

60  
Years

Proudly manufacturing since 1948

**Centurion high voltage motors**

HTE & HCA series cast iron and fabricated steel



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Specialists in Electric Motors, Geared Motors & AC Drives

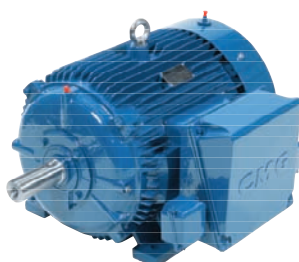
At CMG we offer customised packages to the most demanding industrial markets. Our success is built on a strong commitment to our customers' needs and a willingness to find the best solution possible. We have been in business since 1948 so you can be confident our expertise and experience is second to none.

With over 650 staff around the globe, our branches extend across Australia, New Zealand, Asia Pacific, South Africa, Europe and the Middle East.

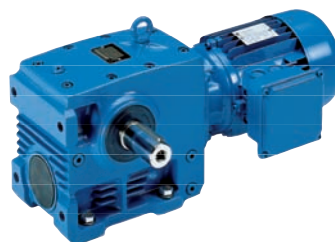
We have the capability to value-add our products through partnerships with leading international companies whose technical skills are equal to ours, including Gear Motors from NORD and AC Drives from VACON. In return we offer these companies superior technical support that complements their own R&D capabilities.

Our manufacturing facility in Melbourne, Australia, demonstrates our commitment to efficient automated manufacturing processes. This facility includes a NATA accredited laboratory which offers complete design and testing services.

***“We specialise in an extensive range of Electric Motors, Geared Motors and AC Drives. Offering a “complete package” ensures our customers get the most efficient, cost effective solution possible.”***



➤ Electric Motors



➤ Geared Motors



➤ AC Drives

# Centurion high voltage HTE & HCA series cast iron & fabricated steel, sizes 355 to 630, up to 2500kW

## European design

Introducing the new range of CMG Centurion series motors covering 2300 volt to 11000 volt, 40Hz to 60Hz. Based on European design criteria and conforming to IEC standards, the Centurion range is available in outputs up to 13000kW medium voltage and high voltage.

This catalogue showcases the Centurion **HTE series** and **HCA series** (up to 2500kW). While not covered in this catalogue, the Centurion is also available in an extended range of design types and sizes. If you require further information on the alternatives available, contact CMG directly.

### HTE Series

HTE are three phase squirrel cage TEFC (IC411), available in frame sizes 355 to 560.

### HCA Series

HCA are three phase squirrel cage CACA (IC611), available in frame sizes 355 to 630.

Both ranges are manufactured in accordance with IEC 60034 and IEC 60072.

### Operating parameters

Standard Centurion series motors are designed with the following parameters:

- Three phase 2300-6600V, 40Hz to 60Hz power supply
- Class F insulation with low temperature rise
- IP55 Degree of Protection
- Low vibration
- Two sets of winding RTD's in an auxiliary terminal box
- Bearing RTD's
- Anti-condensation heaters
- Porous drain plugs
- Standard 2-pack epoxy coating system
- Specific designs for arduous environments and mining specifications

### Additional series versions available:

#### HCA Series (CACA)

kW: 2600 to 4500 Voltage: 3000V to 6600V

kW: 200 to 1300 Voltage: 11000V

#### HCW Series (CACW)

kW: 200 to 13000 Voltage: 3000V to 11000V

#### HTE Series (TEFC)

kW: 200 to 1400 Voltage: 11000V

#### HCR Series (Wound Rotor)

kW: 220 to 2500 Voltage: 3000V to 6600V

kW: 2800 to 5600 Voltage: 11000V

Please note: We also offer the Centurion range in additional frame sizes (up to 1000) and slower speeds (up to 20 pole).

CMG Motors / Cat Centurion 08-08 (1st Edition)

## Product code specification

When placing an order the motor product code should be specified. The product code of the motor is composed in accordance with the following example:

M	3	2	A	0	0	0	0	3	H	C	A	L	/	3	3	0	5
1	2	3	4 - 8					9	10 - 12	13...	Suffix						

### Position 1

**M** = metric frame size

### Position 2

#### Winding design

**3** = Standard three phase motors

### Position 3

#### Number of poles

**2** = 2 poles    **A** = 10 poles

**4** = 4 poles    **C** = 12 poles

**6** = 6 poles    **G** = 16 poles

**8** = 8 poles    **K** = 20 poles

### Positions 4 to 8

#### Rated power output

(kW x 100)

For power greater than 1000kW replace 4th digit with a letter from the table below:

Prefix	Replaces	Prefix	Replaces	Prefix	Replaces
A	10	G	16	M	22
B	11	H	17	N	23
C	12	I	18	O	24
D	13	J	19	P	25
E	14	K	20		
F	15	L	21		

### Position 9

#### Mounting arrangements

**1** = V1    **4** = B3/B5

**3** = B3    **5** = B5

### Positions 10 to 12

#### Series

**HCA** = HCA Series - CACA

**HTE** = HTE Series - TEFC

### Positions 13...\*

#### Series variation

**Blank** = Standard

**L** = LHS terminal box

**V** = Suit VSD

\* Multiple letters indicate multiple variation.

### Suffix

#### Winding design

**/3005** = 3000V / 50Hz

**/3305** = 3300V / 50Hz

**/6005** = 6000V / 50Hz

**/6605** = 6600V / 50Hz

# Mechanical design

## Frame construction

The Centurion series are manufactured from either welded steel plates or cast iron. The frame incorporates, supports and protects the internal active magnetic components. This construction offers exceptional mechanical strength to the motor as well as low vibration levels.

## Stator construction

The stator consists of steel laminated core using low loss high quality electrical steel. The coils forming the stator winding are fitted into the lamination core slots with the stator core being mounted directly on to the motor frame.

## Rotor

The rotor consists of a steel laminated core which is diecast with aluminium. The rotor is designed to allow for the required starting torque and motor operating conditions for each application where necessary.

## Shaft

Shafts are manufactured from thermally treated steel (AIS/SAE 1045) and are adequately sized to provide strength and rigidity during operation. Shaft extension run out, concentricity, and perpendicularity to the face of standard flange mount motors complies with normal grade tolerances as specified in IEC 60072.

## Finish

Standard paint finish for Centurion HTE Series motors is a 2 part epoxy RAL 3002 Carmine Red paint. The HCA Series is finished in a 2 part epoxy RAL 5015 Sky Blue paint.

- Castings are abrasive blast cleaned.
- Bolts, nuts and screws are zinc passivated.
- The cleaned surface is prime coated, immediately after blast cleaning to ensure that surface corrosion does not form, with 2 coats of an epoxy primer (2-Pack) to an average dry film thickness (DFT) of 30µm.
- The Intermediate coat is applied to all external surfaces including the fan, fan cowl inner surface and rear end-shield, with a 2 part surface tolerant, epoxy mastic coating with a matt finish. This coating will have an average DFT of 30µm.
- To complete the system a finish coat of 2 pack epoxy to the customer's colour. The final coat will have an average DFT of 40µm.

