

# POWERS

A WATTS INDUSTRIES CO.

## TECHNICAL INSTRUCTIONS

### HYDRO PANEL™ II SHOWER SYSTEM

with Hydroguard 410 Pressure Balancing Valve

#### DESCRIPTION

The Powers Hydropanel II Shower System with Hydroguard 410 Valve combines pressure balanced water control with the convenience of modular shrouding. Hydropanel II stainless steel shrouding provides a concealed shower system where in-wall piping does not exist or may not be practical. The Hydroguard 410 valve uses a proven poppet/diaphragm cartridge to balance hot and cold water supply pressures and deliver water to the shower at a user-selected temperature. The Celcon® balancing cartridge and poppets, and wide seat clearance in the valve provide maximum protection against lime and dirt build up. The valve opens in the cold position and features a handle rotation stop to guard against over adjustment of the handle.

The Series 450-0410 Hydropanel II comes complete with the stainless steel Hydropanel II Shrouding, Series 410 Hydroguard, in-line checkstops, piping, showerhead, end cap and mounting hardware. Some models feature a stainless steel soapdish. Some models feature an ADA compliant lever handle. An optional handshower comes preassembled with a full spray pushbutton handshower, 60" hose, 18" mounted glide-bar and connectors. The Series 450-0410 Hydropanel II units carries a one-year limited warranty.

The following instructions serve as guide for installation, general maintenance and parts replacement for Hydropanel II Shower Systems with Hydroguard 410 Pressure Balancing Valves. For detailed repair and maintenance instructions for the Hydroguard 410 valve, please refer to Form #MV410-5. For repair and maintenance of checkstops, refer to Form #129-028. For specification or installation of the Hydropanel II Modular Shrouding for shower rooms, please refer to Forms #PS450SH and #TI450SH.

#### OPERATION

Hot and cold water enter respective chambers in the valve. A diaphragm/poppet assembly floats between these chambers and balances the supply water pressures. The Celcon chamber/balancing assembly is replaceable as a complete cartridge. Any change in supply pressure moves the diaphragm/poppet assembly to equalize the supply water ratios and minimize the shower temperature disturbance.

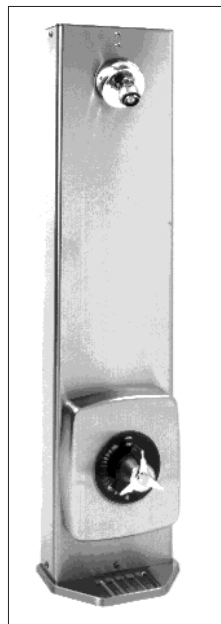
A Celcon mixing plate separates the balancing chambers from the mixing chamber. When the adjustment handle is in its full clockwise position (OFF), the mixing plate closes both supply chambers. As the valve handle rotates toward the stop, hot and cold supply water pass through slots in the mixing plate in proportions required to produce the user selected temperature. Tempered water exits the valve and passes to the showerhead.

A handle rotation stop limits the movement of the control handle toward the full hot position. The Hydroguard 410 does not compensate for supply water temperature changes, so any variation in the supply temperatures will affect the control point temperature.

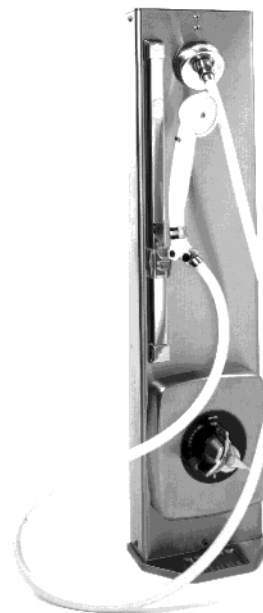
#### CALIFORNIA PROPOSITION 65 WARNING

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

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



*Hydropanel II Model 450-0412 with Swivel Showerhead and Soapdish (available with ADA compliant lever handle, Model 450-0416).*



*Hydropanel II Model 450-0414 with Handshower Assembly and Soapdish (available with ADA compliant lever handle Model 450-0420).*

#### SPECIFICATIONS

Hydropanel: Brushed 18 Gauge 304 SS. Dimensions 31 1/8" H x 7 1/2" W x 6 1/2" D [791mm H x 191mm W x 165mm D].

