Installation Guide

Digital Thermostatic Valve

K-682

M product numbers are for Mexico (i.e. K-12345**M**)
Los números de productos seguidos de **M** corresponden a México (Ej. K-12345**M**)
Français, page "Français-1"
Español, página "Español-1"

THE BOLD LOOK OF KOHLER®

1043183-2-E

IMPORTANT INSTRUCTIONS

WARNING: When using electrical products, basic precautions should always be followed, including the following:

WARNING: Risk of electric shock. A qualified electrician should route all electrical wiring.

WARNING: Risk of electric shock. Disconnect power before servicing.

WARNING: Unauthorized modification may cause poor performance of the valve. Do not make modifications to the valve as this could adversely affect the performance of the valve and void the warranty. Kohler Co. shall not be liable under its warranty or otherwise for personal injury or damage caused by any such unauthorized modification.

WARNING: Risk of injury or property damage. Please read all instructions thoroughly before beginning installation.

NOTICE: Follow all plumbing, electrical, and building codes.

NOTICE: Some electrical codes require a circuit protected by a Ground-Fault Circuit-Interrupter (GFCI)*.

NOTICE: Provide unrestricted service access to the valve.

*Outside North America, this device may be known as a Residual Current Device (RCD).

Operation with DTV, DTV II, or DTV+

- **DTV:** The valve is controlled from one or two user interfaces that connect directly to the valve.
- **DTV II:** To connect the valve to the DTV II system, the K-638 media module is required.
- **DTV+:** To connect one or two valves to the DTV+ system, the K-99695 system controller and K-97172 data cable(s) are required.
- Refer to the appropriate sections in this guide for your system configuration.

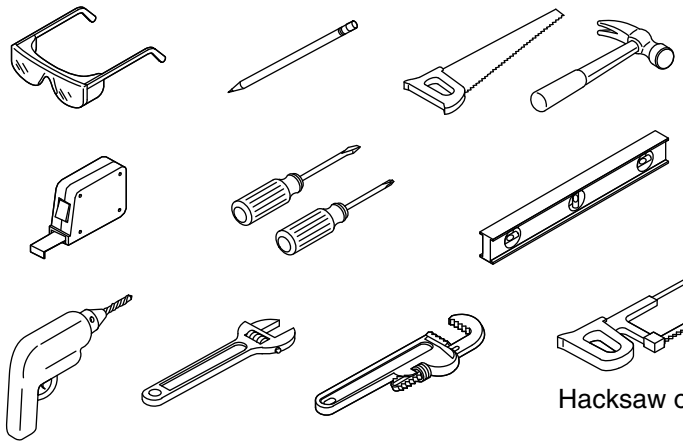
Specifications

Pressures	
Maximum Static Pressure	125 psi, 862 kPa, 8.6 bar
Supply Pressure Differential*	Max 5 psi, 34.5 kPa, 0.34 bar differential *Hot pressure should be equal to or less than cold pressure.*
Minimum Flow Rate	1.6 gal/min (Less than 72 psi dynamic pressure.) 6 l/min (Less than 500 kPa maintaining pressure.)
	2.1 gal/min (Greater than 72 psi dynamic pressure.) 8 l/min (Greater than 500 kPa maintaining pressure.)
Temperatures	
Programmable Temperature	Max 120°F (49°C) Min 79°F (26°C) *Full cold may also be selected.*
Default Temperature at Start-up	102°F (39°C)
Minimum Mixed Temperature Differential from Hot Supply	3.6°F (2°C)
Optimum Thermostatic Control Range	86°F (30°C) to 120°F (49°C)
Temperature Stability at Recommended Supply Conditions	+/- 1.6°F (1°C)
Ambient Temperature	Greater than 34°F (1°C), Max 104°F (40°C)
Maximum Relative Humidity	95% non-condensing
Electrical	

Specifications (cont.)	
Pressures	
Electrical Rating	100-240 VAC, 50-60 Hz, 1.5 A
User Interface Cable Length (supplied)	30′ (9.14 m)

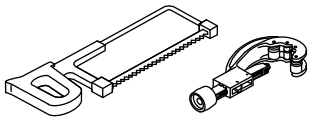
*In commercial applications where there is a large difference in hot and cold supply pressures or frequent fluctuation in either supply line is anticipated, it is strongly recommended that pressure regulators be installed.

Tools and Materials



Plus:

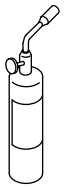
- (2) 3/4" and (6) 1/2" Union Connectors
- Wood and Framing Materials
- PEX Tubing or Copper Tubing
- (2) Water Hammer Arrestors (Recommended)
- (2) Supply Shut-Off Valves



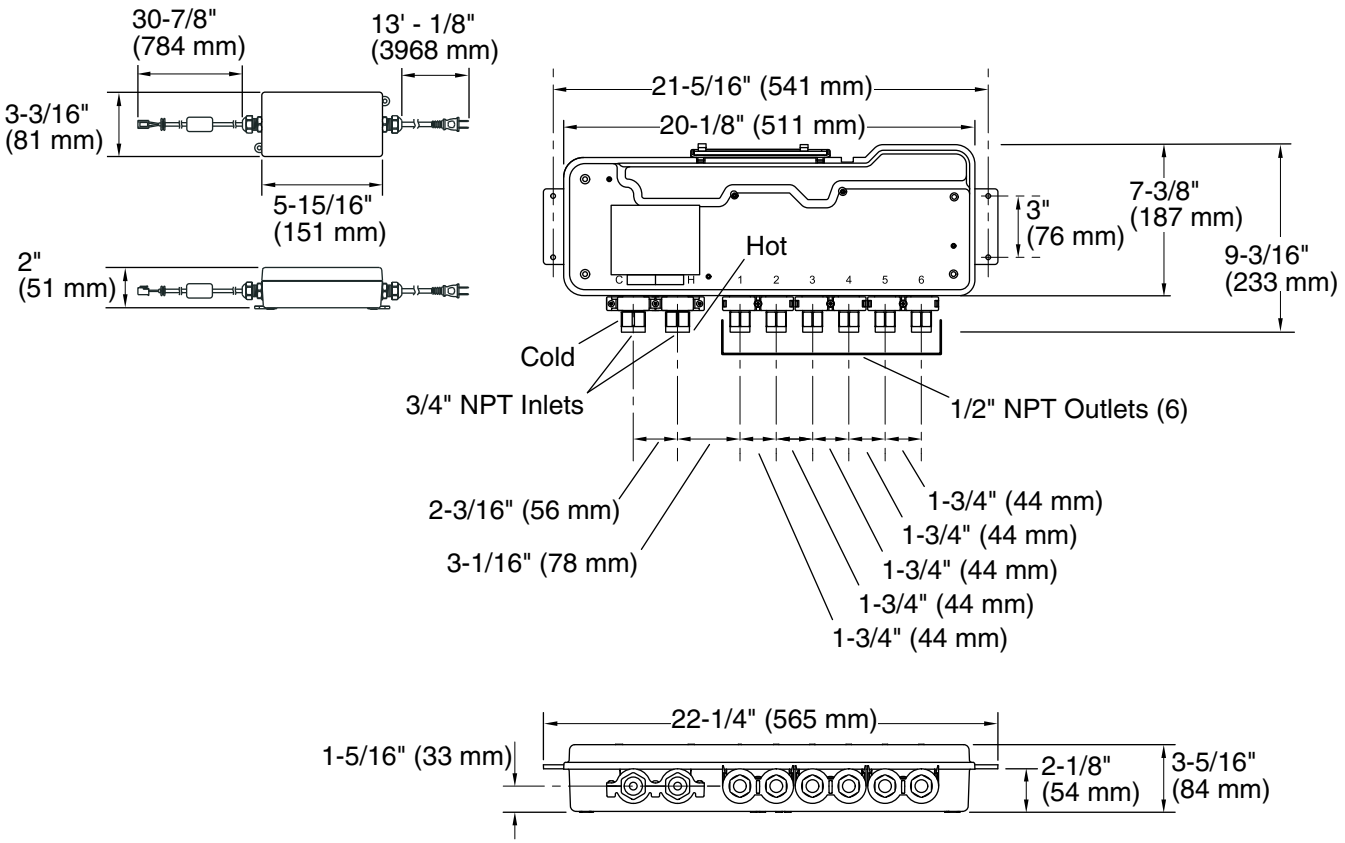
Hacksaw or Tube Cutter

Sealant Tape

Solder



Propane Torch



Roughing-In

Before You Begin

NOTICE: Do not install the valve or power supply under a whirlpool surround or any location where the temperature may exceed 104°F (40°C). The power supply and valve are rated to operate in temperatures up to 104°F (40°C).

