

## ESP™ Hydropanel™ II Pushbutton Sensor System Single and Multiple Shower System Applications

### Technical Instructions

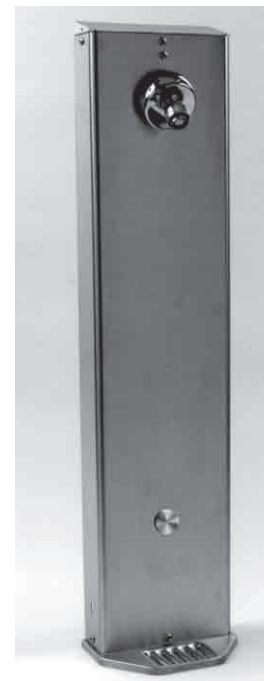
#### Description ■

The ESP (Electronic Sensor Plumbing) Hydropanel™ II Pushbutton Shower System combines modular shrouding with the convenience of electronic water control. Hydropanel™ II shrouding provides a concealed shower system where in-wall piping does not exist or may not be practical. The ESP Pushbutton Shower System relies on Piezo sensor technology to deliver tempered water to a shower for a predetermined length of time. The shower automatically turns on when a bather presses the pushbutton, and automatically shuts off when a bather presses the pushbutton again, or when the field adjustable run-time has been reached.

Multiple shower applications can utilize the ESP Group Control Box, which centralizes ESP control for up to eight showers. A microprocessor in the Group Control Box allows the shower system to be custom programmed for maximum run time, remote override capability.

The Powers Series 450-ESP shower systems come complete with stainless steel Hydropanel™ II shrouding, ESP Pushbutton Shower System, showerhead, piping, soapdish and mounting hardware.

The following instructions serve as a guide for installation of the Powers ESP Hydropanel™ II Pushbutton Sensor shower systems. Powers recommends good safety practices and care when installing electrical equipment. Please follow the procedures as outlined. For additional assistance, please call the Powers Application Engineering Department at 1.800.669.5430.



**ESP Hydropanel™ II Series 450-5100  
Pushbutton Sensor Shower System**

#### Installation ■

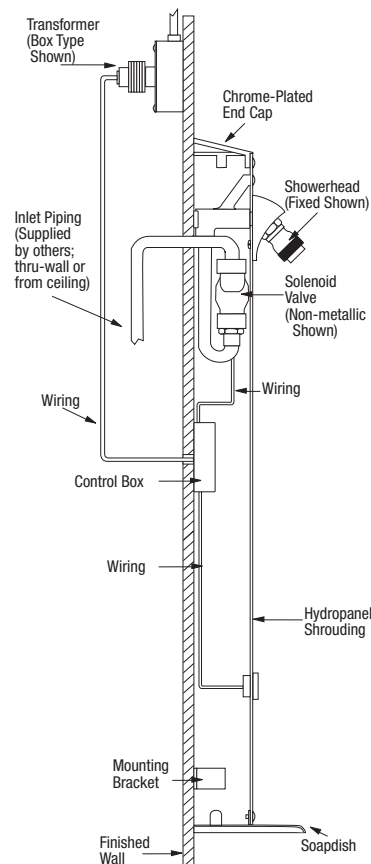
##### Precautions Before Installation:

- Use a 24V AC step-down transformer.
- Do not supply power to, or plug in, the transformer until all other wiring is complete. To prevent permanent damage to the transformer, do not allow power transformer wires to touch during wiring.
- Before connecting the solenoid valve, flush Hydropanel™ supply lines to ensure supply water will be free of grit, sand, etc. The solenoid valve requires water free of all foreign matter to operate properly.
- To inhibit corrosion, a waterproof, multi-purpose grease may be sprayed onto all electrical contacts.
- Follow the national/local codes and regulations for all electrical wiring and plumbing.
- Use stainless steel screws for all component installations.

##### Tools Required:

- Slotted and Phillips screwdrivers.
- Drill with 5/8" bit.
- Pipe wrenches.
- Pipe dope/sealing compound.
- Allen Wrench(s) (included with shrouding).