Piping: 1/2" copper tubing.

**Showerhead:** Fixed: Chrome plated brass, maximum flow 2.5 gpm @ 80 psi [.16 l/s @ 552 kPa]. Adjustable Swivel (shown): Chrome plated brass, 30° angle of rotation, maximum flow 2.5 gpm @ 80 psi [.16 l/s @ 552 kPa].

**Valve Assembly and Trim:** Hydroguard 410 Pressure Balancing Valve. Three port, heavy cast bronze body with brass stem. Standard in line checkstops. Standard handle rotation stop. Chrome plated zinc tri-handle, or ADA compliant lever handle.

**Connections:** 1/2" NPT inlets /outlet.

**Valve Operation:** 6 gpm @ 45 psi differential [.38 l/s @ 310 kPa]. Maximum pressure 125 psig [862 kPa]. Maximum inlet temperature 180°F [82°C].

**Handshower:** Full spray with pushbutton water control. Minimum flow 2.0 gpm @ 20 psi [.13 l/s @ 138 kPa]. Maximum flow 2.5 gpm @ 80 psi [.16 l/s @ 138 kPa]. 60" [1499mm] reinforced vinyl hose with 1/2" chrome plated supply connections. 18" [457mm] chrome plated brass glide bar, self-tensioned for easy height adjustment.

## INSTALLATION

Before installation of any Hydropanel II unit, rotate the stem (or handle) of the valve to its full clockwise position (OFF).