NOTICE: Do not apply excessive heat near the valve or apply flux or acids directly onto the valve. This valve contains plastic and rubber components which will melt if heat is directly applied.

NOTICE: Do not apply petroleum-based lubricants to the valve components. Doing so will damage the valve components.

NOTICE: Do not use oil-based, non-setting compounds, such as plumbers putty, on the threaded inlet and outlet connections. Use sealant tape or liquid sealant.

NOTICE: Do not allow any outlet to flow more than 10 gal/min (37.9 l/min).

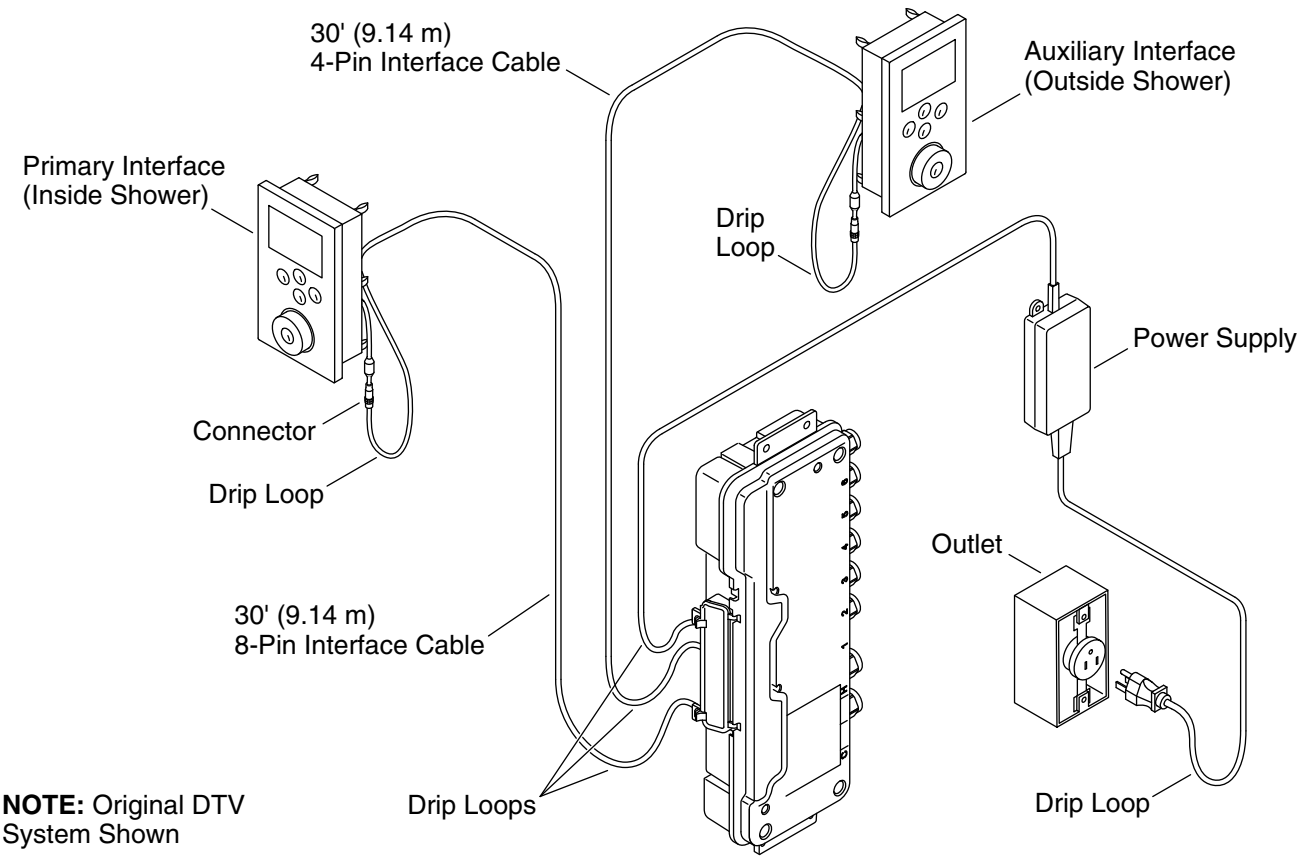
- ☐ Read these instructions and determine the locations of all required components before beginning installation.
- ☐ When possible, install the valve before installing the other components.
- ☐ If possible, flush all piping thoroughly before installing the valve. If the pipes are flushed after the valve is installed, clean the inlet screens before using the system.
- ☐ A qualified electrician should install a 120 V electrical outlet, within the stud framing, in close proximity to the valve. A GFCI outlet may be required in certain applications.
- ☐ If possible, install the electrical outlet prior to installing the valve.

Before You Begin (cont.)

- ☐ For optimum valve performance, the water heater should be set at 120°F (49°C). Hot water pressure should be equal to or less than the cold water pressure.
- ☐ This valve complies with UL1951, ASME A112.18.1, ASSE 1016, CSA B125, and CSA C222 No. 218.2-93. This valve is listed with ASSE, CSA, IAPMO/UPC, and UL.

Special Considerations for Large Showering Systems

- ☐ Showering configurations using large water volumes require supply piping and drain systems that will sufficiently accommodate the actual total flow rate at any one time.
- ☐ **Hot water generation:** Use a water heating system capable of handling large flow rates. Tankless (on-demand) water heaters and recirculating pumps may not be adequate for your showering configuration.



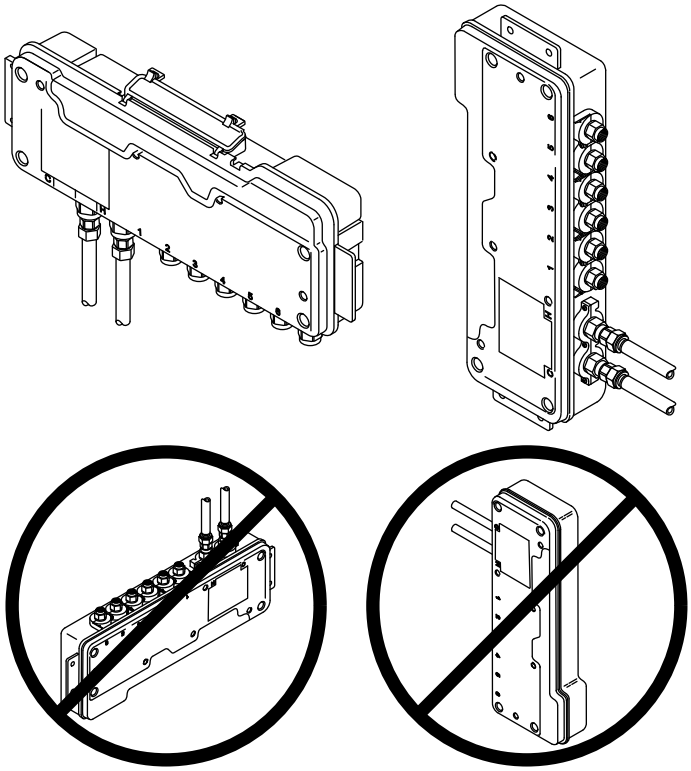
NOTE: Original DTV System Shown

1. Plan the System Layout

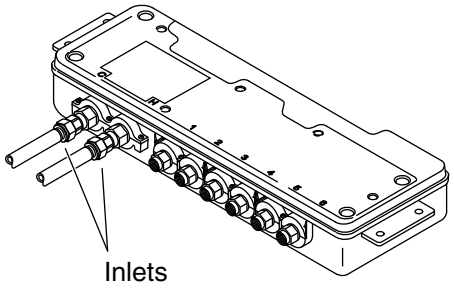
NOTE: The original DTV system is shown above. The interface cables do not connect directly to the valve for DTV II and DTV+.

