XNP SERIES

INDUSTRIAL PERFORMANCE SERIES

High Efficiency Cast Iron motors, 90S to 400L Frame

IP 66-IE3

Australian Version | Effective 1st September 2016

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MEPS 3 COMPLIANT

IP66 WATER & DUST PROOF

CEG

ELECTRIC MOTORS AND PUMPS

DIVISION OF KEITH R. NORLING LTD

XNP SERIES

INDUSTRIAL PERFORMANCE RANGE

HIGH EFFICIENCY RANGE CAST IRON MOTORS, 90S TO 400L FRAME

CEG is an Australasian leader of electric motors and water pumps for the industrial and domestic market.

Our products are used in almost every industrial activity, including water treatment, building services, chemical/petrochemicals and general processing and manufacturing where they drive fans, pumps, compressors and conveyors, to name just a selection of the vast applications.

We have extensive stocks of motors around Australia, New Zealand, Fiji backed up by a network of distributors, ensuring excellent local support and service where ever needed.

XNP SERIES

With the increasing demand on the world energy supply coupled with the demand to be more competitive in the modern world has resulted in the development of CEG's High Efficiency XNP Series industrial performance range of three phase squirrel cage TEFC motors.

This XNP Series catalogue details the complete range and specifications of the XNP series. The XNP series motors are cast iron, three phase, squirrel cage, totally enclosed fan cooled (TEFC), with IEC frame size from 90S to 400L. These include single speed 2, 4, 6 and 8 pole design. They combine high efficiency and excellent quality.

The XNP Series cast iron motors range covers from 0.75kW right through to 560kW. The design of this range and its rugged cast iron construction make these motors extremely reliable and durable in all weather conditions and environments from the frozen planes of Southland to the tropical climate of Queensland.

These motors are widely used in a diverse range of industrial applications from food and drink to water and sewerage, from heating and ventilation to refrigeration etc.

EFFICIENCY

The XNP Series, exceed the requirements for the listed MEPS AS/NZ 1359.5.2004 high efficiency levels.

QUALITY ASSURANCE

Stringent quality procedures are observed from initial design to the finished product, in accordance with the ISO9001 documented quality systems. This is a further assurance that only the highest possible standards of quality are accepted right through to final packaging.

BENEFITS INCLUDE

- High Efficiency (IE3), low runner costs
- Low ownership cost
- IP 66 protection
- Class F insulation with Class B temperature rise
- Voltage 400V-415V ± 5% 50Hz
- Dual Frequency 50/60 Hz
- 1000volt 50Hz (available on request)
- Genuine thru flushing grease system
- Low noise, low vibration levels
- High Power Factors
- 15 + year winding design life
- 5 year warranty
- Thermistors fitted frame sizes 160 and above
- Anti condensation heaters fitted 250 frame and above
- Stainless steel name plate to provide permanent motor identification

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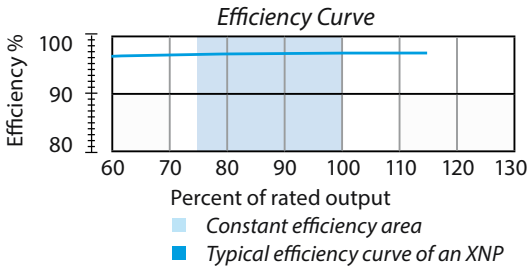
HIGH EFFICIENCY

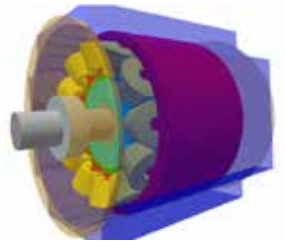
All XNP Series motors comply with MEPS3 AS/NZS 1359.5.2004. also known as (high efficiency) levels of IEC 60034-30. The XNP was designed in such a way as to maintain efficenies constant within the range of 75% to 100% of load. Therefore, even when the motor does not run at full load it's efficincey is not considerably affected resulting in high levels of energy efficiency.



15 YEAR DESIGN LIFE

All XNP Series motors are designed using the latest 3D CAD modelling and are made from world class materials to ensure optimised power to weight ratio without any distortion to the casing or end shields.

All motors are manufactured using Class F insulation and a state of the art Class F varnish system. They are designed to have a temperature rise of 80°C or less (Class B), and provide a thermal reserve in excess of 45°C when operating in a 40°C ambient environment. The result of the conservative design, low temperature rise and modern materials gives the XNP Series a winding design life in excess of 15 years.



XNP 3D CAD Modelling

MECHANICAL DESIGN

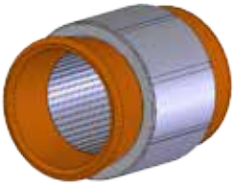
The standard level of Ingress Protection (IP) for all XNP Series motors is IP66 which covers both the motor and terminal box. XNP Series motors can be mounted vertically shaft up without the need for additional covers or protection. When mounted shaft down protection rain hoods are required (V1 Mounting).

XNP Model

STATOR FRAME

Stator enclosures are manufactured from high grade fine cast iron, having a FC200, 200Mpa tensile strength. They are designed and manufactured as one piece, complete with integrated ribs and feet (feet optional). Special attention in relation to design was implemented such as superior heat dissipation allowing the minimum amount of air needed for cooling to be passed over the motor in return for greater efficiency and less noise. Rib design, size and space have been optimized to reduce blockage on the cooling channels. This complete manufacturing design process ensures the stator casing remains rigid under the most extreme starting and running conditions.

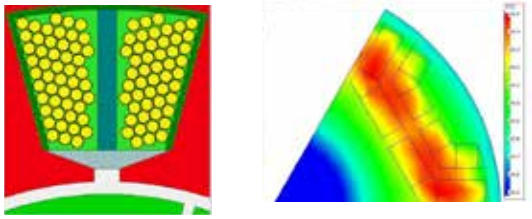
Stator Frame



Stator/ Windings

STATOR CORE

The stator core is now constructed from a new high grade, low loss 400 grade magnetic silicon steel that is thermo-chemically coated creating a highly energy efficient electric motor.



XNP Slot/ Stator Core Temperature Rise

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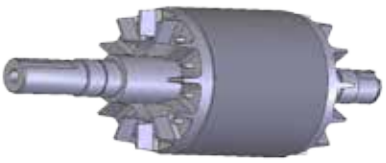
ROTOR

Rotor core lamination is now constructed from higher grade steel giving the XNP Series better efficiency. The rotor and the cooling fan are balanced independently of each other before assembly.



Rotor and Shaft

This allows easy replacement of cooling fan without the need to re-balance the rotor assembly once the cooling fan is reinstalled. The rotor is a squirrel cage design, manufactured from pressured die cast aluminium as a single piece. This manufacturing process achieves high starting torque and increased efficiency.

SHAFT

The shaft is manufactured from a single piece of high tensile C40 (EN8) steel, providing strength and rigidity for the most arguess applications. The shaft on all 225 frame size motors and above are ultrasonically tested for detection of flaws before the machining process is started.

Shaft

All shaft specifications (face run out, concentrically and perpendicular to flange face) and tolerance comply with AS/NZS 1259 and IEC 60072 (other shaft material and customized shaft are available upon request). Bearing journals and housing are ground to ensure accurate and consistent dimensions. The output shaft comes complete with a key and keyway.

XNP Series motors can employ roller bearings, making them suitable for heavy duty applications such as pulley and belt application. Information about the maximum amount of radial loads on shaft ends please contact the CEG office. Shafts are supplied with an open profile keyway and dimensions shown in dimensional data found on page 23.

FRAME	NUMBER OF POLES:	DIMENSIONS
90 S/M/L	All	M8
100 S/M/L	All	M10
112 S/M/L	All	M10
132 S/M/L	All	M12
160 S/M/L	All	M16
180 S/M/L	All	M16
200 S/M/L	All	M20
225 S/M/L	All	M20
250 S/M/L	All	M20
280 S/M/L	All	M20
315 S/M/L	2	M20
315 S/M/L	4,6,8	M20
355 S/M/L	2	M20
355 S/M/L	4,6,8	M24
400L	4,6,8	MXX

END-SHIELDS / FLANGES

End-shields are manufactured from high grade fine cast iron, having a FC200, 200Mpa tensile strength. They are designed and manufactured as one piece, with extra material ribbing located around the bearing which greatly reduces the temperature around the bearing ensuring longer bearing life. The excellent design will remain rigid under the most extreme starting and running loads.

End-Sheild

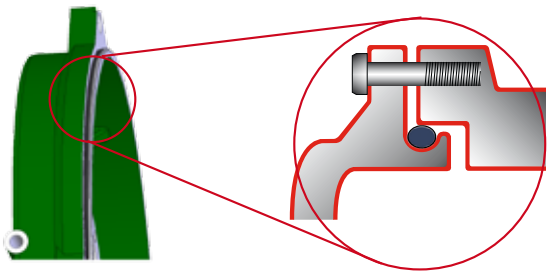
End-shields are CNC machined to close tolerances and to provide prefect alignment and fit. Frames 90-132 have sealed non-regreasable bearing housings. These bearings are pre-lubricated with a lithium based grease for the life of the bearing. Frames 160 and above are fitted with a genuine online flush-through greasing capability. A pressure grease relief one way valve incorporating a V-Ring which allows the bearing to be re-lubricated without stopping the motor. Automatic greasing systems can be fitted to this system.

Flange B5

END-SHIELD / FLANGE IP66 O-RING

Both Drive End (DE) and Non Drive End (NDE) shields and flanges are fitted with a recessed O-ring seal to offer uncompromising sealing between the stator casing and end sheilds or flange. The O-ring gives protection from water and dust helping to achieve it's IP66 protection. This is a first for the Australasian market.

O-ring



IP66 O-ring endsheild / flange cross section

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COOLING SYSTEM

The XNP series totally enclosed fan cooled (IC411), as per IEC60034-6. The cooling system components, cooling fan, conical fan cowl and non-drive endshield was designed to maximise thermal efficiency and to minimise noise levels emitted from the motor.

