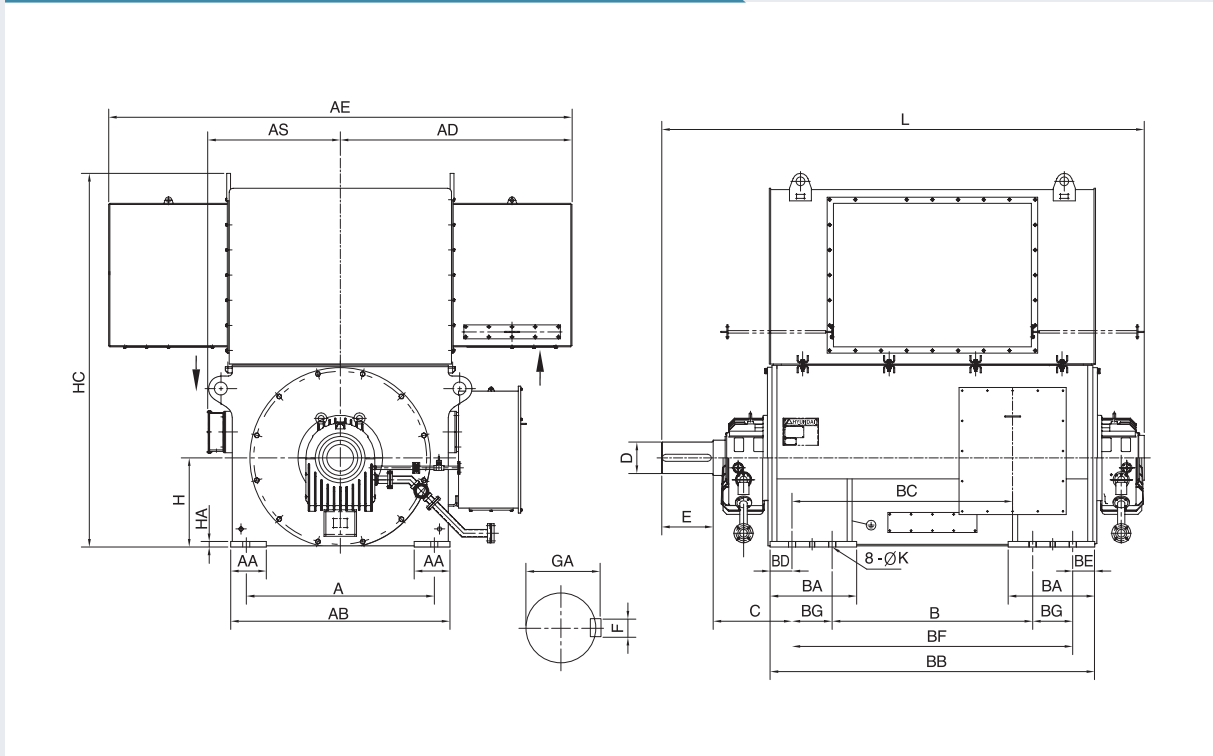
Unit: mm

Type	Poles	C	H	HA	HC	K	L	LT	D	E	F	GA	weight (kg)	
HRP3	633	8 - 12	315	630	38	2820	48	2860	3210	220	350	50	231	12650
	635	8 - 12						2860	3210					13250
	637	8 - 12						3100	3350					14350
	639	8 - 12						3100	3350					15050

**Note:** For bearing type and tolerances of dimensions, see page 81.

## | HRP3 |

Mounting B3 / Degree of Protection IP23W, IP24W



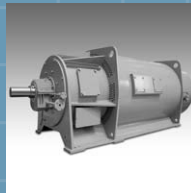
Unit: mm

Type	Poles	A	AA	AB	AD	AE	AS	B	BA	BB	BC	BD	BE	BF	BG	
HRP3	715	4 - 12	1500	285	1750	1850	3700	1060	1400	690	2390	1560	175	175	2040	320
	717	4 - 12							1600		2590	1760				
	719	4 - 12							1600		2590	1760				

Unit: mm

Type	Poles	C	D	E	F	GA	H	HA	HC	K	L	weight (kg)	
HRP3	715	4	630	250	410	56	262	710	44	2980	56	3650	19200
		6										3650	18800
		8 - 12										3650	19400
	717	4										3850	20500
		6										3850	20100
		8 - 12										3850	20900
	719	4										3850	21400
		6										3850	21200
		8 - 12										3850	21900

