



Leak Detection

Product information /
Process description

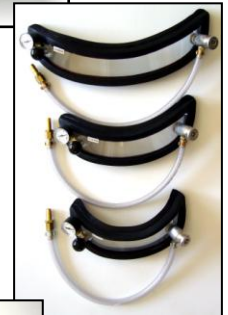
Leak Detection with VSP-leak detection units and vacuum boxes

General

Using the bubble test procedure according to EN 1593, vacuum leak detection units of the VSP series allow a fast and safe leak testing of the welding seams of containers, pipes and many other welded structures. With this test method even castings can be checked for through-going discontinuities (leaks, porosity).

The leak detection method with VSP-units is used e.g. prior to a compression test. They are also used instead of a compression test if the latter can be executed only with unrealistically high effort or if the compression test gives only limited satisfying results (e.g. when testing parts which are thin-walled compared to its measurements).

VSP leak detection units and vacuum boxes are used for leak testing especially in cases when the test piece is accessible only from one side or if it is an open construction (such as the bottom of tanks or collecting basins).



Procedure

When using VSP-units, the area to be tested (the welding seam or the casting surface) is moistened with a foam-forming inspection material. Suitable materials are aqueous solutions as used for testing of compressed air and/or gas equipment, like e.g. **MR[®] 99 Leak detection spray**. Soap water should not be used for leak detection.

Then the area is covered with a vacuum box adapted to the test area. The vacuum box is connected to the leak detection unit by a vacuum hose and is evacuated in seconds when the valve is pressed.

Under the inspection glass of the evacuated vacuum box a through-going discontinuity is made visible by foam building. This method allows easy location of possible leakages to be corrected or repaired.

Under practical test conditions, the realizable leak detection limit of the bubble test procedure lies approx. between 10^{-5} and 10^{-4} Pa·m³/s (10^{-4} to 10^{-3} mbar·l/s). To ensure that even tiny leaks become visible the vacuum under the box must be maintained for at least 30 s.



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VSP-Leak detection units



Technical description:

VSP-Leak detection units have proven their worth especially because of their robust structure and suitability for use on construction sites. They offer tailor-made solutions adjusted to the customer's requirements and fields of application.

Low maintenance, self-lubricating vacuum pumps with a suction power approx. 8 or 10 m³/h built in a stable welded steel tube framework with two carrying handles, equipped with vacuum meter, vacuum regulation valve, air filter, dirt filter, water separator, splash-proof protective motor switch as well as 3 m cable.

If needed, we also deliver oil-lubricated or maintenance-free vacuum pumps for special needs up to 63 m³/h.

Order-No. 500... (see price list)

VSP-Vacuum boxes

consist of an approx. 100 mm wide break-proof sight glass made of highly transparent, flexible polycarbonate which is equipped with a special soft rubber seal.

The vacuum box is evacuated by a freely swivelling valve which seals in any orientation. The valve has a conical adapter for the 1/2" vacuum hose. We also deliver connection couplings instead of the conical adapter if required.

All VSP-vacuum boxes are equipped with a vacuum meter to avoid misinterpretation due to a wrong testing vacuum.

Economic length lies between 500 and 750 mm. Other lengths are available on request.



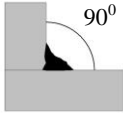
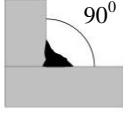
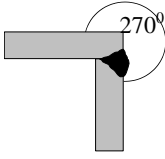
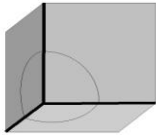





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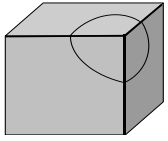
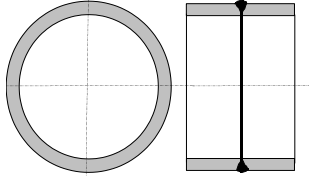
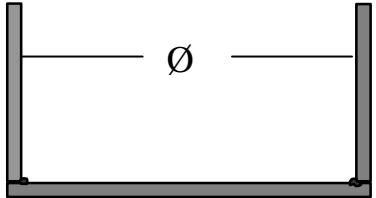
Types of VSP-Vacuum boxes and the kind of seams that can be tested:

