

TECHNICAL FEATURES

Morley motors are designed and manufactured at the Morley head office and main factory in Leeds in England, making use of proven electrical design software and modern design tools including computer aided drawing and finite element analysis techniques.

Construction Frames are very robust yet permit the possibility for customisation. All motors are manufactured from either cast iron or heavy gauge fabricated steel dependant on size, including the feet or flange, the terminal box and bearing housings. All mounting arrangements can be accommodated.

Cooling Conventional air-cooling or water jacket cooling is available. Air-cooled machines incorporate steel fans, fan covers and ribbed frames. Water jacket cooled machines by virtue of the internal water labyrinth offer an extremely efficient cooling system and they have many other benefits over air-cooled motors including:

- Higher efficiency - reducing running cost and payback time. Generally the capital cost of a motor represents a fraction of the operating cost over its working life.
- Very low noise, typically 10dB(A) lower than an air cooled motor
- Compact construction – much smaller than an air-cooled equivalent
- Heat dissipation into the water not the surrounding atmosphere
- Variable speed compatibility, constant cooling even at very low speeds
- Frame cooling is not affected by heavy coal deposits on the frame
- All machines are bi directional
- Outer frame surfaces remain cold to the touch, therefore not affecting the surrounding ambient conditions and maintaining operator safety

Location Machines are available for non-hazardous - safe area use or for use in a zone 1 hazardous area mining environment with protection type "d" (Exd) to BS.4683, Part 2 or to EN50014/18 or to the equivalent American, Russian, Chinese or Australian standard.

Cores Produced from laminated, insulated, high grade, low loss silicon steel. Stator cores are secured between laser cut steel plates. Rotor cores fit against a shaft shoulder at the non-drive end, are keyed with a full-length key and secured by a multi-tab washer and locking nut at the drive end. This ensures that both the stator and rotor cores are very rigidly supported.

Windings Low voltage motors incorporate wire windings insulated with a high-grade polyester covering. High voltage motors have rectangular copper strip pre-formed coils that are vacuum pressure impregnated in a class H polyester resin. High-grade proven insulation systems provide a high overload capacity and the ability to pass IEEE water immersion tests.

Rotors The Morley Barlok® pinned copper bar rotor system employs rolled steel pins that are inserted below the rotor bar in order to overcome problems associated with more conventional methods of rotor construction. The system was specifically developed for arduous starting duty cycles as seen in mining applications. Barlok® overcomes bar joint stress and radial vibration problems increasing reliability, life expectancy and permissible starting frequency. Morley are not aware of a single rotor bar failure since the introduction of Morley Barlok® in 1980. Morley Barlok® is a standard feature now specified by many coal mining companies.

Bearings All motors incorporate high quality widely available metric grease lubricated rolling element bearings. Long bearing design lives and generous re-lubrication intervals help to reduce maintenance and down time. Grease nipples allow re-greasing while running and pressure grease relief facilities ensure bearings cannot be over greased. One of the most common causes of bearing problems is inadequate bearing sealing. Morley utilise the highest quality and most effective brass seals available.

Terminals Terminal boxes are cast iron or fabricated steel, non-fault rated and air insulated. Terminal boxes can be mounted in various positions including the top, side and at the non-drive end. Gland plates can be provided blank or fitted with a variety of glands, sockets and adapters to suit customer's requirements and local regulations.

Protection Enclosure protection is available up to IP56 and protective surface treatments have been carefully selected to offer effective protection in all environments including potash mining.



MINING DRIVE MOTORS



Morley Electric Motors

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Morley Electric Mining Drive Motors



✓ MARKET LEADING

Morley is well established in all key mining markets of the world and the company's products are certified to comply with a variety of international standards. Morley prides itself on its design expertise, technical innovation and having the flexibility to understand and react to customers needs.

✓ EXPERIENCED

Established in 1897 the company can demonstrate comprehensive reference lists detailing numerous high profile global installations. Customers include packagers, mining machinery manufacturers and coal and potash producers. The product range and experience embraces every mining duty, application and environment.

