

CRANE

PUMPS & SYSTEMS

BARNES[®]

SH Series

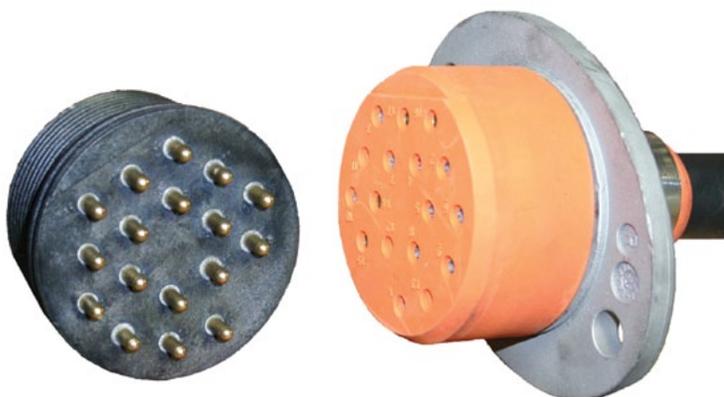
TECH NOTES

#6

Reduce Costs with the Barnes[®] Plug-n-Play Power Cord

When a Municipal Utility has to remove a submersible pump for maintenance, they have to go through a sequence of steps, including disconnecting the cable(s) from the control panel, pulling the cable from the conduit and then removing the pump from the lift station. For reinstallation, and with additional effort, the pump is replaced in the station and then the cable must be fished back through the conduit, the vapor seal replaced and reconnection made in the panel. During customer interviews, cable removal and replacement was described as a major pain point.

The Barnes[®] SH Solids Handling pump, up through 30 HP (21 Frame), is provided with a specialized 17-pin power plug that allows **easy pump removal** without the labor expense of pulling cable from the conduit. The plug is contained within the socket by an investment-cast stainless steel plate bolted to the motor housing. When the plate is bolted down metal-to-metal against the housing flange, the vertical force acts to squeeze the rubber plug compound outward, creating a water-tight seal. In fact, testing for FM qualification for the Explosion-Proof label proved the seal to 65 feet of submergence as well as being flame path resistant. And the cord relief clip design successfully passed FM's 400 pound pull test.



For dual-voltage motors, an orange plug easily connects 460 or 575 volt power to male pins sealed into the top of the motor housing. A black plug provides 208-230 volt power without re-wiring the motor.



When the stainless steel plate is bolted metal-to-metal against the motor housing, the connection is sealed to over 65 ft of submergence and is FM qualified for flame path resistance.

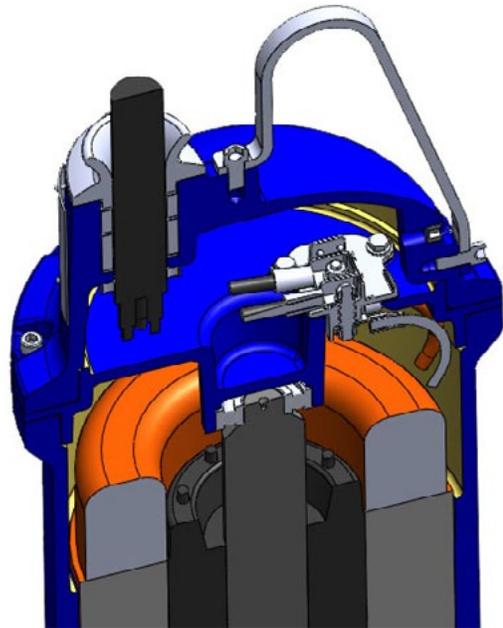
Another feature of this plug, available to 20 HP or so depending on voltage, is that dual voltage pumps require **NO** need to change the wiring in the motor to select the voltage. To change voltage, merely change the plug and cable assembly.

Barnes® offers a number of cables to match these dual voltage motors, all with color-coded plugs: An **orange** plug for 460 or 575 volt service, and a **black** plug for 208 or 230 volt service. This allows a user to have a **single** common spare pump for a given HP with two plug and play cord assemblies for a much more effective inventory. In addition to the color code, the voltage and amp ratings for the cord are cast onto the top of the investment cast stainless steel clamping plates.

For single voltage motors above 20 HP or so, again depending on voltage, the higher currents and correspondingly larger conductor sizes make a plug impractical. In order to simplify pump removal by eliminating the need to remove cable from the conduit, Barnes® has provided these larger frame motors with a sealed, removable cast iron cap that encloses a terminal strip for easy cable connection.

Cable entry into the cap is sealed with a double gland arrangement; the stainless steel gland plate squeezes the rubber gland rings axially, creating a watertight and flame-path resistant seal against the socket in the cap. And, just like the plugs on the smaller frames, the design has been tested and certified by FM to both the 400 lb pull test and submergence to 65 feet. The gland plate has a generously flared skirt to eliminate the possibility of cable abrasion.

For larger single voltage motors, the power cable is clamped in a double gland arrangement with conductors bolted to a gasketed terminal strip for ease of installation and removal.



Maintenance Tip:

The cords for the 21 frame motors are packaged separately from the pump and include a plastic cap taped to the plug to keep it clean and dry. At installation, **retain** the cap. If maintenance is required in the future, remove and unplug the pump and fit and re-tape the cap over the plug to protect it while the pump is out.