The total DFT of the system shall be an average of 100µm.

Special paint systems can be provided for motors in corrosive environments, selected to resist substances such as acid, salt water and extremes of climatic conditions.

## Cooling

HTE series (TEFC) are fitted with a radial blade fabricated steel fan, steel fan cover and are designated as IC 411.

HCA series (CACA) are fitted with a radial blade steel fan on the main shaft and the air is then directed through the heat exchanger via a fabricated steel duct. This motor is also fitted with an internal fan mounted on the shaft and contained within the stator body and are designated as IC 611.

## Shaft locking clamps

All motors within the Centurion range are fitted with a substantial shaft-locking clamp to help prevent false brinnelling in transport. The motors should always be transported or stored with this clamp fitted and tensioned to avoid bearing damage.

Once the motor has reached its final destination and is ready for installation, the shaft-locking clamp must be removed before the motor is run no-load to confirm that the bearings are in good condition.

After this initial run normal installation can continue with additions of pulleys or couplings.

## Porous drain plugs

Sintered bronze porous drain plugs are fitted to the lowest point of the motor enclosure as standard. Using sintered bronze plugs ensures the IP integrity is maintained during operation.

## Low noise options

Where there is a requirement for reduced noise levels several options are available for both the HTE and HCA series. Please contact your nearest CMG office for more information.

# Electrical design

## Winding design

Medium and high voltage motor coils are manufactured using rectangular copper wire which are form wound and fully insulated using mica tape. Tapes, both conductive and semi-conductive, are also used to insulate the coils to improve the resistance to corona effect.

## Varnishing system

All Centurion motors are varnished based on the “Vacuum Pressure Impregnation” (VPI) system, which for many years has been recognised as the most efficient and reliable varnishing process for rotating machines.

## Nameplates

Rating plates are manufactured from stainless steel and are engraved, not printed, to provide permanency of information.

RTD and heater nameplates are also manufactured from stainless steel.

## Earth Terminal

All Centurion motors are fitted with an earth stud located in the main terminal box, an additional earthing stud is fitted to the motor foot for grounding of the frame.

## RTD's

To effectively monitor temperature, all Centurion motors as standard are fitted with 2 sets of 3 wire PT100 Resistance Temperature Detectors (RTD's) in the main winding. RTD's are terminated in an auxiliary terminal box affixed to the stator frame.

Bearing RTD's are also supplied as standard for both drive and non-drive end bearings and are terminated in the same auxiliary terminal box as that of winding RTD's.

## Anti-condensation heaters

Heaters are fitted to all Centurion motors and are connected during manufacture for 220 - 250V operation as standard, 380 - 440 volt can be supplied upon request.

Heaters are terminated in a separate auxiliary terminal box affixed to the stator frame.

# Modifications, variations and optional extras

## VVVF Drives

### Option 1 - Separately driven cooling fan

This option should be used when the motor speed is reduced to below 30Hz in constant torque applications. For centrifugal fan or pump applications, no separate cooling fan is required.

### Option 2 - Standard motor (EDM)

When option 2 is selected, motors are supplied with an insulated bearing, normally at the non-drive end, together with an earthing brush fitted at the drive end. The earthing brush is designed to remove the effect of Electrical Discharge Machining (EDM) through the bearings.

CMG recommends the use of an insulated bearing and earth brush for all VVVF drive applications.

## Rain Canopy

Rain canopies are available for HTE series where motors are mounted vertically shaft down.

## Dust shields

For use in very dusty environments, dust shields are available in either steel or stainless steel to suit the HTE series. The shields are fitted over the motor and prevent the ribs of the motor from clogging with material and are suitable for horizontal applications.

# Performance data

Centurion HTE series, three phase, 3300V 50Hz  
IP55, F class insulation, B class temperature rise

kW	Motor frame	Speed [ r/min ]	Efficiency at full load [ % ]	Power factor at full load [ cos φ ]	Current		Torque			Moment of inertia J=¼GD² [ kg m² ]	Weight of foot mount motor [ kg ]	Current Full load I <sub>N</sub>		
					Full load I <sub>N</sub> [ A ]	Locked rotor I <sub>L</sub> [ A ]	Full load T <sub>N</sub> [ Nm ]	Locked rotor T <sub>L</sub> [ Nm ]	Break down T <sub>B</sub> [ Nm ]			3000V [ A ]	6000V [ A ]	6600V [ A ]
<b>3000 r/min = 2 Pole</b>														
185	355 - 75	2976	93.9	0.84	41	287	594	416	1188	19	2330	45.1	22.6	20.5
200	355 - 75	2975	94.0	0.84	44	310	642	449	1284	21	2420	48.7	24.4	22.2
220	355 - 75	2976	94.2	0.85	48	336	706	494	1412	22	2510	52.8	26.4	24.0
250	355 - 75	2977	94.4	0.85	55	382	802	561	1604	25	2630	60.0	30.0	27.3
280	355 - 75	2976	94.6	0.86	60	421	899	629	1798	27	2760	66.2	33.1	30.1
315	400 - 85	2979	94.8	0.86	68	473	1010	707	2020	28	3550	74.4	37.2	33.8
355	400 - 85	2980	94.9	0.86	76	533	1138	797	2276	31	3700	83.7	41.9	38.1
400	400 - 85	2980	95.1	0.87	85	592	1282	897	2564	33	3850	93.1	46.5	42.3
450	400 - 85	2982	95.2	0.86	96	673	1441	1009	2882	36	4050	106	52.9	48.1
500	450 - 95	2982	95.3	0.87	105	738	1601	1121	3202	50	4600	116	58.0	52.7
560	450 - 95	2980	95.4	0.87	118	826	1795	1257	3590	54	4740	130	64.9	59.0
630	450 - 95	2984	95.5	0.88	133	929	2016	1411	4032	59	4990	146	73.0	66.4
710	450 - 95	2982	95.7	0.88	148	1033	2274	1592	4548	66	5130	162	81.1	73.8
800	500 - 110	2986	95.6	0.88	166	1164	2559	1791	5118	97	5900	183	91.5	83.2
900	500 - 110	2985	95.7	0.89	185	1294	2879	2015	5758	105	6100	203	102	92.5
1000	500 - 110	2987	95.9	0.89	205	1435	3197	2238	6394	115	6350	226	113	103
1120	500 - 110	2988	96.0	0.88	232	1623	3580	2506	7160	125	6650	255	127	116
1250	560 - 130	2988	96.1	0.89	256	1790	3995	2797	7990	190	8500	281	141	128
1400	560 - 130	2987	96.3	0.89	286	2001	4476	3133	8952	210	8750	314	157	143
1600	560 - 130	2988	96.5	0.90	322	2256	5114	3580	10228	230	9000	355	177	161
<b>1500 r/min = 4 Pole</b>														
185	355 - 100	1485	93.7	0.84	41	267	1190	952	2380	33	2300	45.1	22.6	20.5
200	355 - 100	1485	93.9	0.84	44	288	1286	1029	2572	35	2350	48.7	24.4	22.2
220	355 - 100	1486	94.1	0.83	49	317	1414	1131	2828	37	2400	53.6	26.8	24.4
250	355 - 100	1487	94.3	0.84	55	359	1606	1285	3212	40	2500	60.7	30.4	27.6
280	355 - 100	1486	94.5	0.84	62	400	1799	1439	3598	44	2650	67.8	33.9	30.8
315	400 - 110	1487	94.6	0.85	69	445	2023	1618	4046	67	4130	75.4	37.7	34.3
355	400 - 110	1488	94.8	0.85	77	501	2278	1822	4556	72	4260	84.7	42.4	38.5
400	400 - 110	1488	95.0	0.86	86	556	2567	2054	5134	77	4380	94.2	47.1	42.8
450	400 - 110	1489	95.2	0.85	97	632	2886	2309	5772	82	4500	107	53.5	48.6
500	450 - 120	1490	95.3	0.86	107	694	3205	2564	6410	110	4600	117	58.7	53.4
560	450 - 120	1490	95.4	0.87	118	767	3589	2871	7178	120	4800	130	64.9	59.0
630	450 - 120	1491	95.5	0.86	134	872	4035	3228	8070	132	5000	148	73.8	67.1
710	450 - 120	1489	95.6	0.86	151	982	4554	3643	9108	144	5200	166	83.1	75.5
800	500 - 130	1492	95.7	0.87	168	1093	5121	4097	10242	190	6500	185	92.5	84.1
900	500 - 130	1490	95.8	0.88	187	1214	5768	4614	11536	202	6700	205	103	93.4
1000	500 - 130	1491	96.0	0.88	207	1346	6405	5124	12810	217	6950	228	114	104
1120	500 - 130	1492	96.0	0.87	235	1525	7169	5735	14338	234	7200	258	129	117
1250	560 - 150	1492	96.2	0.88	258	1679	8001	5601	16002	395	8000	284	142	129
1400	560 - 150	1492	96.3	0.88	289	1879	8961	6273	17922	415	8250	318	159	145
1600	560 - 150	1493	96.4	0.87	334	2169	10234	7164	20468	440	8500	367	184	167