**Note:** For bearing type and tolerances of dimensions, see page 81.



# 06

Totally Enclosed Air-to-Air Cooled Wound Rotor | **HLS7 Series**



## | Rated Power at 50 Hz |

### | 3.3 kV |

Unit: kW

Type	Poles	4P	6P	8P	10P	12P
HLS7	560	440	380	260	190	160
	562	490	430	290	220	180
	564	550	480	330	240	190
	566	600	530	370	270	210
	630	700	580	420	310	270
	632	770	650	450	380	300
	634	840	730	530	420	330
	636	910	830	580	460	370
	710	1100	880	680	530	400
	712	1190	1000	760	580	440
	714	1330	1080	830	630	480
	716	1390	1180	-	-	-
	800	1710	1330	990	820	650
	802	1900	1500	1100	880	690
	804	2060	1650	1210	980	750
	806	2320	1770	1350	1080	820
	902	2630	2030	1690	1140	990
	903	2960	2200	1950	1340	1090
	904	3320	2430	2190	1540	1220
	905	3880	2600	2330	1630	1380
906	-	2860	-	-	-	

Motor for 4160 V: Output decreased by 3.5%

### | 6.6 kV |

Unit: kW

Type	Poles	4P	6P	8P	10P	12P
HLS7	560	420	370	240	180	-
	562	460	420	280	190	-
	564	530	450	310	220	170
	566	570	500	350	240	190
	630	670	560	400	280	240
	632	740	630	430	340	280
	634	800	700	510	380	310
	636	880	790	550	430	340
	710	1050	860	650	510	380
	712	1140	970	730	550	430
	714	1280	1050	800	610	470
	716	1340	1140	-	-	-
	800	1650	1270	960	790	630
	802	1830	1430	1060	860	670
	804	1980	1570	1170	950	730
	806	2230	1680	1300	1050	790
	902	2540	1960	1580	1110	960
	903	2860	2120	1830	1300	1060
	904	3210	2330	2070	1500	1180
	905	3750	2500	2210	1580	1270
906	-	2750	-	-	-	

※ Bearing type for horizontal motors:

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

## | Rated Power at 60 Hz |

### | 3.3 kV |

Unit: kW

Type	Poles	4P	6P	8P	10P	12P
HLS7	560	490	460	310	230	190
	562	550	520	350	260	210
	564	620	570	390	290	230
	566	670	630	440	320	250
	630	780	700	500	375	320
	632	860	780	540	450	355
	634	940	870	640	500	400
	636	1020	990	690	550	440
	710	1230	1060	815	635	480
	712	1330	1200	910	700	530
	714	1490	1290	1000	760	580
	716	1560	1410	-	-	-
	800	1920	1600	1190	985	780
	802	2130	1800	1320	1060	830
	804	2310	1980	1450	1180	905
	806	2600	2120	1620	1300	980
	902	2950	2440	2025	1370	1190
	903	3310	2640	2345	1610	1310
	904	3720	2910	2630	1850	1460
	905	4350	3120	2800	1960	1650
906	-	3430	-	-	-	

Motor for 4160 V: Output decreased by 3.5%

### | 6.6 kV |

Unit: kW

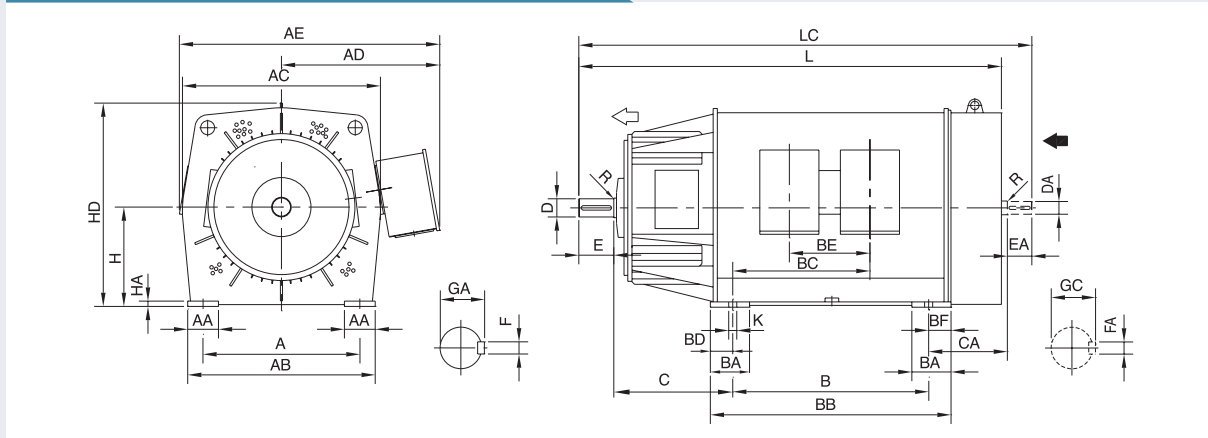
Type	Poles	4P	6P	8P	10P	12P
HLS7	560	470	440	290	180	-
	562	520	500	330	190	-
	564	590	540	375	220	200
	566	640	600	420	240	230
	630	750	670	480	280	290
	632	830	750	520	340	330
	634	900	840	610	380	370
	636	980	950	660	430	410
	710	1180	1030	780	510	460
	712	1280	1165	870	550	510
	714	1430	1260	960	610	560
	716	1500	1370	-	-	-
	800	1850	1520	1150	790	750
	802	2050	1720	1270	860	800
	804	2220	1880	1400	950	875
	806	2500	2020	1560	1050	950
	902	2850	2350	1900	1110	1150
	903	3200	2540	2200	1300	1270
	904	3600	2800	2480	1500	1420
	905	4200	3000	2650	1580	1520
906	-	3300	-	-	-	

