POPE
ELECTRIC MOTORS

FLEXI-FRAME™

THE BENCHMARK IN ELECTRIC MOTORS

Certified System™
Quality
ISO 9001

DEFENCE RECOGNISED SUPPLIER
Department of Defence

IEC

Electric Motors and Brake Motors
0.12kW to 900kW 3 Phase 380V-1250V

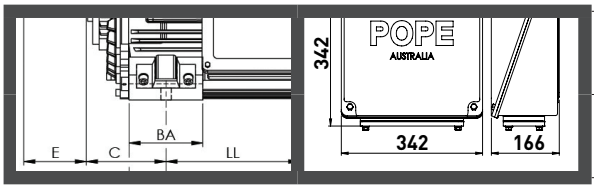
INDEX

The Flexi-Frame™ Motor

Features

Performance Data

Dimensions



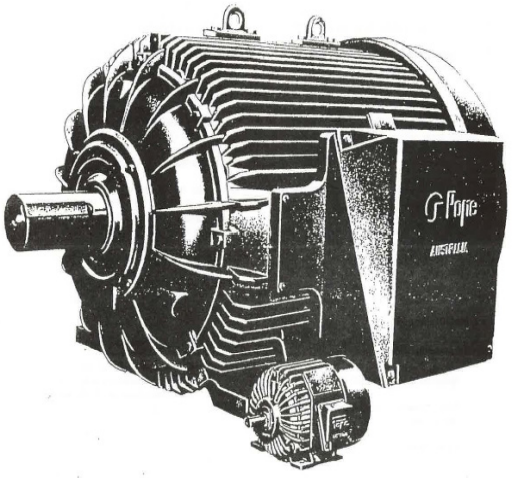
Reference Material

POPE ELECTRIC MOTORS PTY LTD

HISTORY AND PHILOSOPHY

POPE Electric Motors have set the benchmarks in the design of heavy duty industrial electric motors and our customers have profited over many decades from innovative designs and high standards for electric motor performance, efficiency and reliability.

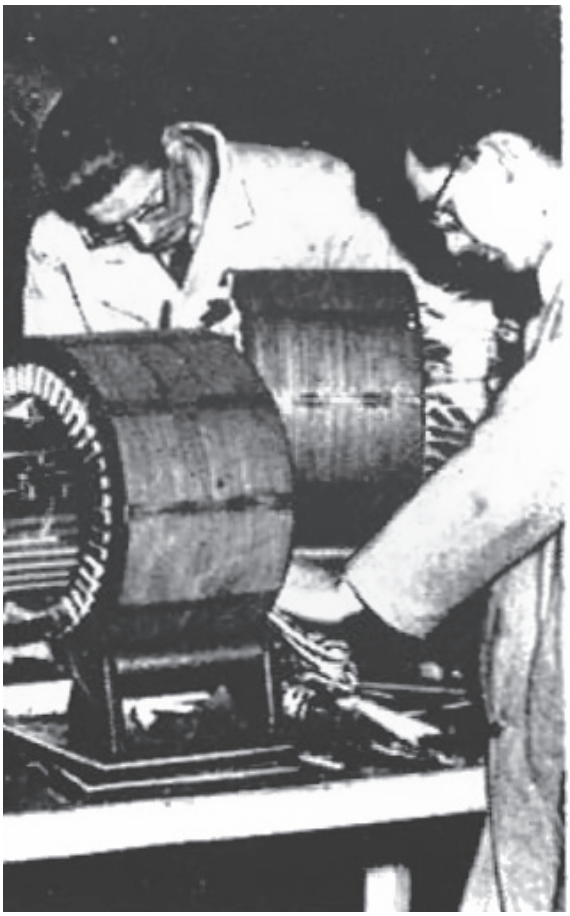
POPE Electric Motors continue to remain in service in excess of 40 years, ensuring our customers will benefit for many years to come.



STRONG, EFFICIENT, RELIABLE

PROVEN HISTORY

"Thousands of POPE Electric Motors have successfully operated in harsh conditions for decades, saving millions of dollars in energy, down time, replacements, rewinds, stress and lost production time"



POPE ELECTRIC MOTORS

VALUES WE STAND FOR

Strong Construction
Made from heavy duty cast iron

High Ingress Protection
Protection from water and dust

Energy Efficiency
High quality materials and design for energy saving

Easy Connections
Generous size terminal boxes

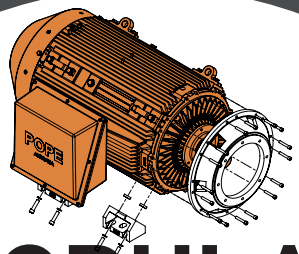
Winding Protection
Class H insulation rated to 180°C

Heavy Duty Cooling
Cast iron fan and heavy duty fan cowl

Continuous Lubrication
POPE Tru-Flush lubrication

THE FLEXI-FRAME™ MOTOR

COMPLETE CUSTOMISATION AND ULTIMATE FLEXIBILITY

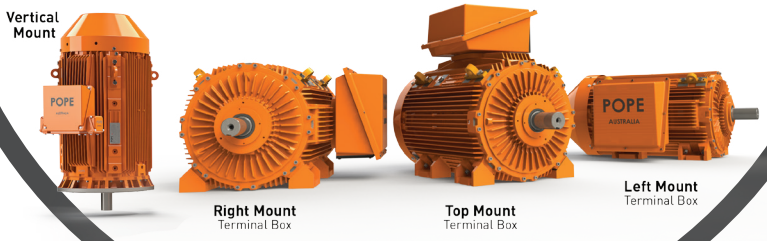


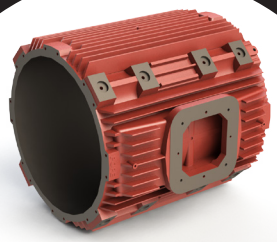
MODULAR

FLEXI-FRAME™ DESIGN

Bolt on Flange, Feet and More

Sizes include; undersize, oversize, V1, V6, NEMA and more.
Flexible design allows for various terminal box positions.





DURABLE

Heavy duty ISO200 thick wall cast iron construction

THOUSANDS
OF COMBINATIONS

OPTIONS

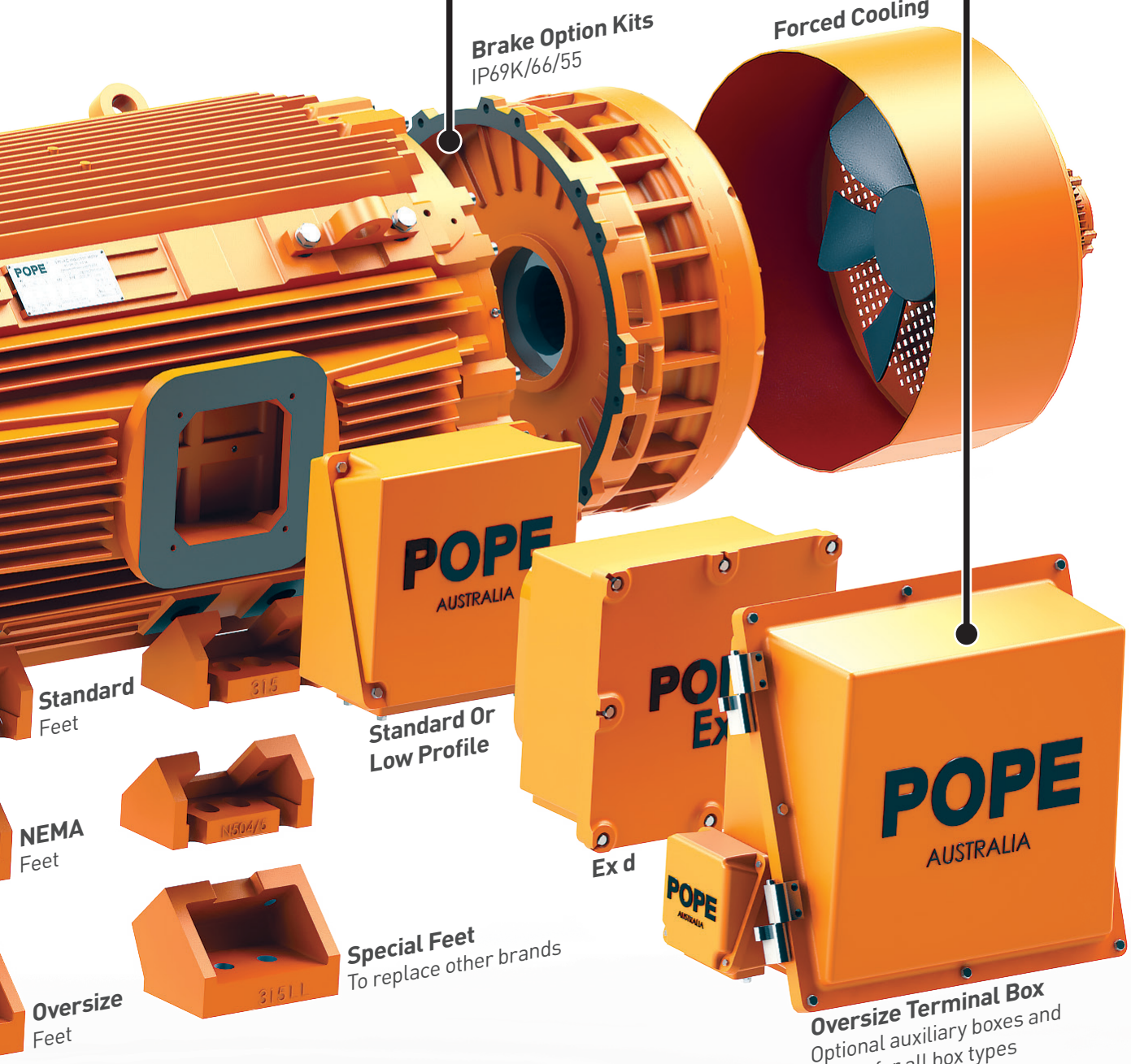
Bolt-On Options

Designed for easy fit optional attachments such as forced cooling, safety brake kit and shaft encoder

CHOICES

Terminal Boxes Customisation

Standard or specify your terminal box and auxiliary box position, size, rotation and gland plate

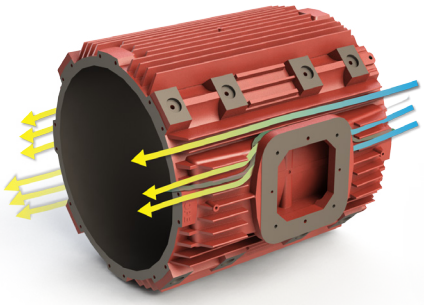


1000'S OF CHOICES
FROM JUST ONE FRAME

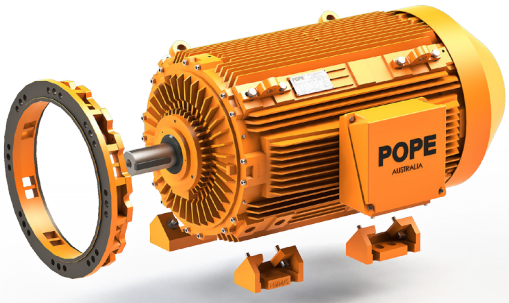
One High Strength Cast Iron Frame
can be used for numerous mounting options and motor types

Ease of maintenance
Inventory can be dramatically reduced
Interchangeability of spares

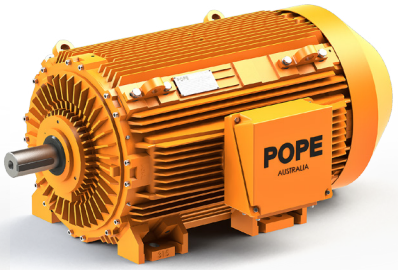
01 High strength T200
Cast iron frame
Advanced airflow design



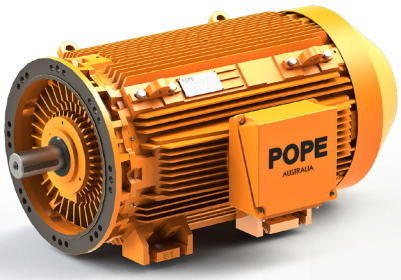
02 Interchangeable
foot and flange



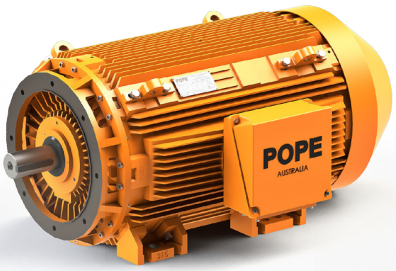
03 Standard foot
No flange



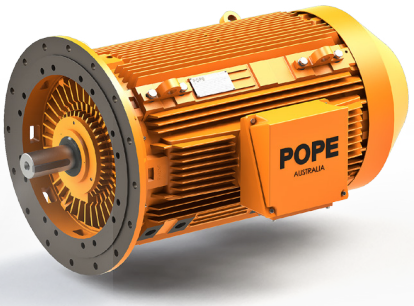
04 Standard foot
Standard flange



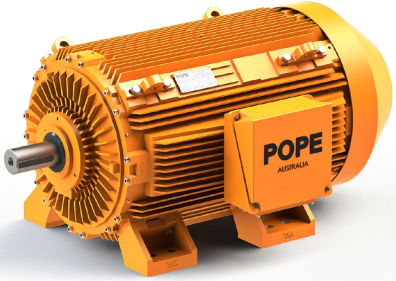
05 Standard foot
Undersize flange



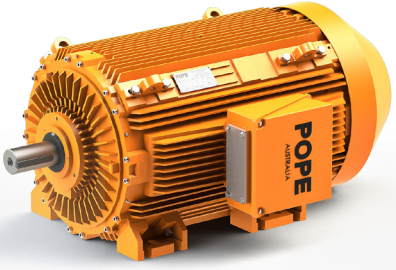
06 Oversize flange
No feet



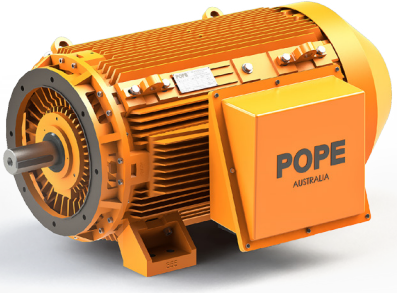
07 Oversize foot
No flange



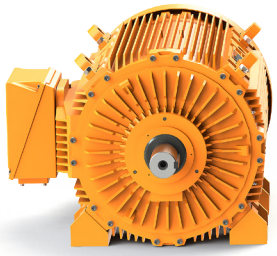
08 West oriented
terminal box



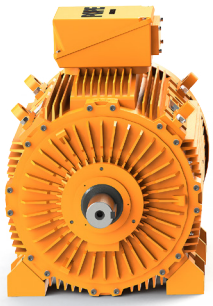
09 Undersize flange
Oversize foot
Oversize terminal box



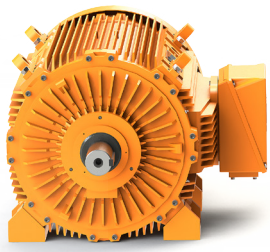
10 Left mount terminal box



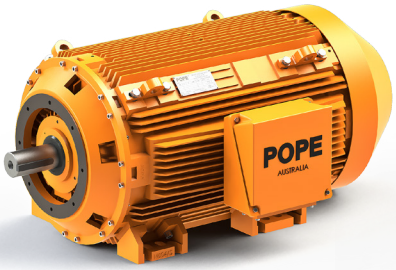
11 Top mount terminal box



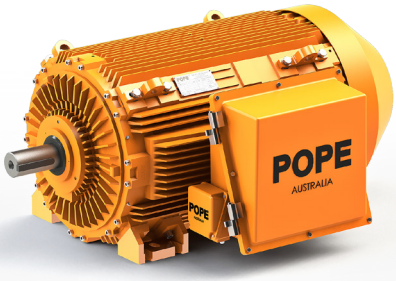
12 Right mount terminal box



13 NEMA foot / flange



14 Oversize terminal box with hinged lid and auxiliary box



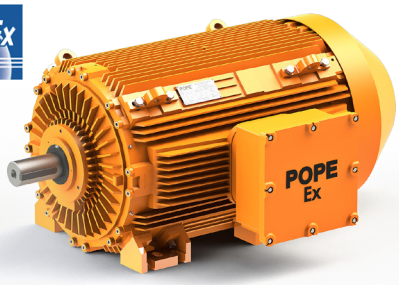
15 Top mount and low profile terminal box

16 Forced cooling

17 BrakePak Brake motor

18 Hazardous Area Flameproof Increased Safety Dust Ignition Proof (DIP)

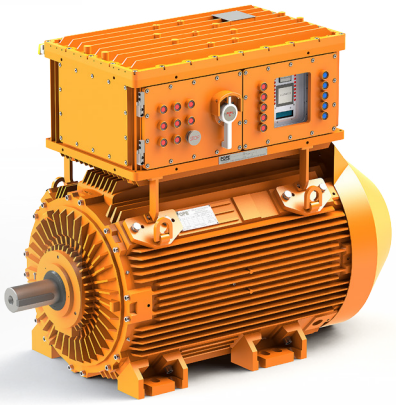
IECEx



19 Vertical shaft down with rain hood

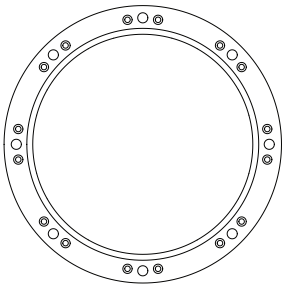
20 Coal / debris guard

21 Integral starter package

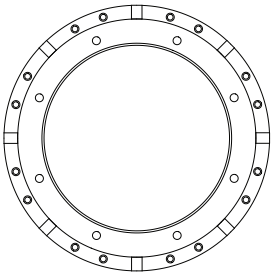


Bolt On Flange

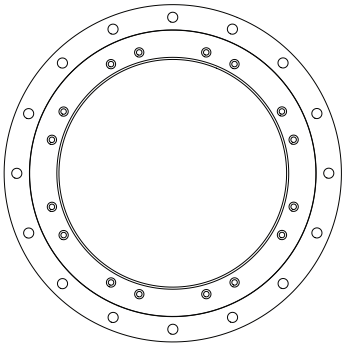
Extreme IP69K | MinePak IP66 | TruPak IP55



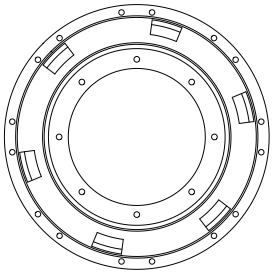
Standard Flange Ring



Undersize Flange Ring



Oversize Flange Ring

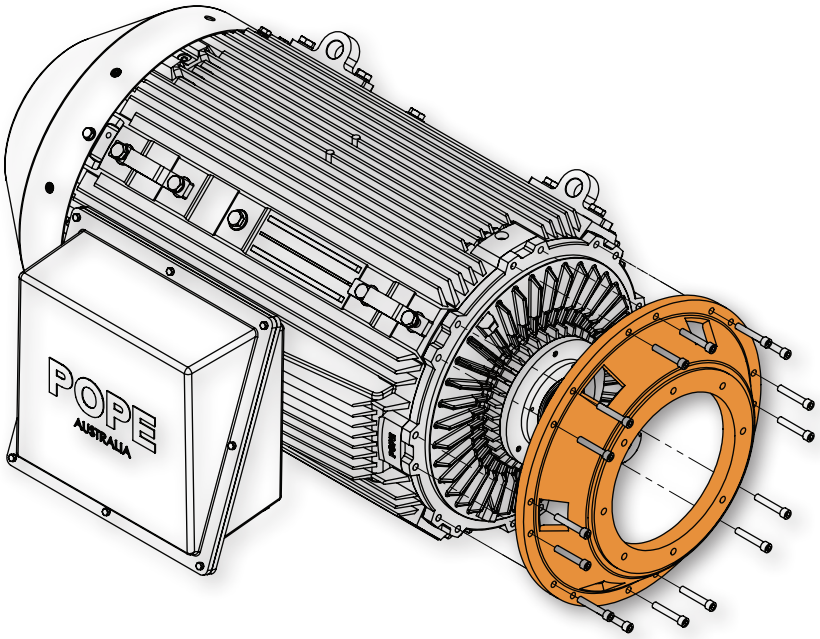


NEMA Flange Ring

BOLT ON AND INTERCHANGEABLE FLANGE RINGS

[063 - 500 frame size motors]

Able to convert standard foot mounted motor without the need to dismantle the motor using the standard fastening points. Motors can be converted to a flange mount, foot/flange, vertical shaft down, NEMA, oversize and undersize flange. Ideal for inventory reduction.



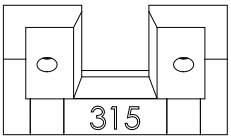
8 or 16 hole flange permits orientation elasticity, and compatibility with other manufacturer's mounting configurations

	Extreme IP69K	MinePak IP66	TruPak IP55
4 hole flange [Sizes 063-071]	✓	✓	✓
8 hole flange [Sizes 080-225 and NEMA]	✓	✓	✓
16 hole flange [Sizes 250-500]	✓	✓	✓
NEMA flange available [NEMA 48-589T]	✓	✓	✓
Undersize flange rings [Sizes 090-400]	✓	✓	✓
B14A / B14B flange [Sizes 063-160]	✓	✓	✓
SAE flange available	✓	✓	✓
Double flange available for both DE and NDE	✓	✓	✓
Vented flanges for improved airflow [Sizes 132-500] Non vented optional for wet flange	✓	✓	✓

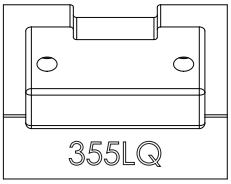
Bolt On Feet

Extreme IP69K | MinePak IP66 | TruPak IP55

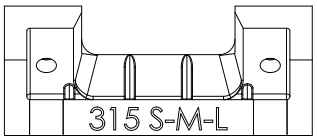
BOLT ON AND INTERCHANGEABLE FEET
[063 - 400 frame size motors]



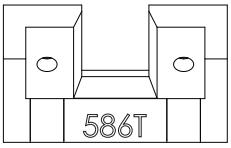
Standard Foot



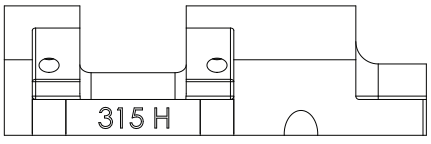
Oversize Foot



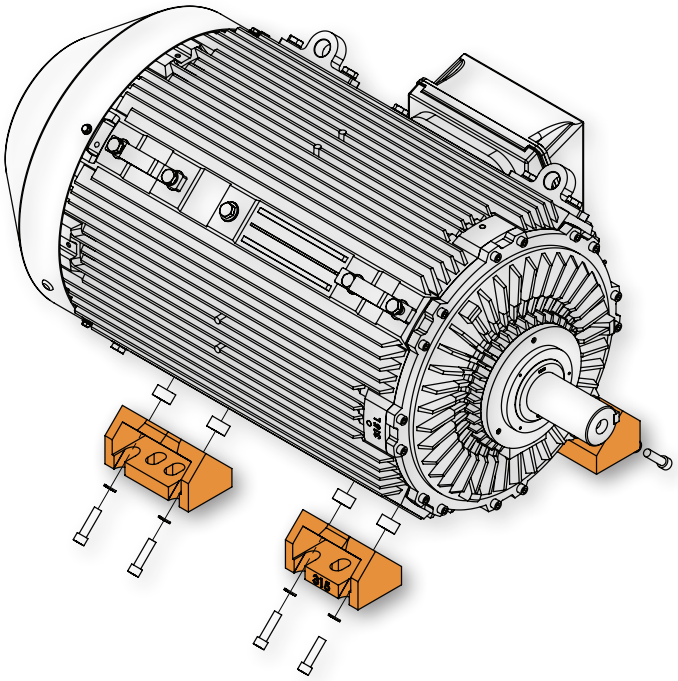
Multiple Option Foot



NEMA Foot



Special Feet To Suit Other Brand Motors



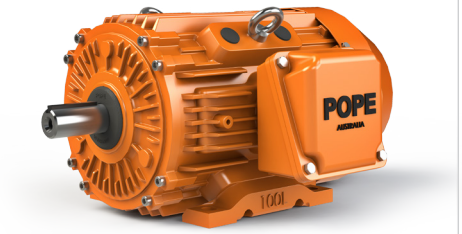
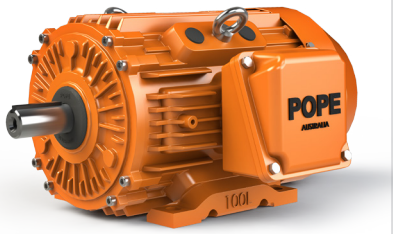
	Extreme IP69K	MinePak IP66	TruPak IP55
Remove or fit feet as required [Sizes 063-400]	✓	✓	✓
High strength cast iron [Sizes 063-400]	✓	✓	✓
Fixed fabricated steel feet [Sizes 450-500]	✓	✓	✓
Precision locating bushes [Sizes 063-400]	✓	✓	✓
Oversize feet available	✓	✓	✓
Custom feet / shaft height options to suit specials	✓	✓	✓
NEMA dimension feet for North American market	✓	✓	✓

FLEXI-FRAME™

EXTREME, MINEPAK AND TRUPAK SPECIFICATIONS

The POPE Flexi-Frame® Motor is available in **Extreme, MinePak** and **TruPak** specifications.

Below is a summary of each specification and the following pages **list all the features** that can be found in each specification.

Extreme	MinePak™	TruPak™
IP69K	**IP66**	**IP55**
Extreme Reliability Fully featured for harsh operating conditions	**Mining Standard** True high efficiency mine specification motor	**General Use** Designed for general industrial applications
		
Water Protection : Protected against high pressure, high temperature wash down and heavy seas.	**Water Protection :** Protected against heavy seas and strong jets of water from all directions.	**Water Protection :** Provides general water resistance from splashes and jets of water.
Dust Protection : Dust tight. No Ingress of dust.	**Dust Protection :** Dust tight. No Ingress of dust.	**Dust Protection :** Limited dust protection.
Common Applications : Washdown areas Mining and heavy industry Wet, dirty, dusty Extreme conditions Food and beverage Cooling towers	**Common Applications :** Mining and quarries Heavy industries Oil and gas Harsh environments	**Common Applications :** General HVAC Food and beverage Irrigation

INGRESS PROTECTION (IP)

RATING OF DEGREES OF PROTECTION

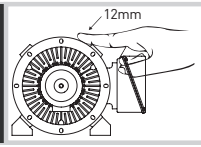
The IP Rating is the classification and rating of **degrees of protection from solid foreign objects and water**. A major contributing factor for electric motor failures is the ingress of water and dust.

POPE Flexi-Frame Electric Motors are available with a choice of three levels of ingress protection and features.

IP 6 SOLIDS 9K WATER

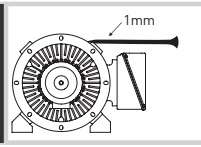
Solids

2



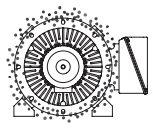
Protected Against Solid Objects
Objects over 12mm unable to enter the enclosure.
e.g. a persons finger.

4



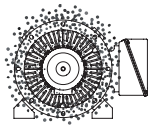
Protected Against Solid Objects
Objects over 1mm unable to enter the enclosure.
e.g. a screw or wire.

