ODP SERIES

PREMIUM INDUSTRIAL OPEN DRIP PROOF MOTORS

C280M to C355LB Frame

Australian Version | October 2013

www.ceg.co

CEG

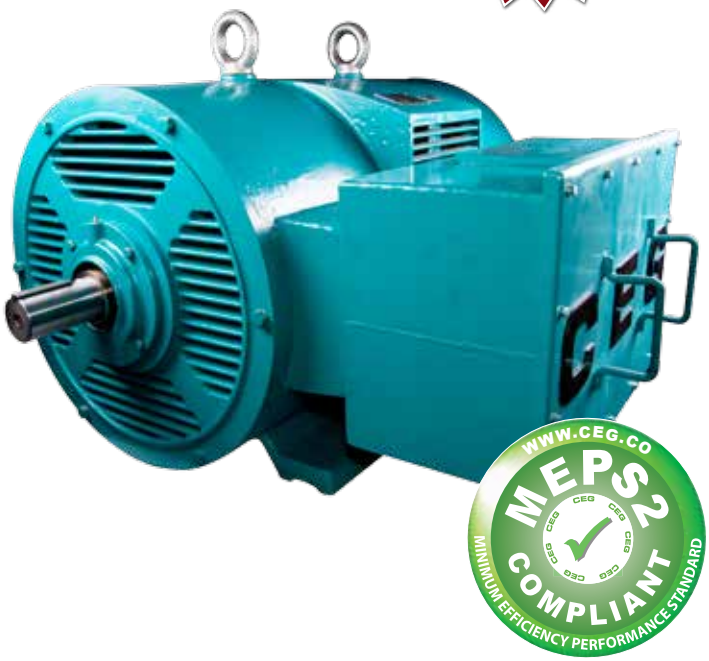
ELECTRIC MOTORS AND PUMPS

ODP SERIES (OPEN DRIP PROOF)

PREMIUM INDUSTRIAL OPEN DRIP PROOF MOTORS, C280M TO C355LB FRAME

1 YEAR STANDARD WARRANTY

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 and New Zealand, backed up by a network of distributors, ensuring excellent local support and service wherever needed.

ODP SERIES

This series catalogue details the range and specification of the C280M to C355LB frame ODP motors. The motors are cast iron , three phase squirrel cage, open drip proof, with IEC frame dimensions. The complete range covers 2-8pole / 22kW to 540kW (contact your nearest CEG office for data outside this catalogue range). The ODP series motors are cast iron, three phase, squirrel cage, Open Drip Proof (ODP), with IEC frame size from C160LB to C355LB. These include single speed 2, 4 pole and two speed 2-4 pole design. They combine high efficiency and excellent quality.

These motors are widely used in industrial refrigeration / air conditioning compressors applications from cool stores to shopping malls from heating and ventilation to refrigeration etc.

EFFICIENCY

The ODP Series, exceed the requirements for the listed MEPS AS/NZ 1359.5-2004 minimum 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.

The new CEG Open Drip Proof range (ODP) has been designed to optimise the customer benefits of a high power to weight ratio. The CEG ODP range is an ideal option where weight, size or cost per kW output are important.

Typical applications are compressors and fire pumps etc. ODP motors are suitable for relatively clean environments and locations where a degree of protection is already offered to the motor.

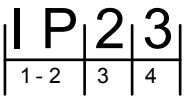
BENEFITS INCLUDE

- High output in reduce frame sizes
- Oversized main terminal box
- Bidirectional rotation
- Energy efficiency for low running costs
- Full cast iron construction for durability
- Low noise levels
- Voltage 380-415 / 680-720 Multi Voltage
- Dual frequency 50Hz and 60Hz
- High power factors
- High torque with smooth acceleration and low current
- IP 23 protection
- Class F insulation with Class B temperature rise
- 2 sets of thermistors (alarm (130 Deg C) and trip (155Deg C)
- Anti-Condensation Heaters fitted as standard
- C280 frame and above Winding RTD's fitted as standard
- Bearing RTD's fitted on request
- Maximum ambient 40°C

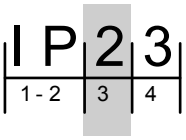
PROTECTION

The level of mechanical enclosure protection for all ODP frame sizes is IP23 in the standard B3 mounting position.