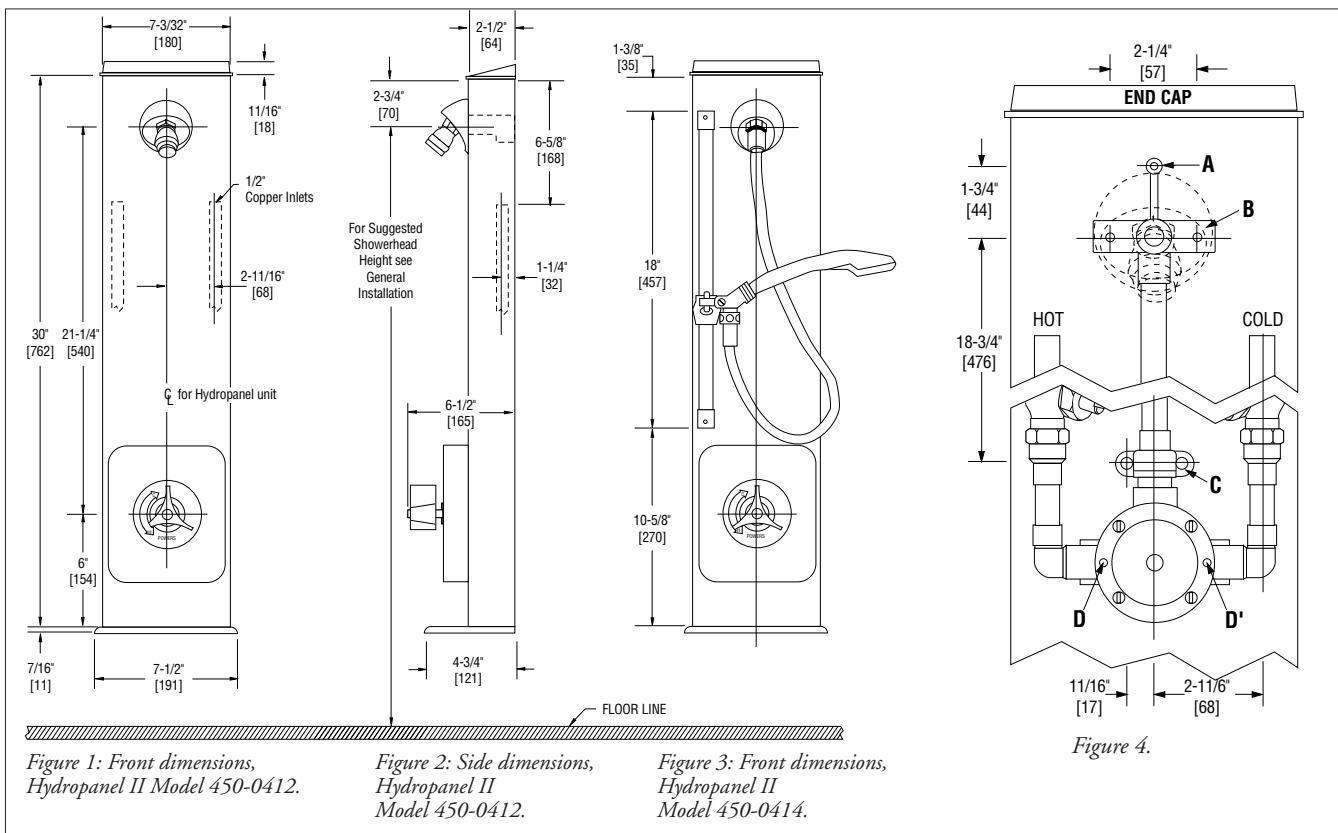
### POSITION THE HYDRO PANEL II UNIT

(See Figures 1 and 2) Determine the horizontal position of the unit according to shower room layout, and mark the centerlines. For multiple shower applications, the recommended minimum distance between the centerline of two units is 36 inches [914mm].

- Determine the floor-to-showerhead height for the unit. Recommended heights are listed below:

Men - 77" [1956mm] Youth - 66" [1676mm]  
 Women - 70" [1778mm] Youth - 60" [1524mm]

- The preassembled copper tubing for supply water inlets are 6-5/8" [168mm] from the top of the shroud, and 2-11/16" [68mm] left and right of the centerline. Adjust supply piping accordingly.



### Install the Piping Assembly

The piping and Hydropanel II shrouding must be separated before mounting to wall. The valve trim and cover plate are in a separate plastic bag in the Hydropanel II shipping carton. For #450-0414 and #450-0415 Hydropanel II units, the handshower, hose and showerhead base come preassembled to the shrouding. Refer to Figure 4.

- Detach the piping from the shrouding, by removing screw A above the showerhead. Slide piping out of the shrouding; the shower head remains attached to the shroud.
- For mounting the piping assembly upper bracket B, use bracket as a template and drill two small holes in the wall at showerhead height.
- For mounting the piping assembly lower bracket C, drill two small holes in the wall that are 18-3/4" [476mm] below the upper bracket and 11/16" [17mm] left and right of centerline.
- Install any mounting anchors as detailed by the individual room specifications.
- Secure upper piping bracket B with mounting screws (not included).
- Secure lower piping bracket C with mounting screws (not included).
- Connect the supply lines to the piping assembly.

### Attach the Shrouding

Do Not remove the entire chrome plated end cap from the shrouding; it functions as an end cap and gasket for shroud extension. Part of the end cap can be broken out to provide vertical and horizontal piping clearance.

- To remove scored section, hit it sharply with a hammer.
- To connect the showerhead on the shroud to the water outlet pipe, slide the showerhead nipple on the inside of the shroud into the piping assembly. The End Cap will slide over the supply piping. Secure the shrouding with the screw at A.

### Test the System

Before final assembly, test the Hydropanel II system.

- Fit the handle onto the valve stem and turn clockwise to the shut off position.
- Turn on water supply, and then rotate the valve handle counterclockwise. Water should come through the showerhead.
- Now turn handle fully counterclockwise and measure the temperature of the outlet water. Wait until the temperature stabilizes for an accurate reading.
- Turn off valve (fully clockwise) and check all connections (showerhead, pipe connections, valve bonnet) for leaks.

