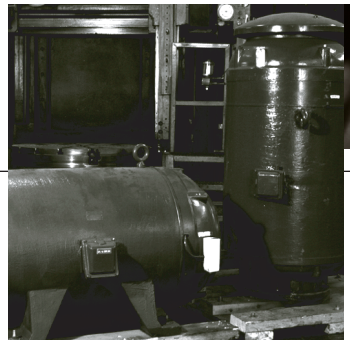
HORIZONTAL & VERTICAL EXPLOSION PROOF AND TOTALLY ENCLOSED MOTORS



CONTINENTAL

Custom designed

100% U.S. manufactured

Continental's pioneering efforts have led to a number of important achievements, and among these was the design of explosion-proof motors. They're intended for Class I, Group C, D, E, F and G, Division I and II areas, i.e. atmospheres containing volatile substances, including gasoline, petroleum-naphtha, benzene, alcohols, acetone, benzol, lacquer, solvent vapors, propane, butane, and natural gas. Its totally enclosed models employ the same end cap and circulating fan, and are intended for areas where airborne corrosives are present.

Continental's explosion proof and totally enclosed motors are available from fractional Hp to 1500 Hp, and can be designed for special voltages as high as 13,000 volts. Standard insulation systems are Class F or Class H with Class B temperature rise as required for UL listing. The motors can be built in vertical or horizontal configurations, and for both fixed and variable speed operation. Continental explosion-proof and totally-enclosed motors are built to meet or exceed all appropriate specifications.*

ENGINEERED FOR PERFORMANCE

Little things make big motors perform better. That's why Continental attends to every detail.

Quality assurance checks begin the moment components or raw materials enter our plant and continue, almost uninterrupted, until completed motors are shipped. Each motor is dynamically balanced and thoroughly tested. Vibration and noise levels are in accordance with NEMA and IEEE guidelines, or are controlled to meet your safety specifications. Certificates of Conformance accompany each motor shipped. Every effort is made to assure optimum performance with minimal repair and maintenance. It's why Continental today supports its motors with the broadest, most comprehensive product warranty in the industry.

* NEMA – National Electrical Manufacturers Association; IEEE – Institute of Electrical & Electronics Engineers; API – American Petroleum Industries; UL – Underwrites Laboratories; ANSI – American National Standards Institute; ABMA – American Bearing Manufacturers Association.

HORIZONTAL & VERTICAL EXPLOSION PROOF & TOTALLY ENCLOSED MOTORS

AIR GAP

- Provides optimal mechanical clearance with high power factor
- Perfect concentricity of rotors and stators minimize noise and vibration
- Combined with small slot openings minimizes permeance pulsations

BRACKETS

- Rigid cast iron brackets maintain precise bearing alignment
- With jack screw holes, brackets are easily removed with standard tools
- Bronze cartridge liners around the shaft provide an extra measure of safety.

BEARINGS

- Oil or grease lubricated bearings are tailored to the motor size, speed and thrust requirements
- High thrust motors are equipped with conservatively rated angular contact bearings
- Dynamic rotor balance minimizes stress and vibration, extending the life of the bearings.
- Advanced INSOCOAT bearings
- New electrically insulated technology developed by SKF
- Protects bearings against breakdown voltages up to 1000 V
- Prevents cratering caused by the passage of electrical current
- Maximizes interval between servicing and maintenance
- Provides long operating life

COPPER BAR ROTORS

- High conductivity silver brazing alloy anchors the rotor bars to the copper end rings
- Radial ribs create an air passage, allowing a free flow of air across the rotor bars.

CECO-SEAL

- B-Stage epoxy tape provides a sealed system for all Weather Protected I and II motors
- After curing, the tape bonds to itself, forming an abrasion resistant seal against moisture, carbon black and other conductive materials.

FANS

- Constructed of durable non-ferrous material
- Cast iron fan covers and grids protect the fan and direct the air flow across the entire motor frame.

LUBRICATION SYSTEM

- Grease lubricated and oil lubricated ball bearings are standard
- Oil-mist lubrication systems are optionally available.

MAGNETIC DENSITIES

- Controlled flux densities provide economical use of active materials without diminishing motor performance
- Steel densities in the teeth and core assure acceptable levels of saturation, and allow operation at +10% of rated voltage without excessive iron loss.

NON-REVERSE RATCHET ASSEMBLY

- Installed when reverse rotation caused by electrical phase reversal or motorizing of the pump or other load could damage the line shaft couplings or driven equipment.