IP STANDARDS

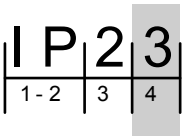


International Protection Rating



This rating number refers to the protection against solid bodies.

1	Protection against solid bodies with dimensions over 50mm
2	Protection against solid bodies with dimensions over 12mm
3	Protection against solid bodies with dimensions over 2.5mm



2	Protected against water dripping up to 15° from the vertical
3	Protected against water dripping up to 60° from the vertical
4	Protected against water splashes from all directions

STATOR CASING

Stator enclosures are manufactured from high grade cast iron, having a 250MPa tensile strength. They are designed and manufactured as one piece open ventilated frame with feet. This manufacturing process ensures the stator casing remains ridged under the most extreme starting and running loads.

This open frame design ensures the maximum effective dissipation of heat from the windings with the least amount of airflow though the motor, helping to minimise the running noise.

STATOR CORE

The stator core is constructed from high grade cold-rolled electromagnetic steel creating an energy efficient motor.

END-SHEILDS

End-shields are manufactured from high grade cast iron, having a 250MPa tensile strength. They are designed and manufactured as one piece, ensuring they remain ridged under the most extreme starting and running loads. End-sheilds are machined to close tolerances providing perfect alignment and fit.

ROTOR

Rotor core laminations are constructed from high quality cold-rolled electromagnetic steel.

Rotor cages are of the squirrel cage type, and are manufactured from pressurised die cast aluminium as a single piece complete with integral wafer fan blades. This manufacturing process achieves high starting torque and fan bland providing extra air movement of air over the windings. Once assembled the rotor is dynamically balanced to achieve smooth operation.

The surface is then treated with a corrosion-free coating to protect from the open frame design.

SHAFT

The Shaft is manufactured from a single piece of high tensile C40 (EN8) steel, providing strength and rigidity for the most rugged operation. The shaft all frame size and above are ultrasonically tested for detection of flaws before the machining process is started. All shaft specifications and tolerance comply with AS/NZ1359 and IEC60072.

Bearing journals and the output shaft are ground to ensure accurate and consistent dimensions. The rotor output shaft comes complete with a key and keyway.

FINISH

All castings and mild steel components are protected with a red oxide rust resistant primer. The finishing coat of standard CEG motors is a water blue enamel paint, which is adequate for normal operational conditions.

MECHANICAL - FRAME SIZES C160 - C355LB

TERMINAL BOX

Terminal boxes on frame size C160 - C280 are constructed from 250MPa cast iron with generous dimensions. Terminal boxes on all C160 - C280 frames are rotatable 360º in increments of 90º. This feature has been incorporated in order to facilitate cable entry from any direction.

Terminal boxes on frame size C315 - C355 are fabricated steel design with large oversize dimensions with two glanded plates accommodating top or bottom entry with adequate room each side of the terminal block to run cables.

High temperature one-piece gaskets are fitted between all mounting surfaces better protection from dust. All terminal boxes include an internal earth stud. All frame sizes are provided with a stepped terminal block for ease of termination of two sets of cables for Star/Delta starting.

FRAME SIZE	NUMBER OF ENTRIES	ENTRY / PITCH
C160	2	M50 / 1.5 M25 / 1.5
C180	2	M50 / 1.5 M25 / 1.5
C200	2	M50 / 1.5 M25 / 1.5
C225	2	M50 / 1.5 M25 / 1.5
C250	2	M72 / 2.0 M25 / 1.5
C280	2	M72 / 2.0 M25 / 1.5
C315	2 x Glanded Plates	N/A
C355	2 x Glanded Plates	N/A

TABLE 1.3

EARTHING

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	ENTRY / PITCH
160 - 180	1	M6
200 - 280	1	M8
315 - 355	1	M10

TABLE 1.2

COOLING

The ODP range of motors are all designed with an open frame construction, internal fans draw cooling air into the motor through each end of the frame and exhausts out through openings in the stator frame.

