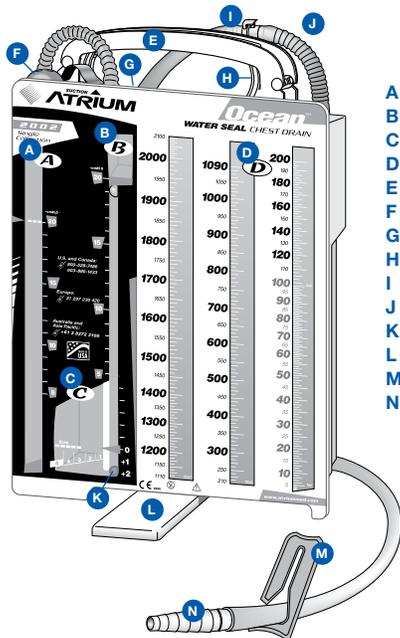


Atrium OCEAN

Water Seal Chest Drain

MAQUET
GETINGE GROUP



- A Suction Control Chamber
- B Water Seal Chamber
- C Air Leak Monitor
- D Collection Chamber
- E Easy-to-Grip Handle
- F Positive Pressure Release Valve
- G Manual High Negativity Vent
- H Multi-position Hangers
- I In-line Connector
- J Needleless Access Port
- K Patient Pressure Float Ball
- L Swing Out Floor Stand
- M Patient Tube Clamp
- N Patient Connector

• Set up

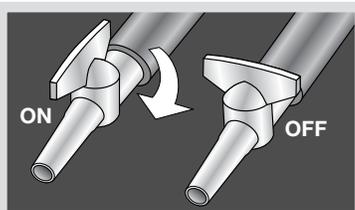
- Step 1. Fill water seal (B) to 2 cm line**
Hold funnel down and fill to the top. Raise funnel to empty water into water seal to 2 cm line.
- Step 2. Fill suction control (A) to desired pressure level**
Remove the tethered vent plug, pour water, and replace vent plug.
- Step 3. Connect chest drain to patient**
Connect chest drain to patient prior to initiating suction.
- Step 4. Connect chest drain to suction**
To apply suction, connect suction source line directly to the suction control stopcock or suction connector provided. Adjust the suction control stopcock or suction control source as needed to increase or decrease suction control bubbling.

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What to check during system operation

• Suction control stopcock

The suction control stopcock regulates vacuum to the chest drain. It provides effective control of suction control bubbling and allows efficient use with any unregulated suction source. The stopcock must be ON for initial system set up and should not be turned OFF during patient use. **During patient transport or when suction is not operating, it is not recommended to turn the stopcock off or to clamp off suction tube.**



• Verifying system operation

Water seal and suction control chambers must be filled and maintained to prescribed levels to ensure proper operation and should be checked regularly when used for extended periods. Water seal should be maintained at 2 cm line and suction control chamber should bubble gently when connected to suction. Adjust stopcock or suction source as needed to increase or decrease suction control bubbling. As required, additional water may be added by a 19 gauge or smaller needle and syringe via the grommet located on the back.

• Placement of unit

Always place chest drain below the patient's chest in an upright position. To avoid accidental knock-over, open the floor stand for secure placement on floor or hang the system bedside with the hangers provided.

• Recording drainage volume

The collection chamber incorporates a writing surface with easy-to-read fluid level graduations. Please refer to individual product inserts for specific model graduations.

• Observing water seal for patient air leaks

When air bubbles are observed going from right to left in the air leak monitor, this will confirm a patient air leak.

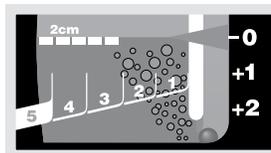
Continuous bubbling

in the water seal air leak monitor will confirm a persistent air leak.

Intermittent bubbling

with float ball oscillation will confirm the presence of an intermittent air leak.

No bubbling with minimal float ball oscillation at bottom of water seal will indicate no air leak is present.



