INVERTER DUTY MOTORS

GENERAL INFORMATION

GENERAL FEATURES

UNIQUE SQUARE LAMINATED STEEL FRAME

25 HP @ 1750 RPM, FL2173 Frame, TEFC - 1000:1 CT - Full Torque At Zero Speed

RPM AC motors are designed specifically for optimum inverter duty performance. RPM AC is the only motor built by Reliance Electric that is designed exclusively for superior performance on inverter power supplies.

From three generations of successful experience with laminated frame DC motors, RPM AC motors have been designed as square, laminated steel frame [FL210 - L440 (NEMA) & FDL132 - DL280 (IEC)] to achieve maximum performance on inverter power. RPM AC FL180 and FDL112 frames are extruded aluminum frames for high power density.

INTRODUCTION OF FINNED FRAME TECHNOLOGY

This catalog includes the first ever offering of our latest advancement in laminated frame induction motor technology:

Totally enclosed motors in frame sizes FL180 (FDL112), FL210 (FDL132) and FL250 (FDL160) with finned frames.

These new (patent pending) finned laminated frame designs continue the RPM AC heritage of compact, low inertia designs and infinite constant torque speed range (1000:1). The finned frame designs are optimized to provide improved cooling without internal frame passages. The new finned frames improve power density and provide faster dynamic response.

All RPM AC motors have cast iron brackets with feet on the brackets for maximum ruggedness and stability. The FL180 frames are extruded aluminum frames and also have all cast iron brackets with feet-on-brackets. For highest torque to inertia, the FL180 and DFL112 frames will have a finned frame drip-proof force ventilated (IP23/IC06) option.

Since the exterior profile dimensions of the finned frame and current smooth frame (210 and 250) are the same, retrofit of RL frame with FL frames will allow critical mounting dimensions of the RL to be met in the finned frame designs. All ratings will be in the same frame or smaller when compared to the smooth RL frame designs. For new Totally Enclosed applications for ratings in the 210-250 frame size (IEC132-160 frames) the finned laminated frames (FL prefix) will be our standard offering.

New RPM AC Extruder Duty addition - feature-rich - ideal for OEMs and replacement of existing AC and DC Motors, cost effective, near maintenance free, four times the life of competitive motors. See page M-110 and M-136 and data sheet RAPS-1371.

Low Inertia Induction Servo Ratings for fast acceleration have been expanded. See page M-112 and M-137.

RPM AC customer benefits:

- Reliance Electric's only motor designed exclusively for optimum performance on inverter power.
- Square frame designs allow larger horsepower ratings in smaller frame sizes than NEMA cast iron motors without compromise in performance or life
- Stock availability from 5 - 1000 HP
- Replace larger frame NEMA AC and DC motors easily
- Continuous Constant Torque to zero speed
- 1000:1 constant torque in vector mode is standard on DPFV, TENV, TEBC and TEFC as shown in catalog
- Feet located on cast iron brackets provide more rigid, vibration-resistant structure on FL180 - L440 frames (IEC FLD112 - FDL280)
- Rugged laminated steel frames (FL180 & FDL112 frames are finned aluminum frame construction)
- Wide constant horsepower range - 4:1 to 12:1 available
- High peak torque- 200% standard on enclosed motors; 300% to 400% available upon request
- Low inertia for fast acceleration
- Mount multiple accessories easily - encoders, brakes, etc.
- Encoder provisions: machined opposite drive end bracket and tapped shaft for addition of stub shaft are standard on DPFV, TENV, TEBC and FL180 frame TEFC; a tapped shaft only is standard for TEFC FL180 - L400 frames for ease of mounting hollow shaft encoders (see detail page)

Typical Applications

RPM AC motors have been successfully applied on a wide variety of applications. Because of the versatility to meet both wide constant torque and constant HP needs, optimum power matched solutions are available for the following:

Constant Torque: Extruders, injection molding, conveyors, paper machines, crane and hoist. Includes web processing on printing press, metal coating, film and paper coating.

Cut-to-length applications on shears used in metals and paper corrugators, and veneer lathes utilize the low inertia and mechanical ruggedness of laminated frame RPM AC.

Constant Horsepower: Winders, unwinders, recoilers, tension reels, and machine tool spindle are examples where high peak torque to inertia for fast acceleration, and constant HP ranges of 4:1 up to 16:1 have been supplied. The ability to design very low base speeds and high response are standard with RPM AC.
Electric Vehicle Traction Motors, requiring high peak torque, high speed and compact dimensions make RPM AC the motor of choice.

High Shock and Vibration: Stamping presses for automotive and metal stamping take advantage of compact designs with feet on the brackets directly under the bearings. Includes high horsepower top drives for off shore oil rigs with the added demands of high humidity, salt spray and extreme ambient conditions.

Test stands: Again, the fast response and compact mechanical features of RPM AC make it the choice solution for test stand applications. Depending on frame size, maximum speeds of 4000 - 11,800 RPM are available.

Variable Torque Loads: Because of the economic advantages and compactness of RPM AC motors, many customers have selected DPFV RPM AC for many variable torque applications, particularly for high horsepower requirements.

APPLICATION TOOLS

The RPM AC MOTOR WIZARD is a patented, revolutionary inverter duty motor selection program. For custom motor requirements not found in the catalog, the WIZARD allows you to input exact values of altitude, ambient, base speed, wide constant HP speed ranges, enclosure, voltage, continuous torque and overload torque. The output includes: motor frame size, inverter kva, and typical motor amps. It allows evaluation of lower cost alternatives based on your needs. You can immediately print typical performance data curves, motor, conduit box and encoder typical dimensions.

A DUTY CYCLE CALCULATOR is included in the RPM AC Motor Wizard to determine the motor frame size for load torques which vary cyclically over time.

The RPM AC MOTOR WIZARD CD can be ordered by number RAPS-517, through your sales contact. It can also be downloaded from the web at **www.reliance.com**. We encourage customer use of this powerful tool to aid in rapid selection of the exact motor for your application needs.

BASIS OF RATINGS

The RPM AC motors in this catalog are designed specifically for use on IGBT voltage source controllers (PWM and six step VVI). Motor characteristics are optimized to reduce peak currents from the controller as well as to minimize motor losses. When the AC controller is properly adjusted, RPM AC motor performance will be in accordance with published rating data. The ratings in this catalog are based on a minimum PWM frequency of 4 khz for HP through 500, 2 khz for 600 HP and higher, and a minimum ratio of PWM frequency: fundamental frequency of 20:1.

STANDARD MOTOR FEATURES

AGENCY LISTINGS AND CERTIFICATIONS – FL180 through L440 Frames FDL112 through DL280 Frames

ORDINARY LOCATIONS

Both the CSA mark and UL logo are standard on all stock TEFC and TENV models.

All RPM AC motors are eligible for UL component listing and CSA Certification for Ordinary Locations for all enclosures. (Please note blower changes on certain TEBC Stock Ratings below for UL listing.)

UL File Number E54825

On stock motors, the CSA mark for ordinary locations on all RPM AC motors in frames FL180 - L440 (all enclosures), and UL logo in TEBC frames L360 - L440 is standard. Both the CSA mark and UL logo are standard on stock DPFV (except FL180 DPFV) and TEFC models in frames FL180 - L440, and all TENV stock models.

CSA file number LR40567

The CSA mark and UL logo can be supplied on all production motors. The UL logo can be obtained on stock TEBC FL180 - L320 by requesting the 56 frame blower package. See Modification section for IP54 pricing. Motor dimensions will change with 56 frame blower.

