**IMPORTANT!**

Read this entire installation manual to ensure proper installation. When finished with the installation, file this manual with the owner or maintenance department.

Separate parts from packaging and make sure all parts are accounted for before discarding any packaging material. If any parts are missing, do not begin installation until you obtain the missing parts.

Make sure that all water supply lines have been flushed and then completely turned off before beginning installation. Debris in supply lines can cause valves to malfunction.

Hardware supplied by installer must be appropriate for wall construction. Wall anchors used must have a minimum pull-out rating of 1,000 lbs.

Product warranties may be found under "Product Information" on our web site at www.bradleycorp.com.
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Supplies Required by Installer

(8) 3/8" wall anchors, bolts and 1" min. O.D. washers to mount main frame and bowl to wall (minimum pull-out rating of 1,000 lbs.)
1/2" NPT hot and cold supply piping
1-1/2" NPT drain piping
MG-2/NDT Express® Lavatory System Dimensions

*Subtract 4" (102mm) from vertical dimensions for compliance with ADA guidelines for children’s use.
MG-2/NDT Express® Lavatory System Dimensions continued . . .

TAS Juvenile Height
Grades Pre-K thru 5 or 6

TAS Juvenile Height
Grades 6 thru 8 or 9
Installation Instructions

Step 1: Rough in

NOTE: See Figure 1 (below), 1a, 1b (for TAS on page 6) and Figure 2 (on page 7) when roughing in the MG-2/NDT Express®.

⚠️ IMPORTANT: Flush the supply lines before making connections. Debris in supply lines will cause the valves to malfunction.

⚠️ IMPORTANT: Dimensions shown in Figure 1 are for Standard Height only. Make sure to follow appropriate dimensions based on configuration and required rim height. Review appropriate figure before beginning rough-ins.

1. Rough in 1/2" NPT hot and cold supply lines through wall at dimensions shown.
2. Rough in 1-1/2" NPT drain waste connection through wall at dimensions shown.

---

Standard Height Mounting

Figure 1

*Juvenile Height Mounting:

Subtract 4" (102mm) from vertical dimensions for compliance with ADA guidelines for children’s use.
TAS — Texas Accessibility Standards:
Juvenile Height (grades Pre-K thru 5 or 6)

Figure 1a

TAS — Texas Accessibility Standards:
Juvenile Height (grades 6 thru 8 or 9)

Figure 1b
Installation Instructions continued . . .

Step 2: Rough in wall anchors

1. Install six 3/8" wall anchors with a minimum pull-out rating of 1,000 lbs. (supplied by installer) at the locations marked (ref. location “B” shown in Figure 1, 1a or 1b on pages 5-6).

NOTE: The dimensions for the wall anchors at location “A” are for reference only.

2. On the back of the bowl, measure the distance between the 3/4" bowl mounting holes. Divide this measurement in half. Measure and mark this dimension on the wall to the left of the centerline and to the right of the centerline. Install two 3/8" wall anchors with a minimum pull-out rating of 1,000 lbs. (supplied by installer) at the locations marked (ref. location “A” shown in Figure 1, 1a or 1b on pages 5-6).

NOTE: The anchors will be used to mount the Express® bowl and frame to the wall.

Figure 2
Installation Instructions continued . . .

Step 3: Mount frame to wall

1. Loosen, but do not remove the bottom three access panel screws.

2. Remove the top three access panel screws and washers securing the access panel to the frame and remove the access panel (see Figure 3).

3. Position the frame with Terreon® End Caps attached, against the wall, ensuring that it is level.

⚠️ IMPORTANT: Anchoring the frame to a wall that is not flat may cause the frame to bend. If necessary, install shims to compensate for wall distortion.

4. Ensure that the back of the frame is flat against the wall. If wall is not flat, insert shims behind the frame to ensure that it will not bend when anchored.

5. Once you have positioned the frame such that it is level and flat against the wall or shimmed, use the 3/8" bolts and washers to mount the frame to the wall.

---

![Figure 3](image-url)
Installation Instructions continued . . .

Step 4: Install bowl assembly

**IMPORTANT:** See Figure 4 below when installing the bowl assembly. If the fixture has soap option, refer to the soap system installation manual 215-1585 before installing the bowl assembly.

1. With someone to assist you, place the bowl assembly squarely onto the frame being careful not to pinch tubing between bowl and frame.