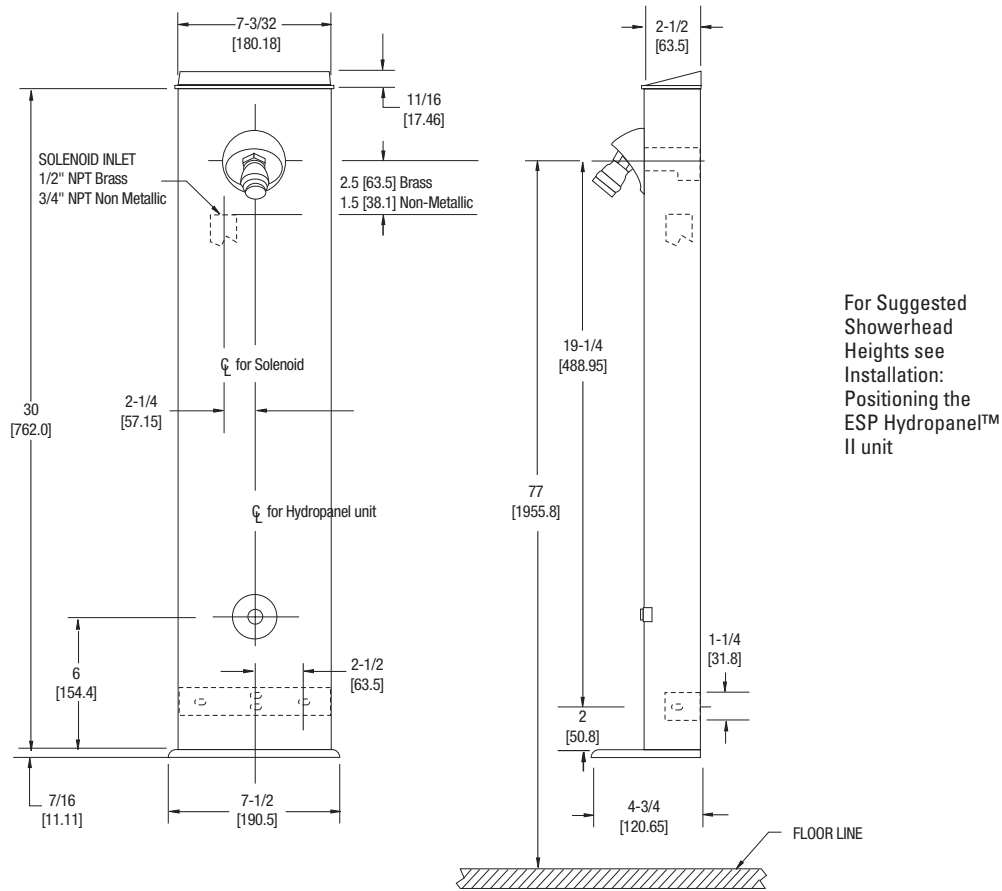
The ESP Hydropanel™ II Shower System includes a solenoid valve (non-metallic or brass) which receives tempered water through pre-installed piping. A Powers master mixing valve such as the 430 Thermostatic mixing valve, or Hi-Lo cabinet supply fixture, can be used to safely supply comfortable water to the ESP Hydropanel™ shower system.



**Figure 2**

**Typical Shower Installation**

**Figure 3**



**Front and Side Views - Dimensions of the ESP Hydropanel™ II Pushbutton Shower**

**Position the ESP Hydropanel™ II Unit**

Determine the horizontal position of the unit according to shower room layout, and mark the centerline (Figure 3). For multiple shower applications, the recommended minimum distance between the centerline of two units is 36 inches.

Determine the floor-to-showerhead height for the unit.

Recommended heights are listed below:

- Men 77" [1955.8mm]
- Youth 66" [1676.4mm]
- Women 70" [1778mm]
- Youth 60" [1524mm]

Determine where the inlet piping will connect to the solenoid. For the non-metallic solenoid, this connection is typically 1-1/2" below showerhead height, and 2-1/4" left of centerline. For a brass solenoid, it is 2-1/2" below showerhead height, and 2-1/4" left of centerline.

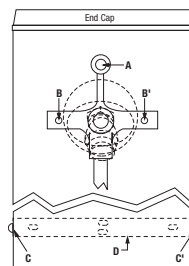
**Install the Solenoid and Piping Assembly**

The piping and Hydropanel™ II shrouding come pre-assembled (Figure 4). To detach, remove the screws at the showerhead (A) and bottom bracket (C and C'). Slide the piping out of shrouding; the showerhead remains part of the shroud.

**WARNING:** Before installing solenoid, flush the pipes to ensure supply water is free of grit and sand.

**NOTE:** A service stop can be installed directly upstream of the solenoid to facilitate maintenance and repair.

The non-metallic solenoid has 3/4" NPT end connections, and a straight through flow path to minimize pressure loss. Make sure the manual override switch is in the "OFF" position, or else water will flow regardless of sensor activity.



**Figure 4**

The brass solenoid has 1/2" NPT end connections.

Connect the supply line to the solenoid. Use only thread sealant on male threads. Do not use Teflon tape; it will clog the solenoid valve. Connect the inlet piping so water flows in the direction of the arrow on the solenoid. To mount the upper bracket of the piping assembly, drill the holes at the same height as the top of the showerhead (B and B').

