



## Bonding of flanges/counter flanges (Titanium) and VITROVEX glass Bonding of VITROVEX glass parts

### Required tools and accessories

*P/N BONDINGSET W. APPLICATOR* or *P/N BONDINGSET W/O APPLICATOR*

- glue applicator
- mixing tube
- dispensing needles (0.84 mm, 1.37 mm)



- adhesive
  - 3M™ Scotch-Weld™ Epoxy Adhesive DP460 (toughened, two-part epoxy)
  - See link below for further product information  
[http://solutions.3m.com/wps/portal/3M/en\\_US/3M-Industrial/Adhesives/Product/Catalog/Detail/?PC\\_7\\_RJH9U5230\\_GJJ60IS8FSO6Q3GD3000000\\_nid=8X2JPTHH9Nbe7ZMZSJBQR\\_Hgl](http://solutions.3m.com/wps/portal/3M/en_US/3M-Industrial/Adhesives/Product/Catalog/Detail/?PC_7_RJH9U5230_GJJ60IS8FSO6Q3GD3000000_nid=8X2JPTHH9Nbe7ZMZSJBQR_Hgl)



### Consumables

- cleaning agent ( Acetone, Isopropanol)
- lint-free soft cleaning cloths
- adhesive strips to fix glass within flange e.g. tooth picks



## **Before you start:**

Make sure that a) the bonding material is not expired and b) the clearance between the glass and flange is between 0.3mm and 0.4mm, i.e. an inner diameter of 115mm for a flange would work fine for a dome with an outer diameter of 114.2mm.

## **Procedure:**

Ensure you bonding surfaces are perfectly even and for ideal bonding, the metal and glass surfaces to be joined must be clean and dry (to clean and degrease use cleaning agent and cleaning cloths). If you bond metal and glass we recommend applying the bonding compound to the metal part.

Insert the Scotch-Weld™ epoxy adhesive DP460 into the glue applicator; attach the mixing tube as well as the applicable dispensing needle and force approx. 1" of bonding compound out to ensure a good mixture.

Apply bonding compound to one side of the sealing surfaces (if possible onto the flange) in the amount according to the size of the bonding area. Preferably this should be done on a firm and level surface. A rotary disk/plate has been proved an ideal solution for this matter since the feed rate would be easy to regulate. The determination of the amount of adhesive requires practical experiences and varies with the type of glass hemisphere. As a rule of thumb, we advise to use slightly more rather than too little adhesive.

Let the bonding compound set for approx. 15 minutes and then bring the surfaces together by just lowering the glass hemisphere evenly on top of the flange. The deadweight of the glass hemisphere determines the amount of adhesive that will remain underneath as any excess adhesive will be squeezed out on both sides. Such remains should be wiped away instantly (Until fully set Scotch-Weld™ DP460 can be removed/cut at a later stage also. However, it then requires more efforts to achieve the same appearance).

Please note: It is paramount that no voids remain between flange and glass surface after the glass hemisphere has been bedded onto the adhesive in order to avoid unequal stress distribution when it's used into the sea.

It is advisable to fix the joined surfaces (e.g. by means of adhesive strips) since the bonding compound has a very low viscosity at the beginning and could cause the parts to move slightly from its desired position.

Within the next 60 to 70 minutes small adjustments can still be done until all parts a finally set after 24 hours (at room temperature).