

marathon[®]
Motors



VARIABLE SPEED MOTORS

REGAL[®]

MAX FAMILY

VARIABLE SPEED MOTORS



MICROMAX™ INVERTER DUTY

1000:1 CT & 20:1 CT

- Designed to replace PMDC, variable, or fixed speed systems
- 1/8 HP to 10 HP, 1800 RPM, TENV & TEFC, 230 Volt, 230/460 Volt, or 575 Volt
- TENV rated for 1000:1 Constant torque (0 to base speed)
- TEFC rated for 20:1 Constant torque
- Cost effective designs available as C-Face, C-Face with rigid base and C-Face with removable rigid base
- Class H insulation with CR[™] corona resistant magnet wire
- UL, CSA, CE
- No encoder provisions



BLACK MAX® VECTOR DUTY

1000:1 CT

- Designed for high performance applications utilizing Closed- or Open-Loop Vector controls or Volts/Hertz drives
- Stock through 30 HP, 1800 RPM, and 10 HP, 1200 RPM, 230/460 Volt or 575 Volt, TENV
- Constant torque operation from 0 to base speed on vector drive
- Lightweight versatile design with encoder and brake provisions included on opposite drive end
- MAX GUARD[®] Motor Class F insulation system
- UL, CSA, CE



BLACK MAX EXPLOSION PROOF

1000:1 CT

- Designed for hazardous locations Class I Groups C & D, Class II Groups F & G
- Stock ratings available from 1/4 HP through 1 HP, 1800 RPM, 230/460 Volt, C-Face with rigid base
- Constant torque operation from 0 to base speed on vector drive
- Top mounted (F3) conduit box included (shipped loose)
- MAX GUARD Motor Class F insulation system
- Class F normally closed thermostats
- No encoder provisions



BLUE MAX® 2000 VECTOR DUTY

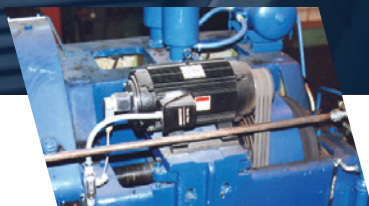
2000:1 CT

- Designed for VFD applications requiring full rated torque at 0 speed using Closed- or Open-Loop (Sensorless) Vector controls
- 1 HP through 350 HP, 1800 RPM in stock, 230/460 Volt and 460 Volt, C-Face with rigid base (through 100 HP)
- Cast iron frame and brackets for harsh environments and minimal vibration
- Encoder provisions on all stock ratings
- Patented "fracket" design provides more options
- MAX GUARD Motor Class H insulation system
- BCP[™] on select ratings
- UL, CSA, CE

APPLICATIONS



- Machine Tools
- Conveyors
- Packaging Equipment
- Batching Machines
- Printing Equipment
- Stair Lifts



- Material Handling
- Machine Tools
- Conveyors
- Crane and Hoist
- Metal Processing
- Pumps
- Packaging Equipment
- Test Stands



- Machine Tools
- Conveyors
- Crane and Hoist
- Packaging Equipment



- Process Lines
- Chemical Plants
- Paper Mills
- Conveyors
- Crane and Hoist

LY MOTORS

WE TAKE TECHNOLOGY FURTHER



BLUE MAX 2000 EXPLOSION PROOF

2000:1 CT

- Designed for industrial applications in hazardous locations, Class I Groups C & D, Class II Groups F & G, that require precise speed control
- 1 HP through 20 HP, 1800 RPM, 230/460 Volt, C-Face with rigid base
- Capability of building ratings up to 150 HP
- Cast iron frame and brackets for dirty, dusty or caustic environments
- BEI* H38 Encoder, 1024 ppr on stock ratings, other encoders available on factory build-ups
- MAX GUARD Motor Class F insulation system



BLUE MAX 2000 BRAKEMOTORS

2000:1 CT

- Similar industrial design as the Blue Max 2000 motor only featured with a brake for temporary slow down and holding
- Stock ratings from 1 HP through 20 HP, 1800 RPM, 230/460 volt, C-face with rigid base
- Constant torque operation from 0 to base speed on vector drive
- Cast iron frame and brackets for dirty, dusty or caustic environments
- MAX GUARD Motor Class F insulation system
- Build-up ratings through 200 HP with brakes up to 1000 lb-ft