These cooling fans are suitable for both directions of rotation.

When installing the motor it is important to ensure airflow into the motor cowl is not restricted. Table 1.3 below provides dimensions that should be used as a guide for minimum distance requirements when mounting as precaution should be taken not to impede airflow.

FRAME SIZE	DIMENSIONS
160 - 180	100mm
200 - 250	120mm
280 - 355	150mm

COOLING ON VSD'S

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

MOUNTING OPTIONS

The standard mounting position is B3 (horizontal foot mount).

WINDINGS

Windings consist of high grade electrolytic copper wire insulated with high temperature polyester varnished wire. These are inserted into the slot liners, which are either double cuffed or edge bound at the slot mouth providing strength to the insulation.

Windings are fitted with insulating phase barriers and bound with a class F tape to provide additional protection against motor failure caused through insulation breakdown from electrical and/or mechanical stresses.

All stators are double vacuum impregnated with a thermo setting epoxy resin (class F). An additional epoxy gel coating sprayed on the winding overhangs to provide mechanical rigidity to the windings to withstand the electrical and mechanical stresses.

PROTECTION

All ODP motors come complete with two sets of PTC thermistors.

- 130°C warning alarm set
- 155°C trip set

Frame Sizes C280 and above are fitted as standard.

- One set winding RTD's
- Two sets anti-condensation heaters (230-250V)

All thermistors, RTD's and heaters are terminated in the main terminal box. Bearing RTD's are available on all sizes.

MOTOR BEARING SPECIFICATIONS FOR FRAMES C280M - C355L

BEARINGS

All frame sizes come with high quality NTN or SKF deep groove ball bearings, which facilitate online grease replenishment of lubrication during operation.

Refer to Table 1.4.

ODP motor bearings are specifically designed for use in electric motors. The bearings all come pre-lubricated with a lithium based grease grade II, which under normal operating conditions will provide maximum reliability. Bearing grease is suitable for operation temperatures ranging from –20°C to +50°C. For operation outside these temperatures please contact your local CEG agent.

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.

TABLE 1.4

FRAME SIZE	BEARING SIZE	
	DRIVE END (DE)	NON DRIVE END (NDE)
280 S/M - 2	6314	6314
315 S/M/L - 2	6317	6317
355 S/M/L - 2	6319	6319

