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Three-Phase Brushless
Synchronous Alternators

HYUNDAI
HEAVY INDUSTRIES CO.,LTD.

Three-Phase Brushless

Synchronous Alternators

Based on state-of-the-art manufacturing facility and continuously developed technology, Hyundai has been manufacturing Synchronous Alternators for its marine and industrial customers throughout the world for the past 25 years. Our customers have come to rely on our strict quality control procedures and on-time delivery programs.

Hyundai Marine-purpose Generators have been widely acknowledged not only by major world classification societies such as LRS of U.K., ABS of U.S.A., DNV of Norway, GL of Germany, NK of Japan, CCS China KR of Korea, but also by leading shipowners around the world.

Hyundai's quality control system is certified to conform to the Quality Control System Standard (ISO 9001) and the Environmental Management System certification (ISO14001).

Hyundai Synchronous Alternators have long been recognized for their dependability and have been playing a significant role in the world's marine vessels and power industries. Hyundai will continue to produce unique product innovations through continuous product research and development.

Electrical	Constant voltage excitation with rapid dynamic voltage response
Mechanical	TERMINAL BOX can be located in the alternator frame at left or right side as required EXCITATION SYSTEM are mounted inside of protective housing
Maintenance	Easier maintenance with brushless excitation

Due to continuous development the technical data are subject to change without prior notice.

Three-Phase Brushless Synchronous Alternators

Contents

Constant Voltage Brushless Synchronous Alternators

Application

The constant voltage brushless synchronous alternator is of a self-excited type with an electronic voltage regulator integrated in the excitation unit.
It is used as main and standby units for land based power installations and for marine electrical supplies. Units can be driven by internal combustion engines, gas, steam or water turbines and electric motors.

Construction

The alternator comprises the main machine (revolving field machine with cylindrical rotor and damper winding), exciter (revolving armature machine) and excitation equipment.
The excitation power is supplied to the rotor of the main machine via rotating rectifiers.
For type of cooling, see page 08.

Excitation system

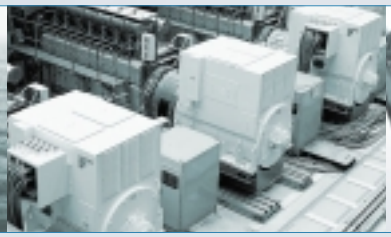
The alternator is fitted according to size and type with an excitation system with THYRIPART excitation system (load dependent excitation, compounded with thyristor voltage regulator). This method results in excellent dynamic response to load switching applications and short circuits.

Standards and codes of practice

The alternator conforms to the applicable IEC requirements, DIN standards and VDE codes, particularly to VDE 0530 specification for rotating electrical machines.
Other standards on inquiry.

Three-Phase Brushless Synchronous Alternators






Technical Data

Output

The rated outputs (kVA) given in the selection tables see(page 16~23) are valid for

- continuous duty at 50 or 60 Hz rated frequency
- power factors from 0.8 to 1 (LAGGING)
- class F insulation
- sinusoidal load current
- symmetrical load

Site rated output

A deduction must made from the nominal output to VDE 0530 (rated output at 40℃ and 1000 m above sea level) in each of the following cases:

1. Coolant temperature exceeds 40℃ and all practices for marine alternators not complying with classification society rules (see the selection tables).
   A special inquiry should be made if the coolant temperature exceeds 55℃.
   At a coolant temperature of 30℃, the mean output is increased by 4% over that permissible at 40℃.

2. Site altitude exceeds 1000 m above sea level (applicable for in-land power installations only)

Site altitude m a. s. l.	Permissible output % of rated value
1000	100
1500	97
2000	94
2500	91
3000	87
3500	82
4000	77

If no coolant temperature is stated, it will be assumed that the altitude-induced reduction in the cooling efficiency is compensated by a lower coolant temperature, i.e. adjustment of the maximum temperature rise to VDE 0530 is not necessary (no de-rating).
The following coolant temperatures have been obtained for the thermal utilization corresponding to Class F insulation:

Altitude in m a.s.l.:						
1000	1500	2000	2500	3000	3500	4000
Coolant temperature in ℃:						
40	35	30	25	19	14	9

3. Power factor <0.8

cos phi Power facto	Permissible output % of rated value	
	HFC5	HFC6
0.8...1[1)]	100	100
0.7	95	96
0.6	91	92
0.5	89	91
0.4	87	90
0.0	84	88

1) A shaft end of large diameter may be required for HFC5-alternators when the power factor is greater than 0.8.

4. Unbalanced load (see page 11)

5. Overload (see page 11; for marine alternators page 12)

6. Slight voltage dip when large loads like squirrel-cage motors are switched in (see page 10).

7. Load current is not sinusoidal in case of static converter load (please inquire).

Voltage and frequency

The alternator is suitable for operation at 50 Hz or 60 Hz as shown in the selection tables.

The alternator voltages on our standard design are 400 V at 50 Hz and 450 V at 60 Hz.

Load voltages corresponding to the alternator voltages are respectively 380 V at 50 Hz and 440 V at 60 Hz.

The alternator can supply voltages up to 600 V for HFC 280 otherwise up to 1100 V. Please separately inquire if alternator should supply voltage less than 230 V.

Inquiries are also welcomed for special voltages and for frequencies other than 50 Hz or 60 Hz.

The output data (except rated currents) correspond roughly to those given in the selection tables for nominal voltages.

Apart from an internal reference value potentiometer fitted in the regulator, the rated voltages can be adjusted ±5% using a reference value setter to be mounted in an external panel. The three-phase stator winding of the alternator is connected in star.

Efficiency

The efficiency allows for the total losses in the alternator, including those of the field winding and excitation system.

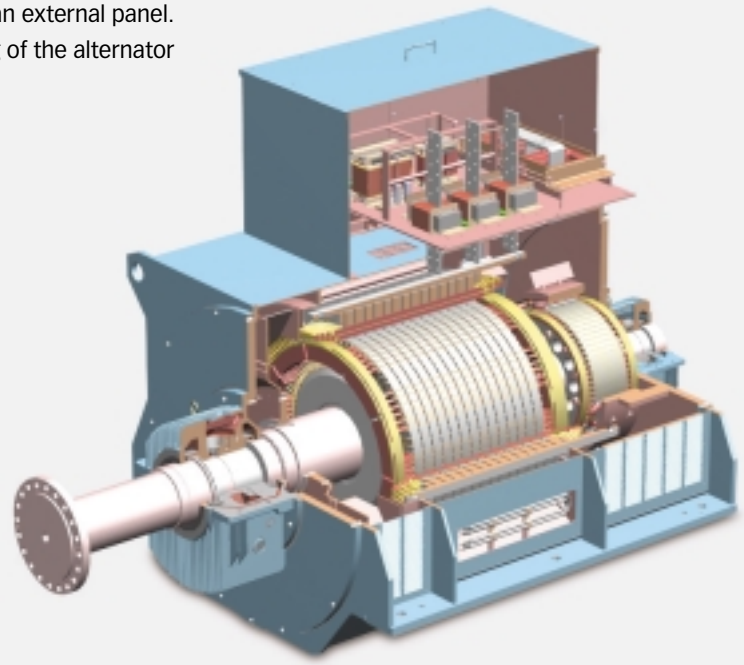
Insulation system

The insulation materials used are non-hydroscopic, non -tracking and can withstand severe thermal and mechanical stress.

The stator windings of the alternator are made of special enameled wire of high hydrolysis-resisting quality or flat copper bars with mica paper.
The standard insulation system employs a special resin impregnation process. This results in high mechanical strength, vibration resistance and excellent dielectric strength.

Radio interference suppression

The alternator is supplied with radio interference suppression grade N to VDE 0875.



Mechanical Data

Speed and direction of rotation

At the rated speed given in the selection tables, the alternator produces the rated frequency of 50 Hz or 60 Hz.
The alternator is designed for clockwise rotation, when viewed from the drive-end if not otherwise specified. It can also be made for counterclockwise rotation.
In accordance with VDE 0530, the sequence "U, V, W" of the terminals in the terminal box corresponds to the phase sequence in clockwise rotation. For parallel operation with an existing system, the phase sequence must be checked before making the connections.

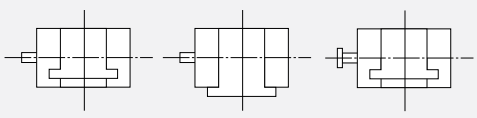
Overspeed for alternators is normally specified to be $n_{max} = 1.2 \times n_N$. Higher values on request.
With the alternator main switch open, there is no restriction on operating the alternator with THYRIPART® - excitation at less than rated speed (like in the case of starting up the prime mover).

This does not apply to special alternators with sleeve bearings which may only be run at a reduced speed to about 20% of their rated speed.

Types of construction

The alternator can be supplied in the following versions to IEC 34-7 (IM=international mounting).

For the different types of construction other than those illustrated below, please inquire.



IM 1101 (B20)	IM 1001 (B3)	IM 1305 (B16)
HFC7 HFJ7	HFC7 HFJ7	HFC7 HFJ7

Degree of protection

The alternator normally has the degree of protection IP 23 (IEC 34-5) if not specified otherwise.
The HFJ7 45. to 56. series have IP44/IC81W according to IEC.
The HFJ7 63. to 80. have IP44/IC81 in accordance with IEC (IC81: closed circuit cooling system with air/water cooler mounted).
See page 13.
The terminal box or terminal space has the degree of protection IP54.
Other degree of protection on inquiry.

