Nidec

All for dreams

CAplus

Totally Enclosed Fan Cooled Motor

www.nidec-industrial.com

INDUSTRIAL SOLUTIONS

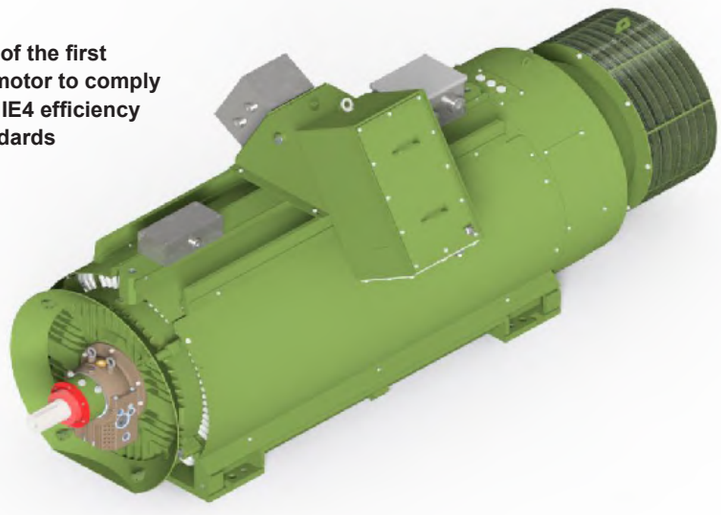
Introduction

Table of content

The CAplus is the new generation of Nidec ASI's Totally Enclosed Fan Cooled motors. Developed for heavy-duty industrial applications, where the motors work continually and energy efficiency is a consideration, this robust machine offers excellent performance and meets the rigorous specifications of API 541 V Edition and stringent customer requirements like SHELL Dep.

The result is a top of the class motor with great mechanical strength and oustanding dissipation offering higher levels of reliability and energy efficiency. All features that come standard.

One of the first MV motor to comply with IE4 efficiency standards



Construction details

1. Frame

The frame of the CAplus is made of fabricated steel and ensures maximum heat dissipation thanks to the fins that contribute to increase the dissipation area.

2. Feet

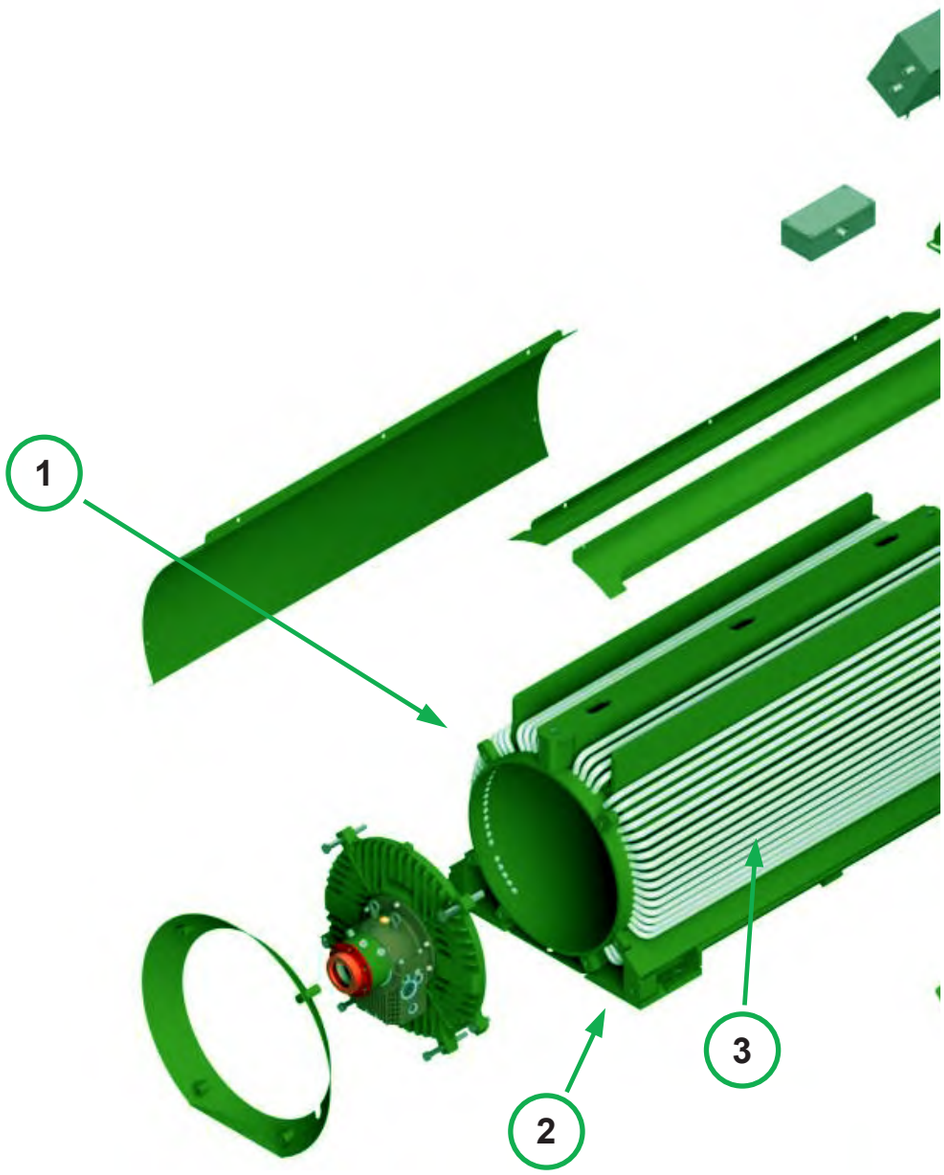
The motors has a horizontal mounting arrangement (IM 1001). Integrated in the frame, the feet are designed to provide high strength and stiffness.

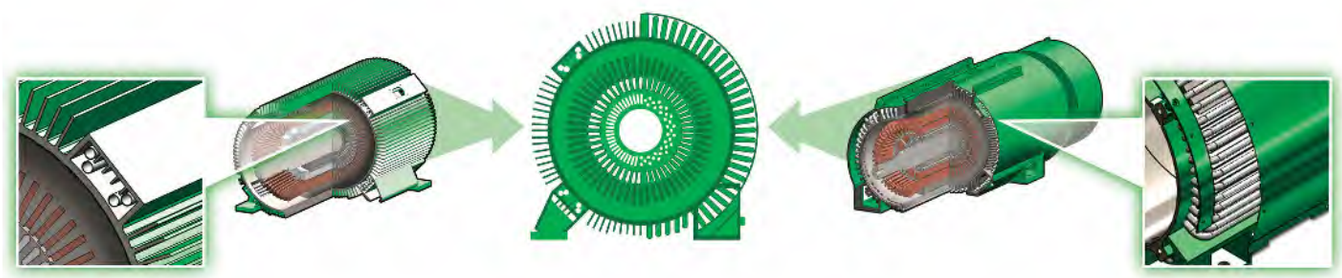
3. Cooling System

The innovative cooling solution, defined as Enhanced IC411, consists of a row of aluminum pipes running parallel to the fins covered by a robust steel plate that forces the air to the drive end of the motor in a constant flow that increases the heat transfer. End shields are designed to maximize heat dissipation in order to maintain low temperature on bearings

4. Stator Windings

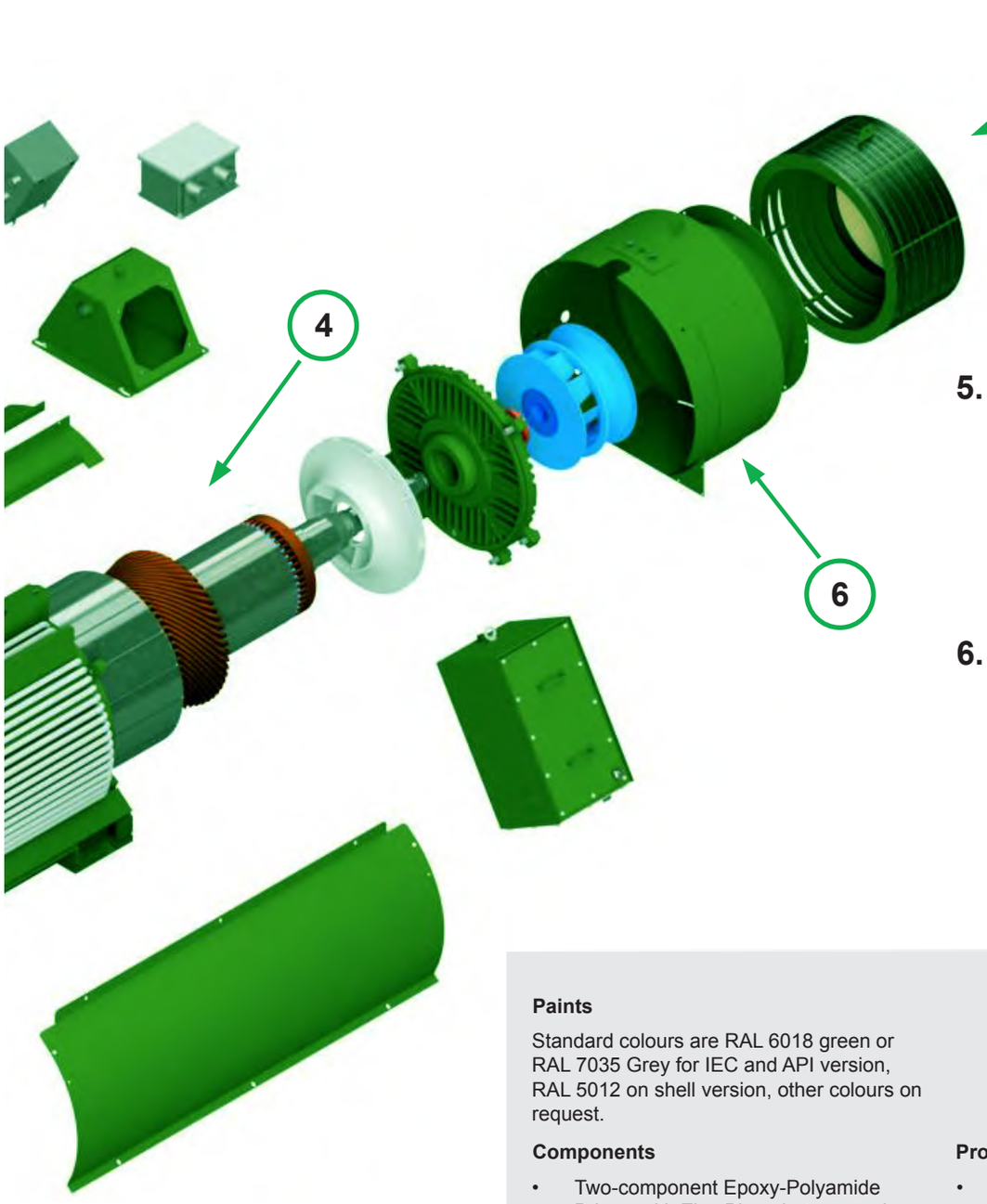
Like all of our machines, the CAplus uses our Micasystem ® insulation which offers class F protection.





Standard Cooling System

Enchanced Cooling System



5. Fan Cover

The fan cover is made of steel plates covered by an iron wire mesh. Using lateral air intake, the motor can be placed against the wall, offering more flexibility in layout.

6. Protection and painting

The machine undergoes our standard aggressive environment painting cycle which was specifically studied for harsh environments and is able to resist even the most abrasive environments. The machine is IP55.

Paints

Standard colours are RAL 6018 green or RAL 7035 Grey for IEC and API version, RAL 5012 on shell version, other colours on request.

Components

- Two-component Epoxy-Polyamide Primer with Zinc Phosphate corrosion preventing fillers
- Two-component High Build Epoxy Polyamide Intermediate
- Two-component Acryl-Polyurethane Finishing with Aliphatic Catalyst

Protective action of each coat

- The two-component anti-rust epoxy-polyamide primer adheres well to steel and iron surface and inhibits oxidation. This coat prevents corrosion of parts during storage, machinng and assembly operations.
- The two-component epoxy-polyamide intermediate provides a high-build coat, which is mechanically resistant and suitable to protect both the primed parts and machined areas.
- The two-component acryl-polyurethane finish provides a hard final coat, highly resistent to abrasion, chemicals and weathering.

RAL 6018 RAL 7035 RAL 5012 (Shell)

Receiving and Handling the CAplus

Receiving

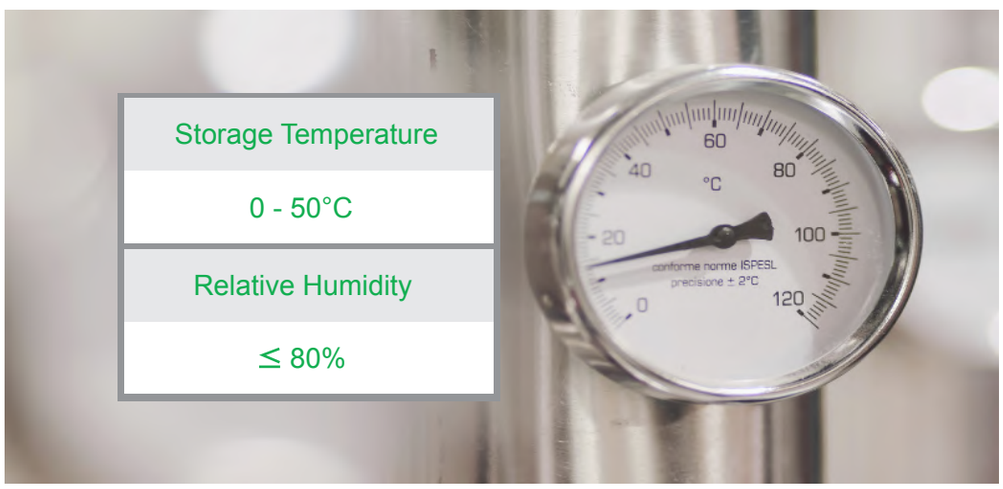
During transportation the shaft is locked to prevent damage to the bearings.
For long distance shipping, CAplus motors are palletized and packed in a wooden box equipped with coupled barrier and dehydrating salts.
Item Identification is furnished on the packing list.

Unpacking and Storage

If the motor has been exposed to low temperatures, unpack it only after it has reached room temperature. Otherwise the motor windings will be exposed to condensing moisture. If the motor will not be put into service immediately, cover it and place it in a clean, dry location. During storage, make sure windings are protected from excessive moisture by a safe and reliable method of heating, such as space heaters, to keep the temperature of windings above the room temperature of the surrounding air. Inspect the motor in storage at periodic intervals.

Mounting

CAplus motors have an horizontal mounting arrangement. Mount motors securely on a firm, flat base. Use the mounting holes to tighten the motor to the base. (See page 31 for details)



Handling

CAplus motors are provided with two lifting eyebolts (one on the front and one on the back - ***see Figure 1***).
Use all eyebolt simultaneously to lift the motor (***see Figure 2***). In case of installation on a skid, do not use the eyebolts of the motor to lift the base once the motor is attached to the skid.
CAplus motors can be placed against a wall but make sure that there is a minimum clearance around the motor to allow normal air flow (***see Figure 3***).