2. Attach the front of the bowl assembly to the frame using the two 1/4-20 x 1/2" pan-head screws and washers provided. *Do not tighten screws at this time.*

**IMPORTANT:** When bolting the bowl assembly to the wall, do not overtighten the bolts. Overtightening bolts can damage the Terreon® material.

3. After the bowl assembly is attached to the frame, install the two 3/8" bolts and washers (supplied by the installer) to bolt the bowl to the wall anchors. *Do not overtighten bolts.*

4. Tighten the screws installed in procedure #2 above to secure the bowl assembly to the frame. *Do not overtighten.*

5. If necessary, adjust sprayhead body to fit closely to wall by adjusting sprayhead mounting bolts. See Figure 7 on page 14 for sprayhead mounting bolt locations.
Installation Instructions continued . . .

Step 5: Connecting supply

1. Loosen but do not remove the two mounting screws holding the valve bracket to the frame. Slide the valve bracket up until the larger cutout in the frame’s slot aligns with the screw head (see Figure 5b). Then lift up to remove the valve bracket from the frame.

2. FOR HOT AND COLD SUPPLY: Attach the stop/check to the hot and cold water supply piping from the wall. Connect the flexible hoses to the Vernatherm™ Mixing Valve and to the stop/checks (see Figure 5a).

   NOTE: The “H” on Vernatherm™ Mixing Valve indicates hot water supply inlet.

   FOR SINGLE TEMPERED SUPPLY: Attach the stop/check to the 1/2” tempered supply line. Connect the stop/check to the tempered line adapter with the flexible supply hose (Figure 5c).

3. Assemble the P-trap by connecting the 1-1/2” tubular pipe to the tailpiece and to the 1-1/2” drain pipe stubbed out of the wall.

4. Install the strainer on the drain plug opening inside the bowl, and push the strainer firmly into place. Secure the strainer with the screw provided.

---

**Figure 5a**

**Figure 5b**

**Figure 5c**
**Installation Instructions continued . . .**

**Step 6: Connecting electrical and supply tubing**

**WARNING:** The MG-2/NDT must be connected to the ndite power management module. Connection to 110 VAC can result in personal injury and damage to electronics.

**CAUTION:** Connection of leads other than shown may cause permanent damage to the sensor.

**CAUTION:** To avoid activating the sprayhead valve, make sure to connect sensor cable plugs to the circuit board before connecting the power supply. If the cable is connected or disconnected while the batteries are installed, the station will activate and continue running for 75 seconds.

**IMPORTANT:** It will take approximately 60 minutes @ 700 lux for the system to charge.

**NOTE:** Refer to Figure 6a (right) and 6b (on page 12).

1. Snap the sensor plugs from the sprayhead into the proper valve’s circuit board.
2. Connect the photovoltaic cell plug from the photovoltaic cover to the power-in cable on the power management module (Figure 6a).
3. Insert the two sprayhead supply tubes into the two solenoid tube connectors by loosening the compression nut and firmly pushing the tube into the connector until they are fully seated (red tube for left-hand station, green tube for right-hand station). Retighten the compression nut by hand.
4. Align the valve bracket mounting screws with slots on the frame. Let the valve bracket slide down to lock into place.

**NOTE:** Optional Battery Power Pack (p/n S65-284) for quickstart power-up is available from Bradley.

**IMPORTANT:** The Vernatherm™ valve is NOT factory-preset. Upon installation, the valve temperature must be checked and adjusted to ensure delivery of safe water temperature. Water in excess of 110°F (43°C) may cause scalding.

5. Check the temperature when approximately 1.0 GPM water flow is reached and adjust if necessary (the range of the valve is 95°F–115°F (35°C–43°C)). To adjust the temperature, first loosen the temperature locking nut with a wrench. Then using a blade screwdriver, turn the adjustment stem **counterclockwise** to **increase** the temperature or **clockwise** to **decrease** the temperature. Once desired temperature is reached, tighten the nut to prevent temperature change.

6. After testing is complete, reinstall access panel to frame. Fasten access panel with the six panel screws and washers provided (Figure 3, page 8).
Figure 6b
Cleaning and Maintenance Instructions

**IMPORTANT:** Strong alkaline or acid-based chemicals and cleansers should not be used to clean the Express®. If these chemicals come in contact with the Terreon® surface, wipe off the surface immediately and flush with soapy water. Avoid unnecessary or prolonged contact with hot pans and objects.

**Terreon® and panel maintenance**

The bowl, sprayhead and pedestal end caps are made of Terreon®, a solid cast polyester resin material. Terreon® resists chemicals, stains, burns and impact, and is repairable with everyday cleaners or fine-grit abrasives. The panel is made of stainless steel. With regular cleaning, your Terreon® fixture will provide years of dependable service.