All RPM AC IEC frame motors include the CE mark as standard. The CE mark can be supplied on any motor, NEMA or IEC frame, but must be requested at time of order entry for NEMA frames, both stock and production.

IMPORTANT – Motors with modifications or accessories not approved by UL or CSA may not have the agency logo stamped on the nameplate

CLASSIFIED AREAS - HAZARDOUS LOCATIONS

Class 1 Division 2 Certification Inverter Duty RPM AC ✣

CSA file number LR46877

RPM AC motors have been tested and certified by CSA for operation on inverter power in areas classified as Class 1, Division 2, Groups A, B, C and D and equivalently marked for Class 1, Zone 2 locations in accordance with NEC Article 505 for all TENV, TEBC, TEFC and DPFV enclosures. See Pricing and Modifications sections of the Variable Speed catalog, RAPS-692. Motor frame size will vary based on the NEC temperature code specified. Contact Reliance Electric for details. Groups A and B only available for TENV and TEFC enclosures.

NOTE: Accessories supplied and mounted on the motor must be approved for Class 1, Division 1 or 2 and the same groups as main motor. This will limit the availability of some modifications. See available modifications in this catalog for further details.

✣ **Groups A and B not available on TEBC Enclosure**

Class 1 Division 1

RPM AC motors have been tested and approved by CSA for Class 1 Division 1 or 2 locations for Totally Enclosed Pipe In/ Pipe Out Ventilation - see Application section for details.

For U/L listed explosion proof motors for inverter duty, see Variable Speed catalog.

ALTITUDE - AMBIENT

All motors in this catalog are based on 40 degrees C ambient, altitude of 3300 feet (1000 meters) above sea level at 1.0 service factor on inverter power. All motors are suitable for low ambient down to -25° C as standard. Modifications can be selected for service factor, ambient and altitude as needed from the modification section.

For immediate frame size determination for any altitude, ambient or service factor, use the RPM AC Motor Wizard. Order CD Number RAPS-517 or download it from the web at www.reliance.com.

TEBC FL180 Frame
Totally Enclosed Blower Cooled FL1852 Frame 20HP 1750 RPM
1000:1 Constant Torque - Full Torque at Zero Speed

ADJUSTABLE SPEED CAPABILITY

All RPM AC motors in this catalog are rated Vector Duty, in that they are capable of producing 1000:1 constant torque below base speed. They are suitable for full load torque continuously at zero speed. This includes TENV, TEBC, TEFC (1000:1 CT ratings) and DPFV enclosures. RPM AC motors may be applied to inverters that are configured for vector control with encoder (flux regulated vector) sensorless vector, or scalar (volts per hertz) operation. The constant torque speed range obtained is dependent on the control's ability to properly regulate the motor flux. For example, continuous torque at zero speed may require a vector control with encoder feedback, depending on the specific performance requirements, including overloads and transient response.

Enclosure	Speed Range	
	Below Base Speed	Above Base Speed
	Constant Torque	Constant Horsepower
TEBC	1000:1 (1)	2:1 (2)
TENV	1000:1 (1)	2:1 (2)
TEFC	1000:1 (1)	2:1 (2)
TEFC	4:1	2:1 (2)
DPFV	1000:1 (1)	AS PUBLISHED

(1) Suitable for Full Torque down to zero speed continuously on Vector controllers on which motor flux is regulated

(2) See specific Enclosure page for exceptions and speed limitations

RPM AC motors are optimized for Inverter Duty operation only and are not intended for across the line power supplies. Please contact Reliance Electric if By-pass Mode (Across-The-Line) operation is required.

BALANCE

Standard - All RPM AC motors meet the dynamic balance limits of NEMA MG1 Part 7 for peak value of the unfiltered velocity in inches per second as shown below:

Standard Balance Limits

RPM	Industrial L180 - L440
	Velocity (inches / sec) Peak
0 - 1200	Per NEMA Standard
1201 - 1800	0.15
1801 - 3600	0.15
3601 - 5000	0.2
5001 - 8000	0.2

See Modification section for higher grade balance (Ultra Standard and Precision) and NEMA Standard in Table 1 in Modification Section.

BEARINGS

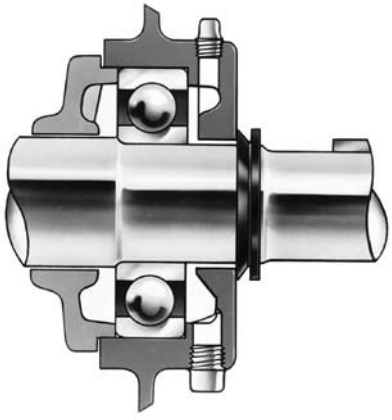
Standard - All RPM AC motors use deep-grooved anti-friction ball bearings.

Frames FL180- FL250 (IEC frames FDL112-FDL160)

- **Oversized ball bearings** are standard on frames FL180/FDL112 through FL250/FDL160 for both coupled and belted duty.
- Double shielded bearings with oversized grease reservoirs that provide lifetime lubrication with no maintenance are standard; bearings in frames FL180, & FL250 are not regreasable.

Frames L280 - L440 I/IEC DL180-DL280

- Exclusive PLS lubrication incorporating open bearings with inner caps is standard on L280-L440 frames. See the Application Section for bearing life data.



PLS System is standard on all L280-L440/DL180-DL280 frames.

Roller bearings are available for belted duty on all frames. All **FL180**, **FL210** and **FL250** frames with oversize ball bearings are suitable for coupled or belted duty. See Application Section for radial and axial load capacity. These bearings and their internal clearances have been especially selected based on load carrying ability, thermal stresses and speed range consistent with ample bearing life.

Note: Many radial load requirements can be met with the standard oversized bearings used. See the Application Section for Radial Load Capacity to determine if a roller bearing is required.

INSULATED BEARINGS – Available as an Option on Frames FL180 - L400/FDL112-DL250

Note: All L440/DL280 frame RPM AC motors come standard with an Insulated Opposite Drive End bearing and Premium VPI insulation system

Motors designed for higher than standard speeds may use special bearing construction other than stated above.

CONDUIT BOX (TERMINAL HOUSING)

NEMA Frames

Standard construction for frames FL180 through L360 provides a gasketed, stamped steel box and cover. Boxes can be rotated in 90 degree increments. FL180 - L360 frames can have the conduit box located in any quadrant as long as accessories and blower are not in the same quadrant - i.e., F-1, F-2, top (F-3). Exception: FL180 DPFV conduit box only available as F-1 or F-2.

Standard construction for frames L400 and L440 are heavy gauge mill type conduit boxes which can be mounted on either side or the top of the motor, as long as the conduit box is not in the same quadrant as the blower. See the Modification Section for location and construction options.

IEC Frames

All IEC motors include a phenolic or mill type conduit box with terminal strips

CONDUIT BOX LOCATION

Standard conduit box location for all frames, including stock models

Frame	Enclosure	Box Location	Terminal Blocks
FL180 - L400	TENV/TEFC/TEBC	Top (F-3)	Optional
FL180 - L440	DPG-FV	F-1	Optional
L440	DPG-FV & TEAO-P/B	F-1	Optional
FDL112 - DL250	IP44 / IP54 / IP55	Top (F-3)	Standard
DL280	IP23 & IP44 / IP54/ IP55	F-1	Standard

When an IEC frame is specified, a terminal block will be supplied in the Conduit Box for the main power and accessory leads.

For XT, IP54, Outdoor, or Paper Mill Duty, cast iron boxes are standard in frames FL180 - L360. A large mill box is standard on all L400 designs and all L440 frames. **Other conduit box locations available**. See modification section.