BLUE MAX 2000 DRIPPROOF FORCE VENTILATED

2000:1 CT

- Durable Blue Max 2000 design, precise speed and torque regulation
- 30 HP through 1250 HP, factory build-up capabilities
- Cast iron frame and brackets for industrial durability
- Constant torque operation from 0 to base speed on vector drive
- Numerous encoder options and configurations
- MAX GUARD Motor Class F insulation system



BLUE MAX 2000 WIDE CONSTANT HORSEPOWER

2000:1 CT

- Available in TEBC, TENV, and DPFV Blue Max enclosures
- Totally Enclosed from 5 HP through 350 HP and Dripproof from 25 HP through 450 HP
- Up to 4 times base speed, constant horsepower ("field weakening" mode)
- One minute overload at 150% of rated torque below base speed
- 125% overload capability to maximum constant HP RPM
- MAX GUARD Motor Class F insulation system
- Class F normally closed thermostats



- Process Lines
- Chemical Plants
- Paper Mills
- Conveyors
- Crane and Hoist



- Process Lines
- Chemical Plants
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- Center Winders
- Tension Reels
- Uncoilers
- Recoilers
- Scrap Choppers
- Slitters



- Center Winders
- Payoff and Tension Reels
- Uncoilers
- Recoilers
- Scrap Choppers
- Slitters

INVERTER DUTY MOTORS

marathon[®]
Motors



XRI[®] SEVERE & HAZARDOUS DUTY[®]

2:1 CT to 10:1 CT

- Cast iron construction, 1 HP through 350 HP, UL Listed
- Class I Groups C & D, Class II Groups F & G, Temperature code T3B
- Motor nameplate has Variable & Constant torque capability for use with any PWM Drive
- 1.15 Service factor on sinewave, 1.0 Service factor on IGBT power
- MAX GUARD[®] Motor Class F insulation system
- Meets IEEE45 USCG Marine Duty specifications
- IP54 Construction
- BCP[™] on select ratings

XRI-SD & XRI-841 SEVERE DUTY

Up to 20:1 CT

- 100% cast iron construction, 3/4 HP through 600 HP
- Capable of Variable torque and Constant torque
- 1.15 Service factor on sinewave, 1.0 Service factor on IGBT power
- NEMA Design B provides limited in-rush current when by-passing the VFD
- Internal and external epoxy coatings
- MAX GUARD Motor Class F insulation system
- Meets IEEE45 USCG Marine Duty Specifications
- IP55 construction on XRI-SD and IP56 construction on XRI-841

GLOBETROTTER[®] TOTALLY ENCLOSED

10:1 CT

- Cast iron construction, 1 HP through 200 HP
- Capable of 10:1 Variable torque and Constant torque
- 1.15 service factor on sinewave, 1.0 service factor on IGBT power
- CR200 corona resistant magnet wire
- Class F insulation
- Hazardous Duty Division 2, UL certification nameplate on select ratings
- Division 2 / Zone 2 Class I (gases), Groups A, B, C, D, meets temperature code T2B
- IP55 Construction

TERRAMAX[®] IEC

Up to 20:1 CT

- Aluminum construction 63-90 frame, cast iron construction 100-315 frame
- Capable of 10:1 Variable torque, and up to 20:1 Constant torque on select ratings
- Meets IEC 34 and IEC 72 standards
- Design N with NEMA design B torques
- B3, B5 & B14 mount
- Class F, Class B rise insulation
- IP55 Construction

APPLICATIONS



- Fans and Blowers
- Pumps
- Compressors
- Machine Tools
- Conveyors



- Refineries
- Food Processing
- Mines
- Foundries
- Chemical Plants
- Paper Making
- Marine Duty
- Automotive Plants