- ☐ Determine the locations of all required components before beginning installation.
- ☐ **DTV (shown above):** The primary interface, with the 8-pin cable, is located inside the showering enclosure. An optional auxiliary interface, with the 4-pin cable, can be installed outside the showering enclosure.
- ☐ **DTV II:** Refer to the K-638 media module installation guide for system layout and required components.
- ☐ **DTV+:** Refer to the K-97172 data cable installation guide for system layout and required components.
- ☐ When routing piping, the numbers marked at each valve outlet must correspond to the appropriate shower fitting for pre-programmed or custom showering experiences to function properly.
- ☐ Custom showering experiences must be programmed into the interface prior to use. Refer to the ″Homeowners Guide″ or ″Users guide″ for the interface or controller for your system.

Mounting on a Vertical Surface



Mounting on a Horizontal Surface

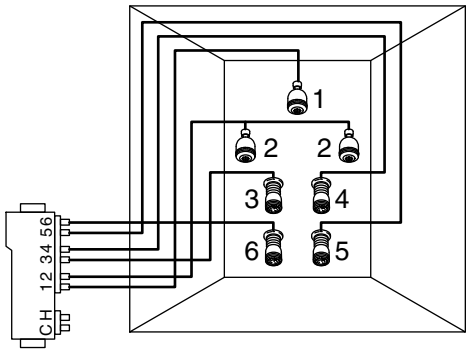


2. Mounting Configurations

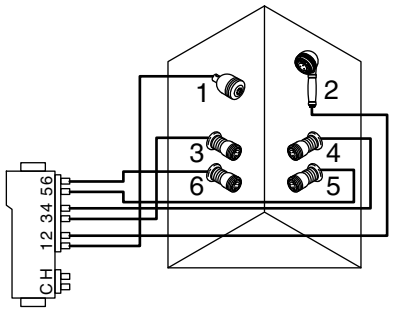
NOTICE: Do not mount the valve with the inlets pointing up or positioned above the outlet ports. Doing so will damage this product.

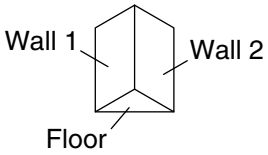
- Vertical and horizontal mounting options are shown above.

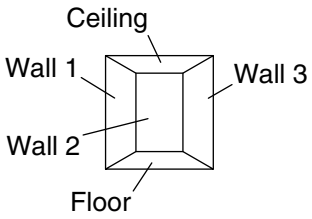
Frontage



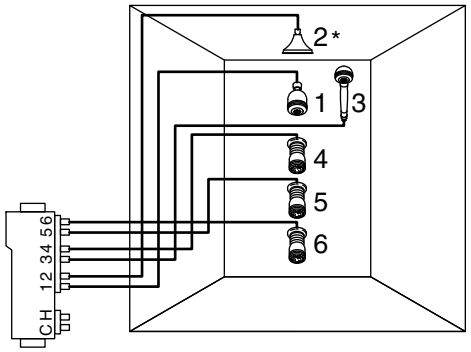
Envelop



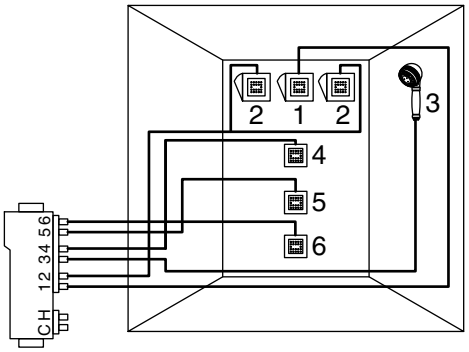




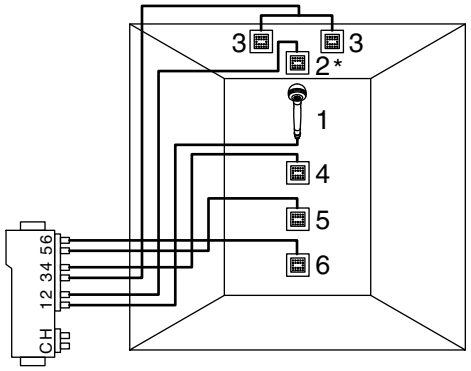
Unwind



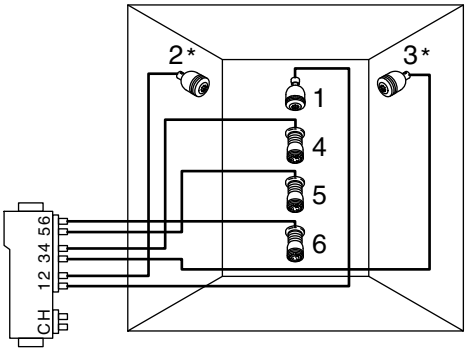
Linear



Downpour



Surround



*If bodysprays, watertiles or watertile showerheads are present in these outlets, they will not cycle.

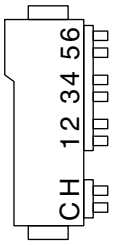
3. Shower Configurations (DTV and DTV II)

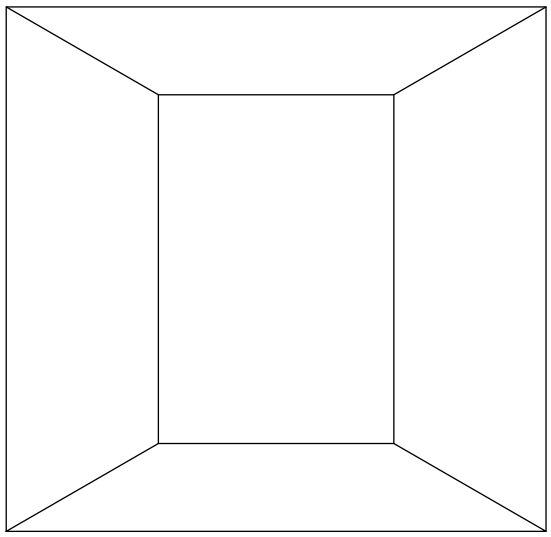
NOTE: Pre-programmed shower configurations are shown; other options are possible. Configurations other than the pre-programmed options will LIMIT the pre-programmed massage functions.

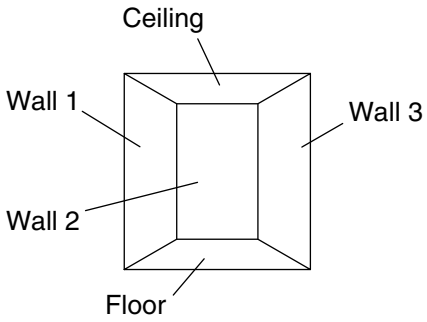
- Massage functions that correspond with custom configurations can be programmed. Refer to the "Digital Interface Homeowners Guide."
- The bodyspray to valve outlet ratio must be 1:1. All bodysprays must have equal flow rates; unequal flow rates will cause the massage mode to shut down. See examples below:

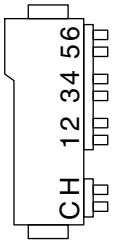
Correct: Four bodysprays using four outlets, one per bodyspray (1:1). See the "Envelop" configuration above.