CEG
ELECTRIC MOTORS AND PUMPS

3000 R/MIN (2 POLE) - FRAME SIZES 280M - 540LA/LB

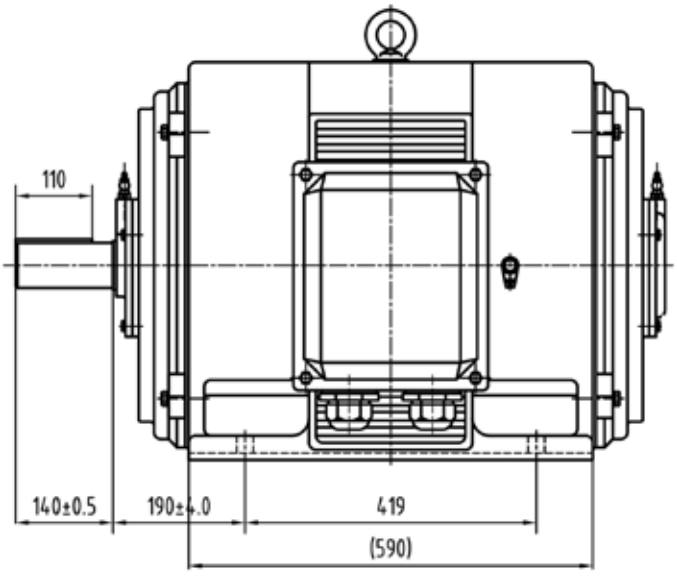
kW	MOTOR FRAME	SHAFT SIZE	50Hz						60Hz		415V 50Hz				$J=^{1/4}GD^2$ (kg.m²)	(Kg)
			SPEED (R/MIN)	(%)	COS Φ	380V In (A)	400V In (A)	415V In (A)	440V I_N (A)	SPEED (R/MIN)	T_N (N_M)	T_L/T_N	T_U/T_N	T_B/T_N		
185	280M	65	2980	94.5	0.89	334	317	306	289	3576	593	1.4	1.0	2.5	1.205	770
220	315 S/M/L	70	2980	95.0	0.89	395	376	362	341	3576	705	1.4	1.0	2.2	1.644	1220
250	315 S/M/L	70	2980	95.0	0.89	449	427	411	388	3576	801	1.3	0.8	2.2	1.871	1280
265	315 S/M/L	70	2980	95.0	0.89	476	452	436	411	3576	849	1.3	0.8	2.2	1.871	1280
285	315 S/M/L	70	2980	95.4	0.89	510	485	467	440	3576	913	1.3	0.8	2.2	1.985	1300
300	315 S/M/L	70	2980	95.4	0.89	537	510	492	464	3576	961	1.2	0.8	2.2	2.155	1320
320	315 S/M/L	70	2980	95.4	0.89	573	544	524	495	3576	1026	1.2	0.8	2.2	2.155	1320
350	315 S/M/L	70	2980	95.8	0.89	624	593	571	539	3576	1122	1.2	0.8	2.2	2.438	1.350
355	**315 S/M/L**	**70**	**2980**	**95.8**		**585**	**552**	**524**	**541**	**3576**	**1074**					**1335**
375	315 S/M/L	70	2980	95.8	0.89	668	635	612	577	3576	1202	1.2	0.8	2.2	2.438	1350
375	355 LA/LB	70	2980	95.8	0.89	668	635	612	577	3576	1202	1.2	0.8	2.2	2.438	1350
400	355 LA/LB	75	2980	95.8	0.90	705	670	645	609	3576	1282	1.2	0.8	2.2	3.522	1800
425	355 LA/LB	75	2980	95.8	0.90	749	711	686	647	3576	1362	1.1	0.7	2.2	3.522	1800
450	355 LA/LB	75	2980	95.8	0.90	793	753	726	685	3576	1442	1.1	0.7	2.2	3.682	1880
465	355 LA/LB	75	2980	95.8	0.90	819	778	750	708	3576	1490	1.1	0.7	2.2	3.962	1880
485	355 LA/LB	75	2980	95.8	0.90	855	812	783	738	3576	1554	1.1	0.7	2.2	3.962	1900
520	355 LA/LB	75	2980	95.8	0.90	916	839	839	791	3576	1666	1.1	0.7	2.0	4.322	2020
540	355 LA/LB	75	2980	95.8	0.90	952	871	871	822	3576	1731	1.1	0.7	2.0	4.322	2020

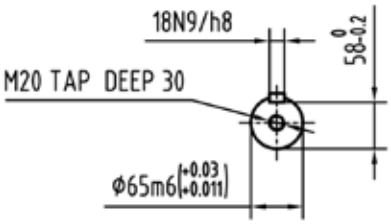
(%)	Efficiency full load
COS Φ	Power factor
I_N (A)	Current full load
I_L/I_N	Current locked rotor
T_N (N_M)	Torque full load
T_L/T_N	Torque locked rotor
T_U/T_N	Torque pull up
T_B/T_N	Torque break down
$J=^{1/4}GD^2$	Moment of inertia
(kg)	Weight of foot mount motor

