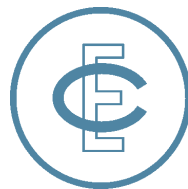
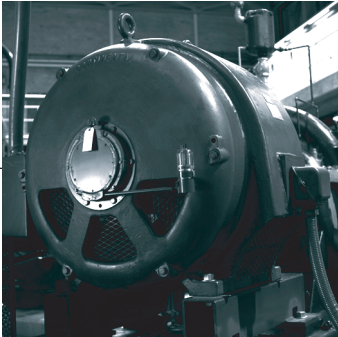


**DRIP PROOF,  
SPLASH PROOF  
WEATHER PROTECTED  
HORIZONTAL AND VERTICAL  
INDUCTION MOTORS**

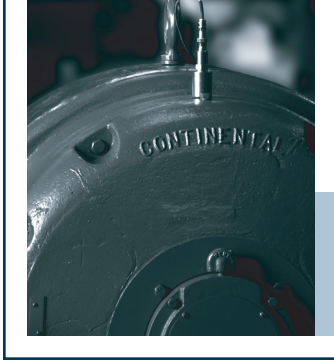


**CONTINENTAL**

Custom designed



100% U.S. manufactured



Continental Motors offers one of the country's broadest selections of high-horsepower, drip proof, weather protected horizontal and vertical motors. While most applications call for constant speed, Continental's selection includes variable speed motors such as wound rotor and modified NEMA D high slip variable voltage/variable speed motors. Sturdy construction and precision balancing minimize vibration across the entire speed range. The result is quieter operation, less wear, and longer lasting performance. This remarkably smooth, quiet operation has made Continental the choice of prestigious sites, including The World Trade Center, Newark and Tampa airports, The White House, and others.

A choice of optional accessories lets the user adapt Continental's vertical motors to a broad range of applications. The accessories include heavy-duty explosion proof oil-lubricated (liquid or mist) bearing cartridge assemblies, audio noise dampening kits, space heater, vibration detectors, and thermal detectors for windings and bearings, or other safety or motor monitoring systems as specified.

Continental vertical drip-proof and weather protected motors are installed routinely in refineries, chemical plants, antenna drives, cooling towers, water applications, office and residential buildings, airports and other areas where durability and reliability are mandated.

### **DRIP PROOF**

Open construction and ventilation ports allow cooling air to circulate freely around the windings. The ports are designed to prevent liquid drops or airborne particles from entering the housing when introduced at angles from 0° to 15° from vertical.

### **WEATHER PROTECTED I**

Weather Protected I motors are identical to drip proof motors. In addition, however, a 3/4" mesh screen completely covers the ventilators. This protects the motor by preventing the entry of rodents and reptiles, twigs, leaves and other potentially harmful material, while also

minimizing the entry of snow and rain. All parts of the motor, both external and internal, are treated with corrosion inhibitors, and insulated with moisture-resistant CECO-Seal.

### **WEATHER PROTECTED II**

Improved ventilation, insulation and sealing systems allow Weather-Protected II motors to be used in areas previously reserved for totally enclosed, fan cooled motors. Ambient air, drawn into the motor by a circumferentially-screened frame opening, is directed upward at velocities of 600 ft/min or lower. When specified, the air is filtered to remove any particulates.

A portion of the air passes the shaft and cools the thrust bearing, then turns downward to cool the top half of the motor. The remaining air is directed to the bottom of the assembly, and is used to cool the motor's lower half. Heated air exits through baffled openings in the lower frame.

Both air passages – for the upper portions of the motor and for the lower – contain at least three abrupt changes in direction. This reduces the possibility of dirt or moisture from entering the fans and windings. Storm winds pass through the external air passages, and are prevented from entering the motor's active area.

### **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.



**DRIP PROOF,  
SPLASH PROOF  
WEATHER PRO-  
TECTED  
HORIZONTAL &  
VERTICAL  
INDUCTION MOTORS**

**CONFINEMENT**



## CONSTRUCTION

- Cast iron and fabricated steel frame and brackets provide true concentricity, maximum rigidity, and long life
- Entire frame assembly is varnished and baked to prevent corrosion, and provide a clean internal surface for easier maintenance and optimum ventilation
- As-new appearance seen in motors 20 year old and older

## 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 to minimize permeance pulsations

## BEARINGS

- Special design for vertical motors allows lubricants to reach all components by flowing from the top down
- Integral oil-lubricated and grease-lubricated bearings are available; adaptable for oil mist lubrication
- Thrust bearings replaced at the job site with common tools
- Entire cartridge and bearings removed at one time
- No contact seals to be replaced
- Large oilers with visible reservoirs
- 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