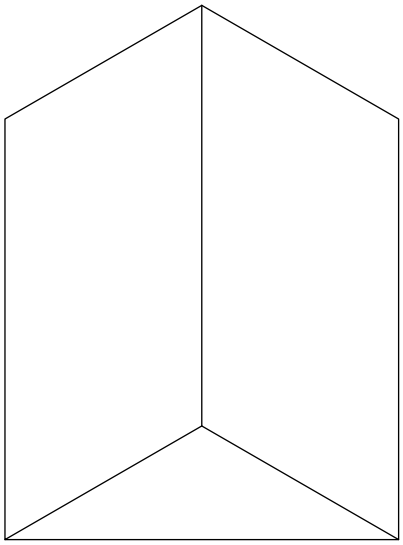
Incorrect: Four bodysprays using three outlets; two bodysprays each installed to one valve outlet (1:1), and the other two bodysprays installed to one valve outlet (2:1).

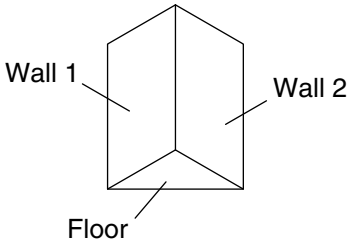










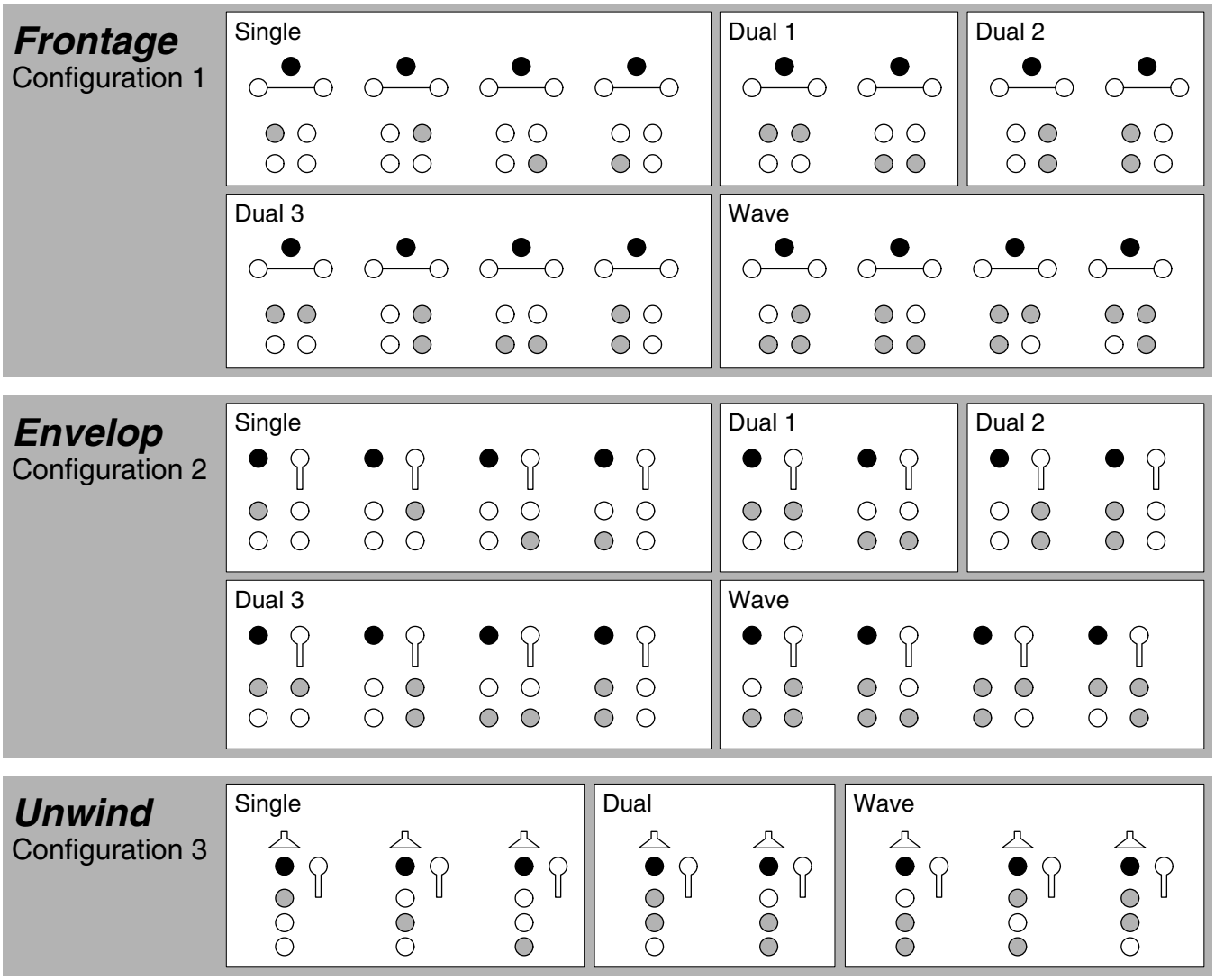


4. Custom Shower Configurations (DTV and DTV II)

□ Draw in the fittings for your custom shower.

□ Draw lines from the valve to each fitting. Be aware that:

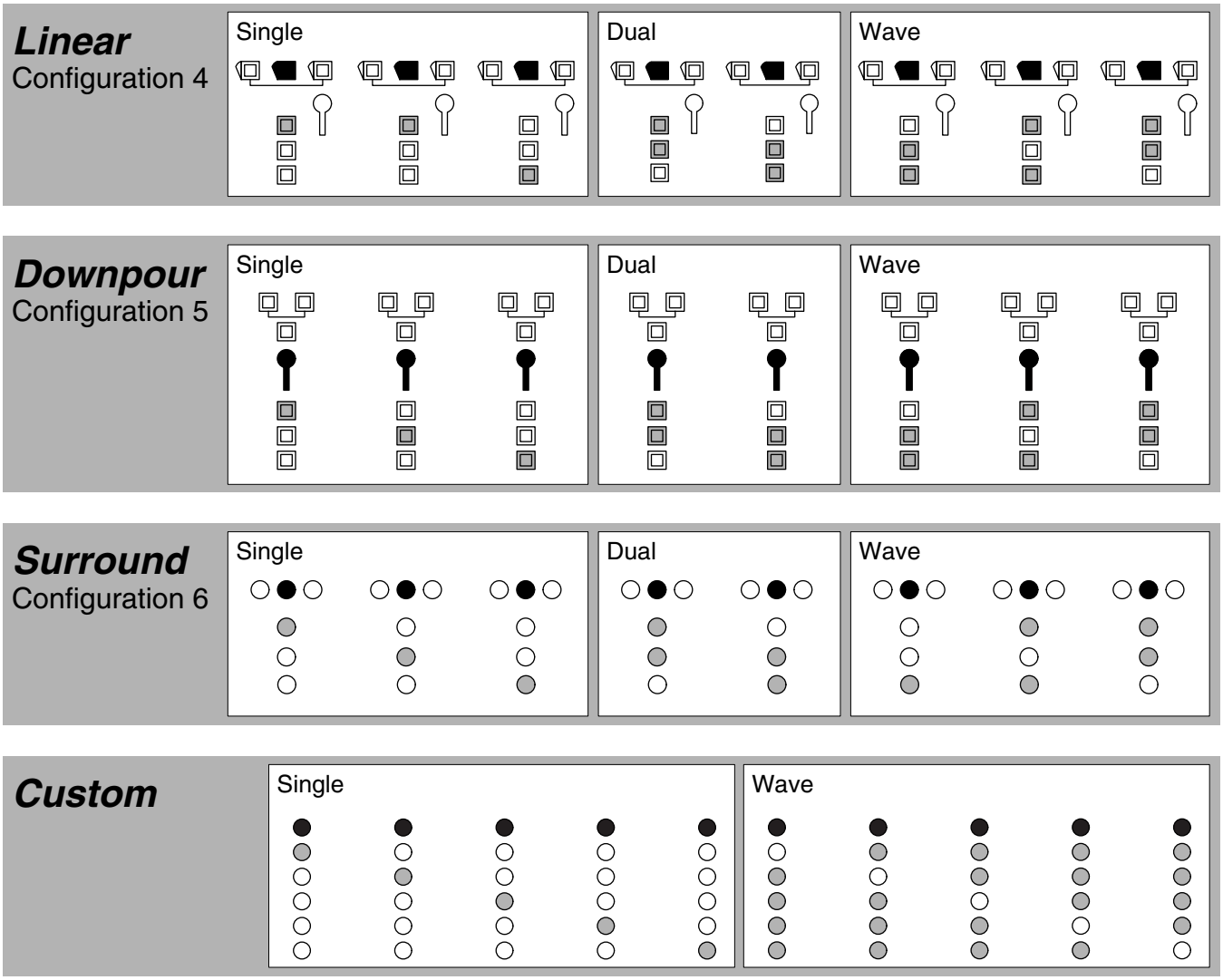
- Outlet 1 should be the primary showerhead.
- The installer must determine the desired sequence for Single mode and plumb the ports to the bodysprays accordingly.
- Custom mode will allow the user to select a different water outlet as the primary showerhead, but it is not recommended.
- In Custom mode, the bodysprays will cycle up the solenoid bank regardless of which port is the primary outlet.



