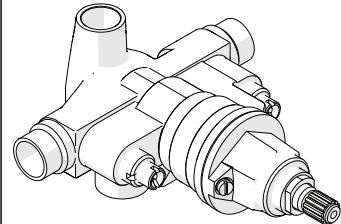
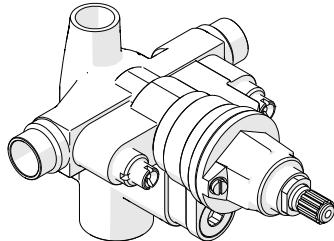


UNIVERSAL  
Pressure Balance Valve

STYLE No. GUPB81†  
CODE No. GUSV81R



STYLE No. GUPB87† (diverter)  
CODE No. GUSV87R



**SPECIFICATIONS:**

Anti-Scald Protection: Yes

Fittings Hole Diameter: Ø3-1/2" [Ø89mm] \*

Hot Limit Safety Stop: Yes

Inlet Connection:

- **GUPB81 & GUPB87** - 1/2" Sweat †

Outlet Connection:

- **GUPB81** - 1/2" Sweat † (Top & Bottom Ports)
- **GUPB87** - 1/2" Sweat † (Top Port Only)
- **GUPB87** - 1/2" Female NPT † (Bottom Port Only)

Unrestricted Max Flow Rate @ 45psi [3bar]: 4.2gpm  
[15.9L/min]

Valve Material: Stainless Steel and Rubber

Water Pressure Maximum: 85psi [6.0bar]

Water Pressure Minimum: 20psi [1.5bar]

Water Pressure Recommended: 45psi [3.0bar]

\* Ø3-1/2" [Ø89mm] hole is required for servicing.

† UK Style No. GU81PB and GU87PB are supplied with BSP ADAPTERS, assembly required.

**IMPORTANT:**

- To ensure this VALVE is installed properly, you must read and follow these guidelines.
- The owner/user of this VALVE must keep this information for future reference.
- This VALVE and associated TRIM (SOLD SEPARATELY) must be installed by a professional licensed contractor and must be on-site prior to rough-in, this allows the installer to visualize the installation. The VALVE rough-in depth is measured from the center of the inlets to the surface of the finished wall and **VARIABLES** depending on the TRIM being used.
- Inspect this VALVE to ensure you have all the parts required for proper installation. This VALVE is sold partially assembled but shown fully disassembled for illustrative and service purposes only.
- **DO NOT** use the bottom (**tub**) outlet of this VALVE for any fittings with restricted flow, such as a handshower or body spray. The back pressure created would cause water to flow out through the top (**shower**) outlet. The integrated diverter on the **GUPB87** would **ALSO** malfunction.
- This VALVE is equipped with an adjustable LIMIT STOP SCREW. The LIMIT STOP DEVICE is used to limit the principle HANDLE from being turned to undesired hot water discharge temperatures. FAILURE to adjust the LIMIT STOP SCREW properly increases the chances for serious injury.

These guidelines have been prepared for the professional contractor to aid in the installation of:  
UNIVERSAL PRESSURE BALANCE VALVE (STYLE No. GUPB81, GU81PB UK),  
UNIVERSAL PRESSURE BALANCE VALVE WITH DIVERTER (STYLE No. GUPB87, GU87PB UK).  
All dimensions are based on original specification and are subject to change and variation.  
Please consult your Design Associate for current specifications.

# Installation Guidelines

- Be sure your installation conforms to federal, state, and local codes. In the State of Massachusetts, all installations must comply with the rules and regulations set forth within 248 CMR.
- If this VALVE will remain unused for an extended period of time (over 3 months), then the water to the VALVE should be shut off (via service stops or system control valve) and the VALVE should be opened to allow the water in the VALVE to evaporate. This is to keep the CARTRIDGE from being exposed to stagnant or hard water and prevent the PISTON inside the CARTRIDGE from sticking once the VALVE is in use again. See the sections below for instructions on how to service and replace the CARTRIDGE.