This data is provided for guidance only, guaranteed only when confirmed by CMG.

# Performance data

Centurion HTE series, three phase, 3300V 50Hz  
IP55, F class insulation, B class temperature rise

kW	Motor frame	Speed [ r/min ]	Efficiency at full load [%]	Power factor at full load [ cos φ ]	Current		Torque			Moment of inertia J=¼GD² [ kg m² ]	Weight of foot mount motor [ kg ]	Current Full load I <sub>N</sub>		
					Full load I <sub>N</sub> [ A ]	Locked rotor I <sub>L</sub> [ A ]	Full load T <sub>N</sub> [ Nm ]	Locked rotor T <sub>L</sub> [ Nm ]	Break down T <sub>B</sub> [ Nm ]			3000V [ A ]	6000V [ A ]	6600V [ A ]
<b>1000 r/min = 6 Pole</b>														
160	355 - 100	989	93.4	0.80	38	225	1545	1236	3090	42	2230	41.3	20.6	18.8
185	355 - 100	989	93.5	0.80	43	259	1786	1429	3572	47	2360	47.5	23.8	21.6
200	355 - 100	988	93.7	0.80	47	280	1933	1546	3866	53	2500	51.4	25.7	23.4
220	400 - 110	989	93.8	0.82	50	300	2124	1699	4248	84	3720	55.0	27.5	25.0
250	400 - 110	991	93.9	0.81	58	345	2409	1927	4818	90	3800	63.3	31.6	28.8
280	400 - 110	990	94.1	0.82	63	380	2701	2161	5402	96	3900	69.7	34.9	31.7
315	400 - 110	990	94.3	0.82	71	427	3039	2431	6078	102	4000	78.3	39.2	35.6
355	450 - 130	990	94.5	0.83	79	475	3424	2739	6848	124	4600	87.1	43.6	39.6
400	450 - 130	991	94.6	0.83	89	534	3855	3084	7710	133	4750	97.9	49.0	44.5
450	450 - 130	989	94.7	0.84	99	594	4345	3476	8690	142	4900	108.9	54.5	49.5
500	450 - 130	990	94.9	0.84	111	666	4823	3858	9646	151	5100	122.1	61.1	55.5
560	500 - 140	992	95.1	0.83	124	745	5391	4313	10782	234	6200	136.5	68.3	62.1
630	500 - 140	992	95.2	0.83	139	836	6065	4852	12130	251	6400	153.3	76.7	69.7
710	500 - 140	991	95.4	0.84	155	930	6842	5474	13684	268	6600	170.5	85.3	77.5
800	500 - 140	992	95.4	0.84	177	1060	7702	6162	15404	285	6900	194.4	97.2	88.4
900	560 - 160	991	95.6	0.84	196	1175	8673	6071	17346	447	7500	215.5	108	98.0
1000	560 - 160	992	95.7	0.85	216	1295	9627	6739	19254	468	7700	237.4	119	108
1120	560 - 160	990	95.8	0.85	242	1450	10804	7563	21608	490	8000	265.8	133	121
1250	560 - 160	992	96.0	0.85	268	1608	12034	8424	24068	512	8200	294.8	147	134
<b>750 r/min = 8 Pole</b>														
160	400 - 110	740	93.2	0.76	40	217	2065	1652	4130	84	3670	43.5	21.7	19.8
185	400 - 110	741	93.3	0.76	46	251	2384	1907	4768	90	3700	50.2	25.1	22.8
200	400 - 110	740	93.5	0.77	49	267	2581	2065	5162	96	3960	53.4	26.7	24.3
220	400 - 110	742	93.7	0.77	53	293	2832	2266	5664	102	3970	58.5	29.3	26.6
250	450 - 130	742	93.9	0.78	60	328	3218	2574	6436	115	4600	65.6	32.8	29.8
280	450 - 130	743	94.1	0.78	67	367	3599	2879	7198	124	4750	73.4	36.7	33.4
315	450 - 130	741	94.2	0.77	73	400	4060	3248	8120	133	4900	80.0	40.0	36.4
355	450 - 130	743	94.4	0.79	84	464	4563	3650	9126	142	5100	92.8	46.4	42.2
400	500 - 140	744	94.5	0.79	94	516	5134	4107	10268	217	6000	103.2	51.6	46.9
450	500 - 140	744	94.6	0.79	105	579	5776	4621	11552	234	6200	115.8	57.9	52.7
500	500 - 140	745	94.8	0.80	115	634	6409	5127	12818	251	6400	126.8	63.4	57.7
560	500 - 140	745	94.9	0.80	129	710	7179	5743	14358	268	6700	142.0	71.0	64.6
630	560 - 160	744	95.1	0.81	143	787	8087	5661	16174	432	7500	157.4	78.7	71.6
710	560 - 160	745	95.3	0.82	161	886	9101	6371	18202	447	7700	177.2	88.6	80.6
800	560 - 160	745	95.4	0.81	181	997	10255	7179	20510	468	8000	199.4	99.7	90.7
900	560 - 160	745	95.6	0.82	204	1119	11537	8076	23074	490	8200	223.9	112	102

This data is provided for guidance only, guaranteed only when confirmed by CMG.

