MagneTek

# Century® Integral Horsepower Motors

## Installation and Maintenance Instructions

**General.** These instructions must be followed to ensure safe and proper installation and maintenance of the motor

Before accepting delivery, the motor should be inspected for damage caused by exposure to dirt, grit or excessive moisture Make sure the shaft rotates freely when turned by hand. Damage claims must be made by the purchaser against the carrier.

**Handling.** Use eyebolts or lifting lugs for lifting the motor only. Don't use them to lift the motor plus other equipment attached to it. Direction tion of lift, using eyebolts, should not exceed a 15-degree angle with the shank of the eyebolt.

If the armature or rotor are packaged separately. use a padded cradle under the lamination core to support the shaft. Protect all bearing surfaces from damage and contamination.

**Safety.** Avoid personal injury or equipment damage by disconnecting electric power and discharging all capacitors before working on the motor or motor-driven equipment.

Motors with automatic thermal protectors will automatically restart when the protector cools if the power is left on. Do not use these motors where automatic restart will present a hazard to personnel or equipment. Check the nameplate for "thermally protected" marking to identify these motors.

Ensure that keys, pulleys, fans, belts, etc. are secured and properly guarded before energizing motor.

Install and ground the motor in accordance with National Electric Codes (NEC), NEMA MG-2 local safety and electrical codes, and OSHA (Occupational Safety and Health Act) where applicable.

FAILURE TO GROUND MOTOR PROPERLY MAY CAUSE SERIOUS INJURY.

**Mechanical Installation.** Install the motor where the free flow of air around the motor is not impeded. The ambient temperature must not exceed value on motor nameplate, normally 40°C (104°F). Fasten the motor to a foundation or base that will prevent undue vibration, loosening, or misalignment.

Ball-bearing motors, frames 180T through 445T, may be mounted in any position. However, if not mounted in standard horizontal or vertical position, the end brackets may have to be properly rotated or additional drain holes drilled. Larger frames, 447T and 449T, are designed for horizontal F1, F2 mounting only.

Align the motor with driven equipment in all directions. Use a flexible coupling (preferred) or other coupling between the motor and load.

Before operating, make certain that motor and driven equipment can be manually and freely rotated.

If the motor is the totally-enclosed type used outdoors or in other high-moisture areas, remove moisture drain plugs before operating.

**V-Belt Drive.** Center the drive sheave (pulley) on the motor shaft extension and align the driven sheave to prevent axial thrust on motor bearings.

Tighten belts only enough to prevent slippage, making the lower side of the belt the driving side where possible

The sheave used should comply with NEMA Spec MG1-14.42. Do not exceed pitch diameters shown in Table 1.

**Electrical Installation.** Power source-line voltage, phase, and frequency must agree with data on the motor nameplate, and current capacity must he sufficient to maintain rated voltage at the motor under all load conditions.

Proper wiring, rotation and voltage connections are shown on the connection diagram. Table 2 gives wire sizes for various applications.

If voltage and frequency from the power source are within the following range, the motor will operate, but with characteristics different from those with correct nameplate listed values: voltage within ±10%: frequency within ±5%: voltage and frequency together within ±10% (so long as frequency is less than +5%).

To determine whether the motor rotates in the proper direction, apply power to motor leads for an instant. To reverse rotation:

- Single phase – follow connection diagram instructions.
- Two phase – interchange line leads 1 and 3
- Three phase – interchange any two line leads.

**Maintenance.** Motor should be checked periodically, as dictated by local operating conditions.

DISCONNECT ALL POWER SOURCES TO MOTOR AND DRIVEN EQUIPMENT.

Clean electrical connections and clean and relubricate bearings as necessary. On single phase motors, check switch and governor, repairing or replacing as necessary.

**Lubrication.** The motor was properly lubricated at time of manufacture. No initial relubrication is required unless the motor has been stored for two years or longer.

Relubrication periods are shown in Table 3 (see Figure 1 for locations of grease fittings). When Table 3 is used, divide lubrication period by 3 for roller bearing applications. The column heads of the table are defined as follows:

1 **Standard service** – 8 hours a day; normal to light loading; 100°F maximum ambient temperature.

2 **Severe service** – 24 hours a day; shock loading, vibration, or in dirt or dust; 100°F to 150°F ambient temperature.