## INSTALLATION, CONTINUED

### Set the Handle Rotation Stop

The Hydroguard 410 is a pressure balancing valve, and therefore cannot compensate for variations in hot water supply temperatures. It is factory set to pass full hot water.

The handle rotation setting must be adjusted to limit the distance the user can rotate the handle towards the full hot water position.

**CAUTION:** Any repair or modification of the valve will affect the high temperature setting. Any changes in inlet water temperature will require readjustment of the handle rotation stop.

When the user rotates the handle fully counterclockwise, the limit stop will rest against the bonnet stop. Refer to Figure 5.

16. Remove the valve handle. Slide the limit stop retaining O-ring up, but do not remove.
17. If the measured temperature exceeds the desired maximum outlet temperature, move the limit stop ONE SPLINE COUNTERCLOCKWISE. This will DECREASE the handle rotation and the maximum adjustable temperature.
18. If the measured temperature is below the desired maximum outlet temperature for the system, move the limit stop ONE SPLINE CLOCKWISE. This will INCREASE the handle rotation and the maximum adjustable temperature.
19. For fine temperature adjustments, use the limit screw.
20. Turn the screw CLOCKWISE to further DECREASE the maximum adjustable temperature.  
Turn the screw COUNTERCLOCKWISE to further INCREASE the maximum adjustable temperature.
21. Slide the limit stop O-ring back into place, and replace handle. Repeat steps 12 through 20 until desired maximum outlet temperature is reached. Remove handle before final assembly of shrouding.

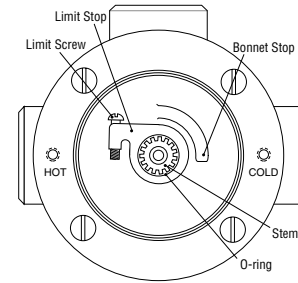


Figure 5.

### Assemble the Valve Cover and Handle

The Hydropanel II piping assembly and shrouding must be securely mounted to the wall before the valve cover plate and handle assembly are attached.

**NOTE:** Only properly mounted piping and shrouding provide the stable platform needed for the cover plate to snap snugly into place.

The valve parts and cover plate are packaged in a separate plastic bag in the Hydropanel II shipping carton.

22. The cover plate fits over the tabs around the shroud valve hole. Snap the cover plate into place.
23. (Figure 4) Secure the cover plate to the shroud and the piping assembly at D and D', with the 1-1/2" stainless steel screws.
24. (Figure 6) Place the graphic insert into the cover plate, slide the brass sleeve over the stem and fit the rubber retainer inside the edge of the cover plate hole.
25. (Figure 6) Place the tri-handle over the stem, and secure with retaining washer and screw using the 3/32" wrench (included). Snap the button plug into place.
26. (Figure 4) Finish assembly by tightening the shrouding screw at A above the showerhead.

## SERVICING THE HYDRO PANEL UNIT

Before servicing checkstops or piping, turn off the supply water upstream. To access the checkstops, remove the valve handle assembly, cover plate and shrouding (refer to Install the Piping Assembly).

At least every twelve months, open up the checkstops and check for free movement of the poppet.

Before servicing the valve, either turn off the water supply upstream (the shroud does not have to be removed), OR access

and close the checkstops. To close the checkstops, turn the adjustment screw on each fully clockwise.

Every six months, check and adjust the handle rotation setting. Every twelve months, remove the valve bonnet and check the internal components for freedom of movement.

To service or clean the showerhead, unscrew from shroud at hex nut. Service as necessary, and reattach.

## TROUBLESHOOTING

**\*NOTE:** For complete instructions on servicing the Hydroguard 410 valve, please refer to Form #MV410-5. For complete instructions on servicing checkstops, please refer to Form #129-028.