## CECO-SEAL

- System sealed with B stage epoxy tape standard in all motors
- Tape bonds to itself, forming protective seal against moisture, carbon black and other conducting materials
- Stator can be tested under high potential while immersed in water that contains wetting agents

## RANDOM WOUND COILS

- Random wound coils for low voltage applications
- Wound on automatic winding machine with heavy duty, high temperature single- or double-film insulated copper magnetwires
- Housed in semi-enclosed slots insulated with high dielectric, high temperature Class 155C slot liner, then secured with high temperature rated melamine top sticks
- Silver brazed connections
- Vacuum pressure impregnation with varnish of Class "F" solventless, non-flammable, high dielectric strength, high bonding strength
- Baked at 280° - 300° to prevent greening

## FORM WOUND COILS

- For large motors where high voltages are required, or for low voltage motors with greater than 250 Hp
- Wound in loop fashion from rectangular copper wire, heavy poly-thermalize, single dacron glass, double dacron glass over single or double film coated as required
- Loops lightly taped with untreated glass tape, varnished and soft baked, then spread and insulated according to electrical engineering specifications
- Coils placed in open slots and further insulated against mechanical damage and dielectric failure
- Vacuum pressure impregnated and baked to assure solid bond between coils and iron

## VARNISH

Continental uses only Class F (MIL-I-24092) varnish, even with a Class B temperature rise. The varnish is never diluted, so each dipping results in a thick protective coating.

## HOUSINGS

- Cast iron frames and bearing brackets limit noise and dampen vibration
- Heavy duty, fabricated steel housings are available for severe applications

## 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 the units to operate at + 10% of rated voltage without excessive iron loss.

## NON-REVERSE RATCHET ASSEMBLY (WHEN SPECIFIED)

- Installed when reverse rotation caused by electrical phase reversal, motorizing the pump, or other load might 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 seen during locked rotor and acceleration periods
- Lower temperature rise allows the end ring to act 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
- For lower speed motors, stiffening-ribs assure proper stiffness and high critical speed
- Uniform air flow under the rotor core and out the rotor's radial vents and stator lead provide uniform temperature distribution



- Shaft diameters give a 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 end 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 FRAME

- Heavy duty cast iron or fabricated steel casting construction assures structurally strong, torsionally rigid frame
- Frames made from heavy-section cast iron or fabricated from plates are connected with longitudinal members and a 1/4" steel outer shell
- All fabricated pieces are stress relieved for dimensional stability

### 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

- Specially designed 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.

## MOTOR FRAME ASSIGNMENTS

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

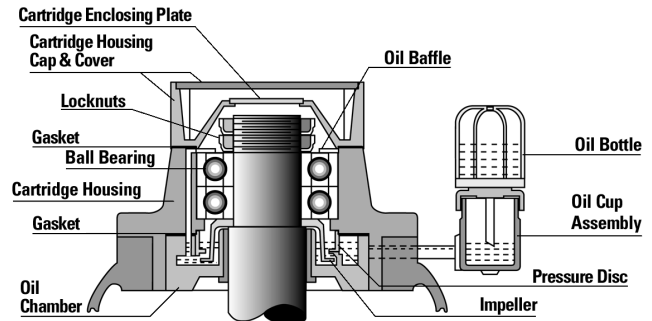
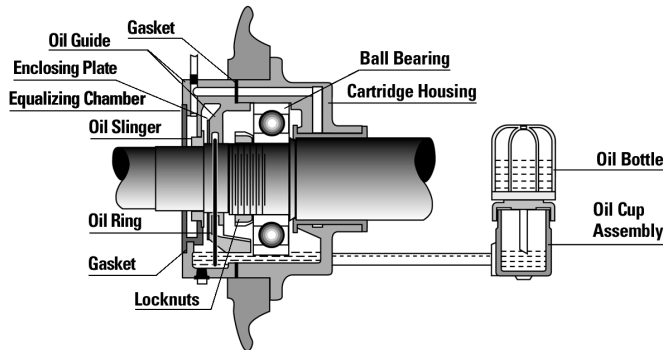
ODP – WPI – WP11				ODP – WPI – WP11				
	Speed	208-575V	2300-4160V		Speed	208-575V	2300-4160V	
60	600	504	—	600	3600	589	589	
	720	505	—		1800	589	589	
	600	505	—		1200	686	686	
100	720	505	505	900	900	689	689	
	600	585	585		720	806	806	
					600	807	807	
125	720	505	585	514	943	943		
	600	585	585		450	945	945	
150	1200	505	585	700	3600	589	589	
	900	505	505		1800	589	589	
	720	585	585		1200	589	589	
	600	586	586		900	689	689	
	514	588	588		720	806	806	
450	684	—	600	807	807			
200	3600	504	504	514	943	943		
	1800	504	504		450	945	945	
	1200	505	505					
	900	585	585		800	3600	—	686
	720	586	586			1800	—	686
	600	588	588			1200	—	688
	514	589	589		900	—	689	
450	686	686	720	—	806			
			600	—	807			
			514	—	945			
			450	—	947			
250	3600	505	505	900	3600	—	688	
	1800	505	505		1800	—	688	
	1200	585	585		1200	—	689	
	900	586	586		900	—	806	
	720	586	586		720	—	807	
600	588	588	600	—	945			
514	589	589	514	—	947			
450	686	686						
300	3600	505	505	1000	3600	—	688	
	1800	585	585		1800	—	689	
	1200	586	586		1200	—	689	
	900	588	588		900	—	806	
	720	589	589		720	—	806	
	600	589	589		600	—	945	
	514	688	688		514	—	947	
450	689	689						
350	3600	585	585	1250	3600	—	689	
	1800	585	585		1800	—	689	
	1200	586	586		1200	—	806	
	900	589	589		900	—	806	
	720	686	686		720	—	945	
	600	688	689		600	—	947	
	514	689	689					
450	689	689	1500	3600	—	689		
400	585	585		1800	—	689		
350	585	585		1200	—	945		
400	3600	585	585	1750	3600	—	689	
	1800	585	585		1800	—	689	
	1200	588	588		1200	—	945	
	900	589	589		900	—	947	
	720	686	686		2000	3600	—	689
	600	689	689			1800	—	689
	514	804	804			1200	—	947
450	804	804	900	—	947			
400	806	806						
450	3600	586	586	2250	3600	—	806	
	1800	586	586		1800	—	808	
	1200	588	589		1200	—	947	
	900	686	686		2500	3600	—	807
	720	688	688			1800	—	947
	600	689	689			3000	—	947
	514	806	806					
450	806	806						
500	3600	586	586	500	3600	586	586	
	1800	586	586		1800	586	586	
	1200	588	589		1200	588	589	
	900	688	688		900	688	688	
	720	689	689		720	689	689	
	600	806	806		600	806	806	
	514	806	806		514	806	806	
450	807	807	450	807	807			

