



REMOVAL OF VARIABLE VOLUME

To remove the variable volume from the unit, the pressure fitting on the inside of the DWT housing must first be connected. Remove the rear cover and loosen the fitting at the rear of the variable volume using a 12 mm wrench.

The variable volume is then removed from the front of the DWT housing by first removing the (4) 3 mm retaining screws on the front of the variable volume.

DISASSEMBLY OF THE VARIABLE VOLUME AND PISTON

- ❶ Back out handle of Variable Volume.
- ❷ Remove handle retaining nut (13 mm) on the front of the VV handle (left-hand threaded nut).
- ❸ Unscrew handle from shaft (#5). This may require placing a 10 mm wrench on the shaft immediately behind the VV handle.
- ❹ Place outer nut (#10) in a padded vice and unscrew the body (#7) by placing a wrench on the rear of the body (standard right-hand thread). Remove outer nut from variable body.
- ❺ Remove rear nut set screw (B).
- ❻ Remove rear retaining nut (#3).
- ❼ Remove rear pressure connection (#4) - pulled rearward from the variable volume body (#7).
- ❽ Using a NYLON or WOODEN punch, drift out the piston (#1) and shaft (#5).

IMPORTANT: Use **CAUTION** when performing this operation. The brass cone that has the shaft threaded through it will also come out at the same time. **It is important that the inside of the body is NOT damaged while performing this operation.**

- ❾ Once the piston and shaft have been removed, inspect the inside bore for any damage.

If any scratches are present: It is possible that the body may require replacement.

- ❿ Prior to reassemble, clean all components using solvent.
- ⓫ Inspect the replacement piston for any damage. The piston has been inspected and adjusted for use at the factory. Insure that there are NO sharp edges on any of the outside edges.

If any sharp edges are found: Remove sharp edges as they will cause internal damage of the bore.

REASSEMBLE OF VARIABLE VOLUME

- ❶ Using a heavy or Teflon™ grease, lightly coat the seals of the replacement piston.
- ❷ The following operation is **extremely** critical and **MUST** be performed with care.

If damage occurs to the piston during installation: The piston will render this part unstable.

- Insert the replacement piston (#1) into the end variable volume body (#7) that has the threads on the outside. Insert the seal end first.
- Exact alignment of the piston and bore is critical and will require the use of a press or ram to insert the piston into the bore.
- Press the piston into the body until the open slot is just above the end of the bore.

- ③ Insert the slotted end of the shaft (#5) into the open end of the piston. Continue to press the shaft and piston into the variable volume body until there is sufficient room to thread the brass cone onto the shaft and install the front nut (#6).
- ④ Install the front nut onto the variable volume body. Place the front nut into a padded vice and tighten the body onto the nut.
- ⑤ Install rear pressure connection #4) into rear of the variable volume body. Lightly coat O-ring with a Teflon™ grease. When installing the rear pressure connection, insure the retaining hole is aligned with the set screw (B).
- ⑥ Tighten the rear nut (#3) into the variable volume and tighten.
- ⑦ Install and tighten the set screw that retains the rear seal assembly.
- ⑧ Install handle onto the threaded shaft and secure with a 13 mm retaining nut and washer.
- ⑨ Coat the threaded shaft with a Teflon™ or heavy grease. Operate variable handle in and out several times. Handle should operate with some resistance but should NOT be difficult to operate.
- ⑩ Reinstall variable volume into the unit and perform a pressure test at full system pressure. Position variable volume handle at different depths to check for leaks along bore.
- ⑪ Upon completion of the test, the variable volume should be ready for use.