Air filter

Air filter can be provided in HFC7 series for special conditions (on request).
If the design calls for air filter, it is recommended that temperature sensors be fitted in the stator winding so that the alternator can be immediately alarmed or tripped in case of abnormal temperature rise due to a dirty filter.

Anti-condensation heating

Anti-condensation heating is available for the alternator.
The supply voltage to the anti-condensation heater must be 220 V or 110 V of single phase.

Terminals and connection bus bars

Cable entry to the main connections (U,V,W) and 2 field terminals (+F1, -F2) can be made at the left or right side as instructed. The cable entry plates are normally supplied undrilled.

Moment of inertia

All values for the moment of inertia (J in kg- m^2) given in the selection tables are subject to a tolerance of ±10% to VDE 0530.
The values are for the rotor without coupling.

Cooling

The HFC7 series are internally cooled with shaft-mounted fan to VDE 0530, IC 01 to IEC. The fan provided at the drive-end draws the cooling air axially through the machine.
For details of air inlet and discharge openings, see the dimension tables.

Noise emission

The noise level of the alternator will not exceed that specified in Part 9, VDE 0530 (1981).

Vibration stability

Reciprocating engines used as prime mover impress vibrations on the alternator because of the pulsating torque output.
Permissible vibration stress measured at the bearings is

〈10 Hz	vibration amplitude	$\hat{S}$	≦ 0.40 mm
10 - 100 Hz	vibration velocity	Veff	≦ 18 mm/s
〉100 Hz	acceleration	b	≦ 1.6 g

Please inquire if higher vibration strees level are expected.

Bearings

If required, alternators with HFC7 453 and above can be fitted with sleeve bearings at extra cost.
Alternators with HFC7 63. - 80. for marine use are generally fitted with sleeve bearings.
Alternators with HFC7 350 and above a miniature Pt 100 screw-in resistance thermometer can be fitted in the bearings for remote display (optional).

Sleeve bearings

Lubricating system reference for alternators in B3, and B16 and B20 type of construction, with sleeve bearings:

Alternator Type	No. of Poles	Lubrication system at					
		50Hz Coolant temperature (℃)			60Hz		
		50	45	40	50	45	40
HF 7 45	4	○	○	○	●	○	○
	6 to 12	○	○	○	○	○	○
HF 7 50	4	●	○	○	●	○	○
	6 to 12	○	○	○	○	○	○
HF 7 56	4	●	○	○	●	●	●
	6 and 8	○	○	○	●	○	○
	10 and 12	○	○	○	○	○	○
HF 7 63	4	●	●	○	●	●	●
	6 and 8	○	○	○	●	○	○
	10 and 12	○	○	○	○	○	○
HF 7 71	4	●	●	●	●	●	●
	6	●	●	●	●	●	●
	8 and 10	●	○	○	○	○	○
	12	○	○	○	○	○	○
HF 7 80	4	●	●	●	●	●	●
	6	●	●	●	●	●	●
	8 and 10	●	○	○	○	○	○
	12	○	○	○	○	○	○

○ Ring lubrication, air cooled
● Forced lubrication, with oil cooling

Drive and coupling

Alternators provided with two bearings can be driven by reciprocating engines via highly flexible shaft couplings.
The coupling is not a part of the scope of delivery by the alternator manufacturer.
The torsional vibration has to be calculated for rigidly coupled single bearing alternators.
If necessary, preliminary outline and shaft dimension drawings can be made available. Shaft reinforcements if necessary may entail extra costs.

Performance Data

Three-Phase Brushless Synchronous Alternators

Steady state voltage variation

Throughout the range from no-load to rated load at rated power factor, the following voltage regulating accuracies are achieved

	THYRIPART excitation
Isolated operation (without droop compensation device)	UN±0.5%
Parallel operation (with droop compensation device)	UN±2.5%

The voltage variation of alternators with droop compensation device can be improved to that of isolated operation value by short-circuiting the droop compensation devices, while not in parallel operation.

Calculation example

It is assumed that three-phase induction motor with squirrel-cage rotor maybe switched on to an unloaded brushless constant voltage synchronous alternator.

Generator Data

Alternator type	HFC7 504-10
Capacity	880 KVA
PF	0.8
Voltage	450 V
X'd	28.2%=0.282 pu.
X''d	15.1%=0.151 pu.

Motor Data

Capacity	170 kW
PF	88.5%
Efficiency	93.5%
Nominal Current(In)	269.6 A
Starting Current(Is)	760% at direct on line starting
Starting Method	Auto-TR 65% tap starting

Momentary voltage drop caused by starting of load is calculated by the following formula;

※Calculation of starting capacity of largest motor 90kW

$= \sqrt{3} \times \text{voltage} \times \text{starting current}$

$= \sqrt{3} \times 0.44 \times (269.9 \times 7.6 \times 0.65\text{^}2)$

660 [KVA]

Generator reactance (X'''D)

$$X'''D = \frac{0.282+0.151}{2} = 0.2165$$

Formula for calculating starting load reactance XL ;

$$XL = \frac{\text{generator capacity}}{\text{starting capacity of thrown-on load}}$$

$$= \frac{880}{660} \quad 1.334$$

Voltage drop △V is calculated by the following formula ;

$$\triangle V = \frac{X'''D}{X'''D + XL} \times 100$$

$$= \frac{0.2165}{0.2165 + 1.334} \times 100$$

14%

△V : Allowable momentary voltage drop
(Max. - 15% according to LRS requirement)
X'D : Direct-axis transient reactance of generator
X''D : Direct-axis sub-transient reactance of generator

Note

If the voltage variation exceeds the given value, the load is to be reduced by an appropriate starting circuit with induction motors; otherwise, a larger frame size of alternator is necessary.

Short-circuit current and short-circuit rating

Owing to the load dependent operation of the static excitation system, the alternator meets the requirements for the lowest possible voltage dips and rapid voltage recovery (like in case of sudden loading with large squirrel-cage induction motors).
The excitation principle employed features sustained short-circuit currents of approximately 3 to 5 times of the rated current. This enables the use of selective protective relays. The alternator must be relieved from the sustained short-circuit current in 5 seconds.

Unbalanced load

In accordance with VDE 0530, the alternator can withstand unbalanced loading of up to 20%.
It should be noted, however, that the voltage variation and the rated outputs indicated in the tables are not attained under unbalanced load.

Overload

In accordance with VDE 0530, the alternator can have an overload of 1.5 times of the rated current at rated voltage for 2 minutes.
The alternator has been designed to match the overload capabilities of diesel engines. For one hour out of every 6 hours, the alternator can supply 110% of rated power without harmful overheating. (Also see page 09, overload data for marine alternators.)

Parallel operation

During such a short period for no break load transfer, alternators can be operated in parallel regardless of design variants and manufacturer.

Continuous parallel operation between **HFC7** and **HFJ7** alternators is possible, provided that following points be fulfilled:

1. All alternators equipped with **damper windings** which reduce phase swinging in parallel operation

2. **Active load sharing** controlled with the governor of the driving engine. The speed characteristics of the engine should be linear, turing change-over from rated load to no-load and the speed variation should fall between 3 to 5% of the rated speed

3. **Reactive load** sharing assured by droop compensation or cross current compensation device

A droop compensation device can be fitted into the main body for HFC7 280 to 356 if requested (extra cost) and is also available for HFC7 40 to HFC7 80.

Owing to the droop compensation device provided, alternators are suitable for parallel operation with other alternators, having the same voltage droop or supply system.

Neutral point connection

Direct interconnection of alternator neutrals and/or those of transformers and load neutrals may give rise to circulating current by three times of the power frequency in the neutral conductors.
The magnitude of these currents must be measured in the alternator neutral conductors under the highest conceivable load condition.
To avoid thermal overloading of the alternators the circulating currents occurring at three times of the rated frequency should not exceed about 50% of the alternator rated current. Higher current values should be limited by means of neutral reactors or other equivalent means.

Protection equipment

The stator winding can be provided with thermal protection in the form of PTC sensors or resistance thermometers (optional).

Please inquire when alternator protection gear necessitates opening of neutral. Please indicate type designation if it is intended to use a star-point current transformer.

Alternators to be operated in parallel should be provided with reverse power protection.
The necessary monitoring and tripping devices must be provided separately and are not included in the alternator scope of supply.

Special Provisions for Marine Alternators

In addition to compliance with the standards and codes quoted on page 03, HFC7 and HFJ7 marine alternators also conform to the requirements of the following classification societies:

Classification society	Abbreviation Coolant	temperature (CT)°C
American Bureau of Shipping	ABS	45, 50
Bureau Veritas	BV	45, 50
China Classification Society	CCS	45, 50
Det Norske Veritas	DNV	45
Germanischer Lloyd	GL	45
Korean Register of Shipping	KR	45, 50
Lloyd's Register of Shipping	LRS	45, 50
Registro Italiano Navale	RINa	45, 50

Marine alternators can also meet the requirements of other classification societies such as

Polish Register of Shipping (PRS) Russian Maritime Register of Shipping

In case of shaft alternators (driven by the main engine of turbine), attention must be paid to the special speed characteristics and to the excess torque protection, if applicable Please inquire for further information.