• Graduated air leak monitor

For those models with a graduated air leak monitor, air leak bubbling can range from 1 (low) to 5 (high). Air bubbles create an easy to follow air leak pattern for monitoring patient air leak trends.

• Observing graduated water seal column for changes in patient pressure

Patient pressure can be determined by observing the level of the blue water and small float ball in the graduated water seal column. With suction operating, patient pressure will equal the suction control setting plus the graduated water seal column level only. For gravity drainage (no suction) patient pressure will equal the graduated water seal column level only.

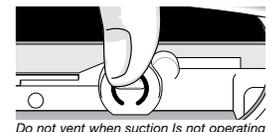
• High negativity float valve

The high negativity float valve, with its controlled release action, enables the thoracic patient to draw as much intrathoracic pressure as is required during each respiratory cycle. During prolonged episodes of extreme negative pressure, the controlled release system will automatically relieve excess vacuum to a lower pressure level.

• Manual high negativity vent

To lower the height of the water seal column or to lower patient pressure when connected to suction, depress the manual vent located on top of the drain until the float valve releases and the water column returns to the desired level.

Do not use manual vent to lower water seal column when suction is not operating or when the patient is on gravity drainage.



Do not vent when suction is not operating

To prescribe suction pressure greater than -20 cmH₂O
Suction pressure greater than -20 cmH₂O can be imposed directly by a graduated wall regulator or portable pump by taping over the vent-plug with non-porous tape and reading vacuum pressure directly from regulator or pump. **Vacuum pressures greater than -40 mmHg are not recommended.**

• Sampling patient drainage

Sampling of patient drainage must be in accordance with approved hospital infection control standards. Selected models include a needleless Luer port on the patient tube connector for sampling patient drainage. Alcohol swab the Luer port prior to syringe attachment (no needle). Fluid samples can also be taken directly from the patient tube by forming a temporary dependent loop and inserting a 19 gauge needle at an oblique angle. Alcohol swab the patient tube prior to inserting syringe at a shallow angle. **Do not puncture patient tube with an 18 gauge or larger needle.**

• Positive pressure protection

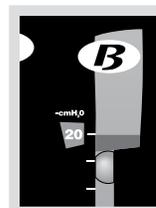
The positive pressure release valve, located on top of drain, opens to release accumulated positive pressure. **Do not obstruct the positive pressure release valve.**

• System disconnection

For models equipped with an in-line connector, **close patient tube clamp prior to disconnecting** chest drain patient tube from patient. Clamp off all indwelling thoracic catheters prior to disconnecting chest drain from patient.

• System disposal

Disposal of chest drain and its contents should be in accordance with all applicable regulations.



Troubleshooting

What happens when:

• There is no bubbling in the suction control chamber?

Check to be sure the suction tubing is connected to the chest drain and to the wall regulator and the suction source is turned on. Adjusting the suction control stopcock is required for constant gentle bubbling.

• There is vigorous bubbling in the suction control chamber?

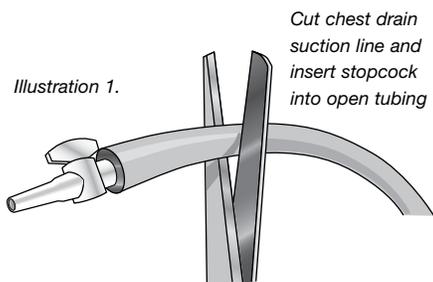
Vigorous bubbling causes quicker evaporation and produces excessive noise. Constant, gentle bubbling is all that is required to impose the prescribed amount of suction. The suction control stopcock, located on the suction tubing, can be used to adjust bubbling. The suction source regulator can also be adjusted to turn suction control bubbling up or down.

Should the suction control stopcock be turned off for gravity drainage or for patient transport?