5. Massage Cycling Configurations (DTV and DTV II)

NOTE: Primary outlets and any outlets designated as handshowers will not be included in the cycling pattern. For installations that include both bodysprays and watertiles, the outlets designated as watertiles will not cycle.

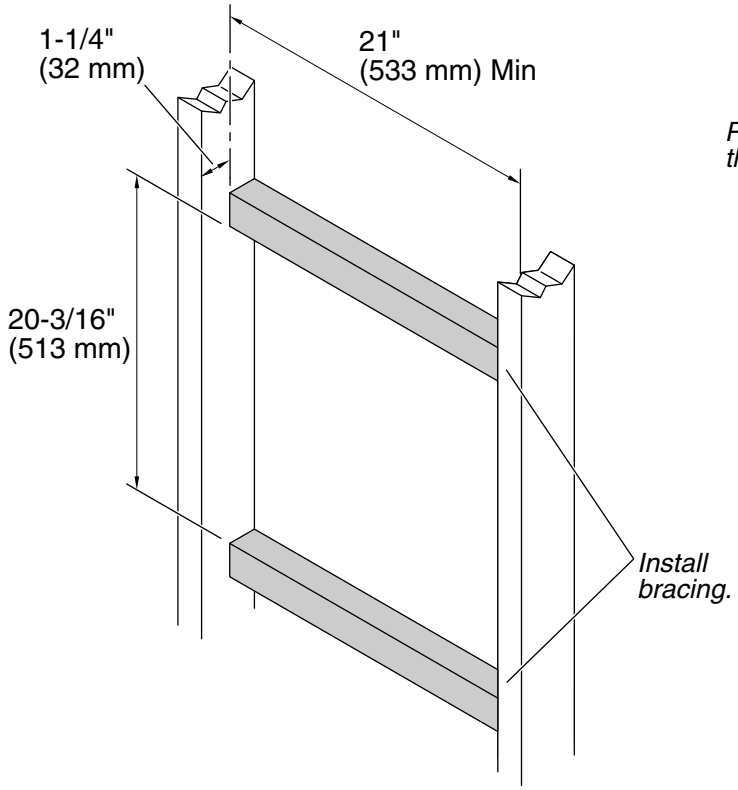
- For massage cycling configurations for DTV+, refer to the guide found on the K-99695 controller product page at www.us.kohler.com.

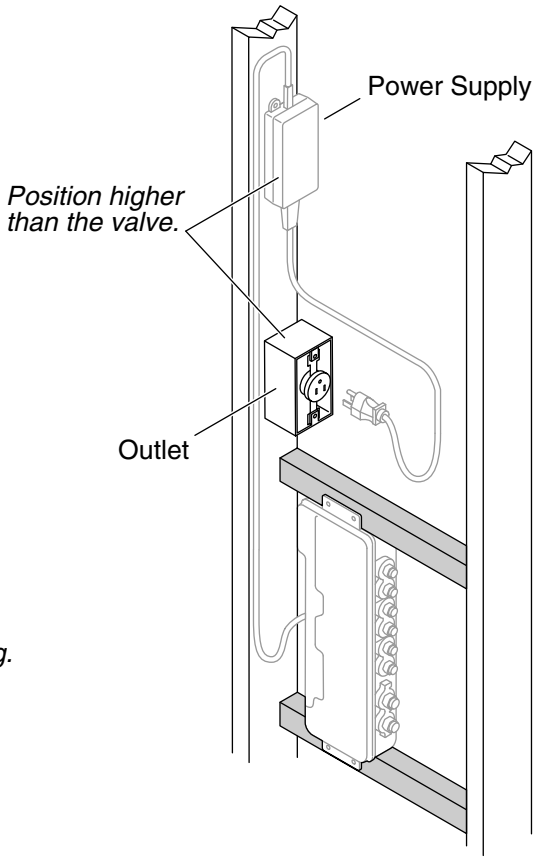


6. Massage Cycling Configurations (DTV and DTV II)

NOTE: Primary outlets and any outlets designated as handshowers will not be included in the cycling pattern. For installations that include both bodysprays and watertiles, the outlets designated as watertiles will not cycle.

- For massage cycling configurations for DTV+, refer to the guide found on the K-99695 controller product page at www.us.kohler.com.