3 **Extreme service** – heavy shock or vibration; dirt or dust; 100°F to 150°F ambient temperature.

## Table 1
### Minimum Pitch Diameters

**Integral Horsepower Motors Polyphase Induction**

| Horsepower at synchronous speed, RPM | | | | V-belt sheave | |
|---|---|---|---|---|---|
| 3600 | 1800 | 1200 | 900 | Convent'l | Narrow |
| 1½ | 1 | ¾ | ½ | 2.2 | 2.2 |
| 2-3 | 1½-2 | 1 | ¾ | 2.4 | 2.4 |
| 3 | 3 | 1½-2 | 1½-2 | 2.4 | 2.4 |
| 5 | — | — | — | 2.6 | 2.4 |
| 7½ | 5 | — | — | 3.0 | 3.0 |
| 7½-10 | 7½ | 3 | 2 | 3.0 | 3.0 |
| 10 | — | 5 | 3 | 3.0 | 3.0 |
| 15 | 10 | — | — | 3.8 | 3.8 |
| 15 | — | 7½ | 5 | 3.8 | 3.8 |
| 20 | 15 | — | — | 4.4 | 4.4 |
| 20-25 | — | 10 | 7½ | 4.4 | 4.4 |
| — | 20 | — | — | 4.6 | 4.6 |
| — | — | 15 | 10 | 4.6 | 4.4 |
| — | 25 | — | — | 5.0 | 4.4 |
| — | 30 | 20 | 15 | 5.4 | 5.2 |
| — | 40 | 25 | 20 | 6.0 | 6.0 |
| — | 50 | 30 | 25 | 6.8 | 6.8 |
| — | — | 40 | 30 | 6.8 | 6.8 |

**Integral Horsepower Motors Polyphase Induction**

| Horsepower at synchronous speed, RPM | | | | V-belt sheave | |
|---|---|---|---|---|---|
| 3600 | 1800 | 1200 | 900 | Convent'l | Narrow |
| — | 60 | — | — | 7.4 | 7.4 |
| — | — | 50 | 40 | 8.2 | 8.2 |
| — | 75 | — | — | 9.0 | 8.6 |
| — | — | 60 | — | 9.0 | 8.0 |
| — | — | — | 50 | 9.0 | 8.4 |
| — | 100 | — | — | 10.0 | 8.6 |
| — | — | 75 | 60 | 10.0 | 10.0 |
| — | 100 | — | — | 10.0 | 8.6 |
| — | 125 | — | — | 11.5 | 10.5 |
| — | — | 100 | — | 11.0 | 10.0 |
| — | — | — | 75 | 10.5 | 9.5 |
| — | 125 | — | — | 11.0 | 9.5 |
| — | 150 | — | — | — | 10.5 |
| — | — | 125 | — | 12.5 | 12.0 |
| — | — | — | 100 | 12.5 | 12.0 |
| — | 150 | — | — | — | 10.5 |
| — | 200 | — | — | — | 13.2 |

# Century® Integral Horsepower Motors
## Installation and Maintenance Instructions (Continued)

Relubrication should comply with lubrication instructions on the motor or, when no motor-mounted instructions exist, follow these instructions:

1. Lubricate motor while warm and with power off.
2. Wipe grease fittings clean
3. Remove plugs A and B, if supplied (see Figure 1.)
4. Free relief hole of any hard grease
5. Add grease with low pressure gun
6. Start motor and run for 30 minutes
7. Stop motor and remove any drained grease
8. Replace plugs A and B

**Recommended Grease.** Use grease specified on the nameplate or, when no grease is specified, use Chevron SRI-2 or equivalent.

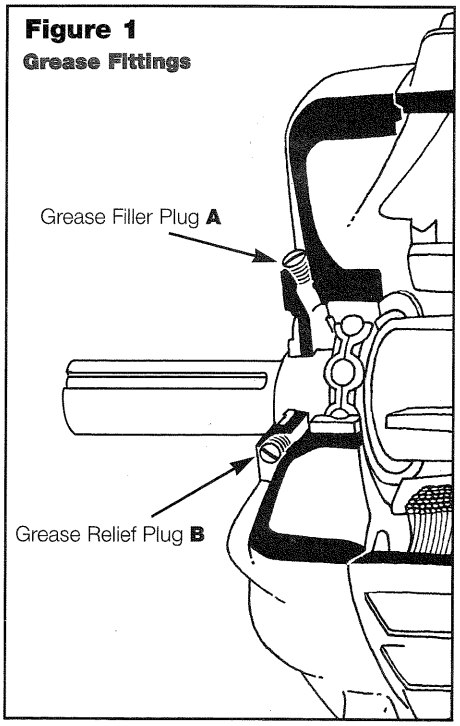
### Table 2
### Individual Branch Circuit Wiring