**Terreon® Bowl, Sprayhead and Pedestal End Cap cleaning**

- **Daily Cleaning:** Wipe the surface with a damp cloth and wipe dry.
- **Weekly Cleaning:** Wipe the surface with a damp cloth and a household liquid detergent.
  1. Using a #7448 Scotch-Brite® pad, scrub with an abrasive cleanser such as Ajax®, Comet® or Soft Scrub® and water.
  2. Clean thoroughly with soapy water and allow to dry.
- **Scorch Marks:** Although Terreon® will not burn, a lit cigarette in contact with Terreon® could leave a scorch mark. Scorch marks can be removed by buffing with a #7448 Scotch-Brite pad or with an abrasive cleaner.
- **Repair kit:** In the unlikely event your Terreon® surface becomes damaged, it can easily be repaired. Contact your Bradley representative to order a repair kit and be sure to specify color when ordering.

**Stainless Steel Access Panel cleaning**

Stainless steel is extremely durable, and maintenance is simple and inexpensive. Proper care, particularly under corrosive conditions, is essential. Ordinary deposits of dirt and grease are quickly removed with soap and water. Whenever possible, the metal should be thoroughly rinsed and dried after washing. To remove tightly adhering deposits, use stainless steel polishing powder. In all cases, rub in the direction of the stainless steel grain.

**IMPORTANT:** Never use ordinary steel wool or steel brushes on stainless steel. Always use stainless steel wool or stainless steel brushes.

Avoid prolonged contact with chlorides, bromides, thiocyanates, and iodides on stainless steel equipment, especially if acid conditions exist. Do not permit salty solutions to evaporate and dry on stainless steel. The appearance of rust streaks on stainless steel leads to the belief that the stainless steel is rusting. Look for the source of the rust in some iron or steel particles which may be touching, but not actually a part of the stainless steel structure.

**NOTE:** Strongly acidic or caustic cleaners may attack the steel causing a reddish film to appear. The use of these cleaners should be avoided.

**NOTE:** Use of brand names is intended only to indicate a type of cleaner. This does not constitute an endorsement, nor does the omission of any brand name cleaner imply its inadequacy. Many products named are regional in distribution and can be found in local supermarkets, department and hardware stores or through your cleaning service. It is emphasized that all products should be used in strict accordance with package instructions.
Assembly of Components

**Sprayhead Body**
(Part number varies with color of unit. Contact your local Bradley rep. for assistance).

**Bowl**
(Part number varies with color of unit. Contact your local Bradley rep. for assistance).

**End Cap (Left)**
(Part number varies with color of unit. Contact your local Bradley rep. for assistance).

**End Cap (Right)**
(Part number varies with color of unit. Contact your local Bradley rep. for assistance).

**Stainless Steel Access Panel**
186-1263.

---

**Figure 7**

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**Bowl Mounting Hardware**
- 1/4"-20 x 1/2" Pan Head Screw (qty. 2) (160-389)
- 1/4"-20 Washer (qty. 2) (142-002DB)
- 1/8" Rubber Washer (125-001DP)
- Tailpiece (129-056)
- #8-32 Screw (160-319)
- Strainer (P16-075)
- Drain Plug (P16-072)
- P-Trap (Polypropylene) (269-1697)
- Optional P-Trap (Chrome-Plated Brass) (S29-094)
Assembly of Components continued . . .

Sensor assembly and solenoid valve access

- **To access solenoids:**
  Using a 5/32” Allen socket wrench, loosen, but do not remove the bottom three access panel screws. Remove the top three access panel screws and washers securing the panel to the frame and remove the access panel (see Figure 3 on page 8). Solenoids are located on left side of frame (see Figure 8).

- **To remove sprayhead:**
  Remove (3) bolts located underside of bowl neck (see Figures 7 and 9). Carefully remove sprayhead from bowl.

- **To access sprayhead/aerator/lens and sensor assembly:**
  Remove (2) screws and washers from the access plate assembly using a 1/8” Allen socket wrench. The access plate assembly is located underneath the sprayhead (2) places (see Figure 10a on page 16), the assembly will drop down to access the lens, sensor, and sensor eyes, housing flow control and tube connector.
Assembly of Components continued . . .