✓ PROFESSIONAL

Morley is ISO9001:2000 and EECs approved, and is a strong, focused and expanding organisation that prides itself on its design expertise, technical innovation and having the flexibility to understand and react to customers needs.

✓ LOCAL

A network of overseas offices and service and repair companies offering local consultation and product support demonstrates the company's commitment to extending an already strong international position.

Morley offer specifically engineered reliable drive solutions that match the requirements of the driven equipment, coupling, drive system and gearbox arrangement. The unmistakably robust build specification of a Morley motor is evidence that the motors are built to last in the harshest mining environments.

Morley motors operate around the clock at the heart of some of the most productive coal and potash mining equipment in the world today. If you want performance that exceeds your expectations, unrivalled quality and proven reliability, increased availability and therefore higher productivity, longer product life and peace of mind, then take control by installing a Morley motor in your mining machinery.

BENEFITS

- Outputs up to 2000kW, supplies up to 6600 Volts
- Extra heavy duty construction to safeguard against impact and mechanical shock
- Barlok® pinned copper bar rotor construction
- Sealed, VPI stator winding system
- High quality, proven bearing and bearing seal arrangements
- Extremely efficient
- Low noise, vibration and maintenance
- Flexibility and customisation to match specific drive requirements
- Comprehensive in house on load testing on 50Hz, 60Hz or variable frequency
- Variable speed / Inverter compatible
- Wide ranging and international flameproof approval certificates
- Water jacket cooled motors available permitting continuous operation under heavy coal deposits
- Water cooled shafts are available for heavy duty cycles
- Water cooled endplates are available to cool the area around the bearings
- Nickel, stainless steel or ceramic water passage coatings are available to reduce corrosion
- Range of cooling and mounting options



DUTIES AND APPLICATIONS

Armour face conveyor motors	Fan motors	Road header motors
Shearer loader motors	Plow system drives	Auger motors
Stage loader motors	Traction motors	Gathering arm motors
Crusher motors	Haulage motors	Bucket loader motors
Belt conveyor motors	Continuous miner motors	Tunnelling machine drives
Pump motors	Shuttle car drives	Monorail drives

RANGE

The Morley ranges have developed along with the increasing demands of the most modern and largest longwall's, longwall support systems and shearer loaders in the world.

A wide range of outputs, speeds and enclosures is available including designs that are suitable for use on both 50Hz and 60 Hz supplies within the same motor. Using 4 pole single speed (1500 revs/min) and 4/8 pole two speed (1500/750 revs/min), 50Hz, 3 phase a.c. supply as an example, the following outputs are typically available.

FRAME SIZE	POWER OUTPUT (kW)	POWER OUTPUT (HP)	SPEED (POLES)	SUPPLY VOLTAGE	COOLING
E132M – E280M	3 – 110	4 – 147	4	200 – 1100	Air
PBM28 – PDM40	30 – 112	40 – 160	4	200 – 1200	Air
E315S – E355	112 – 425	150 – 570	4	200 – 6600	Air
EM43M – EM64L	Up to 250	Up to 335	4	200 – 1200	Air
BM28 – EM54M	18.5/18.5 – 150/75	24/24 – 200/100	4/8	1000 – 1200	Air
AMW33 – FMW52	75 – 400	100 – 535	4	1000 – 1200	Water
FMW54 – GMW64	224/112 – 400/200	300/150 – 535/268	4/8	1000 – 1200	Water
GMW48 – HMW82	260/130 – 700/350	345/174 – 935/467	4/8	3300 – 6600	Water
EMW30L – IMW85	112 – 1500	150 – 2000	4	3300 – 6600	Water

STANDARDS AND CERTIFICATION

Motor ranges are designed and constructed in accordance with IEC standards. Flameproof certification compliance certificates are available for a range of countries including Europe (BASEEFA or SIRA), USA (MSHA), China (Shanghai Electric), Australia (Test Safe) and Russia (Vostni).