※ Bearing type for horizontal motors:

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

HLS7 |

Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AC	AD	AE	B	BA	BB	BC	BD	BE	BF	C	CA	H	
HLS7	560	4 -	950	180	1130	1180	1070	1755	1120	245	1400	885	125	620	155	670	500	560
	562	4 -							1120		1400	885						
	564	4 -							1250		1530	950						
	566	4 -							1250		1530	950						
	630	4 -	1060	180	1240	1310	1150	1850	1250	295	1570	970	125	620	195	750	530	630
	632	4 -							1250		1570	970			195		530	
	634	4 -							1400		1730	1050			205		560	
	636	4 -							1400		1730	1050			205		560	
	710	4 -	1120	220	1340	1420	1330	2090	1400	280	1720	1025	160	620	160	850	530	710
	712	4 -							1400		1720	1025						
	714	4 -							1600		1920	1125						
	716	4 -							1600		1920	1125						
	800	4	1250	220	1470	1590	1470	2290	1600	250	1890	1110	145	620	145	1100	800	800
		6 -							1600		1890	1110				800	600	
	802	4							1600		1890	1110				1100	800	
		6 -							1600		1890	1110				800	600	
804	4							1800		2090	1210				1100	800		
	6 -							1800		2090	1210				800	600		
806	4							1800		2090	1210				1100	800		
	6 -							1800		2090	1210				800	600		