# Performance data

Centurion HCA series, three phase, 3300V 50Hz  
IP55, F class insulation, B class temperature rise

kW	Motor frame	Speed [ r/min ]	Efficiency at full load [ % ]	Power factor at full load [ cos φ ]	Current		Torque			Moment of inertia $J=\frac{1}{2}GD^2$ [ kg m <sup>2</sup> ]	Weight of foot mount motor [ kg ]	Current Full load $I_N$		
					Full load $I_N$ [ A ]	Locked rotor $I_L$ [ A ]	Full load $T_N$ [ Nm ]	Locked rotor $T_L$ [ Nm ]	Break down $T_B$ [ Nm ]			3000V [ A ]	6000V [ A ]	6600V [ A ]
<b>3000 r/min = 2 Pole</b>														
200	355 - 80	2975	92.4	0.85	45	312	642	385	1156	4.1	2500	49.0	24.5	22.3
220	355 - 80	2973	92.5	0.85	49	342	707	424	1273	4.2	2600	53.8	26.9	24.5
250	355 - 80	2972	92.6	0.84	56	389	803	482	1445	4.3	2650	61.2	30.6	27.8
280	355 - 80	2970	92.8	0.85	62	435	900	540	1620	4.5	2700	68.4	34.2	31.1
315	355 - 80	2974	93.1	0.86	70	487	1012	607	1822	4.7	2800	76.6	38.3	34.8
355	400 - 90	2977	93.4	0.85	77	541	1139	683	2050	5.9	3500	85.0	42.5	38.7
400	400 - 90	2876	93.7	0.86	87	608	1328	797	2390	6	3550	95.6	47.8	43.5
450	400 - 90	2977	94.0	0.86	98	683	1444	866	2599	6.1	3650	107	53.6	48.8
500	400 - 90	2977	94.2	0.85	108	756	1604	962	2887	6.4	4000	119	59.4	54.0
560	450 - 100	2977	94.4	0.86	121	845	1796	1078	3233	13	4400	133	66.4	60.4
630	450 - 100	2978	94.6	0.87	134	938	2020	1212	3636	14	4500	147	73.7	67.0
710	450 - 100	2977	94.7	0.87	151	1055	2278	1367	4100	15	4650	166	82.9	75.4
800	450 - 100	2975	94.8	0.86	170	1187	2568	1541	4622	16	5000	187	93.3	84.8
900	500 - 110	2982	95.0	0.87	191	1334	2882	1729	5188	21	6000	210	105	95.3
1000	500 - 110	2982	95.1	0.88	211	1480	3203	1922	5765	23	6200	233	116	106
1120	500 - 110	2981	95.2	0.87	218	1528	3588	2153	6458	24	6600	240	120	109
1250	500 - 110	2980	95.3	0.87	262	1835	4006	2404	7211	25	7000	288	144	131
1400	560 - 130	2980	95.4	0.88	292	2043	4487	2692	8077	36	9500	321	160	146
1600	560 - 130	2979	95.5	0.88	333	2332	5129	3077	9232	40	9700	366	183	167
1800	560 - 130	2982	95.6	0.89	374	2620	5765	3459	10377	41	10000	412	206	187
2000	630 - 140	2982	95.7	0.87	411	2875	6405	3843	11529	50	11700	452	226	205
2240	630 - 140	2982	95.8	0.88	465	3254	7174	4304	12913	57	12200	511	256	232
2500	630 - 140	2984	96.0	0.88	519	3631	8001	4801	14402	64	12700	571	285	259
<b>1500 r/min = 4 Pole</b>														
185	355 - 100	1480	92.8	0.84	41	267	1194	187	2149	4.7	2700	45.2	22.6	20.6
200	355 - 100	1482	92.9	0.85	44	289	1289	202	2320	5	2800	48.8	24.4	22.2
220	355 - 100	1480	93.0	0.85	49	317	1420	222	2556	5.4	2850	53.6	26.8	24.4
250	355 - 100	1480	93.1	0.85	55	359	1613	252	2903	6	2900	60.8	30.4	27.7
280	400 - 110	1485	93.2	0.86	61	397	1801	278	3242	7.6	2975	67.2	33.6	30.6
315	400 - 110	1484	93.3	0.86	69	447	2027	313	3649	8.4	3000	75.6	37.8	34.4
355	400 - 110	1485	93.5	0.85	77	502	2283	352	4109	9	3150	85.0	42.5	38.7
400	400 - 110	1486	93.7	0.86	87	565	2571	395	4628	9.9	3250	95.6	47.8	43.5
450	400 - 110	1485	93.9	0.87	98	634	2894	444	5209	11	3350	107	53.6	48.8
500	450 - 120	1486	94.0	0.86	108	703	3213	492	5783	18	4400	119	59.5	54.1
560	450 - 120	1485	94.2	0.86	121	786	3601	550	6482	19	4500	133	66.5	60.5
630	450 - 120	1484	94.4	0.87	134	872	4054	611	7297	20	4750	148	73.8	67.1
710	450 - 120	1485	94.6	0.88	153	993	4566	695	8219	23	4950	168	84.0	76.4
800	500 - 130	1487	94.8	0.87	170	1102	5138	772	9248	40	5600	187	93.3	84.8
900	500 - 130	1488	94.9	0.87	191	1240	5776	868	10397	43	5800	210	105	95.4
1000	500 - 130	1488	95.0	0.87	212	1376	6418	963	11552	48	6000	233	116	106
1120	500 - 130	1487	95.1	0.88	234	1522	7193	1066	12947	52	6200	258	129	117
1250	560 - 150	1488	95.2	0.88	261	1697	8023	1018	14441	55	8500	287	144	131
1400	560 - 150	1487	95.3	0.89	292	1898	8991	1139	16184	58	8800	321	161	146
1600	560 - 150	1488	95.4	0.88	333	2167	10269	1300	18484	63	9200	367	183	167
1800	630 - 170	1489	95.5	0.88	375	2435	11545	1461	20781	101	11600	412	206	187
2000	630 - 170	1488	95.6	0.89	416	2704	12836	1622	23105	107	12000	458	229	208
2240	630 - 170	1488	95.7	0.88	465	3024	14376	1814	25877	120	12300	512	256	233