5



LIMITED PROTECTION Aginst Dust
Protection again harmful deposit of dust in the enclosure.

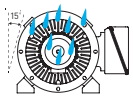
6



TOTAL PROTECTION Against Dust
Prevents any dust from entering the enclosure.

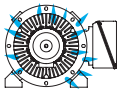
Water

2



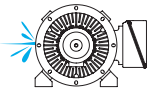
Protection Against Drips
of water up to 15° from the vertical.

4



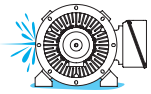
Protection Against Sprays
from all directions.

5



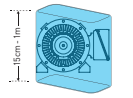
Protected Against Low Pressure
jets of water from all directions.

6



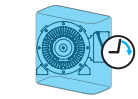
Protected Against Strong Jets
of water from all directions.

7



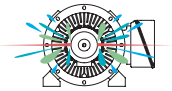
Immersion Up To 1 Metre

8



Protection For LONG PERIODS
of full submersion

9K



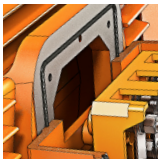
HIGH Pressure and Temperature
protection for wash-down applications.

IP69K Extreme

High-pressure and high-temperature water wash-down applications.

Water Protection : Protected against high pressure and high temperature wash down.

Dust Protection : No Ingress of dust.



Ingress protection features include:

- O-Rings between mated faces
- IP69K breather plugs
- Extreme Shaft Seal® system on DE and NDE (DE being the drive end and NDE the non-drive end).

IP66 MinePak

Water Protection : Protected against heavy seas and strong jets of water from all directions.

Dust Protection : No ingress of dust.

IP55 TruPak

Water Protection : Provides general water resistance from splashes and jets of water.

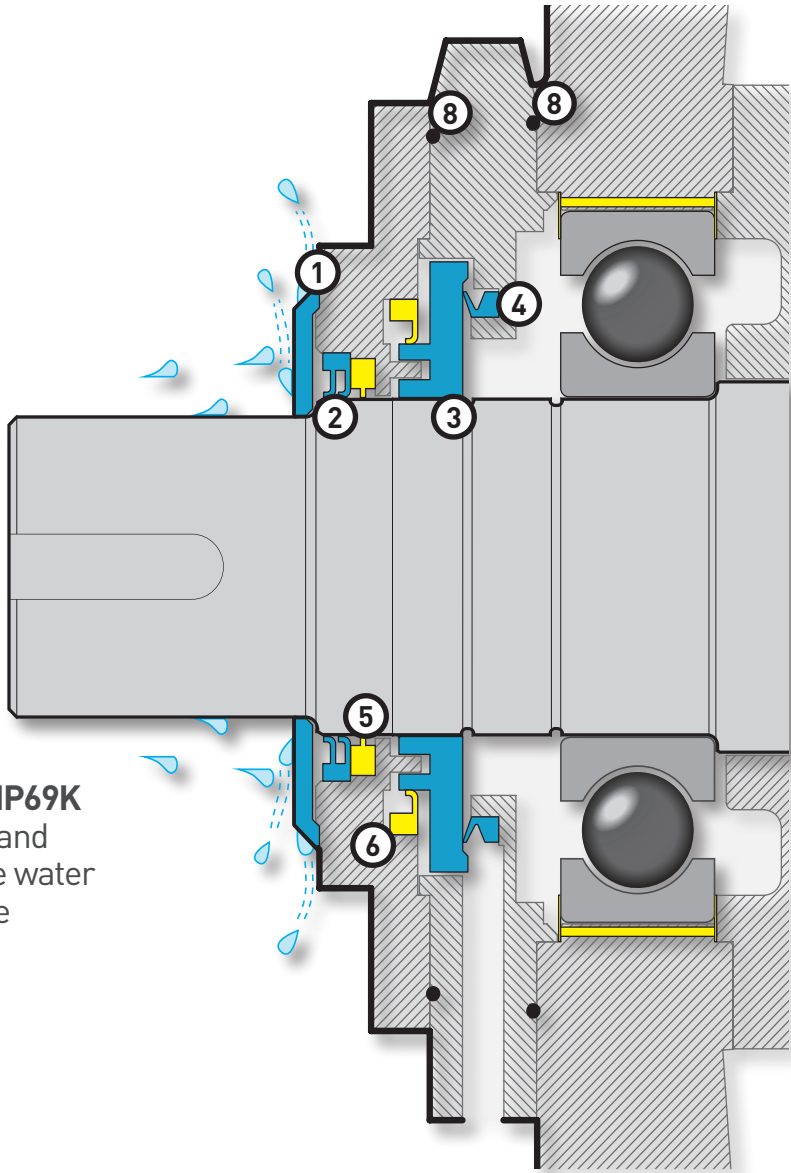
Dust Protection : Limited dust protection.

POPE EXTREME SHAFT SEAL PATENT

MULTIPLE BARRIERS OF PROTECTION

The patented POPE Extreme Shaft Seal includes:

- **Multiple barriers of protection** and **o-ring seals** to stop water and dust from entering the motor, perfect for **harsh and wet conditions.**
- **The Tru-Flush Greasing** system for reliable grease purging of the bearing system.
- **Integrated shaft grounding features** to provide extended life, reliability and protection when used with **speed controllers.**
- Multi-path labyrinth and v-ring seal assembly



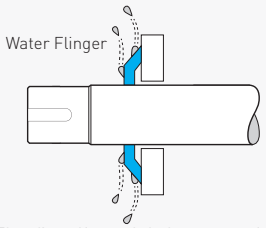
IP69K

POPE Extreme motors are rated to **IP69K water and dust protection** to withstand high pressure and high temperature water wash-down applications and provide complete protection from ingress.

FEATURES

MULTIPLE BARRIERS OF PROTECTION

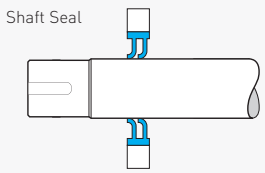
1 Water Flinger
Labyrinth Ingress Shield



The first line of defense against effects of water and debris from entering the motor and bearing housing.

Made from oil and chemical resistant nitrile rubber (HNBR), the flinger is fitted to the shaft shoulder and rotates with the shaft providing a centrifugal force to expel water and debris.

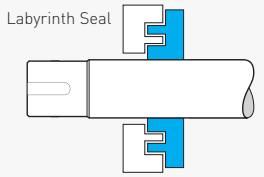
2 Shaft Seals
Dual Lip Low Friction PTFE



The dual lip PTFE (Teflon) shaft seals on both shaft extensions provide superior durability over traditional radial shaft seals.

Stainless steel retainer, low friction, long life, withstands aggressive environments, high pressure, low and high temperatures.

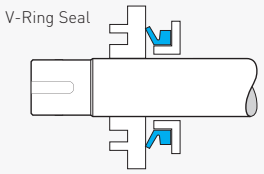
3 Labyrinth Seal
Multi-path and Grease Slinger



An internal rotating non-contact mechanical sealing device with a torturous multi-path labyrinth that provides a centrifugal motion to exclude contaminants.

The opposite side of the seal acts as a slinger to distribute grease around the bearings as part of the Pope Tru-Flush lubrication system.

4 V-Ring Seal
For Grease Purging



In addition to being another ingress barrier, The V-Ring seal also serves the Tru-Flush greasing system by retaining grease and acting as a pressure release valve to expel excess grease to prevent over greasing.

MULTIPLE BARRIERS OF PROTECTION

5 Shaft Grounding
Encapsulated Microfibre

Recommended for larger motors operated from Variable Speed Drives (VFD) to prevent EDM erosion and to extend bearing life.

Used in conjunction with Pope's insulated bearing housing, the system provides a low impedance path to earth to carry high frequency VFD currents away from the bearings.

Designed to last the life of the motor, the microfiber brush is easily integrated into the bearing cover of the electric motor in an encapsulated chamber free from the effects of solvents, grease and other contaminants.

See page 19

6 Protector
Prevents Grease Overflow

This internal PTFE low friction shaft seal acts to prevent grease from interfering with and minimising the positive effect of the shaft grounding ring.

7 Tru-Flush Grease
For Grease Purging

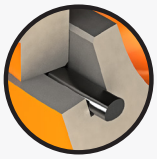
The POPE Tru-Flush® grease system allows for continuous bearing lubrication for extended bearing life.

The motor can be grease purged while it's running without the need to stop production, old grease is discharged through an exhaust chute in the bearing cap and replaced with fresh.

The grease slinger and v-ring seal act to distribute grease and prevent over greasing.

See page 16

8 O-Ring Seals
Contaminant Protection



All external mating components are fitted with O-ring seals compressed between precision machined faces.

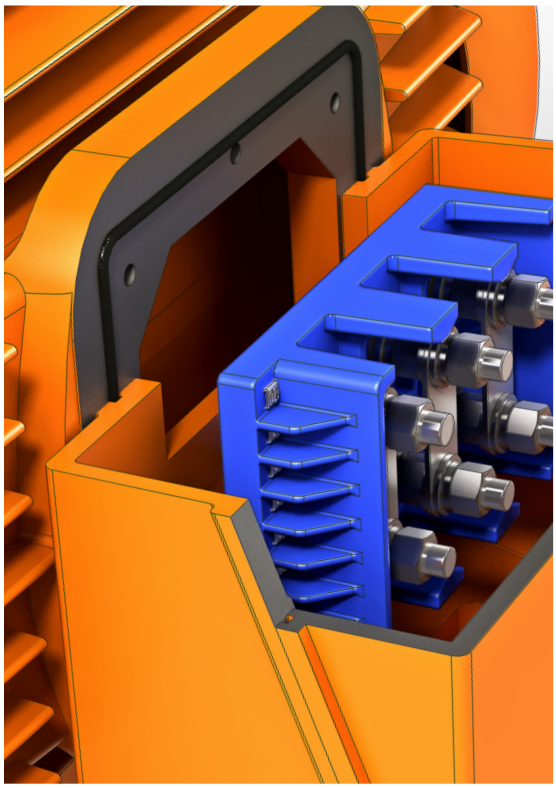
This arrangement provides superior sealing protection against contaminants including dust, water and oil.

Protection - Water and Dust

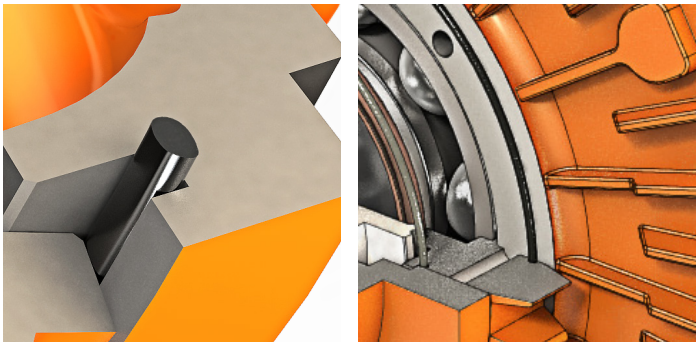
	Extreme IP69K	MinePak IP66	TruPak IP55
Ingress protection ratings (See page 11)	**IP69K**	**IP66**	**IP55**
Extreme Shaft Seal system (See page 12)	✓	Option	Option
Water flinger seal First barrier rubber seal	✓	Option	Option
Teflon shaft seal (PTFE) [Sizes 063-500] Low-friction, long lasting	✓	Option	Option
Labyrinth seal [Sizes 132-500] Multi-path and grease flinger	✓	Option	Option
V-ring seal [Sizes 132-500] For grease purging & additional ingress protection	✓	✓	Option
Outer cover [Sizes 132-500] Required to hold the shaft seal assembly	✓	Option	Option
Nitrile hydrogenated (HNBR) shaft seal Alternative to Teflon shaft seal Outer cover required	-	✓	✓
O-ring seals on machined mating surfaces	✓	✓	-

Protection - O-Ring Seals

	Extreme IP69K	MinePak IP66	TruPak IP55
O-Rings between precision machined surfaces			
End-shields and frame o-rings Drive end (DE) and non-drive end (NDE)	✓	Option	Option
Bearing cap / cover o-rings Drive end (DE) and non-drive end (NDE)	✓	Option	Option
Terminal box base and lid o-rings [Sizes 132-500] Gaskets on other sizes 063-112	✓	✓	✓
Breather plugs o-rings	✓	Option	Option



O-Ring Seals On Terminal Box
And Terminal Box Lid

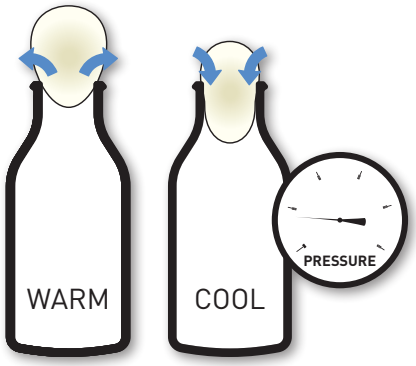


O-Ring Seals On End-shields
And Bearing Caps

FEATURES

Anti-Condensation Control

Extreme IP69K	MinePak IP66	TruPak IP55

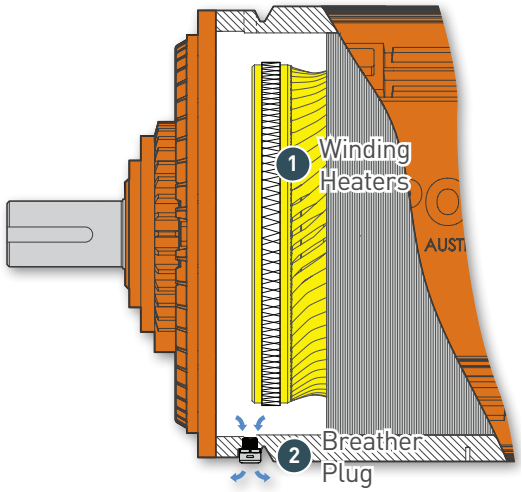


Cause of Condensation
Due To Changes In Temperature

Temperature changes within electric motor enclosures can create vacuum pressures that may contribute to harmful condensation build-up.

All POPE Flexi-Frame motors have recessed mounting pads in the frame that are uniquely designed for the fitment of threaded breather or drain plugs allowing the motors to vent / breathe, contributing to improved motor reliability.

1 Anti-condensation heaters [Sizes 250-500] All other sizes optional	✔	✔	Option
2 IP69K breather plugs [Sizes 160-500] For right mount terminal box All other sizes optional	Option	Option	-
Breather plugs [Sizes 160-500] For right mount terminal box All other sizes optional	-	Option	Option
Winding moisture sensor strips and relay	Option	Option	Option

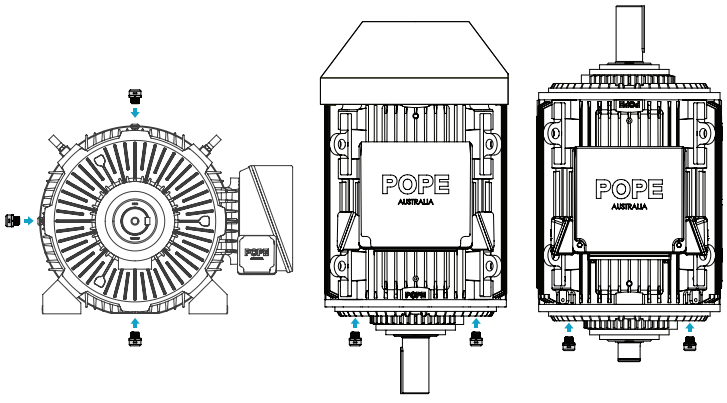


1 Winding Heaters
Anti-Condensation

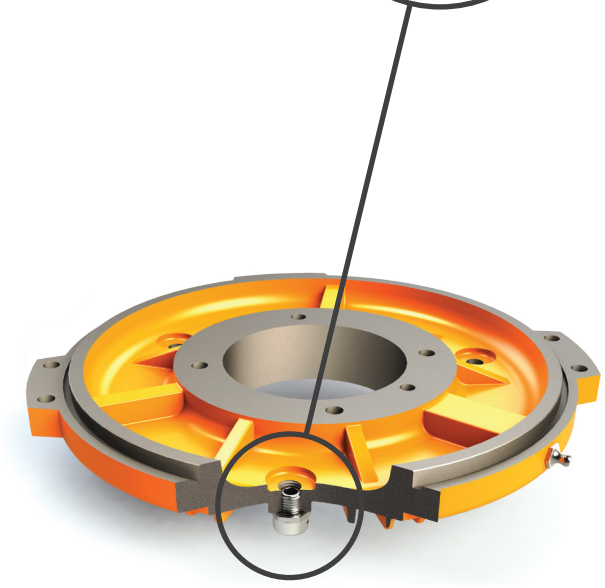
Heaters keep the winding warm when the motor is not in operation minimising the chance of condensation to form.

2 Breather Plug
Regulate Pressure

Breathers relieve pressure buildup within the motor. If pressure is allowed to form, condensation may occur.



Breather Plugs - Location Ready
For All Vertical And Horizontal Mounting Positions



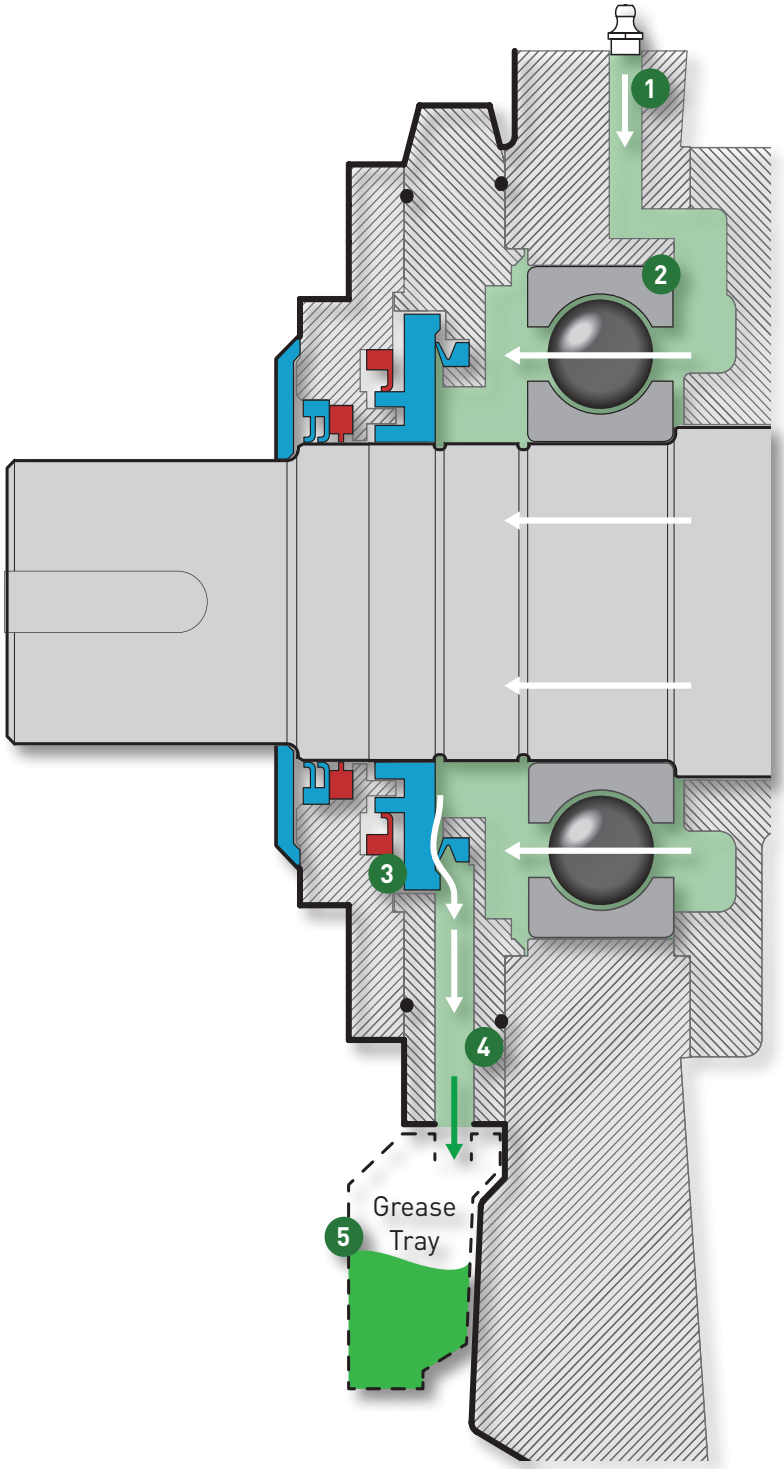
Breather Plug - Location Ready
In Vertical Shaft Up And Down

RELIABLE GREASE PURGING

POPE TRU-FLUSH® GREASE SYSTEM

The POPE **Tru-Flush® Grease system** allows for **continuous bearing lubrication** while the motor is running so you lose no valuable production time. Fresh grease flushes the old grease from the motor and V-Ring seals prevent dust, water and other contaminants from entering the motor.

This unique system means you can lubricate your motor and also **positively discharge old grease while the motor is running**. This contributes to your POPE motor's long, low-maintenance life. The Tru-Flush® system is standard on 132 - 500 motor frames size in the Extreme and MinePak specifications. Frame sizes between 063-112 have sealed for life bearings.



Step 1

GREASE ENTRANCE

Fresh grease entry point.

Step 2

LUBRICATION

High grade lithium grease (-40°C to 180°C)
Fresh grease passes directly through the bearing for optimum lubrication.

Step 3

EFFECTIVE VOLUME

The rotating grease slinger maintains a consistent purging of excessive grease. The optimum amount of grease is kept in the bearing chamber and excess grease is expelled automatically.

Step 4

GREASE EXITS

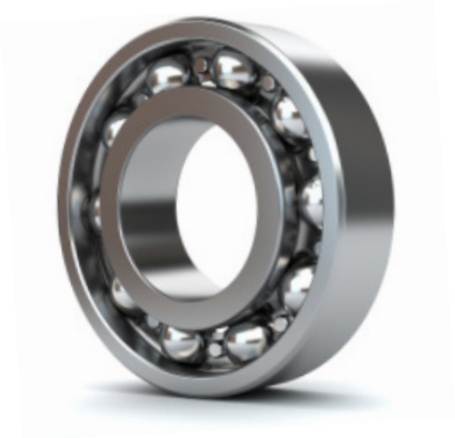
Grease then exits the bearing chamber via the grease exhaust chute.

Step 5

GREASE TRAY

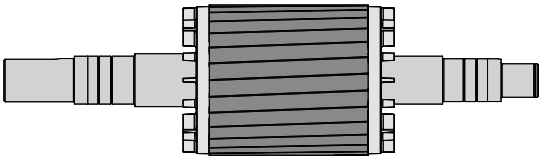
Excess grease is disposed in the optional POPE grease tray (option).

Bearings and Lubrication



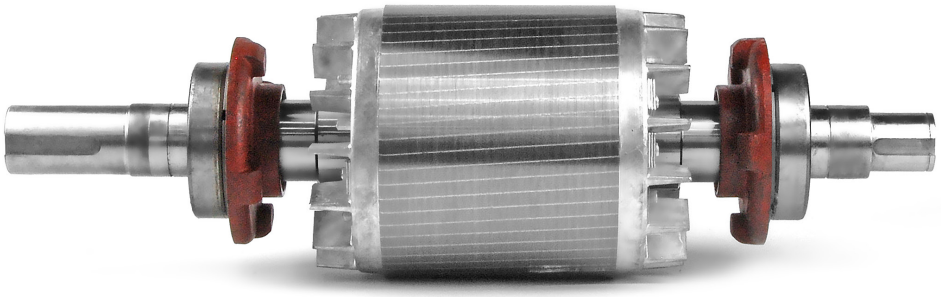
	Extreme IP69K	MinePak IP66	TruPak IP55
Lubrication			
POPE Tru-Flush Greasing [Sizes 132-500]	✓	✓	Option
High grade lithium grease -30°C to 180°C [Sizes 132-500]	✓	✓	✓
High grade lithium grease -30°C to 120°C [Sizes 063-112]	✓	✓	✓
Grease exhaust chute [Sizes 132-500]	✓	✓	Option
Grease tray [Sizes 132-500]	Option	Option	Option
Food grade lubrication	Option	Option	Option
Bearings and Vibration Sensor Points			
Bearing temperature RTD sensors	See page 23		
Oversize drive end (DE) bearing and shaft	Option	Option	Option
Vibration sensor mounting points [Sizes 250-500] Both end-shields spot face and tapped M8 x 1.25 Suitable for MEPA-10 stud Other frame sizes and sensor types optional	✓	✓	Option

Shaft, Stator and Rotor



Shaft And Rotor

	Extreme IP69K	MinePak IP66	TruPak IP55
High grade steel rotor and stator laminations	✓	✓	✓
High grade cast alloy rotor bars	✓	✓	✓
Copper rotor bars	Option	Option	Option
Drive end (DE) shaft drilled and tapped	✓	✓	✓
Stainless steel shaft	Option	Option	Option
Oversized shaft and bearing	Option	Option	Option
Special and double shaft extension	Option	Option	Option
Dynamic rotor balancing (ISO 1940-1:2003)	✓	✓	✓
External cooling fan balanced separately	✓	✓	✓



Pope Electric Motor
Shaft, Rotor, Bearings And Inner Bearing Caps

Winding

	Extreme IP69K	MinePak IP66	TruPak IP55
Inverter duty ready	✔	✔	✔
Winding insulation class	H	H	F
Vacuum pressure impregnation varnish (VPI)	✔	✔	✔
VF220, Super spike resistant wire (220°C) High temp winding wire rated to 220°C to ANSI 1000-2014	Option	Option	Option
Winding temperature RTD sensors	See page 23		
PTC thermistors	See page 23		
Winding moisture sensor strips and relay	Option	Option	Option

Spike Resistant Winding Wire
With VPI Varnish

All POPE Electric Motors come with spike resistance winding wire with VPI varnish.

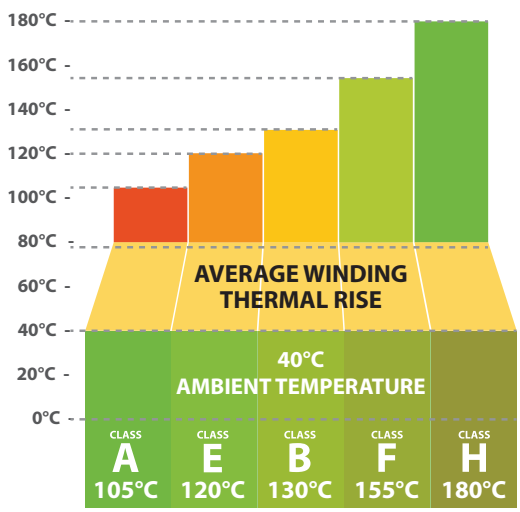
Vacuum Pressure Impregnation Varnish (VPI Varnish)

VPI Tank
Vacuum Pressure Impregnation

All POPE motors use VPI which results in a robust insulation with improved temperature, structure and efficiency. VPI promotes increased winding life for both DOL/VFD operation.