CONNECTIONS

Motor power leads and thermostat leads are terminated in the conduit box and have sufficient length (approximately 6 inches) for connecting to controller leads. Lead lugs are available as an option.

DIRECTION OF ROTATION

All RPMAC motors are designed for bi-directional rotation. All motors are phase sequenced so that when voltages in an A-B-C phase sequence are applied to leads U/T1, V/T2, W/T3 clockwise shaft rotation facing the opposite drive end will occur.

RPM AC Inverter Duty Motor - General Information

ENCLOSURES

The selection of the proper enclosure is vital to the successful safe operation of AC motors. The wrong enclosure can pose hazards to operating personnel and endanger other equipment. In addition, machine performance and life can be materially reduced by using an enclosure inappropriate for the application. The customer must recognize the specific environmental conditions and specify the correct enclosure. Reliance Electric can provide application assistance, but must depend on the customer to provide accurate information on the operating conditions.

The basic RPM AC motor may be Drip-proof Guarded Force Ventilated (DPG-FV), Drip-proof Guarded Separately Ventilated (DPSV) or Totally Enclosed (TE). The minimum enclosure for RPM AC motors is Drip-proof Guarded (Force Ventilated) as defined by NEMA MG1-1.25.5 to prevent accidental exposure to live metal or rotating parts. The drip-proof construction permits successful operation when drops of liquid or solid particles strike or enter the enclosure at any angle from 0 to 15 degrees downward from the vertical. Certain applications may require the Splashproof Guarded (Force Ventilated) machine to permit successful operation when drops of liquid or solid particles strike or enter the enclosure at any angle not greater than 100 degrees downward from the vertical.

The information in this section and the **Modification Section** should be studied thoroughly before specifying an enclosure.

Both Drip-proof Guarded Force Ventilated (DPG-FV) and Splashproof Guarded Force Ventilated (SPFV) machines have a blower driven by a constant speed AC motor mounted on the end bracket to provide cooling independent of motor speed. A filter may be added to the blower when filterable contaminants are present in amounts not sufficient to rapidly clog the filter. A filter is not recommended in extremely dusty, dirty locations.

Drip-Proof Guarded Force Ventilated (DPG-FV) (IEC IP23/IC06) – Motor cooling is provided by motor-mounted blower driven by an integrally mounted three-phase blower motor. Ratings through 1000 HP (725KW) at 1750 RPM continuous duty (S1) are available.

CAUTION: The blower cooling system is designed for optimum cooling air flow. Blowers must not have any auxiliary duct work connected to the inlet shroud since reduction in air flow and motor overheating will occur.

Drip-Proof Guarded Separately Ventilated (DPG-SV) – For applications where cooling air is ducted to the motor from an external source provided by the customer.

For dusty, dirty environments, a totally enclosed machine is required to prevent the free exchange of air between the inside and outside of the enclosure but not sufficiently enclosed to be termed air-tight.

Totally Enclosed Air Over-Blower Cooled (TEBC or TEAO-BC) (IEC IP44/IC416) – RPM AC in-line blower cooled motors incorporate unique integral air ducts in the stator frame, external to the windings, to provide maximum cooling effectiveness. The integrally mounted, independently powered three-phase blowers result in low noise levels over wide speed ranges. TEAO-Piggyback blower is available as an option when brakes or other complex accessories are required. Ratings are available through 500 HP at 1750 RPM; IEC IC416 available up to 300KW at 1450 RPM.

Totally Enclosed Non-Ventilated (TENV) (IEC IP44/IC410) – Does not require any external air flow for cooling. Heat is dissipated through the frame. Ratings are available through 100 HP (75KW) continuous duty (S1), and 500 HP (336KW) 60 minute duty (S2 - 60 minutes).

Totally Enclosed Fan Cooled (TEFC) (IEC IP44/IC411) – Exterior surface cooled by external fan mounted on motor shaft, therefore making motor cooling dependent on motor speed. Unique electrical designs deliver 1000:1 Constant Torque (full continuous torque at zero speed). Ratings are available through 250 HP (186KW) at 1750 RPM.

The basic price pages contain pricing for totally enclosed and drip-proof guarded force-ventilated motors.

Totally Enclosed Pipe-Ventilated (TEPV) or Totally Enclosed Separately-Ventilated (TESV) – Motor is cooled by customer supplied air which is piped into the machine and ducted out of the machine by customer supplied ducts. Air duct or pipes are not provided with the motor and must be installed to maintain totally enclosed integrity of the motor.

Totally Enclosed Dual-Cooled with Air-To-Air Heat Exchanger (TEDC-A/A) (IP44/IC666) – Cooled by circulating motor internal air through the heat exchanger by an AC motor driven blower. External air circulated through the heat exchanger by another AC motor driven blower removes heat from the circulating internal air. No free exchange of air occurs between the inside and outside of the motor. Available in ratings through 700HP.

Totally Enclosed Dual-Cooled with Air-To-Water Heat Exchanger (TEDC-A/W) (IP44/IC66W7) – Similar to TEDC-A/A, except external circulating air flow is replaced by customer supplied water to remove heat from heat exchanger. Available in ratings through 1000HP.

ENCLOSURE ENHANCEMENTS - See Application Section For Standard Features For Each Enclosure Enchancement

XT Features (IP54) – Provides protection against corrosive, moist and dirt laden environments as encountered in paper, chemical and similar industries. Applicable to totally enclosed motors built in frames FL210 - L440 (FDL132-DL280) only. FL180 (FDL112) available as IP54 or IP55 (washdown).

Outdoor Duty/Weatherproof (IP54) – Suitable for operation outdoors subject to direct weather conditions. Available in all frame sizes FL180 - L440 on production basis.

Washdown (IP55) - Includes all features of outdoor duty/weatherproof with addition of lip seals on exposed shaft. Space heaters included.

Paper Mill Duty Features (IP54) – Designed for operation at the wet end of a paper mill and in other harsh industrial environments.

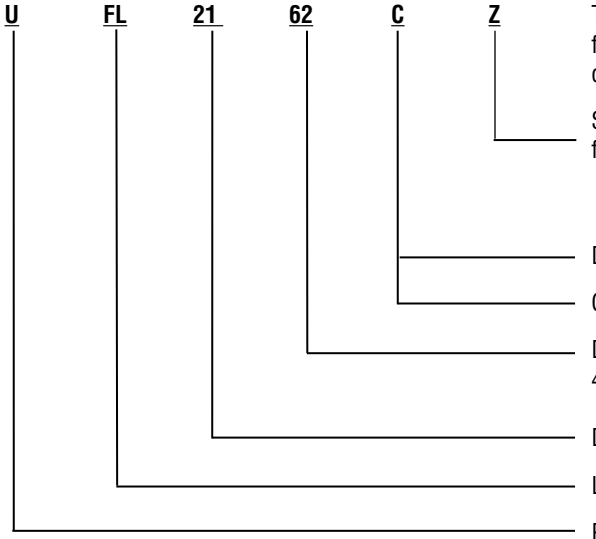
Pickle Line Duty Features – Designed to be resistant to pickling acid environments in the metals industry. Available in FL210 - L440 frames only.

Crane & Hoist Duty Features – Designed around such applications as Hoist, Gantry and Trolley motors, in which the motors are subject to the harshest environments. Available in FL210 - L440 (FDL132-DL280) frames only.

High Vibration/Press Duty Features – Designed for operation where the motor is exposed to higher than normal mechanical stress and high vibration. Motor must be capable of enduring up to a maximum of 3G's of shock, which is seen in applications such as an automotive stamping press line. Available in FL180 - L440 (FDL112-DL280) frames only.