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# Performance data

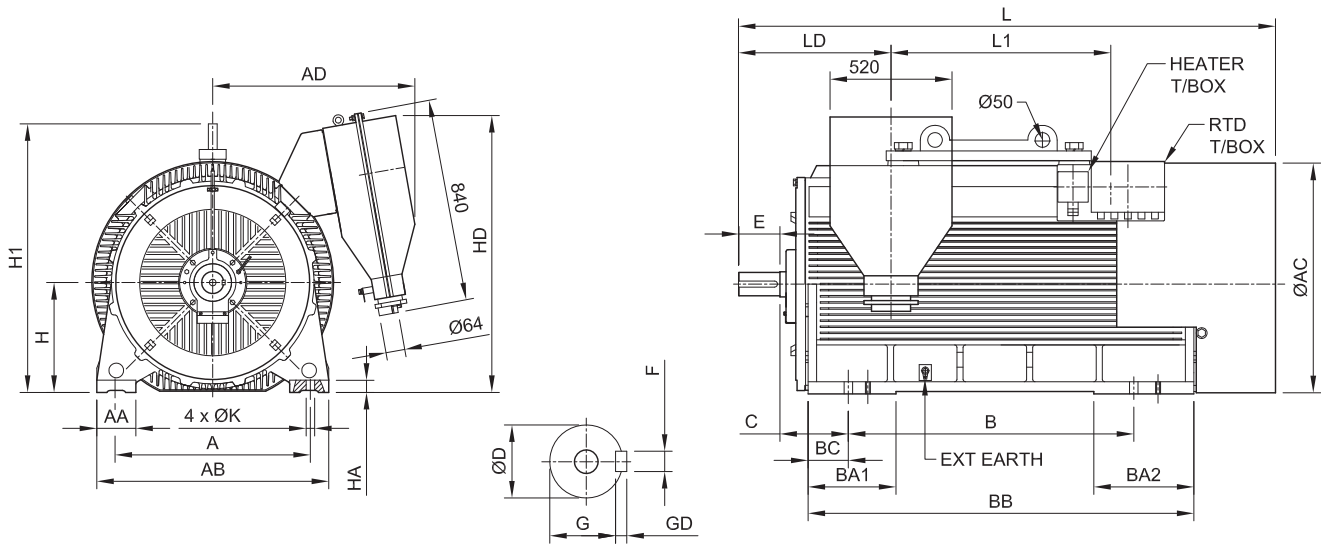
Centurion HCA series, three phase, 3300V 50Hz  
IP55, F class insulation, B class temperature rise

kW	Motor frame	Speed [ r/min ]	Efficiency at full load [ % ]	Power factor at full load [ cos φ ]	Current		Torque			Moment of inertia $J = \frac{1}{2}GD^2$ [ kg m <sup>2</sup> ]	Weight of foot mount motor [ kg ]	Current Full load $I_N$		
					Full load $I_N$ [ A ]	Locked rotor $I_L$ [ A ]	Full load $T_N$ [ Nm ]	Locked rotor $T_L$ [ Nm ]	Break down $T_B$ [ Nm ]			3000V [ A ]	6000V [ A ]	6600V [ A ]
<b>1000 r/min = 6 Pole</b>														
185	400 - 110	991	92.4	0.82	43	257	1783	1248	3209	13	3300	47.1	23.5	21.4
200	400 - 110	990	92.6	0.82	46	276	1929	1350	3472	14	3400	50.6	25.3	23.0
220	400 - 110	990	92.8	0.81	51	304	2122	1485	3820	15	3500	55.7	27.8	25.3
250	400 - 110	989	93.0	0.83	57	343	2414	1690	4345	16	3600	62.9	31.5	28.6
280	400 - 110	988	93.3	0.82	65	388	2706	1894	4871	17	3700	71.1	35.5	32.3
315	400 - 110	988	93.5	0.82	72	431	3045	2132	5481	18.5	3800	79.0	39.5	35.9
355	450 - 130	989	93.7	0.83	80	479	3428	2400	6170	24	4200	87.8	43.9	39.9
400	450 - 130	990	93.8	0.82	90	539	3859	2701	6946	26	4300	98.8	49.4	44.9
450	450 - 130	989	94.1	0.84	101	605	4345	3042	7821	27	4500	111	55.4	50.4
500	450 - 130	990	94.3	0.83	112	670	4823	3376	8681	29	4600	123	61.4	55.8
560	500 - 140	991	94.4	0.84	124	742	5397	3778	9715	44	5900	136	68.0	61.8
630	500 - 140	990	94.5	0.85	139	832	6077	4254	10939	50	6100	153	76.3	69.4
710	500 - 140	990	94.8	0.85	156	936	6849	4794	12328	54	6300	172	85.8	78.0
800	500 - 140	991	94.9	0.84	175	1052	7709	5396	13876	60	6500	193	96.5	87.7
900	560 - 160	992	95.0	0.85	195	1268	8664	6065	15595	66	8700	215	107	97.5
1000	560 - 160	991	95.1	0.86	216	1407	9637	6746	17347	73	8900	238	119	108
1120	560 - 160	990	95.2	0.84	242	1574	10804	7563	19447	77	9200	266	133	121
1250	630 - 180	991	95.3	0.87	267	1734	12046	8432	21683	118	11400	293	147	133
1400	630 - 180	991	95.4	0.86	299	1942	13491	9444	24284	126	11900	329	164	149
1600	630 - 180	989	95.6	0.87	341	2213	15450	10815	27810	134	12300	375	187	170
<b>750 r/min = 8 Pole</b>														
185	400 - 110	740	92.5	0.78	45	248	2388	198	4298	19	3500	49.5	24.8	22.5
200	400 - 110	740	92.7	0.78	48	266	2581	213	4646	21	3600	53.2	26.6	24.2
220	400 - 110	741	92.9	0.79	53	292	2835	233	5103	22	3700	58.3	29.2	26.5
250	450 - 130	742	93.0	0.79	59	327	3218	261	5792	29	4500	65.3	32.7	29.7
280	450 - 130	743	93.2	0.78	67	366	3599	293	6478	31	4600	73.3	36.6	33.3
315	450 - 130	743	93.4	0.79	76	417	4049	334	7288	33	4800	83.4	41.7	37.9
355	450 - 130	742	93.5	0.79	84	463	4569	370	8224	36	5000	92.6	46.3	42.1
400	500 - 140	743	93.7	0.80	93	513	5141	410	9254	47	5700	103	51.3	46.6
450	500 - 140	744	93.8	0.80	105	576	5776	461	10397	54	6000	115	57.6	52.4
500	500 - 140	743	94.2	0.81	116	638	6427	510	11569	59	6200	128	63.8	58.0
560	500 - 140	744	94.4	0.82	130	714	7188	571	12938	65	6400	143	71.4	64.9
630	560 - 160	745	94.5	0.82	142	853	8076	597	14537	84	8300	156	78.2	71.1
710	560 - 160	745	94.6	0.83	160	961	9101	673	16382	92	8500	176	88.1	80.1
800	560 - 160	744	94.7	0.83	180	1081	10269	756	18484	98	8700	198	99.1	90.1
900	630 - 180	745	94.8	0.84	198	1187	11537	831	20767	128	11100	218	109	98.9
1000	630 - 180	745	94.9	0.84	209	1256	12819	879	23074	134	11300	230	115	105
1120	630 - 180	744	95.0	0.85	246	1474	14376	1032	25877	146	11600	270	135	123
1250	630 - 180	744	95.1	0.84	274	1643	16045	1150	28881	162	12200	301	151	137