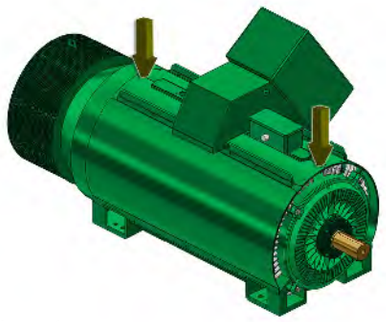


Figure 1

Figure 2

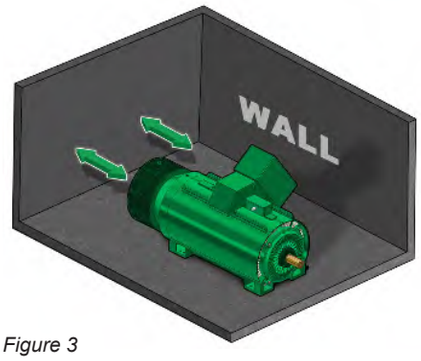


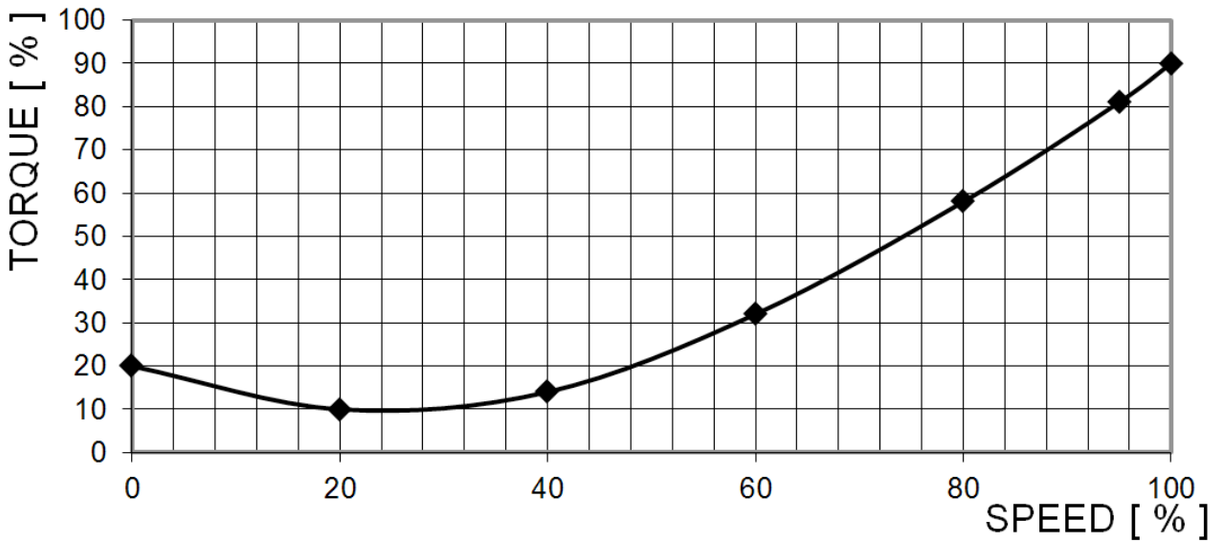
Figure 3

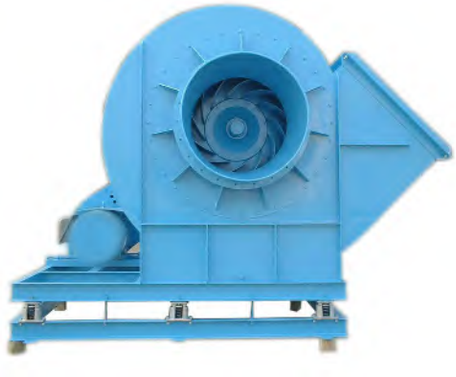
Quadratic Torque applications

CAplus is specifically designed for applications with quadratic torque loads like centrifugal pumps / compressors and fans in which the torque to be supplied by the motor is proportional to the square of its speed.

SPEED %	TORQUE %
0	**20**
20	**10**
40	**14**
60	**32**
80	**58**
95	**81**
100	**90**

REFERENCE
“LOAD TORQUE vs. SPEED DIAGRAM”





CA*plus* IEC Aluminum
3000-6600 V 50 Hz – Electrical Data

Product ID	MOTOR TYPE		RATINGS				EFFICIENCY		POWER FACTOR		LRC	NOISE	MOTOR MASS	BRG.S CODE	
			PN	n	TN	IN	4/4	3/4	4/4	3/4					
			kW	rpm	Nm	A	%	%	-	-	%	dBA	kg	NDE	DE
4 POLE															
I01	315	L	225	1480	1452	25	94.8	94.7	0.82	0.81	550	78	2040	RG	RG
I02	315	L	250	1481	1612	28	95.1	95.1	0.83	0.82	550	78	2140	RG	RG
I03	315	L	280	1481	1805	31	95.4	95.3	0.83	0.82	550	78	2250	RG	RG
I04	315	L	315	1482	2030	35	95.6	95.5	0.83	0.82	550	78	2360	RG	RG
I05	315	L	350	1482	2255	38	95.7	95.6	0.84	0.83	600	78	2470	RG	RG
I06	315	L	390	1482	2513	42	95.8	95.7	0.84	0.83	600	78	2610	RG	RG
I07	355	L	420	1483	2704	44	95.7	95.6	0.87	0.85	650	80	3080	RG	RG
I08	355	L	460	1483	2962	48	95.8	95.7	0.87	0.85	650	80	3160	RG	RG
I09	355	L	500	1483	3220	52	96.0	95.9	0.88	0.86	650	80	3270	RG	RG
I10	355	L	560	1483	3606	58	96.1	96.0	0.88	0.86	650	80	3350	RG	RG

Data on 6 poles are available by request

Base Motor Includes

Accessories and Auxiliary Equipment

- RTD's (PT100) on stator windings, 6 pcs 3 wire, single type class B
- Space heaters
- Phase insulated line terminal box
- Bearing insulation NDE only

Tests

- Routine Test

Certifications

- Ex nA / Ex ec II B

Paint/Finish

- As per NASI standard specified TDS2012.05.09.00 EN Rev 2 (ISO 12944 Category C4)

Does Not Include/To be quoted separately

Accessories and Auxiliary Equipment

- Phase separated line terminal box
- Phase segregated line terminal box
- Star point terminal box

Tests

- Witnessing of test
- Type test

Certifications

- Ex nA / Ex ec II C (not all powers are available with IIC motors)

CA*plus* IEC
3000-6600 V 50 Hz - Electrical data

Product ID	MOTOR TYPE		RATINGS				EFFICIENCY		POWER FACTOR		LRC	NOISE	MOTOR MASS	BRG.S CODE		ROTOR
			PN	n	TN	IN	4/4	3/4	4/4	3/4						
			kW	rpm	Nm	A	%	%	-	-	%	dBA	kg	NDE	DE	
2 POLE																
I01	315	L	250	2977	802	26	95,6	95.5	0,89	0.88	500	81	2380	RG	RG	CU
I02	315	L	280	2978	898	28	95,7	95.6	0,90	0.89	500	81	2400	RG	RG	CU
I03	315	L	315	2978	1010	32	95,7	95.6	0,90	0.89	541	81	2420	RG	RG	CU
I04	315	L	355	2979	1138	36	96,0	95.9	0,90	0.89	541	81	2450	RG	RG	CU
I05	315	L	400	2979	1282	40	96,1	96.0	0,90	0.89	500	81	2510	RG	RG	CU
I06	315	L	450	2980	1442	45	96,2	96.1	0,90	0.89	500	81	2570	RG	RG	CU
I07	355	L	500	2983	1601	50	96,4	96.3	0,90	0.89	458	82	3330	RG	RG	CU
I08	355	L	560	2984	1792	56	96,6	96.5	0,90	0.89	458	82	3460	RG	RG	CU
I09	355	L	600	2984	1920	60	96,7	96.6	0,90	0.89	458	82	3550	RG	RG	CU
I10	400	L	670	2985	2143	67	96,4	96.2	0,91	0.90	500	82	4280	RG	RG	CU
I11	400	L	750	2985	2399	75	96,6	96.5	0,91	0.90	500	82	4410	RG	RG	CU
I12	400	L	830	2985	2655	83	96,7	96.5	0,91	0.90	500	82	4620	RG	RG	CU
I13	450	L	920	2985	2943	93	96,2	95.7	0,90	0.89	500	82	5580	RG	RG	CU
I14	450	L	1030	2985	3295	103	96,4	96.0	0,91	0.90	500	82	5600	RG	RG	CU
I15	450	L	1140	2985	3647	113	96,6	96.2	0,91	0.90	500	82	5820	RG	RG	CU
I16	450	L	1260	2985	4031	125	96,8	96.5	0,91	0.90	500	82	6090	RG	RG	CU
I17	500	L	1380	2985	4415	136	96,8	96.6	0,92	0.91	500	82	7380	RG	RG	CU
I18	500	L	1500	2986	4797	147	96,9	96.7	0,92	0.91	500	82	7660	RG	RG	CU
I19	500	L	1650	2986	5277	162	97,1	96.8	0,92	0.91	500	82	8100	RG	RG	CU
4 POLE																
I20	315	L	250	1484	1609	27	95.8	95.7	0.85	0.84	550	73	2420	RG	RG	CU
I21	315	L	280	1485	1801	30	95.9	95.8	0.85	0.84	600	73	2450	RG	RG	CU
I22	315	L	315	1485	2026	34	96.0	95.9	0.85	0.84	600	73	2510	RG	RG	CU
I23	315	L	360	1485	2315	39	96.1	96.0	0.85	0.84	550	73	2570	RG	RG	CU
I24	315	L	390	1485	2508	42	96.2	96.1	0.85	0.84	550	73	2660	RG	RG	CU
I25	315	L	430	1485	2765	45	96.3	96.2	0.86	0.84	550	73	2760	RG	RG	CU
I26	355	L	470	1487	3018	50	96.3	96.2	0.86	0.85	550	75	3460	RG	RG	CU
I27	355	L	520	1487	3339	55	96.4	96.3	0.86	0.85	550	75	3550	RG	RG	CU
I28	355	L	560	1488	3594	58	96.4	96.3	0.87	0.86	550	75	3680	RG	RG	CU
I29	355	L	620	1488	3979	65	96.5	96.4	0.87	0.86	550	75	3780	RG	RG	CU
I30	400	L	720	1488	4621	75	96,6	96.5	0,87	0,87	500	78	4410	RG	RG	CU
I31	400	L	800	1488	5134	83	96,7	96.6	0,87	0,87	500	78	4620	RG	RG	CU
I32	400	L	950	1488	6097	98	96,8	96.7	0,88	0,88	500	78	4800	RG	RG	CU
I33	450	L	1120	1489	7183	113	97,0	96.9	0,89	0,89	458	81	5820	RG	RG	CU
I34	450	L	1290	1489	8273	131	97,0	96.9	0,89	0,89	458	81	6090	RG	RG	CU
I35	500	L	1450	1491	9287	147	96,9	96.9	0,89	0,89	458	81	7050	RG	RG	CU
I36	500	L	1600	1491	10247	160	97,0	97.0	0,90	0,90	458	81	7380	RG	RG	CU
I37	500	L	1800	1491	11528	180	97,0	97.0	0,90	0,90	458	81	7660	RG	RG	CU
I38	500	L	2000	1491	12809	200	97,1	97.1	0,90	0,90	458	81	8100	RG	RG	CU
I39	500	L	2200	1491	14090	220	97,2	97.2	0,90	0,90	458	81	8590	RG	RG	CU

Data on 6 poles are available by request

Base Motor Includes

Accessories and Auxiliary Equipment

- RTD's (PT100) on stator windings, 6 pcs 3 wire, single type class B
- Space heaters
- Phase insulated line terminal box
- Bearing insulation NDE only

Tests

- Routine Test

Certifications

- Ex nA / Ex ec II B

Paint/Finish

- As per NASI standard specified TDS2012.05.09.00 EN Rev 2 (ISO 12944 Category C4)

Does Not Include/To be quoted separately

Accessories and Auxiliary Equipment

- Phase separated line terminal box
- Phase segregated line terminal box
- Star point terminal box

Tests

- Witnessing of test
- Type test

Certifications

- Ex nA / Ex ec II C (not all powers are available with IIC motors)

CA*plus* API 541 V Edition
3000-6600 V 50 Hz Sleeve Bearings - Electrical data

Product ID	MOTOR TYPE		RATINGS				EFFICIENCY		POWER FACTOR		LRC	NOISE	MOTOR MASS	BRG.S CODE	
			PN	n	TN	IN	44	3/4	4/4	3/4					
			kW	rpm	Nm	A	%	%	-	-	%	dBA	kg	NDE	DE
2 POLE															
A01	355	Y	560	2980	1794	56	96,6	96.5	0,91	0.90	500	82	3670	SN	SN
A02	355	Y	630	2980	2019	63	96,8	96.7	0,91	0.90	500	82	3900	SN	SN
A03	355	Y	710	2981	2274	70	96,9	96.8	0,91	0.90	500	82	4040	SN	SN
A04	355	Z	820	2982	2626	81	97,0	96.9	0,91	0.90	500	82	4320	SN	SN
A05	400	Z	920	2982	2946	90	97,1	97.0	0,92	0.91	458	82	5350	SN	SN
A06	400	Z	1030	2983	3297	101	97,2	97.1	0,92	0.91	458	82	5520	SN	SN
A07	400	Z	1140	2986	3646	111	97,3	97.2	0,92	0.91	458	82	5740	SN	SN
A08	450	Y	1250	2985	3999	124	96,8	96.6	0,91	0.91	458	82	6480	SN	SN
A09	450	Y	1400	2985	4479	139	96,8	96.6	0,91	0.91	458	82	6620	SN	SN
A10	450	Z	1600	2985	5119	159	96,9	96.7	0,91	0.91	458	82	7090	SN	SN
A11	500	Z	1730	2985	5534	170	96,8	96.3	0,92	0.91	458	82	8920	SN	SN
A12	500	Z	1860	2986	5948	180	97,0	96.7	0,93	0.92	458	82	9260	SN	SN
4 POLE															
A13	355	L	470	1487	3018	50	96,3	96.2	0,86	0.85	458	75	3560	SN	SN
A14	355	L	520	1487	3339	55	96,4	96.3	0,86	0.85	458	75	3650	SN	SN
A15	355	L	560	1488	3594	58	96,4	96.3	0,87	0.86	458	75	3780	SN	SN
A16	355	L	620	1488	3979	65	96,5	96.4	0,87	0.86	458	75	3880	SN	SN
A17	400	L	720	1488	4621	75	96,6	96.5	0,87	0.86	500	78	4510	SN	SN
A18	400	L	800	1488	5134	83	96,7	96.6	0,87	0.86	500	78	4720	SN	SN
A19	400	L	950	1488	6097	98	96,8	96.7	0,88	0.87	500	78	4900	SN	SN
A20	450	L	1120	1489	7183	113	97,0	96.9	0,89	0.89	458	81	5990	SN	SN
A21	450	L	1290	1489	8273	131	97,0	96.9	0,89	0.89	458	81	6260	SN	SN
A22	500	L	1450	1491	9287	147	96,9	96.9	0,89	0.89	458	81	7220	SN	SN
A23	500	L	1600	1491	10247	160	97,0	97.0	0,90	0.90	458	81	7550	SN	SN
A24	500	L	1800	1491	11528	180	97,0	97.0	0,90	0.90	458	81	7830	SN	SN
A25	500	L	2000	1491	12809	200	97,1	97.1	0,90	0.90	458	81	8270	SN	SN
A26	500	L	2200	1491	14090	220	97,2	97.2	0,90	0.90	458	81	8760	SN	SN

Data on 6 poles are available by request
Data on size 315 are available by request

Base Motor Includes

Accessories and Auxiliary Equipment

- RTD's (PT100) on stator windings, 6pcs 3 wire, single type class B
- RTD's (PT100) in bearing, 2 pcs (1 RTD each bearing), 3 wire, simple type
- Space heaters
- Phase insulated line terminal box
- Bearing insulation on both DE – NDE
- Provision only for BN proximitors on both DE and NDE (upon request)

Tests

- Routine test according to API 541 5th edition para. 6.3.2
- Vibration test

Certifications

- Ex nA / Ex ec II B

Paint/Finish

- As per NASI standard + C5M (ISO 12944 C5-I or C5-M)
- RAL 6018 or RAL 7031

Does Not Include/To be quoted separately

Accessories and Auxiliary Equipment

- Phase separated line terminal box
- Star point terminal box
- Phase insulated with star point terminal box
- Proximitors probes
- Proximitors cables
- Proximitors aux terminal box
- Auxiliary terminal box for BN

Tests

- Complete test according to API 541 5th edition para. 6.3.5.1
- Stator Test

Certifications

- Ex nA / Ex ec II C (not all powers are available with IIC motors)

API 541
Fully compliant

CA*plus* Shell DEP sleeve bearing
3000-6600 V 50 Hz - Electrical data

Our Demand Performance machines were designed to meet the most stringent Oil & Gas requirements and are fully compliant with Shell DEP specifications.

