

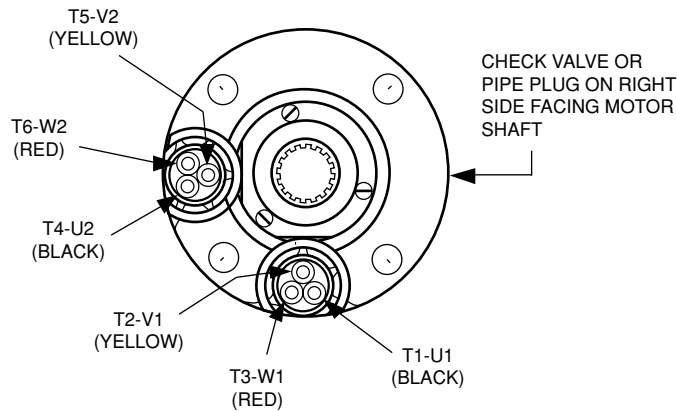


# APPLICATION Three-Phase Motors

## Three-Phase Motor Lead Identification

### Line Connections — Six-Lead Motors

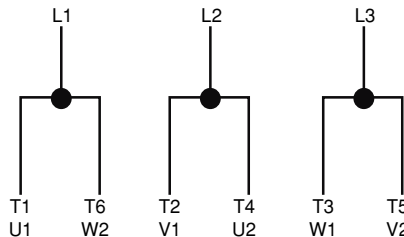
**WARNING:** When installing 6-lead motors extra care must be used to ensure lead identification at the surface. Leads must be marked and connected per diagram. Motor leads are not connected red to red, yellow to yellow, etc.



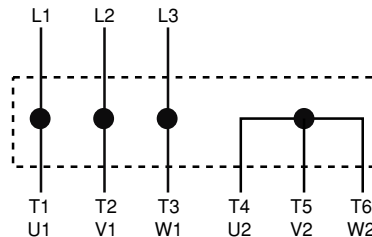
LEADS LOCATED HERE ONLY  
FOR 3 LEAD (DOL) MOTORS

### 90° Lead Spacing

Connections for across-the-line starting, running, and any reduced voltage starting except WYE-DELTA type starters.



WYE-DELTA starters connect the motor as shown below during starting, then change to the running connection shown at the left.



Each motor lead is numbered with two markers, one near each end. To reverse rotation, interchange any two line connections.

## Phase Converters

There are a number of different types of phase converters available. Each generates three-phase power from a single-phase power line.

In all phase converters, the voltage balance is critical to current balance. Although some phase converters may be well balanced at one point on the system-operating curve, submersible pumping systems often operate at differing points on the curve as water levels and operating pressures fluctuate. Other converters may be well balanced at varying loads, but their output may vary widely with fluctuations in the input voltage.

The following guidelines have been established for submersible installations to be warrantable when used with a phase converter.

1. Limit pump loading to rated horsepower. Do not load into motor service factor.
2. Maintain at least 3 ft/s flow past the motor. Use a flow sleeve when necessary.
3. Use time delay fuses or circuit breakers in pump panel. Standard fuses or circuit breakers do not provide secondary motor protection.
4. SubMonitor may be used with electro mechanical type phase converters, however special connections are required. Consult SubMonitor Manual for connections of receiver and lightning arrestor.
5. SubMonitor will not work with electronic solid state phase converters.
6. Current unbalance must not exceed 10%.