<p>Butt seam vacuum box Economic length lies between 500 and 750 mm. Order-No. 510... (see price list)</p>	
<p>Overlap fillet weld vacuum box Economic length lies between 500 and 750 mm. Step height 6 mm for plate thickness approx. 3-9 mm Step height 8 mm for plate thickness approx. 5-11 mm Step height 10 mm for plate thickness approx. 7-13 mm Order-No. 520... (see price list)</p>	
<p>90° Fillet weld vacuum box (straight design for box shaped containers) Economic length lies between 500 and 600 mm. Order-No. 530... (see price list)</p>	
<p>Miniature 90° Fillet weld vacuum box incl. reducing adapter (straight design for box shaped containers) Special design for testing the 90° edges of collecting basins according to the German „GefStoffVO“ for dangerous liquids (for basin heights from approx. 40 mm) Order-No. 530... (see price list)</p>	
<p>270° Fillet weld vacuum box Roof-like construction with rounded edges for testing the outer 90° edge Order-No. 540... (see price list)</p>	
<p>3x90° Edge weld vacuum box For testing the inner 3x90° edge seams Order-No. 550... (see price list)</p>	
<p>Miniature 3x90° Edge weld vacuum box incl. reducing adapter Special design for testing the inner 90° edges of collecting basins according to the German „GefStoffVO“ for dangerous liquids (for basin heights from approx. 40 mm) Order-No. 550... (see price list)</p>	



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Product information /
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<p>3x270° Edge weld vacuum box</p> <p>For testing the outer 3x270° edge seams Order-No. 560... (see price list)</p>	
<p>Vacuum boxes for testing butt welded circumferential seams</p> <p>In the miniature-version the sight glass preformed at nominal size covers two diameter ranges; i.e. it is expansible to the next higher diameter range.</p> <p>(Miniature-) Circumferential seam vacuum box (DN25-DN80) Circumferential seam vacuum box (DN100-DN1600) Order-No. 570... (see price list)</p>	
<p>Vacuum boxes for testing circumferential fillet welds</p> <p>The vacuum boxes are tailor-made for the resp. container diameter at an economical length of 500 – 750 mm.</p> <p>90° Circumferential fillet welds vacuum box (D= 2.250 mm - D= 15.000 mm) Order-No. 580... (see price list)</p>	
<p>Vacuum boxes for special test requirements</p> <p>Round vacuum boxes Square and angular vacuum boxes with rounded edges Order-No. 59... (see price list)</p>	
<p>Highly flexible, special vacuum boxes</p> <p>Vacuum boxes with an extremely highly flexible sight glass for adaptation to geometries with curved surfaces with more than one curvature axes, measurements approx. 100 x 150 mm and bigger.</p>	
<p>Specially designed vacuum boxes</p> <p>For many test requirements which are not mentioned here, e.g. for leak testing of overlapping round seams (sleeves), connecting piece seams and many other special geometries, vacuum boxes have already been designed, or may be designed according to a sample or drawing.</p>	

Interested? Then send us your detailed inquiry, including drawings of the test pieces so that we can tailor make our product for your purposes.



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MR[®] 99 Leak detector

for leak detection with the bubble test procedure acc. to EN 1593

General appearance and composition:

- MR[®] 99 Leak detector is suitable for finding smallest leaks in all objects which are under gas or air pressure resp. when using a vacuum box.
- Once applied, the foam creates bubbles wherever leaks may be.
- MR[®] 99 Leak detector is suitable for testing gas fittings, pipe systems, pressure vessels, etc.
- Processing temperature 0 – 50 °C

Relevant approvals and specifications

- DVGW-certificate available on request.

Application:

- Contaminations like fat, rust, slag etc. should be removed from the testing area because surface contaminations can create or cover bubbles and cause wrong indications.
- Spray MR[®] 99 Leak detector on the testing area from a distance of approx. 30 cm.
- Cover the area with a vacuum box and evacuate.
- Under the inspection glass of the evacuated vacuum box foam shows up where air flows through continuous discontinuities. To ensure that even tiny leaks become visible the vacuum under the box must be maintained for at least 30 s.
- After inspection, MR[®] 99 Leak detection spray can - if necessary - be removed from the surface with water.

Minimum shelf life:

- Stored at room temperature, will keep for a minimum of aerosols: 4 years
solution and concentrate: 1 year

Pack sizes:

- MR[®] 99 Leak detector, aerosols, 400 ml contents (1 box = 12 aerosols)
- MR[®] 99 Leak detector, solution ready for use in 10 L bulks
- MR[®] 99 A Leak detector, concentrate, in 10 L bulks (dilute 1:10 in water)