FRAME NUMBERING SYSTEM

Integral horsepower motors with NEMA Standard dimensions, use frame numbers 180 thru 440. RPMAC frames carry Prefix "L or RL" and Suffix "C," indicate that mounting dimensions are standard NEMA C-Face with feet. Other Prefix and Suffix letter designations for RPMAC motors are shown in the table below.



Typical Frame Designation. NOTE: Prefix letters to the basic frame size are at the manufacturers option, suffix letters are defined by NEMA.

Signifies that mounting dimensions are standard NEMA except for the shaft. "Y" indicates special mounting dimensions.

D - D-Flange

C - C-Face

Defines "2F" (15.5") foot mounting dimensions when divided by 4(2).

Defines "D" (210) dimension.

L ,FL or "RL" - Laminated Steel Frame(1)

Prefix "U" indicates a frame designed with roller bearings. For Belted Duty service. No prefix signifies a Ball Bearing.

Footnotes:

(1) RL210 - L440 frames are smooth frame laminated steel. FL180 (IEC FDL 112) frames are finned aluminum. FL210-FL250 (IEC FDL132-FDL160 are finned laminated steel.

(2) Some exceptions in L320 & L360 frames.

FINISH-PAINT

Standard finish is Reliance Electric blue-green (Munsell Color System 8.5BG3.57/2.0) high-grade modified epoxy, air dry enamel with non-toxic rust inhibitors.

GROUNDING

Motors powered from adjustable frequency controllers will have voltages induced on inactive components, such as the motor frame, as a result of capacitive coupling of the switched voltage wavefronts from the controllers. PROPER GROUNDING OF THE MOTOR FRAME IS ESSENTIAL. **All RPM AC motors have a labeled ground screw provided in the motor conduit box as standard provisions for grounding.**

RPM AC Inverter Duty Motor - General Information

INSULATION SYSTEM

The standard insulation system for all FL180-L440 frame RPM AC motors is thermally rated for NEMA Class H of 180° C. All components of the system have been carefully selected to be fully compatible with any IGBT voltage source type controller, whether it is PWM or VVI. In addition to surpassing NEMA MG-1, Part 31 requirements for voltage spikes, all RPM AC motors have been verified by test on PWM power to be Corona-Free.

Frames FL180 - L400/FDL112-DL250 incorporate multiple dips and bakes of 100% epoxy resin. All L440/DL280 frames include premium Vacuum Pressure Insulation (VPI) as standard.

VOLTAGE SPIKE CAPABILITY

CORONA-FREE INVERTER DUTY INSULATION SYSTEM

RPM AC Motor insulation systems have been tested extensively to insure successful operation on inverter waveshapes, including fast switching IGBTs. All motors are designed to withstand high peak voltages caused by the combination of long lead lengths and steep voltage wavefronts, with no corona formation, for AC input voltages up to 575 volts RMS. Consult the control manufacturer for specific lead length recommendations.

All RPM AC motors have been designed to surpass the requirements of NEMA MG-1 2003, Part 31, Section 4 for definite purpose, inverter fed, polyphase motors for voltage spikes. All RPM AC motors for base voltage rating of 460 volts and below have been qualified by test to meet a minimum of 1600 volts peak, and a dV/dt in excess of 10,000 volts per microsecond. For voltages above 460 volts, including 575 volts, motors use an insulation system which is qualified by test to meet minimum peak voltages of 1850 volts and dV/dt in excess of 10,000 volts per microsecond rate of rise. 660 volt motors (for 690 volt system operation) are available in RPM AC motors. Contact Reliance Electric for price and frame size.

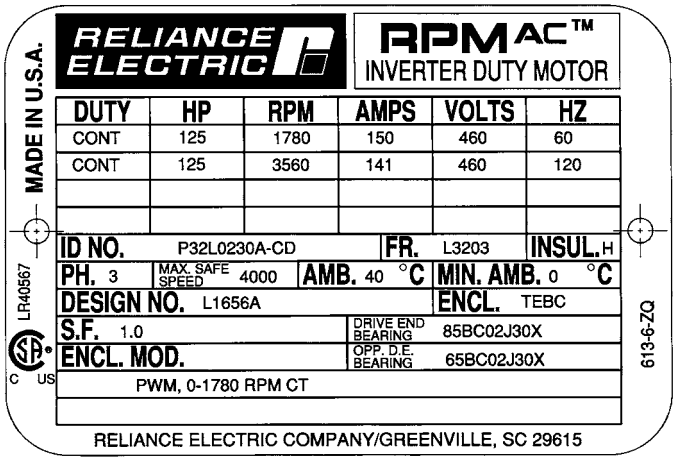
MOUNTING

All RPM AC frames are suitable for floor, wall or ceiling mount and with shaft at any angle from horizontal to vertical.
The standard NEMA mounting symbols are on page M-183.

25 HP @ 1750 RPM, FL2173 Frame, TEFC - 1000:1 CT

NAMEPLATES

Heavy gauge inverter duty stainless steel nameplates are standard on all RPM AC FL180 - L440 frames (FDL112 - DL280 IEC).



OPTIMUM POLE DESIGN

The ratings in this catalog are based on the use of four pole laminations in frames FL180 thru L400/IEC FDL112 thru DL250, and six pole in L440/DL280 frames, for adjustable frequency service. By designing the motor for rated voltage at the desired base speed, motor current and therefore controller size can be minimized. The base speed is obtained by adjusting the controller frequency as required. For example, with four poles, a base speed of 1750 RPM at 460 volts would require a 60 Hz nominal controller output frequency at 460 volts. A base speed of 850 RPM would require a 30 Hz frequency setting at 460 volts output. Using this approach, motors of the same horsepower with different base speeds will have the same nominal full load current even though frame sizes will change. **Motor designs are optimized for the exact base speed and not derated or overframed.** For more information on optimum pole designs, see White Paper B7100 “Optimum Pole Configuration of AC Induction Motors Used on Adjustable Frequency Power Supplies” at www.reliance.com.

OVERLOADS

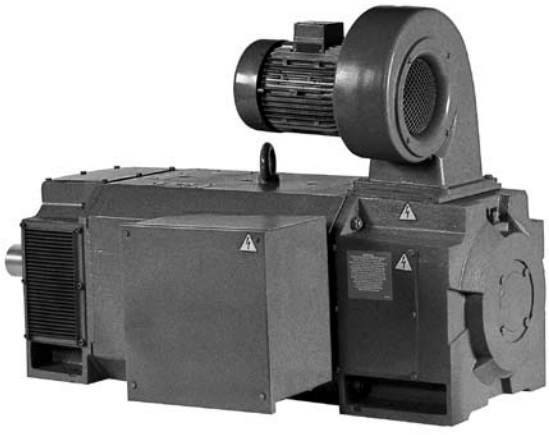
Momentary Overloads - All RPM AC motors have, as standard, an overload capability of 150% (DPFV) and 200% (TEBC, TENV, TEFC and TEDC) of the base speed full load torque for 1 minute at all speeds within the constant torque speed range.
Higher overload, such as 300-400% are available.

TACHOMETER / ENCODER / BRAKE MOUNTING

All RPM AC motors have as a standard feature, a machined opposite drive end bracket and tapped shaft provision for stub shaft for mounting an integral encoder. See Modification Section for Encoder Provisions and page M-182 for dimensions. Mounting kits are available for selected encoders. The most cost effective encoder selection is a hollow shaft design and since it mounts on the stub shaft, no coupling or adapter is required. A tether arm mounts to the motor bracket or fan cover.