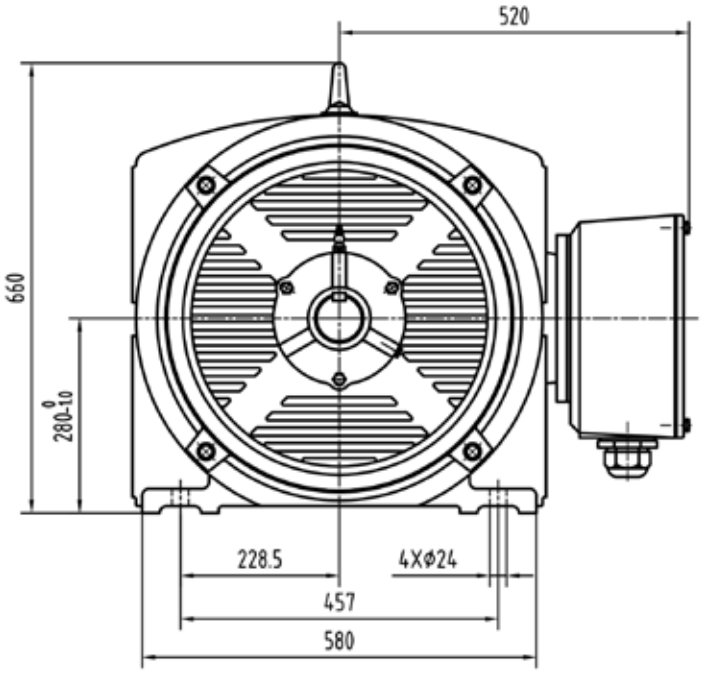
DIMENSIONAL DRAWING 280M FRAME

ELECTRIC MOTORS AND PUMPS

ODP 280M FRAME 3000RPM







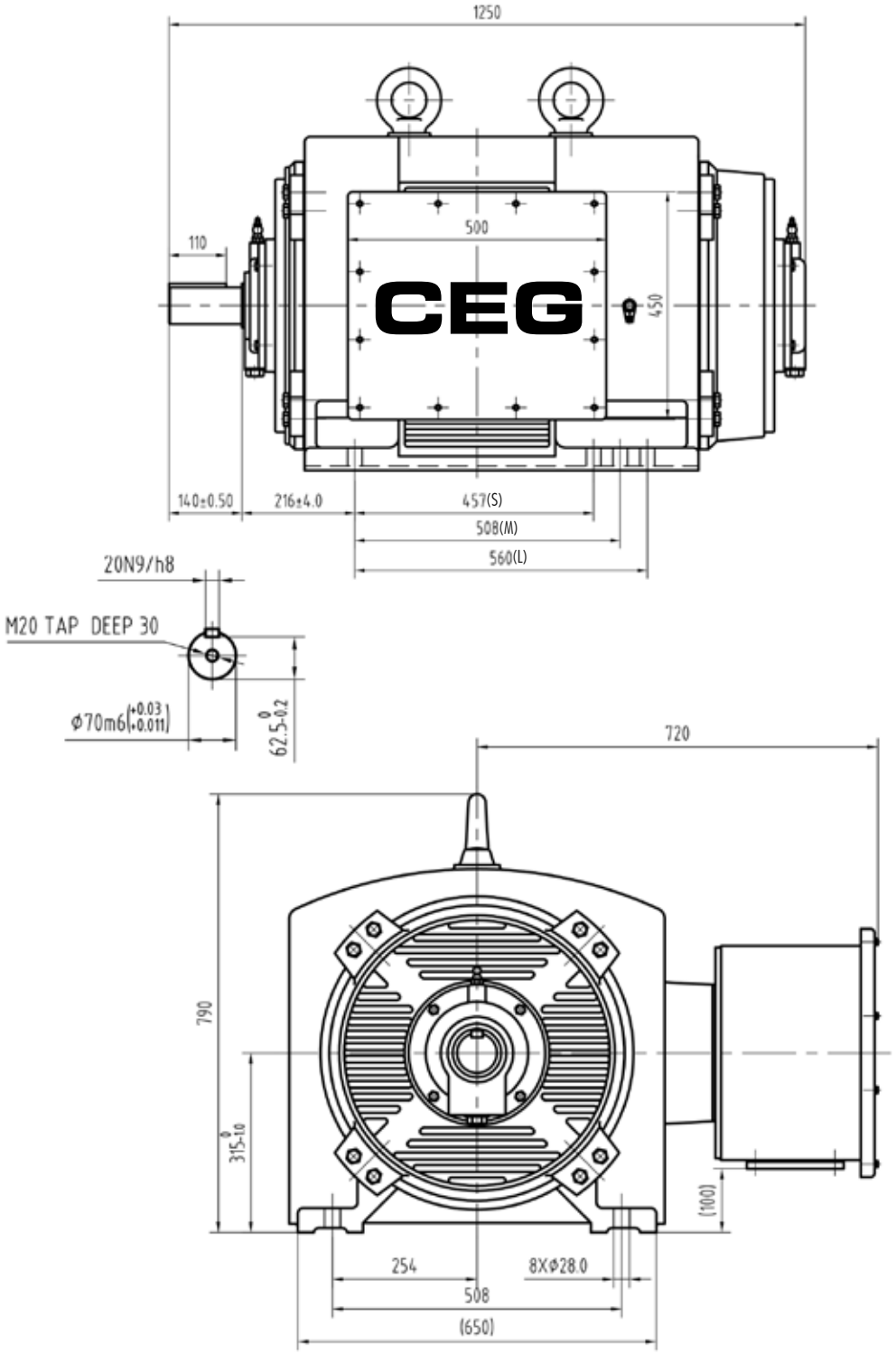
CODE	KW	FRAME	SHAFT	WEIGHT (kg)
ODPM32185003	185	280M	65mm	770