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# Dimensional drawings

## HTE Foot mount B3 (IM1001)



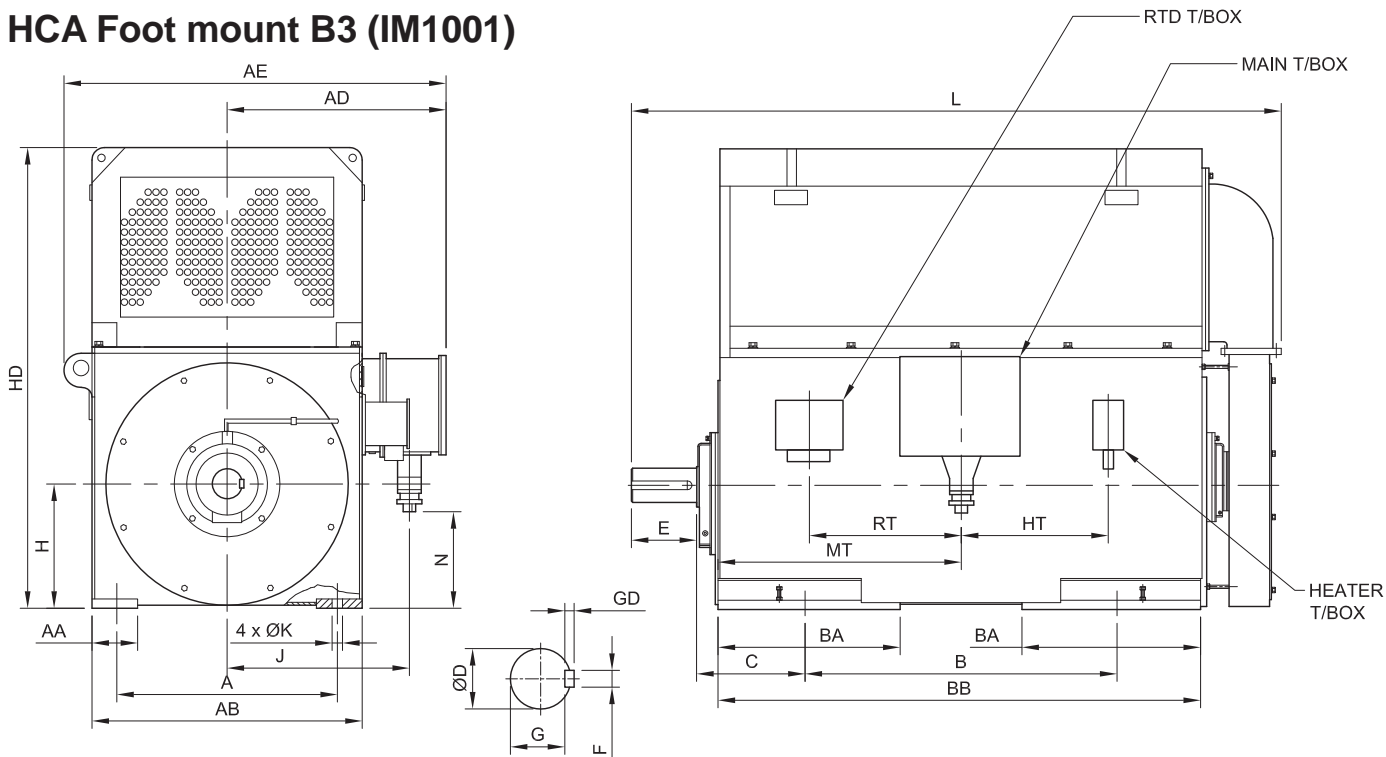
Frame size	Poles	Dimensions										
		A	B	C	D	E	F	GD	G	H	K	L
355	2	630	900	254	75	140	20	12	67.5	355	28	2050
	4, 6				100	210	28	16	90			
400	2	710	1000	280	85	170	22	14	76	400	35	2150
	4, 6, 8				110	210	28	16	100			
450	2	800	1120	280	95	170	25	14	86	450	35	2350
	4				120	210	32	18	109			2250
	6, 8				130	250	32	18	119			2300
500	2	900	1250	315	110	210	28	16	100	500	42	2650
	4				130	250	32	18	119			2550
	6, 8				140	250	36	20	128			
560	2	1000	1400	355	130	250	32	18	119	560	42	2950
	4				150	250	36	20	138			2800
	6, 8				160	300	40	22	147			2850

Frame size	Poles	Outline dimensions												
		AA	AB	AC	AD	BA1	BA2	BB	BC	H1	HA	HD	L1	LD
355	2	160	790	800	900	320	420	1380	146	900	40	1000	600	640
	4, 6													710
400	2	160	870	910	950	350	440	1500	170	950	45	1050	720	670
	4, 6, 8													710
450	2	160	950	1030	1000	360	410	1580	165	1000	50	1150	800	675
	4													715
	6, 8													755
500	2	180	1080	1150	1060	450	550	1730	165	1060	50	1280	950	850
	4													790
	6, 8													790
560	2	180	1180	1260	1100	550	550	1970	205	1330	60	1380	1200	910
	4													785
	6, 8													835