- VPI seals physical voids / air pockets
- Excludes moisture / condensation / ingress and corrosion
- Minimises the effects of Dv/Dt from VFDs and the resultant partial discharge erosion
- Increases mechanical strength and provides protection from vibration and starting torque pulses
- Improves thermal conductance and endurance

Large Thermal Reserve for Long Life



Temperature Rise
Based On Insulation Class

Class H (180ºC) Insulation

Extreme and MinePak Motors:

- Generous thermal reserve permits intermittent overload
- Winding insulation rated to a temperature of 180ºC
- Improved performance for variable speed drives

Class F (155ºC) Insulation

TruPak Motor:

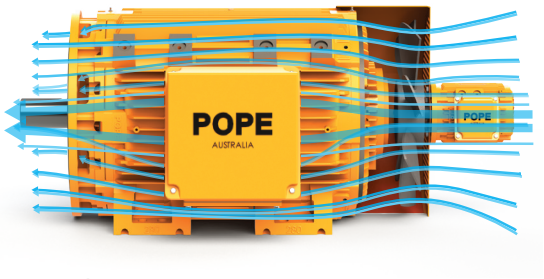
- Commonly found in high end industrial motors
- Winding insulation rated to a temperature of 155ºC

Variable Speed / Inverter Duty (VFD)

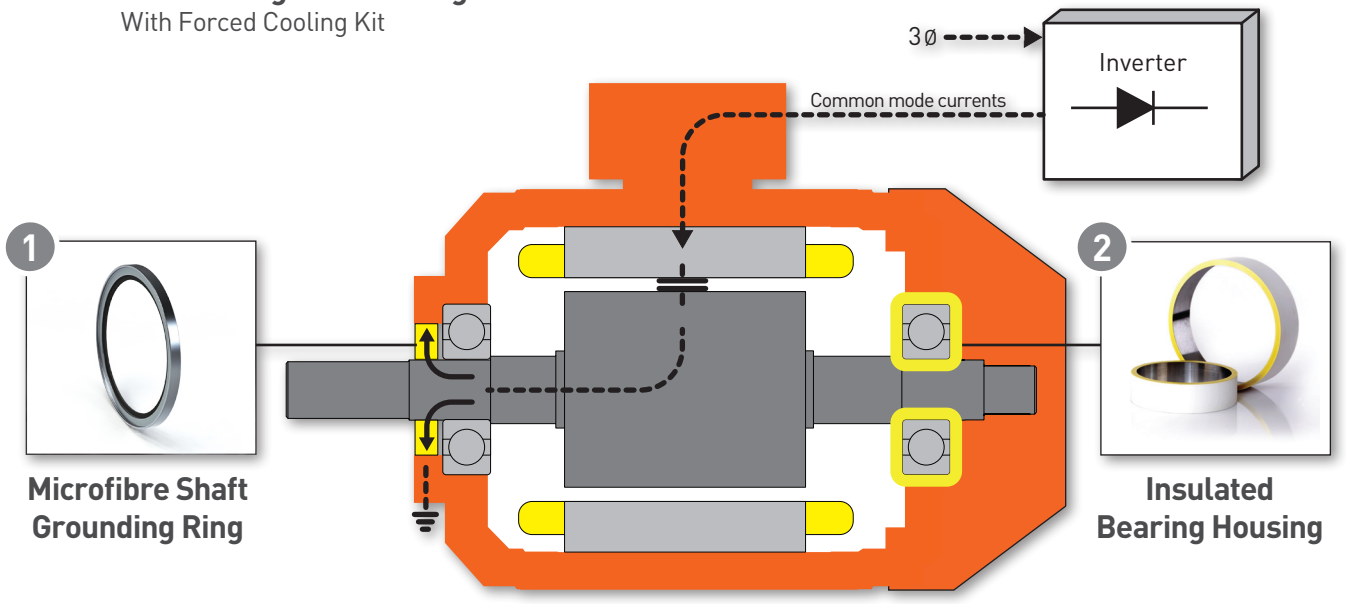
VFDs allow POPE Electric Motors to operate at varying speeds however VFDs may lead to side effects.

POPE Flexi-Frame motors are designed from the ground up to provide a **complete integrated solution** for reliable VFD operation including inverter duty windings and easy to fit VFD features.

	Extreme IP69K	MinePak IP66	TruPak IP55
1 Microfibre shaft grounding ring	Option	Option	Option
2 Insulated bearing housing [Sizes 315-500]	✓	Option	Option
Insulated bearing housing [Sizes 132-280]	Option	Option	Option
Insulated bearing	Option	Option	Option
Inverter duty winding	✓	✓	✓
VF220 super inverter duty winding wire High temp winding wire rated to 220°C to ANSI 1000-2014	Option	Option	Option
Vacuum pressure impregnation winding varnish	✓	✓	✓
Forced cooling fan	Option	Option	Option
Carbon shaft grounding brush Alternative to the microfibre shaft grounding	Option	Option	Option

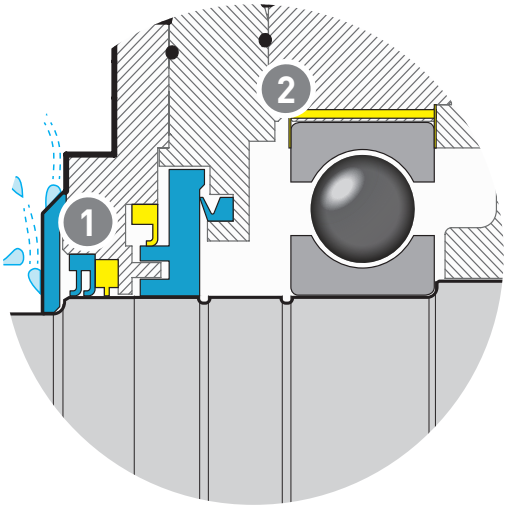


Airflow Maximising Frame Design
With Forced Cooling Kit



Microfibre Shaft Grounding Ring

Insulated Bearing Housing



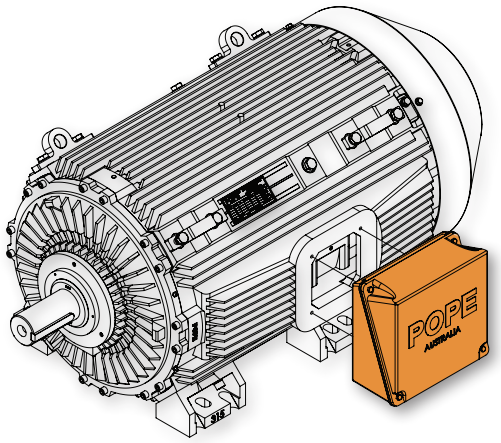
Comprehensive VFD Integration Solution (Patented)

The shaft grounding ring and insulated bearing housing provides a low impedance path for high frequency VFD common mode currents to travel away from bearings to minimise EDM erosion.

Terminal Box Features

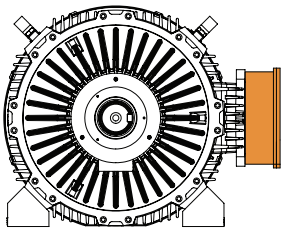
	Extreme IP69K	MinePak IP66	TruPak IP55

POPE Flexi-Frame system allows for **numerous terminal box types and positions** to suit the vast majority of all installations and applications.

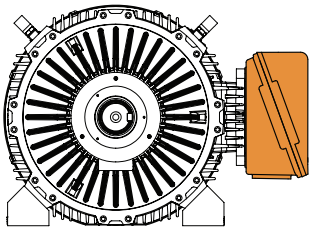


Dimensions see page 46-47

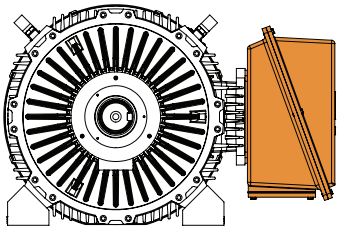
Oversize terminal box	See page 46-47		
Adjustable position (90° increments)	✓	✓	✓
Captive screws in terminal box lid	✓	Option	Option
Hinges and handles for lid	Option	Option	Option
Auxiliary terminal boxes	See page 22-23		
Low profile terminal box	See page 46-47		
Pre-machined gland plates options	See page 46-47		



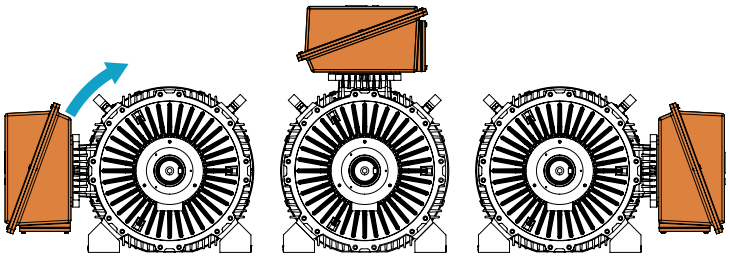
Low Profile Terminal Box



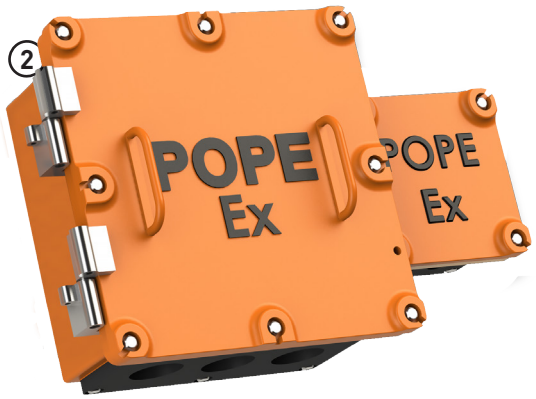
Standard Terminal Box



Oversize Terminal Box



Bolt On Feet Allow Left, Right Or Top Mount
Terminal Box Positions



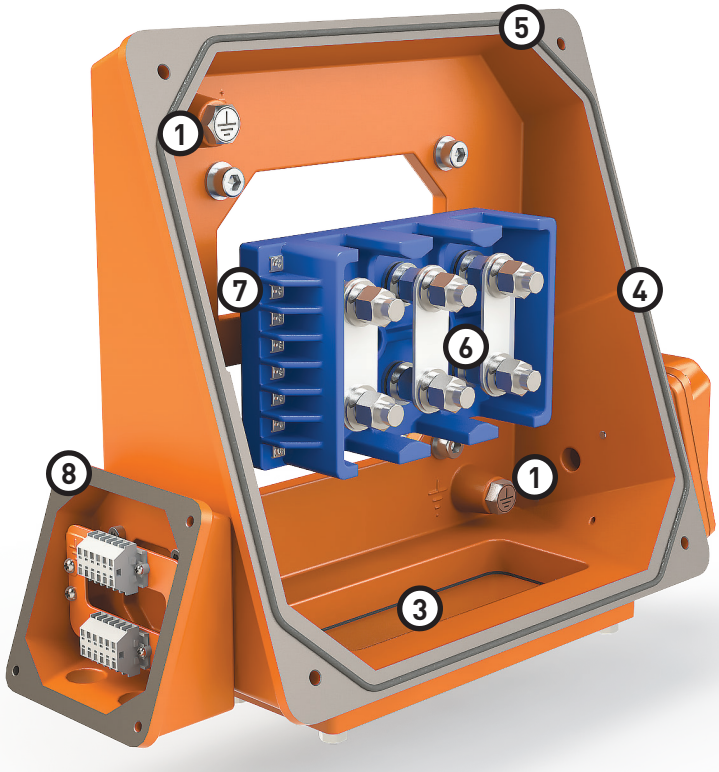
IEC-Ex Hazardous Area Terminal Box
With Auxiliary Box, Hinges And Handles

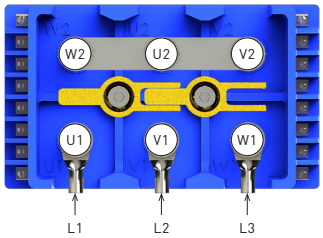
FEATURES

Terminal Box

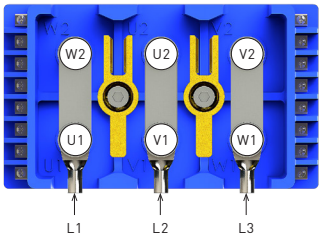
	Extreme IP69K	MinePak IP66	TruPak IP55
Main Terminal Box			
① 2 x raised earth points [Sizes 250-500]	✓	✓	✓
① 1 x raised earth point [Sizes 063-225]	✓	✓	✓
② Hinges on lid	Option	Option	Option
③ Pre-drilled gland plate	See page 46-47		
④ Angled box for easy terminal access	✓	✓	✓
⑤ O-ring seals all mating faces [Sizes 132-500]	✓	✓	✓
⑤ Gaskets on all mating faces [Sizes 063-112]	✓	✓	✓
⑥ CTI-600 rated terminal block High electrical safety margin and mechanical strength	✓	✓	✓
⑦ Auxiliary connections on terminal block	✓	✓	✓
⑧ Auxiliary terminal box	See page 22-23		

Standard Terminal Box
With 2 Auxiliary Boxes

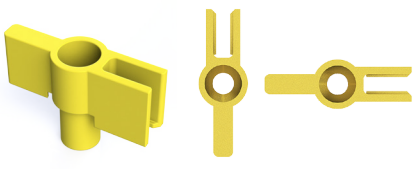




Star Connection (Y)
0.18kW To 3kW
Star Y at 380-480 Volts
(or Delta at 240V 3-Phase)



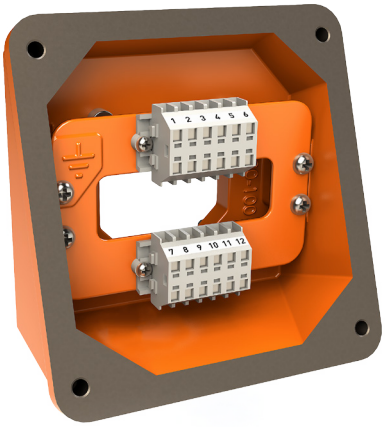
Delta Connection (Δ)
4kW and Above
Delta Δ at 380-480 Volts
(or Star at 660-725 Volts)



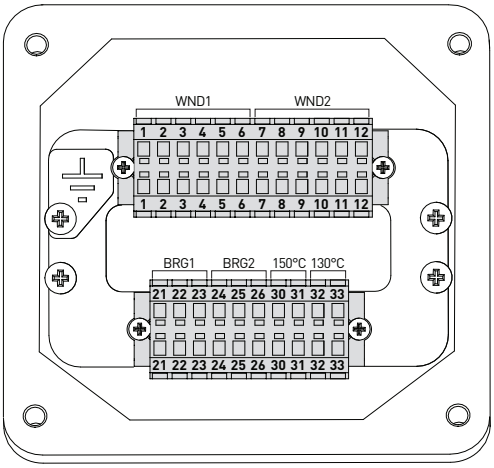
800-1250V Phase Barriers
Clip in Option

Auxiliary Terminal Boxes

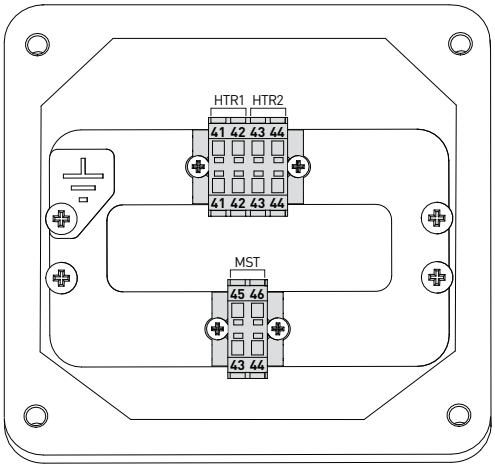
	Extreme IP69K	MinePak IP66	TruPak IP55



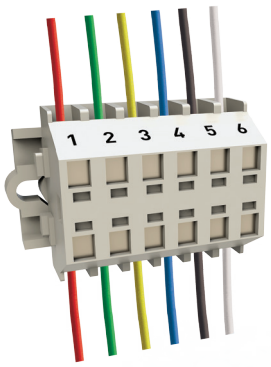
Auxiliary Terminal Boxes			
1 x raised earth point	✔	✔	✔
Hinges on lid	Option	Option	Option
Pre-drilled conduit entries	✔	✔	✔
Removable gland plate (drilled or undrilled)	Option	Option	Option
Easy connect push In terminals (screw-in optional)	✔	✔	✔
Angled box for easy terminal access	✔	✔	✔



Auxiliary Box 1
315 Frame Pope Extreme Model
Example Wiring Diagram



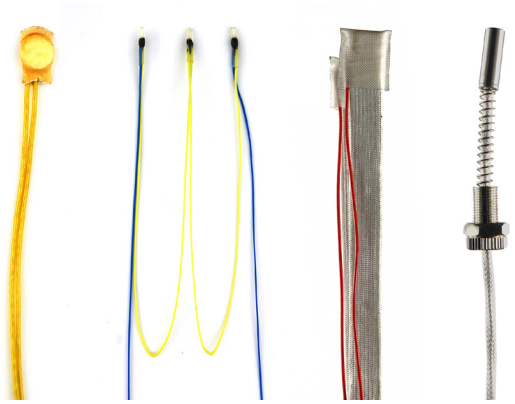
Auxiliary Box 2
315 Frame Pope Extreme Model
Example Wiring Diagram



Easy Connect Push In Terminals

Auxiliary Wiring Termination Labels 315 Frame Pope Extreme Model Example		
Auxiliary Box 1		**Wire Locations**
WND1	Winding RTD set 1 (set of 3)	1, 2, 3, 4, 5, 6
WND2	Winding RTD set 2 (set of 3)	7, 8, 9, 10, 11, 12
BRG1	Bearing RTD drive end (DE)	21, 22, 23
BRG2	Bearing RTD non-drive end (NDE)	24, 25, 26
150°C	Thermistor set 1 (150°C)	30, 31
130°C	Thermistor set 2 (130°C)	32, 33
VIB1	Vibration sensor DE	33, 34, 35
VIB2	Vibration sensor NDE	36, 37, 38
Auxiliary Box 2		**Wire Locations**
HTR1	Anti-condensation heaters DE 240VAC	41, 42
HTR2	Anti-condensation heaters NDE 240VAC	43, 44
MST	Moisture sensor	45, 46

Sensors and Heaters



	Extreme IP69K	MinePak IP66	TruPak IP55
Bearing RTDs fitted to inner bearing cap (Set of 2) Drive end (DE) and Non-drive end (NDE)	See chart below		
Winding RTDs (Set of 3)			
Anti-condensation heaters			
PTC Thermistors			
Auxiliary terminal box for heaters			
Auxiliary terminal box for thermistors and RTDs			
Vibration sensor mounting points [Sizes 250-500] Both end-shields spot face and tapped M8 x 1.25 Suitable for MEPA-10 stud. Other frame sizes and sensor types optional	✔	✔	Option
Vibration sensors inside or outside frame	Option	Option	Option
Thermally operated bimetallic switches	Option	Option	Option
Winding moisture sensor strips and relay	Option	Option	Option

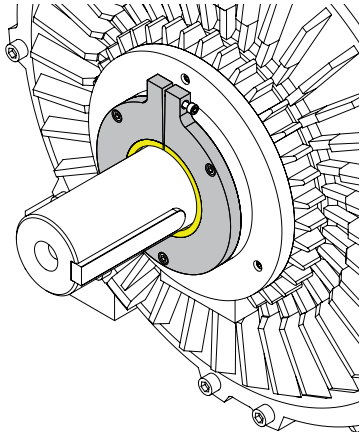
PT100 RTD - Resistance temperature detector, Set of 3, embedded in each winding
PTC Thermistor - Positive temperature coefficient thermistor, Set of 3, embedded in each winding

Default Sensors and Heaters for Motor Specifications

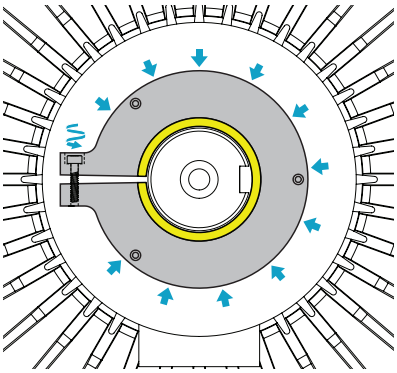
Frame Size	Extreme	MinePak	TruPak
063 071 080 090 100 112	**Motor Sizes 063-112** **Main Terminal Box** 1 x Thermistor Set 150°C	**Motor Sizes 063-112** **Main Terminal Box** 1 x Thermistor Set 150°C	**Motor Sizes 063-500** **Main Terminal Box** 1 x Thermistor Set 130°C
132 160 180 200 225	**Motor Sizes 132-225** **Main Terminal Box** 1 x Thermistor Set 150°C 1 x Thermistor Set 130°C	**Motor Sizes 132-225** **Main Terminal Box** 1 x Thermistor Set 150°C 1 x Thermistor Set 130°C	
250 280	**Motor Sizes 250-280** **Auxiliary Box 1** 2 x Winding RTD Set 1 x Thermistor Set 150°C 1 x Thermistor Set 130°C **Auxiliary Box 2** 2 x Anti-Condensate Heaters 240VAC	**Motor Sizes 250-280** **Auxiliary Box 1** 1 x Thermistor Set 150°C 1 x Thermistor Set 130°C **Auxiliary Box 2** 2 x Anti-Condensate Heaters 240VAC	
315 355 400 450 500	**Motor Sizes 315-500** **Auxiliary Box 1** 1 x Bearing RTD Set 2 x Winding RTD Set 1 x Thermistor Set 150°C 1 x Thermistor Set 130°C **Auxiliary Box 2** 2 x Anti-Condensate Heaters 240VAC	**Motor Sizes 315-500** **Auxiliary Box 1** 1 x Bearing RTD Set 1 x Winding RTD Set 1 x Thermistor Set 150°C 1 x Thermistor Set 130°C **Auxiliary Box 2** 2 x Anti-Condensate Heaters 240VAC	

Transport Bearing Protection

	Extreme IP69K	MinePak IP66	TruPak IP55



Flexi-Clamp Transport Clamp
Integrated Design



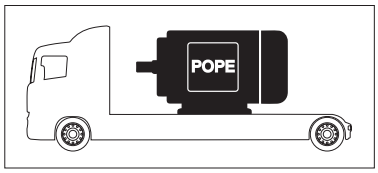
Non-metal sacrificial insert prevents shaft damage if clamp is accidentally engaged when motor starts

Motors 160-500 are fitted with a standard shaft locking clamp to minimise the effects of false brinelling of bearings during transport and storage.

The POPE Flexi-Clamp option fits to the DE bearing cap, it clamps the shaft during transport and remains with the motor for reuse when unclamped.

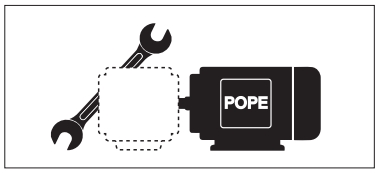
Standard transport clamp [Sizes 160-500]	✓	✓	✓
Flexi-Clamp transport clamp	Option	Option	Option

Flexi-Clamp Transport Clamp
Integrated Design

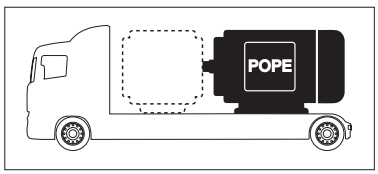


Delivery
The Flexi-Clamp is permanently attached to the motor and can be engaged or disengaged when required.

During transport the Flexi-Clamp is engaged.



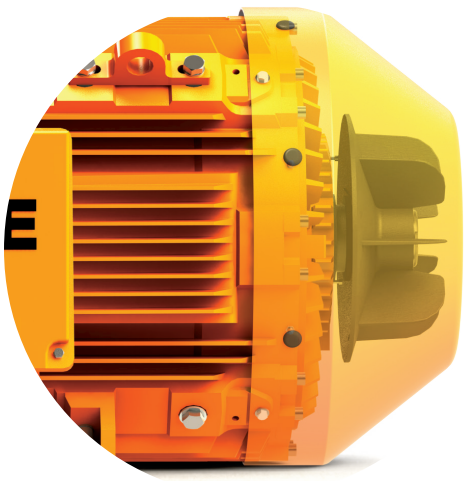
Installation and Testing
The Flexi-Clamp can be disengaged without being removed from the motor shaft.



Re-Ship with Motor Fitted to Equipment
When the complete assembly requires transport, the Flexi-Clamp can then be re-engaged.

Fan and Fan Cowl

	Extreme IP69K	MinePak IP66	TruPak IP55

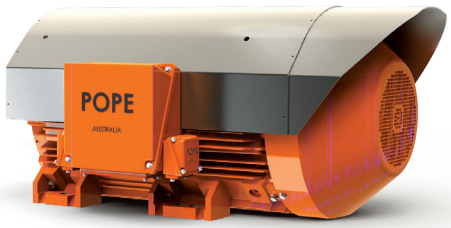


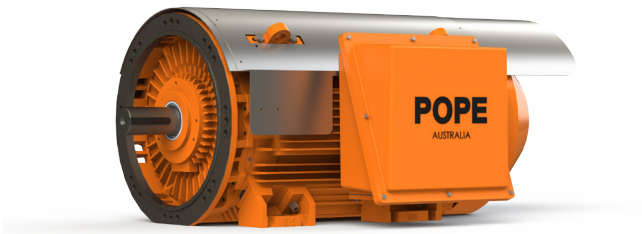
Fan			
Heavy duty steel / cast iron fan	✓	✓	Option
Glass fibre reinforced polypropylene fan	Option	Option	✓
3D design airflow analysis	✓	✓	✓

Fan Cowl			
Conical low noise fan cowl	✓	✓	✓
3 mm thick steel fan cowl [Sizes 250-500]	✓	✓	-
2.5 mm thick steel fan cowl [Sizes 160-225]	✓	✓	-
2 mm thick steel fan cowl [Sizes 063-132]	✓	✓	-
1.2 mm thick steel fan cowl	-	-	✓

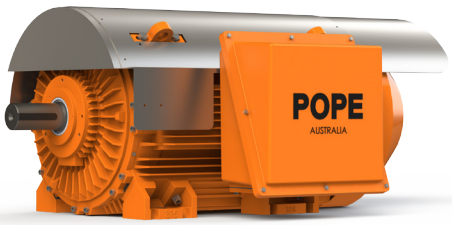
Protection - Guards

	Extreme IP69K	MinePak IP66	TruPak IP55
Coal guard (Sun and debris protection cover)	Option	Option	Option
Coal guard 3-piece assembly	Option	Option	Option
Rain hood (for vertical shaft down)	Option	Option	Option
Drive end (DE) airflow enhancer	Option	Option	Option





2-Piece Coal Guard
For Flange Mount



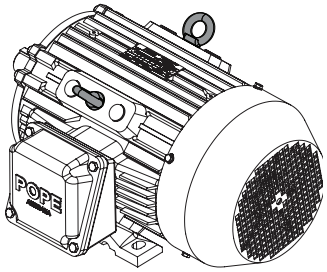
3-Piece Coal Guard
With Airflow Enhancer

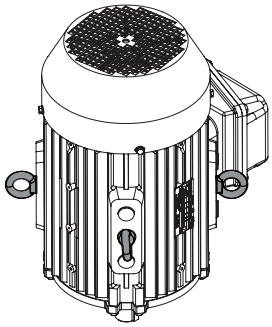
Safe Lifting

	Extreme IP69K	MinePak IP66	TruPak IP55
Standard eye bolts [Sizes 080-200]	✓	✓	✓
POPE heavy duty lifting eyes [Sizes 225-500]	✓	✓	✓
Multiple lifting points for vertical shaft (up/down)	✓	✓	✓
4 x lifting points for horizontal or vertical	✓	✓	✓

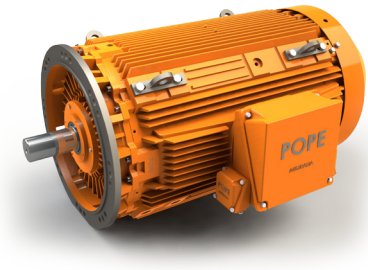
POPE Heavy Duty
Lifting Eyes

Standard
Eye Bolt





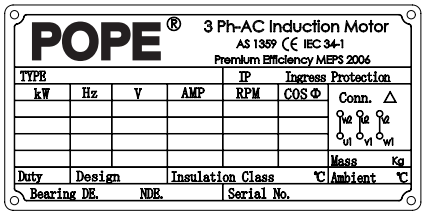
Multiple Lifting Points
For Horizontal And Vertical Lifting



POPE Heavy Duty Lifting Eyes
With Multiple Lifting Points

Fasteners, Nameplates and Paint

	Extreme IP69K	MinePak IP66	TruPak IP55
Fasteners and Nameplates			
External fasteners - 316 stainless steel	✓	Option	Option
Fasteners - plated steel	-	✓	✓
Nameplate - 316 stainless steel (SS)	✓	✓	✓
Nameplate - SS auxiliary heaters warning	✓	✓	✓
Nameplate - SS thermistors and RTDs warning	✓	✓	✓
Paint			
High build primer & 2-pack paint	✓	Option	Option
Zinc primer, enamel coat	-	✓	✓



Stainless Steel Nameplate

Low Voltage
RAL 2011 Deep Orange
(AS2700 X15 Orange)

RGB: 236-124-038
HEX: #C7C26

Medium Voltage (1000V)
RAL 5017 Traffic Blue
(AS2700 B24 Harbour Blue)

RGB: 0-90-140
HEX: #005A8C

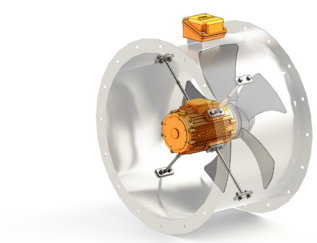
Food Application
RAL 9016 Traffic White
(AS2700 N14 White)

RGB: 240-241-234
HEX: #F0F1EA

Pad Mount Motor

Adjustable pad mount kits for the POPE Flexi-Frame motor. The mounting kits are designed for applications where the motor is mounted in an air stream.

