STN - Guidelines for Sizing Phase-A-Matic Static Phase Converters

The following guidelines should be used when sizing the Static Converter.

WHICH CONVERTER SHOULD BE USED?

The most important question is whether the motor is heavily loaded. You must keep in mind that wye-wound motors will produce approximately 2/3* of its rated HP when running on the Static Converter. If the motor is loaded beyond that point, you must use our Rotary Converter or use method Number 2 as explained in our literature. Otherwise, you must unload the motor by reducing the motor pulley diameter by 1/3 or increase the horsepower by 50% to accommodate the loss of power.

**** Refers to wye-wound motors; delta-wound motors will run at 50% rated HP. Delta-wound motors are rare in the USA, occasionally being found on some imported equipment, and are particularly found on German and Italian machines.***

HEAVY-DUTY USES INCLUDE:

1. If there is a chance of the motor being stalled momentarily during use (such as with woodworking equipment, etc.)
2. Long, heavy starting cycles, such as lathes without a clutch, flywheel driven equipment, etc.
3. Frequent starting or instant reversing (more than once a minute)
4. Unattended equipment, such as air compressors**
5. Jogging

***** However, the pulley on the motor in the air compressor must be reduced by 1/3 in diameter or a 50% larger motor must be fitted. On a deltawound motor, the pulley diameter must be reduced by 50%, or a 100% larger motor must be fitted.***

If further technical assistance is required, please call Phase-A-Matic, Inc. at 661-947-8485 Monday – Friday 7:00AM-3:30PM PST.

WHICH HP RANGE TO USE?

Next, you must find the proper horsepower range for the application. The largest motor on the machine, or idler motor if used, must fall within the minimum and maximum ranges of the converter. Two-speed motors are usually dual horsepower. *Example:* A 3 HP 3600 RPM motor is 1.5 HP at 1800 RPM. You should select a converter with a minimum and maximum range, which will accommodate both horsepower ranges. However, with Taiwanese and Chinese motors, the larger horsepower should be at the lower range of the converter whether it is a two-speed motor or not. *Example:* A 5 HP Taiwanese or Chinese motor should use a 4 to 8 HP converter, even if it is a two-speed motor with 2.5 HP on the low speed. This is because Taiwanese and Chinese motors draw more amperage during start-up than domestic motors and therefore require the use of a slightly larger converter.

ADDITIONAL INFORMATION TO REMEMBER

1. The first motor to start on the converter must fall within the minimum and maximum horsepower range on the converter. However, after the first motor is started, motors below the minimum range may be started and can usually be left running as the main motor is stopped and started.
2. **Do not** add the horsepower of the power feed, coolant pump, or other accessory motors when sizing a converter. The only time you would add the horsepower of two or more motors together would be if they always start at the same time.
3. A larger size converter or a Heavy-Duty series converter will not produce greater horsepower than a Regular-Duty converter. Also, a Static Converter sized too large is incompatible and will not work.
4. Heavily loaded equipment usually consists of pumps blowers, fans, compressors, hydraulics, etc.

Note: The following must be used with a ROTARY Converter. Static Converters will NOT run the following:

- Old open frame motors, generally made before 1950
- Pumps / Blowers / Compressors
- Heating Elements
- Hydraulics (most)
- Battery Chargers
- Dynamic Brakes
- Plasma Cutters
- CNC (3-phase)
- Welders
- Lasers
- Motors' w/RPM ratings less than 1200 RPM
- Variable Frequency Drives (3-phase)
- Transmitters - Radio/TV
- Rheostat Controls
- EDM Machines
- SCR Controls
- Weg Motors
- A/C Units
- Rectifier