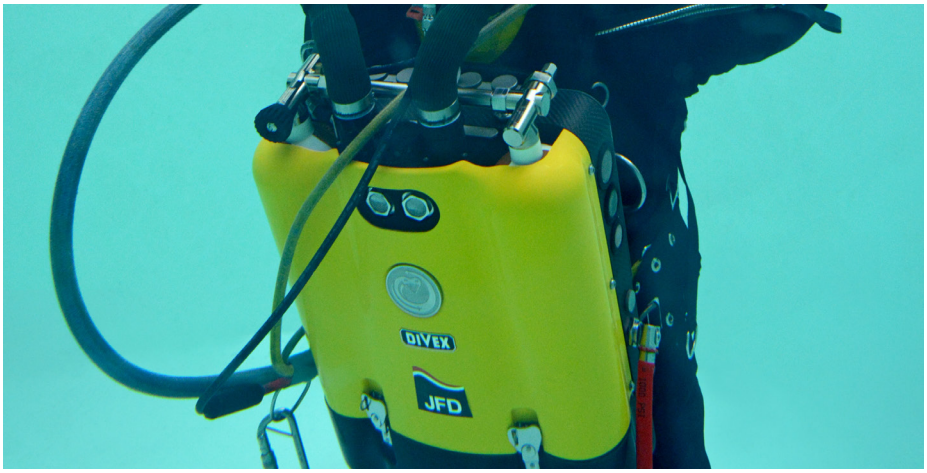
COBRA Guidance Note

Background

Some users have been reporting bulging of the COBRA demand valve diaphragm alongside difficulty setting the positive pressure.



ISSUE

Users have reported various issues around setting the positive pressure on the COBRA backpack.

1. Bulging or Distortion of diaphragm
2. Difficulty in setting positive pressure
3. Seemingly achieving a stable positive pressure, which then suddenly increases, sometimes with an audible popping noise

SOLUTION

1. Firstly, it is necessary to determine whether the diaphragm is actually bulging or merely sitting asymmetrically. Bulging is defined as having any protrusion beyond the shape developed by the diaphragm when the set is in standby mode and gas is venting from the external relief valves (due to lightly purging the demand valve). If any bulging is evident, the diaphragm must be replaced.

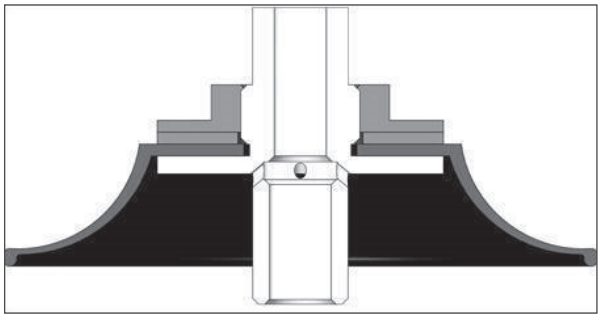


Figure 1 - Diaphragm Resting Shape

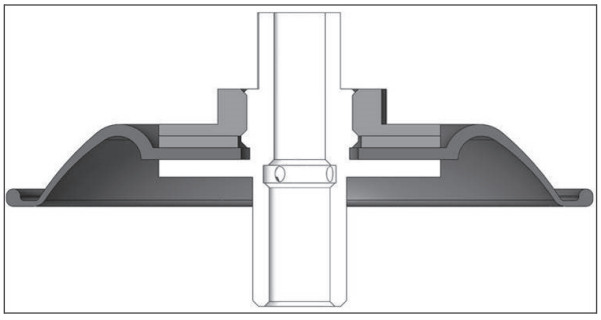


Figure 2 - Diaphragm Fully Convex Shape
(at relief valve pressure)

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If the diaphragm is sitting asymmetrically, this is not a problem in its own right. If a stable positive pressure can be achieved, it is perfectly acceptable to use the COBRA set. In use, the diaphragm is clamped at the circumference and pulled down in the centre. Depending on the inherent stiffness of the individual diaphragm, the positive pressure acting on the underside of the diaphragm may or may not be sufficient to cause the flexible section of the diaphragm between the edge and the centre to adopt a fully convex shape.

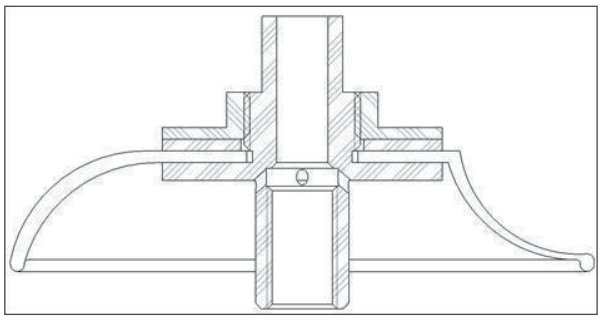

Figure 3 - Acceptable Asymmetric Shape

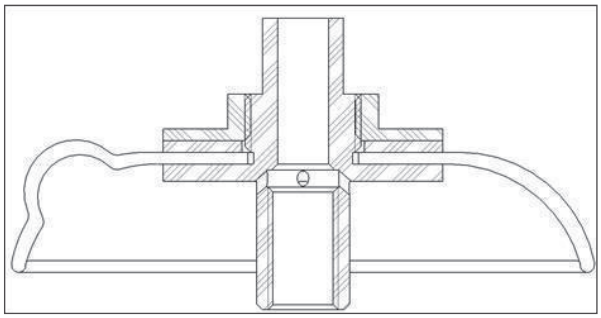

Figure 4 - Unacceptable Asymmetric Shape

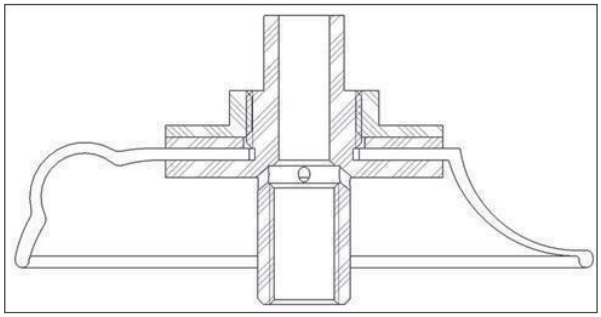

Figure 5 - Unacceptable Asymmetric Shape

2. This is unlikely to be as a result of an asymmetrical diaphragm (as described above). Users should investigate the normal causes of unstable positive pressure e.g. demand lever position, valve seat, positive pressure rod and spring etc.

3. Although JFD has observed this effect, we have not managed to recreate it at JFD sufficiently often to perform a full investigation. This effect could be related to overtightening (or previous overtightening) of the diaphragm retaining ring. JFD recommends replacing the diaphragm if this effect is observed.

In all cases JFD now recommend a torque of 8-10 in-lbs for the diaphragm retaining ring.

The existing tightening tool (DB5002586) for the retaining ring can be modified by drilling and tapping a hole in the opposite end and screwing in an appropriate bolt. A standard tool can then be used to apply the correct torque.

Contact:

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