The world's only large horsepower single-phase motor.™

BELLE
LARGE HORSEPOWER SINGLE-PHASE MOTORS™

The BELLE Motor™ utilizes patented Written-Pole® technology to deliver true single-phase electric motors in ratings up to 100 hp using readily-available single-phase utility services. This revolutionary concept delivers the exceptional performance in higher horsepower ratings for applications where three-phase utility service is not readily-available or cost-effective. As a true single-phase motor, the Belle Motor eliminates the need for phase converters or complex variable frequency drive installations often used in applications lacking three-phase service.

With its high operating efficiency, energy costs are a fraction of those for stationary engines or engine-generator sets with lower maintenance requirements and improved operating convenience and flexibility. Robustly designed, and available in ratings from 30 to 100 hp, Belle Motors are built to withstand the most demanding environments and applications.

Applications: Blowers, Fans, Dryers, Mills, Pumps, Compression, Injection Wells, Water & Wastewater.

BELLE Motor™ Benefits

Low Starting Current - BELLE Motors™ have starting current requirements of less than 2 times their rated full-load current, resulting in a starting demand that is less than 1/3 of conventional single or three-phase electric motors. The soft-start design, accomplished without reduced-voltage starting, dramatically increases the maximum horsepower rating that may be started and operated on rural single-phase utility distribution systems.

Energy Efficient - The synchronous mode of operation of a BELLE Motor™ provides levels of energy efficiency that are comparable to premium efficiency three-phase motors, reducing energy bills and operating costs relative to three-phase motors operated with phase converters or stationary diesel engines often used to power rural applications.

Simple, Rugged Design - The BELLE Motor™ and Motor Control Panel use proven high-grade industrial materials and components for improved reliability and lasting performance.

The BELLE Motor™ is a totally-enclosed, fan-cooled design in a rugged cast-iron frame suitable for indoor or outdoor installation. The motor winding is fabricated using high-grade copper wire and Class H insulation systems similar to those used in premium three-phase electric motors. The BELLE Motor™ does not require brushes, slip-rings or internal rotary switches ensuring superior performance and reliability under harsh conditions.

The BELLE Motor™ Control Panel is a factory-assembled and tested industrial-grade motor control panel containing all the control components required to start and operate a Belle Motor. The simple design and spacious out-door rated control cabinet allow for easy field installation using local electricians. High-grade industrial control components are used in a simple capacitor start/run configuration that uses intelligent logic to optimize starting and running performance. Over-temperature, under-speed and over-load protection supported by intelligent diagnostics are included as standard features in every control panel.

Flexible Operation - The inherent soft-start characteristics of BELLE Motors™ provide low starting demands and flexible starting characteristics that are compatible with utility power quality requirements, while also allowing high inertia loads to be started without overheating and instantaneous restarts following momentary power interruptions without damaging driven equipment.

Stationary Engine Replacement - A BELLE Motor™ can serve as a cost-effective replacement of stationary engines used to power many rural applications. The ability to use readily-available single-phase utility services for electric motors up to 100 hp, allows for a 50 - 75 percent reduction in energy costs, simplified environmental compliance, reduced maintenance requirements and superior long-term performance.

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BELLE Motor Drive Package™ Specifications

Description	Nominal Values							
Rated Horsepower (Hp)	30	30	40	40	50	60	75	100
Rated Single-Phase Voltage (V)	230	460	230	460	460	460	460	460
Rated Shaft Speed (Rpm)	1800	1800	1800	1800	1800	1800	1800	1800
Rated Efficiency (%)	93.0	93.0	93.5	93.5	94.0	94.5	95.0	95.5
Rated Power Factor (pf)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Rated Full Load Amps (FLA)	105	52	139	69	86	103	128	170
Single-Phase Service Voltage (V) (1)	240	480	240	480	480	480	480	480
Minimum Supply Cable Ampacity (1.25 x FLA)(2)	131	65	173	87	108	129	160	212
Minimum Supply Cable Size (based on ampacity)(3)	1	4	2/0	3	2	1	2/0	4/0
Recommended Supply Fuse/Breaker Rating (A)	125	70	175	90	110	125	175	200
Consult Factory-Approved Installation Manual for electrical interconnection between the BELL Motor™ Control Panel and single-phase electric motor (4)								
Locked Rotor Amps (approx.)	173	86	229	114	142	170	211	280
Locked Rotor kVA (approx.)	40	40	53	53	65	78	97	129
Locked Rotor kVA / Hp (approx.)	1.32	1.32	1.32	1.32	1.31	1.30	1.30	1.29
NEMA Locked Rotor kVA Code	A	A	A	A	A	A	A	A
NEMA Fram Dimensions (per NEMA MG-1)	365T	365T	405T	405T	405T	445T	445T	449T
Motor Weight (lbs)	890	890	1280	1280	1420	1860	1920	2720
Control Panel Dimensions (h/w/d inches)	49/37/11	49/37/11	49/37/11	49/37/11	49/37/11	49/37/11	49/47/11	49/47/11

(1) A BELLE Motor™ Control Panel is an integral piece of the BELLE Motor Drive Package™. A BELLE Motor™ cannot be operated without an appropriately-rated and inter-connected single-phase motor control panel. Utility service is provided directly to the BELLE Motor™ Control Panel in all cases.

(2) Minimum Supply Cable Ampacity for the electrical interconnection between the utility service and the Control Panel is determined as per the requirements of the National Electric code (i.e. 125% of rated full load amps). It is the responsibility of the installer to ensure compliance with local code requirements, which may differ from the national electric code.

(3) Minimum Supply Cable size from utility service to the Control Panel is determined by minimum cable ampacity or voltage drop specified by the National Electric Code (i.e. 3% voltage drop). It is the responsibility of the installer to ensure compliance with local code requirements, which may differ from the national electric code. The minimum cable size is related to cable type and installation method as noted in the local code requirements. Please consult a qualified electrician to ensure appropriate sizing.

(4) Minimum cable ampacities for the electrical inter-connection between the single-phase motor and motor control panel are less than those specified for the utility service interconnection to the BELLE™ single-phase motor control panel due to the configuration of the motor windings and start/run capacitors (i.e. located within the control panel). Please consult the factory-approved installation manual for additional details.

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SPPS
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