

Wiring Connections to PENTEK Submersible Motor Controls

⚠ WARNING Hazardous voltage. Can shock, burn, or cause death. Permanently ground the pump, motor and submersible motor control before connecting the power supply to the motor.

CABLE CONNECTIONS TO SUBMERSIBLE MOTOR CONTROLS

Submersible Motor Controls up to 1 HP (SMC Series) or 1-1/2 HP (SMCT Series) accept cables up to No. 10 AWG. For larger cables, run the cable to a separate junction box next to the Submersible Motor Control and connect the junction box to the Submersible Motor Control with No. 10 AWG wire.

PENTEK SMC Series Submersible Motor Controls rated 1-1/2 HP and above, and SMCT Series Submersible Motor Controls rated 2 HP and above, will accept cables up to No. 4 AWG. For larger cables, treat them as above.

For more information, contact your local code officials.

GROUNDING

Ground, in accordance with local codes and ordinances, the pump, motor, and any metallic conduit that carries power cable conductors. The motor is supplied with a copper ground wire. To adequately ground the motor, splice this ground wire to a copper conductor that matches the motor wire size specified in the pump owner's manual, and run it back to the service (that is, to the grounding screw provided within the supply-connection box wiring compartment). Refer to the owner's manual for splicing instructions.

Permanently ground the pump, motor and submersible motor control (SMC) before connecting the power cable to the power supply. Connect the ground wire to an approved ground first and then connect it to the equipment being installed.

Do not ground to a gas supply line.

BONDING

To reduce the risk of electrical shock from metal parts of the assembly other than the pump, bond together all metal parts accessible at the well head (including the metal discharge pipe, the metal well casing, and the like). Use a metal bonding conductor at least as large as the power cable conductors running down the well to the pump's motor.

Clamp or weld (or both if necessary) this bonding conductor to the grounding means provided with the pump, which will be the equipment-grounding terminal, the grounding conductor on the pump housing, or an equipment-grounding lead. The equipment-grounding lead, when provided, will be the conductor having green insulation; it may also have one or more yellow stripes.

SURGE ARRESTERS IN SUBMERSIBLE MOTOR CONTROLS

Grounding: When the Submersible Motor Control has a surge arrester, the surge arrester **MUST** be grounded, metal to metal, all the way to the water strata for the arrester to be effective. Grounding the arrester to a driven ground rod provides little or no protection for the motor.

NOTICE: Surge arresters **DO NOT** protect against direct lightning strikes.

Install grounded surge arresters to protect pump from high voltage surges. Install arrester on the incoming power line to the Submersible Motor Control or pressure switch, as close to the pump motor as possible. See Figures 1 and 2 for installation wiring diagrams for arresters.

NOTICE: Ground the arrester with a No. 10 or larger bare wire. Ground according to local code requirements.

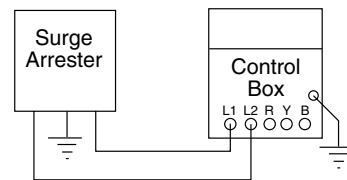


FIGURE 1 – Typical 3 Wire, Single Phase, 230 Volt Surge Arrester

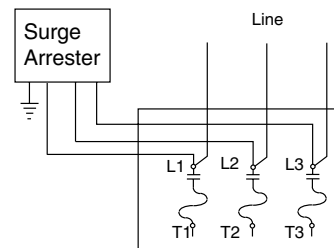


FIGURE 2 - Three Phase Surge Arrester (650 Volt Maximum)

NOTICE: Equipment-specific information in this Technical Bulletin applies only to PENTEK Submersible Motors and Submersible Motor Controls (SMCs). For information regarding other brands of equipment, consult the equipment manufacturer.

A Note on Nomenclature:

A **Submersible Motor Control** is the box, including the terminal strip(s), capacitor(s), relay(s), etc, which controls the basic on/off functions for a 3-Wire, single phase, submersible motor; it is not a Variable Speed Drive.

NOTICE: If surge arresters wired into the Submersible Motor Control are against local electrical code, contact power company for correct wiring information.