- **WINTERIZE:** If the VALVE will remain unused during the winter months then water to the VALVE should be shut off (via service stops or system control valve) and the CARTRIDGE should be removed and replaced with the FLUSH PLATE. See the sections below for instructions on how to properly remove and re-install the CARTRIDGE.

**ROUGH-IN:**

1. Check incoming water pressure. For **OPTIMUM VALVE** performance, balance supply pressures to less than 5 psi (0.3 Bar) pressure differential between hot and cold water supplies.
- **CAUTION:** Refer to the Installation Guidelines of the specific TRIM being used for the **MAXIMUM** and **MINIMUM rough-in depth dimensions**.
- **CAUTION:** The VALVE rough-in depth is measured from the center of the inlets to the surface of the finished wall (see Figure - 01) and varies depending on the TRIM used.

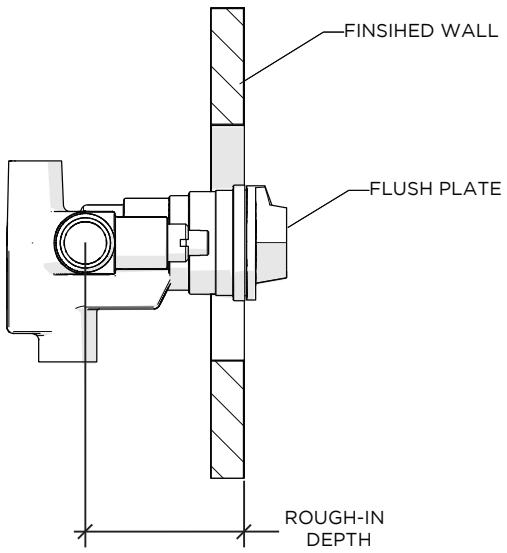


FIGURE - 01

- This VALVE is packaged with a pre-installed FLUSH PLATE and the CARTRIDGE is packaged separately.
- **CAUTION** should be taken when heating VALVE for sweat connections to avoid damaging internal rubber and plastic components in the VALVE.

WATERWORKS

UNIVERSAL  
Pressure Balance Valve

# Installation Guidelines

- **DO NOT** use Pex piping from VALVE to tub spout, this causes too much back pressure for the VALVE to function properly.
- This VALVE includes integrated SERVICE STOPS. Make sure the TILE GUARD is in place to ensure future access for servicing.
- 2. Install rough piping and VALVE.
- NOTE:** When facing the VALVE, **HOT** is on the **left** and **COLD** is on the **right**. Refer to the 'H' and 'C' markings on the casting when installing.
- 3. Remove the SERVICE STOP COVER SCREW, see Figure - 02, then insert a 3/16" Allen Key into the SERVICE STOP and tighten until fully seated.