Product ID	MOTOR TYPE		RATINGS				EFFICIENCY		POWER FACTOR		LRC	NOISE	MOTOR MASS	BRG.S CODE	
			PN	n	TN	IN	4/4	3/4	4/4	3/4					
			kW	rpm	Nm	A	%	%	-	-	%	dBA	kg	NDE	DE
2 POLE															
S01	355	Y	560	2980	1794	56	96,6	96.5	0,91	0.90	500	82	3670	SN	SN
S02	355	Y	630	2980	2019	63	96,8	96.7	0,91	0.90	500	82	3900	SN	SN
S03	355	Y	710	2981	2274	70	96,9	96.8	0,91	0.90	500	82	4040	SN	SN
S04	355	Z	820	2982	2626	81	97,0	96.9	0,91	0.90	500	82	4320	SN	SN
S05	400	Z	920	2982	2946	90	97,1	97.0	0,92	0.91	458	82	5350	SN	SN
S06	400	Z	1030	2983	3297	101	97,2	97.1	0,92	0.91	458	82	5520	SN	SN
S07	400	Z	1140	2986	3646	111	97,3	97.2	0,92	0.91	458	82	5740	SN	SN
S08	450	Y	1250	2985	3999	124	96,8	96.6	0,91	0.91	458	82	6480	SN	SN
S09	450	Y	1400	2985	4479	139	96,8	96.6	0,91	0.91	458	82	6620	SN	SN
S10	450	Z	1600	2985	5119	159	96,9	96.7	0,91	0.91	458	82	7090	SN	SN
S11	500	Z	1730	2985	5534	170	96,8	96.3	0,92	0.91	458	82	8920	SN	SN
S12	500	Z	1860	2986	5948	180	97,0	96.7	0,93	0.92	458	82	9260	SN	SN
4 POLE															
S13	355	L	470	1487	3018	50	96,3	96.2	0,86	0.85	458	75	3560	SN	SN
S14	355	L	520	1487	3339	55	96,4	96.3	0,86	0.85	458	75	3650	SN	SN
S15	355	L	560	1488	3594	58	96,4	96.3	0,87	0.86	458	75	3780	SN	SN
S16	355	L	620	1488	3979	65	96,5	96.4	0,87	0.86	458	75	3880	SN	SN
S17	400	L	720	1488	4621	75	96,6	96.5	0,87	0.86	500	78	4510	SN	SN
S18	400	L	800	1488	5134	83	96,7	96.6	0,87	0.86	500	78	4720	SN	SN
S19	400	L	950	1488	6097	98	96,8	96.7	0,88	0.87	500	78	4900	SN	SN
S20	450	L	1120	1489	7183	113	97,0	96.9	0,89	0.89	458	81	5990	SN	SN
S21	450	L	1290	1489	8273	131	97,0	96.9	0,89	0.89	458	81	6260	SN	SN
S22	500	L	1450	1491	9287	147	96,9	96.9	0,89	0.89	458	81	7220	SN	SN
S23	500	L	1600	1491	10247	160	97,0	97.0	0,90	0.90	458	81	7550	SN	SN
S24	500	L	1800	1491	11528	180	97,0	97.0	0,90	0.90	458	81	7830	SN	SN
S25	500	L	2000	1491	12809	200	97,1	97.1	0,90	0.90	458	81	8270	SN	SN
S26	500	L	2200	1491	14090	220	97,2	97.2	0,90	0.90	458	81	8760	SN	SN

Data on 6 poles are available by request
Data on size 315 are available by request

Base Motor Includes

Accessories and Auxiliary Equipment

- RTD's (PT100) on stator windings, 6 pcs 3 wire, single type class B
- RTD's (PT100) in bearing, 2 pcs (1 RTD each bearing), 3 or 4 wire, simple type (Sleeve only)
- Space heaters
- Phase insulated line terminal box
- Bearing insulation on both DE - NDE both with short-circuit possibilities.
- Provision only for BN proximitors on sleeve bearings

Tests

- Routine test according to SHELL DEP 33.66.05.31-Gen para. 16.5.3

Certifications

- Ex nA IIB

Paint/Finish

- As per NASI standard + C5M (ISO 12944 C5-I or C5-M)
- Standard RAL 5012

Does Not Include/To be quoted separately

Accessories and Auxiliary Equipment

- Phase separated terminal box
- Phase segregated terminal box
- Star point terminal box

Tests

- Performance Test according to Shell DEP 33.66.05.31-Gen para. 16.5.1
- Special Tests and Sample coil test

Certifications

- Ex nA IIC (not all powers are available with IIC motors)

CA*plus* IEC - NEMA metric Aluminium
4160 V 60 Hz - Electrical data

Product ID	MOTOR TYPE		RATINGS				EFFICIENCY		POWER FACTOR		LRC	NOISE	MOTOR MASS	BRG.S CODE	
			PN	n	TN	IN	4/4	3/4	4/4	3/4					
			kW	rpm	Nm	A	%	%	-	-	%	dBA	kg	NDE	DE
4 POLE															
I01	315	L	250	1781	1340	28	95.2	95.1	0.82	0.81	650	80	2040	RG	RG
I02	315	L	280	1781	1501	31	95.3	95.2	0.82	0.81	650	80	2140	RG	RG
I03	315	L	315	1781	1689	35	95.5	95.4	0.82	0.81	650	80	2250	RG	RG
I04	315	L	370	1781	1984	41	95.8	95.7	0.82	0.81	650	80	2360	RG	RG
I05	315	L	420	1782	2251	46	95.9	95.8	0.83	0.82	650	80	2470	RG	RG
I06	315	L	470	1782	2519	52	96.1	96.0	0.83	0.82	650	80	2610	RG	RG
I07	355	L	500	1782	2679	52	95.8	95.7	0.88	0.87	650	82	3160	RG	RG
I08	355	L	550	1782	2947	57	96.0	95.9	0.88	0.87	650	82	3270	RG	RG
I09	355	L	610	1782	3269	63	96.2	96.1	0.88	0.87	650	82	3350	RG	RG

Data on 6 poles are available by request

Base Motor Includes

Accessories and Auxiliary Equipment

- RTD's (PT100) on stator windings, 6 pcs 3 wire, single type class B
- Space heaters
- Phase insulated line terminal box
- Bearing insulation NDE only

Tests

- Routine Test

Certifications

- Ex nA / Ex ec II B

Paint/Finish

- As per NASI standard specified TDS2012.05.09.00 EN Rev 2 (ISO 12944 Category C4)
- RAL 7031

Does Not Include/To be quoted separately

Accessories and Auxiliary Equipment

- Phase separated line terminal box
- Phase segregated line terminal box
- Star point terminal box

Tests

- Witnessing of test
- Type test

Certifications

- Ex nA IIC (not all powers are available with IIC motors)

Premium
Plus Efficiency

CA*plus* IEC - NEMA metric
4160 V 60 Hz - Electrical data

Product ID	MOTOR TYPE		RATINGS				EFFICIENCY		POWER FACTOR		LRC	NOISE	MOTOR MASS	BRG.S CODE		ROTOR
			PN	n	TN	IN	4/4	3/4	4/4	3/4						
			kW	rpm	Nm	A	%	%	-	-	%	dBA	kg	NDE	DE	
2 POLE																
I01	315	S	320	3578	854	33	95.5	95.4	0.88	0.87	650	83	2000	RG	RG	CU
I02	315	S	350	3578	934	36	95.7	95.6	0.88	0.87	650	83	2050	RG	RG	CU
I03	315	S	380	3579	1014	39	95.9	95.8	0.89	0.88	650	83	2115	RG	RG	CU
I04	315	S	420	3579	1121	42	96.1	96.0	0.90	0.89	650	83	2180	RG	RG	CU
I05	355	S	450	3581	1200	47	95.6	95.2	0.87	0.86	550	85	2700	RG	RG	CU
I06	355	S	480	3582	1280	50	95.8	95.5	0.88	0.87	550	85	2790	RG	RG	CU
I07	355	S	530	3582	1413	54	96.0	95.8	0.89	0.88	550	85	2880	RG	RG	CU
I08	400	S	630	3584	1679	66	95.7	95.5	0.87	0.87	650	85	3470	RG	RG	CU
I09	400	S	710	3585	1891	73	96.0	95.7	0.89	0.88	650	85	3570	RG	RG	CU
I10	400	S	820	3585	2184	83	96.2	96.0	0.90	0.89	650	85	3690	RG	RG	CU
I11	450	S	920	3586	2450	95	95.4	95.1	0.89	0.88	650	85	4430	RG	RG	CU
I12	450	S	1030	3586	2743	106	95.7	95.5	0.89	0.88	650	85	4590	RG	RG	CU
I13	450	S	1150	3587	3062	116	96.0	95.8	0.90	0.89	650	85	4790	RG	RG	CU
4 POLE																
I15	315	L	300	1784	1606	32	96.0	95.9	0.85	0.84	600	75	2420	RG	RG	CU
I16	315	L	350	1784	1873	37	96.1	96.0	0.85	0.84	600	75	2450	RG	RG	CU
I17	315	L	390	1785	2086	42	96.2	96.1	0.85	0.84	550	75	2510	RG	RG	CU
I18	315	L	430	1785	2300	45	96.3	96.2	0.86	0.85	550	75	2570	RG	RG	CU
I19	315	L	470	1785	2514	50	96.4	96.3	0.86	0.85	550	75	2660	RG	RG	CU
I20	315	L	520	1785	2782	55	96.5	96.2	0.86	0.85	550	75	2760	RG	RG	CU
I21	355	L	560	1786	2994	59	96.4	96.3	0.86	0.85	550	78	3460	RG	RG	CU
I22	355	L	600	1787	3206	63	96.4	96.3	0.87	0.86	550	78	3550	RG	RG	CU
I23	355	L	670	1787	3580	70	96.5	96.4	0.87	0.86	550	78	3680	RG	RG	CU
I24	355	L	750	1787	4008	78	96.5	96.4	0.87	0.86	550	78	3780	RG	RG	CU
I25	400	L	830	1787	4435	86	96.6	96.5	0.87	0.86	550	81	4410	RG	RG	CU
I26	400	L	950	1787	5077	99	96.7	96.6	0.87	0.86	550	81	4620	RG	RG	CU
I27	400	L	1060	1788	5661	109	96.8	96.7	0.88	0.87	550	81	4800	RG	RG	CU
I28	450	L	1290	1788	6890	131	96.9	96.9	0.89	0.88	550	84	5820	RG	RG	CU
I29	450	L	1500	1789	8007	152	96.9	96.9	0.89	0.88	550	84	6090	RG	RG	CU
I30	500	L	1650	1789	8807	168	96.7	96.6	0.89	0.89	550	84	7050	RG	RG	CU
I31	500	L	1800	1790	9603	183	96.8	96.7	0.89	0.89	550	84	7380	RG	RG	CU
I32	500	L	2000	1790	10670	201	96.9	96.8	0.90	0.89	550	84	7660	RG	RG	CU
I33	500	L	2200	1790	11737	220	97.0	96.9	0.90	0.89	550	84	8100	RG	RG	CU
I34	500	L	2450	1791	13063	245	97.1	97.0	0.90	0.89	550	84	8590	RG	RG	CU

Data on 6 poles are available by request

Base Motor Includes

Accessories and Auxiliary Equipment

- RTD's (PT100) on stator windings, 6 pcs 3 wire, single type class B
- Space heaters
- Phase insulated line terminal box
- Bearing insulation NDE only

Tests

- Routine Test

Certifications

- Ex nA / Ex ec II B

Paint/Finish

- As per NASI standard specified TDS2012.05.09.00 EN Rev 2 (ISO 12944 Category C4)
- RAL 7031

Does Not Include/To be quoted separately

Accessories and Auxiliary Equipment

- Phase separated line terminal box
- Phase segregated line terminal box
- Star point terminal box

Tests

- Witnessing of test
- Type test

Certifications

- Ex nA IIC (not all powers are available with IIC motors)

Premium
Plus Efficiency

CA*plus* API 541 V Edition
4160 V 60 Hz Sleeve Bearings - Electrical data

Product ID	MOTOR TYPE		RATINGS				EFFICIENCY		POWER FACTOR		LRC	NOISE	MOTOR MASS	BRG.S CODE	
			PN	n	TN	IN	4/4	3/4	4/4	3/4					
			kW	rpm	Nm	A	%	%	-	-	%	dBA	kg	NDE	DE
2 POLE															
A01	355	Y	670	3583	1786	67	96,6	96.5	0,91	0.91	500	85	3670	SN	SN
A02	355	Y	750	3583	1999	75	96,7	96.6	0,91	0.91	500	85	3885	SN	SN
A03	355	Y	850	3584	2265	84	96,9	96.8	0,91	0.91	500	85	4030	SN	SN
A04	400	Y	950	3585	2530	94	96,7	96.4	0,91	0.91	541	85	4635	SN	SN
A05	400	Y	1120	3585	2983	111	96,9	96.5	0,91	0.91	541	85	4930	SN	SN
A06	400	Y	1250	3585	3330	124	97,0	96.6	0,91	0.91	541	85	5140	SN	SN
A07	450	Y	1450	3585	3862	144	96,6	96.9	0,91	0.91	541	85	6480	SN	SN
A08	500	Y	1690	3585	4502	166	96,9	97.0	0,92	0.91	541	85	8180	SN	SN
4 POLE															
A09	355	L	560	1786	2994	59	96,5	96.3	0,86	0.85	541	78	3560	SN	SN
A10	355	L	600	1787	3206	62	96,6	96.3	0,87	0.86	541	78	3650	SN	SN
A11	355	L	670	1787	3580	70	96,7	96.4	0,87	0.86	541	78	3780	SN	SN
A12	355	L	750	1787	4008	78	96,8	96.4	0,87	0.86	541	78	3880	SN	SN
A13	400	L	880	1787	4703	92	96,7	96.5	0,87	0.86	541	81	4510	SN	SN
A14	400	L	1000	1787	5344	103	96,8	96.6	0,88	0.86	541	81	4720	SN	SN
A15	400	L	1120	1788	5982	115	96,9	96.7	0,88	0.87	541	81	4900	SN	SN
A16	450	L	1350	1789	7206	137	97,0	96.9	0,89	0.88	500	84	5990	SN	SN
A17	450	L	1580	1789	8434	160	97,0	96.9	0,89	0.88	500	84	6260	SN	SN
A18	500	L	1800	1790	9603	183	96,9	96.6	0,89	0.89	500	84	7220	SN	SN
A19	500	L	1950	1791	10397	198	97,0	96.7	0,89	0.89	500	84	7550	SN	SN