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# Dimensional drawings

## HCA Foot mount B3 (IM1001)

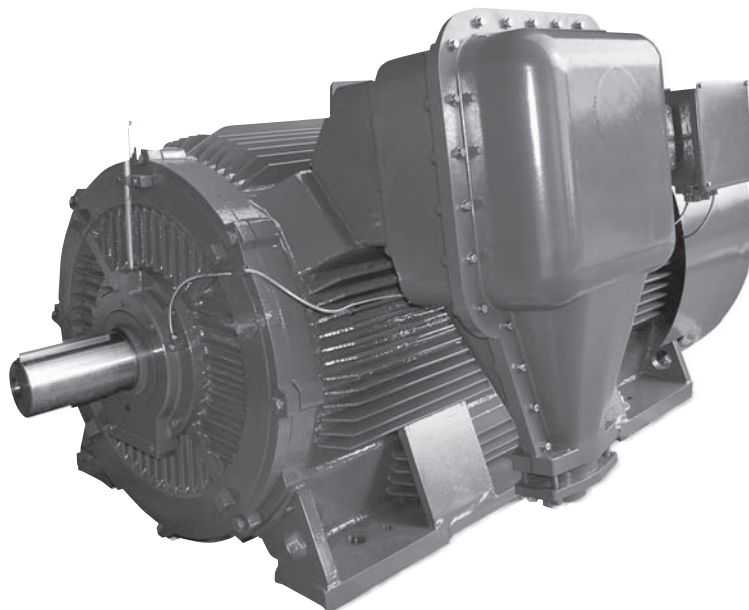


Frame size Poles		Dimensions													
Frame size	Poles	A	B	C	D	E	F	G	GD	H	J	N	K	L	
355	2	630	900	315	80	170	22	71	14	355	585	162	28	2050	
355	4			315	100	210	28	90	16		665	145		1962	
400	2	710	1000	375	90	170	25	81	14	400	585	175	35	2260	
400	4, 6, 8			335	110	210	28	100	16		710	213		2200	
450	2	800	1120	400	100	210	28	90	16	450	660	225	35	2460	
450	4			355	120	210	32	109	18		660	285		2245	
450	6, 8			355	130	250	32	119	18		750	315		2363	
500	2	900	1250	560	110	210	28	100	16	500	720	246	42	2800	
500	4			475	130	250	32	119	18		710	250		2780	
500	6, 8			475	140	250	36	128	20		710	250		2800	
560	2	1000	1400	560	130	250	32	119	18	560	750	315	42	3100	
560	4			500	150	250	36	138	20		750	315		3420	
560	6, 8			500	160	300	40	147	22		890	335		2960	
630	2	1120	1600	560	140	250	36	128	20	630	850	265	48	3400	
630	4			530	170	300	40	157	22		850	265		3400	
630	6, 8			530	180	300	45	165	25		960	335		3545	

Frame size Poles		Outline dimensions									
Frame size	Poles	AA	AB	AE	AD	BA	BB	HD	HT	MT	RT
355	2	170	820	990	700	480	1430	1470	475	715	475
355	4				760	430	1405	1500	425	770	465
400	2	190	920	1080	760	530	1580	1700	465	790	465
400	4, 6, 8	180			820	500	1500	1730	625	700	475
450	2	220	1020	1200	905	500	1600	1800	450	805	485
450	4				905	600	1670	1885	500	825	500
450	6, 8				950	600	1670	1885	500	825	500
500	2	220	1140	1300	965	680	1930	2140	500	950	500
500	4				930	630	1840	2070	780	850	530
500	6, 8				930	630	1840	2070	780	850	530
560	2	220	1200	1420	1000	500	1960	2420	630	1025	435
560	4				1000	600	2060	2420	700	1060	670
560	6, 8				1000	700	2060	2420	700	1060	670
630	2	220	1360	1620	1100	770	2200	2550	680	1275	700
630	4				1100	700	2400	2550	670	1260	770
630	6, 8				1100	520	2300	2550	670	1210	770

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# Noise levels

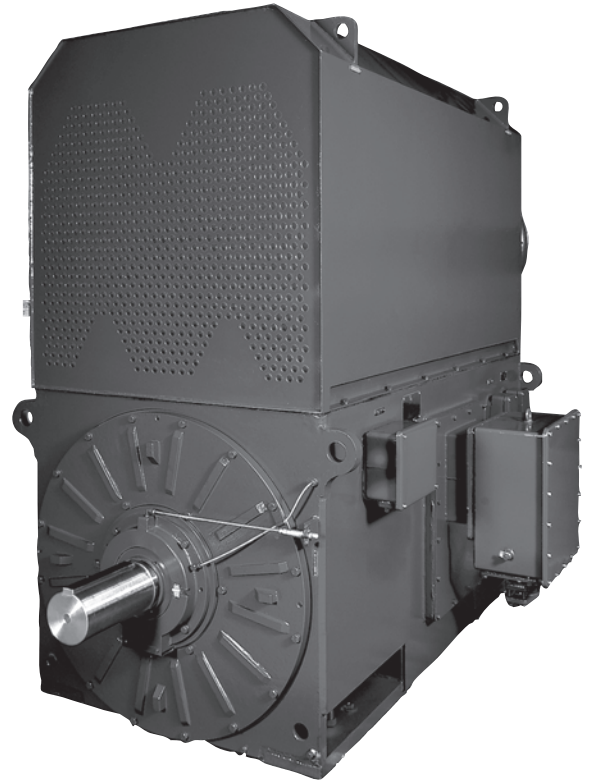


## HTE Series - TEFC

Frame size	2P		4P		6P		8P	
	Output [ kW ]	Noise level dB(A)	Output [ kW ]	Noise level dB(A)	Output [ kW ]	Noise level dB(A)	Output [ kW ]	Noise level dB(A)
355	185	85	185	85	-	-	-	-
355	200	85	200	85	-	-	-	-
355	220	85	220	85	160	80	-	-
355	250	85	250	85	185	80	-	-
355	280	85	280	85	200	80	-	-
400	315	85	315	85	220	80	160	80
400	355	85	355	85	250	80	185	80
400	400	85	400	85	280	80	200	80
400	450	85	450	85	315	80	220	80
450	500	85	500	85	355	85	250	85
450	560	85	560	85	400	85	280	85
450	630	85	630	85	450	85	315	85
450	710	85	710	85	500	85	355	85
500	800	95	800	95	560	90	400	85
500	900	95	900	95	630	90	450	85
500	1000	95	1000	95	710	90	500	85
500	1120	95	1120	95	800	90	560	85
560	1250	95	1250	95	900	90	630	90
560	1400	95	1400	95	1000	90	710	90
560	1600	95	1600	95	1120	90	800	90
560	-	-	-	-	1250	90	900	90