**NOTE:** Do this for **BOTH** hot and cold SERVICE STOPS.

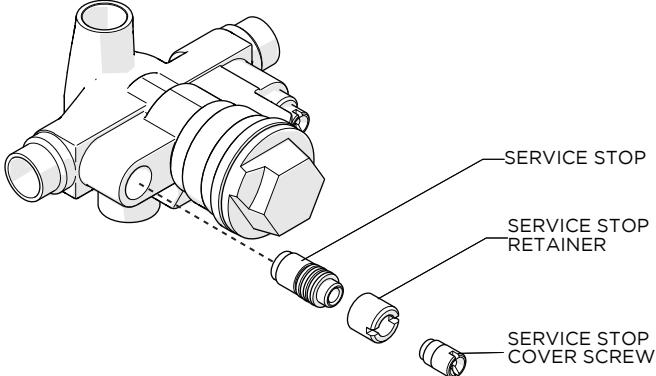


FIGURE - 02

4. Turn on **BOTH** hot and cold supplies then check the VALVE and all connections for leaks.
5. Open both SERVICE STOPS to flush out the VALVE and allow the VALVE to run for a few minutes to totally flush the system.
6. Close both hot and cold SERVICE STOPS then remove the FLUSH PLATE.
7. Install the CARTRIDGE, RETAINING CAP, PACKING and PACKING NUT as an assembly making sure to include the CAP GASKET. See Figure - 03.
- CAUTION:** Before threading the CAP into the VALVE and to **AVOID** distortion of the CARTRIDGE STEM, make sure to leave the PACKING and PACKING NUT in place then back out the LIMIT STOP SCREW until the O-RING is fully exposed and turn the CARTRIDGE counter-clockwise until it stops making sure that it's drawn close to the CAP.
8. Open both hot and cold SERVICE STOPS and check the VALVE and all connections for leaks then re-install the SERVICE STOP COVER SCREWS.
- NOTE:** The VALVE will not operate unless **BOTH** hot and cold supplies are turned on.
9. Tighten the PACKING NUT for the desired frictional resistance when turning the HANDLE.

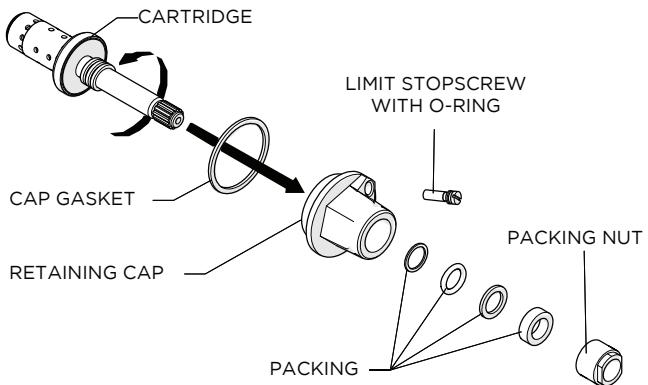


FIGURE - 03

## VALVE CALIBRATION:

10. Slowly turn the CARTRIDGE STEM to adjust the temperature to the **MAXIMUM** desired bathing temperature, verified with a thermometer, then turn the LIMIT STOP SCREW clockwise until it seats.
  - **IMPORTANT:** Failure to adjust the LIMIT STOP SCREW properly increases the chances for serious injury.
  - The outlet water temperature from the VALVE is set by a combination of the incoming hot and cold supply temperatures and pressures, as well as the calibration of the LIMIT STOP SCREW. With the LIMIT STOP SCREW in the full hot position the outlet water temperature may be 5 to 10 degrees less than the incoming water temperature.
- For example: The outlet water temperature from a shower head, with the VALVE in the full hot position, may be 105 degrees while the outlet water temperature from a faucet in the same room, opened to full hot, may be 110 degrees.*
- Due to the VALVE design, the VALVE will always allow some cold water through in the full hot position and also some hot water through in the full cold position. The difference from the inlet to outlet temperature is related to the pressure balance between the hot and cold supplies. The more the pressures are imbalanced the more the temperatures will vary. If a hotter outlet water temperature is needed, the inlet water temperature must be adjusted. Always adjust the high LIMIT STOP SCREW to ensure that VALVE does not exceed the **MAXIMUM** desired bathing temperature.
- Seasonal water temperature changes, and water heater replacement or servicing, change the temperature of the water supplied to the VALVE and change the **MAXIMUM** water temperature supplied by the VALVE. The VALVE does not compensate for changes in the water supply temperature. In the event of such changes, the temperature high limit stop setting should be adjusted.
  - **CAUTION: DO NOT** install a shut-off device on either side of the VALVE. The installation of any such device may create a cross-flow condition at the VALVE and affect water temperature.
  - The VALVE may not provide protection against scalding if there is a failure of other temperature limiting devices elsewhere in the plumbing system.
  - 11. Turn the VALVE off then back on, to verify that LIMIT STOP SCREW functions properly and the temperature does **not** exceed the temperature that was previously set.