The fan blade radial design and conical shape of the fan cowl, minimize the turbulence of the air flow and thereby reducing noise levels.

COOLING FAN

Motors are fitted with a low noise bidirectional cooling fan and are made from polypropylene.

Cooling Fan

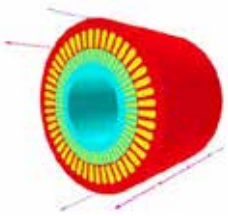
FAN COWL

XNP Series motors are designed with the latest 3D CAD aerodynamics software and are fitted with a heavy duty steel conical fan cowl for low noise. This allows for reduced turbulence even at reduced speeds. This steel design allows for in field repairs when damage has occurred to the fan cowl.

Fan Cowl

AIRFLOW

When installing XNP Series motors it is important to ensure adequate airflow is maintained over the motor. The below table provides dimensions that should be used as a guide for minimum distance requirements when mounting as precaution should be taken not to impede airflow.



XNP CAD Temperature Modelling

For external cooling VSD force cooling kits are available. Operation between 30Hz and 50Hz speed range the XNP series range is capable of delivering full rated torque with the factory cooling fan. Operation below 30Hz a separate forced cooling fan should be used as the efficiency of the factory cooling fan drops off below this point.

MOTOR FRAME:	DIMENSION "A"
90 - 100	60mm
112 - 132	80mm
160 - 180	100mm
200 - 250	120mm
280 - 355	150mm
400	200mm

Table 1.4

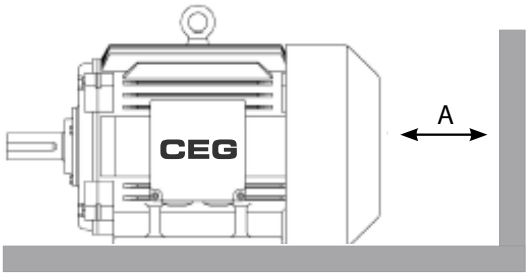


DIAGRAM 2.0:

For further information on cooling when running below standard synchronous speed on variable speed drive (VSD) contact your CEG Agent for an air velocity table as extra external cooling may be required.

NOISE LIMITS

The design between the cooling fan and conical fan cowl this helps to reduce the noise emitted from the motor. XNP motors comply with IEC60034-9 standard, corresponding pressure levels in dBA.

For noise reduction contact CEG for other options

- Forced cooling kits
- Low noise fans
- Inlet attenuation

dBA				
FRAME	2 POLE:	4 POLE	6 POLE:	8 POLE:
90 S/M/L	60	58	54	51
100 S/M/L	63	60	56	54
112 S/M/L	63	60	56	54
132 S/M/L	68	62	58	55
160 S/M/L	74	69	60	56
180 S/M/L	76	70	60	56
200 S/M/L	79	72	62	58
225 S/M/L	80	72	65	60
250 S/M/L	77	74	66	60
280 S/M/L	78	75	70	63
315 S/M/L	80	78	72	71
355 S/M/L	82	81	78	76
400L	92	90	87	82

Table 1.5

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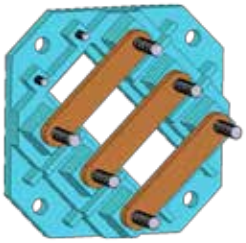
TERMINAL BOX

Oversized sized diagonally split terminal boxes are standard on all XNP Series motors made from high strength FC200, 200MPa Cast Iron.

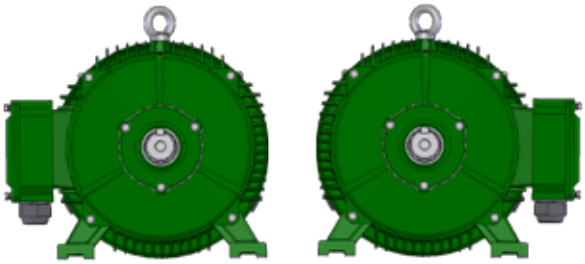
The terminal box is located on the right hand side as standard, but can easily be changed to left hand side on all frame sizes (except frame 400 where it must be specified at time of manufacturing). All terminal boxes can be rotated 360°in 90° increments.

Frame sizes 160 and above are provided with a stepped terminal block for ease of termination of two sets of cables for Star/Delta starting. To ensure the IP66 protection is maintained high grade one piece nitrile gaskets are fitted to all terminal mounting surfaces. A removable gland plate is standard on all terminal boxes 400 frame and above.



Terminal Block

For frames 90 to 355, all cable entries are drilled and tapped with standard metric threads as listed below (Table 1.1). Frames 355 to 400 are fitted with undrilled blank gland plates (optional brass or non ferrous gland plate can be supplied upon request).



Terminal Box mounted on both sides

FRAME:	NUMBER OF ENTRIES:	ENTRY/PITCH
90	2	M20 x 1.5
100	1	M20 / 1.5
112	2	M25 / 1.5
132	2	M25 / 1.5
160	2	M25 / 1.5 M32 /1.5
180	2	M40 / 1.5 M25 / 1.5
200	2	M50 / 1.5 M25 / 1.5
225	2	M50 / 1.5 M25 / 1.5
250	2	M50 / 1.5 M25 / 1.5
280	2	M50 / 1.5 M25 / 1.5
315	2	M64 / 2.0 M25 / 1.5
355	2	M72 / 2.0 M25 / 1.5
400	BGP	BGP

Table 1.1

EARTH TERMINALS

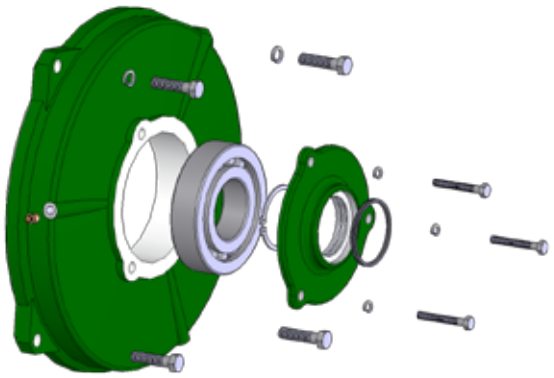
An earth terminal is standard in all terminal boxes as well as an additional earth for grounding is fitted as standard to all motors.All terminal boxes include an internal earth stud.Additional external earthing pads are provided on the stator for all frame sizes (refer to Table 1.2 below).

FRAME SIZE	NUMBER OF BOLTS	THREAD SIZE
90 - 132	1	M5
160 - 180	1	M6
200 - 280	1	M8
315 - 355	1	M10
400	1	M12

Table 1.2

LABYRINTH SEAL

The XNP Series has an upgraded heavy duty steel labyrinth seal on the drive end and non-drive end protecting both shafts to IP66 on all frames 160 and above.



Labyrinth Sealing system

FASTENERS

All fasteners are over-sided for their duty with a minimum tensile grade of 8.8. These are zinc plated for long life and easy maintenance.

Zinc Fasteners

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NAME PLATES

All nameplates display multi-voltage information and performance characteristics. Nameplates are made from heavy gauge stainless steel AISI 314.

All accessories (i.e thermistors and heater labels) are all manufactured from stainless steel. An additional blank stainless steel name plate label is affix to the motor for site identification numbers.

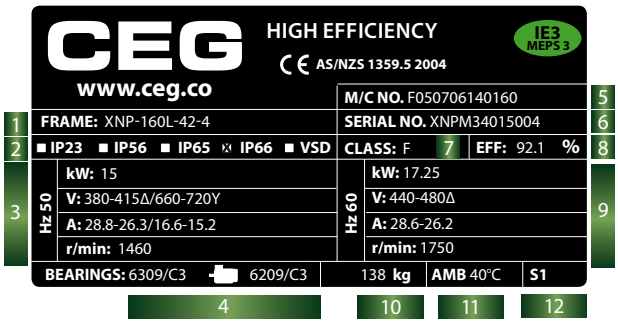

DIAGRAM 1.0:

1. Series/Frame/Number of poles/Shaft size
2. -IP Rating Standard IP66
   - Motor is VSD ready
3. -50Hz Operational Data
   - kW Motor Rated Power
   -Voltage Working Range and Connection
   - Amps Full Load Working Range
   - Motor Revloution Speed per minute
4. Motor Drive End Bearing / Motor Non-drive End Bearing
5. MEPS Compliant Number
6. Serial Number and Manufacturing Date
7. Motor Insulation Class
8. Efficency percentage as per AS/NZS 1359.5.2004
9. -60Hz Operational Data
   - kW Motor Rated Power
   -Voltage Working Range and Connection
   - Amps Full Load Working Range
   - Motor Revloution Speed per minute
10. Gross Weight in kgs of the Motor
11. Maximum Operation Ambient Temperature
12. Servious Factor S1 = Continuous service

VIBRATION LEVEL

XNP motors are dynamically balanced with half key and the standard version meets the vibration levels of Grade A (without special vibration requirements) described in IEC 60034-14 Standard. As and option, motors can be supplied in conformance with vibration of Grade B. The RMS speed and vibration levels in mm/s of Grade A and B are shown in table 1.25

VIBRATION	SHAFT HEIGHT (MM)	56 ≥ H ≥ 132	132 ≥ H ≥ 280	H>280
	Assembly	Vibration speed RMS (mm/s)	Vibration speed RMS (mm/s)	Vibration speed RMS (mm/s)
Grade A	Free suspension	1.6	2.2	2.8
Grade B	Free suspension	0.7	1.1	1.8

Table 1.25

IMPACT RESISTANCE

The XNP motor with cast iron fan cover complies with impact level IK08-mechanical impact of 5J as per EN 50102- Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code) ensuring superior mechanical strength for the most demanding applications.