ROTOR CORE

- Stacked from electrical-grade silicon steel laminations, keyed and locked to the shaft
- Skewed for smooth starting and quiet operation
- Rotor is precision ground and dynamically balanced

ROTOR SLOT

- Provides low in-rush current
- Superior starting and running torque with sufficient mass for thermal effects during locked rotor and acceleration periods
- Lower temperature rise allows end ring to serve as heatsink for rotor bar losses

SERVICE FACTOR

- All Continental motors are standard 1.15 service factor

SHAFT

- Engineered for high mechanical strength, low vibration, and minimal deflection
- Two pole, high speed motors with shafts milled from forgings, and containing no welds
- Stiffening ribs in lower speed motors assure proper stiffness and high critical speed
- Uniform air flow under the rotor core and out the rotor's radial vents and stator lead to uniform temperature distribution
- Shaft diameters give large safety factor in torsional shear strength
- Dynamically-balanced rotor assembly assures vibration-free operation

SLOT COMBINATION

- Minimizes magnetic noise, cusps and cogging in the motor

STATOR CORES

- Selected electrical grade, low-loss silicon steel laminations maximize electrical efficiency
- Laminations secured with steel locking and rings and full length keys
- For larger motors, press flanges and individual tooth stiffeners provide additional support
- Semi-enclosed slots for smaller ratings; open slots for larger ratings
- Ground to size for uniform air gap between stator and rotor

STATOR FRAMES

- Double shell stator frames composed of high strength cast iron provide rigidity and corrosion resistance
- Air flows between the inner and outer shells for efficient cooling
- A proprietary sealing system seals the motor leads, and fills voids that exist between the frame and windings where leads connect to the conduit box.

TERMINAL BOXES

- Oversized, cast iron and diagonally split for easy connections
- Mounts in any of four positions
- Auxiliary terminal boxes detect winding and bearing temperatures, space heaters, etc. (600 V motors and higher)

VENTILATION

- Special air circulation systems assure cool, long-life motors with maximum performance and efficiency
- Fans are individually balanced for proper air flow and for quiet, vibration-free operation.

WINDINGS

- Random and form-wound coils placed in pre-insulated slots in the silicon steel cores
- Coil extensions individually tied with glass tape to the surge ring to prevent movement caused by starting currents or line surges
- After all connections are in place, the stator winding is impregnated in a vacuum pressure impregnation (VPI) system with an environmentally-sensitive varnish and then baked. This assures a homogeneous, void-free bond between coils and frame.

MOTOR FRAME ASSIGNMENTS

Induction Motors, Integral HP, 60Hz, 3 Phase 40C Ambient, Class F Insulation.

TEFC - XPODP – WPI – WPII

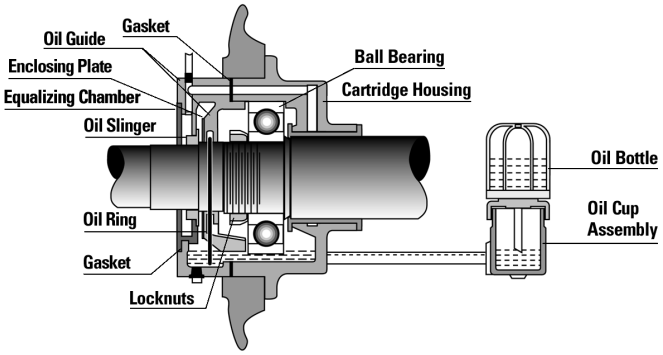
	Speed	208-575V	2300-4160V
125	900	586	586
	720	716	716
	600	717	717
150	1200	585	585
	900	586	586
	720	716	716
	600	717	717
200	3600	505	505
	1800	505	505
	1200	585	585
	900	716	716
	720	718	718
	600	718	718
250	3600	585	507
	1800	585	507
	1200	586	507
	900	716	716
	720	718	718
	600	806	806
	514	905	905
	450	905	905
300	3600	585	507
	1800	586	507
	1200	716	716
	900	806	806
	720	806	806
	600	905	905
	514	905	905
	450	906	906
350	3600	586	509
	1800	586	509
	1200	718	718
	900	806	806
	720	905	905
	600	905	905
	514	906	906
400	3600	718	509
	1800	718	718
	1200	806	806
	900	806	806
	720	905	905
	600	906	906