Sound pressure level no load @ 1 Metre

# Noise levels



## HCA Series - CACA

Frame size	2P		4P		6P		8P	
	Output [ kW ]	Noise level dB(A)	Output [ kW ]	Noise level dB(A)	Output [ kW ]	Noise level dB(A)	Output [ kW ]	Noise level dB(A)
355	200	90	-	-	-	-	-	-
355	220	90	185	85	-	-	-	-
355	250	90	200	85	-	-	-	-
355	280	90	220	85	-	-	-	-
3555	315	90	250	85	-	-	-	-
400	-	-	-	-	185	85	-	-
400	-	-	280	85	200	85	-	-
400	355	90	315	85	220	85	-	-
400	400	90	355	85	250	85	185	80
400	450	90	400	85	280	85	200	80
400	500	90	450	85	315	85	220	80
450	560	90	500	90	355	85	250	80
450	630	90	560	90	400	85	280	80
450	710	90	630	90	450	85	315	80
450	800	90	710	90	500	85	355	80
500	-	-	800	95	560	90	400	85
500	900	95	900	95	630	90	450	85
500	1000	95	1000	95	710	90	500	85
500	1120	95	1120	95	800	90	560	85
500	1250	95	-	-	-	-	-	-
560	1400	95	1250	95	900	90	630	85
560	1600	95	1400	95	1000	90	710	85
560	1800	95	1600	95	1120	90	800	85
630	-	-	1800	95	1250	90	900	85
630	2000	95	2000	95	1400	90	1000	85
630	2240	95	2240	95	1600	90	1120	85
630	2500	95	-	-	-	-	1250	85

Sound pressure level no load @ 1 Metre

# Bearings

## HTE Series (TEFC)

Drive end			Non-Drive end	
Frame size	Bearing no.	Bearing size	Bearing no.	Bearing size
<b>3000 r/min = 2 Pole</b>				
355	6318 C3	90x190x43	NU216 C3	80x140x26
400	6220 C3	100x180x34	NU216 C3	80x140x26
450	6222 C3	110x200x38	NU216 C3	80x140x26
500	DQ11-110	Sleeve bearing	DQ11-110	Sleeve bearing
560	DQ11-125	Sleeve bearing	DQ11-125	Sleeve bearing

### 1500 r/min = 4 Pole

355	6222 C3	110x200x38	6222 C3	110x200x38
400	6324 C3	120x260x55	NU218 C3	90x160x30
450	6326 C3	130x280x58	6326 C3	130x280x58
500	6330 C3	150x320x65	6328 C3	140x300x62
560	NU232 C3	160x290x48	6328 C3	140x300x62

### 1000 r/min = 6 Pole

355	6222 C3	110x200x38	6222 C3	110x200x38
400	6324 C3	120x260x55	NU218 C3	90x160x30
450	NU328	140x300x62	6326 C3	130x280x58
500	NU330	150x320x65	6328 C3	140x300x62
560	NU234	170x310x52	6328 C3	140x300x62

### 750 r/min = 8 Pole

400	6324 C3	120x260x55	NU218 C3	90x160x30
450	NU328	140x300x62	6326 C3	130x280x58
500	NU330	150x320x65	6328 C3	140x300x62
560	NU234	170x310x52	6328 C3	140x300x62

## HCA Series (CACA)

Drive end			Non-Drive end	
Frame size	Bearing no.	Bearing size	Bearing no.	Bearing size
355	6318 C3	90x190x43	6318 C3	90x190x43
400	6220 C3	100x180x34	6220 C3	100x180x34
450	6222 C3	110x200x38	NU218 C3	90x160x30
500	DQ11-110	Sleeve bearing	DQ11-110	Sleeve bearing
560	DQ14-140	Sleeve bearing	DQ14-140	Sleeve bearing
630	DQ14-160	Sleeve bearing	DQ14-160	Sleeve bearing

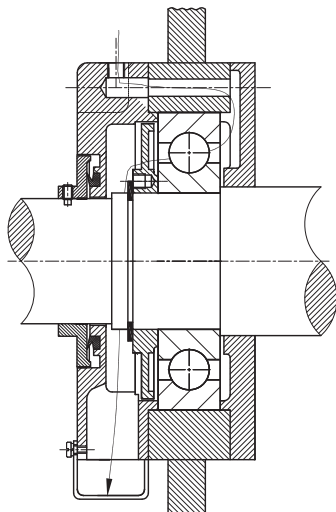
355	6322 C3	110x200x38	6322 C3	110x200x38
400	6324 C3	120x260x55	6324 C3	120x260x55
450	6326 C3	130x280x58	6326 C3	130x280x58
500	6330 C3	150x320x65	6330 C3	150x320x65
560	NU232 C3	160x290x48	6232 C3	160x290x48
630	NU236 C3	180x320x52	6334 C3	170x360x72

355	6322 C3	110x200x38	6322 C3	110x200x38
400	6324 C3	120x260x55	6324 C3	120x260x55
450	NU238 C3	140x300x62	6328 C3	140x300x62
500	NU330 C3	150x320x65	6330 C3	150x320x65
560	NU234 C3	170x310x52	6332 C3	160x340x68
630	NU238 C3	190x340x55	6334 C3	170x360x72

355	6322 C3	110x200x38	6322 C3	110x200x38
400	6324 C3	120x260x55	6324 C3	120x260x55
450	NU238 C3	140x300x62	6328 C3	140x300x62
500	NU330 C3	150x320x65	6330 C3	150x320x65
560	NU234 C3	170x310x52	6332 C3	160x340x68
630	NU238 C3	190x340x55	6334 C3	170x360x72

## Thru-flushing grease relief valve

The pressure grease relief valve, incorporating a V-ring seal, eliminates downtime by enabling relubrication of the bearings without stopping the motor.



## Lubrication

Standard bearings are lubricated with a lithium based rolling contact bearing grease, having an R3 consistency and suitable for operation within the cooling air temperature range of -20°C to +55°C. For operation outside this temperature range special lubricants are required.

Special lubricants or additional maintenance may also be required in cases where motors are exposed to a comparatively high degree of pollution, high humidity, increased or changed bearing loads, or prolonged continuous operation. For details of grease quantities, relubrication intervals, and recommended grease types refer to the Centurion Installation, Operation & Maintenance manual available from CMG (copy also supplied with purchase of motor).

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- Nordbloc-HGA** Euro dimension inline units
- Nordunicase-HGA** Heavy duty inline and flat helical units
- Nordbevel-HGA** Heavy duty helical bevel units
- Nordworm-HGA** All cast iron motor & wormbox units
- FRT-MTT/HLA** All aluminium universal mount wormbox units
- FRS-HGA** All cast iron motor & wormbox units
- FRS-MTT/HLA** All aluminium motor & wormbox units
- FRD-MTT/HLA** All aluminium Euro dimension inline units
- C&H SLA** High ratio inline multi-stage spur units
- Cycloid 600** Compact High Efficiency Cycloidal speed reducers
- Geardrive** C-frame sub-fractional horsepower units
- SMR®** Helical shaft mounted reducers
- CRT-MTT/HLA** All aluminium universal mount wormbox units

**Other**

- Corporate Brochure & Product Selection Guide

*Please note: not all products are available worldwide.*



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