

POPE

ELECTRIC MOTORS



Quality
ISO 9001

HIGH VOLTAGE ELECTRIC MOTORS

ELECTRIC MOTORS BROCHURE 2016/17





Designed for Excellence

Built to International and Australian standards

- Pope designs and builds motors to achieve optimum performance and maximum efficiency. Our motors are built to achieve and exceed the following standards:
 - AS 1359 - Electric motor design
 - IEC 34
 - IEC 72
 - NEMA
 - JEC
- Every Pope Motor is built under the ISO9001 Quality Assurance System. Pope also operates a NATA certified test laboratory and can offer a full range of internationally recognised testing capabilities.
- Pope Motors are built to withstand the toughest environmental conditions and arduous operational duty cycles.

Pope Electric Motors design and build the world's best motors for high voltage applications. Our specialist knowledge in high voltage technology, rugged construction methods and integrated manufacturing continue to provide products of excellence, performance and value. We provide tailored solutions for your equipment driving needs which meet the most rigorous Australian and International standards.

Pope supplies and supports its motors throughout Australasia, Asia, the Middle East, Africa and South America. Our motors are supplied for a wide range of industries including, mining, petroleum, process manufacturing and heavy industry.



General design specifications

• Output Range

Pope design and build high voltage motors rated up to 6,000kW at 4 pole speed. Pope offer a full range of output speeds and torque capabilities.

• Frames

Pope build electric motors in frame sizes (measured to centre height of motor shaft) up to 1200mm. Pope Electric Motors are designed completely inhouse and are available in a wide range of enclosures.

• Power Supply

Pope can produce motors to handle voltages of up to 13.8kV in 3 phase power at frequencies of 50 and 60Hz. Designs for special voltages and supply frequencies can also be provided.

• Insulation System

All windings are constructed with Class H (155°C) materials. Anti Corona treatment is standard for insulation used in motors of 5kV and above.

• Enclosure Protection

T.E.F.C.	IC 411	IP 69K
C.A.C.A.	IC 611	IP 69K
C.A.C.W.	IC.8A.IW7	IP 69K
Drip proof	IC.01	IP 22
N.E.M.A.	IC.01	IP 44

Optional protection specifications available

• Noise

Pope High Voltage motors comply with the following noise requirements:

- AS 1359 - part 109 (IEC 60034-9)

• Vibration Levels

Pope High Voltage Motors comply with the following vibration levels:

- AS1359 part 114 (IEC 34.14)

Tailored for your Application

Pope tailors the design of each High Voltage Motor to suit your specific requirements.

- Pope Motors can be designed for use with variable speed drives, reciprocating machinery, low starting currents, constant torque, special mountings, hazardous areas and other requirements.
- Pope's baseline designs utilise either one or two end shield mounted bearings as follows:
IM1001 or IM1002 : Horizontal Foot Mounting
IM2001 or IM2201 : Horizontal Foot & Flange Mounting
IM3011 : Vertical Flange Mounting
- Pope optimises the design of its motors to achieve excellence in performance, efficiency and machine integrity.
- Pope Motors achieve a minimum temperature range of -40°C to +60°C at 1000 metres altitude.

• Hazardous Area Operations

Pope offers motors suitable for a full spectrum of Hazardous Area Operations. We have a wide range of designs pending certification and are continuously developing new motors for new applications.

• Design Tools

Pope has developed a suite of advanced engineering tools for motor design. We have developed our own motor design software for electrical design and performance calculations and we use a range of commercially available computer packages for equipment modelling and detailed design.

• Design Integrity

Every element of a Pope High Voltage Motor is designed or specified inhouse. Our team of world class engineers and designers ensure that each motor achieves integrity with technical and performance specifications, and certification requirements.

Motor Technology - Building a Better Motor

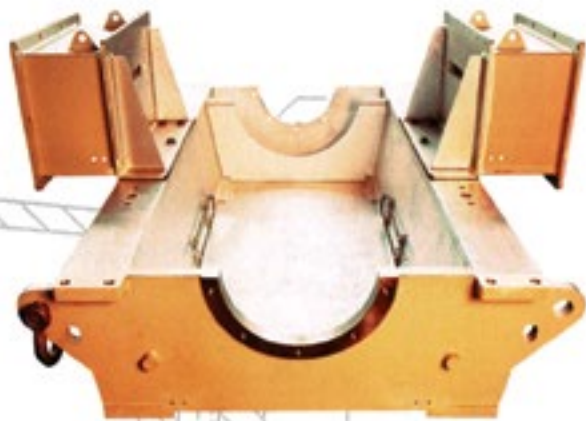


Commitment to Excellence

- Pope's commitment to excellence flows through to manufacturing. Each element is manufactured to the highest quality prior to being integrated into a finished product.