Data on 6 poles are available by request
Data on size 315 are available by request

Base Motor Includes

Accessories and Auxiliary Equipment

- RTD's (PT100) on stator windings, 6 pcs 3 wire, single type class B
- RTD's (PT100) in bearing, 2 pcs (1 RTD each bearing), 3 or 4 wire, simple type
- Space heaters
- Phase insulated line terminal box
- Bearing insulation on both DE – NDE
- Provision only for BN proximitors on both DE and NDE (upon request)

Tests

- Routine test according to API 541 5th edition para. 6.3.2
- Vibration test

Certifications

- Ex nA / Ex ec II B

Paint/Finish

- As per NASI standard + C5M (ISO 12944 C5-I or C5-M)
- RAL 7031

Does Not Include/To be quoted separately

Accessories and Auxiliary Equipment

- Phase separated line terminal box
- Phase segregated terminal box
- Star point terminal box
- BN system
- Auxiliary terminal box for BN

Tests

- Complete test according to API 541 5th edition para. 6.3.5.1
- Stator Test

Certifications

- Ex nA IIC (not all powers are available with IIC motors)

API 541
Fully compliant

CA*plus* Shell DEP
4160 V 60 Hz - Electrical data

Our Demand Performance machines were designed to meet the most stringent Oil & Gas requirements and are fully compliant with Shell DEP specifications.

Product ID	MOTOR TYPE		RATINGS				EFFICIENCY		POWER FACTOR		LRC	NOISE	MOTOR MASS	BRG.S CODE	
			PN	n	TN	IN	4/4	3/4	4/4	3/4					
			kW	rpm	Nm	A	%	%	-	-	%	dBA	kg	NDE	DE
2 POLE															
S01	355	Y	670	3583	1786	67	96,6	96.5	0,91	0.91	500	85	3670	SN	SN
S02	355	Y	750	3583	1999	75	96,7	96.6	0,91	0.91	500	85	3885	SN	SN
S03	355	Y	850	3584	2265	84	96,9	96.8	0,91	0.91	500	85	4030	SN	SN
S04	400	Y	950	3585	2530	94	96,7	96.4	0,91	0.91	541	85	4635	SN	SN
S05	400	Y	1120	3585	2983	111	96,9	96.5	0,91	0.91	541	85	4930	SN	SN
S06	400	Y	1250	3585	3330	124	97,0	96.6	0,91	0.91	541	85	5140	SN	SN
S07	450	Y	1450	3585	3862	144	96,6	96.9	0,91	0.91	541	85	6480	SN	SN
S08	500	Y	1690	3585	4502	166	96,9	97.0	0,92	0.91	541	85	8180	SN	SN
4 POLE															
S09	355	L	560	1786	2994	59	96.3	96,5	0.85	0,86	541	78	3560	SN	SN
S10	355	L	600	1787	3206	62	96.3	96,6	0.86	0,87	541	78	3650	SN	SN
S11	355	L	670	1787	3580	70	96.4	96,7	0.86	0,87	541	78	3780	SN	SN
S12	355	L	750	1787	4008	78	96.4	96,8	0.86	0,87	541	78	3880	SN	SN
S13	400	L	880	1787	4703	92	96.5	96,7	0.86	0,87	541	81	4510	SN	SN
S14	400	L	1000	1787	5344	103	96.6	96,8	0.86	0,88	541	81	4720	SN	SN
S15	400	L	1120	1788	5982	115	96.7	96,9	0.87	0,88	541	81	4900	SN	SN
S16	450	L	1350	1789	7206	137	96.9	97,0	0.88	0,89	500	84	5990	SN	SN
S17	450	L	1580	1789	8434	160	96.9	97,0	0.88	0,89	500	84	6260	SN	SN
S18	500	L	1800	1790	9603	183	96.6	96,9	0.89	0,89	500	84	7220	SN	SN
S19	500	L	1950	1791	10397	198	96.7	97,0	0.89	0,89	500	84	7550	SN	SN

Data on 6 poles are available by request
Data on size 315 are available by request

Base Motor Includes

Accessories and Auxiliary Equipment

- RTD's (PT100) on stator windings, 6 pcs 3 or 4 wire, simple type
- RTD's (PT100) in bearing, 2 pcs (1 RTD each bearing), 3 or 4 wire, simple type (Sleeve only)
- Space heaters
- Phase insulated line terminal box
- Bearing insulation on both DE - NDE
- Provision only for BN proximitors on sleeve bearings (upon request)

Tests

- Routine test according to SHELL DEP 33.66.05.31-Gen para. 16.5.3

Certifications

- Ex nA IIB

Paint/Finish

- As per NASI standard + C5M (ISO 12944 C5-I or C5-M)
- Standard RAL 5012

Does Not Include/To be quoted separately

Accessories and Auxiliary Equipment

- Phase separated line terminal box
- Phase segregated line terminal box
- Star point terminal box
- Proximitors probes
- Proximitors cables
- Proximitors aux terminal box
- Auxiliary terminal box for BN

Tests

- Performance Test according to Shell DEP 33.66.05.31-Gen para 16.5.1
- Special Tests and Sample coil test

Certifications

- Ex nA IIC (not all powers are available with IIC motors)

Bearings

Roller Bearings

CAplus motors are normally equipped with deep groove ball bearings (for shaft heights 315 to 450mm) and cylindrical roller bearings + deep groove ball bearings (for shaft heights 500 to 560mm) and the non-drive-end bearings are insulated.
In a ball bearing, the load is transmitted from the outer race to the ball and from the ball to the inner race.

Since the ball is a sphere, it only contacts the inner and outer race at a very small point, which helps it to spin very smoothly. In cylindrical roller bearings the contact between the inner and outer race is not a point but a line.

This spreads the load out over a larger area, allowing the bearing to handle much greater radial loads than a ball bearing.
CAplus motors for API 541 and Shell are supplied with one Pt-100 temperature sensor in each bearing to ensure continuous temperature monitoring during operations.
Non-drive-end bearing is insulated.

Frame	Number of poles	Hz	Roller Bearings	
			DE	NDE
315	2	50	6320 M/C3	6320M/C3
		60	6320M/C3	6320M/C3
	4	50	6320 M/C3	6320 M/C3
		60	6320M/C3	6320M/C3
355	2	50	6321M/C3	6321M/C3
		60	6321M/C3	6321M/C3
	4	50	6321M/C3	6321M/C3
		60	6321M/C3	6321M/C3
400	2	50	6322M/C3	6322M/C3
		60	6322M/C3	6322M/C3
	4	50	6322M/C3	6322M/C3
		60	6322M/C3	6322M/C3
450	2	50	NU222 C3 + 6222M/C3	6222M/C3
		60	NU222 C3 + 6222M/C3	6222M/C3
	4	50	6324 M/C3	6324 M/C3
		60	6324 M/C3	6324 M/C3
500	2	50	NU224 C3 + 6224M/C3	6224M/C3
		60	NU224 C3 + 6224M/C3	6224M/C3
	4	50	NU228 C3 + 6228 M/C3	NU228 C3 + 6228 M/C3
		60	NU228 C3 + 6228 M/C3	NU228 C3 + 6228 M/C3

Sleeve Bearings

If sleeve bearings are requested, CAplus motors are fitted with EF-type bearings with floating labyrinth seals.

The bearings are rigidly mounted to the end shield of the machine and their housing is made of cast iron. Tapped holes for thermometer, oil inlet and outlet and oil level are provided on both sides of the housing. The bearings are lubricated by hydrodynamic lubrication, which can be of a self-lubricating or oil circulation type.

Both sleeve bearing are insulated with short-circuit possibilities.

Frame	Number of poles	Hz	Sleeve Bearings	
			DE	NDE
355	2	50	EFNL 9-80	EFNL 9-80
		60	EFNL 9-80	EFNL 9-80
	4	50	EFNL 9-80	EFNL 9-80
		60	EFNL 9-80	EFNL 9-80
400	2	50	EFNL 9-80	EFNL 9-80
		60	EFNL 9-80	EFNL 9-80
	4	50	EFNL 9-90	EFNL 9-90
		60	EFNL 9-90	EFNL 9-90
450	2	50	EFNL 9-90	EFNL 9-90
		60	EFNL 9-80	EFNL 9-80
	4	50	EFNL 11-100	EFNL 11-100
		60	EFNL 11-100	EFNL 11-100
500	2	50	EFNL 9-100	EFNL 9-100
		60	EFNL 9-90	EFNL 9-90
	4	50	EFNL 11-110	EFNL 11-110
		60	EFNL 11-110	EFNL 11-110

Accessories

Embedded Resistance thermodetectors

CAplus motors are equipped with six resistance thermodetectors (PT100) with three wires per phase, equally spaced around the stator circumference: three are inserted between coils and three in the bottom of the slot.

The API 541 and Shell versions are also fitted with one PT100 per bearing. The PT100s are connected to the main auxiliary terminal box.

Space heaters

Space heaters are of the armored type and are usually available for single phase supply voltage at 220V, 50 or 60 Hz. Space heaters connection cables are wired to the main auxiliary terminal box provided with 4 pole terminal and with an earth terminal. The main auxiliary terminal box is placed on top of the motor for easy connectivity and maintenance.

Terminal Boxes

Terminal boxes are designed to facilitate cable connection and shorten installation times. They can be mounted on either side of the motor, and are equipped with a pressure relief device as an added safety feature. Design options are available, including a star point terminal box, phase insulated, phase separated and phase segregated terminal boxes.

Main terminal Box

The main air insulated terminal box (***see Figure 1***) is mounted on top of the motor and can be rotated in step of 90°. It contains three copper terminal assemblies fastened to three epoxy standoff insulators.
Motor cables are press fitted to the locking nut. A copper pressure relief diaphragm is located in the rear wall of the compartment. Mains incoming cables enter the terminal box via suitable certified cable glands, mounted on a gland plate.

Assemblies are attached to the enclosure wall with a silicone rubber gasket in the joint and fixed to the insulators.

Phase separated terminal box

The phase separated terminal box (***see Figure 2***) is similar to the insulated phase with adding phases separators.

Phase segregated terminal box

The Phase Segregated Terminal Box (***see Figure 3***) contains a 3-phase terminal assembly for the connection of external supply cables to the internal cabling of the motor. The enclosure is fabricated as three separate enclosures (one per phase) with a cover.

Star point terminal box

The star point terminal box (***see Figure 4***) contains three epoxy insulated terminal posts or a copper terminal bar fastened to three epoxy standoff insulators. Motor cables are attached to one side of the neutral terminal assembly via suitable lugs. Possible incoming cables can enter the terminal box via suitable certified cable glands, which mounted on a gland plate assemblies attached to the enclosure wall with a silicone rubber gasket in the joint and fixed to the insulators.

Phase insulated with star point terminal box

(***see Figure 5***) is a merge of the two terminal box insulated and star point.

Routine test

Provides information to confirm that the motor is as designed and is suitable for service. This test is essential and is performed on each unit before sending the product to site.

Type Test

Type test provides typical performance values for purchased motor together with a copy of the inspection and testing report issued to customer

- *Complete Test* according to API 541 5th edition
- *Performance Test* according to SHELL DEP requirements

Bearing insulation

Insulated bearings reliably prevent current discharge. In general the non-drive-end bearing is insulated. If the motor is operating on a frequency converter, the insulation of the non-drive-end bearing is mandatory.

Vibration probes and proximitors

Vibration probes and proximitors can be installed on the bearings to make appropriate measurements.

Auxiliary terminal Box for vibration and proximitors

Require a dedicated stainless steel auxiliary terminal box.

Figure 1

Figure 2

Figure 3

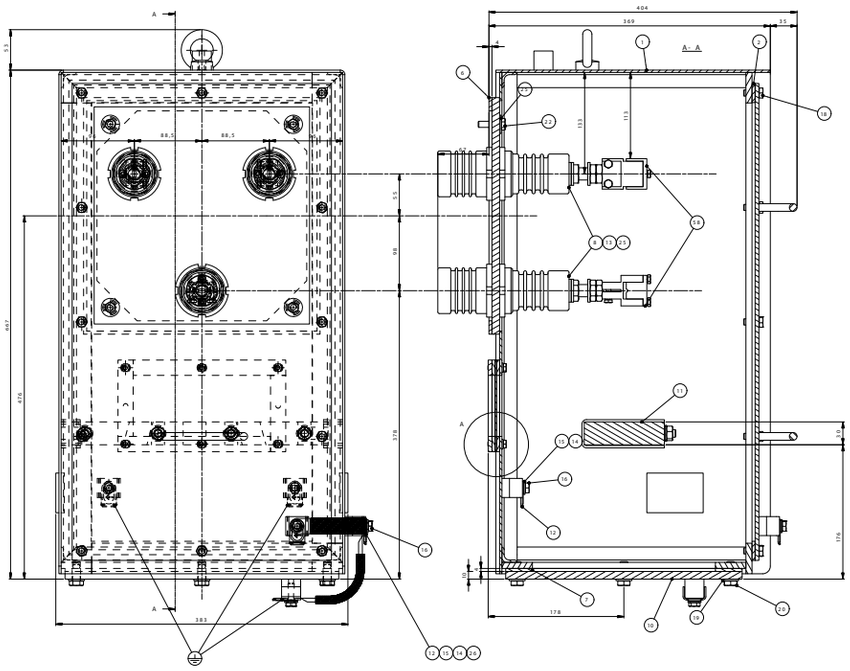
Figure 4

Figure 5

Terminal Boxes

Main Terminal Box 001

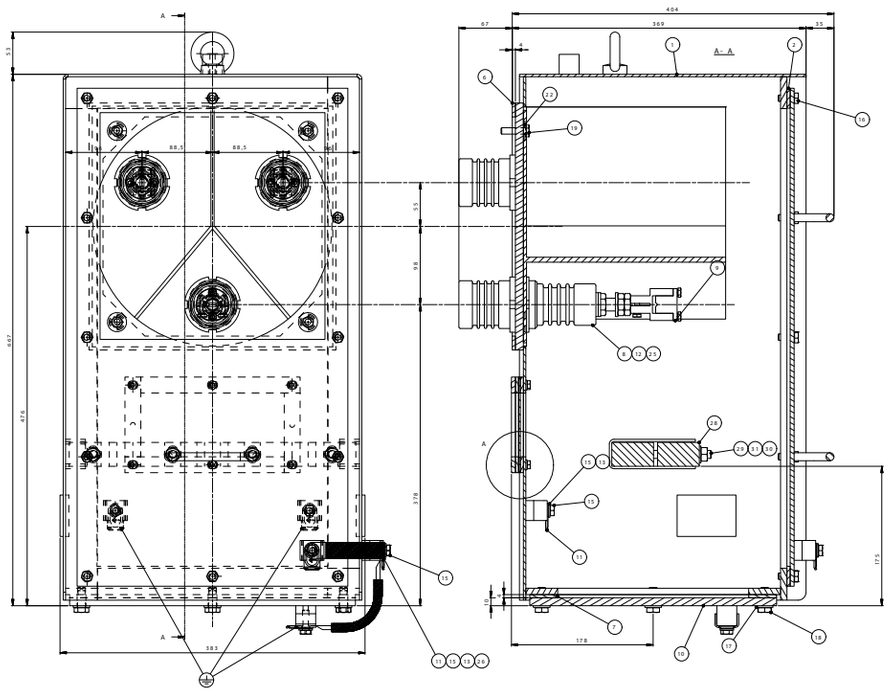
The main terminal box is placed on side, left or right, of the motor and it is provided with a rear flange for fixing to the frame. It can be mounted in front, center and back position and rotated in step of 90° (315 shaft height have only front and back position).
Terminal boxes with separated or segregated phases are available on request with the same characteristics of insulated phases. If required, a star point terminal box may be installed on the opposite side to allow connection to different protection devices. The main terminal boxes, in the standard execution are provided with pass through china or resin insulators. The degree of protection is IP55 and it is internally provided of a rupture diaphragm for safety against eventual internal overpressures due to short circuit, preventing injures to the personnel.