Works inspection and acceptance

Marine alternators are subject to works inspection and acceptance as stipulated in the table below:

Abbreviation	Work inspection	Acceptance
ABS	≧100 kW	≧100 kW
BV	≧100 kW	all
GL	–	≧50 kVA
LRS, RINa	≧100 kW	≧100 kW
DNV	all	all

Alternator intended particularly for ship's propulsion system are subject to works inspection and acceptance test, irrespective of the output rating.

Overload requirements (Also refer to Overload, page 09.)

Rules	Overload current in % of rated current	Overload duration	Remarks
VDE	150	2 min	-
ABS	150	30 sec	no overload capability specified
	125	2 h[1)]	upon owner's request only; steady-state temperature rise from previous oper-ation not to be more than 15K
BV	150	2 min	at p.f.0.6 (lagging)
GL	110	2 min	at p.f.0.5 (lagging)
LRS	150	15 sec	-
DNV	150	30 sec	only for alternators at p.f.0.6 and rated frequency
RINa	150	2 min	at p.f.0.6 (lagging)

1) The rated output given in the selection tables is to be reduced to 88%.

During overload testing, the voltage must be kept as close as possible to its rated value.

Air/water cooler

If required HFJ7 45. to 80. alternators can be supplied with a top-mounted air/water cooler.

The cooler can be used for fresh water or seawater and can be made of double-or single-tube type.
The type designation for the alternator with air/water cooler is HFJ. Due to the closed-circuit cooling system, the degree of protection has been upgraded from IP23 to IP44.

The electrical particulars of the alternators with air/water cooler remain unchanged.

The alternator HFJ can easly be converted for emergency operation as an open circuit air-cooled machine if the coolant system of the cooling element fails. In such a case, the degree of protection is IP23 with the rated output maintained.

Please always provide the following information for any inquiry:

- Coolant temperature (air)
- Cooling water inlet temperature
- Fresh water or seawater
- Type of cooler (single or double tube)

Classification society rules

Classification society	Anti-conden sation heating[1)] (Also see page 08.)	Thermometer **Temperature sensor** (See page 12, protectionequipment.)
ABS	For alternators with a total weight (less shaft) of more than 1000 1bs (~450kg) applicable for HFC7 280 and above	Resistance thermometer to measure the temperature of stator winding for the output of 500 kVA and above
GL	For alternators with 500 kVA and above	Temperature sensors in the stator winding for alternators with air filters; thermometer in the cooling air circuit and a temperature sensor in the stator with air/water cooler; bearing thermometer for sleeve bearings; alarm device for excessive temperature rise in bearing with external lubrication
LRS	For alternators with 500 kVA and above	Temperature sensor in the cooling air circuit for alternators with air/ water cooler.

1) It is always recommended that alternators for emergency and port use be ordered with anti-condensation heater, regardless of the classification society rules.

Notes for The Selection of Alternators

Determination of output and current

$$Pa = \frac{S \cdot \cos phi \cdot 100}{\eta}$$

$$S = \frac{Pa \cdot \eta}{\cos phi \cdot 100}$$

$$I = \frac{S \cdot 1000}{\sqrt{3} \cdot U}$$

Pa : Power input in kW
I : Current in A
S : Alternator output in kVA
η: Efficiency in %
U : Voltage in V

(Also refer to site rated output, page 06.)

Standard design of the alternator

Brushless
THYRIPART® - excitation with thyristor regulator
Class F insulation
Radio interference suppression N to VDE 0875
Main terminals (U , V, W)
Cable entry plate undrilled

Type of construction;
IM B5/20 with HFC7 18. to 40.
IM B3 with HFC7 45. to 56. and HFC7 63. to 80.
IM B20 with HFC7 45. to 56. and HFC7 63. to 80.

Flange and shaft extensions to DIN
Degree of protection IP23.
Antifriction bearings (sleeve bearing for marine alternators ; HFJ7 and HFC7)
Damper winding
Droop compensation (built-in)
for HFC7 40. to 56.and HFC7 63. to 80.

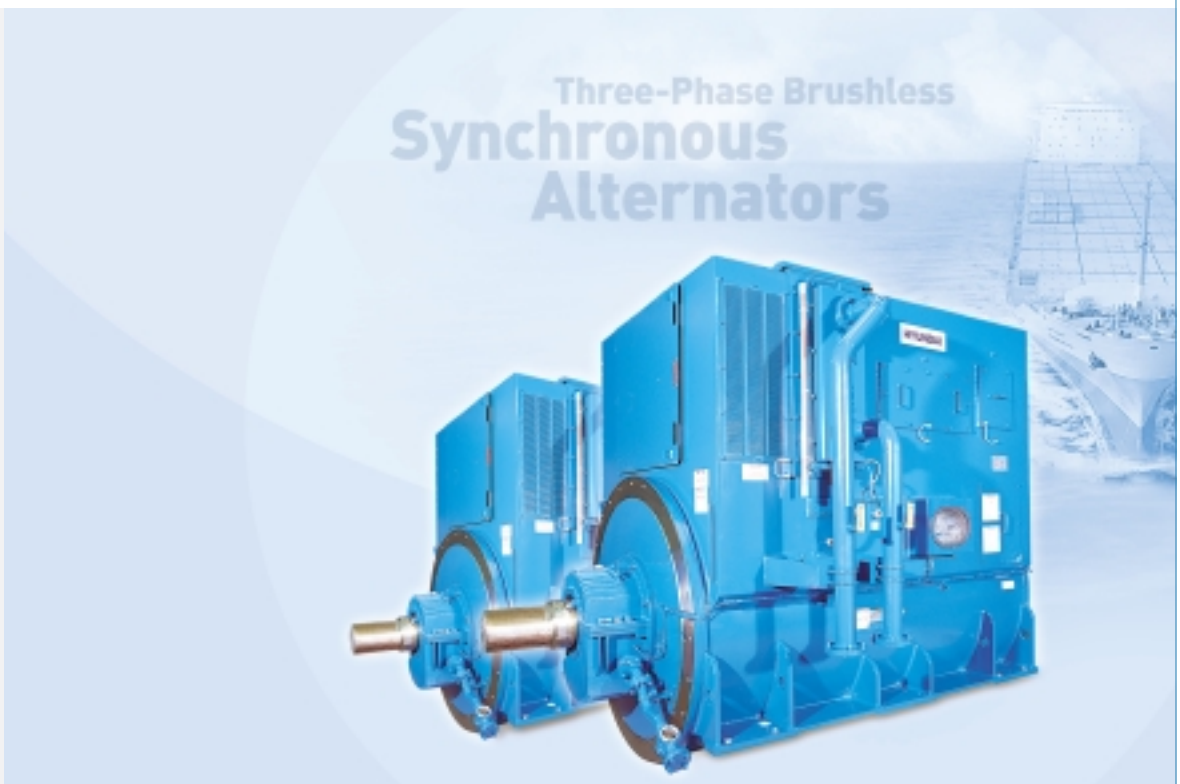
Optional accessories and variations to standard design

- Reference value setter (for control pannel)
- 3 or 6 PTC temperature sensors (alarm and/or trip)
- 3 resistance thermometers Pt 100 (6 thermometers for HFC7 350 and above)
- Radio interference suppression grade K to VDE 0875
- Anti-condensation heater
- Miniature Pt 100 screw-in resistance thermometers for bearing installation for HFC7 350 and above
- Droop compensation
- Star-point current transformers for HFC7 45. to 56. and HFC7 63. to 80.
- Air filter
- Air/water cooler for HFJ7 45. to 56. and HFJ7 63. to 80.

Spare parts

Recommended spare for stock purpose

- Bearing or bearing shells for sleeve bearing (as applicable)
- Rotating rectifier stack
- Rectifiers for the excitation equipment
- Voltage regulator



Selection Tables

450/260 V, 60 Hz
- -1800 rev/min (4-pole)
- -1200 rev/min (6-pole)
- -900 rev/min (8-pole)
- -720 rev/min (10-pole)

400/231 V, 50 Hz
- -1500 rev/min (4-pole)
- -1000 rev/min (6-pole)
- -750 rev/min (8-pole)
- -600 rev/min (10-pole)

Dimension Tables

HFC7 280 to HFC7 406
HFC7 454 to HFC7 806
HFJ7 564 to HFJ7 806

Selection Tables 450/260 V, 60 Hz 1800 rev/min (4-pole)