Stator Windings

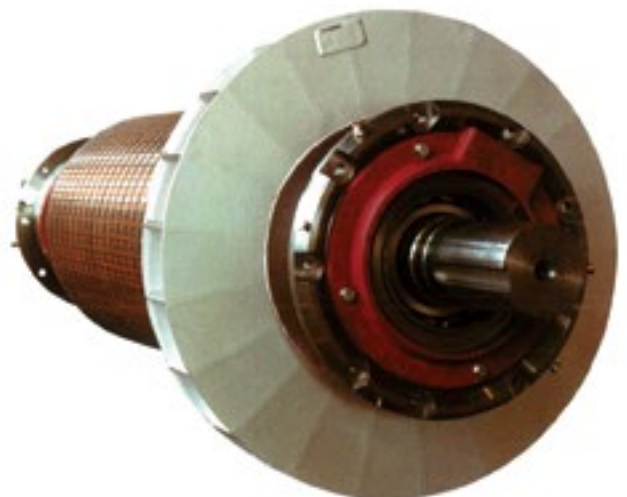
- Rectangular Copper Conductors are used to maximise electrical conductivity
- Polyester enamel and film baked mica tape are used to pre-insulate conductors
- Semiporous mica glass tape is applied in half lap layers according to voltage requirements
- Inserted coils are held with resin bonded magnetic slot wedges which minimise harmonic stray losses
- Head windings are fully braced to prevent movement during D.O.L. starting
- Corona protection is provided for 5kV motors and above (and can be specified for lower voltages)
- A rigid void free winding is achieved using a solventless epoxy resin Vacuum Pressure Impregnation process (VPI)



WINDING
026 AT D.E.
06 AT N.D.E.

ENDSHIELD

V-RING SEAL





Stator Core

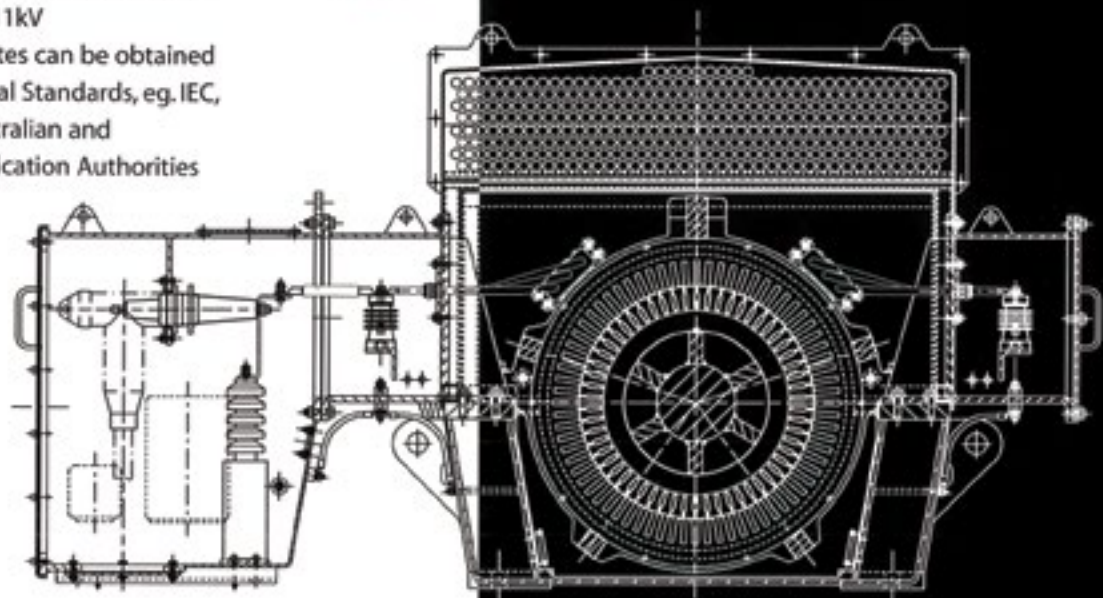
- Pre varnished, low loss electrical steel is used in the stator core
- The pressure cleat welding process creates a tight build and produces low noise and vibration levels in finished motors
- Ventilation ducts are incorporated in the design to achieve efficient cooling and movement of internal air