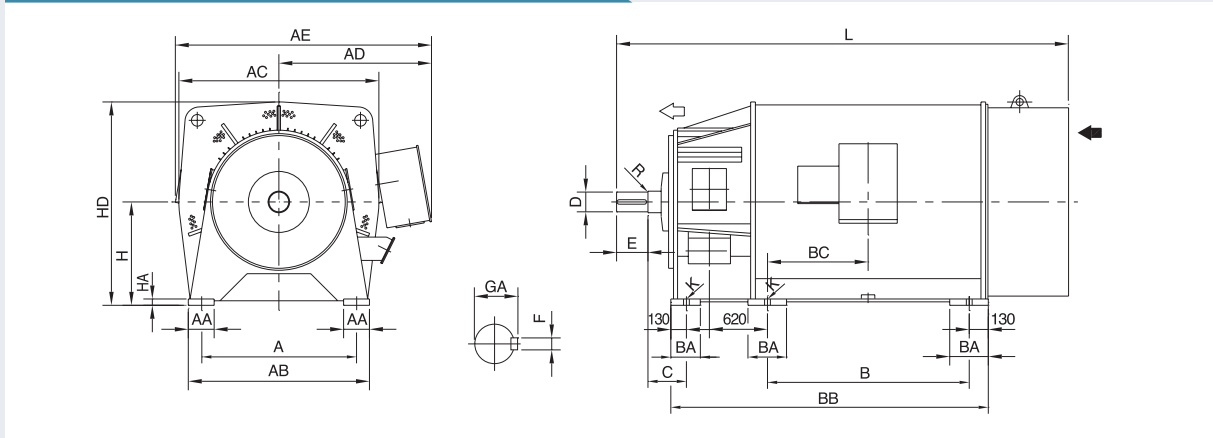
Unit: mm

Type	Poles	HA	HD	K	L	LC	D	DA	E	EA	F	FA	GA	GC	Weight (kg)	
HLS7	560	4 -	34	1150	42	2475	2670	100	85	210	170	28	22	106	90	3900
	562	4 -				2475	2670	100	85				22	106	90	4100
	564	4 -				2605	2800	110	95				25	116	100	4400
	566	4 -				2605	2800	110	95				25	116	100	4500
	630	4	34	1285	42	2725	2910	110	95	210	170	28	25	116	100	5200
		6 -				2725	2910	120	100		210	32	28	127	106	5200
	632	4				2725	2910	110	95		170	28	25	116	100	5300
		6 -				2725	2910	120	100		210	32	28	127	106	5400
	634	4				2885	3130	120	100		210	32	28	127	106	5800
		6 -				2925	3170	130	110	250	210	32	28	137	116	5800
	636	4				2885	3130	120	100	210	210	32	28	127	106	6000
		6 -				2925	3170	130	110	250	210	32	28	137	116	6000
	710	4	38	1430	48	3020	3240	130	110	250	210	32	28	137	116	7100
		6 -				3020	3240	130	110			32	28	137	116	7000
	712	4				3020	3240	130	110			32	28	137	116	7300
		6 -				3020	3240	130	110			32	28	137	116	7300
	714	4				3220	3440	140	120			36	32	148	127	8000
		6 -				3220	3440	140	120			36	32	148	127	7900
	716	4				3220	3440	140	120			36	32	148	127	8300
		6 -				3220	3440	140	120			36	32	148	127	8200
	800	4	38	1590	48	3710	3960	140	120	250	210	36	32	148	127	9300
		6 -				3210	3500	150	130	250	250	36	32	158	137	9200
	802	4				3710	3960	140	120	250	210	36	32	148	127	9500
		6 -				3210	3500	150	130	250	250	36	32	158	137	9600
	804	4				3910	4200	150	130	250	250	36	32	158	137	10500
		6 -				3460	3750	160	140	300	250	40	36	169	148	10400
	806	4				3910	4200	150	130	250	250	36	32	158	137	10800
		6 -				3460	3750	160	140	300	250	40	36	169	148	10800

Note: For bearing type and tolerances of dimensins, see page 104.

## | HLS7 |

### Mounting B3 / Degree of Protection IP54



Unit: mm

Type	Poles	A	AA	AB	AC	AD	AE	B	BA	BB	BC	BD	BE	
HLS7	902	4	<b>1400</b>	220	1620	1790	1400	2340	<b>1700</b>	260	2820	850	130	130
		6												
		8 -												
	903	4	<b>1400</b>	220	1620	1790	1400	2340	<b>1820</b>	260	2940	910	130	130
		6							<b>1700</b>		2820	850		
		8 -							<b>1820</b>		2940	910		
	904	4	<b>1400</b>	220	1620	1790	1400	2340	<b>1940</b>	260	3060	970	130	130
		6							<b>1820</b>		2940	910		
		8 -							<b>2060</b>		3180	1030		
	905	4	<b>1400</b>	220	1620	1790	1400	2340	<b>2180</b>	260	3300	1090	130	130
		6							<b>1940</b>		3060	970		
		8 -							<b>2180</b>		3300	1090		
906	6							<b>2180</b>		3300	1090			

Unit: mm

Type	Poles	C	H	HA	HD	K	L	D	E	F	GA	Weight(KG)	
HLS7	902	4	<b>475</b>	<b>900</b>	38	1880	<b>48</b>	4330	<b>150</b>	<b>250</b>	<b>36</b>	<b>158</b>	13200
		6	<b>235</b>					3900	<b>160</b>	<b>300</b>	<b>40</b>	<b>169</b>	12900
		8 -	<b>235</b>					3900	<b>160</b>	<b>300</b>	<b>40</b>	<b>169</b>	13700
	903	4	<b>475</b>	<b>900</b>	38	1880	<b>48</b>	4500	<b>160</b>	<b>300</b>	<b>40</b>	<b>169</b>	13800
		6	<b>235</b>					3900					13400
		8 -	<b>235</b>					4020					14300
904	4	<b>475</b>	<b>900</b>	38	1880	<b>48</b>	4620	<b>160</b>	<b>300</b>	<b>40</b>	<b>169</b>	14100	
	6	<b>235</b>					4020	<b>160</b>			<b>169</b>	14000	
	8 -	<b>235</b>					4260	<b>170</b>			<b>179</b>	14700	
905	4	<b>475</b>	<b>900</b>	38	1880	<b>48</b>	4900	<b>160</b>	<b>300</b>	<b>40</b>	<b>169</b>	14600	
	6	<b>235</b>					4140	<b>160</b>		<b>40</b>	<b>169</b>	14700	
	8 -	<b>245</b>					4390	<b>180</b>		<b>45</b>	<b>190</b>	15400	
906	6	<b>235</b>					4380	<b>170</b>		<b>40</b>	<b>179</b>	16200	

#### Note

1. Tolerance on "D" and "DA" dimensions will be m6.
2. Transmission element bores are made to an ISO H6 fit.
3. The dimensions printed in bold-face in the dimensional tables as A, B, C, D, E, F, GA, H, and K are comply with IEC rule.
4. Type of bearings.
  - Grease lubricated anti-friction
  - Forced feed oil lubricated sleeve bearings