Technical Data
Voltage: up to 6,6 kV
Current: 430 A
No of Cables: 1 per phase
Max cables cross section: 300 mm
Cable gland entry: 1 pcs
Connection Screws: M16
Weight: 48kg
Protection: IP55
Dynamic short circuit current:
40 kA rms x 0,25 s/
100 kA peak
Rotation: in steps of 90°

Material
Box: Welded structural steel (thickness min. 3 mm)
Cable Gland plate: steel painted, aluminum and AISI316L with cable gland on request
Connection Screws: Nickel-coated copper
Isolators: Epoxy Resin bushing
Grounding Pad: Stainless Steel
Distance between first terminal and cable inlet: 375mm

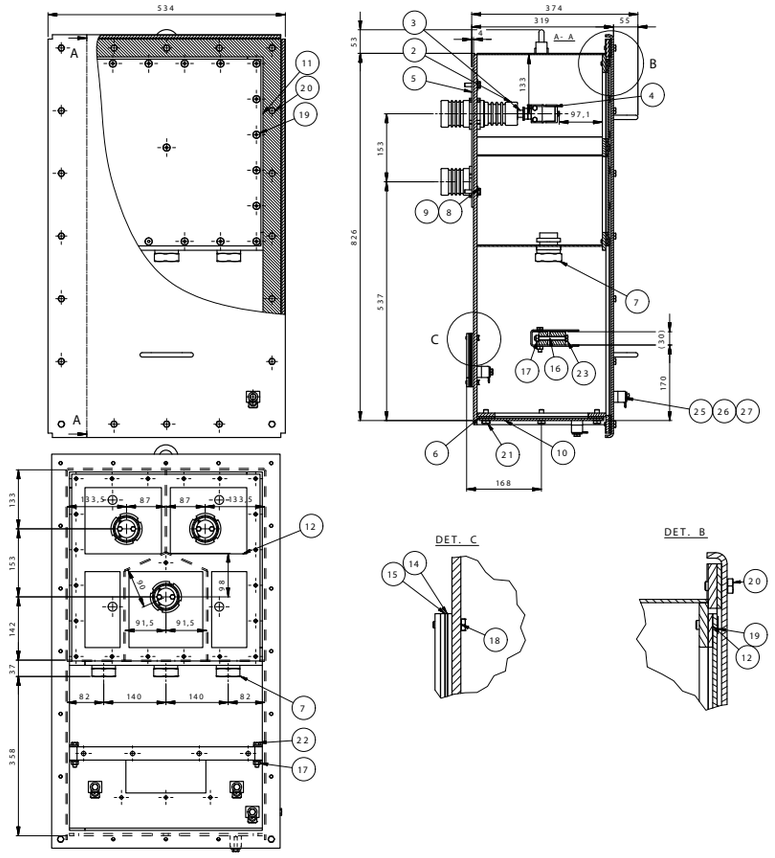
Separated Phase Terminal Box 002



Technical Data
Voltage: up to 6,6 kV
Current: 430 A
No of Cables: 1 per phase
Max cables cross section: 300 mm
Cable gland entry: 1 pcs
Connection Screws: M16
Weight: 49kg
Protection: IP55
Dynamic short circuit current:
40 kA rms x 0,25 s/
100 kA peak
Rotation: in steps of 90°

Material
Box: Welded structural steel (thickness min. 3 mm)
Cable Gland plate: steel painted, aluminum and AISI316L with cable gland on request
Connection Screws: Nickel-coated copper
Isolators: Epoxy Resin bushing
Grounding Pad: Stainless Steel
Distance between first terminal and cable inlet: 375mm

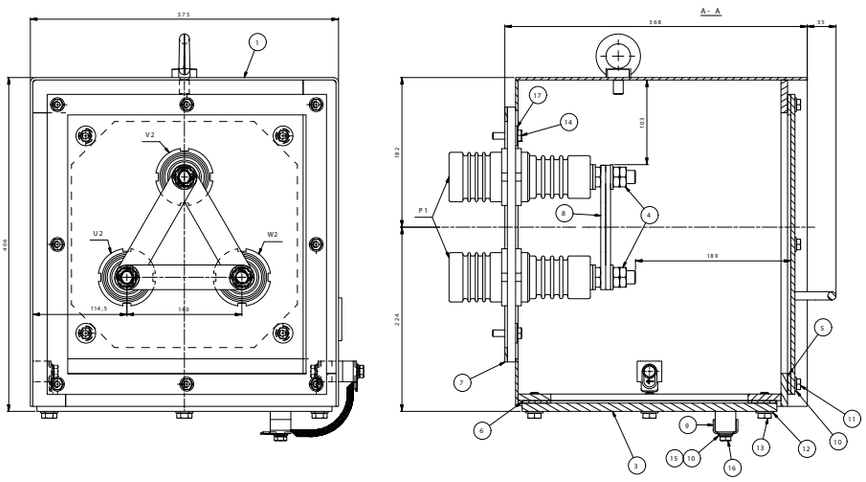
Segregated phase Terminal Box 003



Technical Data
Voltage: up to 8,3 kV
Current: 430 A
No of Cables: 1 per phase
Max cables cross section: 240 mm
Cable gland entry: 1 pcs
Weight: 102kg
Protection: IP55
Dynamic short circuit current:
40 kA rms x 0,25 s/
100 kA peak
Rotation: in steps of 90°

Material
Box: Welded structural steel (thickness min. 3 mm)
Cable Gland plate: steel painted, aluminum and AISI316L with cable gland on request
Connection Screws: Nickel-coated copper
Isolators: Epoxy Resin bushing
Grounding Pad: Stainless Steel
Distance between first terminal and cable inlet: 375mm

Start Point Terminal Box 004

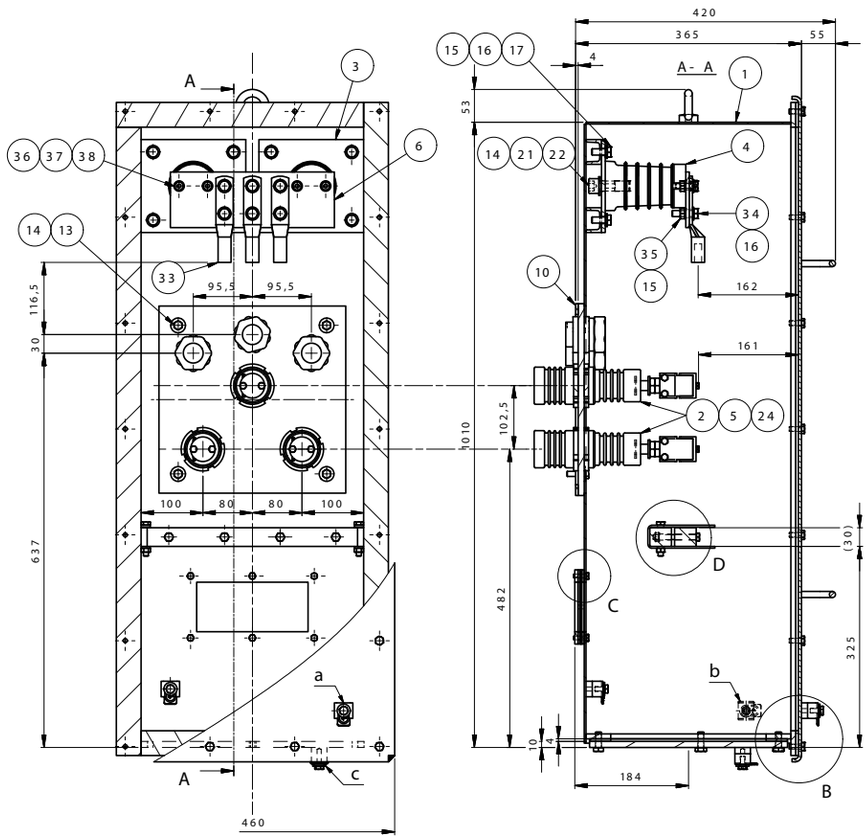


Technical Data
Voltage: up to 6.6 kV
Current: 430 A
Weight: 48kg
Protection: IP55
Rotation: in steps of 90°

Material
Box: Welded structural steel (thickness min. 3 mm)
Connection Screws: Nickel-coated copper
Isolators: Epoxy Resin bushing
Grounding Pad: Stainless Steel

Terminal Boxes

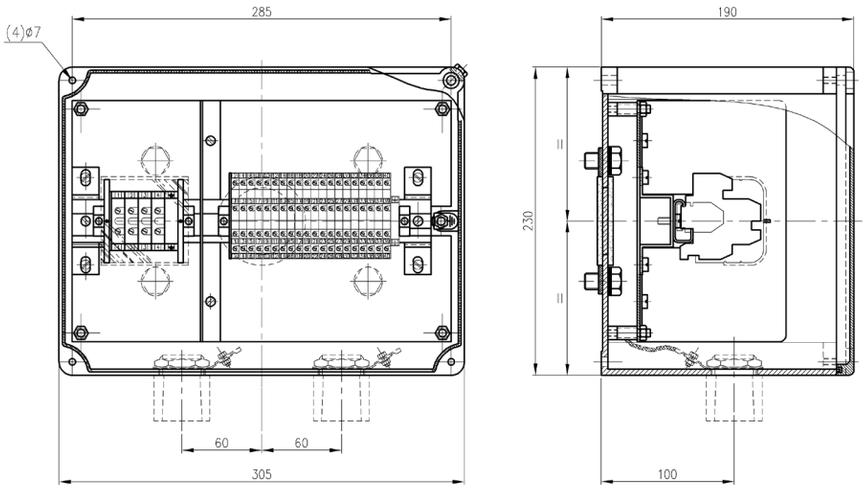
Insulated Phase with Start Point Terminal Box 005



Technical Data
Voltage: up to 6,6 kV
Current: 430 A
No of Cables: 1 per phase
Max cables cross section: 300 mm
Cable gland entry: 1 pcs
Connection Screws: M16
Weight: 88kg
Protection: IP55
Dynamic short circuit current:
40 kA rms x 0,25 s/
100 kA peak
Rotation: in steps of 90°

Material
Box: Welded structural steel (thickness min. 3 mm)
Cable Gland plate: steel painted, aluminum and AISI316L with cable gland on request
Connection Screws: Nickel-coated copper
Isolators: Epoxy Resin bushing
Grounding Pad: Stainless Steel
Distance between first terminal and cable inlet: 375mm

Auxiliary Terminal Box 006



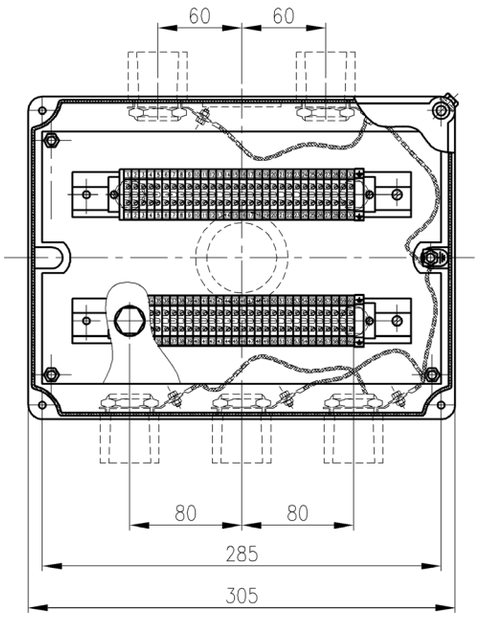
The auxiliary box is used to connect control equipment and heating elements.

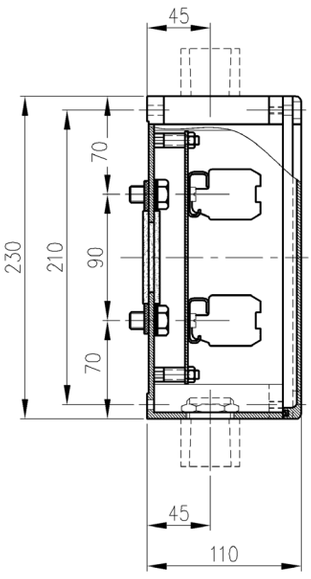
One box with two compartments including
– RTDs stator winding
– RTDs bearings
– Vibration sensors
– Contact dial thermometer
– Heating elements

Features:
Material: Al-Si12
Main dimensions: 230x305x190 mm
Degree of protection: IP66
Silicone rubber gasket material
Assembly DIN Rail 35, 35x285
Max terminal blocks:
Heating Elements: 4 pcs 6 or 10 mm2
Accessories: 14 pcs double type 2,5 mm2

All cable entries of the box are closed by Ex certified plugs for motor transportation.