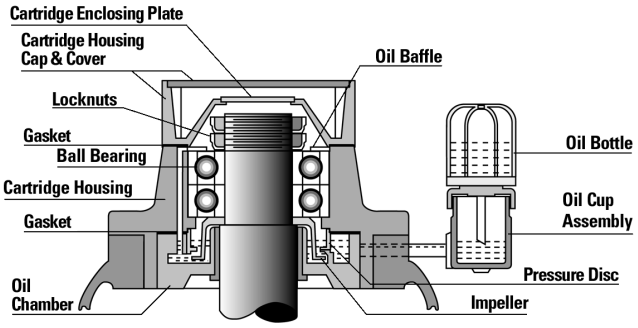
TEFC - XPODP – WPI – WPII

	Speed	208-575V	2300-4160V
450	3600	718	718
	1800	718	718
	1200	806	806
	900	905	905
	720	906	906
	600	907	907
500	3600	718	718
	1800	806	806
	1200	806	806
	900	905	905
	720	906	906
	600	907	907
600	3600	–	806
	1800	–	806
	1200	–	905
	900	–	906
	720	–	906
700	3600	–	905
	1800	–	905
	1200	–	905
	900	–	906
	720	–	906
800	3600	–	905
	1800	–	905
	1200	–	905
	900	–	906
	720	–	906
900	3600	–	905
	1800	–	906
	1200	–	906
	900	–	907
1000	3600	–	905
	1800	–	906
1250	3600	–	906
1500	3600	–	907

PATENTED LUBRICATION SYSTEM

Oil ring lubrication systems are available on request, and are standard on 3600 rpm motors. Continental's patented self-contained oil lubricator is mounted on the motor shaft. There's no oil bath. Complete lubrication is accomplished with just 24 ounces of oil, as opposed to the 24 or more quarts often required by other systems. Because the impellers turn with the shaft, lubrication starts the moment the motor is started.





Horizontal Motors: Oil is carried to the top of the shaft by an oil ring. It's then guided to the inside of the outer race where it lubricates continually with fresh oil. The oil is automatically replenished from an exterior bottle while the motor is in operation. There are no contact seals to wear out. Differential air pressures are balanced or released from the motor. Changing or replenishing the lubricant can be performed while the motor is operating. When stopped, the oil drains down, covering the inside bottom of the outer race. With this proprietary oil-ring system, oil is immediately available upon restarting.

Vertical Motors: Oil-lubricated ball bearing assemblies lubricate the entire assembly. Thrust bearings can be changed on site with no special tools. All parts are interchangeable with any rating having the same sized bearings. Jack screws and tapped holes allow removal of the entire cartridge and bearings simultaneously. There are no contact seals to leak or wear out. On vertical motors with high thrust requirements, pivot shoe bearings are mounted with a vertical sleeve bearing to assure precise alignment and radial support. For medium thrust motors, spherical roller bearings can be used.

EFFICIENCY

High efficiency may be optionally available with other motor manufacturers, but it's standard with Continental. We supplied 95% efficient motors long before they became fashionable, and long before they were mandated.

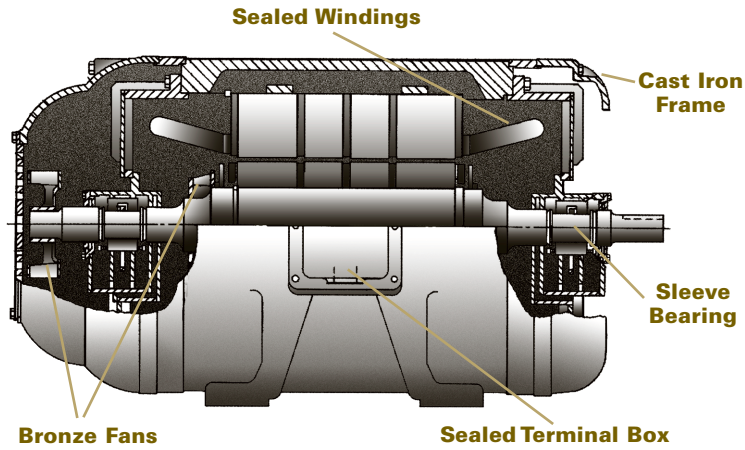
Performance Data for Totally Enclosed Fan Cooled & Explosion Proof Squirrel Cage Induction Motors
Class "B" Temperature Rise, Nominal Efficiency, 2300 Volts, 3 Phase, 60 Hertz

		EFFICIENCY (%)			Power Factor (%)			Current (A)		Torque				
HP	FL RPM	FULL LOAD	3/4 LOAD	1/2 LOAD	FULL LOAD	3/4 LOAD	1/2 LOAD	@ F.L.	@ L.R.	F.L. Torque LB. FT.	@STG in % FLT	@BKD in % FLT	NEMA DESIGN	NEMA CODE LETTER
800	3585	95.6	95.2	94.0	93.1	91.5	87.5	169	1250	1171	60	225	A	G
	1790	95.8	95.4	94.2	91.7	90.5	85.6	171	1250	2346	70	250	A	G
	1192	95.3	95.0	94.0	89.7	88.5	83.3	175	1125	3523	80	225	B	F
	895	94.3	93.5	91.6	83.0	78.0	68.0	193	1375	4694	90	260	A	H