### 1. If the flow of water is less than desired...

- a. The upstream supply valves may not be fully open.
- b. The inlet supply pressure(s) may be low.
- c. Lime deposits may have accumulated in the hot water pipes, restricting water flow.
- d. The showerhead may be clogged. Remove according to Servicing the Hydropanel II Unit and clean.
- e. The checkstops may be clogged.\*

### 2. If the flow of water is completely shut off...

- a. The upstream supply valves may be completely closed.

- b. The hot or cold water supply pressure may have failed. The Hydroguard 410 valve is designed to virtually shut off in the event of hot or cold supply water failure.

- c. The checkstops may be closed. Access the checkstops and open by turning the adjustment screw fully counterclockwise.

### 3. If the water flowing from the showerhead varies in temperature, or is untempered hot or cold...

- a. The diaphragm inside the balancing chamber may have failed. Replace with Repair Kit #410-183\*.
- b. The hot water supply temperature may be too low.

### 4. If water continues to flow from the showerhead after shut off, or the valve leaks at the stem and/or bonnet...

- a. The shut-off discs or gaskets in the valve may have worn out. Replace with Repair Kit #410-182\*.

**TROUBLESHOOTING, CONTINUED**

- b. The mixing plate may be damaged. Replace with Repair Kit #410-378\*.
- 5. If the handle does not fit properly on the stem and the water leaks from the valve shut off...**
  - a. The handle splines on the stem and/or the mixing plate may be damaged. Replace with Repair Kit #410-378\*.
- 6. If the checkstops leak, or they won't shut off...**
  - a. The checkstops may be damaged. Clean and service with Repair Kit #141-845\*.
- 7. If a maximum temperature cannot be obtained...**
  - a. Lime deposits may have accumulated in the hot water pipes, restricting the hot water supply.
  - b. The hot water supply temperature may be too low.
  - c. The handle rotation setting may be too low. Remove valve handle, and readjust the handle rotation stop (see Setting the Handle Rotation Stop).
  - d. The diaphragm assembly may have failed. Replace with Repair Kit #410-183\*.
- 8. If the valve opens with hot water flow rather than cold water flow...**
  - a. The supply water inlets may be reversed, or the mixing plate orientation may be incorrect. Refer to Figure 6.

- 1. Turn the valve handle to full clockwise position (OFF).
- 2. Turn off supply water and access the valve.
- 3. Check that the adjustment stem faces the correct direction for valve operation:
  - For NORMAL operation, Hot Inlet is on the left and Cold Inlet is on the right, and with the valve in shut off position, the notch in the splined stem faces the UP (toward the water outlet).
  - For REVERSE valve operation, Cold Inlet is on the right and Hot Inlet is on the left, and with the valve in shut off position, the notch in the splined stem faces DOWN.
- 4. To change the stem orientation, pull up but do not remove the stem O-ring and handle rotation stop.
- 5. Turn the stem 180° so the notch faces the appropriate direction (see above).
- 6. Replace handle rotation stop and O-ring. Test the system. Replace shroud, cover plate and valve handle.

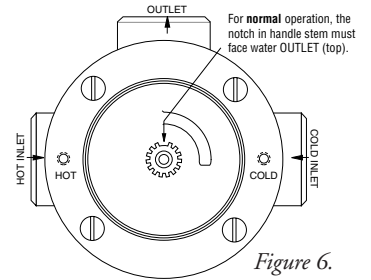


Figure 6.