Auxiliary Terminal Box 007



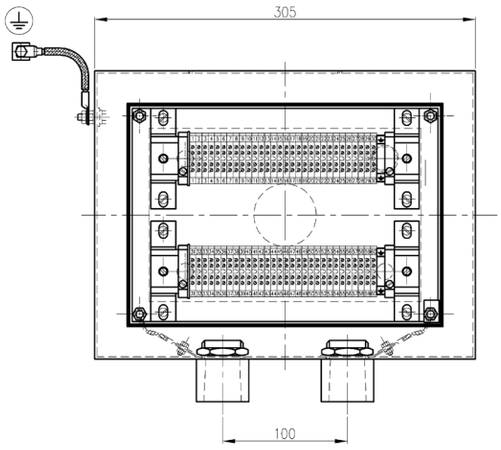


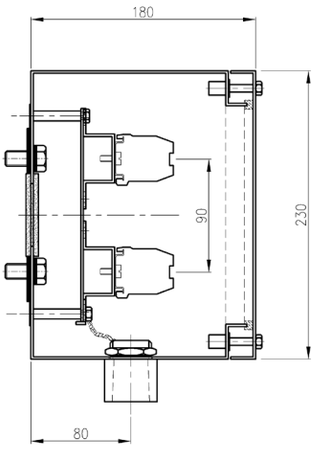
One box equipped with one or two terminal blocks row including:
– RTDs stator windings
– RTDs bearing
– Vibration sensors
– Contact dial thermometer

Features:
Material: Al-Si12
Main dimensions: 230x305x110 mm
Degree of protection: IP66
Silicone rubber gasket material
Assembly DIN Rail 35, 35x285
Max terminal blocks:
1 row: 30 pcs 2,5 mm2
25 pcs 4,5 mm2
2 rows: 60 pcs 2,5 mm2
50 pcs 4,5 mm2

All cable entries of the box are closed by Ex certified plugs for motor transportation.

Auxiliary Terminal Box 008



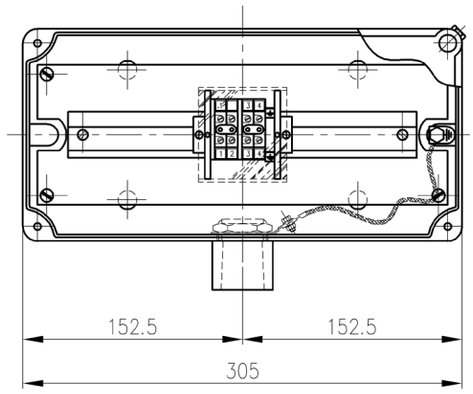


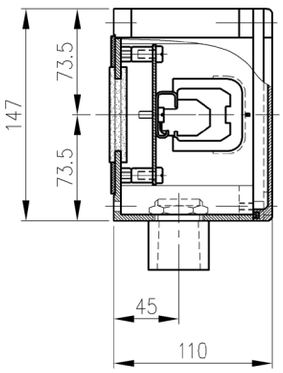
One box including:
– RTDs stator windings
– RTDs bearings
– Vibration sensors
– Contact dial thermometer

Features:
Material: AISI 316L
Main dimensions: 230x305x180 mm
Degree of protection: IP66
Silicone rubber gasket material
Assembly DIN Rail 35, 35x285
Max terminal blocks:
1 row: 30 pcs 2,5 mm2
25 pcs 4,5 mm2
2 rows: 60 pcs 2,5 mm2
50 pcs 4,5 mm2

All cable entries of the box are closed by Ex certified plugs for motor transportation.

Auxiliary Terminal Box 009



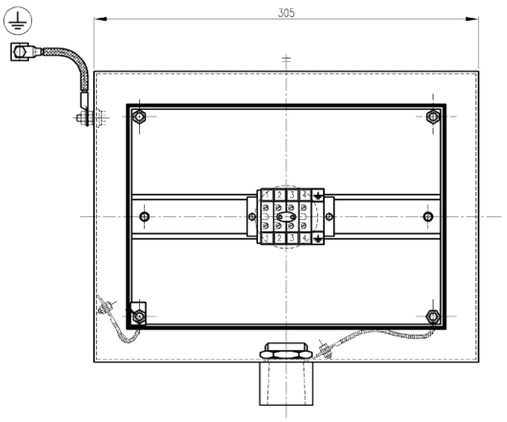


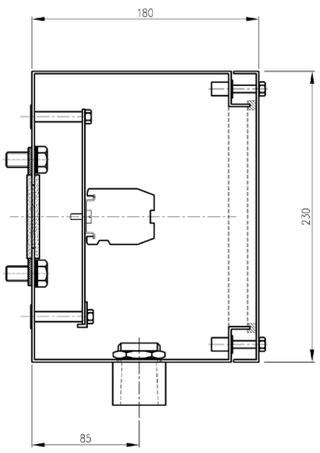
One box including:
– Heating elements

Features:
Material: Al-Si12
Main dimensions: 147x305x110 mm
Degree of protection: IP66
Silicone rubber gasket material
Assembly DIN Rail 35, 35x285
Max terminal blocks: 4 pcs 6mm2 or 10mm2

All cable entries of the box are closed by Ex certified plugs for motor transportation.

Auxiliary Terminal Box 0010



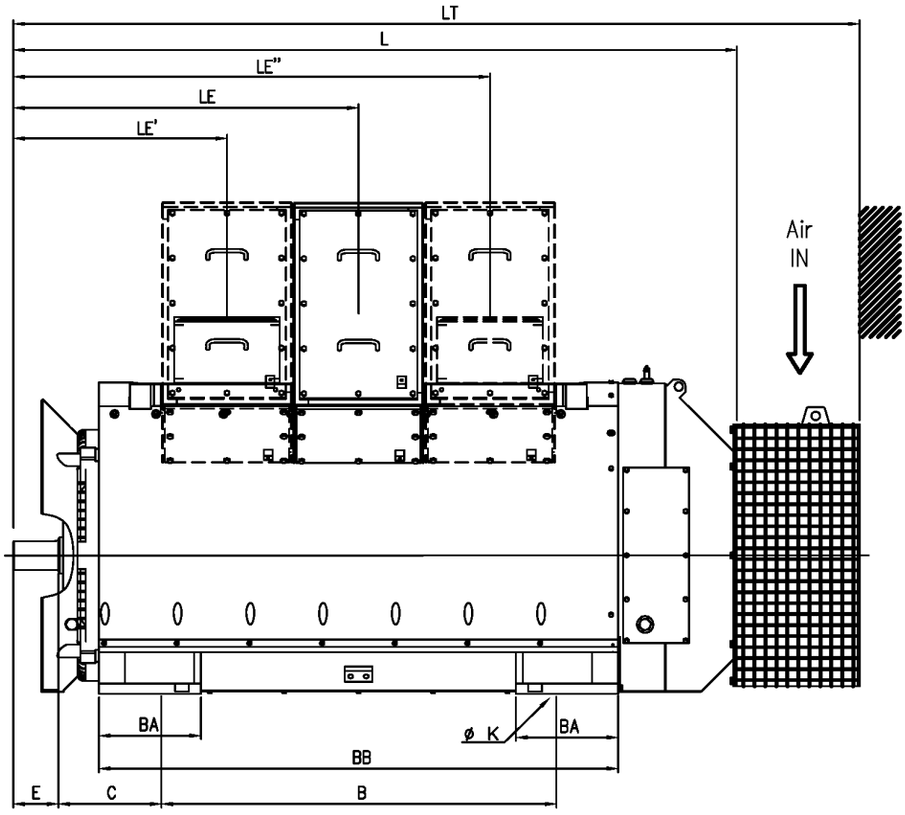


One box including
– Heating elements

Features:
Material: AISI 316L
Main dimensions: 230x305x180 mm
Degree of protection: IP66
Silicone rubber gasket material
Assembly DIN Rail 35, 35x285
Max terminal blocks: 4 pcs 6mm2 or 10mm2

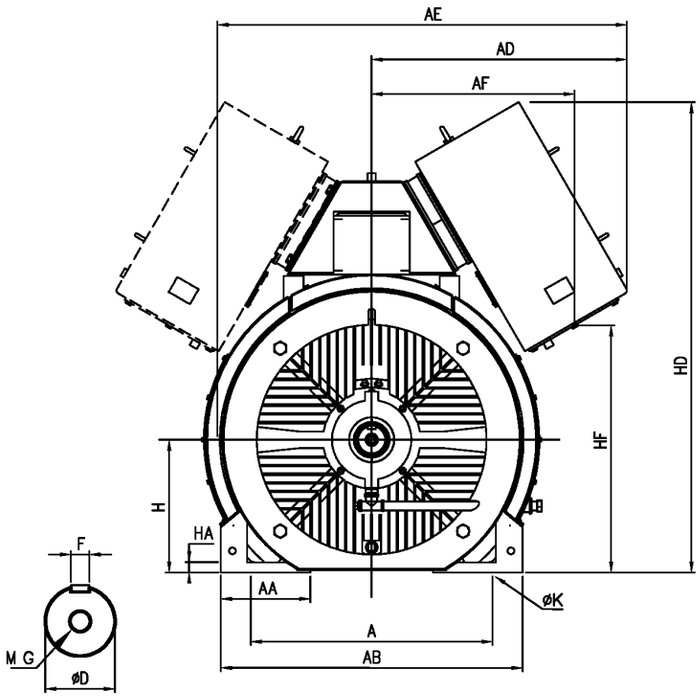
All cable entries of the box are closed by Ex certified plugs for motor transportation

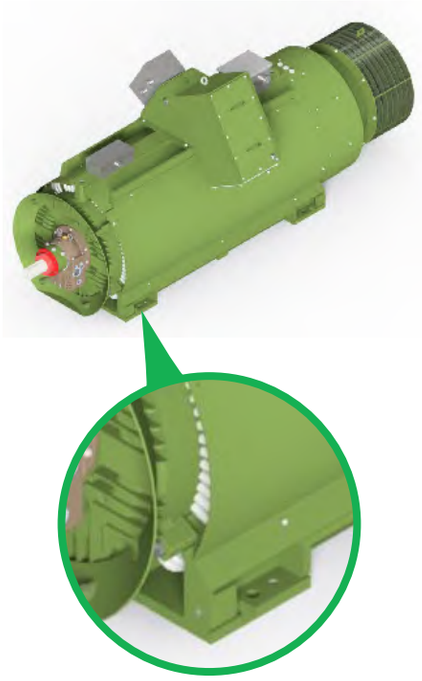
Dimensions
2 Poles - Roller Bearings



MOTOR TYPE CAT			A mm	AA mm	AB mm	AC mm	AD mm	AE mm	AF mm	H mm	HA mm	HD mm	HF mm	K mm
315	L	2	710	235	780	620	730	1160	570	315	25	1260	585	30
315	S	2	710	235	780	620	730	1160	570	315	25	1260	585	30
355	S	2	745	257	825	700	745	1210	585	355	30	1340	665	30
355	L	2	745	257	825	700	745	1210	585	355	30	1340	665	30
355	L	4	745	257	825	700	745	1160	585	355	30	1340	665	30
400	S	2	830	270	910	755	770	1275	610	400	30	1420	745	30
400	L	2	830	270	910	755	770	1275	610	400	30	1420	745	30
400	L	4	830	270	910	755	770	1225	610	400	30	1420	745	30
450	S	2	880	270	960	825	805	1355	645	450	30	1520	845	30
450	L	2	880	270	960	825	805	1355	645	450	30	1520	845	30
450	L	4	880	270	960	825	805	1315	645	450	30	1520	845	30
500	L	2	1000	300	1070	900	830	1430	665	500	45	1620	940	30
500	L	4	930	300	1070	900	830	1390	665	500	45	1620	940	30

Dimensions for reference, actual dimensions may vary





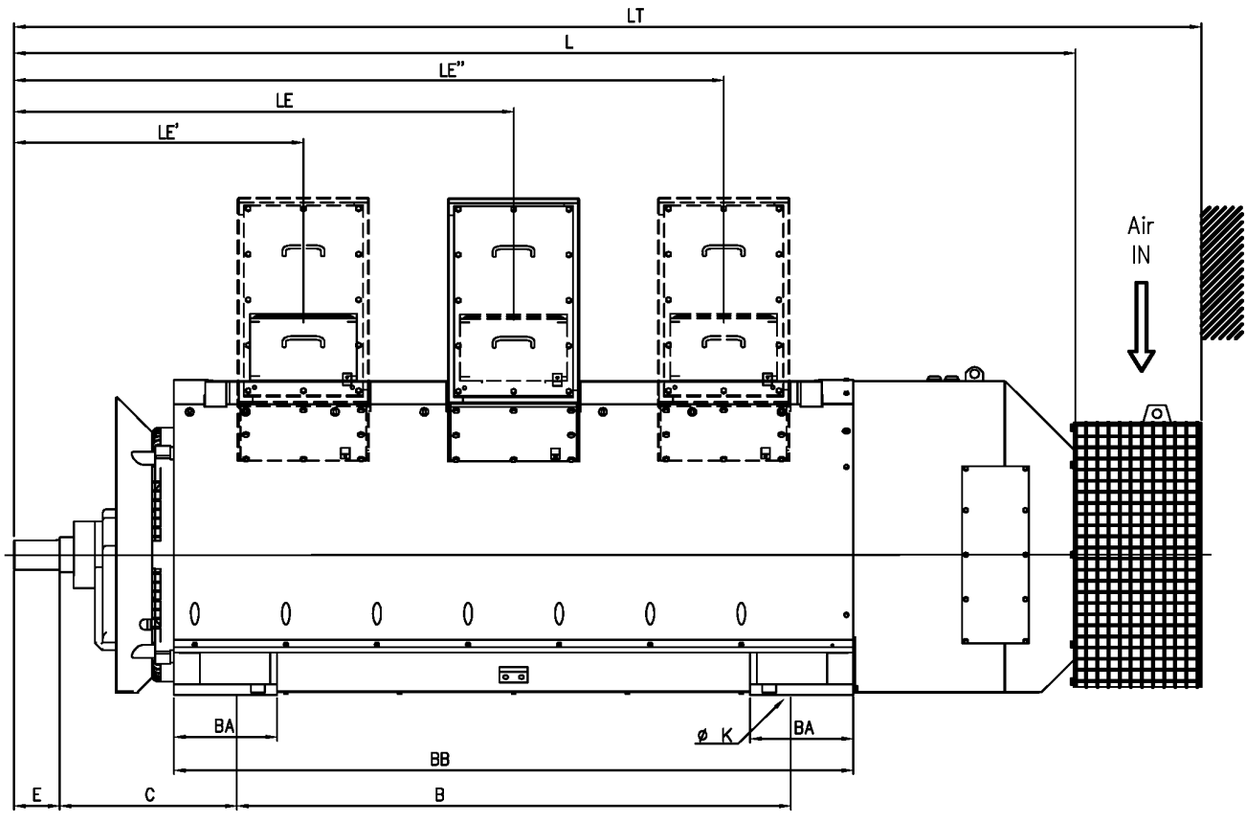
Detail of mounting on feet

In the 2 pole versions, the feet are compatible with Siemens motors with the same shaft height.