For TEFC motors in FL180 - L400 frames (IEC FDL 112 - DL250), a fan cover with machined fit for accessory mounting is available as a modification, if brakes and/or coupled or bearingless encoders are required.

TEFC With Hollow Shaft HS35 Encoder



IP23/IC06 707 kw 1750 RPM DL2814 Frame with Machined Opposite Drive End Bracket (with Cover) for Mounting Encoder

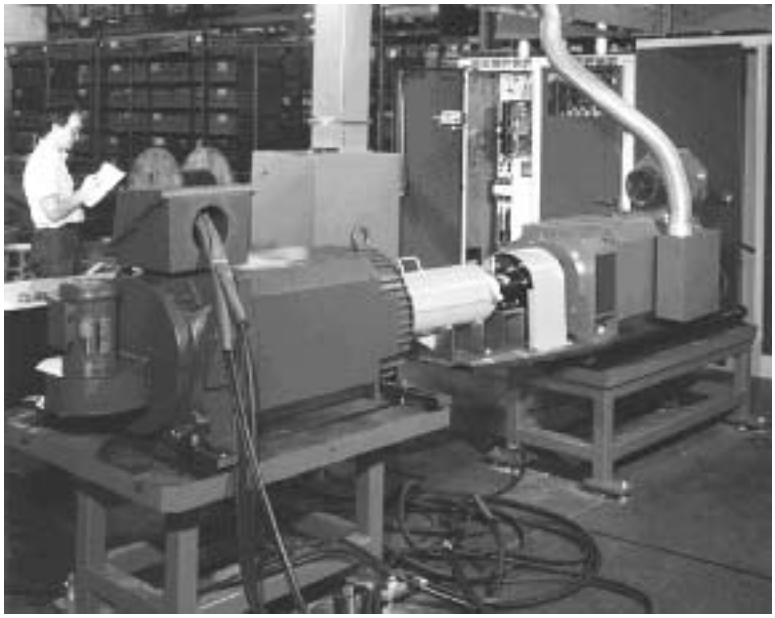
Typical In-line Totally Enclosed Blower Cooled (TEBC) Compact Blower for FL180 - L320 Frames (IP44)

TEST - STANDARD

Each motor is given a full load test on a PWM power supply, and a routine test in accordance with IEEE 112 as modified by Reliance Electric for inverter power. This provides customers with assurance that all motors meet design specifications. Routine test consists of:

- Stator winding resistance
- Hi potential test
- No load and full load amps
- No load and full load speed

See Modification section for price to supply certified routine test report price and other test options.



THERMAL PROTECTION

All RPM AC motors include three normally closed thermostats (1 per phase) connected in series, as standard. Leads are brought into the main conduit box as standard.

(Extruder Duty motors include three warning and three shutdown thermostats)

RPM AC Inverter Duty Motor - General Information

RPM AC STOCK MODELS-ENCODER PROVISIONS ONLY

Note: Stock motors may be modified as published in Modification Section of IMC Catalog RAPS 1632

Features

- Continuous constant torque to zero speed
- Full continuous torque at zero speed
- Standard encoder provisions include : FL180 - L440 machined O.D.E. bracket and see tapped hole for stub shaft
- Small RPM AC - shaft extension for selected hollow shaft encoders in frames FB56C - WE184TC
- Premium Class H insulation standard in FL180-L440 frames; Class F Insulation Standard in 56-WE184T Frames
- 40° C Ambient - 1.0 Service Factor
- Stock encoder kits available for all ratings. See RPM AC Accessories
- Ball Bearing
- Three normally closed thermostats (one per phase)
- Surpasses the requirements of NEMA MG-1 Part 31 for spike voltage withstand

C-Face with Feet or Foot Mounted as shown - Without Encoder 1/3 - 1000 HP

HP	Speed, RPM		Voltage	Frame	Enclosure	Model Number	List Price	Price Symbol	Mounting Foot/Flange	Dimension Sheet	Design Number	FLA
	Base	CHP (1)										
1/3	1800	3600	230/460	FB56C	TENV	**P56H6605**	$350	RPMST	Foot/56C	610302-873	M4626F	1/.5
1/2	1800	3600	230/460	FB56C	TENV	**P56H6604**	400	RPMST	Foot/56C	610302-873	M2941V	1.6/.8
3/4	1800	3600	230/460	FB56C	TENV	**P56H6603**	450	RPMST	Foot/56C	610302-873	M2966T	2.2/1.1
1	1800	3600	230/460	WC143TC	TENV	**P14A6903**	460	RPMST	Foot/140TC	610302-876	M2968Z	3.2/1.6
	1800	3600	230/460	WC143TC	TENV-IP55	**P14A6953**	600	RPMST	Foot/140TC	610302-879	M2968Z	3.2/1.6
1.5	1800	3600	230/460	WC143TC	TENV	**P14A6904**	480	RPMST	Foot/140TC	610302-876	M8057	4.6/2.3
	1800	3600	230/460	WC143TC	TENV-IP55	**P14A6954**	620	RPMST	Foot/140TC	610302-879	M8057	4.6/2.3
2	1800	3600	230/460	WD145TC	TENV	**P14A6905**	632	RPMST	Foot/140TC	610302-876	M8058B	6./3
	1800	3600	230/460	WD145TC	TENV-IP55	**P14A6955**	772	RPMST	Foot/140TC	610302-879	M8058B	6./3
3	1800	3600	230/460	WE182TC	TENV	**P18A8203**	736	RPMST	Foot/180TC	610302-880	M8070A	8.8/4.4
	1800	3600	230/460	WE182TC	TENV-IP55	**P18A8253**	876	RPMST	Foot/180TC	610302-880	M8070A	8.8/4.4
5	1800	3600	230/460	WE184TC	TEBC	**P18A8204**	880	RPMST	Foot/180TC	610301-638	M4466AC	14.2/7.1
	1750	3500	230/460	FL1838C	TENV	**P18T348**	2,047	RPMST	Foot/180TC	617228-3	L3221A	14.4/7.2
	1750	3500	230/460	RL2153C	TENV	**P21R307 (2)**	2,440	RPMST	Foot/180TC	617254-33	L0060A	13.6/6.8
7.5	1750	3500	230/460	FL1852C	TENV	**P18T349**	2,354	RPMST	Foot/210TC	617234-13	L3222A	22/11
	1750	3500	230/460	RL2158C	TENV	**P21R308 (2)**	2,675	RPMST	Foot/210TC	617257-3	L0056A	21.4/10.7
10	1750	3500	230/460	FL1844C	TEFC	**P18T350**	2,445	RPMST	Foot/210TC	617232-13	L3219A	27.8/13.9
	1750	3500	230/460	RL2162C	TENV	**P21R309**	2,788	RPMST	Foot/210TC	617200-3	L0040A	28/14
15	1750	3500	460	FL1844C	TEBC	**P18T359**	2,525	RPMST	Foot/250TC	617232-23	L3220A	21
	1750	3500	460	FL2162C	TEFC	**P21T397**	2,870	RPMST	Foot/250TC	617517-23	L3307A	20
	1750	3500	460	RL2158C	TEFC	**P21R358 (2)**	2,870	RPMST	Foot/250TC	617258-13	L1517A	21
20	1750	2890	460	FL1838C	DPG-FV	**P18T328**	2,705	RPMST	Foot/250TC	617230-23	L1232A	26
	1750	3500	460	FL2162C	TEFC	**P21T283**	2,990	RPMST	Foot/250TC	617517-23	L3308A	27
	1750	3500	460	RL2162C	TEFC	**P21R283**	2,990	RPMST	Foot/250TC	617201-13	L0514A	27
	1750	3500	460	FL1852C	TEBC	**P18T268**	2,784	RPMST	Foot/250TC	617235-23	L3218A	27
	1750	3500	460	RL2158C	TEBC	**P21R314 (2)**	3,005	RPMST	Foot/250TC	617258-13	L0021A	27
25	1750	2600	460	FL1844C	DPG-FV	**P18T330**	2,930	RPMST	Foot/250TC	617233-23	L0928A	32
	1750	3500	460	FL2173C	TEFC	**P21T286**	3,288	RPMST	Foot/250TC	617525-23	L3213A	34
	1750	3500	460	RL2173C	TEFC	**P21R286 (6)**	3,288	RPMST	Foot/250TC	617209-13	L1819A	34
	1750	3500	460	FL2162C	TEBC	**P21T287**	3,240	RPMST	Foot/250TC	617517-23	L3306A	34
	1750	3500	460	RL2162C	TEBC	**P21R287 (6)**	3,240	RPMST	Foot/250TC	617201-13	L0022A	34
30	1750	3475	460	FL1852C	DPG-FV	**P18T331**	3,048	RPMST	Foot/250TC	617236-23		39
	1750	2700	460	RL2158C	DPG-FV	**P21R327 (2)**	3,310	RPMST	Foot/250TC	617259-13	L1711A	39
	1750	3550	460	RL2578C	TEFC	**P25R278 (6)**	3,460	RPMST	Foot/250TC	617217-13	L2380A	40
	1750	3500	460	FL2570C	TEFC	**P25T299**	3,460	RPMST	Foot/250TC	617573-23		39
	1750	3500	460	FL2162C	TEBC	**P21T294**	3,430	RPMST	Foot/250TC	617517-23	L3310A	40
	1750	3500	460	RL2162C	TEBC	**P21R294 (6)**	3,430	RPMST	Foot/250TC	617201-13	L2381A	39
	1150	1350	460	RL2168	DPG-FV	**P21R250 (6)**	4,290	RPMST	FOOT	617206-1	L1767A	38