Rated output at p.f.0.8 to 1.0 and coolant temperature (CT)···°C								
Column								
1	2	3	4					
	CT							
°C	°C	°C	°C	**Rules**				
40	45	50	55	VDE				
		40	45	KR				
-	-	-	50	ABS				
-	40	45	50	BV				
40	45	-	-	GL				
-	40	45	50	LRS				
35	-	45	-	DNV				
-	45	50	-	RINa				
kVA	kVA	kVA	kVA				Net Weight B16 approx. kg	Moment of inertia (J) approx. kg m2	Rated current at 450 V, 60 Hz A
1800 rev/min (4-pole)							IP23		
130	125	120	118	HFC7	280-4		700	1.98	167
170	160	155	150		282		710	2.07	218
210	205	200	195		284		920	3.01	269
255	250	235	230		286		930	3.20	327
310	300	290	280	HFC7	350-4		1,220	4.3	398
350	340	330	320		352		1,280	4.6	449
445	435	425	415		354		1,400	5.2	571
560	530	515	500		356		1,600	6.4	718
570	560	545	525	HFC7	400-4		1,750	9.1	731
650	620	600	585		402		1,820	9.6	834
690	660	630	605		404		1,910	10.9	885
740	710	680	650		406		1,955	11.4	949
1,015	970	945	925	HFC7	454-4		3,000	29.0	1,302
1,230	1,170	1,135	1,105		456		3,100	32.0	1,578
1,390	1,340	1,300	1,270	HFC7	502-4		3,350	34.0	1,783
1,620	1,570	1,530	1,500		504		3,600	37.0	2,078
1,770	1,690	1,640	1,600		506		3,800	40.0	2,271
2,245	2,130	2,075	2,025	HFC7	564-4		4,650	54.1	2,880
2,450	2,400	2,345	2,290		566		5,300	59.5	3,143
2,645	2,590	2,535	2,475		568		5,700	63.0	3,394
2,810	2,725	2,640	2,555	HFC7	632-4		6,980	94.0	3,605
3,285	3,190	3,085	3,000		634		7,400	102.0	4,215
3,710	3,605	3,490	3,380		636		7,950	109.0	4,760
3,905	3,785	3,670	3,555	HFC7	710-4		8,800	155.0	5,010

Selection Tables 450/260 V, 60 Hz 1200 rev/min (6-pole)

Rated output at p.f.0.8 to 1.0 and coolant temperature (CT)···°C				
Column				
1	2	3	4	
	CT			
°C	°C	°C	°C	**Rules**
40	45	50	55	VDE
		40	45	KR
-	-	-	50	ABS
-	40	45	50	BV
40	45	-	-	GL
-	40	45	50	LRS
35	-	45	-	DNV
-	45	50	-	RINa

kVA	kVA	kVA	kVA		Net Weight B16 approx. kg	Moment of inertia (J) approx. kg m2	Rated current at 450 V, 60 Hz A
1200 rev/min (6-pole)					IP23		
205	200	195	190	HFC7 350-6	1,160	4.3	263
250	245	240	235	352	1,250	5.8	321
290	285	280	275	354	1,400	7.8	372
400	390	380	370	356	1,460	8.5	513
520	510	500	490	HFC7 404-6	1,810	11.8	667
645	635	625	615	406	2,010	14.1	828
765	745	725	705	HFC7 454-6	2,810	19.6	981
890	870	850	830	456	2,960	22.7	1,142
1,230	1,205	1,180	1,155	HFC7 502-6	3,350	32.8	1,578
1,360	1,330	1,300	1,270	504	3,600	37.2	1,745
1,565	1,535	1,505	1,475	506	4,000	43.2	2,008
1,710	1,680	1,650	1,620	508	4,300	45.5	2,194
1,870	1,830	1,785	1,740	HFC7 564-6	4,900	63.1	2,399
1,940	1,900	1,860	1,840	566	5,200	68.8	2,489
2,100	2,050	2,000	1,950	568	5,400	72.0	2,694
2,700	2,620	2,540	2,450	HFC7 634-6	7,200	146	3,464
3,060	2,980	2,895	2,810	636	7,600	157	3,926
3,230	3,140	3,050	2,955	638	7,800	162	4,144
3,500	3,400	3,300	3,200	HFC7 712-6	9,100	226	4,491
3,900	3,800	3,700	3,580	714	9,700	245	5,004
4,400	4,300	4,200	4,090	716	10,500	277	5,645

Selection Tables 450/260 V, 60 Hz 900 rev/min (8-pole)

Rated output at p.f.0.8 to 1.0 and coolant temperature (CT)···°C								
Column								
1	2	3	4					
	CT							
°C	°C	°C	°C	**Rules**				
40	45	50	55	VDE				
		40	45	KR				
-	-	-	50	ABS				
-	40	45	50	BV				
40	45	-	-	GL				
-	40	45	50	LRS				
35	-	45	-	DNV				
-	45	50	-	RINa				
						Net Weight	Moment of inertia (J)	Rated current at 450 V, 60 Hz
						B16 approx.	approx.	
kVA	kVA	kVA	kVA			kg	kg m2	A
900 rev/min (8-pole)						IP23		
670	635	620	605	HFC7	454-8	3,000	29	860
725	685	670	655		456	3,100	32	930
865	820	800	780	HFC7	502-8	3,350	39	1,110
1,025	975	950	925		504	3,600	43.5	1,315
1,250	1,190	1,160	1,130		506	3,800	47.9	1,604
1,380	1,310	1,280	1,250		508	4,100	52.5	1,771
1,570	1,500	1,450	1,415	HFC7	564-8	5,060	92.0	2,014
1,670	1,600	1,545	1,505		566	5,244	96.2	2,143
1,840	1,790	1,730	1,690		568	5,428	102.0	2,361
1,940	1,885	1,825	1,765	HFC7	634-8	6,528	144	2,489
2,385	2,310	2,240	2,170		636	6,720	166	3,060
2,465	2,390	2,315	2,240		638	7,008	180	3,163
3,025	2,930	2,840	2,750	HFC7	712-8	9,200	241	3,881
3,455	3,350	3,245	3,145		714	9,500	266	4,433
3,885	3,765	3,650	3,535		716	9,900	300	4,984
4,445	4,305	4,180	4,045	HFC7	802-8	12,100	440	5,703
5,125	5,040	4,890	4,730		804	13,100	510	6,575
5,895	5,770	5,600	5,420		806	14,500	585	7,563

Selection Tables 450/260 V, 60 Hz 720 rev/min (10-pole)

Rated output at p.f.0.8 to 1.0 and coolant temperature (CT)···°C				
Column				
1	2	3	4	
	CT			
°C	°C	°C	°C	**Rules**
40	45	50	55	VDE
		40	45	KR
-	-	-	50	ABS
-	40	45	50	BV
40	45	-	-	GL
-	40	45	50	LRS
35	-	45	-	DNV
-	45	50	-	RINa

						Net Weight	Moment of inertia (J)	Rated current at 450 V, 60 Hz
						B16		
kVA	kVA	kVA	kVA			approx.	approx.	
						kg	kg m2	A
720 rev/min (10-pole)						IP23		
615	600	585	565	HFC7	500-10	3,740	39.6	789
725	710	690	670		502	3,800	44.3	930
925	905	880	850		504	3,900	52.0	1,187
975	950	925	895		506	4,100	58.8	1,251
1,245	1,210	1,180	1,145		508	4,300	66.0	1,597
1,400	1,325	1,300	1,255	HFC7	564-10	5,500	102.2	1,796
1,616	1,530	1,500	1,450		566	5,700	106.9	2,073
1,777	1,680	1,650	1,595		568	5,900	114.2	2,280
1,809	1,755	1,700	1,645	HFC7	632-10	6,300	158.2	2,322
1,948	1,890	1,830	1,770		634	6,800	176.4	2,499
2,129	2,065	2,000	1,935		636	7,000	184.1	2,731
2,235	2,170	2,100	2,030		638	7,300	197.2	2,868
2,795	2,705	2,625	2,545	HFC7	710-10	8,600	274.4	3,586
2,960	2,865	2,780	2,695		712	9,300	304.4	3,798
3,180	3,085	2,990	2,900		714	9,700	322.9	4,080
3,415	3,310	3,210	3,110		716	10,100	339.5	4,381
3,800	3,680	3,570	3,460		718	10,900	374.7	4,875
3,890	3,805	3,700	3,595	HFC7	800-10	11,800	456	4,991
4,345	4,250	4,130	4,015		802	13,000	503	5,575
5,050	4,940	4,800	4,665		804	14,200	550	6,479
5,260	5,145	5,000	4,860		806	15,000	596	6,749

Selection Tables 400/231 V, 50 Hz 1500 rev/min (4-pole)