MOTOR TYPE CAT			B mm	BA mm	BB mm	C mm	E mm	D mm	F mm	G mm	L mm	LT mm	LE mm	LE' mm	LE'' mm
315	L	2	1090	295	1340	237	115	70	22	M24	1860	2230	NA	650	1150
315	S	2	960	295	1210	237	115	70	22	M24	1740	2100	NA	585	1085
355	S	2	950	295	1240	264	115	75	25	M24	1780	2135	NA	605	1105
355	L	2	1110	295	1400	265	115	75	25	M24	1980	2300	935	555	1310
355	L	4	1110	295	1400	265	190	100	28	M24	2010	2370	1005	625	1385
400	S	2	1040	295	1330	262	140	85	25	M24	1925	2285	NA	675	1175
400	L	2	1210	295	1500	265	140	85	25	M24	2140	2455	1010	630	1390
400	L	4	1210	295	1500	265	210	105	28	M24	2165	2525	1075	695	1455
450	S	2	1190	315	1480	262	140	95	28	M24	2085	2445	1000	600	1400
450	L	2	1390	315	1680	265	140	95	28	M24	2285	2645	1070	670	1470
450	L	4	1390	315	1680	265	210	115	32	M24	2385	2745	1170	770	1570
500	L	2	1470	345	1760	290	160	105	28	M24	2560	2870	1185	735	1635
500	L	4	1470	345	1760	290	230	120	32	M24	2580	2940	1255	805	1705

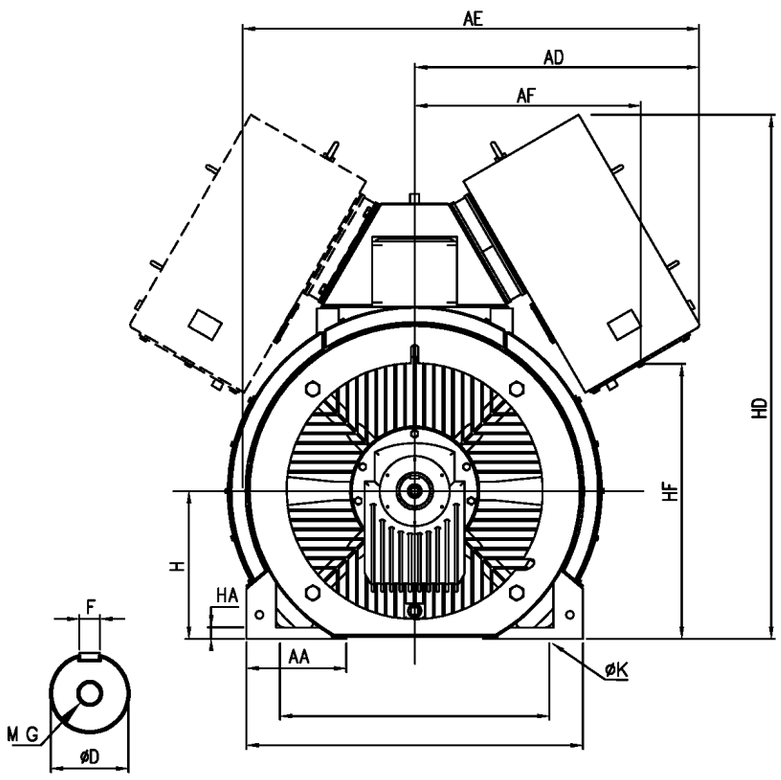
Dimensions for reference, actual dimensions may vary

Dimensions
2 Poles - Sleeve Bearings



MOTOR TYPE CAT			A mm	AA mm	AB mm	AC mm	AD mm	AE mm	AF mm	H mm	HA mm	HD mm	HF mm	K mm
355	Y	2	745	257	825	700	745	1210	585	355	30	1340	665	30
355	Z	2	745	257	825	700	745	1210	585	355	30	1340	665	30
355	L	4	745	257	825	700	745	1160	585	355	30	1340	665	30
400	Y	2	830	270	910	755	770	1276	610	400	30	1420	745	30
400	Z	2	830	270	910	755	770	1276	610	400	30	1420	745	30
400	L	4	830	270	910	755	770	1225	610	400	30	1420	745	30
450	Y	2	880	270	960	825	805	1355	645	450	30	1520	845	30
450	Z	2	880	270	960	825	805	1355	645	450	30	1520	845	30
450	L	4	880	270	960	825	805	1315	645	450	30	1520	845	30
500	Y	2	1000	300	1070	900	825	1430	667	500	45	1620	940	30
500	Z	2	1000	300	1070	900	825	1430	667	500	45	1620	940	30
500	L	4	1000	300	1070	900	825	1390	667	500	45	1620	940	30

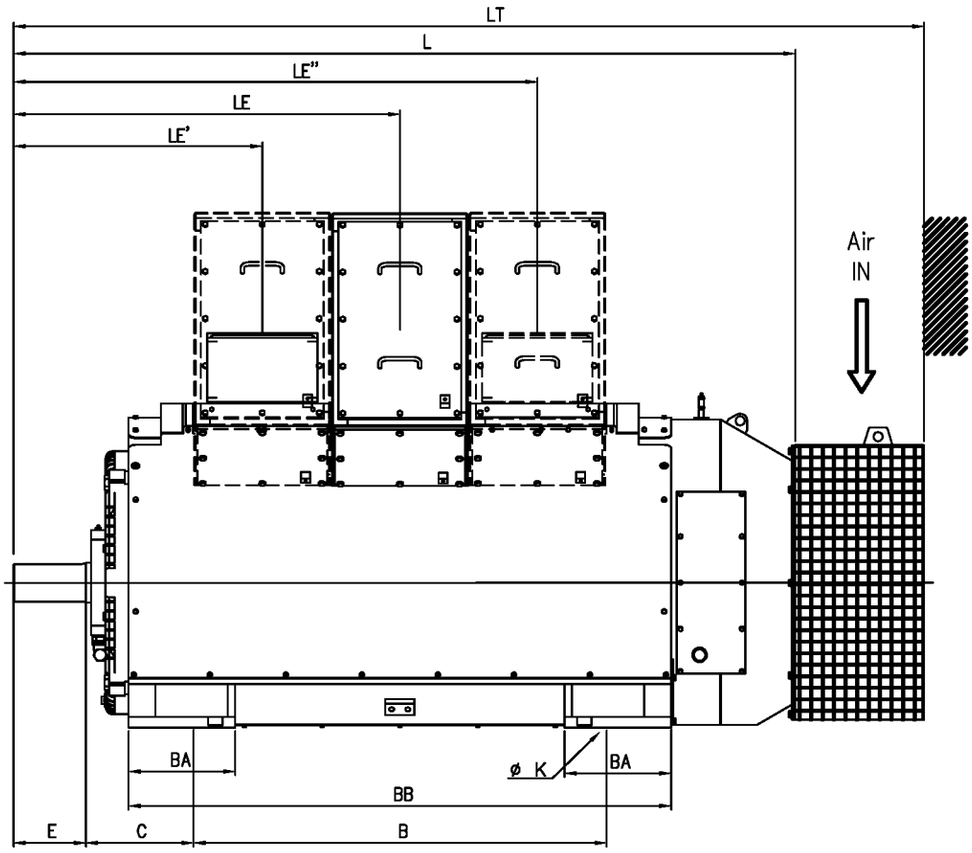
Dimensions for reference, actual dimensions may vary



MOTOR TYPE CAT			B mm	BA mm	BB mm	C mm	E mm	D mm	F mm	G mm	L mm	LT mm	LE mm	LE' mm	LE" mm
355	Y	2	1330	295	1620	460	115	75	25	M24	2680	3040	1270	890	1650
355	Z	2	1430	295	1720	460	115	75	25	M24	2780	3140	1320	940	1700
355	L	4	1110	295	1400	490	190	100	28	M24	2535	2895	1235	855	1615
400	Y	2	1510	295	1800	470	140	85	25	M24	2910	3280	1385	855	1915
400	Z	2	1650	295	1940	470	140	85	25	M24	3060	3420	1455	855	2055
400	L	4	1210	295	1500	470	210	105	28	M24	2690	3050	1305	925	1685
450	Y	2	1570	315	1860	490	140	85	25	M24	2980	3340	1415	1015	1815
450	Z	2	1660	315	1950	490	140	95	28	M24	3070	3435	1460	1060	1860
450	L	4	1390	315	1680	520	210	115	32	M24	2950	3310	1425	1025	1825
500	Y	2	1570	345	1860	490	160	105	28	M24	2970	3330	1435	935	1935
500	Z	2	1720	345	2010	490	160	105	28	M24	3120	3480	1510	935	2085
500	L	4	1470	345	1760	440	230	120	32	M24	3090	3450	1485	1035	1935

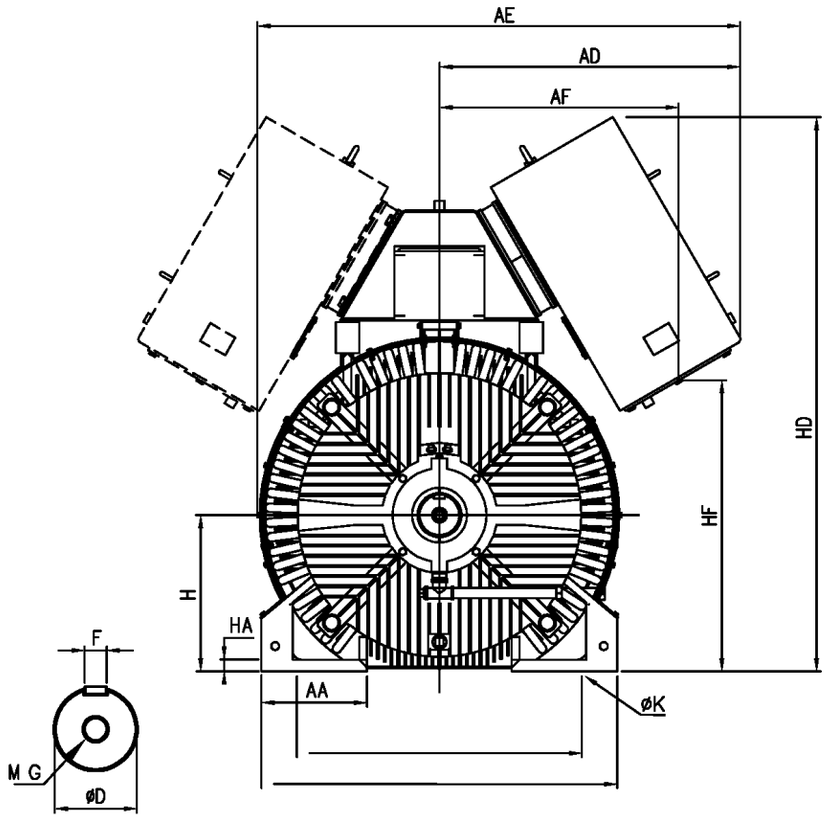
Dimensions for reference, actual dimensions may vary

Dimensions
4 Poles - Roller Bearings



MOTOR TYPE CAT			A mm	AA mm	AB mm	AC mm	AD mm	AE mm	AF mm	H mm	HA mm	HD mm	HF mm	K mm
315	L	4	710	235	780	620	730	1110	570	315	25	1260	585	30
355	S	2	745	257	825	700	745	1210	585	355	30	1340	665	30
355	L	2	745	257	825	700	745	1210	585	355	30	1340	665	30
355	L	4	745	257	825	700	745	1160	585	355	30	1340	665	30
400	S	2	830	270	910	755	770	1275	610	400	30	1420	745	30
400	L	2	830	270	910	755	770	1275	610	400	30	1420	745	30
400	L	4	830	270	910	755	770	1225	610	400	30	1420	745	30
450	S	2	880	270	960	825	805	1355	645	450	30	1520	845	30
450	L	2	880	270	960	825	805	1355	645	450	30	1520	845	30
450	L	4	880	270	960	825	805	1315	645	450	30	1520	845	30
500	L	2	1000	300	1070	900	830	1430	665	500	45	1620	940	30
500	L	4	930	300	1070	900	830	1390	665	500	45	1620	940	30

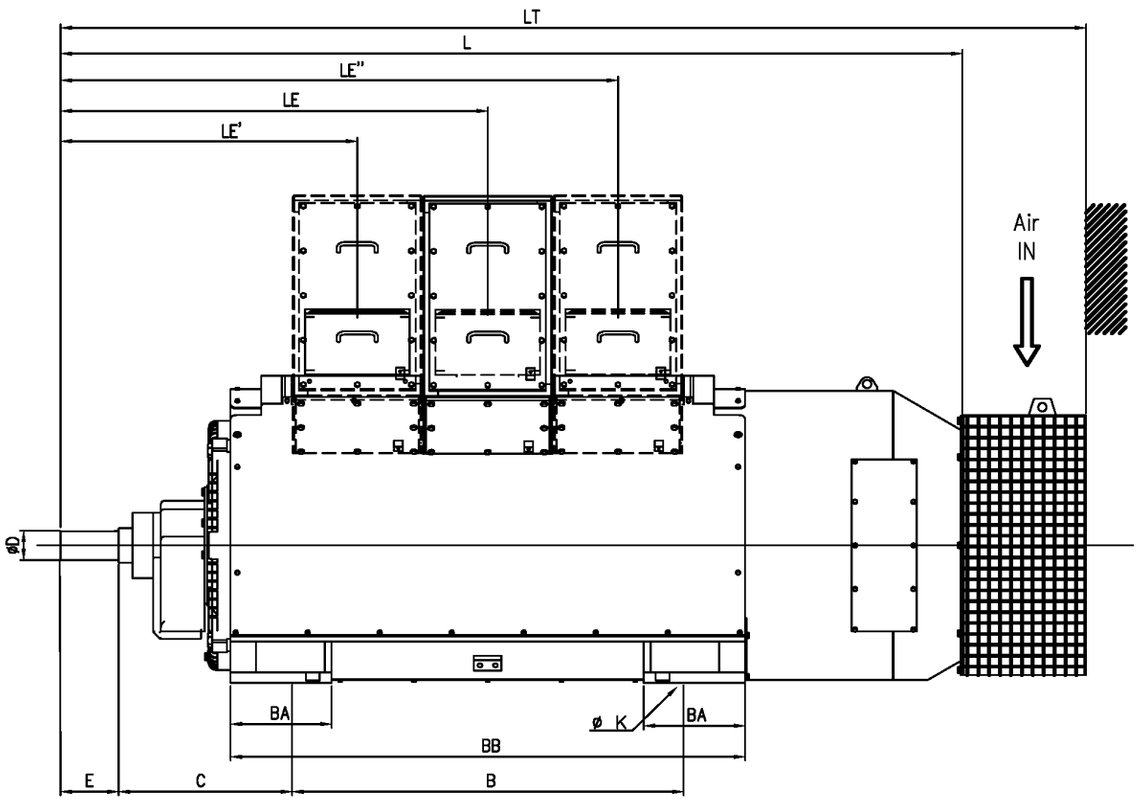
Dimensions for reference, actual dimensions may vary



MOTOR TYPE CAT			B mm	BA mm	BB mm	C mm	E mm	D mm	F mm	G mm	L mm	LT mm	LE mm	LE' mm	LE" mm
315	L	4	1090	295	1340	237	190	95	25	M24	1945	2305	NA	725	1225
355	S	2	950	295	1240	264	115	75	25	M24	1780	2135	NA	605	1105
355	L	2	1110	295	1400	265	115	75	25	M24	1980	2300	935	555	1310
355	L	4	1110	295	1400	265	190	100	28	M24	2010	2370	1005	625	1385
400	S	2	1040	295	1330	262	140	85	25	M24	1925	2285	NA	675	1175
400	L	2	1210	295	1500	265	140	85	25	M24	2140	2455	1010	630	1390
400	L	4	1210	295	1500	265	210	105	28	M24	2165	2525	1075	695	1455
450	S	2	1190	315	1480	262	140	95	28	M24	2085	2445	1000	600	1400
450	L	2	1390	315	1680	265	140	95	28	M24	2285	2645	1070	670	1470
450	L	4	1390	315	1680	265	210	115	32	M24	2385	2745	1170	770	1570
500	L	2	1470	345	1760	290	160	105	28	M24	2560	2870	1185	735	1635
500	L	4	1470	345	1760	290	230	120	32	M24	2580	2940	1255	805	1705