**ORDERING**

#	Part #	Description	Qty	Material
2	NA	Shroud 410/420	1	St Steel
4	450 268	Soap Dish	1	St Steel
5	4504011	End Cap Kit	1	Chrm Plt ABS
6	450 273	Screw 10-32 x 3/8 (shrouding)	7	St Steel
NS	141 837	Handshower with 18" Glidebar	1	-
7	450 276	Set Screw 10-32 x 7/8	1	St Steel
8	141 816	Fixed Showerhead	1	Chrm Plt Brass
9	141 815	Adjustable Swivel Showerhead	1	Chrm Plt Brass
10	450 277	Gasket, Showerhead Base	1	Garlock 3000
11	4502676	Showerhead Base	1	Chrm Plt Brass
12	047 013	Quad Ring 3/8 x 1/2 x 1/16	1	Buna N
13	450 274	Screw 10-32 x 1/4 (showerhead)	3	Brass
14	410 195	Button Plug (tri-handle)	1	Ni Plt Brass
15	450 271	Screw 8-32 x 1/2 (tri-handle)	1	St Steel
NS	0342246	Screw (lever handle)	1	St Steel
18	046008K	Shakeproof Washer (tri-handle)	1	Cad Plt Brass
19	410 191	Tri-Handle	1	Chrm Plt Znc
NS	420 301	Lever Handle	1	Chrm Plt Znc
20	410 367	Retainer (dial) Kit (1 needed)	10	Buna -S
21	401 267	Sleeve for 410	1	Chrm Plt Cu
26	410 442	Graphics Insert	1	Al w/ Mylar
27	080 013	Screw 8-32 x 1-1/2 (dial insert)	2	St Steel
28	NA	Cover Plate	1	St Steel
33	NA	Hydroguard/Piping Assembly	1	-
NS	089 003	3/32" Service Wrench	1	Steel
NS	089 004	1/8" Service Wrench	1	Steel

NS = Not shown in diagram    NA = Not available as commercial part

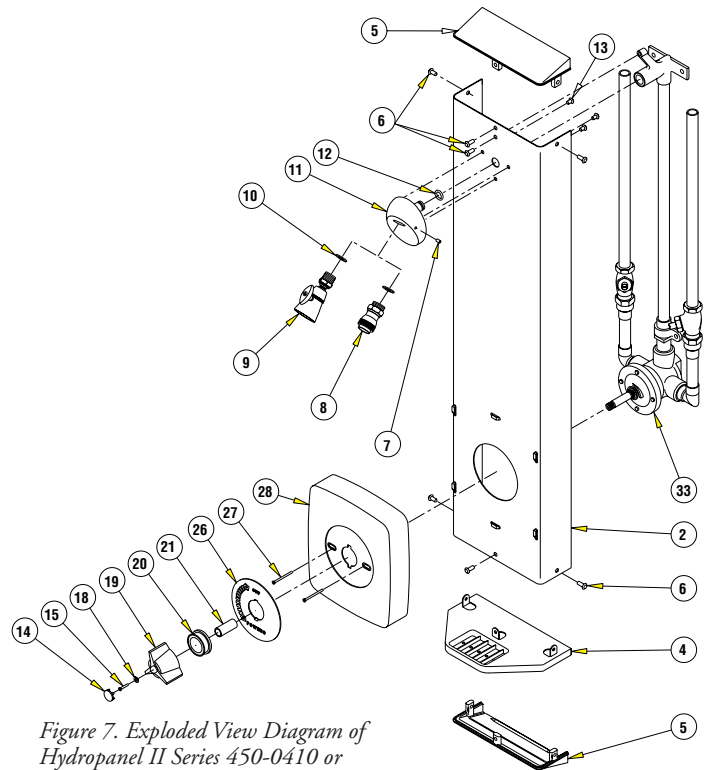


Figure 7. Exploded View Diagram of Hydropanel II Series 450-0410 or 450-0412 Shower Unit.

**POWERS**  
A WATTS INDUSTRIES CO.

© Reprinted March 2002 Powers, a Watts Industries Co.  
3400 Oakton Street, Skokie, IL 60076 Phone: 800.669.5430 • 847.673.6700 • Fax: 847.673.9044  
www.powerscontrols.com  
5435 North Service Road, Burlington, Ontario, L7L 5H7 Canada • Phone: 888.208.8927 • Fax: 888.882.1979