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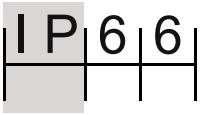
CONSTRUTION MATERIALS

ITEM:	MATERIAL:	STRENGTH:
Stator	Cast Iron	FC200, 200Mpa
End-Shields	Cast Iron	FC200, 200Mpa
Terminal Box	Cast Iron	FC200, 200Mpa
Fan	Polypropylene	4500, PSI T/S
Fan Cowl	Heavy gauge Steel	2mm
Fasteners	Zinc plate (stainless optional)	Grade 8.8
Shaft	High Tensile	C40
Labyrinth seals	Steel	C40
Name plate	Stainless steel	AISI 314

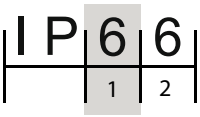
Table 1.3

DEGREE OF PROTECTION

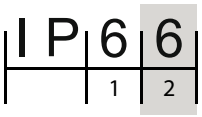
All XNP Series motors are supplied with an enclosure rating of IP66 in conformance with IEC 60034-5.



- Internation Protection Rating



- First character numeral 6: dust tight motor. The dust enclosure provides full protection against the ingress of dust



- Second character numeral 6: the motor is protected against forces such as heavy seas or water projected in powerful jets shall not enter the machine in harmful quantities

FINISH

All castings and mild steel components are protected with a red oxide rust resistant primer. The finishing coat is synthetic enamel on all CEG XNP motors, RAL 6002 Leaf green for the stator housing and end-sheilds and RAL 9005 Black for the fan cowl, which is adequate for normal operational conditions. However special paint is also available for motors required to operate in acidic, alkaline, or any other corrosive atmosphere. Motor components are suitably treated to withstand corrosion due to such atmospheres and are then painted with an epoxy based paint of any shade requested.

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BEARINGS

All XNP Series bearings are high quality bearings made from a vacuum degassed steel. Frames sizes 90-132 are fitted with long life quiet running and high load capacity ZZ bearings.

End Drive Bearing

- All 2 pole motors, as standard are fitted with high quality deep groove ball bearings.
- 4, 6 and 8 pole motors up to 280 frame as standard are fitted with high quality deep groove ball bearings.
- 355 frame and above (excluding 2 pole) are fitted with a cylindrical roller bearing on the drive end.
- 4 pole motor from 90 to 280 have the option of being fitted with a roller bearing.

All XNP Series motors 160 frame and above are fitted with shaft locking clamps to help prevent brinelling of the bearings in transport and storage. Remove shaft lock before running.

BEARING SIZE CHART

MOTOR FRAME:	DE STANDARD:	NDE STANDARD:	4,6,8 POLE DE OPTIONAL:
90 S/L	6206-ZZ	6206-ZZ	NU306
100L	6206-ZZ	6206-ZZ	NU306
112M	6207-ZZ	6207-ZZ	NU307
132 S/M/L	6208-ZZ	6208-ZZ	NU308
160 S/M/L	6309	6209	NU309
180 S/M/L	6311	6211	NU311
200 S/M/L	6312	6212	NU312
225 S/M/L	6313	6312	NU313
250 S/M/L	6315	6313	NU315
280 S/M/L	6317	6314	NU317
315 S/M/L - 2	6317	6317	-
315 S/M/L - 4/6/8	319	6319	NU6319
355 S/M/L - 2	6319	6319	-
355 S/M/L - 4/6/8	6322	6322	NU6322
400L - 2	6319	6319	-
400L - 4/6/8	6326	6326	NU6326

Table 1.6

TRUE THRU-FLUSH GREASE RELIEF VALVE

- The XNP Series now incorporates a thru-flush grease system ensuring longer bearing life (160 frame and above).
- The pressure grease relief valve incorporates a v-ring sealing system, allowing re-lubrication without the need to stop the motor.

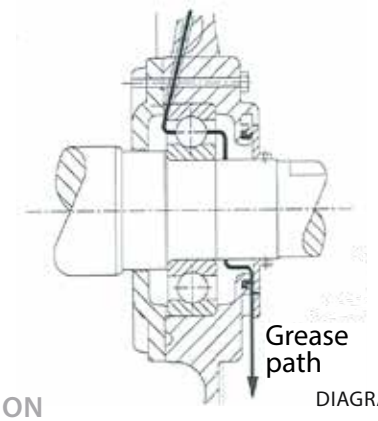

DIAGRAM 3.0:

LUBRICATION

All XNP Series motors are fitted with pre lubricated lithium based bearing grease, with a R3 consistency. Suitable for operation between -20°C and + 55°C.

For operation outside this temperature range special lubricants will be required.

The minimum life of bearings for a standard motor is: 20,000hrs for 2 pole motors and 40,000hrs for 4, 6 and 8 pole motors. These are based on operation under conditions of maximum permissible radial thrust, axial thrust, and minimum diameter and maximum face width of pulley. These values are calculated for horizontal mounting only.

NEVER MIX GREASES

LUBRICATION NAMEPLATE

All 90 - 355 frame XNP Series motors have a lubrication schedule nameplate attached to the motor fan cowl

CEG www.ceg.co

LUBRICATION SCHEDULE
in duty hours relevant to r/min

USE LITHIUM BASED R3

FRAME SIZE	QTY OF GREASE	r/min						
		3600	3000	1800	1500	1200	1000	900-500
160 - 180	30 g	2400	3400	6000	7000	8000	9000	10000
200 - 225	50 g	1100	2400	5200	6200	7200	8200	9500
250 - 280	70 g	1000	2200	3800	4800	5400	6400	8000
315 - 355	100 g	600	1000	2000	3000	4000	5000	6400

Average grease gun is approx. 3-5 gms per stroke

DIAGRAM 4.0:

VIBRATION

XNP Series motors are balanced to G1 tolerance and the limits of vibration are as to IEC 60034-14.

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CEG
ELECTRIC MOTORS AND PUMPS

PERMISSIBLE RADIAL FORCE

XNP	PERMISSIBLE RADIAL FORCE (N)			
MOTOR FRAME	3000 R/MIN	1500 R/MIN	1000 R/MIN	750 R/MIN
90 S/L	605	775	910	-
100L	840	1030	1250	1400
112M	940	1150	1400	1560
132 S/M	1180	1530	1780	1980
160 M/L	1240	1590	1820	2080
180 M/L	1550	1950	2250	2500
200L	2100	2750	3200	3450
225 S/M	2550	2950	3600	3900
250 S/M	2950	3600	4350	4700
280 S/M	2800	7200	8900	9850
315 S/M/L	3840	15700	18000	19600
355 M/L	12270	22000	25400	27600

Table 1.7

PERMISSIBLE RADIAL / AXIAL FORCE B3 MOUNTING

XNP	PERMISSIBLE AXIAL FORCE B3 MOUNTING (N)			
MOTOR FRAME	3000 R/MIN	1500 R/MIN	1000 R/MIN	7500 R/MIN
90 S/L	450	450	520	-
100L	630	620	720	790
112M	870	860	990	1090
132 S/M	930	930	1060	1180
160 M/L	1710	1690	1940	2150
180 M/L	2620	2600	2990	3290
200L	2970	2940	3380	3730
225 S/M	3090	3040	3500	3860
250 S/M	3480	3420	3930	4350
280 S/M	4450	4390	5050	5590
315 S/M/L	4480	4340	5030	5590
355 M/L	-	6115	7390	8530

Table 1.8

Note:
- Maximum permissible radial pull in Newton at the centre of shaft extension including weight of pulley
- Maximum permissible axial trust in Newton considering external radial thrust to absent.

WINDINGS AND INSULATION

Stator Core and Casing/ Windings

The XNP Series motors are wound with class F insulation. All frames 80-400 go through a vacuum pressure impregnation process which uses a full Class F epoxy resin system (on average 2-2.5 times better on retained solids than a varnished system). All windings are fitted with insulating phase barriers and bound with a class F tape.

Special attention is paid to the first and last coil. The winding overhangs are epoxy gel coated to minimize any additional mechanical and / or electrical stresses caused by VSD with the winding design limiting the temperature rise to 80K, a safety margin of 25K is allowed (diagram 5.0). This conservative winding system is designed to handle extreme conditions allowing a 15 + year design life. In addition the entire range are weather protected, all the windings are tropic proofed and an oil resistant coating has been applied. With this design a ratio between temperature rise and service factor can be calculated.

ΔT (final) = $(SF)^2 \times \Delta T$ (rated kW)

The safety design feature gives the XNP Series motors a service factor of 1.15 and the capacity to cope with a 15% continuous overload if the ambient is 40°C or below. All XNP Series motors are designed to withstand a 150% overload for up to 2 minutes (diagram 5.0).

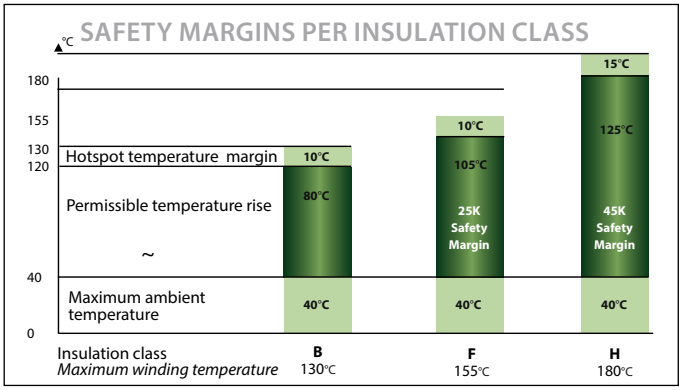

DIAGRAM 5.0:

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XNP SERIES OVERLOAD ABILITY

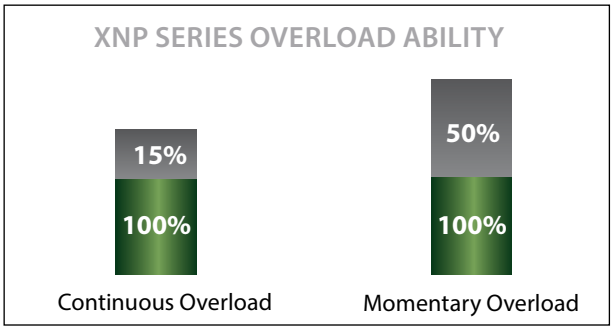


DIAGRAM 6.0:

NEW POWER =		
RATED POWER	X	ADJUSTMENT FACTOR

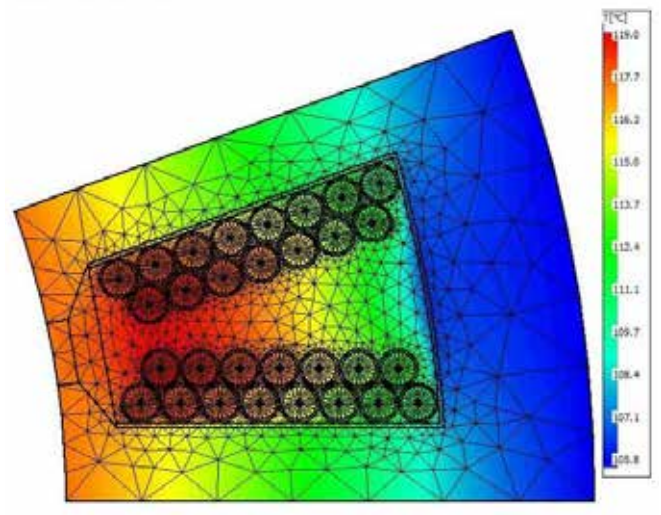


DIAGRAM 7.0:

ELECTRICAL DESIGN FOR TEMPERATURE AND ALTITUDE

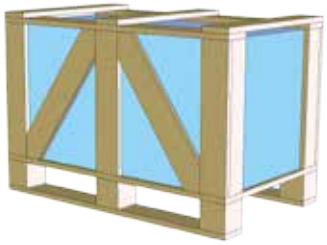
Rated output is based on 40°C ambient temperature and altitude of 1000 meters. If application differs from base the following adjustment factors can be applied.

T °C	ALTITUDE (METERS)						
	1000	1500	2000	2500	3000	3500	4000
10	1.25	1.20	1.15	1.09	1.06	1.03	0.97
15	1.20	1.15	1.09	1.06	1.03	0.98	0.94
20	1.15	1.09	1.06	1.03	1.00	0.94	0.91
25	1.09	1.06	1.03	1.0	0.96	0.92	0.89
30	1.06	1.03	1.00	0.97	0.92	0.87	0.86
35	1.03	1.00	0.97	0.94	0.90	0.85	0.83
40	1.00	0.98	0.94	0.91	0.87	0.82	0.80
45	0.97	0.95	0.91	0.88	0.84	0.80	0.75
50	0.93	0.91	0.87	0.85	0.81	0..76	0.72
55	0.88	0.86	0.83	0.80	0.77	0.72	0.68
60	0.82	0.80	0.77	0.75	0.71	0.67	0.63

Table 1.9

PACKAGING

All CEG XNP Series from 90 to 112 frame are neatly packaged in industrial cardboard. All frames 132 to 400 are packaged in a high quality wooden crate. All motors are sealed in plastic.



Crate Packaging

MOUNTING OPTIONS

The Standard mounting position is B3 (horizontal foot mount)
Refer to table 1.10 for mounting options.

Horizontal shaft:

Vertical shaft:

Table 1.10

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THERMISTOR (PTC)

XNP Series motors have PTC thermistors in all kW sizes (rated as 145°C, other temperatures available on request). 80-132 frame thermistor are terminated in the main terminal box. 160 frame and above thermistors are terminated in the right hand auxiliary terminal box.

The PTC thermistor is a termperature dependent sensor. The nominal switching temperature (TNF) corresponds to the curie point temperature of the ceramic. Under normal conditions the PTC thermistor has a low resistance. The resistance of the PTC thermistor rises very steeply near it's TNF, thus triggering the switch function. This change of resistance vs temperature is used to activate a circuit and provide over temperature protection.

PTC Thermistor

TEMPERATURE VS. RESISTANCE DIAGRAM

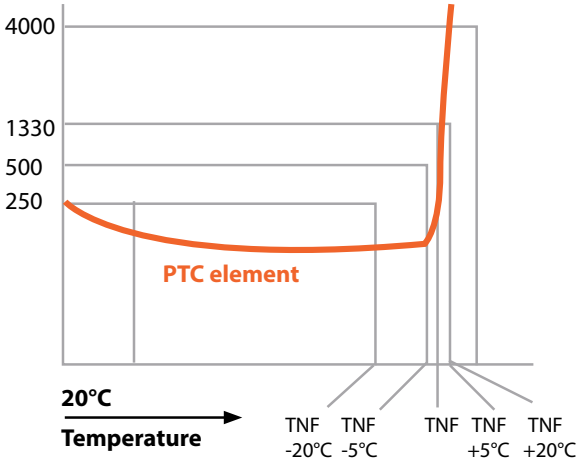

DIAGRAM 8.0:

The graph shows the relationship between the resistance and temperature. The increase in the resistance for the switching point onwards is exponential.

TRIP TEMPERATURE	LEAD WIRE COLOURS	
90°C	GREEN	GREEN
100°C	RED	RED
110°C	BROWN	BROWN
120°C	GREY	GREY
130°C	BLUE	BLUE
140°C	WHITE	BLUE
145°C	WHITE	BLACK
150°C	BLACK	BLACK
155°C	BLUE	BLACK
160°C	BLUE	RED
170°C	WHITE	GREEN
180°C	WHITE	RED

Table 1.11

ANTI CONDENSATION HEATER

All XNP Series motors have anti-condensation heaters as standard in 250 frame motors and above (optional in smaller frame motors and other voltages). Anti Condensation heaters are terminated in left hand terminal box.

Anti Condensation Heater

ROTATION

All XNP Series motors as standard view from drive end having RHS terminal box will have sequential connection of L1, L2, L3

- U1/V1/W1 for clockwise rotation
- V1/U1/W1 for anti-clockwise rotation

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ADJUSTMENT FACTORS FOR DIFFERENT VOLTAGES AND FREQUENCIES

MOTOR WOUND FOR 50HZ AT RATED VOLTAGE	CONNECTED TO		DATA[1] IN PERCENTAGE OF VALUES AT 50HZ AND RATED VOLTAGE						
			Output	r/min	I_N	I_L/I_N	T_N	T_L/T_N	T_B/T_N
380V	400V	50Hz	100	100	95	110	100	110	110
	380V	60Hz	100	120	98	83	83	70	85
	400V	60Hz	105	120	98	90	87	80	90
	415V	60Hz	110	120	98	95	91	85	93
	440V	60Hz	115	120	100	100	96	95	98
	460V	60Hz	120	120	100	105	100	100	103
400V	380V	50Hz	100	100	105	91	100	90	90
	415V	50Hz	100	100	96	108	100	108	108
	400V	60Hz	100	120	98	83	83	70	85
	415V	60Hz	104	120	98	89	86	75	88
	440V	60Hz	110	120	98	95	91	85	93
	460V	60Hz	115	120	100	100	96	93	98
	480V	60HZ	120	120	100	105	100	100	103
415V	380V	50Hz*	100	100	109	84	100	84	84
	400V	50Hz	100	100	104	93	100	93	93
	440V	50Hz	100	100	94	112	100	112	112
	415V	60Hz	100	120	98	83	83	70	85
	440V	60Hz	105	120	98	90	87	80	90
	460V	60Hz	110	120	98	95	91	85	94
	480V	60Hz	115	120	100	100	96	95	98

Table 1.12

*Not applicable for motors with F class temperature

Motors can be supplied for exact voltage and frequency. Contact your local CEG office.

1) I_N = Full load current
I_L/I_N = Locked rotor current/full load current
T_N = Full load torque
T_L/T_N = Locked rotor torque/full load torque
T_B/T_N = Breakdown torque/full load torque

EXPLODED VIEW

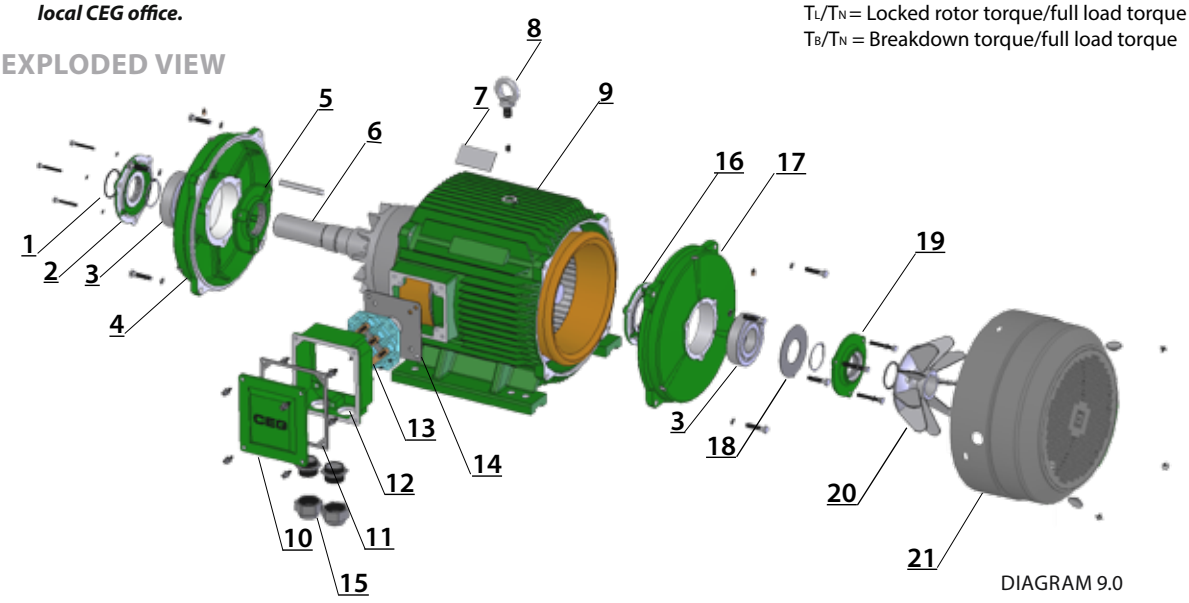

DIAGRAM 9.0

PART No	DESCRIPTION	PART No	DESCRIPTION	PART No	DESCRIPTION
1	Labyrinth Seal	8	Eye Bolt	15	Cable Entry Gland
2	Outer Bearing Cap Retainer DE	9	Stator	16	NDE Inner Bearing Cap
3	Drive-End Bearing	10	Terminal Box Lid	17	NDE End Shield
4	Drive-End Endsheild	11	Terminal Box Gasket	18	Bearing Preloader
5	Inner Bearing Cap	12	Terminal Box Base	19	NDE Outer Bearing Cap
6	Rotor and Shaft	13	Terminal Block	20	Cooling Fan
7	Name Plate	14	Terminal Base Gasket	21	Fan Cowl