Rated output at p.f.0.8 to 1.0 and coolant temperature (CT)···°C								
Column								
1	2	3	4					
	CT							
°C	°C	°C	°C	**Rules**				
40	45	50	55	VDE				
		40	45	KR				
-	-	-	50	ABS				
-	40	45	50	BV				
40	45	-	-	GL				
-	40	45	50	LRS				
35	-	45	-	DNV				
-	45	50	-	RINa				
kVA	kVA	kVA	kVA				Net Weight B16 approx. kg	Moment of inertia (J) approx. kg m2	Rated current at 400 V, 50 Hz A
1500 rev/min (4-pole)							IP23		
120	115	110	106	HFC7	280-4		700	1.98	154
150	145	140	135		282		710	2.07	192
185	180	175	170		284		920	3.01	237
225	220	210	205		286		930	3.20	289
265	255	245	240	HFC7	350-4		1,220	4.3	340
300	290	280	270		352		1,280	4.6	385
380	370	360	355		354		1,400	5.2	488
475	450	440	425		356		1,600	6.4	609
485	480	465	445	HFC7	400-4		1,750	9.1	622
550	530	510	500		402		1,820	9.6	706
585	560	535	515		404		1,910	10.9	
630	605	580	555		406		1,955	11.4	808
855	815	795	785	HFC7	454-4		3,000	29.0	1,097
1,035	985	955	930		456		3,100	32.0	1,328
1,175	1,135	1,100	1,075	HFC7	502-4		3,350	34.0	1,508
1,370	1,330	1,295	1,270		504		3,600	37.0	1,758
1,495	1,430	1,385	1,355		506		3,800	40.0	1,918
1,950	1,850	1,800	1,760	HFC7	564-4		4,650	54.1	2,502
2,125	2,085	2,035	1,990		566		5,300	59.5	2,726
2,295	2,250	2,200	2,150		568		5,700	63.0	2,944
2,360	2,290	2,220	2,145	HFC7	632-4		6,980	94.0	3,028
2,760	2,680	2,590	2,520		634		7,400	102.0	3,541
1,335	3,030	2,930	2,840		636		7,950	109.0	1,713
3,280	3,180	3,085	2,990	HFC7	710-4		8,800	155.0	4,208

Selection Tables 400/231 V, 50 Hz 1000 rev/min (6-pole)

Rated output at p.f.0.8 to 1.0 and coolant temperature (CT)···°C								
Column								
1	2	3	4					
	CT							
°C	°C	°C	°C	**Rules**				
40	45	50	55	VDE				
		40	45	KR				
-	-	-	50	ABS				
-	40	45	50	BV				
40	45	-	-	GL				
-	40	45	50	LRS				
35	-	45	-	DNV				
-	45	50	-	RINa				
						Net Weight	Moment of inertia (J)	Rated current at 400 V, 50 Hz
						B16		
kVA	kVA	kVA	kVA			approx.	approx.	
						kg	kg m2	A
1000 rev/min (6-pole)						IP23		
175	170	165	160	HFC7	350-6	1,160	4.3	225
210	205	200	195		352	1,250	5.8	269
255	245	235	225		354	1,400	7.8	327
340	330	320	310		356	1,460	8.5	436
435	425	415	405	HFC7	404-6	1,810	11.8	558
550	535	520	505		406	2,010	14.1	706
650	625	600	575	HFC7	454-6	2,810	19.6	834
760	730	700	670		456	2,960	22.7	975
1,060	1,030	1,000	970	HFC7	502-6	3,350	32.8	
1,170	1,140	1,110	1,070		504	3,600	37.2	1,501
1,340	1,310	1,280	1,250		506	4,000	43.2	1,719
1,480	1,440	1,400	1,360		508	4,300	45.5	1,899
1,590	1,540	1,490	1,440	HFC7	564-6	4,900	63.1	2,040
1,960	1,885	1,560	1,500		566	5,200	68.8	2,515
1,800	1,740	1,680	1,620		568	5,400	72.0	2,309
2,280	2,200	2,120	2,040	HFC7	634-6	7,200	146	2,925
2,570	2,490	2,410	2,330		636	7,600	157	3,297
2,710	2,630	2,550	2,470		638	7,800	162	3,477
2,920	2,840	2,755	2,670	HFC7	712-6	9,100	226	3,746
3,260	3,180	3,090	3,000		714	9,700	245	4,183
3,670	3,590	3,500	3,410		716	10,500	277	4,709

Selection Tables 400/231 V, 50 Hz 750 rev/min (8-pole)

Rated output at p.f.0.8 to 1.0 and coolant temperature (CT)···°C								
Column								
1	2	3	4					
	CT							
°C	°C	°C	°C	**Rules**				
40	45	50	55	VDE				
		40	45	KR				
-	-	-	50	ABS				
-	40	45	50	BV				
40	45	-	-	GL				
-	40	45	50	LRS				
35	-	45	-	DNV				
-	45	50	-	RINa				
kVA	kVA	kVA	kVA				kg	kg m2	A
750 rev/min (8-pole)							IP23		
555	530	515	505	HFC7	454-8		3,000	29.0	712
605	570	555	545		456		3,100	32.0	776
720	680	665	650	HFC7	502-8		3,350	39.0	924
850	810	790	670		504		3,600	43.5	1,091
1,040	990	965	940		506		3,800	47.9	1,333
1,145	1,090	1,065	1,040		508		4,100	52.5	1,471
1,305	1,245	1,205	1,175	HFC7	564-8		5,060	92.0	1,674
1,390	1,330	1,285	1,250		566		5,244	96.2	1,783
1,530	1,485	1,440	1,405		568		5,428	102.0	1,963
1,610	1,565	1,515	1,465	HFC7	634-8		6,528	144.0	2,066
1,980	1,920	1,860	1,805		636		6,720	166.0	2,540
2,050	1,985	1,925	1,860		638		7,008	180.0	2,630
3,690	3,575	3,470	3,355	HFC7	712-8		9,200	241.0	4,734
4,255	4,185	4,060	3,925		714		9,500	266.0	5,459
4,895	4,790	4,650	4,500		716		9,900	300.0	6,280
3,710	3,590	3,485	3,375	HFC7	802-8		12,100	440.0	4,760
4,275	4,205	4,080	3,945		804		13,100	510.0	5,485
4,915	4,815	4,670	4,520		806		14,500	585.0	6,306

Net Weight B16 approx.

Moment of inertia (J) approx.

Rated current at 400 V, 50 Hz

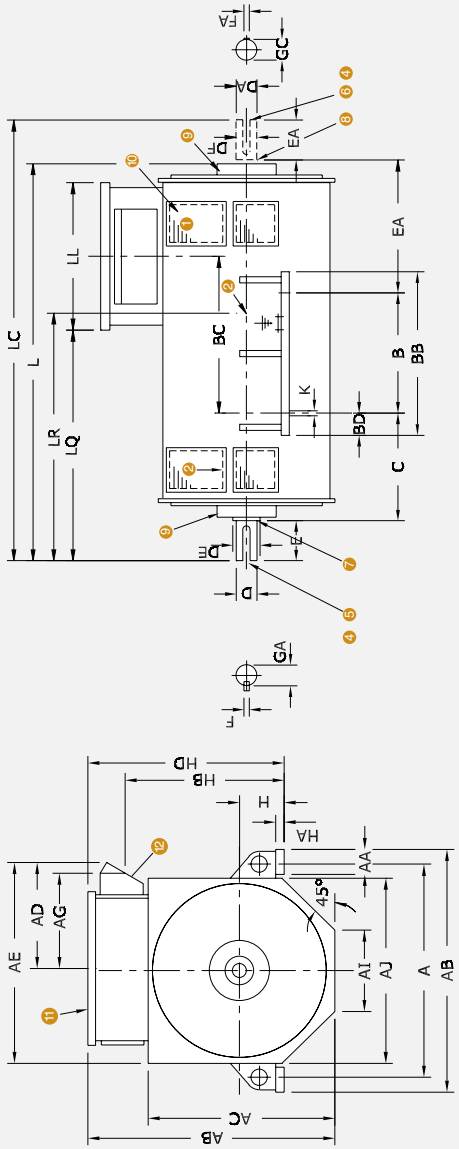
Selection Tables 400/231 V, 50 Hz 600 rev/min (10-pole)

Rated output at p.f.0.8 to 1.0 and coolant temperature (CT)···°C				
Column				
1	2	3	4	
	CT			
°C	°C	°C	°C	**Rules**
40	45	50	55	VDE
		40	45	KR
-	-	-	50	ABS
-	40	45	50	BV
40	45	-	-	GL
-	40	45	50	LRS
35	-	45	-	DNV
-	45	50	-	RINa

kVA	kVA	kVA	kVA		Net Weight B16 approx. kg	Moment of inertia (J) approx. kg m2	Rated current at 400 V, 50 Hz A
600 rev/min (10-pole)					IP23		
510	550	485	475	HFC7 500-10	3,740	39.6	654
605	590	575	555	502	3,800	44.3	776
770	750	730	705	504	3,900	52.0	988
810	790	770	745	506	4,100	58.8	1,039
1,035	1,005	980	950	508	4,300	66.0	1,328
1,165	1,100	1,080	1,045	HFC7 564-10	5,500	102.2	1,495
1,340	1,270	1,245	1,205	566	5,700	106.9	1,719
1,475	1,395	1,370	1,325	568	5,900	114.2	1,892
1,505	1,460	1,415	1,370	HFC7 632-10	6,300	158.2	1,931
1,620	1,575	1,525	1,475	634	6,800	176.4	2,078
1,775	1,720	1,665	1,610	636	7,000	184.1	2,277
1,860	1,805	1,750	1,690	638	7,300	197.2	2,386
2,325	2,250	2,185	2,120	HFC7 710-10	8,600	274.4	2,983
2,465	2,385	2,315	2,245	712	9,300	304.4	3,163
2,645	2,565	2,490	2,415	714	9,700	322.9	3,394
2,840	2,755	2,670	2,590	716	10,100	339.5	3,644
3,160	3,065	2,970	2,880	718	10,900	374.7	4,054
3,240	3,170	3,080	2,995	HFC7 800-10	11,800	456	4,157
3,620	3,540	3,410	3,345	802	13,000	503	4,644
4,205	4,115	3,995	3,885	804	14,200	550	5,395
4,380	4,285	1,465	4,045	806	15,000	596	5,620