RELIANCE ELECTRIC

RPM AC STOCK MODELS-ENCODER PROVISIONS ONLY (cont.)

C-Face with Feet or Foot Mounted as shown - Without Encoder 1/3 - 1000 HP (cont.)

HP	Speed, RPM		Voltage	Frame	Enclosure	Model Number	List Price	Price Symbol	Mounting Foot/Flange	Dimension Sheet	Design Number	FLA
	Base	CHP (1)										
	1750	2000	460	RL2162	DPG-FV	**P21R211**	$3,550	RPMST	FOOT	617202-1	L0231A	52
	1750	3550	460	FL2586	TEFC	**P25T279**	3,765	RPMST	FOOT	617581-1		52
40	1750	3550	460	RL2586	TEFC	**P25R279 (6)**	3,765	RPMST	FOOT	617221-1	L1881A	52
	1750	3500	460	FL2173	TEBC	**P21T285**	3,580	RPMST	FOOT	617525-1	L3311A	52
	1750	3500	460	RL2173	TEBC	**P21R285**	3,580	RPMST	FOOT	617209-1	L2327A	52
	1750	2000	460	RL2168	DPG-FV	**P21R254**	3,960	RPMST	FOOT	617206-1	L1757A	65
50	1750	3500	460	FL2570	TEBC	**P25T300**	4,590	RPMST	FOOT	617573-1		61
	1750	3500	460	RL2578	TEBC	**P25R234 (6)**	4,620	RPMST	FOOT	617217-1	L1823A	61
	1150	1300	460	RL2570	DPG-FV	**P25R217**	5,730	RPMST	FOOT	617214-1	L0191A	65
	1750	2200	460	RL2168	DPG-FV	**P21R247**	4,780	RPMST	FOOT	617206-1	L1765A	74
60	1750	3500	460	FL2578	TEBC	**P25T302**	5,895	RPMST	FOOT	617577-1		74
	1750	3500	460	RL2586	TEBC	**P25R232 (6)**	5,980	RPMST	FOOT	617221-1	L1820A	74
	1150	1300	460	RL2578	DPG-FV	**P25R237**	6,970	RPMST	FOOT	617218-1	L1866A	73
	1750	2500	460	RL2570	DPG-FV	**P25R209**	5,740	RPMST	FOOT	617214-1	L0122A	96
75	1750	3500	460	FL2586	TEBC	**P25T303**	7,040	RPMST	FOOT	617581-1		94
	1750	3500	460	L2890	TEBC	**P28L234 (6)**	8,570	RPMST	FOOT	616759-1	L1515A	94
	1150	3000	460	RL2586	DPG-FV	**P25R238**	7,890	RPMST	FOOT	617222-1	L1868A	91
	1750	2000	460	RL2578	DPG-FV	**P25R239**	6,960	RPMST	FOOT	617218-1	L1821A	119
100	1750	3500	460	L2898	TEBC	**P28L232**	9,210	RPMST	FOOT	616759-1	L1520A	123
	1150	1450	460	L2882	DPG-FV	**P28L239**	10,550	RPMST	FOOT	616760-1	L0337A	124
	1750	2000	460	RL2586	DPG-FV	**P25R233**	9,225	RPMST	FOOT	617222-1	L1824A	148
125	1750	3500	460	L3203	TEBC	**P32L230**	11,810	RPMST	FOOT	616763-1	L1656A	150
	1150	2000	460	L2898	DPG-FV	**P28L237**	12,760	RPMST	FOOT	616760-1	L1591A	159
	1750	2000	460	L2882	DPG-FV	**P28L238**	10,300	RPMST	FOOT	616760-1	L0234A	180
150	1750	3500	460	L3213	TEBC	**P32L228**	15,800	RPMST	FOOT	616763-1	L1659A	177
	1150	2400	460	L3203	DPG-FV	**P32L235**	14,788	RPMST	FOOT	616764-1	L1663A	180
	1750	2600	460	L2898	DPG-FV	**P28L233**	13,800	RPMST	FOOT	616760-1	L1642A	237
200	1750	3500	460	L3614	TEBC	**P36L237**	17,480	RPMST	FOOT	609994-1		227
	1750	3500	460	L4022	TEBC	**P40L201 (7)**	18,860	RPMST	FOOT	609994-1	L0116A	227
	1150	2000	460	L3213	DPG-FV	**P32L233**	18,400	RPMST	FOOT	616764-1	L1699A	236
	1750	2945	460	L3203	DPG-FV	**P32L234**	15,800	RPMST	FOOT	616764-1	L0115A	290
250	1750	3500	460	L4034	TEBC	**P40L202**	21,885	RPMST	FOOT	609994-1	L0163A	283
	1150	2000	460	L3614	DPG-FV	**P36L207**	18,900	RPMST	FOOT	609998-1	L0192A	289
	1750	2500	460	L3213	DPG-FV	**P32L229**	18,400	RPMST	FOOT	616764-1	L1698A	350
300	1750	3500	460	L4046	TEBC	**P40L203**	26,855	RPMST	FOOT	609994-1	L0091A	336
	1150	2000	460	L4034	DPG-FV	**P40L205**	24,110	RPMST	FOOT	609998-1	L0211A	360
350	1750	2200	460	L3614	DPG-FV	**P36L210**	20,875	RPMST	FOOT	609998-1	L0198A	401
400	1750	2500	460	L3614	DPG-FV	**P36L212**	23,300	RPMST	FOOT	609998-1	L0809A	477
	1150	2000	460	L4046	DPG-FV	**P40L237**	35,200	RPMST	FOOT	609998-1	L1540A	451
500	1750	2400	460	L4034 (5)	DPG-FV	**P40L1315 (5)**	30,760	RPMST	FOOT	609998-1	L0485A	557
600	1750	2200	460	L4046 (5)	DPG-FV	**P40L1316 (5)**	37,500	RPMST	FOOT	609998-1	L0972A	666
700	1750	2300	460	L4429 (5)	DPG-FV	**P44L1320 (4) (5)**	46,800	RPMST	FOOT	615917-1	L1483A	875
1000 (3)	1750	2000	460	L4461	DPG-FV	**P44L1344 (4) (5)**	58,650	RPMST	FOOT	615917-1	L2029A	1202

Notes: For the current version of Inverter Duty Motors dimension sheets, connection diagrams, design curves, etc., go to www.reliance.com

(1) CHP = Constant HP speed

(2) Being replaced with new FL180 frames

(3) Requires a minimum inverter carrier frequency of 4 KHZ

(4) All L440 frames include VPI insulation and an insulated opposite drive end bearing.