- Conveyors
- Pumps
- Fans and Blowers
- Extruders



- Machine Tools
- Textile Machinery
- Conveyors
- Pumps
- Blowers

INVERTER TECHNOLOGY NEEDS BEARING CURRENT PROTECTION

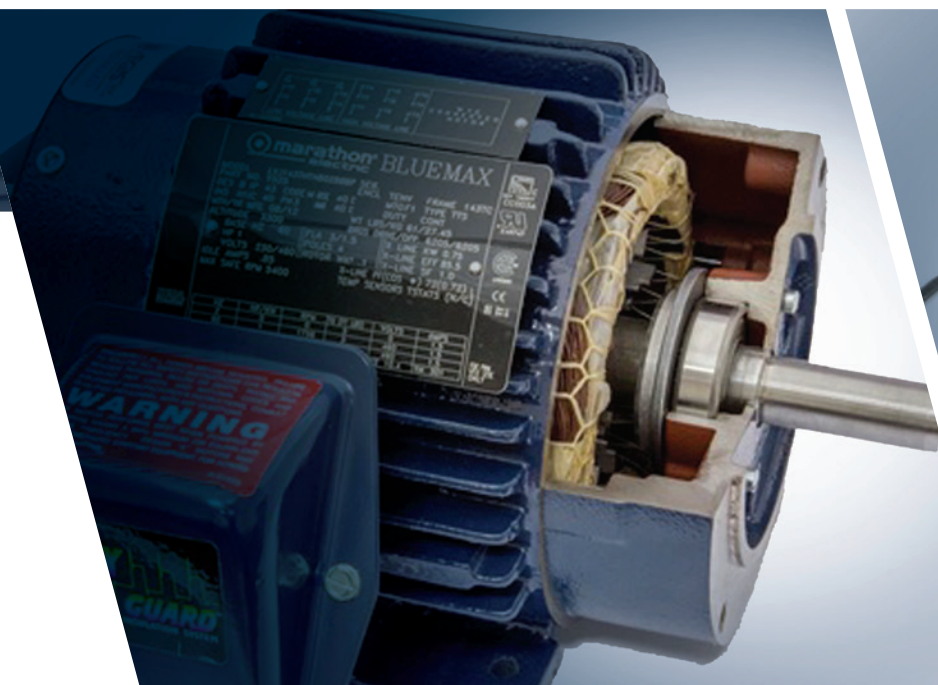
Bearings are mechanical devices, subject to wear and damage.

However, the impact on them is often unknown and hence overlooked when used with variable frequency drives.

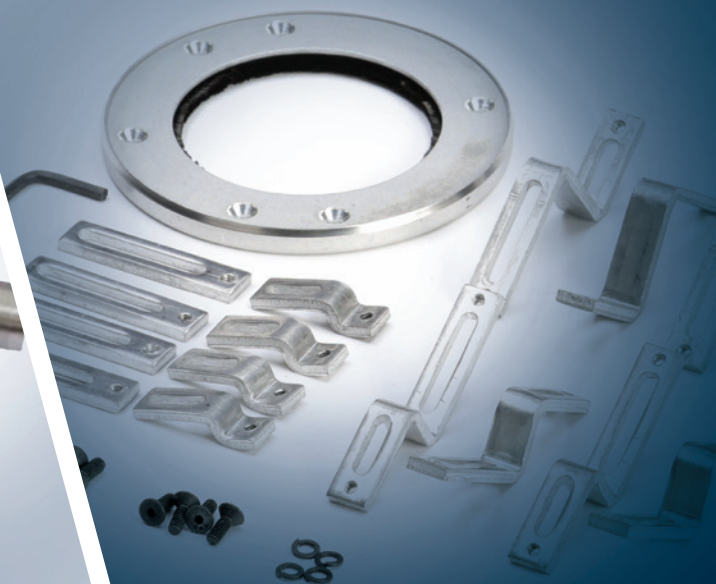
When you need a motor that can handle the demands inverters create, look no further than a Marathon® motor with bearing current protection. BCP™ technology is an internal grounding ring that is mounted internally on the drive end of the motor. With BCP technology you get unsurpassed protection in the most demanding applications without sustaining bearing damage due to inverter-sourced bearing current.