	Extreme IP69K	MinePak IP66	TruPak IP55
Adjustable Pad Mount Kit			
4 x support arms (or custom)	✓	✓	✓
Stainless steel components	Option	Option	Option
Cooling tower specification	✓	Option	Option



Fan Mount

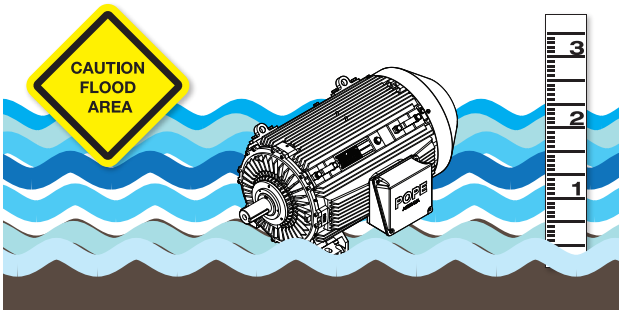
Cooling Tower Specification

IP67 FloodPak Motor

FloodPak Motor

Designed to survive temporary flooding of up to 2 metres, the POPE FloodPak motor is ideal for critical supply installations that may be subject to; heavy seas, cyclonic conditions, low lying flood zones and locations that may be affected by broken pipes.

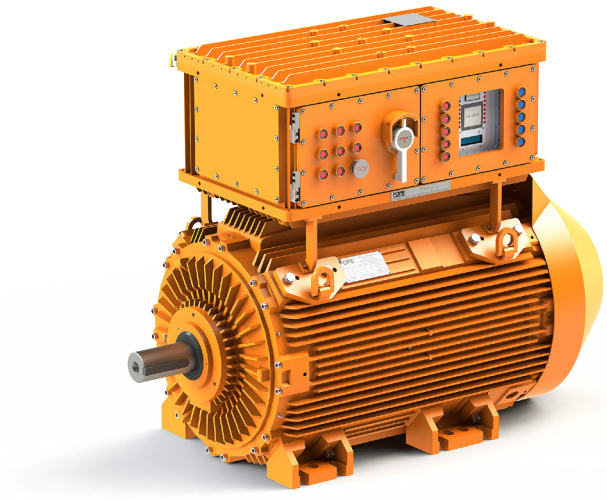
IP67 immersible	✔
Moisture sensors In terminal box, drive end (DE) and non-drive end (NDE)	✔
Anti-condensation heaters DE and NDE	✔



POPE IP67 FloodPak
For Flood Prone areas

StarterPak Integral Mount Starter

StarterPak Motor



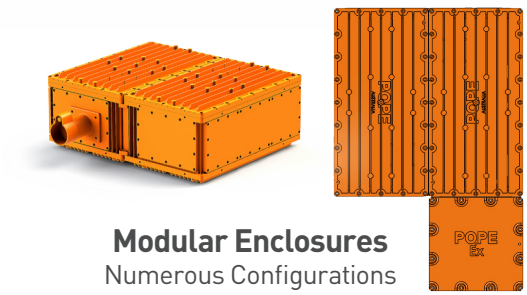
The POPE StarterPak includes a uniquely modular heavy duty cast iron enclosure securely mounted and connected to the motor or wall mounted.

Standard control configurations or designed to suit your requirements. The StarterPak enclosure(s) can be mounted as a separate starter box or combined to form a modular switchboard.

Each package includes a choice of fully functional:

- Star / delta, DOL, Soft start or VFD
- Motor and starter protection
- Low voltage transformer and control circuit
- Main circuit breaker with through door lockable handle.

Available in IP69k wash-down, IP66 or IP55.

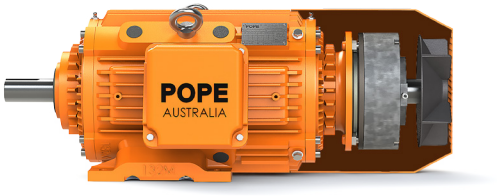


Modular Enclosures
Numerous Configurations

StarterPak	
Modular and rectangle / cube enclosure design Permits for numerous configurations with finned, flat or open sides	✔
Extreme duty lifting eyes	✔
Gas struts on doors / lid	Option
Hinged and lockable doors	Option
Windowed door with custom LED indicator strips	Option
Hazardous Area IEC Ex'd', Ex'e', Ex'n', Ex't' Certification Pending	Option

BrakePak Brake Motor

BrakePak Motor

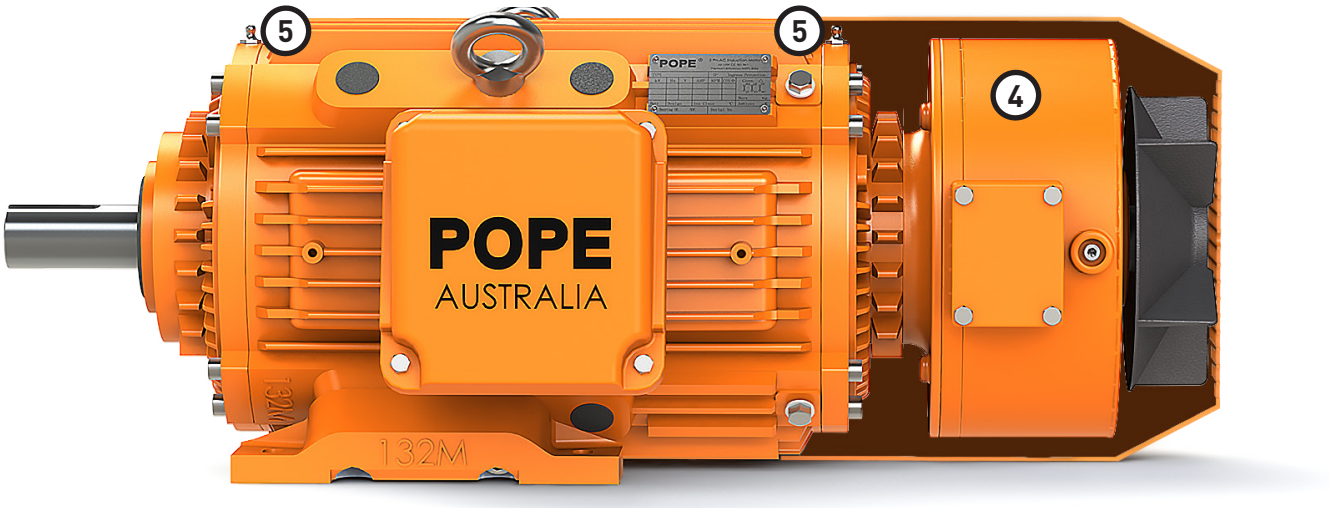


Brakepak IP55
Section View

The BrakePak motor features a modular electromagnetic failsafe DC brake kit suitable for all POPE Flexi-Frame models 63-315 frame.

Available in IP69K, IP66 and IP55. The BrakePak motors are suitable for cranes, conveyors, winches, safety gates, etc. For mining, oil and gas and industrial industries.

BrakePak Motor With Independent Terminal Box
And Manual Release

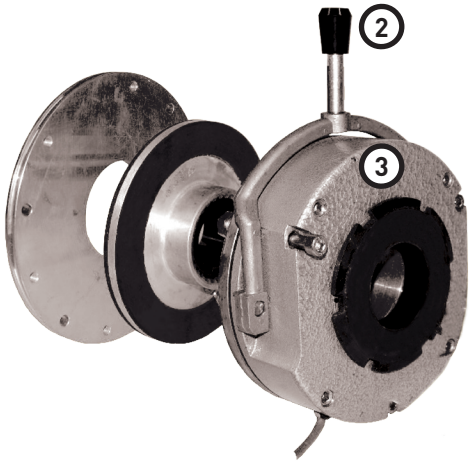


BrakePak IP69K
Section View

FEATURES

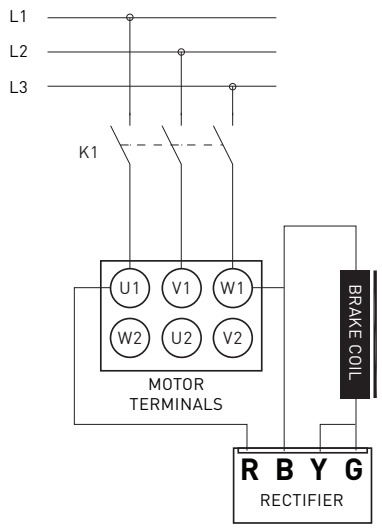
BrakePak Brake Motor

	Extreme IP69K	MinePak IP66	TruPak IP55
BrakePak Motor (See page 32-41 for Brake Data)			
0.12kW to 280kW	✓	✓	✓
Ingress protection rating	**IP69K**	**IP66**	**IP55**
① Independant terminal box For brake connection termination	Option	Option	Option
② Manual release mechanism	Option	Option	Option
③ Heavy duty spring applied failsafe brake	✓	✓	✓
Electrically encapsulated class H brake coil Class H brake coil winding insulation rated to 180°C	✓	✓	✓
④ IP69K brake protect enclosure	✓	Option	-
⑤ Tru-Flush Grease lubrication (Sizes 132 - 500) Drive end (DE) and non-drive end (NDE)	✓	Option	-
Fast acting AC-DC rectifier	✓	✓	✓

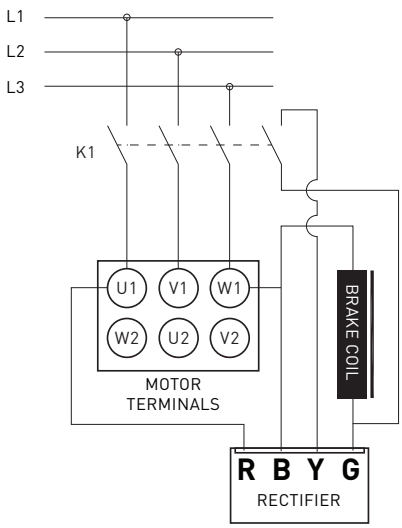


Brake Magnet Assembly
Electrically Encapsulated Coil

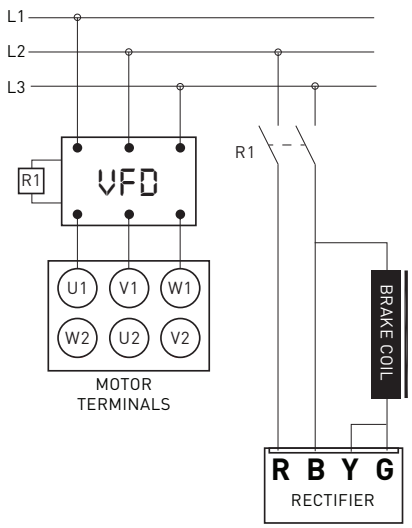
BrakePak Motor Wiring Diagrams



Standard



Fast Acting Side Switch



Variable Speed Switching

TECHNICAL AND FEATURES COMPARISON

High Voltage Motor

	Extreme IP69K	MinePak IP66	TruPak IP55

POPE Australia offers a comprehensive range of large capacity medium and high voltage electric motors for mining and industrial applications with enclosure types TEFC, CACA, CACW, ODP and IEC-Ex Hazardous Area.

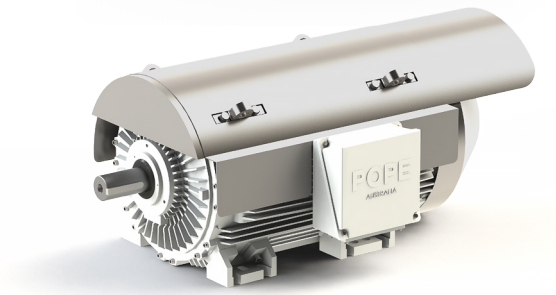
High Voltage Motors			
Rated up to 5000kW	✔	✔	✔
Class H insulation	✔	✔	Option
Tru-Flush Greasing system	✔	✔	✔
Extreme Shaft Seal® system	✔	Option	Option

FoodPak™ Food Equipment Motor

FoodPak Motor

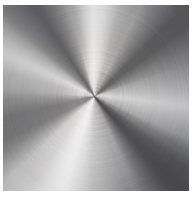
The POPE FoodPak™ food grade electric motor combines high performance, high-ingress capability with features specifically designed to meet the unique needs of your food and beverage application.

Food grade lubrication	✔
Tru-Flush Grease and grease trap [Sizes 132-500]	Option
IP69K high pressure washdown	✔
PTFE seals with stainless steel retainer	✔
Stainless steel hygiene guard	Option
Stainless steel fasteners	✔
Stainless steel fan cowl	✔
Stainless steel nameplate	✔
Brake motor available	Option
2-pack paint	✔



Stainless Steel Hygiene Guard

IP69k Washdown



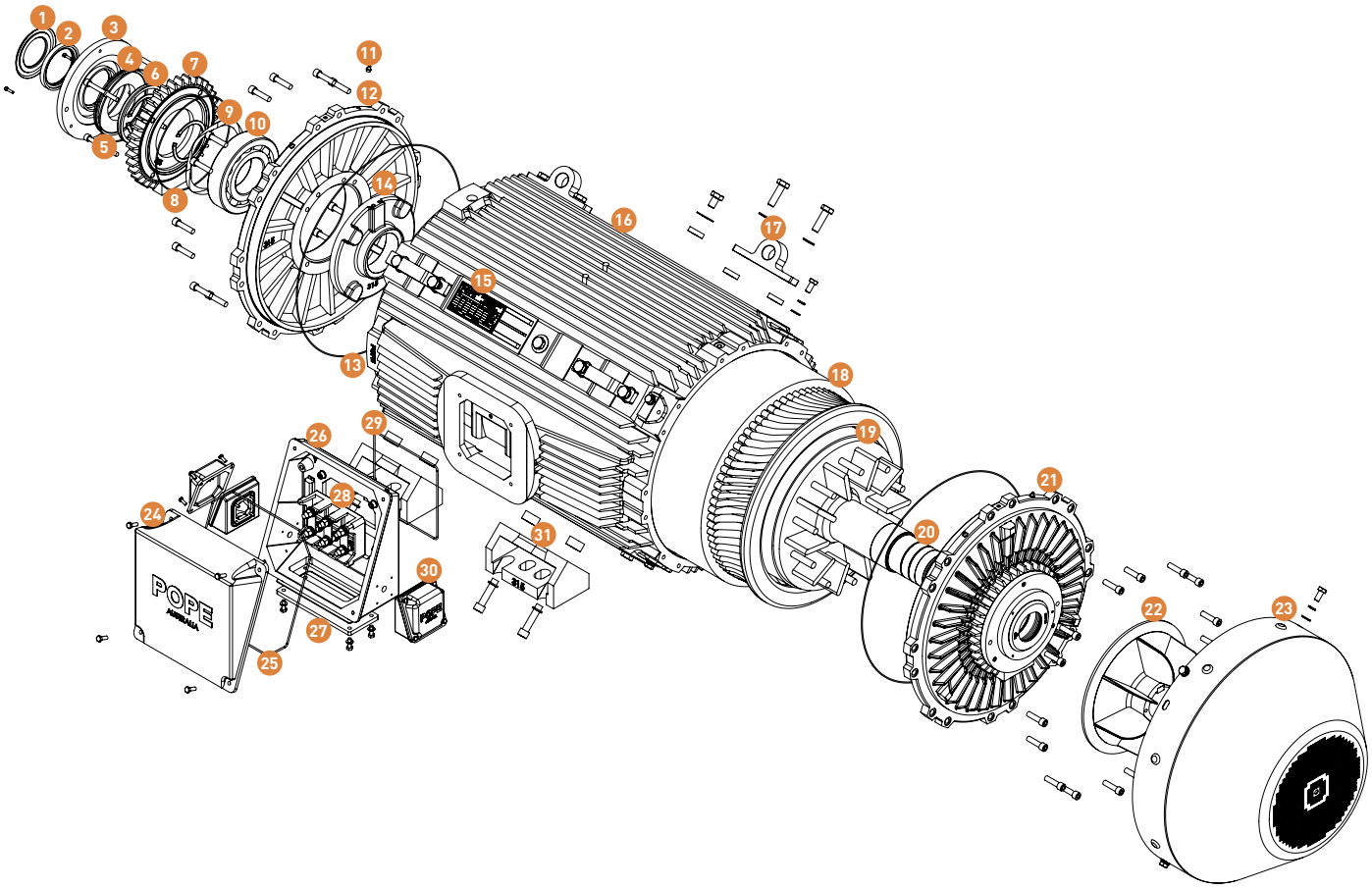
Stainless Steel Parts

Food Grade Lubrication

EXPLODED VIEW

PART IDENTIFICATION

Pictured below is a POPE Extreme 315L Motor. The components found in your POPE motor can vary by model & size however they will always follow a similar configuration to the general assembly pictured below. Please use this exploded view drawing as a guide only.



01 Water flinger seal
02 Teflon shaft seal (PTFE)
03 Outer cover
04 Labyrinth seal / grease slinger
05 O-ring seal on outer cover
06 V-ring seal
07 Outer bearing cap
08 O-ring seal on bearing cap
09 Wave washer
10 Bearing
11 Grease nipple
12 Endshield (DE)
13 O-ring seal on endshields
14 Inner bearing cap
15 Nameplate
16 Motor frame
17 Lifting eye
18 Stator
19 Rotor
20 Shaft
21 Endshield (NDE)
22 Fan
23 Fan cover
24 Terminal box lid
25 O-ring seal on terminal box lid
26 Terminal box body
27 Terminal box gland plate
28 Terminal block
29 O-ring seal on terminal box body
30 Auxiliary terminal box
31 Foot (Removable)

PERFORMANCE DATA

50HZ

General						Current									Efficiency		
Output		Poles	Speed	Frame Size	Shaft Size	415 Volts			400 Volts			380 Volts			100% Load	75% Load	50% Load
						F.L.	N.L.	L.R.	F.L.	N.L.	L.R.	F.L.	N.L.	L.R.			
kW	hp	#	RPM		mm	Amps			Amps			Amps			%		
0.06	0.08	8	630	063-11	11	0.28	0.22	0.7	0.29	0.21	0.7	0.31	0.25	0.8	50.0	47.4	42.6
0.09	0.12	8	630	071-14	14	0.42	0.33	1.2	0.43	0.31	1.1	0.45	0.36	1.2	50.0	47.5	42.5
0.12	0.1	4	1323	063-11	11	0.41	0.29	1.2	0.43	0.27	1.2	0.44	0.28	1.2	57.7	57.3	51.4
0.12	0.1	6	831	063-11	11	0.50	0.38	1.2	0.52	0.35	1.1	0.54	0.36	1.1	50.5	50.1	44.3
0.12	0.1	8	630	071-14	14	0.51	0.43	1.3	0.53	0.42	1.2	0.56	0.45	1.4	54.0	51.3	45.9
0.18	0.2	2	2751	063-11	11	0.43	0.27	1.8	0.45	0.23	1.7	0.47	0.28	1.8	71.1	71.6	69.1
0.18	0.2	4	1320	063-11	11	0.54	0.39	1.6	0.56	0.35	1.5	0.60	0.42	1.7	63.3	64.3	60.6
0.18	0.2	6	899	071-14	14	0.67	0.63	1.8	0.69	0.59	1.7	0.71	0.64	1.9	60.7	58.6	52.5
0.18	0.2	8	690	080M-19	19	0.7	0.6	2.1	0.8	0.6	2.0	0.8	0.7	1.8	58.4	55.2	48.5
0.25	0.3	2	2718	063-11	11	0.57	0.29	2.3	0.59	0.25	2.2	0.63	0.36	2.5	72.2	73.8	72.6
0.25	0.3	4	1349	071-14	14	0.67	0.48	2.3	0.69	0.42	2.2	0.73	0.53	2.5	70.3	70.9	68.4
0.25	0.3	6	897	071-14	14	0.83	0.75	2.4	0.87	0.69	2.3	0.93	0.85	2.5	64.1	63.0	57.5
0.25	0.3	8	694	080M-19	19	0.9	0.8	2.9	1.0	0.8	2.8	1.0	0.8	3.1	63.9	61.1	54.7
0.37	0.5	2	2726	071-14	14	0.86	0.53	3.4	0.89	0.45	3.2	0.95	0.66	3.6	71.3	72.7	71.1
0.37	0.5	2	2899	080M-19	19	0.8	0.5	5.2	0.8	0.4	4.9	0.9	0.4	5.2	81.2	80.2	76.7
0.37	0.5	4	1330	071-14	14	0.95	0.63	3.1	0.98	0.56	3.0	1.07	0.78	3.5	70.6	72.3	70.8
0.37	0.5	4	1430	080M-19	19	0.9	0.7	4.6	0.9	0.6	4.4	0.9	0.6	4.8	77.5	77.2	74.0
0.37	0.5	6	937	080M-19	19	1.0	0.8	4.3	1.0	0.7	4.0	1.1	0.8	4.4	73.4	72.5	68.4
0.37	0.5	8	709	090S-24	24	1.4	1.5	4.5	1.4	1.3	4.2	1.5	1.6	4.7	67.2	64.3	56.8
0.55	0.7	2	2759	071-14	14	1.18	0.55	5.6	1.23	0.50	5.4	1.32	0.71	6.2	76.2	77.2	75.5
0.55	0.7	2	2886	080M-19	19	1.1	0.6	7.0	1.2	0.5	6.7	1.2	0.6	7.6	82.5	82.4	79.8
0.55	0.7	4	1427	080M-19	19	1.3	0.7	6.4	1.3	0.6	6.1	1.3	0.7	6.6	80.3	80.6	78.5
0.55	0.7	6	933	080M-19	19	1.4	1.0	5.7	1.4	0.9	5.4	1.5	1.1	6.2	75.4	75.5	72.4
0.55	0.7	8	710	090L-24	24	1.9	1.8	6.4	1.9	1.6	5.9	1.9	1.7	6.3	71.5	69.2	63.0
0.75	1	2	2880	080M-19	19	1.5	0.7	9.3	1.6	0.6	8.8	1.6	0.7	10	83.6	83.9	81.9
0.75	1	4	1420	080M-19	19	1.6	0.9	8.4	1.7	0.8	7.8	1.8	0.9	8.9	82.3	83.3	82.4
0.75	1	6	947	090S-24	24	1.8	1.5	8.4	1.9	1.4	7.9	2.0	1.6	9.1	78.2	77.9	74.8
0.75	1	8	718	100L-28	28	2.3	2.1	8.6	2.4	1.9	8.8	2.4	2.1	9.8	74.7	72.5	67.4
1.1	1.5	2	2869	080M-19	19	2.2	0.9	13	2.2	0.8	12	2.3	0.9	14	83.4	84.1	82.8
1.1	1.5	4	1428	090S-24	24	2.3	1.2	12	2.4	1.1	11	2.5	1.2	13	84.6	85.4	84.4
1.1	1.5	6	948	090L-24	24	2.6	2.0	9.4	2.7	1.7	7.7	2.8	2.0	9.6	80.1	79.8	77.2
1.1	1.5	8	716	100L-28	28	3.1	2.7	13	3.2	2.4	12	3.1	2.0	11	77.4	76.0	71.6
1.5	2	2	2896	090S-24	24	2.9	1.4	18	3.0	1.3	18	3.1	1.5	21	85.1	85.7	84.8
1.5	2	4	1428	090L-24	24	3.1	1.5	17	3.2	1.4	16	3.3	1.6	18	85.6	86.5	85.7
1.5	2	6	957	100L-28	28	3.4	1.9	18	3.5	1.8	17	3.6	1.6	15	82.7	83.0	80.7
1.5	2	8	713	100L-28	28	4.1	3.5	17	4.2	3.3	16	4.1	2.9	14	78.9	78.4	74.5
1.5	2	8	713	100L-28	28	4.1	3.5	17	4.2	3.3	16	4.1	2.9	14	78.9	78.4	74.5
1.5	2	8	713	112MQ-28	28	4.1	3.5	17	4.2	3.3	16	4.1	2.9	14	78.9	78.4	74.5
2.2	3	2	2885	090L-24	24	4.2	1.7	27	4.3	1.6	25	4.5	1.8	30	85.7	86.8	86.2
2.2	3	4	1441	100L-28	28	4.3	2.0	26	4.4	1.8	24	4.6	2.0	26	86.7	87.7	87.2
2.2	3	6	952	100L-28	28	4.9	2.7	24	5.1	2.4	23	5.2	2.2	21	83.5	84.4	83.4
2.2	3	6	952	112MQ-28	28	4.9	2.7	24	5.1	2.4	23	5.2	2.2	21	83.5	84.4	83.4
2.2	3	8	706	132SR-38	38	5.2	2.9	36	5.3	2.7	35	5.6	3.1	38	81.4	82.3	81.1