(5) These models include VPI, Stator RTD's, Grounding Brush, Insulated ODE Bearing and 3 thermostats.

(6) Being replaced with new Finned Frames

(7) Being replaced with L3614 frame as stock model when inventory is depleted.

Price Symbol - RPMST

RPM AC STOCK MODELS - WITH ENCODER MOUNTED

Note: Stock motors may be modified as published in Modification Section of IMC Catalog RAPS 1632

RPM AC - Totally Enclosed Motor With Encoder - Vector Duty

56-L400 Frames • 40 C Ambient • Continuous Duty • 1.0 Service Factor Three Phase

Features

- Continuous constant torque to zero speed
- 3 N/C thermostats included
- Full continuous torque @ zero speed
- 200% overload - 1 minute from 0 to base speed
- Meets IP44
- Class H Insulation FL180-L440.
- TEBC enclosure has 3 phase/60Hz/230-460 volt blower except WE184TC frame has 1 phase 50/60Hz 115 volt blower
- 1024 ppr hollowshaft BEI HS-35, Dynapar HS20, or coupled Dynapar H20 encoder with Quadrature output as noted, marker pulse is included on all.
- Class F Insulation 56-WE180T frames

C-Face With Feet (1) or Foot Mounted as shown 1/3 - 200 With Encoder

HP	Speed, RPM		Voltage	Frame	Enclosure	Model Number	List Price	Price Symbol	Mounting Foot/Flange	Dimension Sheet	FLA
	Base	CHP (5)									
1/3	3600	5400	230/460	FB56C	TENV	**P56H5602 (4)**	$1,450	REM03	Foot/56C	610302-889	1.6/.8
	1800	3600	230/460	FB56C	TENV	**P56H5605 (4)**	1,480	REM03	Foot/56C	610302-889	1/.5
1/2	3600	5400	230/460	FB56C	TENV	**P56H5601 (4)**	1,460	REM03	Foot/56C	610302-889	1.6/.8
	1800	3600	230/460	FB56C	TENV	**P56H5604 (4)**	1,510	REM03	Foot/56C	610302-889	1.6/.8
3/4	3600	5400	230/460	FB56C	TENV	**P56H5600 (4)**	1,490	REM03	Foot/56C	610302-889	2.2/1.1
	1800	3600	230/460	FB56C	TENV	**P56H5603 (4)**	1,540	REM03	Foot/56C	610302-889	2.2/1.1
1	3600	5400	230/460	WC143TC	TENV	**P14A5920 (4)**	1,746	REM03	Foot/140TC	610302-890	2.4/1.2
	1800	3600	230/460	WC143TC	TENV	**P14A5923 (4)**	1,600	REM03	Foot/140TC	610302-890	3.2/1.6
1-1/2	3600	5400	230/460	WC143TC	TENV	**P14A5921 (4)**	1,806	REM03	Foot/140TC	610302-890	4/2
	1800	3600	230/460	WC145TC	TENV	**P14A5924 (4)**	1,655	REM03	Foot/140TC	610302-890	4.6/2.3
2	3600	5400	230/460	WE145TC	TENV	**P14A5922 (4)**	1,804	REM03	Foot/140TC	610302-890	5/2.5
	1800	3600	230/460	WD145TC	TENV	**P14A5925 (4)**	1,675	REM03	Foot/140TC	610302-890	6/3
3	3600	5400	230/460	WE182TC	TENV	**P18A6301 (4)**	2,031	REM03	Foot/180TC	610302-898	7.6/3.8
	1800	3600	230/460	WE182TC	TENV	**P18A6303 (4)**	1,880	REM03	Foot/180TC	610302-898	8.8/4.4
5	3600	5400	230/460	WD184TC	TEBC	**P18A6302 (4)**	2,503	REM03	Foot/180TC	610301-414	10.8/5.9
	1800	3600	230/460	WE184TC	TEBC	**P18A6304 (4)**	2,345	REM03	Foot/180TC	610301-414	14.2/7.1
	1750	3600	230/460	FL1838C	TENV	**P18T362 (2)**	3,147	RPMST	Foot/180TC	617228-3 (8)	14.4/7.2
	1750	3500	230/460	RL2153C	TENV	**P21R373 (7) (2)**	3,540	RPMST	Foot/180TC	617254-33 (8)	13.6/6.8
7.5	1750	3500	230/460	FL1852C	TENV	**P18T368 (2)**	3,454	RPMST	Foot/210TC	617231-13 (8)	21.2/10.6
	1750	3500	230/460	FL1852C	TENV	**P18T363 (3)**	3,654	RPMST	Foot/210TC	617234-13 (8)	22/11
	1750	3500	230/460	RL2158C	TENV	**P21R374 (7) (3)**	3,975	RPMST	Foot/210TC	617257-3 (8)	21.2/10.6
	1750	3500	230/460	RL2158C	TENV	**P21R375 (7) (2)**	3,775	RPMST	Foot/210TC	617257-3 (8)	21.2/10.6
10	1750	3500	230/460	FL1844C	TEFC	**P18T365 (2)**	3,545	RPMST	Foot/210TC	617232-13 (8)	27.8/13.8
	1750	3500	230/460	FL1844C	TEFC	**P18T364 (3)**	3,745	RPMST	Foot/210TC	617232-13 (8)	27.8/13.8
	1750	3500	230/460	RL2162C	TENV	**P21R376 (7) (3)**	4,088	RPMST	Foot/210TC	617200-3 (8)	28/14
	1750	3500	230/460	RL2162C	TENV	**P21R377 (7) (2)**	3,888	RPMST	Foot/210TC	617200-3 (8)	28/14
15	1750	3500	460	FL1844C	TEBC	**P18T367 (2)**	3,625	RPMST	Foot/250TC	617232-23 (8)	21
	1750	3500	460	FL1844C	TEBC	**P18T366 (3)**	3,825	RPMST	Foot/250TC	617232-23 (8)	21
	1750	3500	460	RL2158C	TEFC	**P21R378 (7) (3)**	4,170	RPMST	Foot/250TC	617258-13 (8)	21
	1750	3500	460	RL2158C	TEFC	**P21R379 (7) (2)**	3,970	RPMST	Foot/250TC	617258-13 (8)	21

See page M-90 for Footnotes

RPM AC STOCK MODELS - WITH ENCODER MOUNTED (cont.)

C-Face With Feet (1) or Foot Mounted as shown 1/3 - 200 With Encoder (cont.)

