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INSTALLATION AND OPERATING INSTRUCTIONS

SERIES 5300 SUBMERSIBLE PUMPS INSTALLATION AND OPERATING MANUAL

SUBMERSIBLE PUMPS INSTALLATION AND OPERATING MANUAL

The Armstrong's Series 5300 Submersible Pumps work with everlasting high quality and maintenance free operations. The absence of oil in the motor, a high efficiency and a low level cost rate of energy make these pumps considerably important in safeguarding the environment.

The design features of the Series 5310 SUMP, the Series 5320 SEWAGE and the Series 5330 GRINDER are built in a cast iron casing to ensure high resistance to wear.

The Armstrong Series 5300 Submersible Pumps are tested at assembly and are therefore ready to be installed. After unpacking, the unit should be carefully examined for possible damage during transit. Contact your Armstrong representative and the Transport Company immediately if there is any evidence of mishandling.

INSTALLATION

1. GENERAL

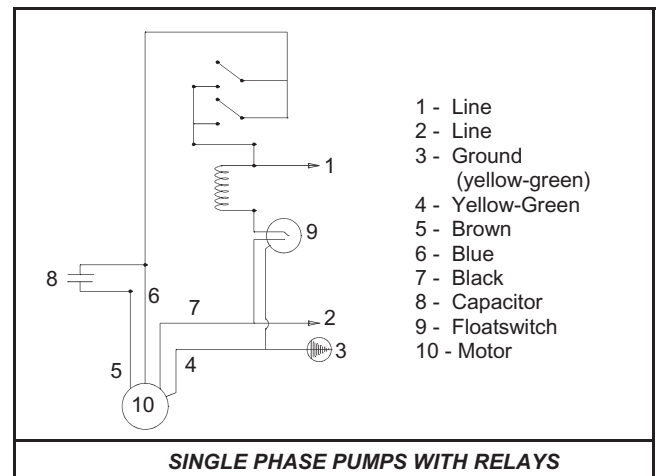
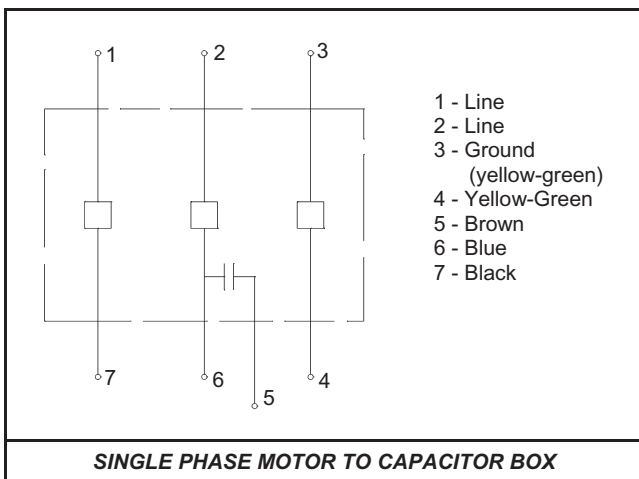
- ❑ Series 5310 SUMP is suitable for commercial and industrial use for drainage of water with limited soil, sand or other solid contents
- ❑ Series 5320 SEWAGE is suited to handle commercial, industrial and rain sewage when solid content is expected to be bigger than 3/8" diameter
- ❑ Series 5330 GRINDER is suitable for commercial and industrial applications when fibrous materials are present
- ❑ Single phase and three phase power supply with maximum allowable variation of $\pm 10\%$ with respect to the nominal data on the label
- ❑ Maximum depth of immersion: 26 feet below liquid level
- ❑ Maximum liquid temperature of 104°F for continuous duty and 176°F for intermittent use
- ❑ Maximum noise level is negligible as the pump must be totally submerged
- ❑ Sumps and tanks dimensions should be such as to avoid starts per hour in excess of the maximum permissible starts of 20 starts per hour at regular intervals
- ❑ In order to eliminate air aspiration that might be created by turbulence in the liquid, it is important to avoid the inlet flow from falling directly on the pump

2. DIRECTION OF ROTATION

Single Phase Submersible Pumps

- ❑ Make sure the main supply voltage is the same as marked on the pump data plate
- ❑ Run capacitors are built into the body of all single phase pumps. 5310 SUMP and 5320 SEWAGE pumps require no start capacitor.
- ❑ 5330 GRINDER pumps require an external start capacitor. Feed the connectors going out of the capacitor box and connect to ground the yellow-green connector
- ❑ An automatic re-start thermal protection is embedded in the winding. In case disconnection's and disjunctions of the box cables occur, re-connect motor connectors as follows:

- ⇒ black core to line
- ⇒ blue core to line and to the capacitor
- ⇒ brown core to the capacitor
- ⇒ yellow-green core to ground



Three phase submersible pumps

- ❑ Make sure the main supply voltage is the same as marked on the pump data plate
- ❑ Rotation may be clockwise or anticlockwise; an incorrect pump rotation will cause a substantial reduction of flow and pressure