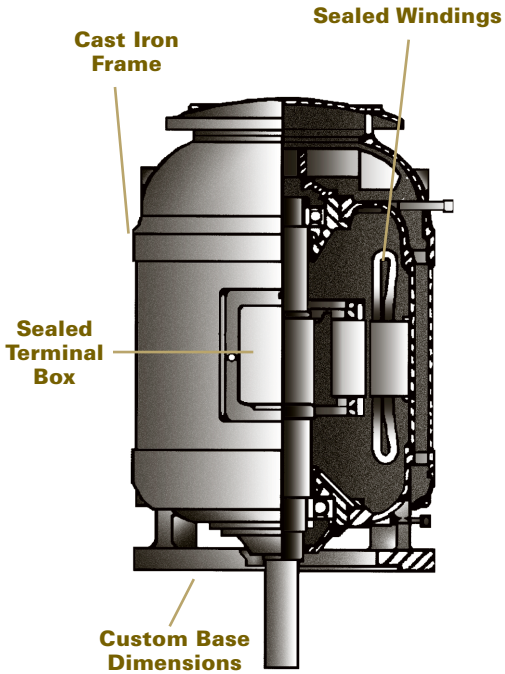
Performance Data for Drip Proof, WPI and WPII Squirrel Cage Induction Motors
Class "B" Temperature Rise, Nominal Efficiency, 2300 Volts, 3 Phase, 60 Hertz—Design B, Code F

		EFFICIENCY (%)			Power Factor (%)			Current (A)		Torque		
HP	FL RPM	FULL LOAD	3/4 LOAD	1/2 LOAD	FULL LOAD	3/4 LOAD	1/2 LOAD	@ F.L.	@ L.R.	F.L. FT. LBS.	STG. %	BKD. %
800	3570	95.5	95.2	94.6	91.0	90.0	85.0	173	1010	1180	80	225
	1780	95.4	95.0	94.5	91.0	90.5	89.0	175	0950	2360	75	175
	1190	95.2	95.0	94.5	87.0	84.5	78.0	180	1000	3530	80	200
	890	95.2	94.9	94.0	85.0	83.0	77.0	186	1100	4720	80	200

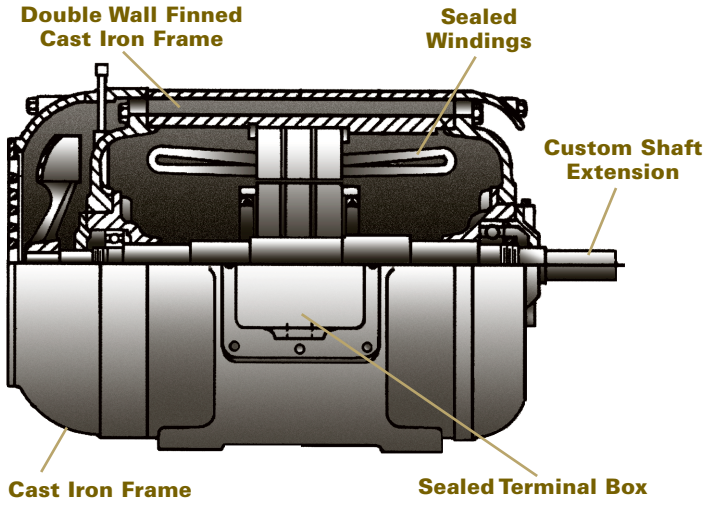
TEFC & EXPLOSION PROOF



Sleeve Bearing Motor



Vertical Ball Bearing Motor



Ball Bearing Motor

Note: All rotors are of copper bar and copper end ring construction.

OPTIONAL FEATURES All Continental motors are available with the following:

- Surge capacitors (usually 3-pole)
- Lightening arrestors (one for each phase)
- RTDs
- Space heaters
- Thermocouples
- Thermisters
- Current differential transformers
- P.F. correction capacitors
- Vibration switches
- Zero speed switches
- Tach generators
- and others as specified.

CONTINENTAL — FOR 90 YEARS, A TRUSTED NAME IN MOTOR DESIGN

Continental is one of the oldest electric motor manufacturers in the country. The first of our motors left our plant more than 90 years ago. Since then, we've produced and installed more than 25,000 motors, and have developed an unsurpassed reputation for product quality and customer support.

In an industry characterized by imports, Continental stands apart. All our motors and components are U.S. made. This gives you added control over the design and manufacture of your motors, and assures that spare parts and expert service are never an ocean away.

For your next electric motor, call Continental. If in our library of 19,000 proven designs you can't find one that's perfect for you, we'll create a new one.

CONTINENTAL

CONTINENTAL ELECTRIC MOTORS, INC.

The Workhorse of Industry

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