PERFORMANCE DATA 50HZ

Power Factor			Torque				Brake						Other					
100% Load	75% Load	50% Load	Full Load	Locked Rotor	Pull Up	Pull Out	Brake Torque		Brake Mass	Excited Power	Brake Time	Connect Time	Conn	Bearings			Poles	Output
%			Nm	% of Full Load Torque			Nm	%	Kg	W	Ms	Ms		DE	NDE		#	kW
0.60	0.52	0.43	0.9	2.20	1.58	2.41	4	444	1.1	25	50	60	Y	6201	6201		8	0.06
0.60	0.51	0.42	1.4	2.10	1.50	2.27	5	357	1.8	35	55	63	Y	6202	6202		8	0.09
0.70	0.61	0.50	0.9	2.34	1.85	2.61	4	444	1.1	25	50	60	Y	6201	6201		4	0.12
0.66	0.57	0.46	1.4	2.38	1.75	2.53	4	286	1.1	25	50	60	Y	6201	6201		6	0.12
0.61	0.52	0.42	1.8	2.03	1.45	2.18	5	278	1.8	35	55	63	Y	6202	6202		8	0.12
0.82	0.75	0.63	0.6	2.33	1.82	2.55	4	667	1.1	25	50	60	Y	6201	6201		2	0.18
0.73	0.63	0.50	1.3	2.12	1.67	2.34	4	308	1.1	25	50	60	Y	6201	6201		4	0.18
0.62	0.52	0.41	1.9	2.25	1.65	2.68	5	263	1.8	35	55	63	Y	6202	6202		6	0.18
0.59	0.51	0.41	2.5	2.14	1.53	2.94	7.5	300	2.8	50	75	87	Y	6204	6204		8	0.18
0.84	0.79	0.68	0.9	2.29	1.79	2.38	4	444	1.1	25	50	60	Y	6201	6201		2	0.25
0.74	0.65	0.52	1.8	2.40	1.89	2.51	5	278	1.8	35	55	63	Y	6202	6202		4	0.25
0.65	0.55	0.43	2.7	2.20	1.61	2.56	5	185	1.8	35	55	63	Y	6202	6202		6	0.25
0.58	0.49	0.39	3.4	2.30	1.65	3.08	7.5	221	2.8	50	75	87	Y	6204	6204		8	0.25
0.84	0.77	0.65	1.3	2.13	1.66	2.32	5	385	1.8	35	55	63	Y	6202	6202		2	0.37
0.78	0.70	0.58	1.2	2.41	1.88	3.44	7.5	625	2.8	50	75	87	Y	6204	6204		2	0.37
0.77	0.69	0.56	2.7	2.26	1.78	2.28	5	185	1.8	35	55	63	Y	6202	6202		4	0.37
0.76	0.67	0.54	2.5	2.39	1.89	2.89	7.5	300	2.8	50	75	87	Y	6204	6204		4	0.37
0.71	0.61	0.48	3.8	2.38	1.75	2.89	7.5	197	2.8	50	75	87	Y	6204	6204		6	0.37
0.56	0.48	0.37	5.0	2.17	1.55	3.08	15	300	4	60	95	110	Y	6205	6205		8	0.37
0.85	0.80	0.68	1.9	2.71	2.11	2.67	5	263	1.8	35	55	63	Y	6202	6202		2	0.55
0.82	0.76	0.64	1.8	2.35	1.83	3.13	7.5	417	2.8	50	75	87	Y	6204	6204		2	0.55
0.76	0.68	0.56	3.7	2.39	1.89	2.72	7.5	203	2.8	50	75	87	Y	6204	6204		4	0.55
0.74	0.65	0.52	5.6	2.30	1.69	2.71	7.5	134	2.8	50	75	87	Y	6204	6204		6	0.55
0.57	0.48	0.38	7.4	2.15	1.54	3.03	15	203	4	60	95	110	Y	6205	6205		8	0.55
0.83	0.79	0.68	2.5	2.36	1.84	2.97	7.5	300	2.8	50	75	87	Y	6204	6204		2	0.75
0.78	0.71	0.59	5.0	2.42	1.91	2.53	7.5	150	2.8	50	75	87	Y	6204	6204		4	0.75
0.73	0.64	0.51	7.6	2.36	1.73	2.72	15	197	4	60	95	110	Y	6205	6205		6	0.75
0.61	0.52	0.40	10	2.16	1.55	2.88	40	400	7	110	130	152	Y	6206	6206		8	0.75
0.85	0.81	0.71	3.7	2.28	1.58	2.69	7.5	203	2.8	50	75	87	Y	6204	6204		2	1.1
0.80	0.75	0.64	7.4	2.43	1.93	2.30	15	203	4	60	95	110	Y	6205	6205		4	1.1
0.74	0.65	0.52	11	2.43	2.09	2.71	15	136	4	60	95	110	Y	6205	6205		6	1.1
0.64	0.56	0.52	15	2.18	1.56	2.71	40	267	7	110	130	152	Y	6206	6206		8	1.1
0.85	0.79	0.68	4.9	2.22	1.83	2.82	15	306	4	60	95	110	Y	6205	6205		2	1.5
0.80	0.76	0.65	10	2.51	2.03	2.26	15	150	4	60	95	110	Y	6205	6205		4	1.5
0.74	0.67	0.55	15	2.30	1.65	2.67	40	267	7	110	130	152	Y	6206	6206		6	1.5
0.65	0.55	0.43	20	2.23	1.59	2.52	40	200	7	110	130	152	Y	6206	6206		8	1.5
0.65	0.55	0.43	20	2.23	1.59	2.52	40	200	7	110	130	152	Y	6206	6206		8	1.5
0.65	0.55	0.43	20	2.23	1.59	2.52	40	200	7	110	130	152	Y	6306	6306		8	1.5
0.86	0.82	0.73	7.3	2.29	1.88	2.62	15	205	4	60	95	110	Y	6205	6205		2	2.2
0.83	0.78	0.68	15	2.26	1.94	2.62	40	267	7	110	130	152	Y	6206	6206		4	2.2
0.75	0.69	0.56	22	2.30	1.92	2.40	40	182	7	110	130	152	Y	6206	6206		6	2.2
0.75	0.69	0.56	22	2.30	1.92	2.40	40	182	7	110	130	152	Y	6306	6306		6	2.2
0.73	0.65	0.53	30	2.02	1.63	2.47	80	267	10	130	140	165	Y	6308	6308		8	2.2

PERFORMANCE DATA 50HZ

General						Current									Efficiency		
Output		Poles	Speed	Frame Size	Shaft Size	415 Volts			400 Volts			380 Volts			100% Load	75% Load	50% Load
						F.L.	N.L.	L.R.	F.L.	N.L.	L.R.	F.L.	N.L.	L.R.			
kW	hp	#	RPM		mm	Amps			Amps			Amps			%		
3	4	2	2881	100L-28	28	5.3	1.4	35	5.5	1.3	34	5.9	1.5	37	87.2	87.9	87.5
3	4	4	1441	100L-28	28	5.6	2.2	34	5.8	1.9	31	6.1	2.4	36	87.5	88.6	88.4
3	4	6	963	132SR-38	38	6.4	3.7	57	6.7	3.5	54	6.9	4.0	62	85.4	86.2	85.2
3	4	8	708	132M-38	38	6.8	4.1	52	7.0	3.8	50	7.3	4.2	54	83.3	84.3	83.2
3.5	4.7	8	707	132MX-38	38	7.7	4.1	33	8.0	3.8	32	8.4	4.5	36	84.3	85.5	85.0
4	5.4	2	2879	100LX-28	28	6.9	1.7	47	7.2	1.6	45	7.7	1.5	42	88.1	89.4	89.4
4	5.4	2	2879	112MXQ-28	28	6.9	1.7	47	7.2	1.6	45	7.7	1.5	42	88.1	89.4	89.4
4	5.4	4	1441	100LX-28	28	7.4	3.0	47	7.7	2.8	44	8.1	3.2	50	88.1	89.3	89.0
4	5.4	4	1441	112MXQ-28	28	7.4	3.0	47	7.7	2.8	44	8.1	3.2	50	88.1	89.3	89.0
4	5.4	6	967	132M-38	38	8.4	4.7	49	8.8	4.3	43	9.2	5.1	52	86.7	87.3	86.0
4	5.4	8	707	132MX-38	38	8.8	5.1	40	9.1	4.6	36	9.7	5.6	43	84.2	85.4	84.7
4	5.4	8	717	160M-42	42	8.7	4.6	42	9.0	4.4	40	9.5	4.9	45	85.6	85.8	84.4
5.5	7	2	2911	132SR-38	38	9.6	3.3	71	10.0	3.0	68	10.4	3.3	75	89.4	90.1	89.7
5.5	7	4	1459	132SR-38	38	10.2	4.0	64	10.5	3.7	59	11.1	4.3	69	89.7	90.3	89.6
5.5	7	6	969	132M-38	38	11.3	5.9	66	11.7	5.4	61	12.4	6.1	68	88.0	88.4	87.5
5.5	7	8	717	160M-42	42	11.8	6.0	57	12.3	5.7	55	12.8	6.3	61	86.3	86.7	85.6
6.5	8.5	6	968	132MX-38	38	13.1	6.9	80	13.6	6.6	73	14.3	7.3	83	88.7	89.5	89.1
7.5	10	2	2907	132SR-38	38	12.6	3.1	94	13.1	3.0	88	13.8	3.2	95	90.0	91.0	89.0
7.5	10	4	1459	132M-38	38	13.6	4.9	88	14.1	4.5	80	14.7	4.8	85	90.4	91.1	90.6
7.5	10	6	967	132MX-38	38	15.1	7.8	91	15.6	7.2	82	16.5	8.4	99	88.7	89.7	89.3
7.5	10	6	974	160M-42	42	14.8	7.6	83	15.3	7.1	78	16.0	7.9	87	89.4	89.3	88.1
7.5	10	8	719	160L-42	42	15.9	8.2	83	16.5	7.8	80	17.2	8.5	87	87.6	87.9	86.6
9	12	2	2903	132MX-38	38	15.2	3.6	112	15.8	3.5	106	16.5	3.8	115	91.3	92.0	91.8
9	12	4	1455	132MX-38	38	16.2	5.8	104	16.8	5.3	95	17.5	5.7	103	90.8	92.0	92.0
11	15	2	2886	132MX-38	38	18.8	4.0	121	19.5	3.8	114	20.5	4.6	137	90.6	91.8	91.8
11	15	2	2936	160M-42	42	18.9	5.8	114	19.6	5.3	107	20.4	5.4	111	91.1	91.3	90.4
11	15	4	1451	132MX-38	38	19.9	7.2	123	20.6	6.7	115	21.5	7.3	124	90.5	91.5	91.8
11	15	4	1471	160M-42	42	19.7	9.1	133	20.5	8.4	126	21.1	8.7	130	91.3	91.3	90.1
11	15	6	971	160L-42	42	21.0	9.4	111	21.8	8.6	104	23.0	10.3	121	89.8	90.2	89.3
11	15	8	731	180L-48	48	22.3	13.4	126	23.1	12.5	120	24.1	13.6	130	89.1	89.4	88.7
15	20	2	2937	160M-42	42	25.6	6.5	156	26.5	6.0	147	27.7	6.2	154	91.7	91.9	91.1
15	20	4	1471	160L-42	42	26.7	12.4	187	27.7	11.4	177	28.8	12.2	189	92.1	92.2	91.2
15	20	6	977	180L-48	48	27.4	11.1	171	28.4	10.3	159	29.9	12.3	192	90.7	91.4	91.2
15	20	8	728	200L-55	55	30.1	16.5	166	31.2	15.3	156	33.3	16.0	189	90.1	90.4	89.8
18.5	25	2	2933	160L-42	42	31.1	6.9	175	32.3	6.3	165	34.0	6.7	175	92.0	92.4	92.3
18.5	25	4	1469	180M-48	48	32.0	12.0	236	33.2	11.4	223	34.6	12.1	241	92.5	92.9	92.6
18.5	25	6	983	200L-55	55	34.2	15.2	201	35.5	14.4	187	37.1	15.3	199	91.7	91.8	91.4
18.5	25	8	726	225S-60	60	36.7	20.3	194	38.1	19.1	180	39.6	20.3	194	91.1	91.4	90.7
22	30	2	2945	180M-48	48	36.7	10.3	251	38.1	9.4	239	40.1	10.2	256	92.7	92.8	91.8
22	30	4	1468	180L-48	48	38.0	13.0	270	39.4	12.2	255	41.5	13.4	281	92.7	93.4	93.2
22	30	6	982	200L-55	55	40.6	17.2	230	42.1	16.3	217	43.9	17.5	234	91.9	92.2	91.4
22	30	8	724	225M-60	60	42.8	21.8	215	44.4	20.3	199	46.3	22.4	218	91.6	92.0	91.2

PERFORMANCE DATA 50HZ

Power Factor			Torque				Brake						Other					
100% Load	75% Load	50% Load	Full Load	Locked Rotor	Pull Up	Pull Out	Brake Torque		Brake Mass	Excited Power	Brake Time	Connect Time	Conn	Bearings			Poles	Output
%			Nm	% of Full Load Torque			Nm	%	Kg	W	Ms	Ms		DE	NDE		#	kW
0.90	0.87	0.82	10	2.32	1.91	2.84	40	400	7	110	130	152	Y	6206	6206		2	3
0.85	0.81	0.73	20	2.20	1.94	2.47	40	200	7	110	130	152	Y	6206	6206		4	3
0.76	0.70	0.58	30	2.00	1.61	2.22	80	267	10	130	140	165	Y	6308	6308		6	3
0.74	0.66	0.52	40	2.24	1.80	2.59	80	200	10	130	140	165	Y	6308	6308		8	3
0.75	0.68	0.55	47	2.06	1.46	2.48	80	170	10	130	140	165	Δ	6308	6308		8	3.5
0.91	0.89	0.84	13	2.41	1.75	2.76	40	308	7	110	130	152	Δ	6206	6206		2	4
0.91	0.89	0.84	13	2.41	1.75	2.76	40	308	7	110	130	152	Δ	6306	6306		2	4
0.85	0.81	0.72	27	2.45	1.91	2.52	40	148	7	110	130	152	Δ	6206	6206		4	4
0.85	0.81	0.72	27	2.45	1.91	2.52	40	148	7	110	130	152	Δ	6306	6306		4	4
0.76	0.70	0.68	40	2.15	1.85	2.32	80	200	10	130	140	165	Δ	6308	6308		6	4
0.75	0.67	0.54	54	2.21	1.57	2.51	80	148	10	130	140	165	Δ	6308	6308		8	4
0.75	0.69	0.55	53	2.07	1.47	2.59	150	283	16	150	180	214	Δ	6309	6309		8	4
0.89	0.86	0.78	18	2.23	1.55	3.26	80	444	10	130	140	165	Δ	6308	6308		2	5.5
0.84	0.81	0.73	36	1.97	1.61	2.49	80	222	10	130	140	165	Δ	6308	6308		4	5.5
0.77	0.71	0.59	54	2.19	1.88	2.27	80	148	10	130	140	165	Δ	6308	6308		6	5.5
0.75	0.69	0.56	73	2.10	1.54	2.55	150	205	16	150	180	214	Δ	6309	6309		8	5.5
0.78	0.72	0.61	64	2.29	1.95	2.24	80	125	10	130	140	165	Δ	6308	6308		6	6.5
0.92	0.90	0.85	25	2.20	1.56	3.06	80	320	10	130	140	165	Δ	6308	6308		2	7.5
0.85	0.83	0.75	49	2.04	1.63	2.38	80	163	10	130	140	165	Δ	6308	6308		4	7.5
0.78	0.73	0.61	74	2.28	1.95	2.19	80	108	10	130	140	165	Δ	6308	6308		6	7.5
0.79	0.73	0.62	74	2.11	1.80	2.86	150	203	16	150	180	214	Δ	6309	6309		6	7.5
0.75	0.68	0.56	100	2.29	1.67	2.67	150	150	16	150	180	214	Δ	6309	6309		8	7.5
0.90	0.88	0.83	30	2.49	1.72	3.18	80	267	10	130	140	165	Δ	6308	6308		2	9
0.85	0.83	0.76	59	2.11	1.92	2.32	80	136	10	130	140	165	Δ	6308	6308		4	9
0.90	0.89	0.85	36	2.22	1.54	2.78	80	222	10	130	140	165	Δ	6308	6308		2	11
0.89	0.86	0.80	36	2.07	1.44	2.88	150	417	16	150	180	214	Δ	6309	6309		2	11
0.85	0.83	0.73	72	2.13	1.94	2.22	80	111	10	130	140	165	Δ	6308	6308		4	11
0.85	0.80	0.70	71	2.01	1.83	3.25	150	211	16	150	180	214	Δ	6309	6309		4	11
0.81	0.77	0.66	108	1.92	1.55	2.57	150	139	16	150	180	214	Δ	6309	6309		6	11
0.77	0.69	0.56	144	2.16	1.81	2.80	200	139	31	150	210	252	Δ	6311	6311		8	11
0.89	0.88	0.83	49	2.18	1.51	2.84	150	306	16	150	180	214	Δ	6309	6309		2	15
0.85	0.81	0.69	97	2.16	1.92	3.30	150	155	16	150	180	214	Δ	6309	6309		4	15
0.84	0.80	0.72	147	1.98	1.73	2.51	200	136	31	150	210	252	Δ	6311	6311		6	15
0.77	0.69	0.57	197	2.20	1.64	2.84	300	152	48	200	250	303	Δ	6312	6312		8	15
0.90	0.89	0.87	60	2.02	1.37	2.58	150	250	16	150	180	214	Δ	6309	6309		2	18.5
0.87	0.83	0.74	120	2.45	1.96	3.16	200	167	31	150	210	252	Δ	6311	6311		4	18.5
0.82	0.79	0.72	180	2.06	1.86	2.61	300	167	48	200	250	303	Δ	6312	6312		6	18.5
0.77	0.70	0.57	243	2.30	2.02	2.69	450	185	60	200	270	359	Δ	6313	6313		8	18.5
0.90	0.87	0.82	71	2.11	1.70	3.39	200	282	31	150	210	252	Δ	6311	6311		2	22
0.87	0.83	0.75	143	2.39	1.81	3.03	200	140	31	150	210	252	Δ	6311	6311		4	22
0.82	0.78	0.72	214	2.03	1.80	2.51	300	140	48	200	250	303	Δ	6312	6312		6	22
0.78	0.71	0.60	290	2.13	1.86	2.52	450	155	60	200	270	359	Δ	6313	6313		8	22

PERFORMANCE DATA 50HZ

General						Current									Efficiency		
Output		Poles	Speed	Frame Size	Shaft Size	415 Volts			400 Volts			380 Volts			100% Load	75% Load	50% Load
						F.L.	N.L.	L.R.	F.L.	N.L.	L.R.	F.L.	N.L.	L.R.			
kW	hp	#	RPM		mm	Amps			Amps			Amps			%		
30	40	2	2917	200L-55	55	49.2	12.6	338	51.1	11.8	322	53.8	13.0	353	93.2	93.8	93.8
30	40	4	1472	200L-55	55	52.1	18.4	282	54.0	16.7	267	56.9	18.7	294	93.2	93.4	92.7
30	40	6	976	225M-60	60	54.9	22.9	326	57.0	20.9	301	59.2	24.0	341	92.7	93.3	93.0
30	40	8	740	250S-70	70	55.5	23.3	268	57.6	21.7	253	60.8	24.6	284	92.8	93.0	92.4
37	50	2	2916	200LX-55	55	60.6	16.0	426	62.8	14.7	407	66.2	17.0	457	93.4	94.2	94.0
37	50	4	1481	225SX-60	60	63.1	20.2	409	65.5	18.6	386	69.0	22.1	443	93.7	93.8	92.9
37	50	6	988	250S-70	70	63.4	20.7	379	65.8	18.1	355	68.5	19.7	383	93.3	93.5	92.9
37	50	8	739	280S-80	80	68.5	26.1	305	71.1	23.5	284	74.9	28.5	333	92.8	93.3	92.8
45	60	2	2968	225MX-55	55	73.5	17.6	423	76.3	16.1	404	80.3	19.1	461	94.6	94.6	94.1
45	60	4	1481	225MX-60	60	76.6	23.5	495	79.5	21.6	468	83.7	24.7	525	93.9	94.0	93.1
45	60	6	988	250M-70	70	76.9	25.6	483	79.8	23.2	452	84.0	26.4	502	93.6	93.8	93.1
45	60	6	988	280MQ-70	70	76.9	25.6	483	79.8	23.2	452	84.0	26.4	502	93.6	93.8	93.1
45	60	8	740	280M-80	80	83.5	36.1	405	86.6	32.5	378	90.2	37.0	423	93.7	93.8	93.1
55	75	2	2974	250S-60	60	89.9	20.0	502	93.2	18.2	480	98.0	24.5	594	94.6	94.7	93.9
55	75	4	1484	250S-70	70	92.2	28.8	598	95.7	26.8	566	99.6	28.7	605	94.3	94.4	93.7
55	75	6	988	250MX-70	70	93.7	28.4	570	97.2	25.7	535	102.3	30.5	613	93.9	94.3	93.7
55	75	6	990	280M-80	80	93.4	29.7	589	96.9	27.6	556	100.9	27.9	568	94.2	94.3	93.4
55	75	8	742	280M-80	80	98.8	39.0	568	103.0	34.9	525	106.6	38.3	575	94.4	94.5	93.7
75	100	2	2975	250M-60	60	120.7	23.3	689	125.2	21.7	660	132.1	23.3	705	95.0	95.0	94.3
75	100	2	2975	280S-65	65	120.7	23.3	689	125.2	21.7	660	132.1	23.3	705	95.0	95.0	94.3
75	100	4	1483	250M-70	70	123.8	34.1	802	128.4	31.8	760	135.2	35.6	847	94.7	94.8	94.2
75	100	4	1483	280S-80	80	123.8	34.1	802	128.4	31.8	760	135.2	35.6	847	94.7	94.8	94.2
75	100	6	990	280M-80	80	126.5	38.3	847	131.3	35.9	800	136.9	35.3	792	94.8	94.9	94.2
75	100	8	742	315SR-85	85	134.5	57.1	682	139.5	52.3	641	146.9	58.7	712	94.6	94.5	93.7
90	120	2	2975	280M-65	65	144.4	31.6	868	149.8	29.1	831	157.8	31.4	889	95.3	95.2	94.3
90	120	4	1485	280M-80	80	147.6	35.0	842	153.2	33.1	804	161.2	37.5	908	95.3	95.4	94.8
90	120	6	989	315SR-85	85	153.1	51.4	894	158.8	46.9	844	167.2	55.0	960	95.1	95.0	94.3
90	120	8	742	315MR-85	85	161.1	65.6	844	167.1	58.7	793	175.9	72.5	927	94.8	94.7	93.8
110	150	2	2974	280MX-65	65	176.1	31.6	999	182.7	29.7	958	192.7	27.6	908	95.5	95.5	94.7
110	150	2	2974	315SRQ-65	65	176.1	31.6	999	182.7	29.7	958	192.7	27.6	908	95.5	95.5	94.7
110	150	4	1484	280MX-80	80	180.0	41.5	1020	186.8	39.1	972	194.6	43.0	1064	95.5	95.6	95.1
110	150	4	1484	315SRQ-80	80	180.0	41.5	1020	186.8	39.1	972	194.6	43.0	1064	95.5	95.6	95.1
110	150	6	992	315MR-85	85	184.8	63.6	1263	191.7	58.5	1186	201.8	64.8	1303	95.2	94.9	94.0
110	150	8	742	315L-85	85	193.5	77.2	984	200.7	68.9	923	208.8	72.5	972	95.3	95.4	94.8
132	175	2	2981	315SR-65	65	210.4	43.6	1394	218.3	39.2	1329	232.4	61.4	1751	95.9	95.7	94.8
132	175	4	1484	280MX-80	80	215.8	47.1	1202	223.9	43.7	1145	233.3	47.2	1230	95.6	95.8	95.4
132	175	4	1488	315SR-85	85	217.4	67.3	1443	225.5	59.7	1367	235.0	65.4	1472	96.0	95.9	95.2
132	175	6	992	315MXR-85	85	223.4	77.4	1526	231.7	70.8	1429	241.1	81.3	1618	95.6	95.5	94.8
132	175	8	742	315L-85	85	231.9	99.9	1245	240.6	88.3	1167	250.3	99.3	1263	95.4	95.5	94.8
150	200	6	992	315L-85	85	250.4	86.0	1734	259.8	78.7	1623	270.6	87.5	1798	95.8	95.8	95.1
160	215	2	2982	315MXR-65	65	254.5	59.0	1807	264.1	53.3	1718	278.3	46.6	1604	96.1	95.7	94.8
160	215	4	1487	315MR-85	85	257.4	74.6	1685	267.0	66.6	1599	281.1	75.4	1758	96.1	96.1	95.5
160	215	6	991	315L-85	85	267.1	86.0	1734	277.1	78.7	1623	285.4	87.5	1798	95.8	95.8	95.2
160	215	8	742	315LX-110	110	280.8	118.8	1455	291.3	104.7	1361	303.0	117.6	1503	95.5	95.6	95.2
160	215	8	742	355LXQ-110	110	280.8	118.8	1455	291.3	104.7	1361	303.0	117.6	1503	95.5	95.6	95.2