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All dimensions are based on original specification and are subject to change and variation.  
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WATERWORKS

## OPERATION:

- The principal handle of the VALVE controls on/off and temperature.
- Turn the HANDLE counter-clockwise to turn on the VALVE and continue through the **cold**, the **warm**, then the **hot** positions. The **maximum** turn of the VALVE is approximately one revolution. This large adjustment allows for infinite settings to suit the requirements of the user.
- **GUPB87 ONLY:** The diverter option, see Figure -04, of the GUPB87 gives the user an added control feature. The VALVE has a HANDLE below the principal handle. This is used to divert flow from the tub to the shower, which is done by moving the lever handle to the left for the tub flow and to the right for the shower flow.

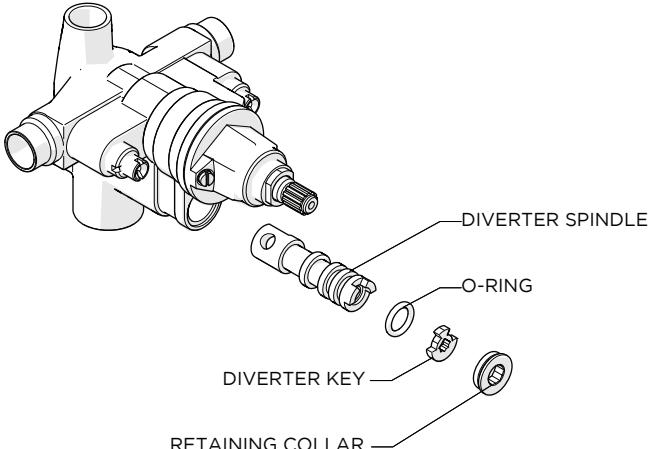


FIGURE - 04

- If further assistance is required, please contact Product Support at 1-800-927-2120 Monday through Friday, 8am - 6pm EST.

## REMOVING THE CARTRIDGE:

1. Remove the handle, gland cover and trim plate.
2. Remove the SERVICE STOP COVER SCREWS then insert a 3/16" Allen key into SERVICE STOPS and tighten until fully seated to shut off water to the VALVE.  
**NOTE:** Make sure to do this for both hot and cold SERVICE STOPS.
3. **CAUTION:** Before removing the RETAINING CAP follow the sequence below to avoid distortion of the CARTRIDGE STEM.
  - a. Make sure to leave the PACKING and PACKING NUT in place.
  - b. Back out the LIMIT STOP SCREW until the O-RING is fully exposed.
  - c. Open the VALVE, turning counter-clockwise, to full hot and unscrew the RETAINING CAP.

## STANDARD SERVICE:

1. To eliminate dripping or non-positive off remove the CARTRIDGE per the instructions in the section above.

**NOTE:** Be sure to inspect SEATS, SEAT O-RINGS and CARTRIDGE STEM for wear.

2. Remove the CARTRIDGE from the CAP then:
  - a. Install a replacement CARTRIDGE or,
  - b. Hold the CARTRIDGE with the temperature handle to remove the RETAINING SCREW and RETAINING COLLAR. Channel locks or equivalent can be used to remove the COLLAR then install the replacement WASHERS, SCREW and COLLAR. See Figure - 05.

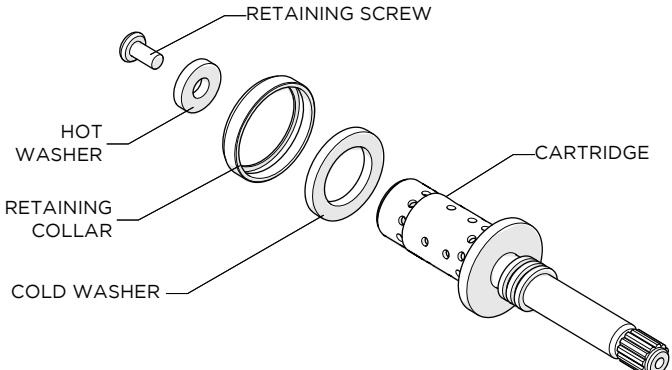


FIGURE - 05

3. Follow step 7 of the ROUGH-IN section in the Installation Guidelines to re-install the CARTRIDGE.

## SEAT REPLACEMENT:

1. When wear on the SEATS and SEAT O-RINGS is identified remove the SEATS using the seat replacement tools.  
**NOTE:** Make a positive engagement of TOOL into SEATS while removing and reassembling.
2. Replace the SEATS and seat O-RINGS.