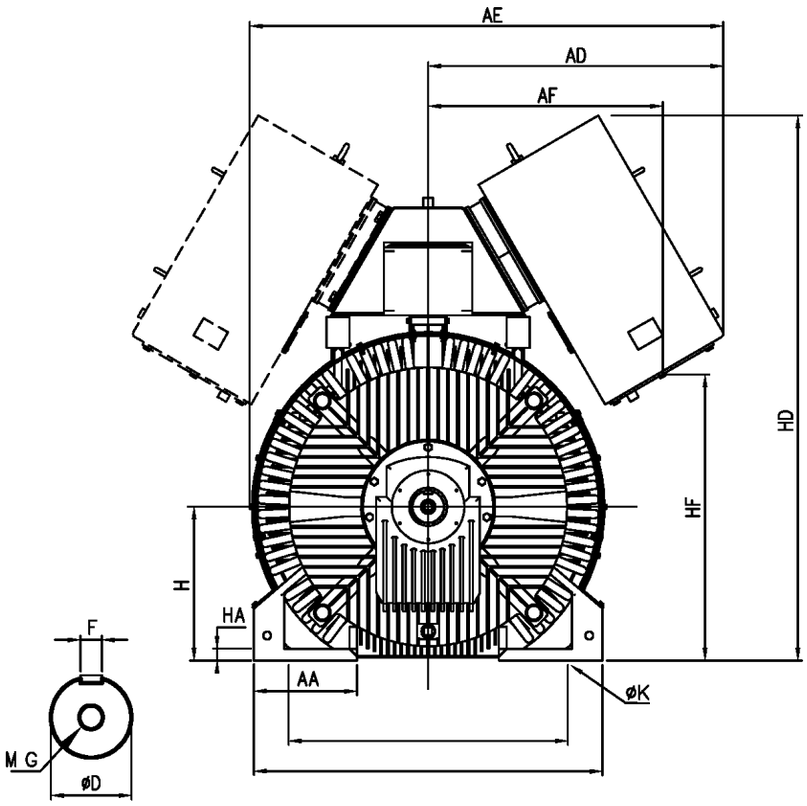
Dimensions for reference, actual dimensions may vary

Dimensions
4 Poles - Sleeve Bearings



MOTOR TYPE CAT			A mm	AA mm	AB mm	AC mm	AD mm	AE mm	AF mm	H mm	HA mm	HD mm	HF mm	K mm
355	Y	2	745	257	825	700	745	1210	585	355	30	1340	665	30
355	Z	2	745	257	825	700	745	1210	585	355	30	1340	665	30
355	L	4	745	257	825	700	745	1160	585	355	30	1340	665	30
400	Y	2	830	270	910	755	770	1276	610	400	30	1420	745	30
400	Z	2	830	270	910	755	770	1276	610	400	30	1420	745	30
400	L	4	830	270	910	755	770	1225	610	400	30	1420	745	30
450	Y	2	880	270	960	825	805	1355	645	450	30	1520	845	30
450	Z	2	880	270	960	825	805	1355	645	450	30	1520	845	30
450	L	4	880	270	960	825	805	1315	645	450	30	1520	845	30
500	Y	2	1000	300	1070	900	825	1430	667	500	45	1620	940	30
500	Z	2	1000	300	1070	900	825	1430	667	500	45	1620	940	30
500	L	4	1000	300	1070	900	825	1390	667	500	45	1620	940	30

Dimensions for reference, actual dimensions may vary



MOTOR TYPE CAT			B mm	BA mm	BB mm	C mm	E mm	D mm	F mm	G mm	L mm	LT mm	LE mm	LE' mm	LE" mm
355	Y	2	1330	295	1620	460	115	75	25	M24	2680	3040	1270	890	1650
355	Z	2	1430	295	1720	460	115	75	25	M24	2780	3140	1320	940	1700
355	L	4	1110	295	1400	490	190	100	28	M24	2535	2895	1235	855	1615
400	Y	2	1510	295	1800	470	140	85	25	M24	2910	3280	1385	855	1915
400	Z	2	1650	295	1940	470	140	85	25	M24	3060	3420	1455	855	2055
400	L	4	1210	295	1500	470	210	105	28	M24	2690	3050	1305	925	1685
450	Y	2	1570	315	1860	490	140	85	25	M24	2980	3340	1415	1015	1815
450	Z	2	1660	315	1950	490	140	95	28	M24	3070	3435	1460	1060	1860
450	L	4	1390	315	1680	520	210	115	32	M24	2950	3310	1425	1025	1825
500	Y	2	1570	345	1860	490	160	105	28	M24	2970	3330	1435	935	1935
500	Z	2	1720	345	2010	490	160	105	28	M24	3120	3480	1510	935	2085
500	L	4	1470	345	1760	440	230	120	32	M24	3090	3450	1485	1035	1935

Dimensions for reference, actual dimensions may vary

Ordering information

Below are the indications to follow when placing an order. The Identification code includes indications for accessories and color.

Example of a product code

A	B	C	D	E	F	G	H	I
CA+	500	Z	2	A041	A	66	S	2

Explaination of the product code

A	**BMotor type**
	CA+
B	**IEC frame**
	315 355 400 450 500
C	**Frame length**
	S L Y Z
D	**Number of poles**
	2 4 6
E	**Voltage / Frequency**
	A = 6600 V / 50 Hz B = 4160 V / 60 Hz C = 3300 V / 50 Hz D = Special Request

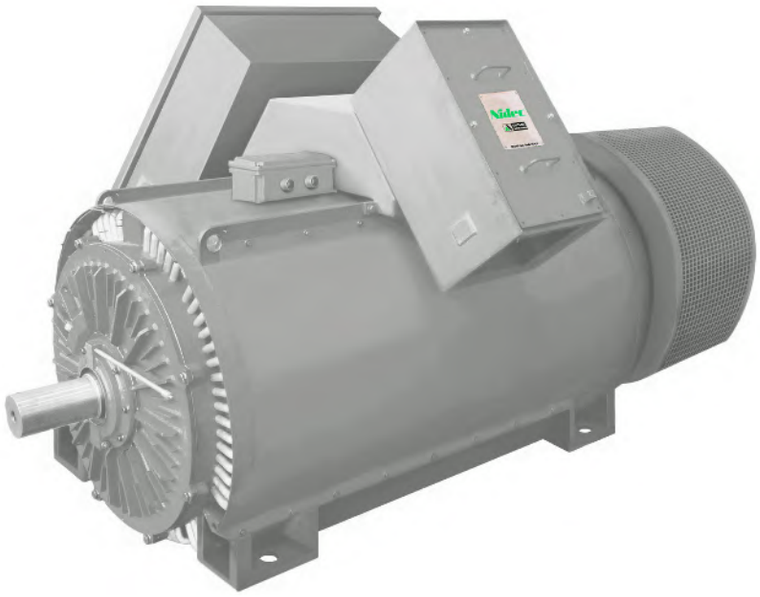
F	**Product ID**
	From I01 to I39 From A01 to A26 From S01 to S26
G	**Bearings type**
	R = Rolling bearings S = Sleeve bearings
H	**Mounting arrangement**
	H = Horizontal V = Vertical
I	**Painting colour**
	1 = RAL 6018 2 = RAL 7035 3 = RAL 5012

A10	355	L	600	1787	3206	62	96,6	0,87	650	78	3650	SN	SN
A11	355	L	670	1787	3580	70	96,7	0,87	650	78	3780	SN	SN
A12	355	L	750	1787	4008	78	96,8	0,87	650	78	3880	SN	SN
A14	400	L	1000	1787	5344	103	96,8	0,88	650	81	4720	SN	SN
A16	450	L	1350	1789	7206	137	97,0	0,89	600	84	5990	SN	SN
A17	450	L	1580	1789	8434	160	97,0	0,89	600	84	6260	SN	SN

Product ID — **IEC frame** — **Frame length** — **Bearings type**

Painting colour

1	2	3
RAL 6018	RAL 7035	RAL 5012 (Shell)



Example of product code + accessories code

CA+ 500 Z 2 A041 A 66 S H 2 A1 B1 D2 E1 F1

Explanation of the accessories code

Code number	Accessories
A1	Terminal Boxes PACK 1
A2	Terminal Boxes PACK 2
A3	Terminal Boxes PACK 3
A4	Terminal Boxes PACK 4
A5	Terminal Boxes PACK 5
A6	Terminal Boxes PACK 6
B1	Separated phase Terminal box
B2	Segregated phase Terminal box
B3	Insulated Phase with Start Point Terminal Box
C1	Proximity Vibration Probes Terminal Box
C2	Proximity Vibration Cable Terminal Box
C3	Proximity aux terminal box Terminal Box
D1	Bearings RTDs PT100: one each bearing
D2	Bearings RTDs PT100: two each bearing
E1	Frame aluminium pipes
E2	Frame stainless steel pipes
F1	Type test

TB PACK 1	Item
Phase insulated Terminal box	001
Common Auxiliary Terminal box for RTDs and Space Heaters	004

TB PACK 2	Item
Phase insulated Terminal box	001
Star point Terminal box	002
Common Auxiliary Terminal box for RTDs and Space Heaters	004

TB PACK 3	Item
Phase insulated Terminal box	001
Auxiliary Terminal box for RTDs	005
Auxiliary Terminal box for Space Heaters	006

TB PACK 4	Item
Phase insulated Terminal box	001
Star point Terminal box	002
Auxiliary Terminal box for RTDs	005
Auxiliary Terminal box for Space Heaters	006

TB PACK 5	Item
Phase insulated Terminal box	001
Stainless Steel Auxiliary Terminal box for RTDs	007
Stainless Steel Auxiliary Terminal box for Space Heaters	008

TB PACK 6	Item
Phase insulated Terminal box	001
Star point Terminal box	002
Stainless Steel Auxiliary Terminal box for RTDs	007
Stainless Steel Auxiliary Terminal box for Space Heaters	008

CAT	Frames	Included in the standard motor configuration	Code N°	Available on request	Code N°
IEC	50 HZ 2 POLE **315-500**	• TB PACK 1	A1	• TB PACK 2	A2
	60 HZ 4 POLE **315-500**	• Stator RTDs PT100 (3 wire class B)	-	• TB PACK 3	A3
	50 HZ 4 POLE **315-500**	• Space Heaters	-	• TB PACK 4	A4
	60 HZ 4 POLE **315-500**	• Bearing insulation, nde side (*)	-	• TB PACK 5	A5
		• Frame aluminium pipes	E1	• TB PACK 6	A6
		• Internal air purgin provision	-	• Phase separated Terminal box	B1
		• Routine test	-	• Segregated phase Terminal box	B2
		• Exna IIB Certified	-	• Insulated Phase with Start Point Terminal Box	B3
				• Proximity Vibration Probes Terminal Box	C1
				• Proximity Vibration Cable Terminal Box	C2
				• Proximity aux terminal box Terminal Box	C3
				• Bearings RTDs PT100: one per bearing	D1
				• Bearings RTDs PT100: two per bearing	D2
				• Frame stainless steel pipes	E2
				• Type test	F1
API Sleeve Bearings	50 HZ 2 POLE **355-500**	• TB PACK 2	A2	• TB PACK 3	A3
	60 HZ 4 POLE **355-500**	• Stator RTDs PT100 (3 wire class B)	-	• TB PACK 4	A4
	50 HZ 4 POLE **355-500**	• Space Heaters	-	• TB PACK 5	A5
	60 HZ 4 POLE **355-500**	• Bearings RTDs PT100: one each bearing	D1	• TB PACK 6	A6
		• Proximity provision	-	• Phase separated Terminal box	B1
		• Bearing insulation de and nde side (**)	-	• Segregated phase Terminal box	B2
		• Frame aluminium pipes	E1	• Insulated Phase with Start Point Terminal Box	B3
		• Internal air purgin provision	-	• Proximity Vibration Probes Terminal Box	C1
		• Routine test	-	• Proximity Vibration Cable Terminal Box	C2
		• Exna IIB Certified	-	• Proximity aux terminal box Terminal Box	C3
				• Bearings RTDs PT100: two each bearing	D2
				• Frame stainless steel pipes	E2
				• Type test	F1
Shell Sleeve Bearings	50 HZ 2 POLE **355-500**	• TB PACK 2	A2	• TB PACK 3	A3
	60 HZ 4 POLE **355-500**	• Stator RTDs PT100 (3 wire class B)	-	• TB PACK 4	A4
	50 HZ 4 POLE **355-500**	• Space Heaters	-	• TB PACK 5	A5
	60 HZ 4 POLE **355-500**	• Bearings RTDs PT100: one each bearing	D1	• TB PACK 6	A6
		• Proximity provision	-	• Phase Separated Terminal box	B1
		• Bearing insulation de and nde side (**)	-	• Segregated phase Terminal box	B2
		• Frame aluminium pipes	E1	• Insulated Phase with Start Point Terminal Box	B3
		• Internal air purgin provision	-	• Proximity Vibration Probes Terminal Box	C1
		• Routine test	-	• Proximity Vibration Cable Terminal Box	C2
		• Exna IIB Certified	-	• Proximity aux terminal box Terminal Box	C3
				• Bearings RTDs PT100: two each bearing	D2
				• Frame stainless steel pipes	E2
				• Type test	F1

(*) Drive end side bearing is uninsulated, not withstanding API 541 Vth edition, par. 4.4.7.1.8
(**) No shorting device can be provided in the bearing housing on the drive end, notwithstanding API 541 Vth edition, par. 4.4.7.1.8

Altitude

Our standard motors are built for operation up to 1.000 metres.
For different limits see table at right.

Other options	1.000 - 3.000	> 3.000
Code	Contact the factory	Contact the factory

Ambient Temperature

Nidec motors are designed for ambient temperature range between -20° and 40°. For operation in temperature between 41° and 55° refer to the table at right.

Other options	41° - 55°
Code	Contact the factory

Bearing life

Our motor have a L-10 life, that means 85.000 hours.

Other options	L-20
Code	Contact the factory

Current Transformers

Use of Current Transformers need a modification of standard terminal boxes. Contact the factory for this option.

Direction of Rotation

Standar Nidec motor have an uni-direction of rotation.

Other options	Not available

Fan Covers

The standard material is carbon steel.

Other options	Not available

Lifting

All Nidec motor come standard with two lifting points.

Other options	Eye bolts by request

Nameplates

Standard nameplates are 301-grade stainless steel with engraved lettering. Additional nameplates for remote-mounting and special markings are available on request.

Soleplates

Soleplates are designed to spec. required, consult factory for quotation.

Stator RTDs

Standard temperature sensors are six PT100 class B. For other options contact the factory.

Velometers

The motor can be configured for the assembly of velometers on Roller Bearings.

Proximity

The motor can be configured for the assembly of Proximities on Sleeve Bearings.

CAT2017.07.11.00EN

Nidec

All for dreams