Table 1.13

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3000 R/MIN (2 POLE) - FRAME SIZES 90S-315M

kW	MOTOR FRAME	SHAFT SIZE	SPEED (R/MIN)			50Hz			60Hz		TORQUE				$J=^{1/4}GD^2$ (kg.m²)	(Kg)
				(%)	COS Φ	400V (A)	415V (A)	415V I_L/I_N	440V I_N (A)	SPEED (R/MIN)	T_N (NM)	T_L/T_N	T_U/T_N	T_B/T_N		
1.5	90S	24	2840	84.2	0.88	3.1	2.95	8.3	3.21	3410	5.04	2.27	2.2	3.0	0.00030	27
2.2	90L	24	2840	85.9	0.87	4.4	4.19	7.8	4.55	3410	7.40	2.74	2.2	2.9	0.00035	32
3	100L	28	2880	87.1	0.89	5.8	5.51	7.9	5.97	3450	9.95	2.34	2.0	3.3	0.00073	38
4	112M	28	2890	88.1	0.88	7.5	7.18	9.0	7.79	3460	13.22	2.20	1.8	3.6	0.0014	50
5.5	132S	38	2900	89.2	0.89	10.1	9.75	7.8	10.6	3480	18.11	2.14	1.7	3.6	0.0030	70
7.5	132S	38	2900	90.1	0.90	13.7	13.2	7.6	14.3	3480	24.70	2.22	1.8	3.4	0.0032	76
9.2	132M	38	2900	90.7	0.90	16.5	16.0	7.5	17.4	3480	30.30	2.47	1.8	3.4	0.0036	70
11	160M	42	2930	91.2	0.91	19.6	18.9	7.0	20.4	3510	35.85	2.10	1.4	2.5	0.054	110
15	160M	42	2930	91.9	0.90	26.6	25.5	7.4	27.7	3510	48.90	2.16	1.5	2.5	0.056	122
18.5	160L	42	2930	92.4	0.92	32.6	31.3	7.5	34.0	3510	60.30	2.14	1.7	2.9	0.066	135
22	160M	48	2940	92.7	0.92	38.6	37.1	7.9	40.2	3520	71.46	2.75	1.8	3.4	0.094	185
30	200L	55	2950	93.3	0.90	52.4	50.3	8.0	54.5	3540	97.12	2.22	1.7	2.9	0.167	230
37	200L	55	2950	93.7	0.91	64.3	61.7	7.8	67.0	3540	119.8	2.23	1.7	2.9	0.174	243
45	225M	55	2970	94.0	0.94	77.1	74.0	8.0	80.3	3560	144.7	2.36	1.9	3.1	0.30	324
55	250M	60	2970	94.3	0.89	94	90.2	7.2	97.8	3560	176.9	2.20	1.6	2.8	0.38	385
75	250M	60	2970	94.6	0.91	128.8	124	7.1	134	3560	241.2	2.38	1.9	3.1	0.47	420
75	280S	65	2970	94.7	0.90	127.8	122	7.1	133	3560	241.2	2.38	1.9	3.1	0.47	530
90	280M	65	2970	95.0	0.90	15.3	146	6.8	159	3560	289.4	2.55	2.4	3.2	0.79	585
110	280M	65	2970	95.1	0.92	186	179	7.7	194	3560	353.7	2.70	2.1	3.4	0.93	630
110	315S	65	2980	95.2	0.92	186	179	7.7	194	3575	352.5	2.70	2.1	3.4	0.93	840
132	315M	65	2980	95.4	0.93	223.2	214	6.4	232	3575	423.0	1.90	1.7	2.9	1.40	920

(%)	Efficiency full load
COS Φ	Power factor
I_N (A)	Current full load
I_L/I_N	Current locked rotor
T_N (NM)	Torque full load
T_L/T_N	Torque locked rotor
T_U/T_N	Torque pull up
T_B/T_N	Torque break down
$J=^{1/4}GD^2$	Moment of inertia
(kg)	Weight of foot mount motor

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3000 R/MIN (2 POLE) - FRAME SIZES 315L-400L

kW	MOTOR FRAME	SHAFT SIZE	SPEED (R/MIN)			50Hz			60Hz		TORQUE				$J=^{1/4}GD^2$ (kg.m²)	(Kg)
				(%)	COS Φ	400V (A)	415V (A)	415V I_L/I_N	440V I_N (A)	SPEED (R/MIN)	T_N (N_M)	T_L/T_N	T_U/T_N	T_B/T_N		
150	315L	65	2980	95.6	0.92	249.9	240	6.4	260	3575	480.7	1.95	1.7	2.9	1.50	920
160	315L	65	2980	95.6	0.92	166.2	256	6.4	278	3575	512.8	2.00	1.7	2.9	1.55	985
185	315L	65	2980	95.6	0.90	308.1	296	7.5	321	3575	592.9	2.00	1.6	2.9	1.73	985
200	315L	65	2980	95.8	0.93	332.9	319	6.3	346	3575	640.9	2.10	1.5	3.0	1.81	1070
220	315L	65	2980	95.8	0.93	332.9	319	7.5	346	3575	705.0	2.30	1.5	2.6	2.00	1090
220	355M	75	2980	95.8	0.90	365.4	351	7.5	381	3575	705.0	2.30	1.5	2.6	2.00	1490
250	355M	75	2980	95.8	0.87	415.9	399	7.4	433	3575	801.2	2.10	1.4	2.7	4.46	1550
280	355L	75	2980	95.8	0.90	465.6	447	7.2	485	3575	897.3	1.90	1.6	2.9	4.87	1620
300	355L	75	2980	95.8	0.91	498.9	479	7.0	519	3575	961.4	1.90	1.6	2.8	4.90	1620
315	355L	75	2980	95.8	0.91	523.7	503	6.2	545	3575	1009	1.80	1.9	2.8	4.95	1680
355	355L	80	2980	95.8	0.92	590.5	567	7.0	614	3575	1138	1.80	1.4	3.2	5.46	2210
400	400L	85	2980	95.8	0.91	658.3	631	6.2	685	3575	1282	1.90	1.4	2.5	5.60	2800
450	400L	85	2980	95.8	0.90	740.3	710	5.9	770	3575	1442	2.00	1.5	2.5	9.47	2920
500	400L	85	2980	95.8	0.91	822.4	789	6.9	856	3575	1602	1.90	1.5	2.9	11.39	3000
560	400L	85	2980	95.8	0.91	920.6	884	6.2	959	3575	1795	1.90	1.5	2.6	11.60	3160

(%)	Efficiency full load
COS Φ	Power factor
I_N (A)	Current full load
I_L/I_N	Current locked rotor
T_N (N_M)	Torque full load
T_L/T_N	Torque locked rotor
T_U/T_N	Torque pull up
T_B/T_N	Torque break down
$J=^{1/4}GD^2$	Moment of inertia
(kg)	Weight of foot mount motor

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1500 R/MIN (4 POLE) - FRAME SIZES 90S-315S

kW	MOTOR FRAME	SHAFT SIZE	SPEED (R/MIN)	50Hz					60Hz		TORQUE				$J=^{1/4}GD^2$ (kg.m²)	(Kg)
				(%)	COS Φ	400V (A)	415V (A)	415V I_L/I_N	440V I_N (A)	SPEED (R/MIN)	T_N (NM)	T_L/T_N	T_U/T_N	T_B/T_N		
1.1	90S	24	1400	84.1	0.77	2.5	2.39	8.0	2.61	1680	17.50	3.3	2.6	3.2	0.0005	30
1.5	90L	24	1400	85.3	0.76	3.3	3.18	8.8	3.46	1680	10.23	3.5	2.8	3.2	0.0006	32
2.2	100L	28	1420	86.7	0.84	4.5	4.36	8.4	4.73	1700	14.80	3.7	3.4	4.9	0.0007	39
3	100L	28	1440	87.7	0.84	6.1	5.40	8.2	6.29	1700	19.90	2.7	2.4	3.3	0.0009	43
4	112M	28	1440	88.6	0.88	8.0	7.66	7.5	8.31	1720	26.53	2.7	2.5	3.1	0.002	56
5.5	132S	38	1440	89.6	0.83	10.7	10.30	8.5	11.20	1720	36.48	1.8	1.8	3.1	0.003	74
7.5	132M	38	1440	90.4	0.83	14.3	13.70	8.4	14.90	1720	49.74	2.3	1.6	3.3	0.007	89
9.2	132M	38	1440	90.9	0.84	17.5	16.80	8.1	18.20	1720	61.01	2.4	1.6	3.3	0.008	89
11	160M	42	1460	91.4	0.85	20.5	19.70	7.5	21.40	1750	71.95	2.3	1.6	2.6	0.090	110
15	160L	42	1460	92.1	0.84	27.5	26.30	7.9	28.60	1750	98.12	2.6	1.6	2.7	0.103	130
18.5	180M	48	1470	92.6	0.88	33.7	32.30	7.3	35.10	1760	120.2	2.5	1.8	2.9	0.16	183
22	180L	48	1470	93.0	0.91	39.9	38.30	7.5	41.50	1760	142.9	2.3	1.7	2.8	0.18	195
30	200L	55	1470	93.6	0.89	54	51.80	7.6	56.20	1760	194.9	2.4	2.2	3.2	0.31	246
37	225S	60	1480	93.9	0.90	66.5	63.70	7.0	69.10	1770	238.8	2.4	1.7	2.9	0.53	300
45	225M	60	1480	94.2	0.90	80.5	77.30	7.1	83.80	1770	290.4	2.1	1.7	2.4	0.58	325
55	250M	65	1480	94.6	0.90	99.2	94.10	7.5	102.0	1775	354.9	2.5	1.7	2.7	0.79	400
75	250M	70	1480	94.7	0.91	130.7	125.0	7.5	136.0	1775	484.0	2.9	2.0	3.0	0.90	451
75	280S	75	1480	95.0	0.91	129.7	125.0	7.5	135.0	1775	484.0	2.5	1.9	3.0	0.90	555
90	280M	75	1480	95.2	0.91	155.5	149.0	7.7	162.0	1775	580.7	2.5	1.9	3.0	1.60	630
110	280M	80	1480	95.4	0.92	190	182.0	7.5	198.0	1775	709.8	2.4	2.1	3.1	1.89	720
110	315S	80	1490	95.4	0.92	188	180.0	7.5	195.0	1785	705.0	2.3	2.1	3.1	1.89	880