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





Open Drip-Proof Wound Rotor |

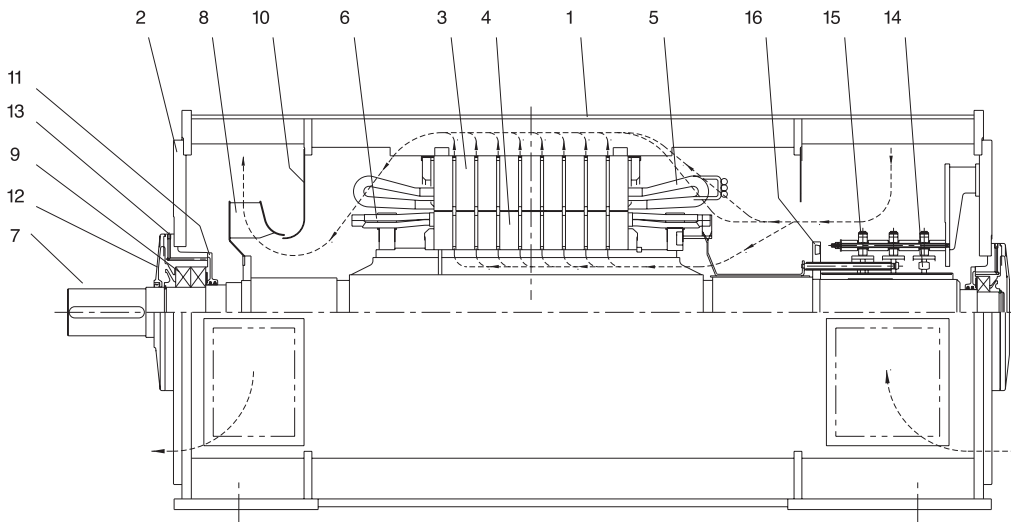
**HRS7 Series**

07

**| HRS7 |**

- Rotor Type                                   Wound Rotor
- Number of Poles                           4-12
- Voltage                                       2-14 kV
- Output Range                               260-4,700 kW (at 60 Hz, 6,600 V, 4-Pole)
- Type of Construction                   IM B3
- Frame   355-710
- 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**



**Parts Name**

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

## | Rated Power at 50 Hz |

### | 3.3 kV |

Unit: kW

Type	Poles	4p	6p	8p	10p	12p
HRS7	353	240	-	-	-	-
	355	250	-	-	-	-
	401	375	320	270	-	-
	403	460	390	330	190	-
	451	600	450	375	280	180
	453	730	590	450	330	220
	455	840	680	520	390	280
	501	940	780	580	470	300
	503	1170	870	650	530	320
	505	1250	1030	740	610	360
	561	1300	1170	870	690	570
	563	1470	1320	1000	780	640
	565	1660	1480	1120	880	690
	567	1850	-	1200	950	770
	632	2000	1770	1390	1150	870
	634	2290	1980	1530	1250	960
	636	2580	2200	1670	1400	1040
	638	2750	2480	1830	1500	1130
	712	3090	2830	2130	1750	1380
	714	3250	3120	2320	1860	1570
716	3670	3290	2500	2000	1730	
718	4080	3730	2830	2170	1870	

Motors for 4160 V: Output decreased by 2%

### | 6.6 kV |

Unit: kW

Type	Poles	4p	6p	8p	10p	12p
HRS7	353	230	-	-	-	-
	355	315	-	-	-	-
	401	360	275	200	-	-
	403	440	370	270	190	-
	451	570	430	360	270	180
	453	700	575	430	320	200
	455	800	660	500	375	270
	501	890	750	580	450	280
	503	1060	830	650	510	310
	505	1160	1000	740	590	340
	561	1250	1130	830	670	540
	563	1430	1270	960	750	620
	565	1600	1430	1080	830	660
	567	1790	-	1170	920	730
	632	1880	1700	1390	1110	830
	634	2170	1900	1530	1200	920
	636	2460	2130	1670	1330	1000
	638	2630	2400	1830	1450	1080
	712	2920	2730	2130	1670	1330
	714	3080	3000	2320	1800	1500
716	3500	3170	2500	1920	1670	
718	3920	3590	2830	2100	1800	

※ Bearing type for horizontal motors:

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

## | Rated Power at 60 Hz |

### | 3.3 kV |

Unit: kW

Type	Poles	4p	6p	8p	10p	12p
HRS7	353	270	-	-	-	-
	355	280	-	-	-	-
	401	420	380	320	-	-
	403	520	470	400	230	-
	451	680	540	450	335	220
	453	820	710	540	400	260
	455	940	820	620	470	335
	501	1050	930	700	560	360
	503	1310	1040	780	630	390
	505	1400	1240	890	730	430
	561	1450	1400	1040	830	680
	563	1650	1580	1200	930	770
	565	1860	1780	1340	1050	830
	567	2070	-	1450	1140	920
	632	2400	2120	1670	1380	1040
	634	2750	2370	1840	1500	1150
	636	3100	2650	2000	1670	1250
	638	3300	2980	2200	1810	1360
	712	3710	3400	2550	2100	1660
	714	3900	3740	2780	2230	1880
716	4400	3950	3000	2390	2080	
718	4900	4470	3390	2600	2240	