No. The patient is protected two ways; first by the one-way valve created by the water seal to maintain the desired patient vacuum pressure, and second, the patient is protected by the integral positive pressure valve in the event the stopcock is turned off. It is not necessary to turn off the stopcock, clamp, or cap the suction line during gravity drainage or patient transport. Both the water seal and the positive pressure valve provide patient protection when either the suction line or stopcock remain open or closed.

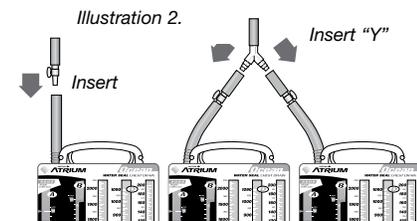
How can I connect multiple chest drains to one suction source easily?

With models equipped with a suction control stopcock, connection of two or more chest drains to a common suction source is made easier. Place a 1/4" x 1/4" x 1/4" Y connector on the wall suction tubing.



Cut the drain suction tubing where indicated in *Illustration 1*. Now invert the cut sections of suction tubing as shown in *Illustration 2* and insert them into the suction tubing remaining on the chest drain.

Now you have two open ends of suction line tubing for the Y connector to be placed. Turn on suction and adjust the suction control stopcock on each drain to achieve constant, gentle bubbling with each.



How do I confirm my patient has an air leak when there is:

• No bubbling in the water seal?

If there are *no air bubbles observed going from right to left in the air leak monitor*, there is **no patient air leak**. In order to confirm that your patient's chest catheter(s) are patent, temporarily turn suction off and check for oscillation of the patient pressure float ball in the water seal column coinciding with patient respiration.

• Bubbling present in the water seal?

Whenever *constant or intermittent bubbling* is present in the water seal air leak monitor, this will **confirm an air leak is present**. Oscillation of the patient pressure float ball at the bottom of the water seal *without bubbling will indicate no apparent air leak*. Bubbling from right to left must be present to confirm an air leak. To determine the source of the air leak (patient or catheter connection), momentarily clamp the patient tube close to the chest drain and observe the water seal. If bubbling stops, the air leak may be from the catheter connections or the patient's chest. Check the catheter connectors and patient dressing for a partially withdrawn catheter. If bubbling continues after temporarily clamping the patient tube, this will indicate a system air leak requiring system replacement.

If the chest drainage system has been knocked over, can I use it and what should I do?

After a chest drainage system has been knocked over, set it upright and immediately check the fluid levels of the water seal and suction control chambers for proper volumes. We provide convenient diaphragms for access with a 20 gauge or smaller needle and syringe to adjust the water level in each chamber, if required. Alcohol swab the needle access area and aspirate any overflow that may have occurred. If the water seal has an inadequate fluid level, simply replace the lost volume. If a significant amount of blood has entered the water seal, it may be advisable to change the system for a new one.

How do I lower the water seal column?

Changes in your patient's pressure will be reflected by the height of the water in the water seal column. These changes are usually due to mechanical means such as milking or stripping patient drainage tubes, or simply by deep inspiration by your patient after all air leaks have subsided. If desired, the height of the water column and patient pressure can be reduced by temporarily depressing the *filtered manual vent*, located on top of the drain, *until the float valve releases* and the water column lowers to the desired level. Do not lower water seal column when suction is not operating or when patient is on gravity drainage.

Is it normal for the patient pressure float ball to fluctuate up and down (tidal) near the bottom of the water seal column?

Yes. Once your patient's air leak is resolved, you will generally observe moderate tidaling in the water seal column. Increases in intrathoracic pressure will cause the water level to rise (the ball rises) during patient inspiration and will lower or decrease (the ball drops) during expiration. This diagnostic tool will help to confirm patency of your patient's catheter(s). Minor "bouncing" of the water seal level can also be caused by vigorous bubbling of the suction control chamber. To accurately assess patient catheter patency, momentarily occlude suction to stop the suction control chamber bubbling and observe the water seal's physiological response.

How do I dispose of the system?

Disposal of chest drain and its contents should be in accordance with all applicable regulations.

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