

marathon®



VARIABLE SPEED DRIVE MOTORS

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MAX FAMILY MOTORS

VARIABLE SPEED MOTORS



MICROMAX™ INVERTER DUTY

1000:1 CT & 20:1 CT

- IP43 Construction
- Designed to replace PMDC, variable, or fixed speed systems
- 3 HP to 10 HP
- TENV & TEFC
- 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 CR²⁰⁰ corona resistant magnet wire
- UL®* Recognized, CSA®* Certified, CE®* Mark
- No encoder provisions
- 3 Year Warranty



BLACK MAX® VECTOR DUTY

1000:1 CT

- IP55 Construction
- Designed for high performance applications utilizing Closed- or Open-Loop Vector controls or Volts/ Hertz drives
- Stock ratings available from 2 HP through 30 HP,
- 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 Recognized, CSA Certified, and CE Mark
- 3 Year Warranty



BLUE MAX® 2000 VECTOR DUTY

2000:1 CT

- IP55 Construction
- Designed for VFD applications requiring full rated torque at 0 speed using Closed- or Open-Loop (Sensorless) Vector controls
- 3 HP through 350 HP in stock & build up motors to trough 1250 HP
- 230/460 Volt and 460 Volt
- C-Face with rigid base (through 100 HP) and 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 F insulation system
- BCP™ on select ratings
- UL Recognized, CSA Certified, and CE Mark
- 3 Year Warranty



BLUE MAX® 2000 HAZARDOUS DUTY® EXPLOSION PROOF

2000:1 CT

- IP55 Construction
- Designed for industrial applications in hazardous locations, Class I Groups C & D, Class II Groups F & G, that require precise speed control
- 3 HP through 20 HP
- 230/460 Volt
- C-Face with rigid base
- Cast iron frame and brackets for dirty, dusty environments
- BEI®* H38 Encoder, 1024 ppr on stock ratings, other encoders available on factory build-ups
- MAX GUARD™ Motor Class F insulation system
- 3 Year Warranty

APPLICATIONS



- Machine Tools
- Conveyors



- Packaging Equipment
- Batching Machines



- Printing Equipment
- Stair Lifts



- Material Handling

MAX FAMILY MOTORS

WE TAKE TECHNOLOGY FURTHER



BLUE MAX 2000 BRAKEMOTORS

2000:1 CT

- IP55 Construction
- Similar industrial design as the Blue Max 2000 motor only featured with a brake for temporary slow down and holding
- 3 HP through 20 HP
- Build-up ratings through 200 HP with brakes up to 1000 lb-ft
- 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
- 3 Year Warranty



BLUE MAX 2000 DRIPPROOF FORCE VENTILATED

2000:1 CT

- IP23 Construction
- DPFV Enclosure
- 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
- Available as Made to Order
- 3 Year Warranty



BLUE MAX 2000 WIDE CONSTANT HORSEPOWER

2000:1 CT

- IP23 & IP55 Construction
- Available in DPFV, TEBC, TENV, and Blue Max enclosures
- Totally Enclosed from 3 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
- Available as Made to Order
- 3 Year Warranty

APPLICATIONS



- Crane and Hoist
- Metal Processing



- Pumps
- Packaging Equipment



- Test Stands



- Process Lines
- Chemical Plants
- Paper Mills

INVERTER DUTY MOTORS



XRI® SEVERE DUTY®

2:1 CT to 10:1 CT

- IP55 Construction
- Cast iron construction, 3 HP through 600 HP, UL®* recognized
- Division 2 / Zone 2 Class I (gases), Groups A, B, C, D, Temperature code T2B
- 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
- BCP™ on select ratings
- 3 Year Warranty



XRI-IEEE841

Up to 20:1 CT

- IP56 construction
- 100% cast iron construction, 3 HP through 500 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
- Inpro/Seal®* VBX®* bearing isolators on drive end shaft extension TENV and on both ends of TEFC
- MAX GUARD Motor Class H insulation system
- Meets IEEE45 USCG Marine Duty Specifications & NEMA MG1 - 1.26.6 waterproof specification.
- 5 Year Warranty



GLOBETROTTER® TOTALLY ENCLOSED

10:1 CT

- IP55 Construction
- Cast iron construction, 3 HP through 450 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
- 3 Year Warranty



TERRAMAX® IEC

Up to 20:1 CT

- IP55 Construction
- 112-315 Cast Iron construction 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
- 3 Year Warranty

APPLICATIONS



- Fans and Blowers
- Pumps



- Compressors
- Refineries



- Food Processing
- Mines



- Foundries
- Chemical Plants
- Paper Making
- Marine Duty
- Automotive Plants
- Extruders

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 kits and modifications are available as additional options



Blue Max® motor in stock with BCP



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.

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			
IP Protection	IP43	IP55	IP55 (If DPV IP23)
Horsepower range	3-10	3-30	3-1250
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)	182T-215T	182T-286T	182T-6805
Normal NEMA frame size	Yes	Yes	Yes
Enclosure	TENV & TEFC	TENV & EPNV	TENV, TEFC, TEBC, EPNV, DPV
Frame material	Rolled Steel	Rolled Steel, Aluminum, 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 (3-100 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	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® Mark	UL Recognized, CSA Certified, CE Mark	UL Recognized, CSA Certified, CE Mark
Warranty	3 Year Warranty	3 Year Warranty	3 Year Warranty



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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 Marathon Electric LLC, and/or its affiliates ("Marathon") with respect to the use of products and components is given in good faith and without charge, and Marathon 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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