PERFORMANCE DATA 50HZ

Power Factor			Torque				Brake						Other					
100% Load	75% Load	50% Load	Full Load	Locked Rotor	Pull Up	Pull Out	Brake Torque		Brake Mass	Excited Power	Brake Time	Connect Time	Conn	Bearings			Poles	Output
%			Nm	% of Full Load Torque			Nm	%	Kg	W	Ms	Ms		DE	NDE		#	kW
0.91	0.89	0.83	98	2.20	1.98	3.46	300	306	48	200	250	303	Δ	6312	6312		2	30
0.86	0.83	0.75	195	2.06	1.62	2.53	300	154	48	200	250	303	Δ	6312	6312		4	30
0.82	0.79	0.69	294	2.36	2.15	2.60	450	153	60	200	270	359	Δ	6313	6313		6	30
0.81	0.77	0.68	387	1.68	1.46	2.13	600	155	80	250	285	385	Δ	6316	6316		8	30
0.91	0.88	0.83	121	2.34	2.07	3.51	300	248	48	200	250	303	Δ	6312	6312		2	37
0.87	0.84	0.77	239	2.02	1.49	2.91	450	188	60	200	270	359	Δ	6313	6313		4	37
0.87	0.84	0.81	358	1.84	1.37	2.39	600	168	80	250	285	385	Δ	6316	6316		6	37
0.81	0.79	0.71	478	1.56	1.15	1.95	850	178	95	370	320	435	Δ	6317	6317		8	37
0.90	0.88	0.85	145	1.74	1.44	2.83	450	310	60	200	270	359	Δ	6313	6313		2	45
0.87	0.85	0.78	290	2.07	1.50	2.87	450	155	60	200	270	359	Δ	6313	6313		4	45
0.87	0.84	0.78	435	2.03	1.80	2.45	600	138	80	250	285	385	Δ	6316	6316		6	45
0.87	0.84	0.78	435	2.03	1.80	2.45	600	138	80	250	285	385	Δ	6316	6316		6	45
0.80	0.76	0.67	581	1.66	1.22	2.10	850	146	95	370	320	435	Δ	6317	6317		8	45
0.90	0.89	0.86	177	1.57	1.38	2.66	600	339	80	250	285	385	Δ	6316	6316		2	55
0.88	0.85	0.77	354	1.88	1.55	2.82	600	169	80	250	285	385	Δ	6316	6316		4	55
0.87	0.86	0.80	532	2.01	1.63	2.33	600	113	80	250	285	385	Δ	6316	6316		6	55
0.87	0.84	0.78	531	1.92	1.55	2.46	850	160	95	370	320	435	Δ	6317	6317		6	55
0.82	0.78	0.70	708	2.03	1.63	2.19	850	120	95	370	320	435	Δ	6317	6317		8	55
0.91	0.90	0.87	241	1.72	1.51	2.65	600	249	80	250	285	385	Δ	6316	6316		2	75
0.91	0.90	0.87	241	1.72	1.51	2.65	850	353	95	370	320	435	Δ	6317	6317		2	75
0.89	0.87	0.81	483	1.96	1.41	2.77	600	124	80	250	285	385	Δ	6316	6316		4	75
0.89	0.87	0.81	483	1.96	1.41	2.77	850	176	95	370	320	435	Δ	6317	6317		4	75
0.87	0.85	0.78	723	2.14	1.73	2.53	850	118	95	370	320	435	Δ	6317	6317		6	75
0.82	0.77	0.68	965	1.89	1.52	2.35	2000	207	155	400	375	495	Δ	6319	6319		8	75
0.91	0.90	0.86	289	1.85	1.62	2.67	850	294	95	370	320	435	Δ	6317	6317		2	90
0.89	0.87	0.83	579	1.69	1.46	2.60	850	147	95	370	320	435	Δ	6317	6317		4	90
0.86	0.83	0.76	869	1.74	1.25	2.64	2000	230	155	400	375	495	Δ	6319	6319		6	90
0.82	0.78	0.69	1158	1.97	1.59	2.43	2000	173	155	400	375	495	Δ	6319	6319		8	90
0.91	0.90	0.87	353	1.84	1.23	2.50	850	241	95	370	320	435	Δ	6317	6317		2	110
0.91	0.90	0.87	353	1.84	1.23	2.50	850	241	95	370	320	435	Δ	6317	6317		2	110
0.89	0.88	0.84	708	1.72	1.30	2.54	850	120	95	370	320	435	Δ	6317	6317		4	110
0.89	0.88	0.84	708	1.72	1.30	2.54	850	120	95	370	320	435	Δ	6317	6317		4	110
0.87	0.84	0.76	1059	1.94	1.37	2.72	2000	189	155	400	375	495	Δ	6319	6319		6	110
0.83	0.79	0.71	1416	1.91	1.35	2.30	2000	141	155	400	375	495	Δ	6319	6319		8	110
0.91	0.90	0.87	423	1.80	1.44	2.89	2000	473	155	400	375	495	Δ	6319	6319		2	132
0.89	0.88	0.85	849	1.74	1.47	2.48	850	100	95	370	320	435	Δ	6317	6317		4	132
0.88	0.86	0.78	847	2.03	1.72	3.02	2000	236	155	400	375	495	Δ	6319	6319		4	132
0.86	0.83	0.75	1272	2.03	1.44	2.69	2000	157	155	400	375	495	Δ	6319	6319		6	132
0.83	0.79	0.70	1699	2.09	1.57	2.39	2000	118	155	400	375	495	Δ	6319	6319		8	132
0.87	0.84	0.77	1444	2.05	1.74	2.69	2000	139	155	400	375	495	Δ	6319	6319		6	150
0.91	0.90	0.85	512	2.02	1.63	3.06	2000	391	155	400	375	495	Δ	6319	6319		2	160
0.90	0.87	0.81	1028	2.01	1.71	2.89	2000	195	155	400	375	495	Δ	6319	6319		4	160
0.88	0.85	0.79	1542	1.92	1.63	2.52	2000	130	155	400	375	495	Δ	6319	6319		6	160
0.83	0.79	0.71	2059	2.05	1.65	2.29	2000	97	155	400	375	495	Δ	6324	6319		8	160
0.83	0.79	0.71	2059	2.05	1.65	2.29	2000	97	155	400	375	495	Δ	6324	6319		8	160

PERFORMANCE DATA 50HZ

General						Current									Efficiency		
Output		Poles	Speed	Frame Size	Shaft Size	415 Volts			400 Volts			380 Volts			100% Load	75% Load	50% Load
						F.L.	N.L.	L.R.	F.L.	N.L.	L.R.	F.L.	N.L.	L.R.			
kW	hp	#	RPM		mm	Amps			Amps			Amps			%		
185	250	2	2979	315L-65	65	291.4	60.4	1808	302.3	52.7	1715	315.1	46.4	1602	96.0	95.8	95.0
185	250	4	1486	315LXR-85	85	297.6	73.9	1684	308.7	66.5	1597	325.3	74.4	1755	96.1	96.2	95.7
185	250	6	991	315LX-110	110	308.5	103.6	2132	320.0	94.3	1997	333.4	98.2	2089	95.9	95.8	95.2
185	250	6	991	355LXQ-110	110	308.5	103.6	2132	320.0	94.3	1997	333.4	98.2	2089	95.9	95.8	95.2
185	250	8	743	355L-110	110	332.0	157.4	1841	344.5	145.5	1732	362.6	163.8	1936	95.7	95.6	94.7
185	250	8	743	400LQ-110	110	332.0	157.4	1841	344.5	145.5	1732	362.6	163.8	1936	95.7	95.6	94.7
200	270	2	2982	315L-65	65	314.4	70.7	2233	326.2	63.1	2125	340.0	55.2	1982	96.2	95.9	94.9
200	270	4	1487	315LXR-85	85	325.3	95.9	2087	337.5	84.7	1980	354.9	101.1	2238	96.1	96.2	95.6
200	270	6	991	355L-110	110	334.7	114.2	2255	346.7	107.1	2136	360.8	112.8	2248	95.7	95.5	94.6
200	270	6	991	400LQ-110	110	334.7	114.2	2255	346.7	107.1	2136	360.8	112.8	2248	95.7	95.5	94.6
200	270	8	743	355L-110	110	358.9	167.6	1983	372.4	155.1	1867	392.0	177.9	2120	95.7	95.6	94.7
200	270	8	743	400LQ-110	110	358.9	167.6	1983	372.4	155.1	1867	392.0	177.9	2120	95.7	95.6	94.7
220	295	2	2980	315L-65	65	349.6	71.5	2234	362.7	63.9	2127	378.1	54.3	1978	96.2	96.0	95.1
220	295	4	1486	315L-85	85	357.8	97.3	2091	371.3	82.9	1980	390.8	98.8	2233	96.1	96.2	95.7
220	295	4	1486	355LQ-85	85	357.8	97.3	2091	371.3	82.9	1980	390.8	98.8	2233	96.1	96.2	95.7
220	295	6	991	355L-110	110	367.6	113.6	2298	381.4	107.6	2181	401.5	114.0	2328	95.7	95.6	94.8
220	295	6	991	400LQ-110	110	367.6	113.6	2298	381.4	107.6	2181	401.5	114.0	2328	95.7	95.6	94.8
220	295	8	743	355L-110	110	394.8	185.2	2189	409.6	171.0	2059	430.7	201.4	2385	95.7	95.6	94.7
220	295	8	743	400LQ-110	110	394.8	185.2	2189	409.6	171.0	2059	430.7	201.4	2385	95.7	95.6	94.7
250	335	2	2980	315L-65	65	393.0	70.9	2491	407.7	64.4	2368	429.6	55.7	2208	96.2	96.1	95.3
250	335	2	2980	355LQ-65	65	393.0	70.9	2491	407.7	64.4	2368	429.6	55.7	2208	96.2	96.1	95.3
250	335	4	1485	315L-85	85	402.1	97.1	2248	417.2	83.3	2129	439.2	105.5	2447	96.1	96.2	95.9
250	335	4	1485	355LQ-85	85	402.1	97.1	2248	417.2	83.3	2129	439.2	105.5	2447	96.1	96.2	95.9
250	335	6	991	355L-110	110	417.3	135.4	2738	432.9	126.9	2593	455.7	136.9	2794	95.8	95.7	94.8
250	335	6	991	400LQ-110	110	417.3	135.4	2738	432.9	126.9	2593	455.7	136.9	2794	95.8	95.7	94.8
250	335	8	743	355LX-110	110	448.2	204.5	2421	465.0	188.7	2278	489.5	228.6	2695	95.8	95.7	94.9
250	335	8	743	400LXQ-110	110	448.2	204.5	2421	465.0	188.7	2278	489.5	228.6	2695	95.8	95.7	94.9
280	375	2	2979	315LX-85	85	439.7	71.1	2764	456.2	64.7	2631	480.7	67.6	2763	96.3	96.1	95.3
280	375	2	2979	355LXQ-85	85	439.7	71.1	2764	456.2	64.7	2631	480.7	67.6	2763	96.3	96.1	95.3
280	375	4	1485	315LX-110	110	449.9	103.0	2480	466.8	89.5	2350	491.9	116.4	2576	96.2	96.3	95.9
280	375	4	1485	355LXQ-110	110	449.9	103.0	2480	466.8	89.5	2350	491.9	116.4	2576	96.2	96.3	95.9
280	375	6	990	355L-110	110	467.4	141.4	2896	484.9	132.8	2744	510.4	144.7	2986	95.8	95.7	94.9
280	375	6	990	400LQ-110	110	467.4	141.4	2896	484.9	132.8	2744	510.4	144.7	2986	95.8	95.7	94.9
280	375	8	742	355LX-110	110	502.0	219.1	2633	520.8	203.0	2479	548.2	253.0	3012	95.8	95.7	94.9
280	375	8	742	400LXQ-110	110	502.0	219.1	2633	520.8	203.0	2479	548.2	253.0	3012	95.8	95.7	94.9
315	420	2	2983	355L-85	85	498.0	125.9	3310	516.7	112.7	3166	537.9	101.7	2984	96.7	96.6	95.9
315	420	2	2983	400LQ-85	85	498.0	125.9	3310	516.7	112.7	3166	537.9	101.7	2984	96.7	96.6	95.9
315	420	4	1489	355L-110	110	504.0	117.2	2872	522.9	110.2	2733	550.5	134.5	3268	96.6	96.7	96.3
315	420	4	1489	400LQ-110	110	504.0	117.2	2872	522.9	110.2	2733	550.5	134.5	3268	96.6	96.7	96.3
315	420	6	990	355L-110	110	525.8	142.4	2983	545.5	135.4	2832	574.2	148.5	3107	95.8	95.8	95.1
315	420	6	990	355LX-110	110	525.8	142.4	2983	545.5	135.4	2832	574.2	148.5	3107	95.8	95.8	95.1
315	420	6	990	400LXQ-110	110	525.8	142.4	2983	545.5	135.4	2832	574.2	148.5	3107	95.8	95.8	95.1
315	420	8	743	450L-110	110	539.3	180.5	3570	559.5	165.4	3366	589.0	201.6	3974	95.6	95.4	94.5

PERFORMANCE DATA 50HZ

Power Factor			Torque				Brake						Other					
100% Load	75% Load	50% Load	Full Load	Locked Rotor	Pull Up	Pull Out	Brake Torque		Brake Mass	Excited Power	Brake Time	Connect Time	Conn	Bearings			Poles	Output
%			Nm	% of Full Load Torque			Nm	%	Kg	W	Ms	Ms		DE	NDE		#	kW
0.92	0.90	0.88	593	1.75	1.42	2.65	2000	337	155	400	375	495	Δ	6319	6319		2	185
0.90	0.88	0.83	1189	1.73	1.47	2.49	2000	168	155	400	375	495	Δ	6319	6319		4	185
0.87	0.84	0.77	1783	2.11	1.60	2.62	2000	112	155	400	375	495	Δ	6324	6319		6	185
0.87	0.84	0.77	1783	2.11	1.60	2.62	2000	112	155	400	375	495	Δ	6324	6319		6	185
0.81	0.75	0.65	2378	1.90	1.52	2.55							Δ	6324	6324		8	185
0.81	0.75	0.65	2378	1.90	1.52	2.55							Δ	6324	6324		8	185
0.92	0.91	0.86	641	2.10	1.67	2.97	2000	312	155	400	375	495	Δ	6319	6319		2	200
0.89	0.86	0.80	1284	2.07	1.75	2.82	2000	156	155	400	375	495	Δ	6319	6319		4	200
0.87	0.83	0.75	1927	2.18	1.64	2.97							Δ	6324	6324		6	200
0.87	0.83	0.75	1927	2.18	1.64	2.97							Δ	6324	6324		6	200
0.81	0.75	0.65	2571	1.90	1.53	2.54							Δ	6324	6324		8	200
0.81	0.75	0.65	2571	1.90	1.53	2.54							Δ	6324	6324		8	200
0.91	0.90	0.87	705	1.91	1.55	2.71	2000	284	155	400	375	495	Δ	6319	6319		2	220
0.89	0.88	0.81	1414	1.89	1.60	2.57	2000	141	155	400	375	495	Δ	6319	6319		4	220
0.89	0.88	0.81	1414	1.89	1.60	2.57	2000	141	155	400	375	495	Δ	6319	6319		4	220
0.87	0.85	0.77	2120	2.01	1.51	2.76							Δ	6324	6324		6	220
0.87	0.85	0.77	2120	2.01	1.51	2.76							Δ	6324	6324		6	220
0.81	0.75	0.65	2828	1.93	1.56	2.54							Δ	6324	6324		8	220
0.81	0.75	0.65	2828	1.93	1.56	2.54							Δ	6324	6324		8	220
0.92	0.91	0.89	801	1.94	1.55	2.64	2000	250	155	400	375	495	Δ	6319	6319		2	250
0.92	0.91	0.89	801	1.94	1.55	2.64	2000	250	155	400	375	495	Δ	6319	6319		2	250
0.90	0.89	0.84	1608	1.81	1.53	2.42	2000	124	155	400	375	495	Δ	6319	6319		4	250
0.90	0.89	0.84	1608	1.81	1.53	2.42	2000	124	155	400	375	495	Δ	6319	6319		4	250
0.87	0.83	0.76	2409	2.16	1.61	2.85							Δ	6324	6324		6	250
0.87	0.83	0.76	2409	2.16	1.61	2.85							Δ	6324	6324		6	250
0.81	0.76	0.66	3213	1.89	1.52	2.46							Δ	6324	6324		8	250
0.81	0.76	0.66	3213	1.89	1.52	2.46							Δ	6324	6324		8	250
0.92	0.92	0.90	898	1.99	1.59	2.57	2000	223	155	400	375	495	Δ	6319	6319		2	280
0.92	0.92	0.90	898	1.99	1.59	2.57	2000	223	155	400	375	495	Δ	6319	6319		2	280
0.90	0.89	0.84	1801	1.81	1.53	2.38	2000	111	155	400	375	495	Δ	6324	6319		4	280
0.90	0.89	0.84	1801	1.81	1.53	2.38	2000	111	155	400	375	495	Δ	6324	6319		4	280
0.87	0.84	0.77	2701	2.05	1.53	2.69							Δ	6324	6324		6	280
0.87	0.84	0.77	2701	2.05	1.53	2.69							Δ	6324	6324		6	280
0.81	0.77	0.67	3604	1.83	1.44	2.39							Δ	6324	6324		8	280
0.81	0.77	0.67	3604	1.83	1.44	2.39							Δ	6324	6324		8	280
0.91	0.89	0.84	1008	1.84	1.47	3.05							Δ	6319	6319		2	315
0.91	0.89	0.84	1008	1.84	1.47	3.05							Δ	6319	6319		2	315
0.90	0.89	0.85	2020	1.81	1.68	2.52							Δ	6324	6324		4	315
0.90	0.89	0.85	2020	1.81	1.68	2.52							Δ	6324	6324		4	315
0.87	0.85	0.80	3039	1.87	1.39	2.48							Δ	6324	6324		6	315
0.87	0.85	0.80	3039	1.87	1.39	2.48							Δ	6324	6324		6	315
0.87	0.85	0.80	3039	1.87	1.39	2.48							Δ	6324	6324		6	315
0.85	0.83	0.75	4049	1.63	1.31	2.72							Δ	6326	6326		8	315

PERFORMANCE DATA 50HZ

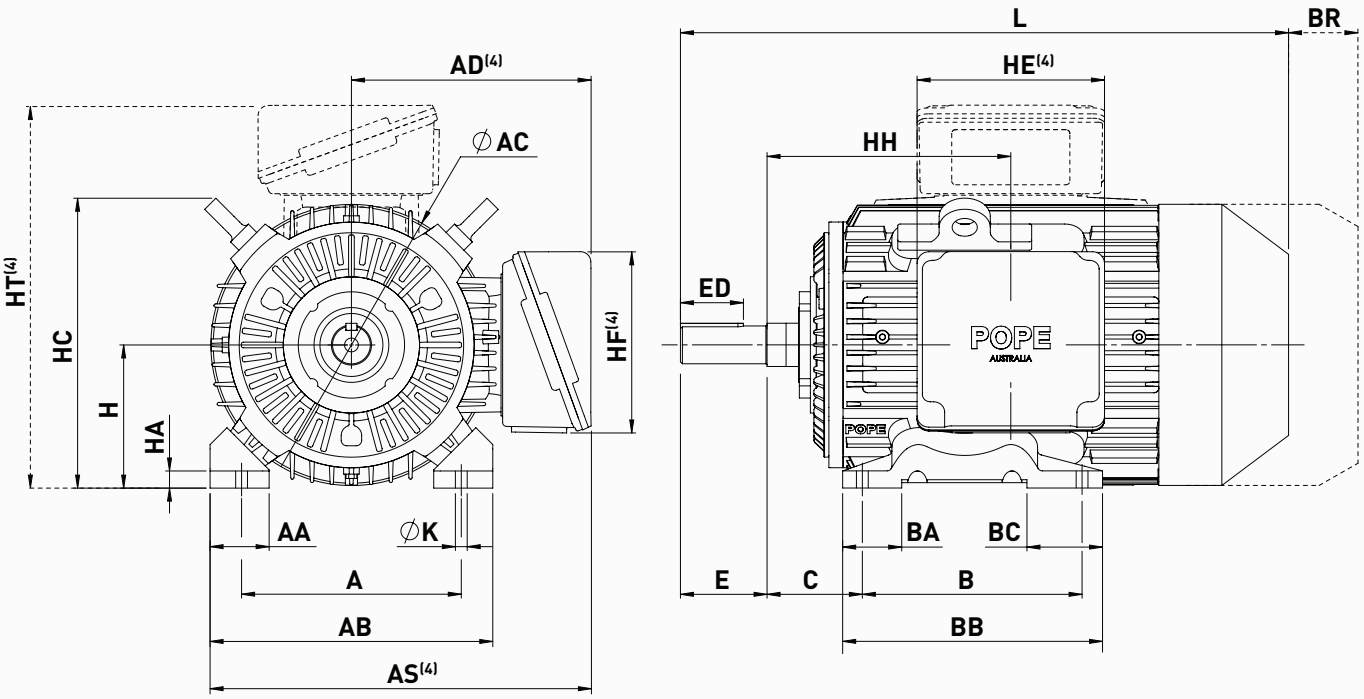
General						Current									Efficiency		
Output		Poles	Speed	Frame Size	Shaft Size	415 Volts			400 Volts			380 Volts			100% Load	75% Load	50% Load
						F.L.	N.L.	L.R.	F.L.	N.L.	L.R.	F.L.	N.L.	L.R.			
kW	hp	#	RPM		mm	Amps			Amps			Amps			%		
355	475	2	2980	355L-85	85	561.2	104.2	3116	582.3	98.3	2990	613.6	90.9	2825	96.7	96.7	96.3
355	475	2	2980	400LQ-85	85	561.2	104.2	3116	582.3	98.3	2990	613.6	90.9	2825	96.7	96.7	96.3
355	475	4	1489	355L-110	110	567.5	135.0	3341	588.7	126.2	3175	619.7	161.6	3918	96.7	96.7	96.3
355	475	4	1489	400LQ-110	110	567.5	135.0	3341	588.7	126.2	3175	619.7	161.6	3918	96.7	96.7	96.3
355	475	6	989	450L-110	110	592.5	155.6	3261	614.8	147.3	3090	647.1	163.7	3445	95.8	95.8	95.2
355	475	8	743	450L-110	110	607.8	196.3	3507	630.6	180.2	3307	663.8	225.9	3997	95.6	95.4	94.6
400	535	2	2983	355LX-85	85	631.1	131.2	4233	654.7	123.6	4060	689.9	115.5	3835	96.9	96.8	96.2
400	535	2	2983	400LXQ-85	85	631.1	131.2	4233	654.7	123.6	4060	689.9	115.5	3835	96.9	96.8	96.2
400	535	4	1489	355L-110	110	632.4	141.5	3695	656.1	134.4	3520	692.0	126.8	3296	96.7	96.8	96.4
400	535	4	1489	400LQ-110	110	632.4	141.5	3695	656.1	134.4	3520	692.0	126.8	3296	96.7	96.8	96.4
400	535	6	992	450L-110	110	652.0	170.9	4712	676.5	155.9	4411	702.7	174.5	4907	95.9	95.8	94.9
400	535	8	744	450L-110	110	674.8	203.2	4962	700.1	193.8	4518	729.2	183.1	4365	95.9	95.6	94.6
450	600	2	2981	355LX-85	85	699.0	129.0	4126	725.0	121.3	3956	764.0	112.9	3741	96.3	95.9	95.1
450	600	2	2981	400LXQ-85	85	699.0	129.0	4126	725.0	121.3	3956	764.0	112.9	3741	96.3	95.9	95.1
450	600	4	1490	355LX-110	110	719.3	188.4	4684	746.3	170.5	4439	777.7	156.7	4147	96.7	96.8	96.3
450	600	4	1490	400LXQ-110	110	719.3	188.4	4684	746.3	170.5	4439	777.7	156.7	4147	96.7	96.8	96.3
450	600	6	991	450L-110	110	723.1	170.3	4908	750.2	160.8	4666	789.7	182.2	5257	96.2	96.1	95.5
450	600	8	743	450L-110	110	751.2	185.2	4464	779.3	176.3	4241	819.5	215.1	5240	95.8	95.8	95.1
500	670	2	2985	450L-85	85	775.1	146.6	6652	804.2	139.4	6357	846.5	131.7	5970	96.5	96.1	95.2
500	670	4	1490	450L-110	110	792.1	155.7	5738	821.9	148.1	5462	866.0	139.8	5109	96.5	96.3	95.5
500	670	6	992	450L-110	110	802.6	174.7	5000	832.7	166.4	4764	876.5	187.0	5357	96.3	96.2	95.5
500	670	8	743	450L-110	110	833.8	215.3	5303	865.0	204.3	5027	910.5	260.1	6488	95.9	95.8	95.0
500	670	8	743	500L-125	125	833.8	215.3	5303	865	204.3	5027	910.5	260.1	6488	95.9	95.8	95.0
560	735	2	2984	450L-85	85	867.2	143.9	6786	899.7	135.3	6491	948.1	126.4	6089	96.6	96.3	95.4
560	735	4	1489	450L-110	110	887.2	156.9	5738	920.5	149.3	5466	968.9	201.6	7197	96.5	96.3	95.6
560	735	6	992	450L-110	110	898.0	193.8	5563	931.7	183.3	5298	981.7	211.0	6066	96.4	96.3	95.6
560	735	8	745	500L-125	125	963.1	334.8	5891	999.3	318.0	5609	1052.9	372.3	6548	96.3	96.5	96.0
600	800	4	1492	450L-110	110	979.9	295.7	6989	1016.6	276.9	6673	1059.2	258.5	6301	96.8	96.5	95.7
630	845	2	2985	450L-95	95	985.2	200.0	7986	1022.2	192.4	7596	1076.0	180.4	7074	96.7	96.5	95.6
630	845	4	1492	450L-110	110	1028.9	295.7	6989	1067.5	276.9	6673	1112.2	258.5	6301	96.8	96.6	95.8
630	845	6	992	450L-110	110	1010.2	215.1	5528	1048.1	202.4	5261	1103.3	239.7	6143	96.4	96.3	95.6
630	845	6	992	500L-125	125	1010.2	215.1	5528	1048.1	202.4	5261	1103.3	239.7	6143	96.4	96.3	95.6
630	845	8	745	500L-125	125	1083.5	386.6	6800	1124.2	364.2	6455	1170.6	341.1	6026	96.3	96.0	95.2
710	950	2	2985	500L-95	95	1109.2	201.7	8321	1150.8	191.6	7981	1211.3	181.6	7373	96.8	96.6	95.8
710	950	4	1491	450L-110	110	1159.6	298.1	6994	1203.1	279.1	6672	1253.5	256.8	6299	96.8	96.6	96.0
710	950	6	993	500L-125	125	1162.0	302.3	7653	1205.6	287.1	7265	1269.0	345.8	8708	96.6	96.5	95.8
710	950	8	745	500L-125	125	1235.8	478.2	8246	1282.1	446.4	7786	1317.8	408.6	7235	96.3	96.0	95.1
800	1070	2	2986	500L-95	95	1318.9	251.7	8026	1368.3	237.0	7683	1441.8	222.1	7250	97.0	96.9	96.2
800	1070	4	1492	500L-125	125	1251.1	245.1	10526	1298.0	231.0	10007	1367.7	214.9	9357	96.7	96.5	95.6
800	1070	6	992	500L-125	125	1309.3	311.9	8145	1358.4	299.0	7758	1429.9	364.9	9534	96.6	96.5	96.0
800	1070	8	745	500L-125	125	1375.8	501.4	8731	1427.4	467.7	8261	1484.9	434.9	7713	96.3	96.1	95.0
900	1205	4	1491	500L-125	125	1407.4	247.1	10531	1460.2	229.3	10006	1538.7	216.5	9368	96.7	96.5	95.8
900	1205	6	993	500L-125	125	1454.8	388.1	10132	1509.4	366.7	9624	1572.8	343.6	8986	96.7	96.6	95.9