ALL MEASUREMENT IN MM

DIMENSIONAL DRAWING 315S/M/L FRAME

CEG
ELECTRIC MOTORS AND PUMPS

ODP 315S/M/L FRAME 3000RPM

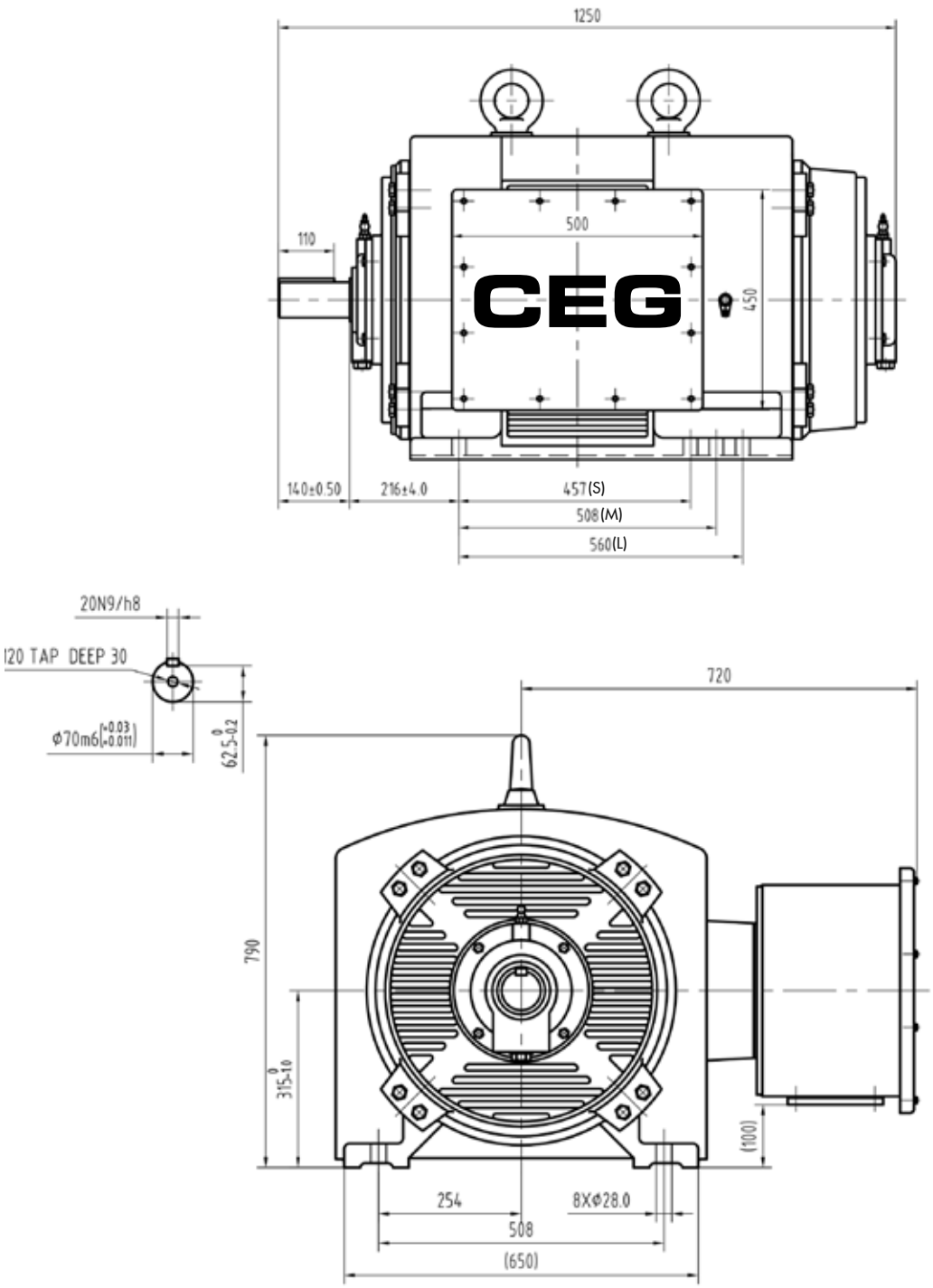


CODE	KW	FRAME	SHAFT	WEIGHT (kg)
ODPM32220003	220	315 S/M/L	70mm	1220
ODPM32250003	250	315 S/M/L	70mm	1280
ODPM32265003	265	315 S/M/L	70mm	1290

ALL MEASUREMENT IN MM

CEG