Figure 10a

- SENSOR EYES
  - 30" (251-019A)
  - 60" (251-019B)

- INFRARED WINDOW
  - 269-1241

- SPRAYHEAD

- CONNECTOR 1/4" TUBE
  - 145-089

- ACCESS PLATE
  - 150-201

- HOUSING, FLOW CONTROL
  - S05-142

- SCREW BUTTON HD SOCKET
  - #10-24 160-138

- NUT
  - 110-115

Figure 10b

- WINDOW

- PURPLE EYE
Assembly of Components continued . . .

- POWER SUPPLY CABLES
- PHOTOVOLTAIC CELL PLUG (S83-183) (FROM PHOTOVOLTAIC COVER)
- POWER-IN CABLE
- POWER MANAGEMENT MODULE (S83-182)
- OPTIONAL BATTERY START-UP PACK (S65-284)
Troubleshooting NDT Components

**IMPORTANT:** ndite™ technology requires a minimum of 400 LUX to operate. Before proceeding make sure all of the lights in the room are operating and that there are no obstructions blocking the light hitting the surface of the sprayhead. If available, use a light meter to measure the amount of light on the surface of the Lavatory System sprayhead. Also check for severe vandalism or other physical damage to the sprayhead.

Leave the lights in the room on for approximately four hours to fully charge the system before operating.

*NOTE: If there is inadequate lighting in the location where the unit is installed, add additional lighting or convert the system to battery power. Contact Bradley and order Battery Pack Kit S45-2083 (one per station).*

*NOTE: Refer to Figure 11 (solenoid valve) on page 20 when necessary.*

**Problem:** Water will not shut off.

**Cause:** Water pressure is too low.

**Solution:** Test proper water pressure.

The Express Lavatory System operating specifications require a water pressure of between 20-80 PSI at the connection to the fixture. If the pressure is above 80 PSI the valve may not operate. When verifying water pressure always use a reliable pressure gauge at the connection to the fixture.

**Cause:** Faulty solenoid valve.

**Solution:** Test station; replace solenoid valve if required.

Disconnect the plug from the power management module to the circuit board of the problem valve. Remove the three #8 Phillips-head screws that hold the solenoid valve assembly together. Be careful not to lose the armature or spring. Remove the diaphragm. Remove any particles that are trapped between the diaphragm and the valve seat. Rinse off the diaphragm and inspect for damage. Make sure the center orifice and both small side orifices are open. Reassemble in reverse order, being careful not to over tighten the Phillips-head screws or the plastic valve body may crack. Tighten until the armature plate makes contact with the plastic body. Reconnect the power plug. Turn on water supply to the unit.

**Problem:** Water in multiple stations will not activate.

**Cause:** Inadequate lighting.

**Solution:** Test for adequate lighting.

ndite technology requires a minimum of 400 LUX to operate. Before proceeding make sure all of the lights in the room are operating and that there are no obstructions blocking the light hitting the surface of the sprayhead. If available, use a light meter to measure the amount of light on the surface of the lavatory system sprayhead. Also check for severe vandalism or other physical damage to the sprayhead. If there is inadequate lighting available in the location where the unit is installed, add additional lighting. If additional lighting is unavailable, the system may be converted to battery power. Contact Bradley and order Battery Pack Kit S45-2083 (one per station)

**Cause:** Improper water pressure.

**Solution:** Test for proper water pressure.

The Express Lavatory System operating specifications require a water pressure of between 20-80 PSI at the connection to the fixture. If the pressure is above 80 PSI the valve may not operate. When verifying water pressure always use a reliable pressure gauge at the connection to the fixture. If water pressure is high but not above 80 PSI the following may be raising the pressure: circulation system, booster pumps or undersized or no expansion tank. If any of this equipment is raising the pressure above the specified pressure levels it will be characterized by the system working for a short time after the supply connections are made and then stopping.
Troubleshooting NDT Components continued . . .

Problem: Water in multiple stations will not activate.
Cause: No power to the sensor board.
Solution: Check for power to the sensor board.

Remove the front cover from the fixture. Wave your hand in front of the sensor window, one station at a time, while looking at the sensor boards below the fixture. A light should flash on the sensor board when each station is activated. If no light flashes, test the output from the photovoltaic cells with a multimeter (available from most home improvement stores and professional supply distributors).

Cause: Improper output from voltaic cells.
Solution: Test output from photovoltaic cells.

Test the output from the photovoltaic cells with a multimeter (available from most home improvement stores and professional supply distributors).

NOTE: The electrical system on ndite™ powered Express® Lavatory Systems is low voltage and low amperage.