PERFORMANCE DATA 50HZ

Power Factor			Torque				Brake						Other					
100% Load	75% Load	50% Load	Full Load	Locked Rotor	Pull Up	Pull Out	Brake Torque		Brake Mass	Excited Power	Brake Time	Connect Time	Conn	Bearings			Poles	Output
%			Nm	% of Full Load Torque			Nm	%	Kg	W	Ms	Ms		DE	NDE		#	kW
0.91	0.90	0.88	1138	1.55	1.19	2.55							Δ	6319	6319		2	355
0.91	0.90	0.88	1138	1.55	1.19	2.55							Δ	6319	6319		2	355
0.90	0.89	0.84	2277	1.91	1.79	2.58							Δ	6324	6324		4	355
0.90	0.89	0.84	2277	1.91	1.79	2.58							Δ	6324	6324		4	355
0.87	0.85	0.80	3428	1.83	1.37	2.39							Δ	6326	6326		6	355
0.85	0.83	0.76	4563	1.60	1.28	2.66							Δ	6326	6326		8	355
0.91	0.90	0.86	1281	1.99	1.55	3.04							Δ	6319	6319		2	400
0.91	0.90	0.86	1281	1.99	1.55	3.04							Δ	6319	6319		2	400
0.91	0.90	0.86	2565	1.90	1.77	2.53							Δ	6324	6324		4	400
0.91	0.90	0.86	2565	1.90	1.77	2.53							Δ	6324	6324		4	400
0.89	0.88	0.82	3851	1.99	1.49	3.06							Δ	6326	6326		6	400
0.86	0.83	0.77	5134	1.96	1.57	2.87							Δ	6326	6326		8	400
0.93	0.92	0.90	1442	1.67	1.30	2.78							Δ	6319	6319		2	450
0.93	0.92	0.90	1442	1.67	1.30	2.78							Δ	6319	6319		2	450
0.90	0.88	0.83	2884	2.23	2.08	2.80							Δ	6324	6324		4	450
0.90	0.88	0.83	2884	2.23	2.08	2.80							Δ	6324	6324		4	450
0.90	0.89	0.84	4337	1.87	1.40	2.86							Δ	6326	6326		6	450
0.87	0.86	0.82	5784	1.52	1.22	2.35							Δ	6326	6326		8	450
0.93	0.92	0.89	1600	1.94	1.51	3.71							Δ	6319	6319		2	500
0.91	0.90	0.87	3205	1.80	1.68	2.85							Δ	6326	6326		4	500
0.90	0.89	0.85	4814	1.75	1.31	2.49							Δ	6326	6326		6	500
0.87	0.86	0.80	6427	1.66	1.33	2.48							Δ	6326	6326		8	500
0.87	0.86	0.80	6427	1.66	1.33	2.48							Δ	6328	6328		8	500
0.93	0.93	0.90	1792	1.84	1.43	3.08							Δ	6319	6319		2	560
0.91	0.91	0.88	3592	1.60	1.49	2.55							Δ	6326	6326		4	560
0.90	0.89	0.85	5391	1.77	1.32	2.46							Δ	6326	6326		6	560
0.84	0.87	0.82	7179	1.87	1.50	2.67							Δ	6328	6328		8	560
0.88	0.86	0.79	3841	2.16	2.01	3.04							Δ	6326	6326		4	600
0.92	0.91	0.87	2016	1.90	1.48	3.65							Δ	6319	6319		2	630
0.88	0.87	0.80	4033	2.06	1.92	2.90							Δ	6326	6326		4	630
0.90	0.89	0.85	6065	1.78	1.33	2.42							Δ	6326	6326		6	630
0.90	0.89	0.85	6065	1.78	1.33	2.42							Δ	6328	6328		6	630
0.84	0.78	0.72	8076	1.96	1.57	2.71							Δ	6328	6328		8	630
0.92	0.91	0.89	2272	1.58	1.23	3.37							Δ	6319	6319		2	710
0.88	0.86	0.81	4548	1.83	1.70	2.58							Δ	6326	6326		4	710
0.88	0.87	0.81	6828	1.83	1.37	2.78							Δ	6328	6328		6	710
0.83	0.80	0.70	9101	2.18	1.75	2.87							Δ	6328	6328		8	710
0.92	0.90	0.88	2559	1.53	1.19	2.84							Δ	6319	6319		2	800
0.92	0.91	0.88	5121	2.17	2.02	3.08							Δ	6326	6326		4	800
0.89	0.87	0.82	7702	1.74	1.30	2.64							Δ	6328	6328		6	800
0.84	0.80	0.71	10255	2.00	1.60	2.73							Δ	6328	6328		8	800
0.92	0.91	0.88	5765	1.93	1.80	2.74							Δ	6326	6326		4	900
0.89	0.88	0.81	8656	1.99	1.49	2.85							Δ	6328	6328		6	900

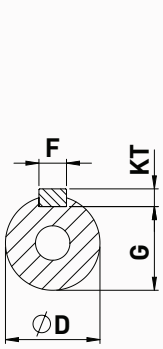
DIMENSIONS

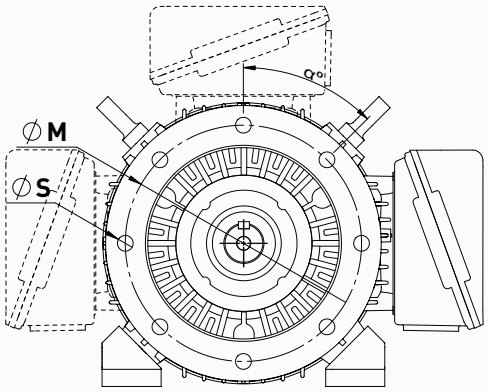
GENERAL DIMENSIONS

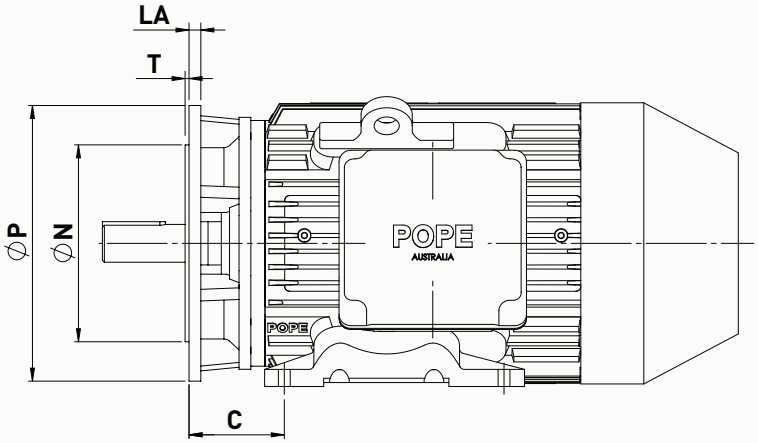


Note (4): Dimensions are for the standard terminal box. For dimensions of the low profile, oversize or Ex 'd' terminal box, please contact POPE Electric Motors.

Frame Size	GENERAL															OVERALL						
	MOUNTING FEET DIMENSIONS											TERMINAL BOX				AC	AS	HC	HT	L		BR Brake
	A	AA	AB	B	BA	BB	BC	C	H	HA	K	HE	HF	HH	AD					2P	4P-8P	
63	100	20	120	80		100		40	63	8	7	118	120	87.5	140	125	200	128	203	224		On Application
71	112	30	142	90		110		45	71	8	7	118	120	95	158	145	229	144	229	262		
80	125	35	160	100		130		50	80	10	10	118	120	123	165	166	245	170	245	324		
90S	140	40	180	100		152		56	90	12	10	118	120	125.5	170	177	260	182	260	346		
90L		40	180	125		152		56	90	12	10	118	120	125.5	170	177	260	182	260			
100L	160	40	200	140	35	170	35	63	100	14	12	118	120	149	187	204	287	202	287	406		
112MQ	190	39	230	140	33	170	33	70	112	15	12	118	120	149	187	204	302	213	299	406		
132SR	216	60	276	140	42	182	50	89	132	16	12	158	157	238.8	240	263	378	269	372	550		
132M		60	276	178	57	222	57	89	132	16	12	158	157	238.8	240	263	378	269	372	610		
160MQ	254	70	304	210	45	300	91	108	160	18	15	158	157	238.8	240	263	392	292	400	640		
160M		70	324	210	58	290	86	108	160	18	15	238	242	282.5	284	318	446	319	444	734		
160L		70	324	254	58	290	86	108	160	18	15	238	242	282.5	284	318	446	319	444	734		
180MQ	279	75	349	241	63	300	86	121	180	20	15	238	242	282.5	284	318	458.5	339	464	734		
180M		75	359	241	75	330	96	121	180	20	15	238	242	309.5	304	357	483.5	358	484	810		
180L		75	359	279	75	330	96	121	180	20	15	238	242	309.5	304	357	483.5	358	484	810		
200LQ	318	85	388	305	77	370	73	133	200	25	19	238	242	309.5	304	357	498	378	504	810		
200L		80	398	305	77	370	73	133	200	25	19	238	242	316.5	330	396	529	397	530	830		
225SQ	356	100	436	286	82	405	82	149	225	25	19	238	242	316.5	330	396	548	435	555		848	
225MQ		100	436	311	100	405	100	149	225	25	19	238	242	316.5	330	396	548	435	555		848	
225S		100	456	286	90	385	90	149	225	25	19	238	242	318.5	353	448	581	450	578		862	
225M		100	456	311	90	385	90	149	225	25	19	238	242	318.5	353	448	581	450	578	832	862	
250S	406	120	526	311	170	506	200	168	250	20	24	342	342	366.5	449	508	712	504	699	985	985	
250M	406	120	526	349	170	506	200	168	250	20	24	342	342	366.5	449	508	712	504	699	985	985	
250MX	406	120	526	349	170	506	200	168	250	20	24	342	342	366.5	449	508	712	504	699	1035	1035	



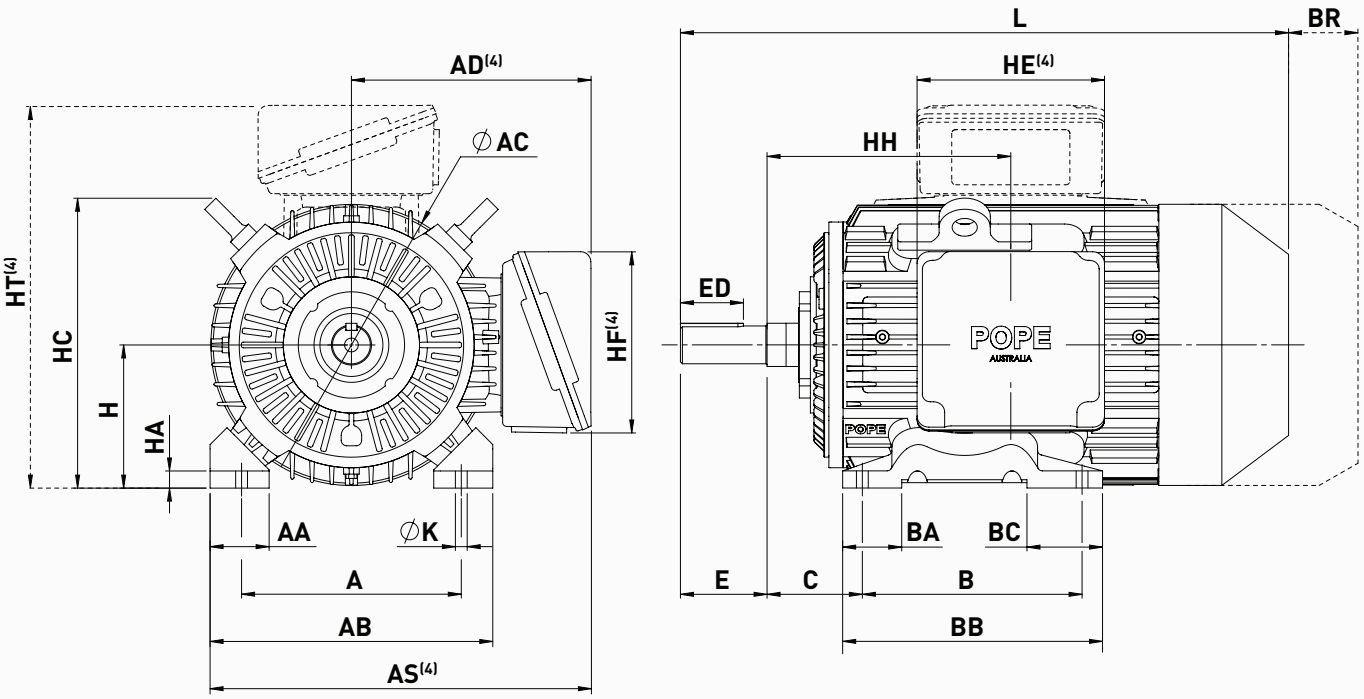




Shaft & Key
Dimensions

Flange & Foot/Flange
Dimensions

SHAFT AND KEY 2 Pole						SHAFT AND KEY 4 - 8 Pole						FLANGE								Flange B5					Flange B14B					Flange B14A					Frame Size
D	E	F	KT	G	ED	D	E	F	KT	G	ED	M	N	P	S	T	LA	α°	Holes	M	N	P	S	T	M	N	P	S	T	M	N	P	S	T	
11	23	4	4	8.5		11	23	4	4	8.5		115	95	140	10	3	10	45	4	100	80	120	M6	3	75	50	90	M5	2.5						63
14	30	5	5	11		14	30	5	5	11		130	110	160	10	3.5	10	45	4	115	95	140	M8	3.5	85	70	105	M6	3						71
19	40	6	6	15.5	25	19	40	6	6	15.5	25	165	130	200	12	3.5	14	45	8	130	110	160	M8	3.5	100	80	120	M6	3						80
24	50	8	7	20	32	24	50	8	7	20	32	165	130	200	12	3.5	14	45	8	130	110	160	M8	3.5	115	95	140	M8	3						90S
																		45	8	130	110	160	M8	3.5	115	95	140	M8	3						90L
28	60	8	7	24	40	28	60	8	7	24	40	215	180	250	15	4	14	45	8	165	130	200	M10	3.5	130	110	160	M8	3.5						100L
28	60	8	7	24	40	28	60	8	7	24	40	215	180	250	15	4	12	45	8	165	130	200	M10	3.5	130	110	160	M8	3.5						112MQ
38	80	10	8	33	56	38	80	10	8	33	56	265	230	300	15	4	12	45	8	215	180	250	M12	4	165	130	200	M10	3.5						132SR
																	12	45	8	215	180	250	M12	4	165	130	200	M10	3.5						132M
42	110	12	8	37	80	42	110	12	8	37	80	300	250	350	19	5	15	45	8	265	230	300	M12	5											160MQ
																	15	45	8	265	230	200	M12	5											160M
																	15	45	8	265	230	200	M12	5											160L
48	110	14	9	42.5	80	48	110	14	9	42.5	80	300	250	350	19	5	15	45	8																180MQ
																	15	45	8																180M
																	15	45	8																180L
55	110	16	10	49	80	55	110	16	10	49	80	350	300	400	19	5	17	45	8																200LQ
																	18	45	8																200L
																	18	45	8																225SQ
						60	140	18	11	53	110	400	350	450	19	5	20	45	8																225MQ
																	20	45	8																225S
55	110	16	10	49	80												20	45	8																225M
60	140	18	11	53	110	70	140	20	12	62.5	110	500	450	550	19	5	22	45	8																250S
60	140	18	11	53	110	70	140	20	12	62.5	110	500	450	550	19	5	22	45	8																250M
60	140	18	11	53	110	70	140	20	12	62.5	110	500	450	550	19	5	22	45	8																250MX



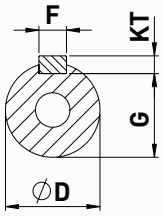
Note (4): Dimensions are for the standard terminal box. For dimensions of the low profile, oversize or Ex 'd' terminal box, please contact POPE Electric Motors.

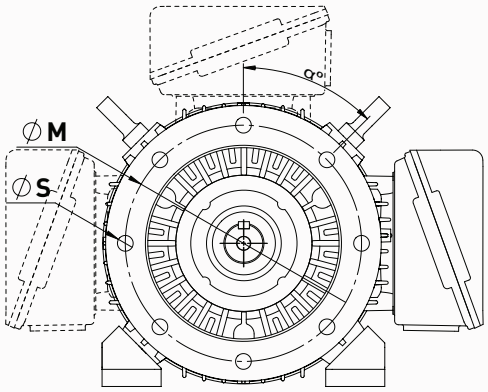
DIMENSIONS

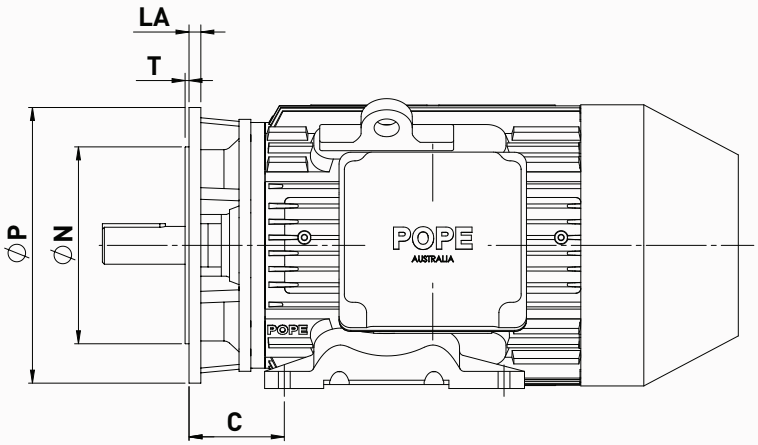
Frame Size	GENERAL															OVERALL						
	MOUNTING FEET DIMENSIONS											TERMINAL BOX				AC	AS	HC	HT	L		BR Brake
	A	AA	AB	B	BA	BB	BC	C	H	HA	K	HE	HF	HH	AD					2P	4P-8P	
280SQ	457	115	547	368	180	567	265	190	280	31	24	342	342	366.5	449	508	722.5	534	729	1055	1085	On Application
280S	457	115	557	368	200	568	200	190	280	31	24	342	342	423	478	576	756.5	568	758	1110	1140	
280M	457	115	557	419	200	568	200	190	280	31	24	342	342	423	478	576	756.5	568	758	1110	1140	
280MX	457	115	557	419	200	568	200	190	280	31	24	342	342	423	478	576	756.5	568	758		1200	
315SQ	508	110	608	406	210	578	210	216	315	30	28	342	342	423	478	576	782	603	793	1170	1200	
315SR	508	120	628	406	200	695	275	216	315	32	28	342	342	500	540	650	855	640	855	1305	1335	
315MR	508	120	628	457	200	695	275	216	315	32	28	342	342	500	540	650	855	640	855	1305	1335	
315M	508	120	628	457	200	698	230	216	315	32	28	342	342	579	540	650	855	640	855	1465	1495	
315LR*	508	120	628	508	200	695	275	216	315	32	28	342*	342*	500	540*	650	855*	640	855	1305	1335	
315L (≤220kW)	508	120	628	508	200	698	230	216	315	32	28	342*	342*	579	540*	650	855*	640	955	1465	1495	
315L (>220kW)	508	120	628	508	200	698	230	216	315	32	28	530	506	579	640	650	955	640	951	1465	1495	
315LX	508	120	628	508	200	698	230	216	315	32	28	530	506	579	640	650	955	640	951	1525	1585	
355LQ	610	135	730	630	200	845	225	254	355	45	28	530	506	579	640	650	1001	680	991	1525	1585	
355L	610	125	700	630	230	825	230	254	355	35	28	530	510	649	675	720	1025	715	1030	1615	1655	
355LX	610	125	700	630	230	825	230	254	355	35	28	530	510	649	675	720	1025	715	1030	1675	1715	
400LQ	686	156	780	710	212	975	212	280	400	50	35	300	520	649	950	840	1085	880	1350	1615	1655	
450LR	760	180	910	776	340	1080	340	310	450	40	35	560	660	739	845	920	1300	995	1295	1875	1915	
450LX	760	180	910	776	340	1080	340	310	450	40	35	560	660	884	845	920	1300	995	1295	2165	2205	
500L	850	195	1050	1150	340	1490	540	371	500	50	42	560	660	949	890	970	1415	1080	1390	2285	2325	

*315LR has different HE, HF, AD and AS dimensions in the Extreme specification (As it has a larger terminal box). The Extreme values are:

HE	HF	AD	AS
530	506	640	955







Shaft & Key
Dimensions

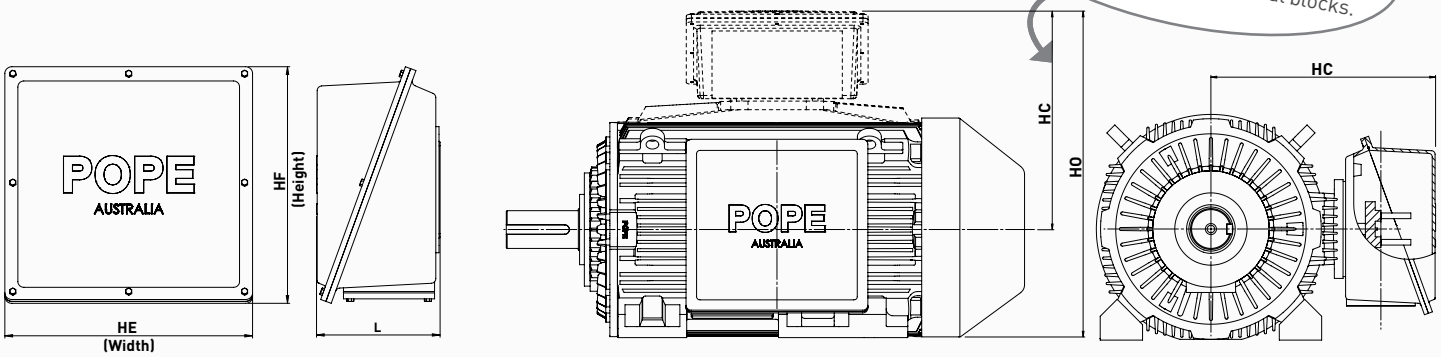
Flange & Foot/Flange
Dimensions

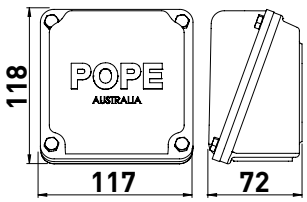
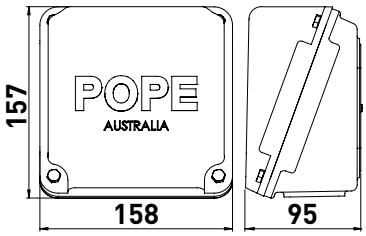
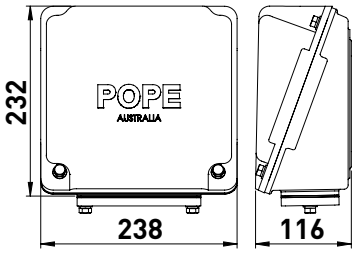
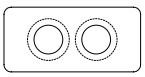
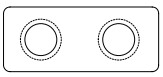
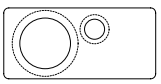
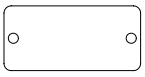
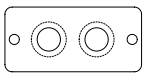
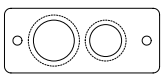
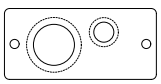
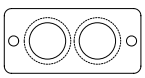
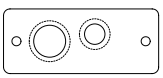
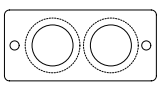
SHAFT AND KEY 2 Pole						SHAFT AND KEY 4 - 8 Pole						FLANGE								Frame Size
												Flange B5					LA	α°	Holes	
D	E	F	KT	G	ED	D	E	F	KT	G	ED	M	N	P	S	T				
65	140	18	11	58	110	80	170	22	14	71	140	500	450	550	19	5	22	45	8	280SQ
65	140	18	11	58	110	80	170	22	14	71	140	500	450	550	19	5	22	45	8	280S
65	140	18	11	58	110	80	170	22	14	71	140	500	450	550	19	5	22	45	8	280M
						80	170	22	14	71	140	500	450	550	19	5	22	45	8	280MX
65	140	18	11	58	110	85	170	22	14	76	140	600	550	660	24	6	22	45	8	315SQ
65	140	18	11	58	110	85	170	22	14	76	140	600	550	660	24	6	22	45	8	315SR
65	140	18	11	58	110	85	170	22	14	76	140	600	550	660	24	6	22	45	8	315MR
65	140	18	11	58	110	85	170	22	14	76	140	600	550	660	24	6	22	45	8	315M
65	140	18	11	58	110	85	170	22	14	76	140	600	550	660	24	6	22	45	8	315LR
65	140	18	11	58	110	85	170	22	14	76	140	600	550	660	24	6	22	45	8	315L (≤220kW)
65	140	18	11	58	110	85	170	22	14	76	140	600	550	660	24	6	22	45	8	315L (>220kW)
85	170	22	14	76	140	110	210	28	16	100	160	600	550	660	24	6	22	45	8	315LX
85	170	22	14	76	140	110	210	28	16	100	160	740	680	800	24	6	24	45	8	355LQ
85	170	22	14	76	140	110	210	28	16	100	160	740	680	800	24	6	25	45	8	355L
85	170	22	14	76	140	110	210	28	16	100	160	740	680	800	24	6	25	45	8	355LX
85	170	22	14	76	140	110	210	28	16	100	160	740	680	800	24	6	30	45	8	400L
85	170	22	14	76	140	110	210	28	16	100	160	1080	1000	1150	24	6	30	45	8	450L
85	170	22	14	76	140	110	210	28	16	100	160	1080	1000	1150	24	6	30	45	8	450LX
85	170	22	14	76	140	125	210	32	18	114	160	1320	1250	1400	24	6	30	45	8	500L

DIMENSIONS

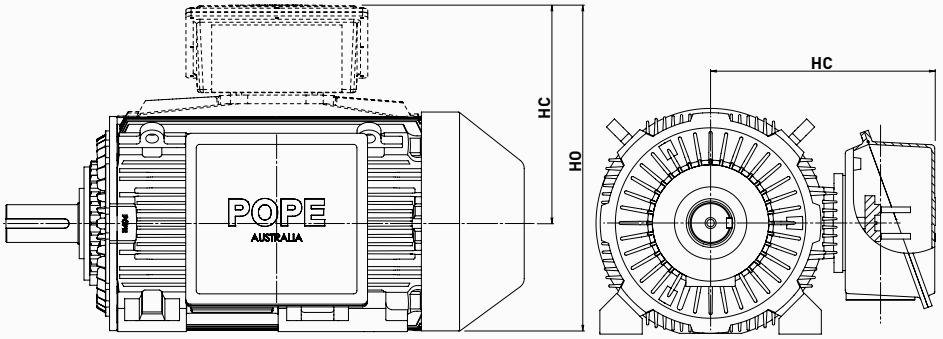
TERMINAL BOX DIMENSIONS

HC Dimension Too Big?
Enquire about our low profile terminal boxes with recessed terminal blocks.



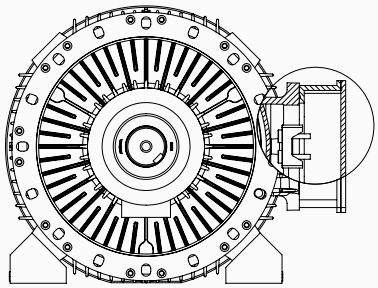
Frame Size	063	071	080	090	100	112	132	160	180	200	225
Terminal Boxes Sizes											
Standard Terminal Box LxWxH (mm)	**Standard Terminal Box** Sizes 063 - 112  72 x 117 x 118 mm						**Standard Terminal Box** Sizes 132  95 x 158 x 157 mm				**Standard Terminal Box** Sizes 160 - 225  116 x 238 x 232 mm
Oversize Terminal Box	**Oversize Terminal Box** Available on request						**Oversize Terminal Box** Available on request				**Oversize Terminal Box** Available on request
Low Profile Terminal Box LxWxH (mm)	**Low Profile Terminal Box** Not available						**Low Profile Terminal Box** 55 x 150 x 150 mm (25mm max conduit entry)				**Low Profile Terminal Box** 65 x 230 x 230 mm (32mm max conduit entry)
Pre-Drilled Terminal Boxes and Removable Gland Plate Options											
Standard Conduit Entry	 2 x M20 (Fixed)						 M25 / M20 (Fixed)				 M50 / M20 (Fixed)
Option 1 Conduit Entry	 Gland Plate (Removable)						 Gland Plate (Removable)				 Gland Plate (Removable)
Option 2 Conduit Entry	 2 x M16 (Removable)						 M32 / M20 (Removable)				 M40 / M20 (Removable)
Option 3 Conduit Entry	 2 x M25 (Removable)						 M20 / M16 (Removable)				 2 x M40 (Removable)
Option 4	Additional **gland plate options** available on request. Contact POPE Electric Motors for more information.										