**Install Control Box**

The control box (Figure 5), with standard cables, can be positioned up to 4 feet from the pushbutton/proximity sensor assembly and up to 2 feet from the solenoid valve. [Optional cable extensions can extend these distances to 1000 feet from the sensor assembly, and 300 feet from the solenoid valve.] Remove the cover. Use the box as a template to mark positions on the wall for two mounting screws. Drill holes and attach the box.

## Installation cont. ■

Push the two power supply wires (supplied with ESP kit) through the hole in the side of the Control Box. Insert one wire into each power connector and tighten each screw for a secure connection. Replace the cover.

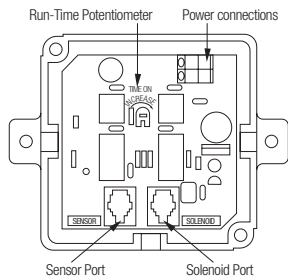


Figure 5

### Install the Transformer

The plug-in and box mount transformers can be positioned in a chaseway, closet or ceiling. Each can power up to eight solenoids. For shower system maintenance, a remote shutoff switch can be installed.

**WARNING:** Do not supply power to or plug in the transformer until all wiring is complete.

### Plug-In Transformer

The plug-in transformer will connect to a 110V AC wall outlet. Connect the two power cord wires from the Control Box (or GCB) to the screw terminals on the secondary side of the transformer (Figure 6). Tighten the screws.

**NOTE:** The wires can be lengthened with 22 gauge bell wire.

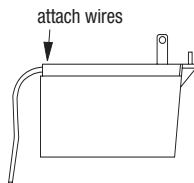


Figure 6

### Box Mount Transformer

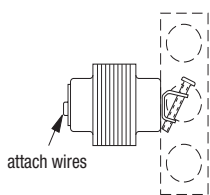


Figure 7

The box mount transformer will mount on a 110V AC supply electrical junction box. The "J" box should be inside the chase wall or above the ceiling. Connect the power supply wires from the Control Box (or GCB) to the secondary side of the transformer (Figure 7). Tighten the screws.

### ESP System Test

Before attaching shrouding, the ESP system should be tested. First, position and support the Hydropanel™ shrouding within all cable limits (on a chair, etc.). Do not turn on power or water supply yet.

### Shower Applications

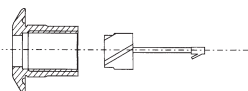


Figure 8

Insert the plugs from the proximity sensor and the solenoid into their labeled ports on the Control Box (Figure 5). The unit will not operate properly if the connectors are not in their correct ports.

Supply power to the transformer, and activate the sensor by pressing the pushbutton (Figure 8). The solenoid should make an audible click.

### ESP Shower Time Adjustments

**NOTE:** To prevent repeat cycling, the Piezo sensor has a five second "lock-out" after the shower has been turned on or off. During the five seconds, no matter how many times the pushbutton is pressed, the sensor is programmed not to respond. Also, the sensor is programmed to deactivate the shower if the button is held in the active position (continuously invading the proximity sensor's magnetic field).

### Shower Applications

The ESP Control Box includes a potentiometer to set maximum run-time, from 0 to 15 minutes (Factory setting is about 6 minutes). To adjust shower time, remove the cover of the Control Box. Locate the slotted dial in the center of the circuit board (Figure 5). With a small screwdriver, rotate the dial in small increments, clockwise for more time, counterclockwise for less. Turn dial carefully; overadjusting can damage the potentiometer. After each adjustment, test and time the shower.

### Re-Attach the Shrouding

The bottom bracket (Figure 4,D) will attach to the wall 25-1/2" below showerhead height (see Figure 3). Use the bracket as a template to mark positions for two mounting holes. Drill holes and attach the bracket.

The chrome plated end cap (Figure 4) on top of the shrouding has a section marked to be broken out for vertical and horizontal piping clearance. To remove the marked piece, hit it sharply with a hammer. Do not remove the entire end cap from the shrouding.

Connect the outlet side of the solenoid to the showerhead piping by sliding the showerhead nipple (with the shrouding unit) into the piping assembly. The bottom bracket will fit inside the shrouding.

Before connecting shrouding with screws, turn on water supply and activate the sensor to test the system. Water should flow through showerhead. Press the pushbutton again to deactivate the shower, then check all connections for leaks.

Use screws to attach the shrouding to the piping bracket and to bottom mounting bracket (Figure 4, A and C).

## Operation ■

- 1) When a bather presses the pushbutton, the sensor sends a signal through the control box to the solenoid. The solenoid opens and allows tempered water to flow to the showerhead.
- 2) If the bather presses the pushbutton again, a signal is sent to the solenoid to close and consequently shutoff the water.
- 3) If the bather does not press the pushbutton again, water will automatically shutoff at the pre-set run-time. After shutoff, the system is ready for the next user.