ELECTRIC MOTORS AND PUMPS

ODP 315L FRAME 3000RPM



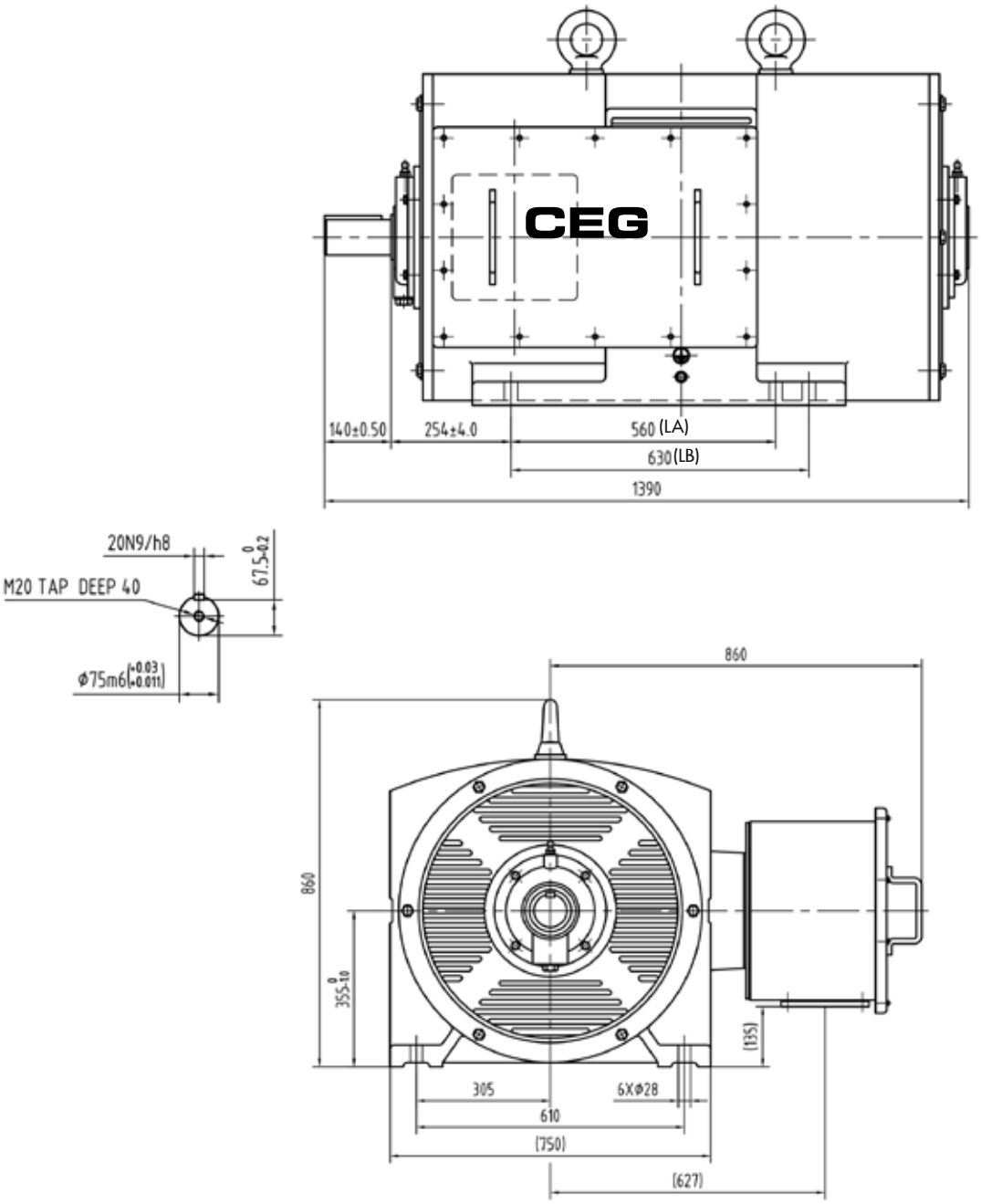
CODE	KW	FRAME	SHAFT	WEIGHT (kg)
ODPM32285003	285	315 S/M/L	70mm	1300
ODPM32300003	300	315 S/M/L	70mm	1310
ODPM32320003	320	315 S/M/L	70mm	1320
ODPM3235503	335	315 S/M/L	70mm	1335
ODPM32350003	350	315 S/M/L	70mm	1350
ODPM32375003R	375	315 S/M/L	70mm	1360