Blue Max® motor in stock with BCP



BCP kits and modifications are available as additional options



TAKING TECHNOLOGY FURTHER

BLACK MAX® & BLUE MAX® MOTORS OFFER MAXIMUM FEATURES

MAX GUARD® Insulation System

- Unlimited lead length between the motor and drive
- Surpasses the requirements of NEMA® MG1, Part 30 and 31
- An exclusive patented feature

MAXimum Performance

- Performance matched for operation with any AC Drive
- Preferred by leading drive manufacturers

MAXimum Flexibility

- Designed-in flexibility for easy addition of encoders and brakes
- Innovative patented "fracket" provides option for mounting brakes, encoders, blowers, or combinations of any of the three
- NEMA frame sizes maintained



MARATHON® MAX FAMILY OF AC VARIABLE SPEED MOTORS

PERFORMANCE AND SPECIFICATION COMPARISONS



CHARACTERISTIC	MICROMAX™	BLACK MAX®	BLUE MAX®
ELECTRICAL CHARACTERISTICS			
Horsepower range	1/8-10	1/4-30	1-1250
Base speed (# Poles)	4	4 and 6	2, 4, 6, 8, 10, 12
Standard Voltage	230, 230/460, 575	230/460, 575	230/460, 460, 575
Insulation Class	H	F	F (select models are H)
Insulation System	CR200 magnet wire / Class H	MAX GUARD® / Class F	MAX GUARD / Class F or H
Service Factor (inverter power)	1.0	1.0	1.0
Phase/Base Frequency	3/60	3/60	3/60
Design Code (NEMA®)	A	A	A ("B" as noted)
Duty Cycle	Continuous	Continuous	Continuous
Thermal protection	None	Class F thermostats	Class F thermostats
MECHANICAL CHARACTERISTICS			
Frame size (mounting)	56-215T	56-286T	143T-6805
Normal NEMA frame size	Yes	Yes	Yes
Enclosure	TENV & TEFC	TENV & EPNV	TENV, TEFC, TEBC, EPNV, DPFV
Frame material	Rolled Steel	Rolled Steel, Aluminum, and Cast Iron	Cast Iron
End bracket material	Aluminum	Aluminum, Cast Iron	Cast Iron
Conduit box material	Steel	Steel	Cast Iron
Fan guard material	Polypropylene	None (all ratings TENV)	Cast Iron
Fan material	Polypropylene	None (all ratings TENV)	Polypropylene
Severe Duty option	No	No	Yes
Lead termination	Terminal block (3 lead TENV) Conduit box (all others)	Conduit box	Conduit box
Standard mounting (stock)	C-Face with Rigid Base and C-Face Round Body	C-Face with Rigid Base	C-Face with Rigid Base (1-100 HP) Rigid base (TEFC and over 100 HP)
Drive end shaft slinger	No	No	Yes
Paint	Black (powder-coat or enamel)	Black (powder-coat or enamel)	Blue (powder-coat or enamel)
Bearings	Ball (C3 fit)	Ball (C3 fit)	Ball (C3 fit); 445T-up Roller
Grease	Mobil POLYREX® EM	Mobil POLYREX EM	Mobil POLYREX EM
Standard conduit box assembly position	F3	F1, reversible to F2 (except 56/140 frame steel)	F1, reversible to F2 (F3 available on build-up)
PERFORMANCE CHARACTERISTICS			
Constant Torque speed range	20:1 (TEFC), 1000:1 (TENV)	1000:1 (TENV)	2000:1 (all enclosures) TEFC: 20:1 on V/H drives
Constant Horsepower speed range	2:1 (90-120 Hz intermittent)	2:1 (90-120 Hz intermittent)	1.5:1-4:1
Temperature rise	B	F	F (TENV & TEFC) B (TEBC)
Encoder provisions (stock motors)	No	Yes	Yes
High Breakdown Torque	Yes	Yes	Yes
OTHER CHARACTERISTICS			
Agency listings	UL Recognized, CSA Certified, CE	UL Recognized, CSA Certified, CE	UL Recognized, CSA Certified, CE

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APPLICATION CONSIDERATIONS

The proper selection and application of products and components, including the related area of product safety, is the responsibility of the customer. Operating and performance requirements and potential associated issues will vary appreciably depending upon the use and application of such products and components. The scope of the technical and application information included in this publication is necessarily limited. Unusual operating environments and conditions, lubrication requirements, loading supports, and other factors can materially affect the application and operating results of the products and components and the customer should carefully review its requirements. Any technical advice or review furnished by Regal Beloit America, Inc. and/or its affiliates ("Regal") with respect to the use of products and components is given in good faith and without charge, and Regal assumes no obligation or liability for the advice given, or results obtained, all such advice and review being given and accepted at customer's risk.

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