(%)	Efficiency full load
COS Φ	Power factor
I_N (A)	Current full load
I_L/I_N	Current locked rotor
T_N (NM)	Torque full load
T_L/T_N	Torque locked rotor
T_U/T_N	Torque pull up
T_B/T_N	Torque break down
$J=^{1/4}GD^2$	Moment of inertia
(kg)	Weight of foot mount motor

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1500 R/MIN (4 POLE) - FRAME SIZES 315M-400L

kW	MOTOR FRAME	SHAFT SIZE	SPEED (R/MIN)			50Hz			60Hz		TORQUE				$J=^{1/4}GD^2$ (kg.m²)	(Kg)
				(%)	COS Φ	400V (A)	415V (A)	415V I_L/I_N	440V I_N (A)	SPEED (R/MIN)	T_N (N_M)	T_L/T_N	T_U/T_N	T_B/T_N		
132	315M	80	1490	95.6	0.87	225.0	216.0	6.9	234.0	1785	846.0	2.2	1.2	2.6	2.73	1020
150	315L	80	1490	95.8	0.87	255.0	245.0	6.9	265.0	1785	961.4	2.4	1.2	2.6	2.89	1050
160	315L	80	1490	95.8	0.87	272.3	261.0	6.3	283.0	1785	1026	2.4	1.2	2.6	3.04	1080
185	315L	80	1490	95.8	0.90	315.1	302.0	6.3	327.0	1785	1186	2.4	1.3	2.4	3.43	1100
200	315L	85	1490	96.0	0.88	336.4	322.0	6.9	349.0	1785	1282	2.4	1.3	2.7	3.62	1140
220	315L	85	1490	96.0	0.88	369.9	354.0	6.9	384.0	1785	1410	2.4	1.3	2.7	3.89	1160
220	355M	95	1490	96.0	0.88	369.9	354.0	6.9	384.0	1785	1410	2.4	1.3	2.7	3.89	1520
250	355M	95	1490	96.0	0.88	420.4	403.0	6.9	437.0	1785	1602	2.4	1.4	2.3	4.14	1660
280	355L	95	1490	96.0	0.84	469.3	451.0	5.5	489.0	1785	1795	1.6	1.3	2.4	7.82	1720
315	355L	95	1490	96.0	0.87	529.2	407.0	5.3	550.0	1785	2019	1.5	1.3	2.4	8.27	1750
355	355L	110	1490	96.0	0.88	602.7	578.0	5.0	627.0	1785	2275	1.5	1.4	2.4	8.90	2290
400	400L	110	1485	95.8	0.88	673.8	645.0	5.1	700.0	1780	2572	1.4	1.5	2.4	9.76	2850
450	400L	110	1485	95.8	0.88	757.2	726.0	5.5	788.0	1780	2894	1.7	1.5	2.4	10.76	3030
500	400L	110	1485	95.8	0.88	840.6	807.0	5.8	875.0	1780	3215	1.6	1.4	2.4	18.67	3150
560	400L	110	1485	95.8	0.87	942.1	904.0	5.2	980.0	1780	3601	1.7	1.4	2.4	19.70	3300

(%)	Efficiency full load
COS Φ	Power factor
I_N (A)	Current full load
I_L/I_N	Current locked rotor
T_N (N_M)	Torque full load

T_L/T_N	Torque locked rotor
T_U/T_N	Torque pull up
T_B/T_N	Torque break down
$J=^{1/4}GD^2$	Moment of inertia
(kg)	Weight of foot mount motor

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1000 R/MIN (6 POLE) - FRAME SIZES 90S-315L

kW	MOTOR FRAME	SHAFT SIZE	SPEED (R/MIN)	50Hz				60Hz		TORQUE				$J=^{1/4}GD^2$ (kg.m²)	(Kg)
				(%)	COS Φ	400V (A)	415V (A)	415V I_L/I_N	440V I_N (A)	SPEED (R/MIN)	T_N (Nm)	T_L/T_N	T_U/T_N	T_B/T_N	
0.75	90S	24	910	78.9	0.70	193	1.86	1.8	2.01	1090	7.5	2.2	1.8	2.7	0.0007	
1.1	90L	24	910	81.0	0.70	2.7	2.59	2.5	2.82	1090	11.1	2.3	1.8	2.7	0.0009	
1.5	100L	28	940	82.5	0.72	3.6	3.47	3.4	3.77	1130	14.8	2.3	1.8	2.9	0.0017	36
2.2	112M	28	940	84.3	0.73	5.1	4.91	4.7	5.32	1120	21.9	2.4	1.7	2.9	0.035	45
3	132S	38	960	85.6	0.77	6.9	6.59	5.8	7.15	1150	29.4	2.0	1.4	2.8	0.007	63
4	132M	38	960	86.8	0.79	9.1	8.66	7.7	9.40	1150	39.4	2.3	1.8	2.6	0.009	74
5.5	132M	38	960	88.0	0.79	12.1	11.6	10.4	12.6	1150	54.1	2.0	1.9	2.6	0.046	84
7.5	160M	42	970	89.1	0.78	15.5	14.8	14.1	16.1	1160	73.5	2.5	1.9	2.8	0.11	112
11	160L	42	970	90.3	0.76	22	21.2	11.2	23.0	1160	108	2.5	1.9	2.6	0.13	135
15	180L	48	970	91.2	0.86	29.5	28.2	25.5	30.6	1160	147	2.4	2.0	2.6	0.25	190
18.5	200L	55	970	91.7	0.84	35.3	34.7	31.6	37.6	1160	179	2.7	1.9	2.7	0.31	221
22	200L	55	970	92.2	0.85	42.7	41.0	37.3	44.5	1160	215	2.4	1.8	2.6	0.41	235
30	225M	60	980	92.9	0.84	56.4	54.1	51	58.7	1170	291	2.4	2.0	3.0	0.67	295
37	250M	65	980	92.3	0.88	67.8	64.7	59	71.2	1175	359	2.1	1.6	2.6	0.94	380
45	250M	70	980	93.5	0.90	80	77.9	82	84.4	1175	434	2.2	1.8	2.6	1.15	345
45	280S	75	980	93.7	0.90	81.8	78.6	82	85.3	1175	434	2.2	1.8	2.6	1.15	492
55	280M	75	980	94.1	0.90	99	94.6	98	103	1175	528	2.4	1.9	2.7	1.82	550
75	280M	75	980	94.4	0.90	132.6	127	134	138	1175	722	2.8	2.1	3.0	2.33	680
75	315S	80	990	94.6	0.90	136.5	131	134	142	1185	722	2.8	2.1	3.0	2.33	800
90	315M	80	990	94.9	0.87	162	155	166	168	1185	867	2.2	1.8	2.6	4.57	880
110	315L	80	990	95.1	0.86	197	189	202	205	1185	1060	2.1	2.0	3.4	4.83	970

(%)	Efficiency full load
COS Φ	Power factor
I_N (A)	Current full load
I_L/I_N	Current locked rotor
T_N (Nm)	Torque full load

T_L/T_N	Torque locked rotor
T_U/T_N	Torque pull up
T_B/T_N	Torque break down
$J=^{1/4}GD^2$ (kg)	Moment of inertia Weight of foot mount motor

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1000 R/MIN (6 POLE) - FRAME SIZES 315L-400L

kW	MOTOR FRAME	SHAFT SIZE	SPEED (R/MIN)			50Hz			60Hz		TORQUE				$J=^{1/4}GD^2$ (kg.m²)	(Kg)
				(%)	COS Φ	400V (A)	415V (A)	415V I_L/I_N	440V I_N (A)	SPEED (R/MIN)	T_N (Nm)	T_L/T_N	T_U/T_N	T_B/T_N		
132	315L	80	990	95.4	0.87	232	224	242	243	1185	1274	2.0	1.5	2.4	5.32	1040
150	355M	95	990	95.6	0.90	264	254	242	275	1185	1274	2.0	1.5	2.4	5.32	1510
160	355M	95	990	95.6	0.90	282	271	266	294	1185	1447	1.8	1.4	2.3	5.95	1510
185	355M	95	990	95.6	0.88	326	313	334	340	1185	1785	2.1	1.3	2.1	6.64	1510
200	355M	95	990	95.8	0.87	348	334	365	362	1185	1931	1.7	1.1	2.3	8.63	1620
220	355L	95	990	95.8	0.88	382.6	367	395	398	1185	2192	1.6	1.0	2.2	9.17	1720
250	355L	95	990	95.8	0.87	435	417	453	453	1185	2414	1.5	1.1	2.4	9.83	1870
280	355L	110	990	95.8	0.88	492	473	505	513	1185	2704	1.4	0.8	2.4	10.64	2330
315	400L	120	990	95.6	0.88	555	533	569	578	1185	3033	1.8	1.2	2.5	11.25	2910
355	400L	120	990	95.6	0.88	626	601	638	652	1185	3411	2.4	1.3	3.0	16.56	3000
400	400L	120	990	95.6	0.88	705	677	715	734	1185	3847	2.3	1.3	2.8	19.26	3270
450	400L	120	990	95.6	0.88	794	761	805	826	1185	4323	2.3	0.8	2.8	20.34	3450