Verify direction of rotation for *SERIES 5310 AND 5320*

- ❑ put the pump in horizontal position
- ❑ remove persons and objects in the range of 3 feet from the pump
- ❑ connect the pump electrically and switch it on for a few seconds only
- ❑ check the rotation by looking at the counter-kick
- ❑ if the counter-kick, looking at the inlet port is clockwise, the direction of rotation is correct, otherwise correct the electrical connection by interchanging the two phases of the supply
- ❑ once the correct rotation is determined, register the connection sequence, **disconnect** power before final installation of the unit

Verify direction of rotation for *SERIES 5330*

- ❑ put the pump in horizontal position
- ❑ remove persons and objects in the range of 3 feet from the pump
- ❑ connect the pump electrically and switch it on for a few seconds only
- ❑ check the rotation by looking at the cutter fitted on the pump inlet
- ❑ anticlockwise rotation is correct, otherwise correct the electrical connection by interchanging the two phases of the supply
- ❑ once the correct rotation is determined, register the connection sequence, **disconnect** power before final installation of the unit

3. PUMP HANDLING

- ❑ To lift and move the pump use the handle or a galvanised chain attached to the lifting eye provided on the pump motor cover
- ❑ The pump can be used on a free standing installation, a fixed installation or a permanent installation with coupling foot base

Free Standing Installation

- ❑ The pump outlet should be connected by means of an elbow to a flexible hose whose diameter is not smaller than the pump outlet
- ❑ A reinforced hose is recommended to allow an easy flow even when bends are used

Fixed Installation

- ❑ The pump is connected to a metal discharge pipe
- ❑ A check valve and gate valve are connected to the discharge pipe

Fixed Installation With Coupling Foot Base

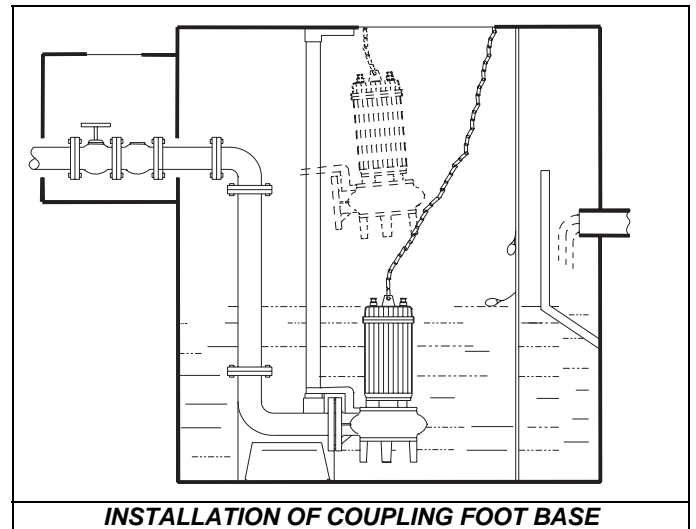
- ❑ The coupling foot base is extremely useful as it allows for easy maintenance with no need to empty the sump
- ❑ Place the auto-coupling unit at the bottom of the sump using a plumb line and heavy duty dowels

- ❑ Install the delivery pipe with the check valve and gate valve

Fixed Installation With Coupling Foot Base (cont'd)

- ❑ Fix the slide rails onto the auto-coupling and cut them off at a suitable level for the guide rail bracket
- ❑ Attach guide rails to guide rail bracket and fix permanently
- ❑ Guide rails must not have any axial play as this would cause excessive noise during pump operation
- ❑ Pump may be lowered down the slide rails into the sump by using a galvanised chain fixed to the lifting eye provided on the pump motor cover

Once the installation is completed proceed with final electrical connection



IT IS RECOMMENDED THESE OPERATIONS BE CARRIED OUT BY A QUALIFIED ELECTRICIAN

4. MAINTENANCE

- ❑ Pump does not normally require any scheduled maintenance
- ❑ Before starting any maintenance it is necessary to disconnect the pump from its power source
- ❑ For maintenance, contact nearest service center
- ❑ Precaution and instructions for maintenance operation comply with the following guidelines:
 - ❑ Replace any faulty or worn parts
 - ❑ Clean carefully the seats or seal rings
 - ❑ Lubricate "O" rings with a glycerin solution
 - ❑ Clean carefully with alcohol the sliding seal surfaces of the mechanical seals

SAFETY WARNING

- ❑ Pump must not be operated before final installation (except to establish the correct direction of rotation)
- ❑ Pump must not be operated dry
- ❑ Never move the pump until power is disconnected
- ❑ Do not use the power cable to lift or move the unit
- ❑ Do not put hands in the inlet port below the pump body or the outlet port on the side of the pump body
- ❑ Do not install in sump, tanks or similar with presence of gases due to danger of explosion
- ❑ Do not use to pump flammable liquids
- ❑ Sump or pumping station may contain poisonous gases therefore it is necessary to implement the following rules:
 - ❑ never work alone during maintenance
 - ❑ ventilate the pumping station before starting maintenance
 - ❑ use a lifting harness, safety line and a respirator as required
 - ❑ an experienced and skilled contractor with the necessary equipment should be employed
- ❑ To move pump from one site to another:
 - ❑ disconnect power cable
 - ❑ uncouple pump from plumbing
 - ❑ move the unit to new site
 - ❑ replumb unit and connect power cable to power source

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