## PATENTED LUBRICATION SYSTEM

Oil ring lubrication systems are standard. 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.

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**

HP	FL RPM	EFFICIENCY (%)			Power Factor (%)			Current (A)		Torque			NEMA DESIGN	NEMA CODE LETTER
		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		
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**

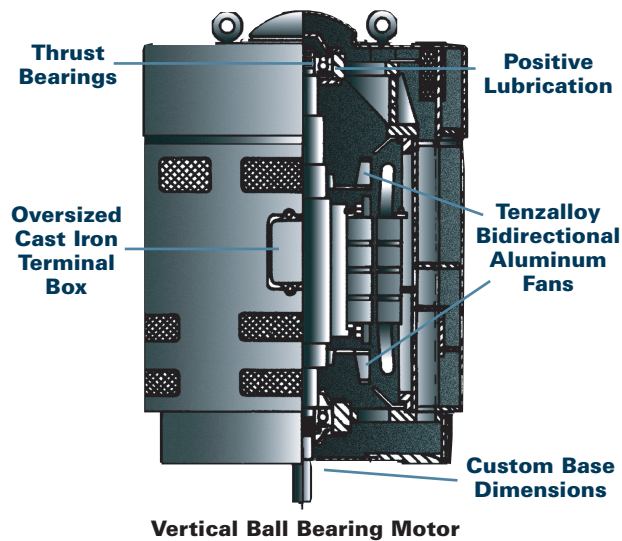
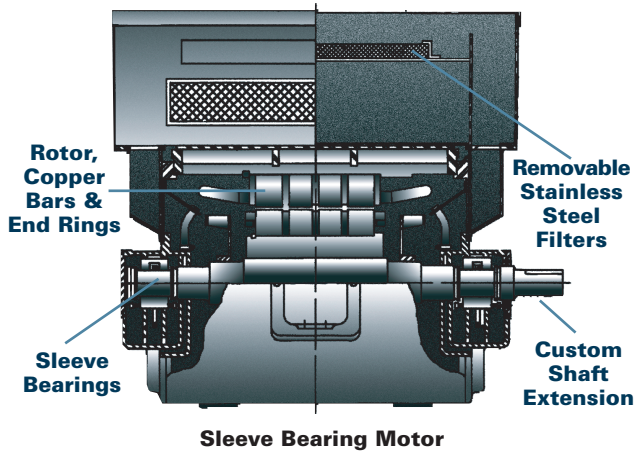
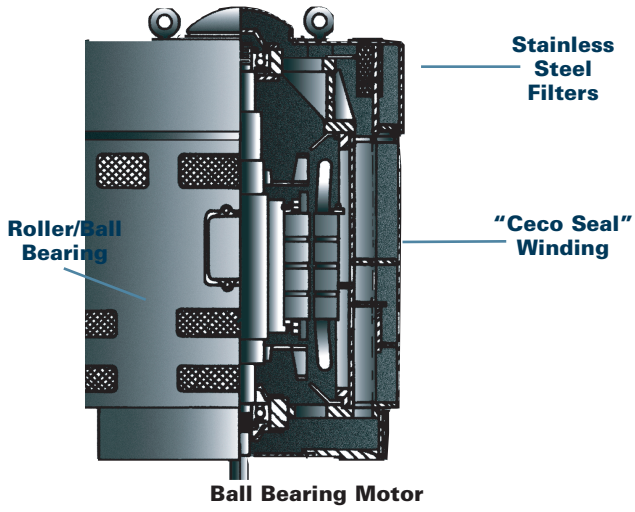
HP	FL RPM	EFFICIENCY (%)			Power Factor (%)			Current (A)		Torque		
		FULL LOAD	3/4 LOAD	1/2 LOAD	FULL LOAD	3/4 LOAD	1/2 LOAD	@ F.L.	@ L.R.	F.L. FT. LBS.	STG. %	BKD. %
800	3570	95.5	95.2	94.6	91.0	90.0	85.0	173	1010	1180	80	225
	1780	95.4	95.0	94.5	91.0	90.5	89.0	175	0950	2360	75	175
	1190	95.2	95.0	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