ALL MEASUREMENT IN MM

DIMENSIONAL DRAWING 355LA/LB FRAME

CEG
ELECTRIC MOTORS AND PUMPS

ODP 355LA/LB FRAME 3000RPM



CODE	KW	FRAME	SHAFT	WEIGHT (kg)
OPDM32375003	375	355 LA/LB	75mm	1760
ODPM32400003	400	355 LA/LB	75mm	1775
ODPM32425003	425	355 LA/LB	75mm	1800
ODPM32450003	450	355 LA/LB	75mm	1860
ODPM32465003	465	355 LA/LB	75mm	1875
ODPM32485003	485	355 LA/LB	75mm	1890
ODPM32520003	520	355 LA/LB	75mm	2020
ODPM32540003	540	355 LA/LB	75mm	2050

ALL MEASUREMENT IN MM

CEG

ELECTRIC MOTORS AND PUMPS

AUSTRALIAN SALES NETWORK

Brisbane Branch

Unit 21, 258 Musgrave Road, 4108, Queensland

Phone +61 (0) 7 3277 0377 Fax +61 (0) 7 3277 0477

NEW ZEALAND SALES NETWORK

Palmerston North Branch

76 - 86 Cuba Street, Palmerston North

Phone +64 (0) 6 357 8940 Fax +64 (0) 6 356 2093

Auckland Branch

Phone +64 (0) 9 309 8940 Fax +64 (0) 9 309 8941

Christchurch Branch

Phone +64 (0) 3 348 8940 Fax +64 (0) 3 348 8945

Invercargill Branch

Phone +64 (0) 3 218 8940 Fax +64 (0) 3 215 6392

WWW.CEG.CO

IMPORTERS OF :

LEADER PUMPS

SAER ELECTRIC PUMPS

calpeda

italvibras

EBARA

GLOBAL GREEN

eco-pure

780863185779