HP	Speed, RPM		Voltage	Frame	Enclosure	Model Number	List Price	Price Symbol	Mounting Foot/Flange	Dimension Sheet	FLA
	Base	CHP (5)									
20	1750	3500	460	FL2162C	TEFC	**P21T288 (2)**	$4,090	RPMST	Foot/250TC	617517-23 (8)	27
	1750	2750	460	RL2162C	TEFC	**P21R288 (2) (6)**	4,090	RPMST	Foot/250TC	617201-13 (8)	27
	1750	3500	460	FL1852C	TEBC	**P18T269 (3)**	4,084	RPMST	Foot/250TC	617235-23 (8)	27
	1750	3500	460	RL2158C	TEBC	**P21R380 (7) (3)**	4,305	RPMST	Foot/250TC	617258-13 (8)	27
	1750	3500	460	FL1852C	TEBC	**P18T336 (2)**	3,884	RPMST	Foot/250TC	617235-23 (8)	27
	1750	3500	460	RL2158C	TEBC	**P21R381 (7) (2)**	4,105	RPMST	Foot/250TC	617258-13 (8)	27
25	1750	3500	460	FL2173C	TEFC	**P21T289 (2)**	4,385	RPMST	Foot/250TC	617525-23 (8)	34
	1750	3500	460	FL2173C	TEFC	**P21T293 (2)**	4,540	RPMST	Foot/250TC	617525-24 (8)	34
	1750	3500	460	RL2173C	TEFC	**P21R289 (2) (6)**	4,385	RPMST	Foot/250TC	617209-13 (8)	34
	1750	3500	460	RL2162C	TEBC	**P21R290 (2) (6)**	4,340	RPMST	Foot/250TC	617201-13 (8)	34
	1750	3500	460	RL2162C	TEBC	**P21R293 (3) (6)**	4,540	RPMST	Foot/250TC	617201-13 (8)	34
30	1750	3500	460	FL2570C	TEFC	**P25T310 (2)**	4,560	RPMST	Foot/250TC	617573-23 (8)	40
	1750	3500	460	FL2162C	TEBC	**P21T282 (2)**	4,530	RPMST	Foot/250TC	617517-23 (8)	40
	1750	3500	460	FL2162C	TEBC	**P21T249 (3)**	4,730	RPMST	Foot/250TC	617517-23 (8)	40
	1750	2750	460	RL2578C	TEFC	**P25R283 (2) (6)**	4,560	RPMST	Foot/250TC	617217-13 (8)	39
	1750	3500	460	RL2162C	TEBC	**P21R282 (2) (6)**	4,530	RPMST	Foot/250TC	617201-13 (8)	39
	1750	3500	460	RL2162C	TEBC	**P21R249 (3) (6)**	4,730	RPMST	Foot/250TC	617201-13 (8)	39
40	1750	3500	460	FL2586	TEFC	**P25T280 (2)**	4,865	RPMST	FOOT	617581-1 (8)	52
	1750	3500	460	FL2173	TEBC	**P21T291 (2)**	4,680	RPMST	FOOT	617525-1 (8)	52
	1750	3500	460	FL2173	TEBC	**P21T292 (3)**	4,880	RPMST	FOOT	617525-1 (8)	52
	1750	2750	460	RL2586	TEFC	**P25R280 (2) (6)**	4,865	RPMST	FOOT	617221-1 (8)	52
	1750	3500	460	RL2173	TEBC	**P21R291 (2) (6)**	4,680	RPMST	FOOT	617209-1 (8)	52
	1750	3500	460	RL2173	TEBC	**P21R292 (3) (6)**	4,880	RPMST	FOOT	617209-1 (8)	52
50	1750	3500	460	FL2570	TEBC	**P25T304 (2)**	5,690	RPMST	FOOT	617573-1 (8)	61
	1750	3500	40	FL2570	TEBC	**P25T305 (3)**	5,890	RPMST	FOOT	617573-1 (8)	61
	1750	2750	460	RL2578	TEBC	**P25R281 (2) (6)**	5,720	RPMST	FOOT	617217-1 (8)	61
	1750	3500	460	RL2578	TEBC	**P25R235 (3) (6)**	5,920	RPMST	FOOT	617217-1 (8)	61
60	1750	3500	460	FL2578	TEBC	**P25T306 (2)**	6,995	RPMST	FOOT	617577-1 (8)	74
	1750	3500	460	FL2578	TEBC	**P25T307 (3)**	6,995	RPMST	FOOT	617577-1 (8)	74
	1750	3500	460	RL2586	TEBC	**P25R282 (2) (6)**	7,080	RPMST	FOOT	617221-1 (8)	74
	1750	3600	460	RL2586	TEBC	**P25R236 (3) (6)**	7,280	RPMST	FOOT	617221-1 (8)	74
75	1750	3500	460	FL2586	TEBC	**P25T308 (2)**	8,140	RPMST	FOOT	617581-1 (8)	94
	1750	3500	460	FL2586	TEBC	**P25T309 (3)**	8,340	RPMST	FOOT	617581-1 (8)	94
	1750	3500	460	L2890	TEBC	**P28L235 (3) (6)**	9,870	RPMST	FOOT	616759-1 (8)	94
100	1750	3500	460	L2898	TEBC	**P28L236 (3)**	10,510	RPMST	FOOT	616759-1 (8)	123
125	1750	3500	460	L3203	TEBC	**P32L231 (3)**	13,110	RPMST	FOOT	616763-1 (8)	150
150	1750	3500	460	L3213	TEBC	**P32L232 (3)**	17,100	RPMST	FOOT	616763-1 (8)	177
200	1750	3500	460	L3614	TEBC	**P36L238**	18,780	RPMST	FOOT	609994-1 (8)	240
200	1750	3500	460	L4022	TEBC	**P40L1301 (3) (9)**	20,160	RPMST	FOOT	609994-2 (8)	240

See page M-90 for Footnotes

RPM AC STOCK MODELS - WITH ENCODER MOUNTED (cont.)

C-Face Foot Mounted 1/3 - 3HP IP-55 Washdown with HS-20 Encoder at 1024 PPR

HP	Speed, RPM		Voltage	Frame	Enclosure	Model Number	List Price	Price Symbol	Mounting Foot/Flange	Dimension Sheet	FLA
	Base	CHP (5)									
1/2	1800	3600	230/460	FB56C	TENV-IP55	**P56H5364 (4)**	$1,650	REM03	Foot/56C	610302-900	1.6/.8
1	1800	3600	230/460	WC143TC	TENV-IP55	**P14A5953 (4)**	1,740	REM03	Foot/140TC	610302-890	3.2/1.6
1.5	1800	3600	230/460	WC143TC	TENV-IP55	**P14A5954 (4)**	1,795	REM03	Foot/140TC	610302-890	4.6/2.3
2	1800	3600	230/460	WD145TC	TENV-IP55	**P14A5955 (4)**	1,815	REM03	Foot/140TC	610302-890	6/3
3	1800	3600	230/460	WE182TC	TENV-IP55	**P18A6253 (4)**	2,485	REM03	Foot/180TC	610302-898	8.8/4.4

Footnotes:

(1) See Dimension Sheet for exact C-Face and Shaft dimensions
(2) Includes BEI HS-35 Encoder 1024 PPR 5-15 volts
(3) Includes Dynapar H20 encoder 1024 PPR 5-15 volts
(4) Includes Dynapar HS20 encoder 1024 PPR 5-26 volts
(5) CHP = Constant HP speed
(6) Being replaced with new Finned Frames
(7) Being replaced with new FL180 frames
(8) See encoder dimension sheet specified on this d/s for total motor length with encoder mounted
(9) Being replaced with L3614 frame