

<p>Relief valve Observation A weak but audible hissing sound originating from the pressure relief valve. Explanation The pressure relief valve controls the operating pressure of the unit. As the liquid nitrogen in the bottle is kept at its boiling point, the liquid nitrogen will constantly evaporate for as long as there is still liquefied gas in the bottle. This evaporation leads to internal pressure build-up, which is kept at a constant and safe level by the pressure relief valve. Once the internal operating pressure is reached (within a few minutes after filling the unit), the pressure relief valve will vent (“leak”) excess pressure, which is associated with a weak and hissing sound. Fix None! The sound is normal and presents no problem.</p>	<p>Cold spot Observation After some time, a “cold spot” develops on the bottle. The liquid nitrogen evaporates faster than normal, and the pressure relief valve may sound louder than normal. Explanation A “cold spot” indicates direct thermic contact between the inner and outer bottle. It may be the result of mechanical damage (visible or invisible). Pressure relief valve OK. Fix Bottle replacement necessary.</p>
<p>Vacuum Observation The bottle gets cold and frosts over. An excessive amount of gas escapes from the pressure relief valve, which is associated with a hissing sound louder than normal. The unit empties itself quickly. Explanation The vacuum in the bottle has deteriorated. Pressure relief valve OK. Fix Bottle replacement necessary.</p>	<p>Condensation on top cover Observation The top cover gets covered with condensation – sometimes to an extent where water starts dripping from the top. Explanation Condensation develops as the result of a cold top cover and high humidity and temperature in the room. <u>It cannot be eliminated</u> but varies according to environmental conditions and the filling level of the unit. Fix As such condensation is <u>normal</u> and presents no problem other than the discomfort caused by dripping. Excess water may be occasionally wiped off, and in addition condensation may be reduced by avoiding overfilling of the unit. A filling level not exceeding 80-90% of the max. capacity leaves an insulating air space between the liquid nitrogen and the top cover, which may help to reduce condensation.</p>
<p>Spray Observation Intermittent spray function. Explanation On its way from the bottle to the spray aperture the liquid nitrogen boils violently. For small apertures (size C and D) this will cause an intermittent spray (“spitting”), however, it will not have any adverse effect on the treatment. In Apertures A and B this phenomenon will hardly be noticeable. Fix None! “Spitting” is normal and presents no problem.</p>	<p>Clogged tips Observation No or restricted spray function. An extremely powerful spray will be noticed when removing the spray aperture and pulling the trigger. Explanation Spray apertures may clog – the smaller one’s C and D more easily than A and B. Clogging is a result of impurities or ice crystals accumulating in the storage tank or in the bottle itself. Fix A spray tip <i>Cleaning Adapter</i> is part of the standard kit of accessories. Follow enclosed instructions. Prevention - Clean the CryoPro can: fill it with warm water and a few drops of dish soap, clean with a soft brush, empty and dry the bottle thoroughly. - Do not leave the CryoPro open when empty. Leave the top on. - Clean the storage tank regularly: empty it completely before refilling. Use a vacuum cleaner for 20 – 30 min. to create air circulation in the empty tank to dry out water from melting ice crystals (the hose should be positioned approx. half ways into the tank).</p>
<p>Clogged main valve Observation No or restricted spray function. No or restricted spray will be noticed when removing the spray aperture and pulling the trigger. OBS! Lift the top of the pressure relief valve to distinguish between a clogged main valve and loss of pressure (see below). The valve freezes up and sticks open (leaks). Explanation Clogging of the main valve is a result of contamination of the storage tank or the bottle itself. 1) Would normally be caused by and accumulation of impurities or ice crystals. 2) strongly indicates water/ice in the valve.</p>	<p>No pressure Observation No spray function. No spray will be noticed when removing the spray aperture and pulling the trigger. OBS! Lift the top of the pressure relief valve to distinguish between a clogged main valve (see above) and loss of pressure. Explanation Pressure loss may be caused by 1) a missing gasket in the top cover or 2) manipulation of the locked adjustment screw in the pressure relief valve (requires a wrench, a screwdriver and application of excessive force. May be indicated by tool marks on the brass top). Fix 1) Inspect the top cover. Request a replacement gasket if the red silicone gasket inside the cover is missing. Return for repair.</p>

<p>Fix Return the unit for thorough cleaning of the main valve.</p> <p>Prevention - Clean the CryoPro can: fill it with warm water and a few drops of dish soap, clean with a soft brush, empty and dry the bottle thoroughly. Do not leave the CryoPro open when empty. Leave the top on. Clean the storage tank regularly: empty it completely before refilling. Use a vacuum cleaner for 20 – 30 min. to create air circulation in the empty tank to dry out water from melting ice crystals (the hose should be positioned approx. half ways into the tank).</p>	
<p>Impaired Trigger Action</p> <p>Observation The trigger action is no longer smooth. Pulling the trigger is “noisy”.</p> <p>Explanation The valve stem has become “dry”.</p> <p>Fix Lubricate the valve stem with a tiny drop of silicone oil or WD 40. Apply the oil between the valve stem and the valve housing right under the trigger handle. Activate and turn the trigger handle several times after application to distribute the oil. OBS! Do not apply more than a tiny drop of oil. An excessive amount of oil may cause the valve to freeze up and stick open.</p>	<p>Mounting of Top Cover</p> <p>Observation The top cover has become difficult and “noisy” to turn and tighten.</p> <p>Explanation Over time the brass thread on the bottle may become dry.</p> <p>Fix Lubricate with a few drops of silicone oil or WD 40.</p>
<p>How to open/refill a pressurised Unit</p> <p>Observation The unit is empty and needs to be refilled while pressurised.</p> <p>Fix Unscrew the top cover ccw. one half turn. Wait ½ - 1 minute for the bottle to depressurize, then fully unscrew the top. Refill and remount the top.</p>	<p>The withdrawal tube does not work</p> <p>Observation There is no flow of liquid through the filter.</p> <p>Explanation</p> <ol style="list-style-type: none"> 1) The filter is clogged by impurities and/or water. 2) The container is not pressurized. Follow the instruction manual carefully. It is important not to release the pressure during the filling process. The operation of the device is based on a passive and physical principle, and internal pressure builds upon insertion of the tube into the tank as the materials cool down provided that the top is sealed off by the rubber handle. <p>Fix</p> <ol style="list-style-type: none"> 1) Replace the filter using a normal wrench. At the same time, we advise to clean the storage container: empty it completely before refilling. Use a vacuum cleaner for 20 – 30 min. to create air circulation in the empty tank to dry out water from melting ice crystals (the hose should be positioned approx. half ways into the tank). 2) Insert the “warm” tube fully into the tank. Immediately press the rubber handle firmly against the Dewar neck while holding the treatment unit under the filter. Liquid nitrogen will flow instantly. Keep pressing the rubber handle – do not release the pressure until the CryoPro unit is full. <p>Remove the withdrawal tube when finished to let it warm up before next use.</p>
<p>Dewar Vacuum</p> <p>Observation The Dewar gets very cold. The Dewar empties itself quickly.</p> <p>Explanation The vacuum in the Dewar has deteriorated.</p> <p>Fix None! The Dewar needs to be replaced.</p>	<p>Dewar Cold Spot</p> <p>Observation After some time, a “cold spot” develops on the Dewar. The liquid nitrogen evaporates faster than normal.</p> <p>Explanation A “cold spot” indicates direct thermic contact between the inner and outer container. It may be the result of mechanical damage (visible or invisible).</p> <p>Fix None! The Dewar needs to be replaced.</p>

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