Motors for 4160 V: Output decreased by 2%

### | 6.6 kV |

Unit: kW

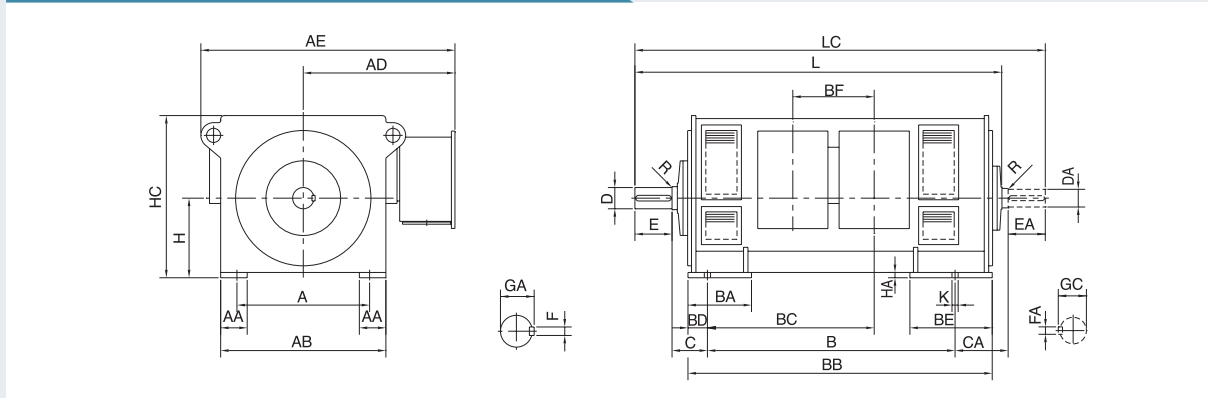
Type	Poles	4p	6p	8p	10p	12p
HRS7	353	260	-	-	-	-
	355	350	-	-	-	-
	401	400	330	240	-	-
	403	490	440	320	230	-
	451	640	520	430	320	220
	453	780	690	520	385	240
	455	890	790	600	450	320
	501	1000	900	700	540	340
	503	1190	1000	780	610	370
	505	1300	1200	890	710	410
	561	1400	1350	1000	800	650
	563	1600	1520	1150	900	740
	565	1800	1720	1290	1000	790
	567	2000	-	1400	1100	880
	632	2260	2040	1670	1330	1000
	634	2600	2280	1840	1450	1100
	636	2950	2550	2000	1600	1200
	638	3150	2870	2200	1740	1300
	712	3500	3270	2550	2000	1600
	714	3700	3600	2780	2150	1800
716	4200	3800	3000	2300	2000	
718	4700	4300	3390	2520	2150	

※ Bearing type for horizontal motors:

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

| HRS7 |

Mounting B3 / Degree of Protection IP23



Unit :mm

Type	Poles	A	AA	AB	AD	AE	B	BA	BB	BC	BD	BE	BF	C	CA	H		
HRS7	353	4 -	610	120	740	860	1330	1400	335	1680	810	90	580	370	160	260	355	
	355	4 -																
	401	4 -	686	150	830	905	1415	1600	390	1820	885	110	580	370	180	180	400	
	403	4 -																
	451	4 -	750	150	935	1005	1565	1800	390	2120	1165	110	580	620	200	300	450	
	453	4 -																
	455	4 -																
	501	4 -	850	150	1035	1040	1685	2000	390	2220	1215	110	580	620	200	200	500	
	503	4 -																
	505	4 -																
	561	4	950	180	1155	1115	1820	2240	445	2510	1340	135	630	620	475	400	560	
		6 -													224	224		
	563	4													475	400		
		6 -													224	224		
	565	4													475	400		
		6 -													224	224		
567	4													475	400			
	6 -													224	224			