Dimension Tables
HFC7 280 to HFC7 406 Type of construction IM B20 Anti-friction bearing

1 Air inlet
2 Air outlet
3 Center of gravity
4 Shaft end to DIN 748
5 Tapped hole DB to DIN 332
6 Tapped hole DC to DIN 332 from HFC7 354
7 Relief groove DG to DIN 509
8 Relief groove DH to DIN 509 from HRC7 354
9 Greasing nipple from HFC7 350
10 Covering for rotating rectifier multicore
11 Cover for terminals and excitation equipment
12 Cable gland for multicore cable

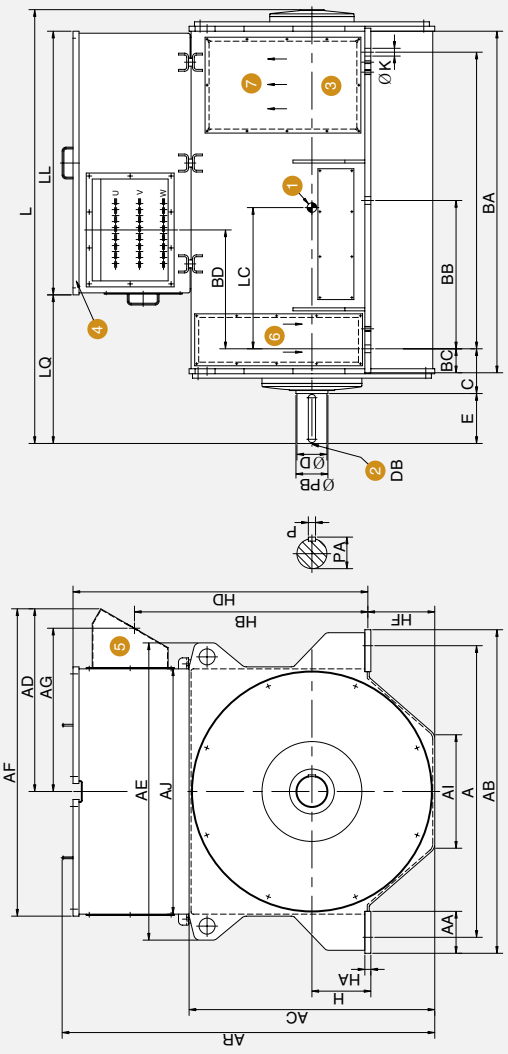


Unit = mm

Type HFC7	No. of Poles	A	AA	AB	AC	AD	AE	AG	AI	AJ	AR	B	BB	BC	BD	C	CA	H	HA	HB	HD	K	L	LC	LL	LQ	LR	Shaft end D	DA	DB	DC	DE	DF	DG⑦	DH⑧	E	EA	F	FA	GA	GC
280	4 or 6	680	70	765	550	285	495	250	265	565	665	230	380	328	75	332		125	20	422	520	17.5	1036		421	554	575	65		M20		85		E1.6×0.3		105		18		69	
282																																										
284														498									1206		724	660	75											20		79.5		
286																																										
350		750	100	890	700	455	805	415	289	700	960	394	550	480	78	382			25	560	735	18	1363		614	660	685					90										
352																																										
354																																										
354												464	620	533			504						1455	1560	675	680	810		75		M20		90		E1.6×0.3	105		20		79.5	
356														663			634						1610	1740		835	895		85						E2.5×0.4	130		22		90	90
400/402		930	120	1020	780		845		323	780	1040	560	770	731	105	431	613		30	635	828	26	1735	1864		950	950		85				100	100			130		22		90	90
404/406																		178									940															

Dimension Tables
HFC7 454 to HFC7 806 Type of Construction IM B20 Anti-friction bearing

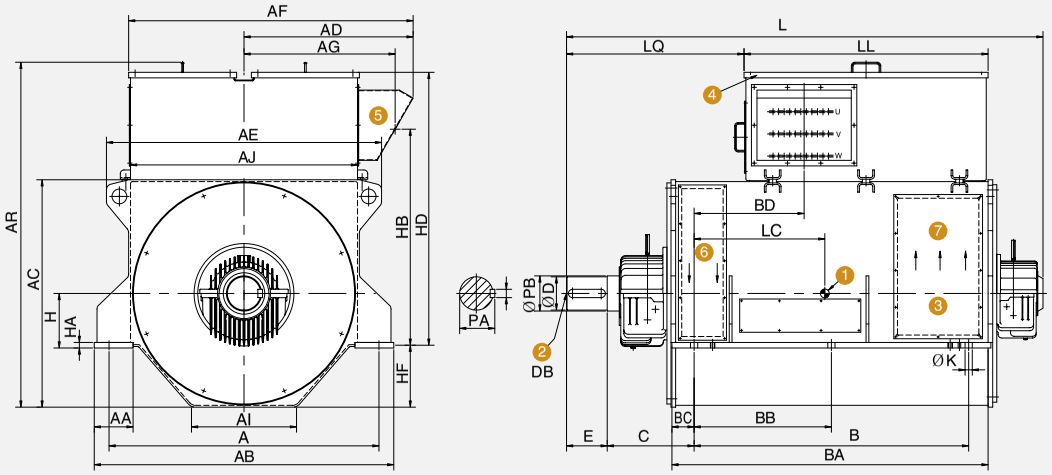
1 Center of gravity
2 Tapped hole DB to DIN 332
3 Cover for rotating rectifier
4 Cover for terminal and excitation equipment
5 Cable gland holder
6 Air outlet
7 Air inlet



Unit = mm

Type HFC7	No. of Poles	A	AA	AB	AC	AD	AE	AF	AG	AI	AJ	AR	B	BA	BB	BC	BD	C	H	HA	HB	HD	HF	K	L	LC	LL	LQ	Shaft end D	DB	E	P	PA	PB
454	4 or 8	1060	150	1210	914	675	1220	1220	604	442	894	1300	690	900		105	515	500	185	30	802	1040	260	Ø28	1915	625	807	912	Ø110	M24	210	28	116	Ø120
455/456																																		
502	4...10	1160	180	1380	1013	726		1212	659	482	994	1430	710	1450	725	125	948	200	185	30	852	1090	260	Ø28	2252	745	1050	1066	Ø120	M24	220	32	127	Ø120
504	4...10																																	
506	4...10																																	
508	8...10													1622	811		1120								2290	827		1104						
564	4...10	1450	210	1610	1138	915	1470	1504	808	535	1218	1730	1440	1690	720	125	705	230	295	30	1135	1492	259	Ø39	2115	665	1140	855	Ø130	M24	220	32	137	Ø140
566	4...10																																	
568	4...6																																	
568	8...10												1500	1750	750		765								2175	695		915						
632	4...10	1460	210	1620	1230	915	1488	1539	818	568	1228	1862	1485	1725	742.5	120	595	224	295	30	1184	1492	320	Ø39	2172	707	1320	744	Ø150	M30	250	36	158	Ø160
634	4...10																																	
636	4...10																																	
638	4...6																																	
638	8...10												1565	1805	782.5		675								2252	747		834						
710	6...10	1540	160	1700	1380	1002	1685	1715	905	776	1403	2016	1700	1930	850	118	622	248	295	35	1270	1576	385	Ø42	2504	729	1490	905	Ø190	M30	350	45	200	Ø200
712	6																																	
712	8...10												1890	2120	945		812								2694	784		1095						
714	6																																	
716	6...10												1960	2190	980		882								2764	819		1165						
718	8..6																																	
718	8...10												2090	2320	1045		1012								2894	884		1295						
800	8...10	1620	190	1800	1460	1100	1800	1850	930	748	1440	2106	1945	2205	400		880	323	510	40	1535	1832	219	Ø42	2859	805	1490	1238	Ø220	M36	350	50	231	Ø240
802	8...10																									840								
804	8...10												2125	2385			1060								3012	995								
806	8...10																																	

Dimension Tables
HFC7 454 to HFC7 806 Type of Construction IM B20 Sleeve bearing



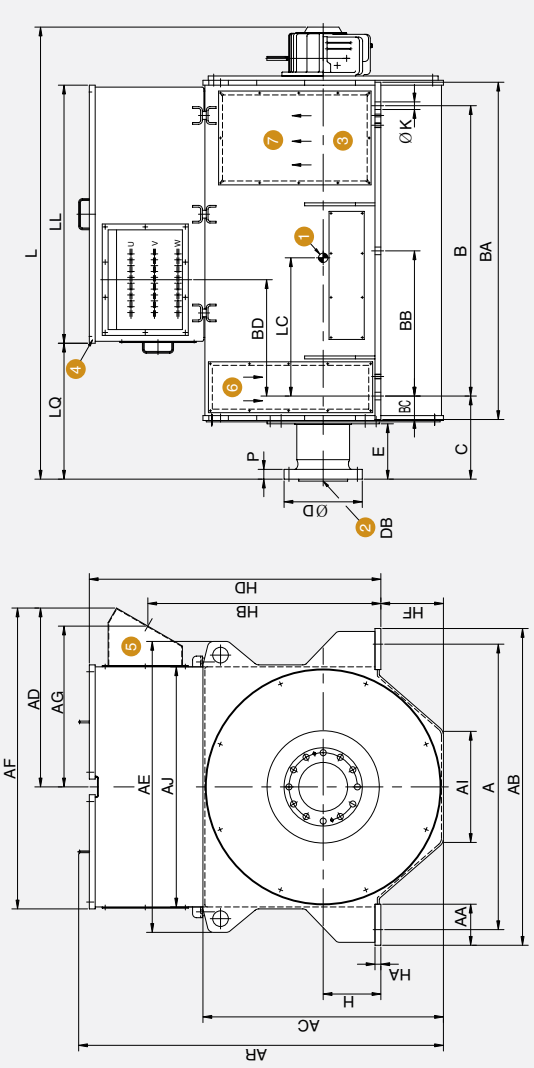
1. Center of gravity
2. Tapped hole DB to DIN 332
3. Cover for rotating rectifier
4. Cover for terminal and excitation equipment
5. Cable gland holder
6. Air outlet
7. Air inlet