| | | | Length of wire run | | |
|---|---|---|---|---|---|
| **Hp** | **FLA*** | **Volts** | **50 Ft** | **100 Ft** | **200 Ft** |
| **1 Phase, Copper Wire** | | | | | |
| ⅓ | 5.8 | 115 | 14 | 12 | 8 |
| ½ | 7.2 | 115 | 14 | 12 | 8 |
| ¾ | 10.4 | 115 | 12 | 10 | 6 |
| ⅓-¾ | — | 230 | 14 | 14 | 14 |
| 1 | 14 | 115 | 12 | 8 | 6 |
| 1 | 7 | 230 | 14 | 14 | 12 |
| 1½ | 18.8 | 115 | 10 | 8 | 4 |
| 1½ | 9.4 | 230 | 14 | 14 | 10 |
| 2 | 25 | 115 | 8 | 6 | 3 |
| 2 | 12.5 | 230 | 14 | 12 | 8 |
| 3 | 36 | 115 | 8 | 4 | 2 |
| 3 | 18 | 230 | 12 | 10 | 8 |
| 5 | 27 | 230 | 10 | 8 | 6 |
| 7½ | 32 | 230 | 8 | 8 | 4 |
| 10 | 38 | 230 | 8 | 8 | 4 |

| | | | Length of wire run | | |
|---|---|---|---|---|---|
| **Hp** | **FLA*** | **Volts** | **50 Ft** | **100 Ft** | **200 Ft** |
| **3 Phase, 230 Volts, Copper Wire** | | | | | |
| ⅓-1½ | — | 230 | 14 | 14 | 14 |
| 2 | 6.0 | 230 | 14 | 14 | 12 |
| 3 | 9.6 | 230 | 14 | 14 | 10 |
| 5 | 14.4 | 230 | 14 | 12 | 8 |
| 7½ | 21.6 | 230 | 10 | 10 | 6 |
| 10 | 25 | 230 | 10 | 8 | 6 |
| 15 | 40 | 230 | 8 | 8 | 4 |
| 20 | 50 | 230 | 6 | 6 | 4 |
| 25 | 63 | 230 | 6 | 4 | 2 |
| 30 | 74 | 230 | 4 | 3 | 1 |
| 40 | 98 | 230 | 1 | 1 | 0 |
| 50 | 120 | 230 | 0 | 0 | 000 |
| 60 | 140 | 230 | 00 | 00 | 000 |
| 75 | 174 | 230 | 0000 | 0000 | 250MCM |
| 100 | 232 | 230 | 300MCM | 300MCM | 350MCM |

** Full Load rating printed on the motor nameplate.*
*Values are based on 2% maximum voltage drop at full load or current carrying capacity whichever applies.*

**Figure 1**
**Grease Fittings**




### Table 3
### Relubrication Schedule

| Speed | Frame | Standard Service | Severe Service | Extreme Service |
|---|---|---|---|---|
| **Over 1800 RPM** | **All motors** | **6 months** | **3 months** | **3 months** |
| 1800 RPM | 140-180 | 3.0 years | 1 year | 6 months |
| | 210-280 | 2.5 years | 10½ months | 5½ months |
| | 320-360 | 2.0 years | 9 months | 4½ months |
| | 400-440 | 1.5 years | 8 months | 4 months |
| 900-1200 | 140-180 | 4.5 years | 18 months | 9 months |
| | 210-280 | 4.0 years | 16 years | 8 months |
| | 320-360 | 3.5 years | 14 months | 7 months |
| | 400-440 | 3.0 years | 12 months | 6 months |

*Lubrication instructions for over 1 year's service does **not** imply warranty extension. For warranty data, refer to our limited Warranty Policy available upon request.*


MagneTek

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*Bulletin #1701 Printed in U.S.A.* *© MagneTek 2M 5/98*