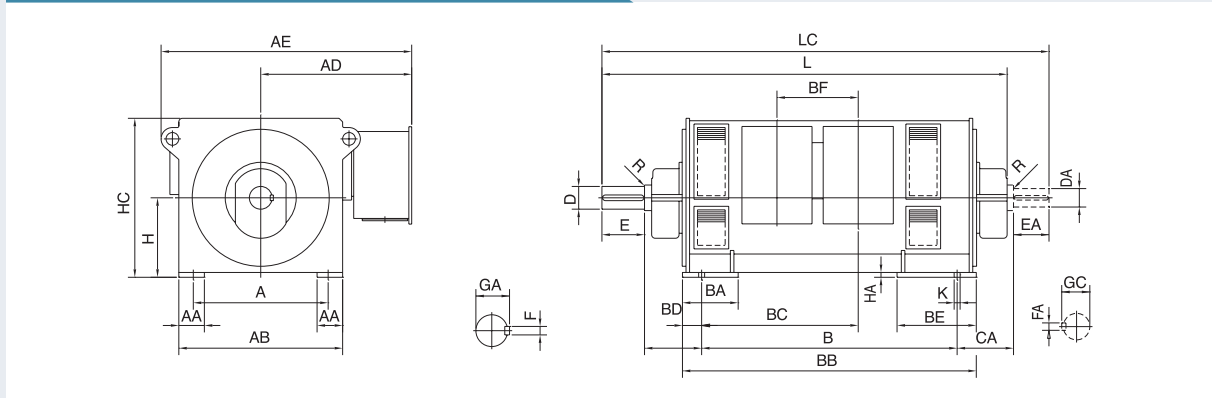
Unit :mm

Type	Poles	HA	HC	K	L	LC	D	DA	E	EA	F	FA	GA	GC	Weight (kg)	
HRS7	353	4 -	25	725	28	1975	2130	90	75	170	140	25	20	95	79.5	1800
	355	4 -														1900
	401	4 -	30	815	35	2150	2340	110	90	210	170	28	25	116	95	2400
	403	4 -														2600
	451	4	30	920	35	2475	2720	120	100	210	210	32	28	127	106	3200
		6				2515	2760	130	110	250				137	116	3300
		8 -				2515	2760	130	110	250				137	116	3300
	453	4				2475	2720	120	100	210				127	106	3400
		6				2515	2760	130	110	250				137	116	3500
		8 -				2515	2760	130	110	250				137	116	3500
	455	4				2475	2720	120	100	210				127	106	3600
		6				2515	2760	130	110	250				137	116	3700
		8 -				2515	2760	130	110	250				137	116	3700
	501	4	30	1020	35	2615	2860	130	110	250	210	32	28	137	116	4300
		6 -				2625		140	120			36	32	148	127	4400
		503	4				2615		130	110			32	28	137	116
6 -						2625		140	120			36	32	148	127	4600
505		4				2615		130	110			32	28	137	116	4700
		6 -				2625		140	120			36	32	148	127	4800
561	4	34	1140	42	3355	3575	140	120	250	210	36	32	148	127	6000	
	6 -				2915	3188	150	130	250	250	36		158	137	6000	
563	4				3355	3575	140	120	250	210	36		148	127	6200	
	6 -				2915	3188	150	130	250	250	36		158	137	6200	
565	4				3355	3615	150	130	250	250	36		158	137	6500	
	6 -				2965	3238	160	130	300	250	40		169	137	6500	
567	4				3365	3615	150	130	250	250	36		158	137	6800	
	6 -				2965	3238	160	130	300	250	40		169	137	6800	

Note: For bearing type and tolerances of dimensins, see page 104.

## | HRS7 |

### Mounting B3 / Degree of Protection IP23



Unit :mm

Type	Poles	A	AA	AB	AD	AE	B	BA	BB	BC	BD	BE	BF	C	CA	H		
HRS7	632	4	1060	180	1295	1185	1975	2240	460	2610	1495	135	650	620	475	550	630	
		6 -													225	325		
	634	4													475	550		
		6 -													225	325		
	636	4					2500		2800	1685					475	480		
		6 -													225	225		
	638	4													475	480		
		6 -													225	225		
	712	4	1180	220	1454	1265	2150	2500	500	2780	1570	135	730	620	495	460		710
		6													225	230		
		8 -													225	230		
	714	4													495	460		
	6													225	230			
	8 -													225	230			
716	4								2880	1670				495	560			
	6 -													225	330			
718	4						2650		2980	1770				495	510			
	6 -													225	280			

Unit :mm

Type	Poles	HA	HC	K	L	LC	D	DA	E	EA	F	FA	GA	GC	Weight (kg)	
HRS7	632	4	34	1280	42	3485	3725	150	120	250	210	36	32	158	127	8200
						3010	3290	150	130	250	250	36	32	158	137	8200
						3060	3340	160	130	300	250	40	32	169	137	8200
	634	4				3485	3765	150	130	250	250	36	32	158	137	8500
						3060	3340	160	130	300	250	40	32	169	137	8500
						3060	3340	160	140	300	250	40	36	169	148	8500
	636	4				3725	4005	160	130	300	250	40	32	169	137	9300
						3250	3530	160	140	300	250	40	36	169	148	9200
						3250	3530	170	140	300	250	40	36	179	148	9200
	638	4				3725	4005	160	140	300	250	40	36	169	148	9800
						3250	3530	170	140	300	250	40	36	179	148	9700
						3250	3530	170	140	300	250	40	36	179	148	9600
	712	4	38	1440	48	3640	4005	170	140	300	250	40	36	179	148	10600
						3230	3505	170	140	300	250	40	36	179	148	10500
						3230	3505	180	150	300	250	45	36	190	158	10500
	714	4				3640	4005	170	140	300	250	40	36	179	148	11000
						3230	3505	180	150	300	250	45	36	190	158	11000
						3230	3505	180	150	300	250	45	36	190	158	11300
	716	4				3765	4105	180	150	300	250	45	36	190	158	12000
						3330	3605	180	150	300	250	45	36	190	158	11700
						3380	3705	190	160	350	300	45	40	200	169	11800
	718	4				3865	4205	180	150	300	250	45	36	190	158	12300
						3480	3805	190	160	350	300	45	40	200	169	12500

Note: For bearing type and tolerances of dimensins, see page 104.