Rotors

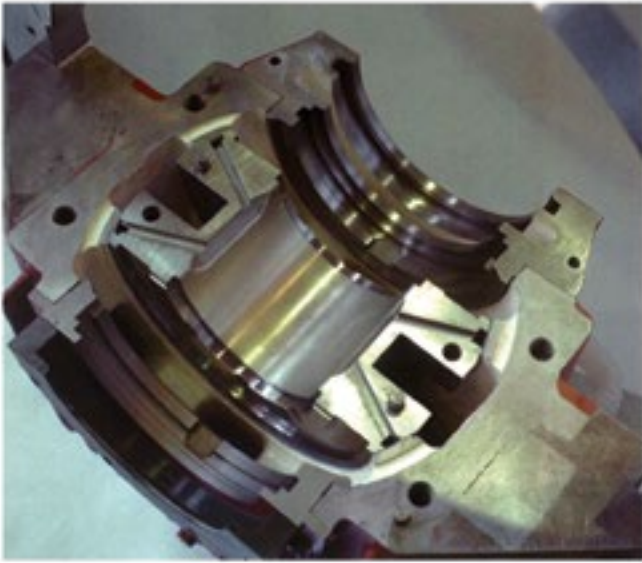
- Squirrel cage rotor bars and shorting rings are assembled on an Acetylene Brazing Rig to maximise quality of connection and finish
- Wound rotors incorporate Class F insulation materials. Slip rings are separately enclosed
- Rotors are dynamically balanced to ISO 1940/1 Grade 2.5 (high speed rotors balanced to Grade 1.0)
- Rotor cores are manufactured from lamination packs of electrical steel. Rotor shafts are manufactured from single piece forgings, minimum tensile strength 570 MPa

Testing and Certification

- A full range of tests is available
 - coil insulation
 - dynamic performance
 - temperature rise and efficiency
- Certification
 - A range of certificates to Australian standards covers Exn, Exe, Exp and DIP for voltages up to 11kV
 - Additional certificates can be obtained against International Standards, eg. IEC, BSEN, through Australian and International Certification Authorities



Motor Elements



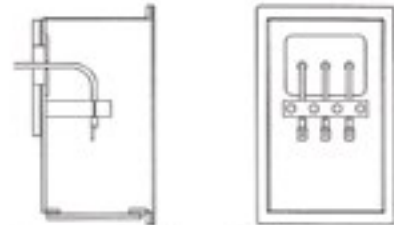
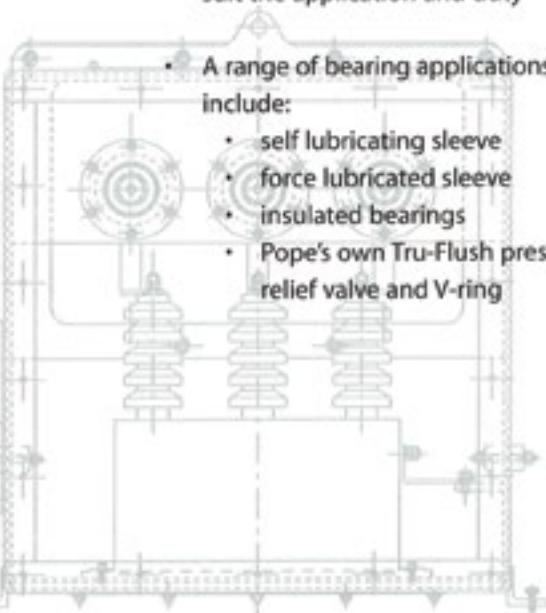
Oil Lubricated Sleeve Bearing

Terminations

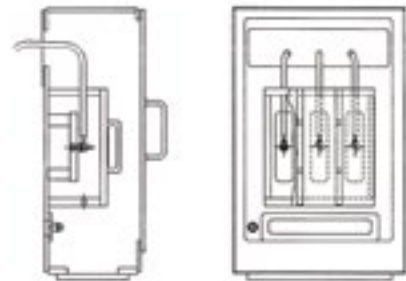
- Pope can provide a range of terminal boxes including phase separated and insulated arrangements
- Separate terminal boxes can be provided for auxiliary electrical items

Bearings

- Pope will tailor the bearing arrangement to suit the application and duty
- A range of bearing applications used include:
 - self lubricating sleeve
 - force lubricated sleeve
 - insulated bearings
 - Pope's own Tru-Flush pressure grease relief valve and V-ring