**NOTE:** To prevent repeat cycling, the proximity sensor has a five second "lock-out" after the shower has been turned on or off. During the five seconds, no matter how many times the pushbutton is pressed, the sensor is programmed not to respond. Also, the sensor is programmed to deactivate the shower if the button is held in the active position (continuously invading the proximity sensor's magnetic field).

## System Maintenance ■

Routinely (twice a year) perform the following maintenance to ensure safe continuous operation of ESP Hydropanel™ units.

1. Inspect electrical connections for corrosion.
2. Check for any loose connections. Tighten if necessary.
3. Check solenoid valve for proper operation. Make sure it is free of dirt and lime build up.
4. Check that temperature of supply water is thermostatically controlled for safe comfortable bathing.

## Solenoid Valve Maintenance ■

For brass solenoid: For maintenance instructions, use Powers Kit #444 183 and refer to "Installation and Maintenance Instructions," Series 8210, included with the ESP Hydropanel™ II Kit.

## Maintenance and Troubleshooting ■

The following are problems that may occur with the ESP Hydropanel™ II. Follow the listed steps toward a solution. For any further problems, call Powers Application Engineering Department at 1.800.669.5430.

### Shower Control:

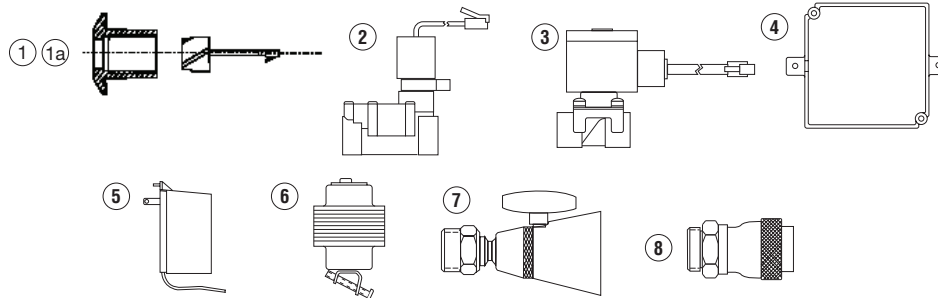
1. *If the shower does not activate when the pushbutton is pressed:*
  - a. Check that transformer feed wires are securely attached to terminals at control box and at transformer.
  - b. Check that power is supplied to the transformer. Also, use a voltmeter to check that power is being supplied through the transformer. If power goes into the transformer but does not come out, replace the transformer.
2. *If no water flows from showerhead when pushbutton is pressed:*
  - a. Check that the supply line is open and water is being supplied.

- b. Check that the solenoid wires are securely connected.
- c. The maximum run-time may have elapsed. Wait 5 seconds for sensor delay, then press the pushbutton again. For a longer shower-run time, reset potentiometer on control box.

### 3. *If water runs continuously, regardless of sensor activity:*

- a. FIRST unplug solenoid from the control box.
- b. If water continues to run...
  - Debris and/or lime build-up may be preventing solenoid from closing. Dismantle, clean and flush the solenoid valve (see Solenoid Valve Maintenance).
- c. If water stops after disconnecting power...
  - The problem is electronic. Check that power wires are connected properly in the Control Box, and check all electrical connections.

## Parts List ■



| No. | Part #  | Description                                |
|-----|---------|--|
| 1   | 444 416 | Sensor Assembly for Pushbutton Shower      |
| 1A  | 444 416 | Pushbutton Assembly                        |
| 2   | 444 175 | Solenoid Assembly (non-metallic)           |
| 3   | 444 175 | Solenoid Assembly (brass)                  |
| 4   | 444 161 | Control Box, Individual Pushbutton Showers |
| 5   | 444 118 | Plug In Transformer                        |
| 6   | 444 119 | Box Transformer                            |

| No.       | Part #  | Description                                     |
|-----------|---------|---|
| 7         | 141 379 | Swivel Showerhead                               |
| 8         | 141 816 | Fixed Showerhead                                |
| Not Shown | 444 168 | Installation Kit, Pusbutton Control Box         |
| Not Shown | 444145C | Maintenance/Repair Kit, Solenoid (non-metallic) |
| Not Shown | 444145D | Diaphragm Repair Kit, Solenoid (non-metallic)   |
| Not Shown | 444 183 | Maintenance/Repair Kit, Solenoid (brass)        |

### CALIFORNIA PROPOSITION 65 WARNING

**WARNING:** This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. (California law requires this warning to be given to customers in the State of California.)

For more information: [www.watts.com/prop65](http://www.watts.com/prop65)

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