Unit = mm

Type HFC7	No. of Poles	A	AA	AB	AC	AD	AE	AF	AG	AI	AJ	AR	B	BA	BB	BC	BD	C	H	HA	HB	HD	HF	K	L	LC	LL	LQ	Shaft end					
																													D	DB	E	P	PA	PB
454	4 or 8	1060	150	1210	914	675	1220	1220	604	442	894	1300	690	900	345	105	515	664	185	30	1040	260	260	2140	807	625	807	1074	Ø110	M24	185	28	116	Ø110
455/456																																			
502	4...10	1160	180	1380	1013	726		1212	659	482	994	1430	710	1450	725	125	948	440	247	30	852	1090	250	Ø28	2472	745	644	1286	Ø120	M24	220	32	127	Ø120
504	4...10																																		
506	4...10																																		
508	8...10													1622	811		1120								2510	827		1458						
564	4...10	1460	210	1620	1226	944	1510	1786	847	568	1228	2044	1440	1690	720	125	705	466	295	30	1135	1492	259	Ø39	2528	665	1140	1094	Ø160	M24	220	40	169	Ø180
566	4...10																																		
568	4...6																																		
568	8...10												1500	1750	750		765								2588	695		1151						
632	4...10	1460	210	1620	1230	915	1488	1539	818	568	1228	1862	1485	1725	742.5	120	595	470	295	30	1184	1492	320	Ø39	2577	707	1320	960	Ø180	M30	220	40	169	Ø190
634	4...10																																		
636	4...10																																		
638	4...6																																		
638	8...10												1565	1805	782.5		675								2657	747		1040						
710	4...10	1540	160	1700	1380	1002	1685	1715	905	776	1403	2016	1700	1930	850	118	622	529	295	35	1270	1576	385	Ø42	2963	729	1490	1126	Ø200	M30	300	50	211	Ø215
712	4...6																																		
712	8...10												1890	2120	945		812								3153	784		1316						
714	4...10																																		
716	4...10												1960	2190	980		882								3223	819		1386						
718	4...6																																		
718	8...10												2090	2320	1045		1012								3353	884		1516						
800	8...10	1620	190	1800	1460	1100	1800	1850	930	748	1440	2106	1945	2205	400		880	589	510	40	1535	1832	219	Ø42	3355	805	1490	1462	Ø240	M36	318	56	252	Ø250
802	8...10																									840									
804	8...10												2125	2385			1060								3535	995								
806	8...10																																		

Dimension Tables
HFC7 454 to HFC7 806 Type of Construction IM B16 Sleeve bearing

1 Center of gravity
2 Tapped hole DB to DIN 332
3 Cover for rotating rectifier
4 Cover for terminal and excitation equipment
5 Cable gland holder
6 Air outlet
7 Air inlet

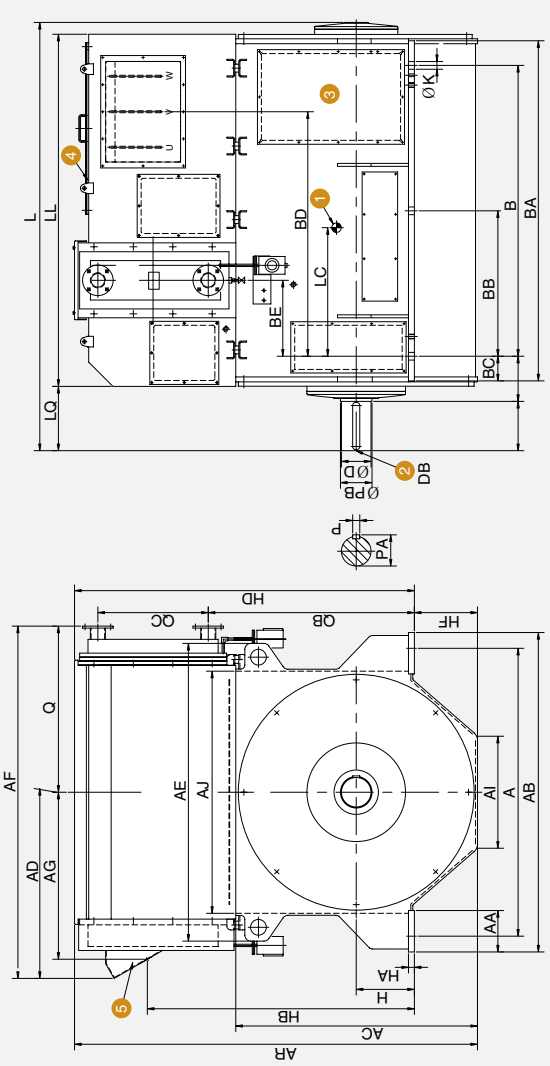


Unit = mm

Type HFC7	No. of Poles	A	AA	AB	AC	AD	AE	AF	AG	AI	AJ	AR	B	BA	BB	BC	BD	C	H	HA	HB	HD	HF	K	L	LC	LL	LQ	Shaft end D	P	DB	E
454	4 or 8	1060	150	1210	914	675	1220	1220	604	442	894	1300	690	900		105	515	605	185	30	802	1040	260	Ø28	2140	807	625	807	260	32	M24	160
455/456																																
502	4...10	1160	180	1380	1013	726		1212	659	482	994	1430	710	1450	725	125	948	400	247	25	886	1429	250	Ø39	2212	745	644	1026	319	40	M24	210
504	4...10																															
506	4...10																															
508	8...10													1622	811		1120							Ø42	2250	827		1198				
564	4...10	1450	210	1610	1138	915	1470	1504	808	535	1218	1730	1440	1690	720	125	705	435	295	30	1135	1492	259	Ø39	2277	665	1140	840	400	50	M24	283
566	4...10																															
568	4...6																															
568	8...10												1500	1750	750		765								2337	695		900				
632	4...10	1460	210	1620	1230	915	1488	1539	818	568	1228	1862	1485	1725	742.5	120	595	425	295	30	1184	1492	320	Ø39	2312	707	1320	695.0	400	50	M30	283
634	4...10																															
636	4...10																															
638	4...6																															
638	8...10												1565	1805	782.5		675											775				
710	4...10	1540	160	1700	1380	1002	1685	1715	905	776	1403	2016	1700	1930	850	118	622	465	295	35	1270	1576	385	Ø42	2599	729	1490	762	400	50	M30	308
712	4...10												1890	2120	945		812								2789	784		952				
714	4...10																															
716	4...6																															
716	8...10												1960	2190	980		882								2859	819		1022				
718	4...6																															
718	8...10												2090	2320	1045		1012								2989	884		1152				
800	8...10	1620	190	1800	1460	1100	1800	1850	930	748	1440	2106	1945	2205	400	130	880	538	510	40	1535	1832	219	Ø42	2968	805	1490	1093	572	60	M36	361
802	8...10																									840	840					
804	8...10												2125	2385			1060								3163	995		1273				
806	8...10																															

Dimension Tables
HFJ7 564 to HFJ7 806 Type of Construction IM B20 Anti-friction bearing

1 Center of gravity
2 Tapped hole DB to DIN 332
3 Cover for rotating rectifier
4 Cover for terminal and excitation equipment
5 Cable gland holder