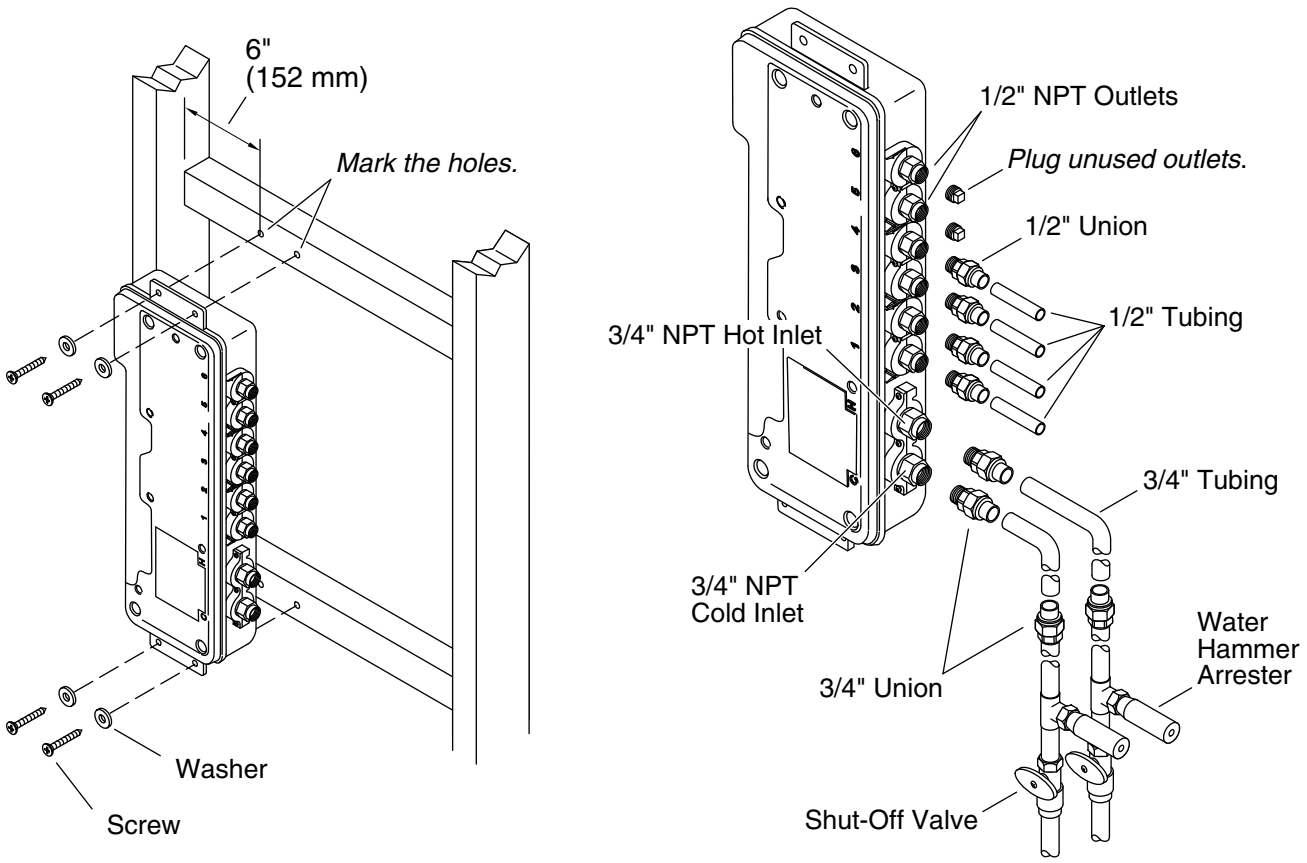


7. Prepare the Site

NOTICE: Do not install the power supply under a whirlpool surround or any location where the temperature may exceed 104°F (40°C). The power supply is rated to operate in temperatures up to 104°F (40°C).

NOTE: Vertical installation within a stud cavity is shown. The valve can also be mounted to a horizontal surface. Refer to the ″Mounting Configurations″ section.

- ☐ This product is designed to fit within a minimum 21″ (533 mm) 2x4 stud cavity.
- ☐ Install adequate bracing for mounting the valve.
- ☐ Install a 120 V electrical outlet within the stud framing, in close proximity to the valve. Locate the outlet above the valve, allowing space to mount the power supply close to the outlet. A GFCI outlet may be required in some applications.



8. Install the Valve

NOTICE: Do not apply excessive heat near the valve or apply flux or acids directly onto the valve. This valve contains plastic and rubber components which will melt if heat is directly applied.

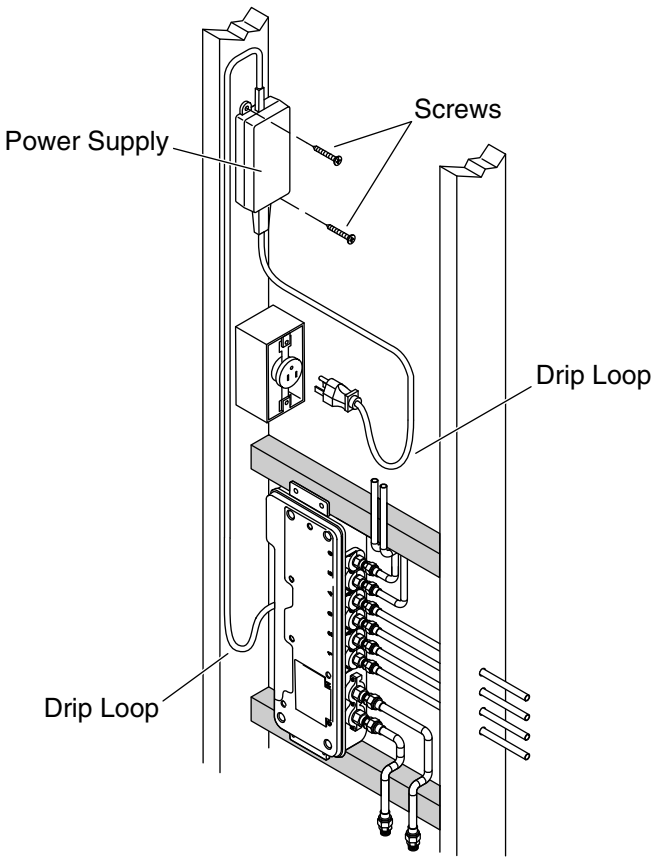
NOTICE: Do not use oil-based, non-setting compounds, such as plumbers putty, on the threaded connections. Use sealant tape or liquid sealant on threaded inlet and outlet connections.

IMPORTANT! If your water supply has high amounts of particulates, install wye strainers in the supply lines.

- ☐ Route the water supply lines. Use unions to install removable pipe segments to the valve inlets to allow access for periodic cleaning of the inlet screens.
- ☐ Install shut-off valves and water hammer arrestors in the supply lines prior to the valve.
- ☐ Hold the valve up to the installation location. Verify fit and mark the hole locations.
- ☐ Pre-drill the holes.
- ☐ Secure the valve with the washers and screws. Do not overtighten.

IMPORTANT! Make sure the shower fittings are connected to the corresponding numbered outlet(s) on the valve for your configuration. Refer to the ″Shower Configurations″ section.

- ☐ Route the piping from the valve outlets to the appropriate shower fitting.
- ☐ If utilizing a custom configuration, plug any unused outlets.
- ☐ Connect the hot and cold supply lines to the appropriate valve inlets. Hot is red and marked with an ″H,″ cold is blue and marked with a ″C.″
- ☐ Secure all piping to the framing.