Phase Insulated Terminal Box



Phase Segregated Terminal Box

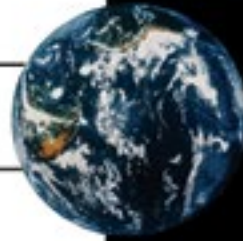


Elastimold Insulated Terminal Box with surge protection

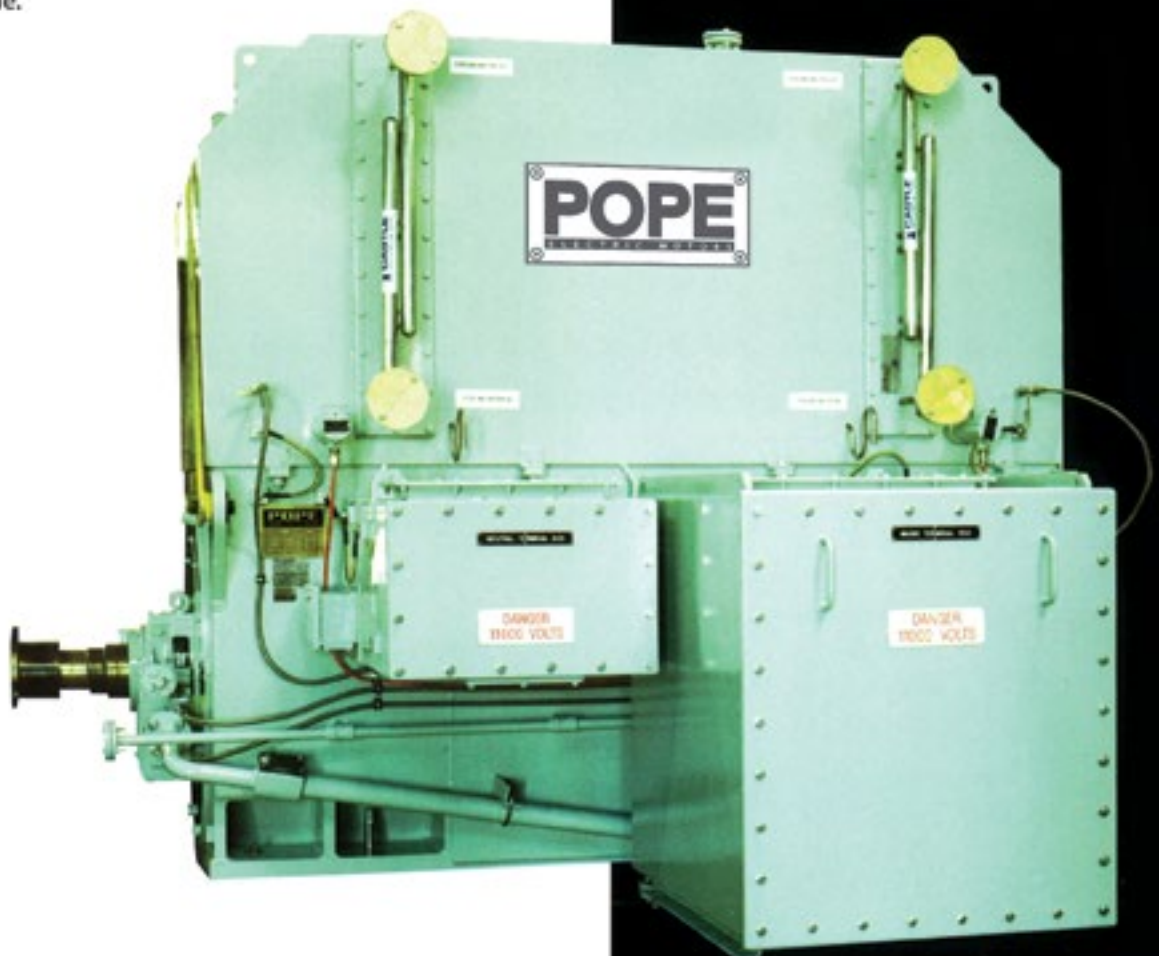


Insulated Bearing

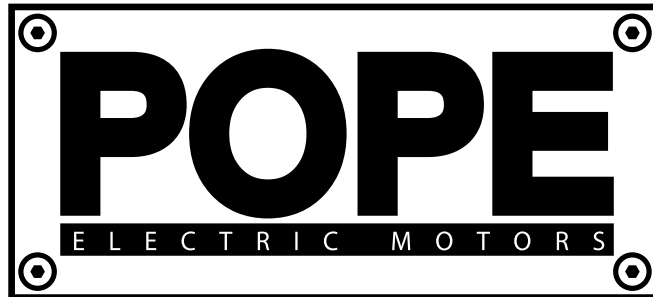
International Excellence



- Pope's highly capable team of designers and engineers cross international boundaries to bring together the best in high voltage technology, engineering and manufacturing excellence.
- Pope tailor high voltage motor solutions for your application anywhere in the world.
- Pope continuously evolve designs and engineering techniques to bring you the best high voltage motors possible.
- Pope Electric Motors are manufactured and tested to the highest standards to give you excellence in performance and reliability.
- Pope offer world wide back up and quality service. Our highly skilled service engineers are equipped with portable diagnostic equipment and are ready to go anywhere at any time.



11kV Water Cooled Motor - CACW



For Sales, Services & Technical Support



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