**OPTIONAL FEATURES** All Continental motors are available with the following:

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

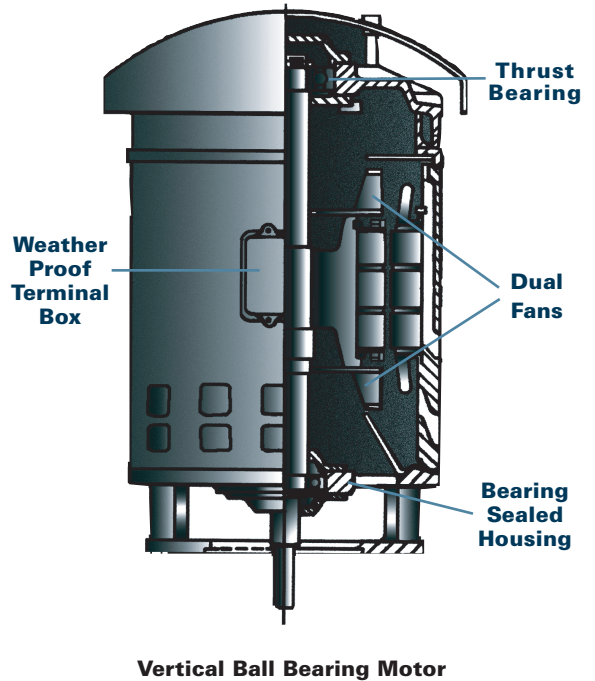
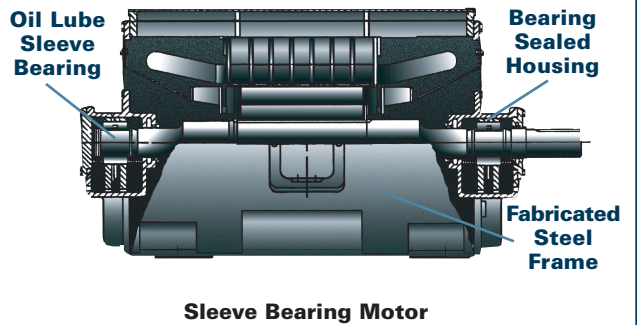
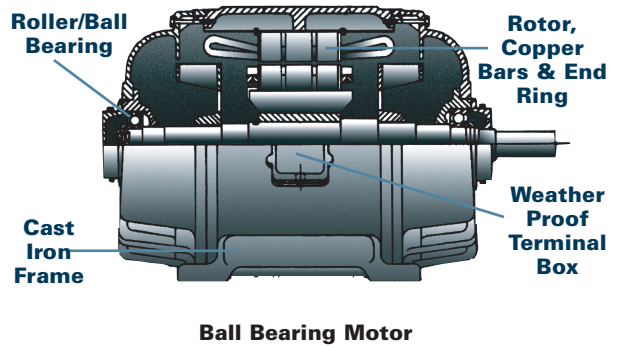


**WEATHER PROTECTED I & II**



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

**DRIP PROOF/SPLASH PROOF SQUIRREL CAGE, INDUCTION MOTORS**



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

**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 ELECTRIC MOTORS, INC.**

*The Workhorse of Industry*

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