With the room lighting on, unplug the cord running from the photovoltaic cells to the power management module. Touch the red multimeter probe to the inside of the plug and the black multimeter probe to the outside of the plug. With the Multimeter in the DC Volts setting, it should have a reading of 6 volts or more. If the reading is under 6 volts, doublecheck the room lighting levels. If the reading is over 6 volts and the system will not operate, replace the ndite power management module.

Problem: Water in one station will not activate
Cause: Faulty sensor eyes.
Solution: Test sensor eyes and replace, if necessary.

Disconnect the sensor cable from the circuit board of the problem valve. Disconnect the sensor cable from the circuit board of an adjacent working valve. Connect the sensor cable from the adjacent working valve to the problem valve. Activate the problem station’s sensor. The station should turn on. If it turns on and cycles normally, replace the eyes in the problem station.

Cause: Problem with control boards.
Solution: Test the control boards and replace the battery, if necessary.

Disconnect the plug from the power supply to the circuit board of the problem valve. Disconnect the plug from the power supply to the circuit board of a working adjacent valve. Connect the power plug from the adjacent working valve to the problem valve. Wait for ten seconds. Activate the problem station’s sensor ten times. The station should turn on. If it turns on, and cycles normally, replace the batteries in the problem station.
Solenoid Valve S07-072 (closed body) and S07-072A (thru body)

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Solenoid Valve W/Circuit Board
CLOSED BODY
(S07-088)
THRU BODY
(S07-088A)

Circuit Board
(S83-184)

Pan-Head Screw
6-19 x 3/4”
(160-451)

Valve Assembly
CLOSED BODY
(S07-072)
THRU BODY
(S07-072A)

Figure 11
Thermostatic Mixing Valve Maintenance and Troubleshooting

NOTE: Before attempting to troubleshoot the valve or disassemble the components, check for the following conditions:

- If stop/check valves are used, make sure that they are fully open.
- Make sure that the hot and cold inlet pipes are connected properly, and that there are no cross-connections or leaking stop/check valves.
- Check the hot water heater output to make sure that it is at least 20° F above the set temperature.

Be sure to close the appropriate shut-off valves prior to disassembly of the valve and reopen the valves after inspection and repair is complete.

Problem: Limited water flow.
Cause: Dirt and debris have built up in the valve or strainer.

1. Check to make sure both hot and cold supplies are connected to the Vernatherm mixing valve and that they have water flow.
2. Remove and clean strainer (see Figure 12 or 13 on page 22). If strainer needs to be replaced, order Bradley part no. 173-028.
3. Check the piston for smooth movement.

To check the valve's piston for free and smooth movement, follow the procedures outlined below:

1. Remove the valve's cap and thermostat (see Figure 12 on Page 22).
2. Push down on the piston with your finger (the piston should move freely). If the movement is not as it should be, the piston needs to be cleaned. Follow the method outlined below for cleaning the piston and valve body:
   - Remove the thermostat.
   - Lift the piston out with a needle-nose pliers and remove the spring.
   - Any cleaner suitable for brass and stainless steel may be used (if cleaning with suitable cleaner is not sufficient to remove debris, a 400-grit sandpaper may be used to polish and hone the piston and valve body).
   - Snap spring into piston (will detent) and reassemble into the valve body. Retest the piston.
3. If, after a thorough cleaning, the piston does not move freely, the piston must be replaced. Contact your Bradley representative and ask for Repair Kit (part number S65-259).

Problem: External leaks in the system.
Cause: O-rings have been damaged.
Solution: Replace O-rings where necessary.

For replacement of the O-rings, contact your Bradley representative and ask for Repair Kit S65-259.

Problem: Improper water temperature or temperature fluctuation.
Cause: Thermostat is slowly failing or not working at all.
Solution: Check the thermostat for proper operation.

1. At room temperature (80° F or less) remove cap and thermostat.
2. Place thermostat into container with 115° F water. The pushrod should pop out of the thermostat approximately 1/10".
3. If thermostat pushrod does not pop out, the thermostat must be replaced. Contact your Bradley representative and ask for Repair Kit (part number S65-259).

Cause: Valve temperature is not properly set
Solution: Adjust the temperature.

Using a blade screwdriver, turn the adjustment stem counterclockwise to increase the temperature or clockwise to decrease the temperature.
Vernatherm™ Thermostatic Mixing Valve (S01-524)

Repair Kit S65-259

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Figure 12

Tempered Line Adapter Assembly (S39-685) Option

Figure 13