(%)	Efficiency full load
COS Φ	Power factor
I_N (A)	Current full load
I_L/I_N	Current locked rotor
T_N (Nm)	Torque full load
T_L/T_N	Torque locked rotor
T_U/T_N	Torque pull up
T_B/T_N	Torque break down
$J=^{1/4}GD^2$	Moment of inertia
(kg)	Weight of foot mount motor

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750 R/MIN (8 POLE) - FRAME SIZES 100L-355M

kW	MOTOR FRAME	SHAFT SIZE	SPEED (R/MIN)	50Hz					60Hz		TORQUE				$J=^{1/4}GD^2$ ($kg.m^2$)	(Kg)
				(%)	COS Φ	400V (A)	415V (A)	415V I_L/I_N	440V I_N (A)	SPEED (R/MIN)	T_N (N_M)	T_L/T_N	T_U/T_N	T_B/T_N		
0.75	100L	28	680	73.5	0.82	2.3	2.18	2.7	2.06	810	15.0	2.3	1.8	2.8	0.0028	35
1.1	100L	28	680	76.3	0.82	3.2	3.09	2.7	2.91	810	15.0	2.3	1.8	2.8	0.0028	39
1.5	112M	28	690	78.4	0.89	4.1	3.86	3.3	3.64	820	20.5	2.1	1.8	2.8	0.0062	52
2.2	123S	38	710	80.9	0.73	5.6	5.40	5.7	5.10	850	29.8	2.1	1.5	2.1	0.031	65
3	132M	38	710	82.7	0.73	7.4	7.11	7.5	6.70	850	40.6	2.1	1.6	2.1	0.040	75
4	160M	42	720	84.2	0.77	9.4	9.05	9.4	8.54	860	53.1	2.2	1.7	2.6	0.085	106
5.5	160M	42	720	85.8	0.78	12.7	12.2	12.5	11.5	860	73.0	2.3	1.8	2.6	0.10	126
7.5	160L	42	720	87.2	0.76	17.1	16.4	17.1	15.5	860	99.5	2.6	2.0	2.8	0.18	138
11	180L	48	730	88.8	0.78	24.6	23.6	24.1	22.3	870	144	2.3	1.7	2.7	0.24	180
15	200L	55	730	90.0	0.78	32.2	30.9	32.4	29.2	870	196	2.1	1.5	2.4	0.37	240
18.5	225S	60	730	90.7	0.77	39.0	44.2	40.3	35.2	870	240	2.3	1.6	2.5	0.60	280
22	225M	60	730	91.2	0.77	46.0	57.4	47.6	41.6	870	286	2.3	1.6	2.6	0.69	312
30	250S	70	735	92.1	0.79	59.7	70.3	63	62.2	880	387	2.0	1.4	2.4	0.96	370
37	250M	70	735	92.7	0.80	73.3	70.3	76	76.2	880	478	1.9	1.5	2.2	1.15	425
45	280S	80	740	93.2	0.82	88.6	85.0	89	92.2	885	577	2.1	2.2	2.4	1.82	580
55	280M	80	740	93.7	0.80	108	103	112	112	885	707	2.7	1.2	3.0	2.14	670
75	315S	85	740	94.4	0.78	142	136	147	148	885	968	1.5	1.3	2.0	4.60	980
90	315M	85	740	94.7	0.83	170	163	174	177	885	1161	1.5	1.2	2.0	5.32	1080
110	315L	85	740	95.1	0.83	207	199	212	215	885	1420	1.6	1.3	2.1	5.95	1190
132	355M	95	740	95.4	0.82	248	238	257	258	885	1704	1.6	0.9	2.1	6.70	1650

(%)	Efficiency full load
COS Φ	Power factor
I_N (A)	Current full load
I_L/I_N	Current locked rotor
T_N (N_M)	Torque full load
T_L/T_N	Torque locked rotor
T_U/T_N	Torque pull up
T_B/T_N	Torque break down
$J=^{1/4}GD^2$	Moment of inertia
(kg)	Weight of foot mount motor

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750 R/MIN (8 POLE) - FRAME SIZES 355M-400L

kW	MOTOR FRAME	SHAFT SIZE	SPEED (R/MIN)	50Hz				60Hz			TORQUE				$J=^{1/4}GD^2$ (kg.m²)	(Kg)
				(%)	COS Φ	400V (A)	415V (A)	415V I_L/I_N	440V I_N (A)	SPEED (R/MIN)	T_N (N_M)	T_L/T_N	T_U/T_N	T_B/T_N		
160	355M	95	740	95.7	0.83	296	284	287	308	885	1936	1.2	1.1	1.8	9.11	1840
185	355M	95	740	95.7	0.83	342	328	357	356	885	2368	1.9	0.9	2.3	9.87	1840
200	355L	95	740	95.7	0.83	369	355	382	385	885	2581	1.3	0.9	1.8	10.64	2060
250	400L	120	740	95.6	0.83	468	449	477	487	885	3218	1.6	1.1	2.2	12.48	2850
280	400L	120	740	95.6	0.83	524	503	533	546	885	3589	1.3	1.0	2.4	17.25	3030
315	400L	120	740	95.6	0.81	590	566	617	614	885	4043	1.8	1.2	3.2	18.24	3210
355	400L	120	740	95.6	0.83	665	638	675	692	885	4551	1.3	0.9	2.4	26.16	3420

(%)	Efficiency full load
COS Φ	Power factor
I_N (A)	Current full load
I_L/I_N	Current locked rotor
T_N (N_M)	Torque full load
T_L/T_N	Torque locked rotor
T_U/T_N	Torque pull up
T_B/T_N	Torque break down
$J=^{1/4}GD^2$	Moment of inertia
(kg)	Weight of foot mount motor

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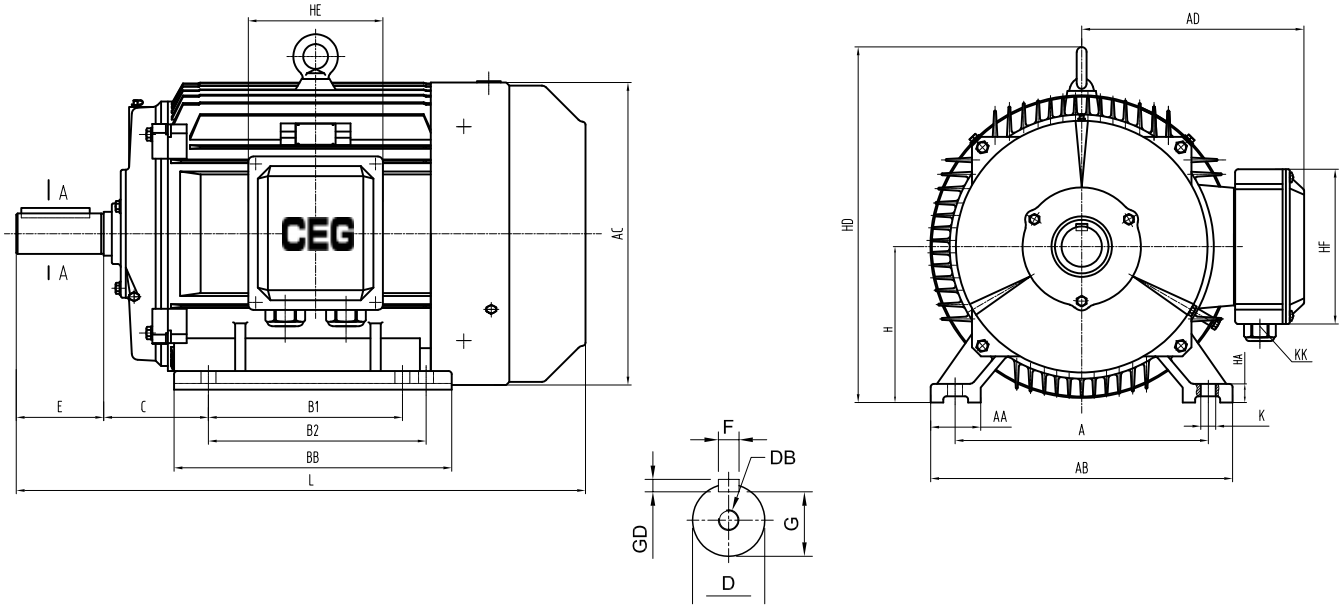
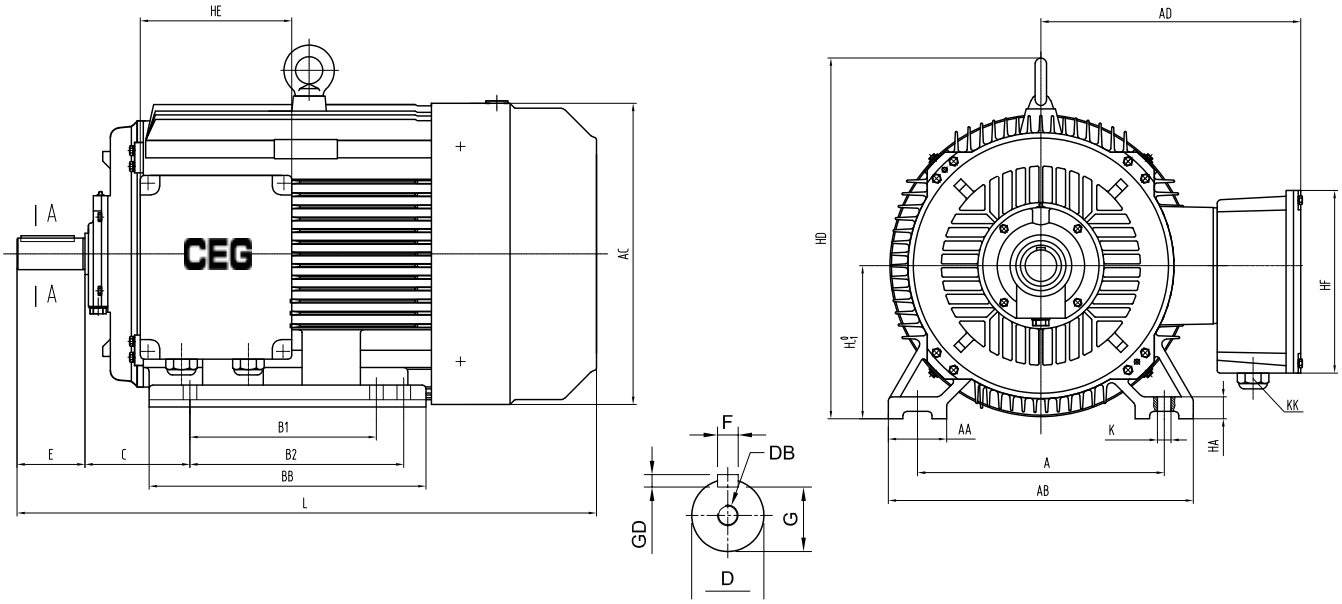
FOOT MOUNT - FRAME SIZES 90S - 280M