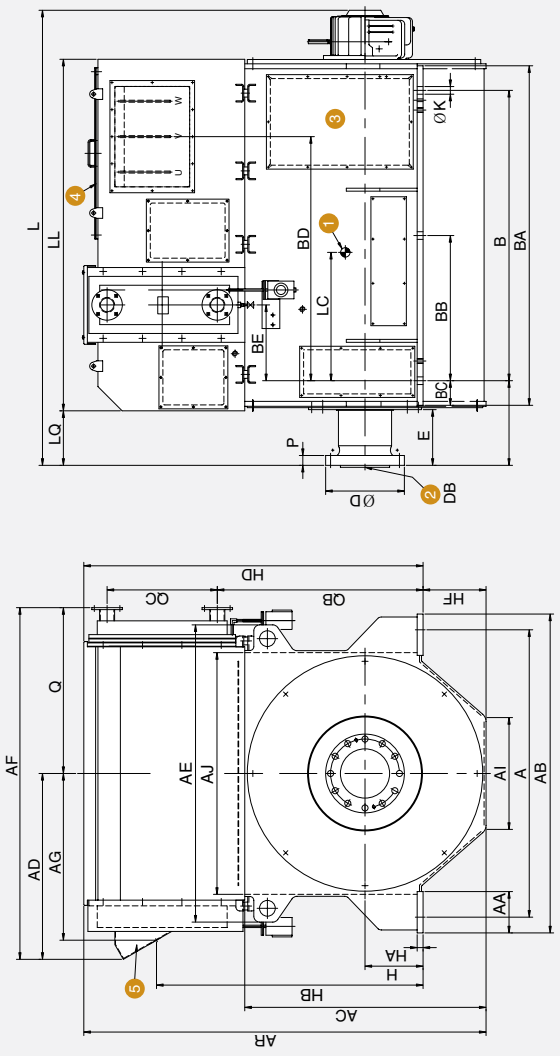


Unit = mm

Type HFJ7	No. of Poles	A	AA	AB	AC	AD	AE	AF	AG	AI	AJ	AR	B	BA	BB	BC	BD	BE	C	H	HA	HB	HD	HF	K	L	LC	LL	LQ	Q	QB	QC	Shaft end D	DB	E	P	PA	PB
564	4...10	1450	210	1610	1113	930	1480	1758	833	535	1200	1933	1440	1690	720	125	1200	385	230	295	30	1302	1673	259	39	2115	635	1746	297	828	993.5	560	Ø130	M24	220	32	137	Ø140
566	4...10																																					
568	4...6												1500	1750	750		1260									2175	665	1806										
568	8...10																																					
632	4...10	1460	210	1620	1226	944	1510	1786	847	568	1228	2044	1475	1725	737.5	125	1240	385	224	295	30	1354	1724	320	Ø39	2172	652	1786	326	842	1046	560	Ø150	M30	250	36	158	Ø160
634	4...10																																					
636	4...10																																					
638	4...6																																					
638	8...10												1556	1805	777.5		1320									2252	692	1866										
710	6...10	1540	160	1700	1376	1133	1685	2063	1020	776	1403	2355	1700	1930	850	118	1368	392	248	295	35	1465	1970	385	Ø42	2504	674	1986	452	930	1211	560	Ø190	M30	350	45	200	Ø200
712	6																																					
712	8...10												1890	2120	945		1558									2694	754	2176										
714	6																																					
716	6...10												1960	2190	980		1628									2764	789	2246										
718	8...6																																					
718	8...10												2090	2320	1045		1758									2894	854	2376										
800	8...10	1620	190	1800	1460	1226	1800	2257	1112	748	1440	2467	1945	2205	400	130	1630	503	323	510	40	1748	2247	219	Ø42	2859	805	2235	528	1031	1473	560	Ø220	M36	350	50	231	Ø240
802	8...10																										840											
804	8...10												2125	2385			1810									3012	995	2415										
806	8...10																																					

Dimension Tables
HFJ7 564 to HFJ7 806 Type of Construction IM B16 Sleeve bearing

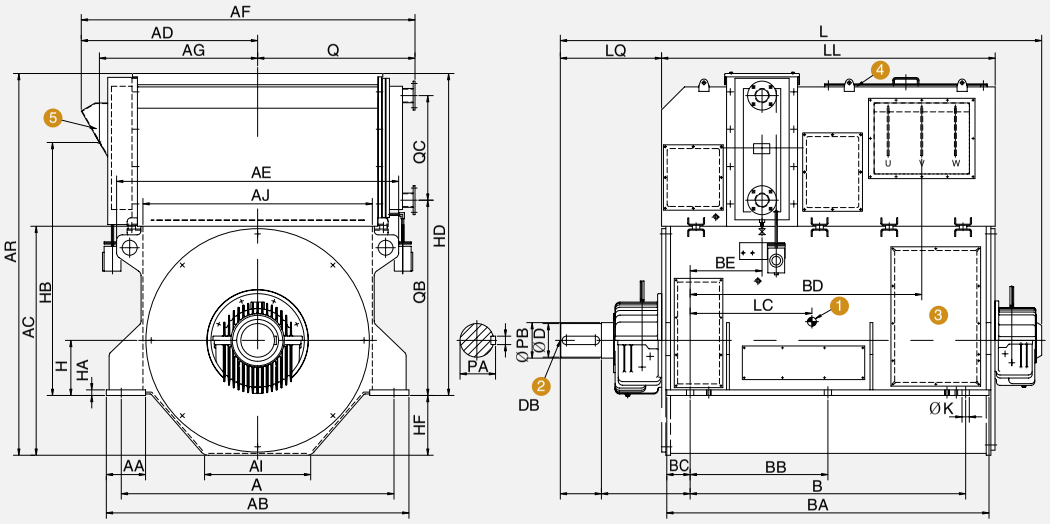
1 Center of gravity
2 Tapped hole DB to DIN 332
3 Cover for rotating rectifier
4 Cover for terminal and excitation equipment
5 Cable gland holder



Unit = mm

Type HFJ7	No. of Poles	A	AA	AB	AC	AD	AE	AF	AG	AI	AJ	AR	B	BA	BB	BC	BD	BE	C	H	HA	HB	HD	HF	K	L	LC	LL	LQ	Q	QB	QC	Shaft end D	Shaft end DB	Shaft end E	Shaft end P
564	4...10	1450	210	1610	1113	930	1480	1758	833	535	1200	1933	1440	1690	720	125	1200	385	435	295	30	1302	1673	259	Ø39	2277	635	1746	282	828	993.5	560	400	M24	283	50
566	4...10																																			
568	4...6												1500	1750	750		1260									2337	665	1806								
568	8...10																																			
632	4...10	1460	210	1620	1226	944	1510	1786	847	568	1228	2044	1475	1725	737.5	125	1240	385	430	295	30	1354	1724	320	Ø39	2312	652	1786	277	842	1046	560	400	M30	283	50
634	4...10																																			
636	4...10																																			
638	4...6																									2392	692	1866								
638	8...10												1556	1805	777.5		1320																			
710	4...10	1540	160	1700	1376	1133	1685	2063	1020	776	1403	2355	1700	1930	850	118	1368	392	465	295	35	1465	1970	385	Ø42	2599	674	1986	319	930	1211	560	400	M30	308	50
712	4...6																																			
712	8...10												1890	2120	945		1558									2789	754	2176								
714	4...10																																			
716	4...6																									2859	789	2246								
716	8...10												1960	2190	980		1628																			
718	4...6																									2989	854	2376								
718	8...10												2090	2320	1045		1758																			
800	8...10	1620	190	1800	1460	1226	1800	2257	1112	748	1440	2467	1945	2205	400	130	1630	503	538	510	40	1748	2247	219	Ø42	2968	775	2235	393	1031	1473	560	400	M36	361	60
802	8...10																										810									
804	8...10												2125	2385			1810									3163	965	2415							
806	10																																			

Dimension Tables
HFJ7 564 to HFJ7 806 Type of Construction IM B20 Sleeve bearing



1. Center of gravity
2. Tapped hole DB to DIN 332
3. Cover for rotating rectifier
4. Cover for terminal and excitation equipment
5. Cable gland holder

Unit = mm

Type HFJ7	No. of Poles	A	AA	AB	AC	AD	AE	AF	AG	AI	AJ	AR	B	BA	BB	BC	BD	BE	C	H	HA	HB	HD	HF	K	L	LC	LL	LQ	Q	QB	QC	Shaft end					
																																	D	DB	E	P	PA	PB
564	4...10	1450	210	1610	1113	930	1480	1758	833	535	1200	1933	1440	1690	720	125	1200	385	466	295	30	1302	1673	259	Ø39	2528	635	1746	533	828	993.5	560	Ø160	M24	220	40	169	Ø180
566	4...10																																					
568	4...6																																					
568	8...10												1500	1750	750		1260									2588	665	1806										
632	4...10	1460	210	1620	1226	944	1510	1786	847	568	1228	2044	1475	1725	737.5	125	1240	385	475	295	30	1354	1724	320	Ø39	2577	652	1786	542	842	1046	560	Ø180	M30	220	40	169	Ø190
634	4...10																																					
636	4...10																																					
638	4...6																																					
638	8...10												1556	1805	777.5		1320									2657	692	1866										
710	6...10	1540	160	1700	1376	1133	1685	2063	1020	776	1403	2355	1700	1930	850	118	1368	392	529	295	35	1465	1970	385	Ø42	2963	674	1986	683	930	1211	560	Ø200	M30	300	50	211	Ø215
712	6																																					
712	8...10												1890	2120	945		1558									3153	754	2176										
714	6																																					
716	6...10												1960	2190	980		1628									3223	789	2246										
718	8...6																																					
718	8...10												2090	2320	1045		1758									3353	854	2376										
800	8...10	1620	190	1800	1460	1226	1800	2257	1112	748	1440	2467	1945	2205	400	130	1630	503	589	510	40	1748	2247	219	Ø42	3335	805	2235	393	1031	1473	560	Ø240	M36	318	56	252	Ø250
802	8...10																										840										
804	8...10												2125	2385			1810									3535	995	2415										
806	8...10																																					