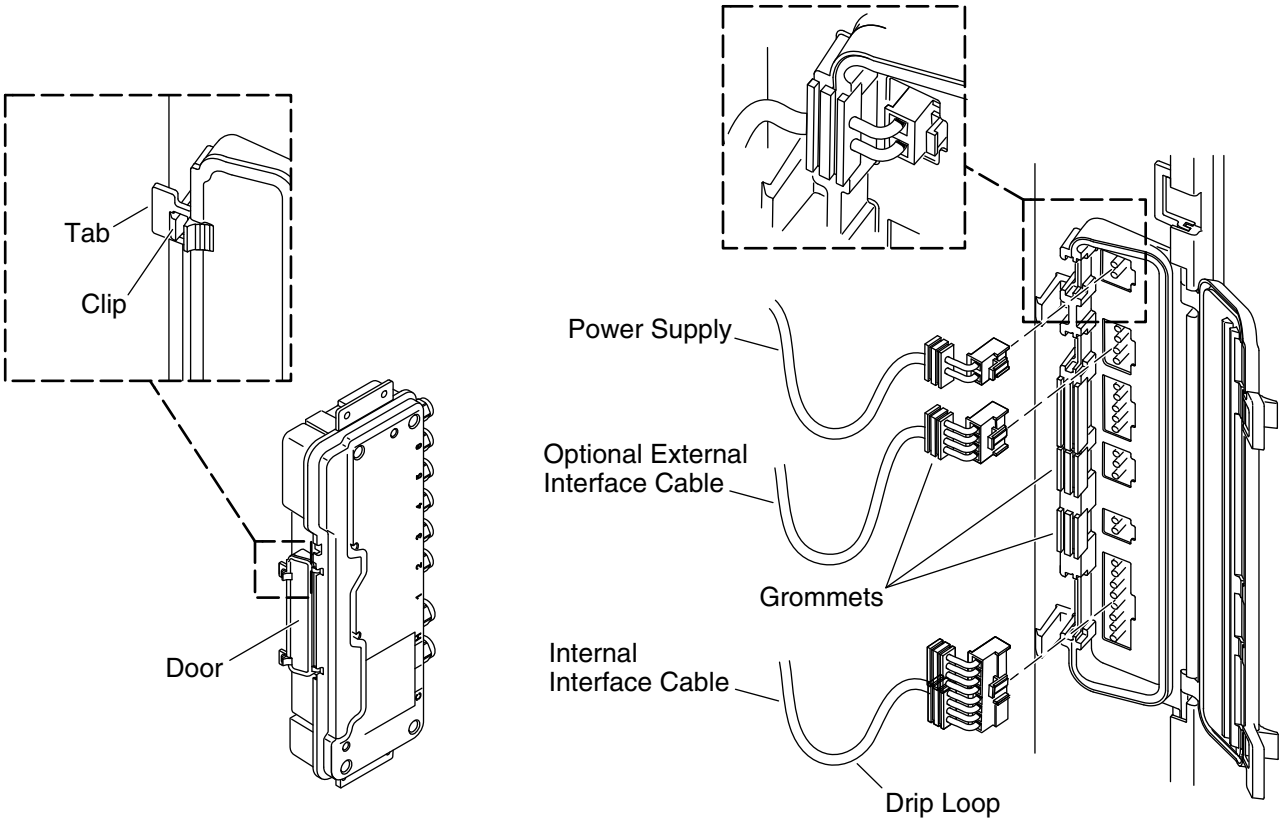
9. Install the Power Supply

NOTICE: Do not install the power supply under a whirlpool surround or any location where the temperature may exceed 104°F (40°C). The power supply is rated to operate in temperatures up to 104°F (40°C).

NOTICE: Do not plug in the power supply until all interface cables are connected.

NOTE: Make drip loops in all cables and cords.

- ☐ Hold the power supply up to the installation location and verify the cord will reach the electrical outlet.
- ☐ Mark the hole locations.
- ☐ Pre-drill the holes.
- ☐ Secure the power supply with the screws.
- ☐ Do not plug the power supply into the electrical outlet at this time.



10. Complete the Installation

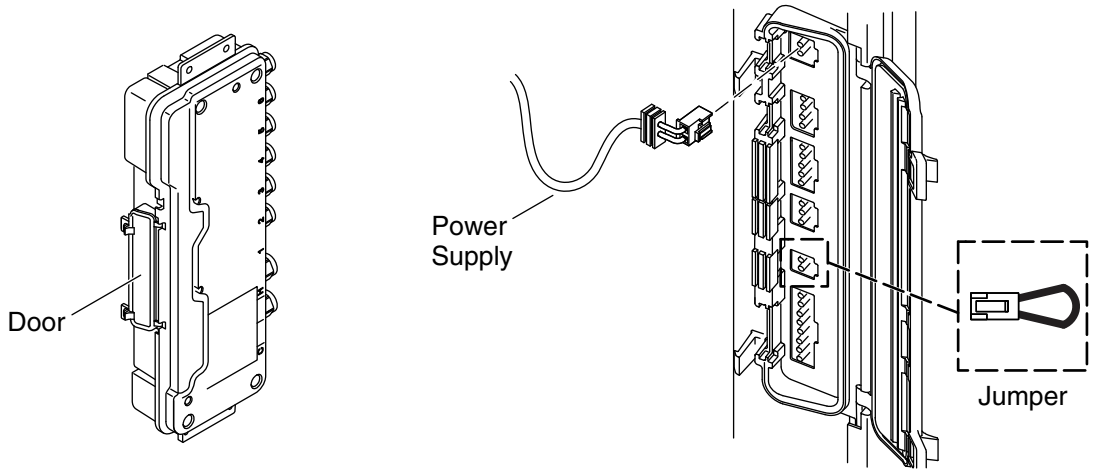
If an interface is not available, proceed to the "Installation Checkout" section, and "Test for Leaks without an Interface."

NOTE: Make drip loops in all cables and cords.

- ☐ Route the interface cable(s) in the wall from the valve location to the interface installation location(s).
- ☐ If not already installed, install the interface(s) according to the instructions packed with the product.

Connect the Cables

- ☐ Press the clips to release and open the door on the valve.
- ☐ To remove the door, slide the hinge side of the door in either direction until it slips free.
- ☐ Connect the interface cable(s) to the valve.
- ☐ Connect the power supply to the valve.
- ☐ Verify all grommets are in place, then reinstall the door.
- ☐ To close the door, press on the tabs until the clips snap in place.



11. Installation Checkout

- ☐ Turn on the water supply to the valve.

Test for Leaks without an Interface or Controller

- ☐ Disconnect the power from the valve.
- ☐ Open the access door on the valve.
- ☐ Verify the power supply cord is connected to the appropriate socket.
- ☐ Connect the jumper to the valve, then reconnect the power.
- ☐ Wait 10 seconds for the valve to initialize; the outlets will activate.
- ☐ Check all connections for leaks.
- ☐ Disconnect the power, then remove the jumper.
- ☐ Close the access door, then reconnect the power to the valve.

Test for Proper Operation (Requires an Installed Interface or Controller)

- ☐ Turn on the main power supply. You should hear the valve power up and the user interface will be lit.
- ☐ If not already completed, set up the interface. Refer to the ″Homeowners Guide″ or ″Users Guide″ for the interface or controller for your system.
- ☐ Use the interface to turn on the water outlets.
- ☐ Check for leaks and make any adjustments as needed.
- ☐ Verify that the water flow is sufficient for your showering needs.

Exercise the Valve (Requires an Installed Interface)

NOTE: Valves which have been recently installed, or have not been used for some time should be exercised before running tests or setting the maximum temperature.

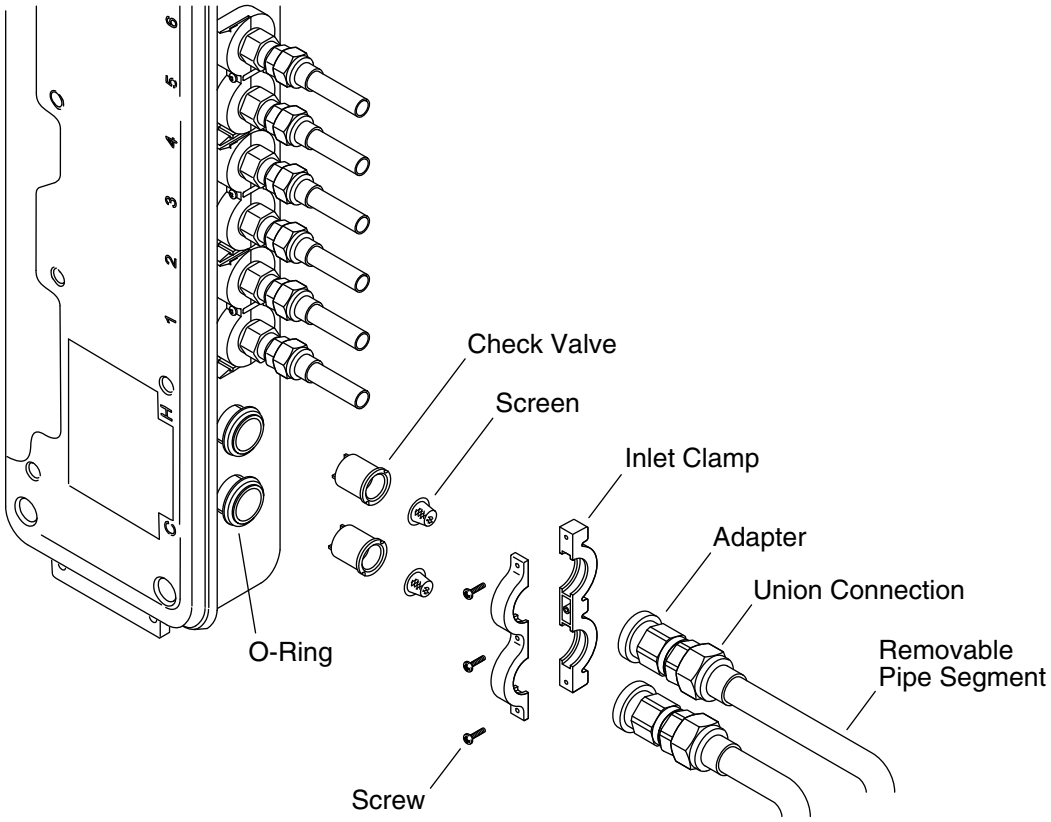
NOTE: The maximum water temperature to the outlets is limited to 120°F (49°C). The valve will automatically shut down if the temperature exceeds 120°F (49°C).