# Order Specification

Motor Type No.	Output(kW)	Phase	Poles	Voltage(V)	Frequency(Hz)	Quantity	No. of Purchase Specification	Delivery

1. Duty Cycle  
 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. Construction  
 B3/Horizontal  
 V1, V10/Vertical  
 B5/Flange  
 B3 & B5/Flange and Horizontal  
 Special(Specify) \_\_\_\_\_

6. Environment  
 High Humidity  
 Dusty  
 Tropical  
 Special(Specify) \_\_\_\_\_

7. Ambient Temperature  
 40°C  
 Special(Specify) \_\_\_\_\_

8. Altitude  
 Standard(Below 1000m Above Sea Level)  
 Special(Specify) \_\_\_\_\_

9. Enclosure  
 Open Drip-proof(IP23)  
 NEMA Weather-Protected Type II (IPW 24)  
 Totally Enclosed Fan Cooled (IP44, IP54)  
 Special(Specify) \_\_\_\_\_

10. Location  
 Indoor  
 Outdoor  
 Special(Specify) \_\_\_\_\_

11. Starting Method  
 Full voltage(Direct-on-Line)  
 Secondary Rheostat (for wound)  
 Reactor  
 Star-Delta

12. Starting Duty  
 Not Exceeding NEMA MGI-20, 43  
 (Cold state : Two, Hot state : One)  
 Special(Specify) \_\_\_\_\_

13. Load Inertia (Referred to Motor Shaft)  
 Not Exceeding NEMA MGI-20, 42  
 Actual WK <sup>2</sup> \_\_\_\_\_ or GD <sup>2</sup> \_\_\_\_\_  
 Please supply the speed-torque curve of load

14. Shaft Extension  
 Single  
 Double

15. Coupling Method  
 Direct Connected  
 Flexible  
 Rigid  
 Hydraulic  
 Belt  
 Driven/Motor Sheave P.C.D= /  
 Q' ty of Belts \_\_\_\_\_  
 Hydraulic

16. Rotation (Facing Drive End)  
 CCW  
 CW  
 Bi-directional

17. Location of Main Terminal Box (Facing Drive End)  
 Right  
 Left  
 Special \_\_\_\_\_

18. Location of Aux. Terminal Box (Facing Drive End)  
 Right  
 Left  
 Special

19. Bearing Type  
 HHI' s standard  
 Special(Specify) \_\_\_\_\_

20. Bearing Lubrication Type  
 Grease lubricated  
 Self cooled sleeve bearing with oil ring  
 Forced cooled sleeve bearing

21. Cable Entry Opening  
 Blind Steel Plate  
 Thread : PF  
 Cable Gland type :  
 Hole :  $\phi$   
 Special \_\_\_\_\_

22. Painting Color  
 Standard(Munsell No.: 7.5BG 6/1.5)  
 Special(extra price)

23. Test and Inspection  
 HHI' s standard(Non-witnessed)  
 Special

24. Thrust for Vertical Motor  
 Normal Thrust UP \_\_\_\_\_ kg Down \_\_\_\_\_ kg  
 Momentary Thrust UP \_\_\_\_\_ kg Down \_\_\_\_\_ kg

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

MODIFICATIONS

25. Winding Temperature Detectors  
 Not Required  
 Required(Quantity per phase \_\_\_\_\_ ea)  
 PT 100 ohm at 0°C  
 Thermocouples(Specify)  
 PTC thermistors  
 Special(Specify)

26. Bearing Temperature Detectors  
 Not Required  
 Required(Quantity per phase \_\_\_\_\_ ea)  
 PT 100 ohm at 0°C  
 Thermocouples(Specify)  
 Without Contact  
 With one Contact  
 With two Contacts  
 Special(Specify) \_\_\_\_\_

27. Anti-condensation Heater  
 Not Required  
 Required(Phase \_\_\_\_\_, Volts \_\_\_\_\_)

28. Required Spare Parts

29. Special Requirement : Please Specify

NOTE : Among the above informations, the items marked with(+)mark are HHI' s standard.  
 + We reserve the right to change the technical data and dimensions without any prior notice.  
 + For further information, please contact our representative or International sales department.