TERMINAL BOX DIMENSIONS



Low Profile Terminal Boxes

To reduce overall motor width or height

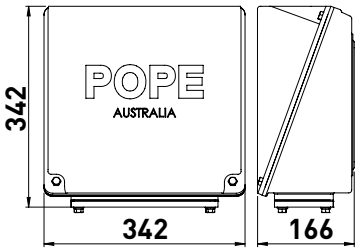


250	280	315	315 Above 220kW or Extreme	355	400	450	500

Terminal Boxes Sizes

Standard Terminal Box

Sizes 250 - 315



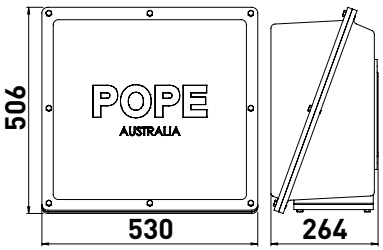
166 x 342 x 342 mm

Oversize Terminal Box
264 x 530 x 506 mm

Low Profile Terminal Box
100 x 300 x 300 mm
(50mm max conduit entry)

Standard Terminal Box

Sizes 315 - 400



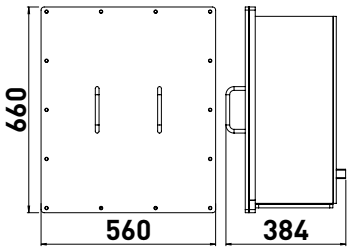
264 x 530 x 506 mm

Oversize Terminal Box
Available on request

Low Profile Terminal Box
180 x 500 x 500 mm
(63mm max conduit entry)

Standard Terminal Box

Sizes 450 - 500

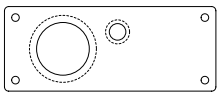


384 x 560 x 660 mm

Oversize Terminal Box
Available on request

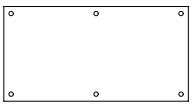
Low Profile Terminal Box
Available on request

Pre-Drilled Terminal Boxes and Removable Gland Plate Options

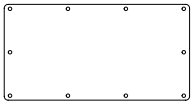


M63 / M20 (Removable)

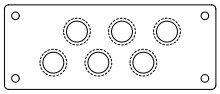
Gland Plate (Removable)



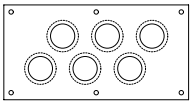
Blank Gland Plate (Removable)



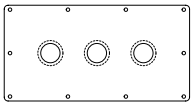
Blank Gland Plate (Removable)



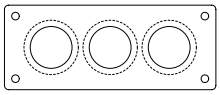
6 x M25 (Removable)



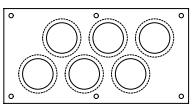
6 x M50 (Removable)



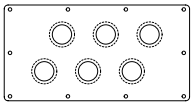
3 x M50 (Removable)



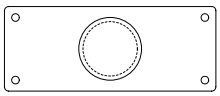
3 x M50 (Removable)



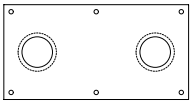
6 x M63 (Removable)



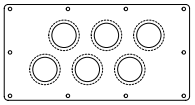
6 x M50 (Removable)



1 x 75mm (Removable)



2 x M63 (Removable)



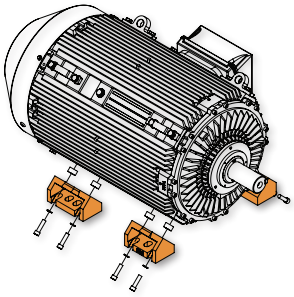
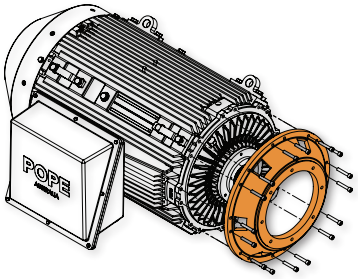
6 x M63 (Removable)

Additional **gland plate options** available on request. Contact POPE Electric Motors for more information.

FOOT , FLANGE, NEMA

ALTERNATIVE FRAME SIZES

If you have the frame size listed in the yellow column, you will **be able to convert it to any motor size** listed in the right columns; Foot Mount Options, Flange Mount Options, or NEMA Mount Options. *Some additional parts may be required.

POPE Flexi-Frame Alternate Sizes			
	Foot Mount Options	**Flange Mount Options**	**NEMA Mount Options**
My Frame Size			**NEMA** Bolt on flanges and feet for North American imperial frame sizes
63 Frame	71	71	
71 Frame	80	80	
80 Frame	90S, 90L	80, 90	48
90S Frame	90L, 100L	90, 100	143T or 145T
90L Frame	90S, 100L	90, 100	143T or 145T
100L Frame	112M	100, 112	184T
112M Frame	100L	100, 112	184T
132S Frame	132M	112, 132, 160	
132M Frame	132S, 160S, 160M	112, 132, 160	213T, 215T
160M Frame	160L	132, 160	254T
160L Frame	160M, 180M, 180L	132, 160, 180	254T, 256T
180M Frame	180L, 200L	160, 180, 200	284T
180L Frame	180M, 200L	160, 180, 200	284T, 286T
200L Frame	225S, 225M	180, 200,225	326T
225S Frame	250S, 250M	200,225, 250	364T
225M Frame	250S, 250M	200,225, 250	364T, 365T
250S Frame	250M, 280S, 280M	250, 280	404T
250M Frame	250S, 280S, 280M	250, 280	404T, 405T
280S Frame	280M, 315S, 315M	250, 280, 315	444T
280M Frame	280S, 315S, 315M	250, 280, 315	444T, 445T, 447T, 449T
315S Frame	315M, 315L	280, 315, 355	504T, 505T
315MS Frame	315S, 315L	280, 315, 355	505T
315M Frame	315S, 315L, 355L	280, 315, 355	505T
315L Frame	315M, 355L	280, 315, 355	
315LS Frame	315M	280, 315, 355	
355L Frame	400L	315, 355, 400	
400L Frame	450L	355, 400	
450L Frame			
500L Frame			

REFERENCE MATERIAL

POPE Electric Motors comply with industry standards to deliver a highly efficient and quality motor.

AS/NZS Quality Management Systems ISO 9001:2008	✔
AS/NZS 1359.5:2004, High efficiency and minimum energy performance standards requirements	✔
IEC 60034-1, Rotating electrical machines - Part 1: Rating and performance	✔
IEC 60034-2, Rotating electrical machines - Part 2: Standard methods for determining losses and efficiency	✔
IEC 60034-5, Rotating electrical machines - Part 5: Degrees of protection (IP code)	✔
IEC 60034-8, Rotating electrical machines - Part 8: Terminal markings and direction of rotation	✔
IEC 60034-9, Rotating electrical machines - Part 9: Noise Limits	✔
IEC 60034-12, Rotating electrical machines - Part 12: Starting performance	✔
IEC 60034-14, Rotating electrical machines - Part 14: Vibration Level	✔
IEC 60034-15, Rotating electrical machines - Part 15: Impulse voltage withstand levels of form-wound stator coils	✔
IEC 60034-17, Rotating electrical machines - Part 17: Cage induction motors when fed from converters	✔
IEC 60034-18, Rotating electrical machines - Part 18: Functional evaluation of insulating systems	✔
IEC 60034-30, Rotating electrical machines - Part 30: Efficiency classes of line operated AC motors (IE-code)	✔
IEC 60038, IEC standard voltages	✔
IEC 60050-411:1996, International electrotechnical vocabulary (IEV)	✔
IEC 60060-1, High-voltage test techniques - Part 1: General definitions and test requirements	✔
IEC 60072 (all parts), Dimensions and output series for Rotating electrical machines	✔
IEC 60085, Electrical insulation – Thermal evaluation and designation	✔
IEC 60204-1, Safety of machinery – Electrical equipment of machines - Part 1: General requirements	✔
IEC 60204-11, Safety of machinery – Electrical equipment of machines - Part 11: Requirements for high voltage equipment	✔
IEC 60445, Basic and safety principles for man-machine interface, marking and identification - Identification of equipment terminals, conductor terminations and conductors	✔
IEC 60664-1, Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	✔
IEC 60971, Semiconductor convertors. Identification codes (Withdrawn)	✔
IEC 61293, Marking of electrical equipment with ratings related to electrical supply - Safety requirements	✔
MEPS Compliant High Efficiency	✔

Minimum Efficiency Levels for Three Phase Electric Motors

Rated kW	MEPS Standard (Australia and NZ)								IEC Standard					
	MEPS-2				MEPS-3				IE2 - High Efficiency			IE3 - Premium Efficiency		
	2 POLE	4 POLE	6 POLE	8 POLE	2 POLE	4 POLE	6 POLE	8 POLE	2 POLE	4 POLE	6 POLE	2 POLE	4 POLE	6 POLE
<0.73	80.5	82.2	77.7	73.5	82.9	84.5	80.4	76.5						
0.75	80.5	82.2	77.7	73.5	82.9	84.5	80.4	76.5	77.4	79.6	75.9	80.7	82.5	78.9
1.1	82.2	83.8	79.9	76.3	84.5	85.9	82.4	79.1	79.6	81.4	78.1	82.7	84.1	81.0
1.5	84.1	85.0	81.5	78.4	86.2	87.0	83.8	81.0	81.3	82.8	79.8	84.2	85.3	82.5
2.2	85.6	86.4	83.4	80.9	87.5	88.2	85.5	83.3	83.2	84.3	81.8	85.9	86.7	84.3
3	86.7	87.4	84.9	82.7	88.5	89.1	86.9	84.9	84.6	85.5	83.3	87.1	87.7	85.6
4	87.6	88.3	86.1	84.2	89.3	89.9	87.9	86.2	85.8	86.6	84.6	88.1	88.6	86.8
5.5	88.5	89.2	87.4	85.8	90.1	90.7	89.1	87.7	87.0	87.7	86.0	89.2	89.6	88.0
7.5	89.5	90.1	88.5	87.2	90.9	91.5	90.1	88.9	88.1	88.7	87.2	90.1	90.4	89.1
11	90.6	91.0	89.8	88.8	91.9	92.2	91.2	90.3	89.4	89.8	88.7	91.2	91.4	90.3
15	91.3	91.8	90.7	90.0	92.5	92.9	92	91.4	90.3	90.6	89.7	91.9	92.1	91.2
18.5	91.8	92.2	91.3	90.7	92.9	93.3	92.5	92.0	90.9	91.2	90.4	92.4	92.6	91.7
22	92.2	92.6	91.8	91.2	93.3	93.6	92.9	92.4	91.3	91.6	90.9	92.7	93.0	92.2
30	92.9	93.2	92.5	92.1	93.9	94.2	93.6	93.2	92.0	92.3	91.7	93.3	93.6	92.9
37	93.3	93.6	93.0	92.7	94.2	94.5	94.0	93.7	92.5	92.7	92.2	93.7	93.9	93.3
45	93.7	93.9	93.5	93.2	94.6	94.8	94.4	94.2	92.9	93.1	92.7	94.0	94.2	93.7
55	94.0	94.2	93.9	93.7	94.9	95.0	94.8	94.6	93.2	93.5	93.1	94.3	94.6	94.1
75	94.6	94.7	94.4	94.4	95.4	95.5	95.2	95.2	93.8	94.0	93.7	94.7	95.0	94.6
90	94.8	95.0	94.8	94.7	95.5	95.7	95.5	95.5	94.1	94.2	94.0	95.0	95.2	94.9
110	95.1	95.3	95.1	95.1	95.8	96.0	95.8	95.8	94.3	94.5	94.3	95.2	95.4	95.1
132	95.4	95.5	95.4	95.4	96.1	96.1	96.1	96.1	94.6	94.7	94.6	95.4	95.6	95.4
150	95.5	95.7	95.6	95.7	96.1	96.3	96.2	96.3	94.8	94.9	94.8	95.6	95.8	95.6
<185	95.5	95.7	95.6	95.7	96.1	96.3	96.2	96.3						
200-375									95.0	95.1	95.0	95.8	96	95.8

INSTALLATION GUIDE

SHORT FORM (CONTACT POPE FOR FULL MANUAL)

POPE ELECTRIC MOTORS INSTALLATION AND SAFETY GUIDE

REFERENCE MATERIAL

HEALTH & SAFETY AT WORK

POPE Electric Motors Pty Ltd is a Quality Endorsed Company accredited to the highest International Quality Standards ISO 9001-2008. This manual gives guidance for installation and maintenance procedures for the TEFC range of squirrel cage induction motors. It should be carefully read in conjunction with local codes & the following standards prior to installation and commissioning.

AS1359	Rotating Electrical Machines. General Requirements.
AS1359.101	Rating and Performance.
AS4024	Safeguarding of Machinery.
AS3000	Electrical Installation (known as SAA Wiring Rules).
IEC 60034	Rotating Electrical Machines

Further information can be obtained by contacting POPE Electric Motors

LIFTING

- Use all lifting facilities provided:
- State or National procedures for safe lifting practices should be followed. See nameplate for motor weight.
- Vertical lifting: Prevent uncontrolled rotation of the motor.

INSPECTION AND STORAGE

☑ **TICK WHEN CHECKED**

☐ 01 Ensure correct motor is received.

☐ 02 Check for transit damage.

☐ 03 Report damages to POPE Electric Motors giving complete details.

STORAGE

☐ 04 Ensure motors are stored in a dry location within an ambient temperature range of -20°C to +45°C

☐ 05 Energise anti-condensation heaters if fitted.

☐ 06 Ensure all plugs originally provided are in place (e.g. Cable entry hole plugs, drain plugs.

☐ 07 Every 24 months rotate shaft.

☐ 08 Ensure shaft locking clamp is in place and tight.

INSTALLATION CHECKS

☐ 09 Electric motors must be protected with correctly sized thermal overload devices with phase loss / imbalance protection. All POPE Flexi-Frame motors are fitted with PTC thermistors. A suitable thermistor relay is highly recommended.

☐ 10 Fan cover not damaged or touching fan. Minimum 80mm gap between fan cover and nearest barrier.

☐ 11 Foot not broken or cracked. Fixing bolts tight.

☐ 12 Shaft not damaged or bent.

☐ 13 Check all the name plate details.

☐ 14 Check free running by hand.

☐ 15 Check grease condition if motor is idle for more than 24 months.

☐ 16 Add appropriate lubrication to oil seals: if required.

☐ 17 Check mounting alignment / plane. Add shims if necessary. (A)

☐ 18 Verify belt tension where applicable. (A)

☐ 19 Check for any misalignment in motor & drive shaft. (A)

☐ 20 Ensure clean and level mounting surfaces to feet, flange & shaft.

☐ 21 While mounting use appropriate fasteners & tightening torques. (T)

☐ 22 Check all the gaskets, sealants & guards are correctly fitted.

☐ 23 Ensure correct drain hole position. Refer to mount positions / drain holes. (M)

☐ 24 Ensure both power supply system and motor is grounded.

☐ 25 Check insulation resistance of all windings with 500V DC megger. If < 10 megger Ω dry out following correct procedure.

☐ 26 Ensure the equipment is fused and isolated correctly.

☐ 27 Ensure all the covers are fitted and sealed, interior of terminal box is clean & free of cable residues and foreign objects.

☐ 28 Seal unused cable entries.

☐ 29 Check connection diagram and ensure correct terminal arrangement. (C)

☐ 30 Ensure all the connections are tight and clean. (T)

☐ 31 Ensure air clearance between phases & phases to earth. (C)

☐ 32 Check rotation, uncoupled.

☐ 33 Ensure rating of fuse - circuit breaker is correct.

☐ 34 Ensure space heater (if provided) is off while motor is operating.

☐ 35 Altitude in excess of 1000 metres contact POPE Electric Motors.

☐ 36 Ambient temperature higher than 40°C contact POPE Electric Motors.

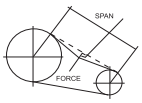
☐ 37 If operated from a speed controller contact POPE Electric Motors.

☐ 38 If motor marked with "Ex" symbol for hazardous area refer to appropriate standards and installation manuals.

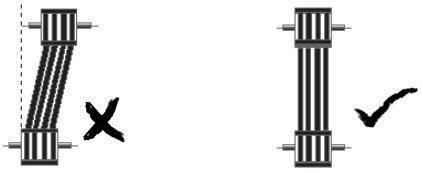
☐ 39 Installation must only be carried out by qualified trade personnel in accordance with local standards.

(A) ALIGNMENT: BELT DRIVES

☐ 40 When fitting belt drives, the belt manufacturers recommendations for installation and tensioning must be strictly adhered to.



DO NOT OVER TENSION V - BELTS

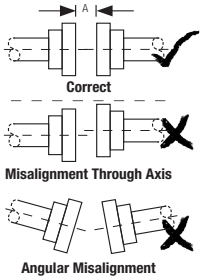


1.INCORRECT INSTALLATION
Shafts are parallel and in alignment, but pulleys are not aligned.

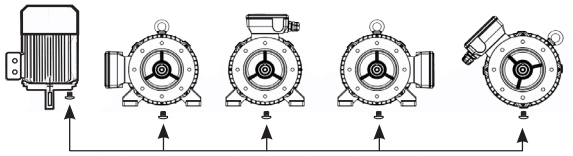
2.CORRECT INSTALLATION.
Both shafts and pulleys are parallel and in alignment.

(A) ALIGNMENT: DIRECT COUPLING

☐ 41 Care must be taken in checking alignment of driving and driven shafts.
Dimension "A" should be the same when measured at any location on coupling face using a thickness gauge.
After fitting and connecting check for vibration and out of balance.



M MOUNTING POSITIONS / BREATHER PLUG



Anti-condensation breather plug at lowest points

☐ 42 **POPE Flexi-Frame** 63-400 Frame motors have bolt on mounting feet, relocating the feet allows the terminal box to be left side, right side, or top mount. When changing feet position ensure:

- Location keys are fitted correctly and fasteners are tightened to recommended torque (see chart (T)).
- Unused mounting holes on frames 63-112 are sealed with rubber grommets, screws or sealant to prevent water/dust pooling.
- Drain hole plugs/holes are located at the lowest point to allow condensation to drain, IP66 motors generally have the drain hole sealed.

C CONNECTION & TERMINATIONS

☐ 43 Typical connection diagrams for standard motors.
All motors are provided with suitable earthing studs.

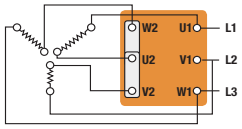


FIGURE 1

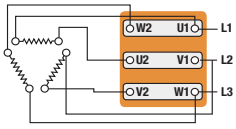


FIGURE 2

Y STAR CONNECTION

0.09 kW to 3 kW are fitted with Star Y connected bridging bars for operation at 380V to 415V 50Hz / 440V to 480V 60Hz. Motors can be reconnected in Delta Δ **(FIGURE 1)** for use with 240V 1ø input inverter with 220/240V 3ø output.

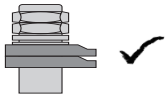
Δ DELTA CONNECTIONS

4kW and above are fitted with Delta Δ connected bridging bars for operation at 380V to 415V 50Hz / 440V to 480V 60Hz. Motors can be reconnected in Star Y **(FIGURE 2)** for use on 690V 50Hz supply.

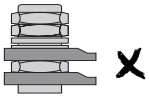
FOR MULTI SPEED & 1000V CONNECTIONS CONTACT POPE ELECTRIC MOTORS

☐ 44 **CABLE TERMINATIONS**

When connecting the supply cable to the motor terminal studs, the position of cable lugs, connectors and washers should be arranged such that the terminal stud is not used as a conductor. Tight terminals must be maintained. It is advisable to tighten nuts or bolts to the recommended torques. (See table (T) below).



Correct terminal connection.



Incorrect terminal connection.

☐ 45 The correct creepages and clearances between phases and phase and earth should be maintained: 600V & below 10mm / 600V to 1250V 20mm or use POPE phase barriers.

T RECOMMENDED TIGHTENING TORQUE

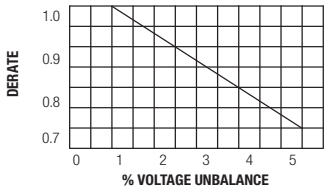
☐ 46

FIXING SIZE (mm)	TERMINAL POST	CAST BODY Stainless Fixings A2-70
	Newton Metres ±10% (Nm)	
4	1.7	2.7
5	2.8	5.0
6	7.3	9.0
8	15	22
10	26	44
12	65	77
16	130	190
20		372
16		640

OPERATION

NO LOAD OPERATION

☐ 47 Run motor with load uncoupled. Ensure rated voltage is applied to motor terminals and balanced in all three phases. The maximum allowable imbalance is 1%. Should voltage imbalance be greater than 1%, moderate motor output or reduce motor load as per graph below.



☐ 48 Check that three phase currents at No Load are balanced.
Note: The No Load currents will be less if the voltage is higher. They will be more if the voltage is less. The increase & decrease will not be in linear proportion with voltage.

☐ 49 No abnormal noise.

☐ 50 Check direction of rotation if specific.

☐ 51 Check vibration.

STARTING AND OPERATING ON LOAD

☐ 52 Squirrel Cage Motors are generally suitable for DOL, Star/Delta, auto transformer starting and AC speed controllers.

☐ 53 Maximum DOL starts per hour at maximum load inertia, equally spaced, includes one cold start at 40°C ambient.

Pole	FRAME / STARTS PER HOUR					
	63 - 112	132-160	180 - 200	225 - 250	280	315M
2	12	10	8	5	3	3
4	21	19	15	10	6	4
6	27	24	19	12	8	6
More starts can generally be achieved by using an AC drive.						

☐ 54 Ensure rated voltage at the motor terminal during start up and check starting time within designed limit. For normal application, the time required will not be more than 5 seconds at DOL. For high inertia load the starting time is longer but special design is required to cater for this. For star/delta & reduced voltage starter the time will be longer than DOL start.

☐ 55 Ensure full load currents are balanced in all phases (maximum imbalance 8% corresponding to 1% imbalance of voltage) and the value is within nameplate data. In case of pulsating load we recommend the maximum current to be within nameplate value.

☐ 56 No abnormal noise or vibration (If change in vibration level is observed, check alignment again with motor at normal running temperature).

☐ 57 Check maximum ambient air temperature 50°C maximum.

☐ 58 Check motor temperature after approximately 2 hours of full load operation, refer to full installation manual for allowable load temperatures for each size motor.

PREVENTIVE MAINTENANCE & LUBRICATION

☐ 59 Motor should be kept clean and free from oil, dust and moisture (with the exception of the POPE Extreme motor).

☐ 60 Care should be taken to see that ventilation passages are not blocked.

☐ 61 The earthing conductor should be regularly inspected and checked for continuity.

☐ 62 The insulation resistance of stator should be checked regularly between respective terminals and the frame.

☐ 63 Always fit shaft clamp during transportation 200 frames and above.

☐ 64 Grease replenishment (Sinopec HPXT grease recommended, or equivalent lithium based grease) should be carried out at predetermined intervals.

NEVER MIX GREASE TYPES

Note: Rewinding motors may reduce motor efficiency and increase running costs. Contact POPE Electric Motors Pty Ltd for additional information.

Abuse of electrical equipment can be hazardous. Every effort should be made to eliminate these hazards and this guide should assist in minimising these risks.

Qualified engineering advice should be sought to determine the correct selection, sizing, safety and installation of electrical equipment.

POPE Electric Motors Pty Ltd makes no warranty as to the completeness or accuracy of any material contained in this guide and shall not be liable for any errors or omissions. POPE Electric Motors Pty Ltd cannot accept responsibility for the way in which this installation & safety guide it is interpreted, or any consequence as a result.

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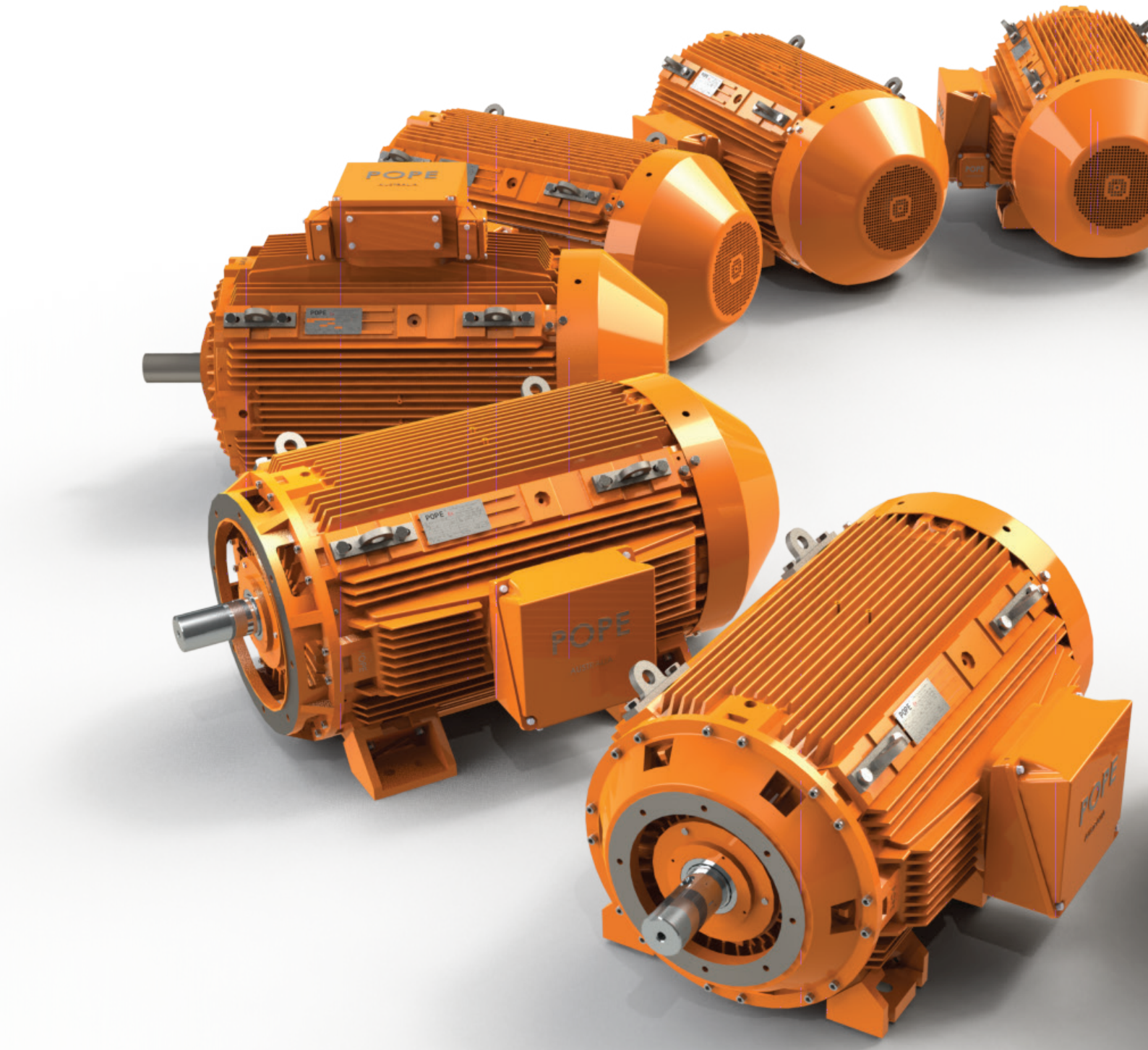

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