- ☐ Verify that the hot and cold water supply lines are connected to appropriate valve inlets.
- ☐ Using the interface, adjust the temperature from cold to hot and back to cold several times, pausing for 30 seconds at each extreme.

Check Component Functions

Installation Checkout (cont.)

- ☐ Using the interface, turn on each component separately to verify that the selected component matches the component running. Make any corrections or adjustments as needed.
- ☐ Turn off the system.



12. Clean the Inlet Screens

- ☐ Disconnect the power and turn off the water supply.
- ☐ Disconnect the removable pipe segment.
- ☐ Remove the screws and inlet clamp.
- ☐ Remove the adapters from the valve inlets.
- ☐ Gently pull the check valves from the valve inlets.
- ☐ Remove the screens from the check valves.
- ☐ Clean the screens to remove any dirt or debris.
- ☐ Rinse or replace the check valves and screens.
- ☐ Reassemble the inlet connections.

Troubleshooting

WARNING: Risk of electric shock. Disconnect power before servicing.

CAUTION: Risk of personal injury. The valve may contain hot water; be careful when draining any residual water.

NOTICE: Valve maintenance should be performed by a KOHLER Authorized Service Representative.

NOTE: For service parts information, visit your product page at www.kohler.com/serviceparts.

This troubleshooting guide is for general aid only. For service and installation issues or concerns, call 1-800-4KOHLER.

Troubleshooting (cont.)

Troubleshooting Table

Symptoms	Probable Cause	Recommended Action
1. Valve will not turn on.	**A.** Power supply is not plugged into the outlet.	**A.** Plug the power supply into the outlet.
	B. Power supply connection to the valve may be loose or disconnected.	**B.** Check power supply connections to the valve and reconnect if needed.
	C. Interface/data cable connections may be loose or disconnected.	**C.** Check interface/data cable connections, connect if needed.
	D. Circuit breaker has been tripped.	**D.** Reset the circuit breaker.
	E. The valve memory may require resetting.	**E.** Disconnect and reconnect the power supply from the valve.
	F. If none of the recommended actions for the above issues correct the symptom, the valve or interface requires servicing.	**F.** Contact your Kohler Co. authorized service representative.
2. The interface power indicator is lit but the system does not turn on.	**A.** Interface cable connections may be loose.	**A.** Check all interface cable connections.
	B. The interface cable or coupler is damaged.	**B.** Replace the cable or coupler.
	C. If the above recommended action does not correct the symptom, the interface or valve requires servicing.	**C.** Contact your Kohler Co. authorized service representative.
3. The interface functions normally but no water flows from the components.	**A.** Inlet/outlet fittings may be blocked.	**A.** Check the inlets and outlets for blockage or debris. Clean the inlet screens. Refer to the ″Clean the Inlet Screens″ section.
	B. Hot and cold water supplies are not turned on.	**B.** Turn on the water supply to the valve.
	C. The valve memory may require resetting.	**C.** Disconnect and reconnect the power supply from the valve.
	D. System error.	**D.** Check the user interface or controller for an error code. Refer to the interface/controller Homeowners Guide or Users Guide.
	E. If none of the recommended actions for the above issues correct the symptom, the valve requires servicing.	**E.** Contact your Kohler Co. authorized service representative.
4. Maximum blend temperature too hot or too cold.	**A.** Incorrect maximum temperature setting.	**A.** Set the maximum temperature. Refer to the interface/controller Homeowners Guide or Users Guide.
	B. If the above recommended action does not correct the symptom, the interface or valve requires servicing.	**B.** Contact your authorized Kohler service representative.
5. Continuous flow.	**A.** System will not switch off.	**A.** Turn off the water and power supply and contact your Kohler Co. authorized service representative.

Troubleshooting (cont.)

Troubleshooting Table

Symptoms	Probable Cause	Recommended Action
6. Massage mode shuts down but water continues to run from showerhead(s).	**A.** Unequal flow rates between valve outlets.	**A.** Verify the installation has one bodyspray per valve outlet and uses bodysprays with the same flow rate. If needed, contact the installer to revise the installation.
	B. Fluctuation of inlet pressure.	**B.** Install pressure regulators in the supply lines.
	C. Pressure difference greater than 5 psi (34.5 kPa) between the hot and cold supply lines.	**C.** Install pressure regulators to bring the supplies within 5 psi (34.5 kPa) of each other.
7. Only cold water flows from the outlets.	**A.** Hot water supply is either not turned on or not connected to the valve inlet.	**A.** Check if the hot water supply is turned on and connected to the valve inlet.
	B. Hot water inlet is blocked.	**B.** Check the hot water inlet screen for blockage. Clean or replace the inlet screen. Refer to the Valve Homeowners Guide.
	C. If none of the recommended actions for the above issues correct the symptom, the valve requires servicing.	**C.** Contact your Kohler Co. authorized service representative.
8. Fluctuating or reduced flow rate. Valve is functioning properly.	**A.** Inlet/outlet fittings may be blocked.	**A.** Check the inlets and outlets for blockage or debris. Clean the inlet screens. Refer to the ″Clean the Inlet Screens″ section.
	B. Water outlet pressure is low.	**B.** Check that the flow rate is at or above the minimum rate required. Refer to ″Specifications″ section.
	C. Fluctuating flow.	**C.** Verify that the dynamic inlet pressures are within specifications. Refer to ″Specifications″ section.
	D. If none of the recommended actions for the above issues correct the symptom, the valve requires servicing.	**D.** Contact your Kohler Co. authorized service representative.
9. Blend temperature drift or temperature cycling.	**A.** Inlet temperature differential is too great.	**A.** Lower the hot water temperature to 120°F (49°C). Maximum temperature difference between hot and cold should be 70°F (21°C) or less.
	B. Hot water pressure too high.	**B.** Install pressure-reducing check valve on the hot supply to achieve equal or slight less pressure than the cold supply.
	C. Pressure difference greater than 5 psi (34.5 kPa) between the hot and cold supply lines.	**C.** Install pressure regulators to bring the supplies within 5 psi (34.5 kPa) of each other.
	D. Flow rate too low.	**D.** Check the inlets and outlets for blockage or debris. Clean the inlet screens. Refer to the ″Clean the Inlet Screens″ section.
	E. If none of the recommended actions for the above issues correct the symptom, the valve requires servicing.	**E.** Contact your Kohler Co. authorized service representative.

Troubleshooting (cont.)

Troubleshooting Table

Symptoms	Probable Cause	Recommended Action
10. Water leaking from the valve. **CAUTION: Risk of personal injury or product damage.** Turn off the main power and water supply.	**A.** Connections are not secure. **B.** Seals are worn or damaged. **C.** Internal leak.	**A.** Check all connections. Make adjustments as needed. **B.** Order a seal service pack and replace all seals. **C.** Unit requires overhaul. Contact your Kohler Co. authorized service representative.
11. Hot water only, the valve shuts down.	**A.** Hot and cold lines are reversed.	**A.** Switch hot and cold water supply connections. Verify the hot water supply is connected to the inlet marked ″H″ and the cold water supply is connected to the inlet marked ″C.″