FOOT MOUNT - FRAME SIZES 315S - 355L



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FOOT MOUNT - FRAME SIZES 90S -355L

TYPE	A	AA	AB	AC	AD	B1	B2	BB	C	D	DB	E	F	GD	G	H	HA	HD	HE	HF	K	KK	L
XNP-90S	140	38	180	195	180	100		155	56	24	M8	50	8	7	20	90	12	235	100	110	10		335
XNP-90L	140	38	180	195	180	125		180	56	24	M8	50	8	7	20	90	12	235	100	110	10		360
XNP-100L	160	42	200	220	195	140		195	63	28	M10	60	8	7	24	100	14	260	110	120	12		400
XNP-112M	190	48	235	250	210	140		210	70	28	M10	60	8	7	24	112	16	290	110	120	12		430
XNP-132S	216	55	270	290	235	140		210	89	38	M12	80	10	8	33	132	18	335	110	120	12		480
XNP-132M	216	55	270	290	235	178		240	89	38	M12	80	10	8	33	132	18	335	110	120	12		510
XNP-160M	254	65	320	315	260	210		265	108	42	M16	110	12	8	37	160	20	405	150	160	14.5		615
XNP-160L	254	65	320	315	260	254		310	108	42	M16	110	12	8	42.5	160	20	405	150	160	14.5		670
XNP-180M	279	70	355	355	285	241		315	121	48	M16	110	14	9	49	180	22	430	150	160	14.5		700
XNP-180L	279	70	355	355	285	279		355	121	48	M16	110	14	9	49	180	22	430	150	160	14.5		740
XNP-200L	318	70	390	400	310	305		375	133	55	M20	110	16	10	49	200	25	480	190	215	18.5		760
XNP-225S	356	75	435	450	340	286		375	149	55	M20	110	18	10	49	225	28	535	190	215	18.5		820
XNP-225M	356	75	435	450	340	311		400	149	55	M20	110	18	10	49	225	28	535	190	215	18.5		845
XNP-250S	406	80	490	500	370	311		450	168	60	M20	140	18	11	53	250	30	580	220	250	24		915
XNP-250M*	406	80	490	485	380	349		450	168	60	M20	140	18	11	53	250	30	580	216	246	24	M63	920
XNP-250M	406	80	490	485	380	349		450	168	65	M20	140	18	11	58	250	30	580	216	246	24	M63	920
XNP-280S*	457	85	550	550	410	368		490	190	65	M20	140	18	11	58	280	36	650	216	246	24	M63	985
XNP-280S	457	85	550	550	410	368		490	190	75	M20	140	20	12	67.5	280	36	650	216	246	24	M63	1015
XNP-280M*	457	85	550	550	410	419		540	190	65	M20	140	18	11	58	280	36	650	216	246	24	M63	1035
XNP-280M	457	85	550	550	410	419		540	190	75	M20	140	20	12	67.5	280	36	650	216	246	24	M63	1065
XNP-315S*	508	120	630	620	530	406		570	216	65	M20	140	18	11	58	315	45	755	310	376	28	M63	1195
XNP-315S	508	120	630	620	530	406		570	216	80	M20	170	22	14	71	315	45	755	310	376	28	M63	1225
XNP-315M*	508	120	630	620	530	457	508	680	216	65	M20	140	18	11	58	315	45	755	310	376	28	M63	1305
XNP-315M	508	120	630	620	530	457	508	680	216	80	M20	170	22	14	71	315	45	755	310	376	28	M63	1335
XNP-315L*	508	120	630	620	530	457	508	680	216	65	M20	140	18	11	58	315	45	755	310	376	28	M63	1305
XNP-315L	508	120	630	620	530	457	508	680	216	80	M20	170	22	14	71	315	45	755	310	376	28	M63	1335
XNP-355M*	610	116	730	700	655	560	630	750	254	75	M20	140	20	12	67.5	355	52	855	400	440	28	M72	1510
XNP-355M	730	116	730	700	655	560	630	750	254	95	M24	170	25	14	86	355	52	855	400	440	28	M72	1540
XNP-355L*	610	116	730	700	655	560	630	750	254	75	M20	140	20	12	67.5	355	52	855	400	440	28	M72	1510
XNP-355L	730	116	730	700	655	560	630	750	254	95	M24	170	25	14	86	355	52	855	400	440	28	M72	1540

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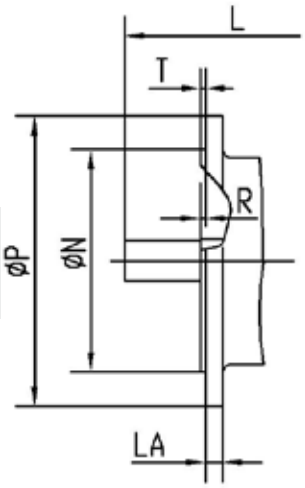
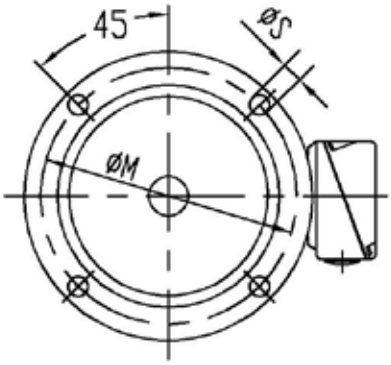
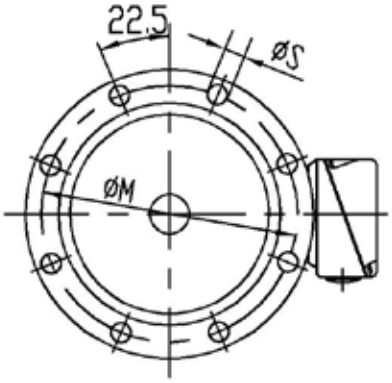
FLANGE MOUNT - FRAME SIZES 90S - 355L

XNP B5
XNP B3/5
Mounting Options





XNP 90S-200L

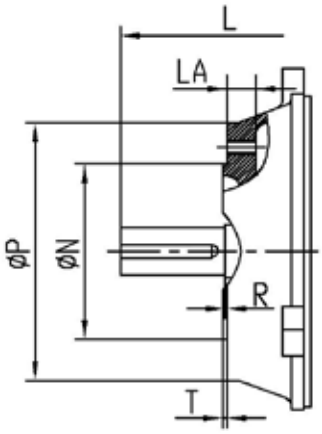


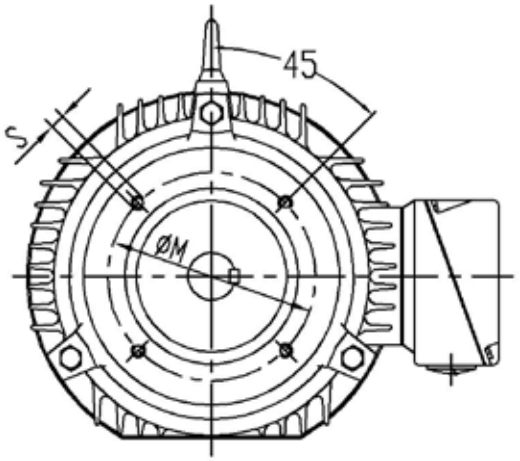
XNP 225S-355L

XNP	B5 MOUNTING					
TYPE	M	N	P	S	T	LA
XNP-90S/L	165	130	200	4x12	3.5	12
XNP-100L	215	180	250	4x14.5	4	14
XNP-112M	215	180	250	4x14.5	4	14
XNP-132S/M	265	230	300	4x14.5	4	14
XNP-160M/L	300	250	350	4x18.5	5	15
XNP-180M/L	300	250	350	4x18.5	5	15
XNP-200L	350	300	400	4x18.5	5	17
XNP-225S/M	400	350	450	8x18.5	5	20
XNP-250S/M	500	450	550	8x18.5	5	22
XNP-280S/M	500	450	550	8x18.5	5	22
XNP-315S/M/L	600	550	660	8x24	6	22
XNP-355M/L	740	680	800	8x24	6	25

XNP	B14 MOUNTING					
TYPE	M	N	P	S	T	LA
XNP-90S/L	115	95	140	4xM8	3	12
XNP-100L	130	110	160	4xM8	3.5	14
XNP-112M	130	110	160	4xM8	3.5	14
XNP-132S/M	165	130	200	4xM10	4	16
XNP-160M/L	215	180	250	4xM12	4	18

XNP B14
XNP B3/14
Mounting Options





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