## CARTRIDGE SERVICE AND REPLACEMENT:

- The most critical part of the VALVE is the end of the CARTRIDGE that is inserted into the VALVE and houses the stainless steel CONTROL PISTON. **DO NOT** tamper with or attempt to remove the PISTON.
- 1. If the PISTON is obstructed or blocked, try to free it by tapping the handle end against a firm object such as a stiff rubber handle or the sole of a shoe.
  - o If the PISTON comes free, shake it and feel for resistance. The PISTON should move freely in the CARTRIDGE and 'click' when it is shaken. Soaking in house-hold vinegar will help free debris build up.
  - o If the PISTON does not become unobstructed or any damage is noted, replace the CARTRIDGE.
- 2. Follow step 7 of the ROUGH-IN section in the Installation Guidelines to re-install the CARTRIDGE.

## TROUBLESHOOTING:

1. VALVE will not flow water.
  - o Cause: Hot and cold water not turned on or SERVICE STOPS not opened.
  - o Solution: Be sure both supplies are turned on and SERVICE STOPS are open. The VALVE will not operate unless both hot and cold water inlets have pressure.

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WATERWORKS

2. VALVE leaks when shut-off.
  - o Cause: Hot and cold water WASHERS are worn or foreign matter (solder, chips, etc.) are between WASHERS and SEAT surfaces.
  - o Solution: Replace hot and cold washers and inspect top surface on hot and cold seats for damage. See the **Standard Service** section.
3. VALVE makes loud noise.
  - o Cause: PISTON in CARTRIDGE is moving back and forth because of a large pressure differential between hot and cold water lines.
  - o Solution: Alter the water system such that the pressure differential at all shower valves is no more than 5 psi (0.3 Bar).
4. Temperature out of VALVE reduces gradually during use.
  - o Cause: Supply system is running out of hot water.
  - o Solution: Reduce **maximum** flow rate out of VALVE or shower head. This will allow longer period of use before reduction of hot water supply.
5. Water volume from VALVE is inconsistent during operation, VALVE delivers an insufficient quantity of hot and cold water, or temperature fluctuates without moving temperature HANDLE.
  - o Cause: CONTROL PISTON housed in the CARTRIDGE is blocked from free movement by foreign matter.
  - o Solution: With VALVE open half way, remove the principle handle and tap the CARTRIDGE STEM with a plastic hammer.

If problem is not solved, following the steps in the **REMOVING THE CARTRIDGE** section, remove the CARTRIDGE then tap the handle end of the CARTRIDGE against a solid object to free the piston and rinse the CARTRIDGE.

Soaking in house-hold vinegar will help free debris build up.
6. **GUBPB87 ONLY:** When VALVE is set for shower operation, a trickle of water runs from the tub spout.
  - o Cause: This is a design function of the VALVE in accordance with national standards. Water is allowed to trickle from the tub spout when the diverter is set to the shower position
  - o Solution: This is a design function in accordance with national standards.
7. Outlet water temperature, in the full hot position, from the VALVE is lower than inlet water temperature or lower than another fitting such as a faucet in the same room, opened to full hot.
  - o Cause: This is a design function of the VALVE. The VALVE will always allow some cold water through in the full hot position. The difference from the inlet to outlet temperature is related to the pressure balance between the hot and cold supplies. The more the pressures are imbalance the more the temperatures will vary.
  - o Solution: If a hotter outlet water temperature is needed, the inlet water temperature must be adjusted. See the **VALVE CALIBRATION** section of the **Installation Guidelines** for more details.

- If further assistance is required, please contact Product Support at 1-800-927-2120 Ext 2 Monday through Friday, 8am - 6pm EST.
- Refer to the separate Service Parts Documents for available replacement parts.

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**WATERWORKS**