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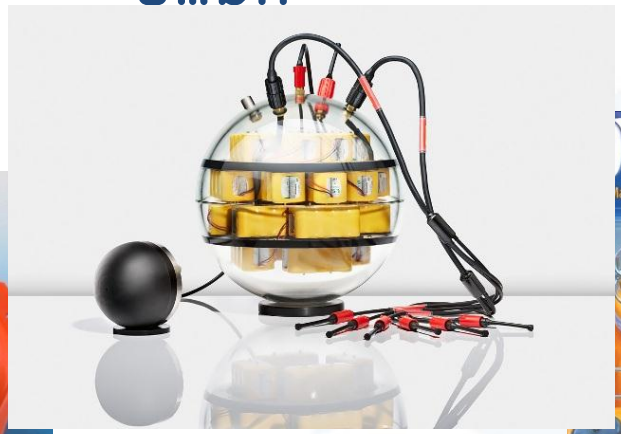
Nautilus Marine Service GmbH

based



Manufacture of

VITROVEX® glass products

used as pressure resistant housings and floatations

to bring marine instruments safely back to surface.

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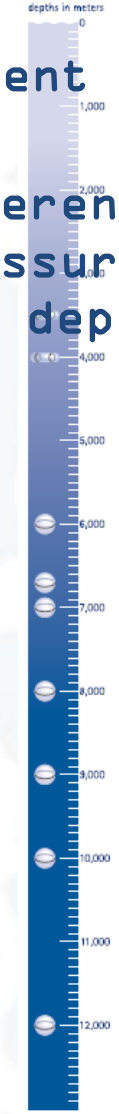
VITROVEX®

flotation and instrument housings

are available in different shapes, sizes and pressure ratings to full ocean depth.



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Product line and standard features

Floatation spheres

sealed during fabrication, not opened during lifetime

Standard configuration: 2 x hemispheres
1 x protective shell
evacuated, assembled, packed

Available sizes: 13" and 17"

Depth rating: 6700m, 7000m, 9000m, 12000m

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Product line and standard features

Instrument spheres

to be opened and closed frequently.

Standard configuration: 2 x hemispheres
1 x protective shell
1 x vacuum port
(installed) with
accompanying drill hole
evacuated, assembled,
packed

Available sizes: 3",
7.5", 13" and 17" (*)

Depth rating: 6000m
to 12000m

Instrument spheres requi
drill hole specification
by customer.

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Product line and standard features

Tubes

to be opened and closed frequently, various configurations

Standard configuration: 2 x hemispheres
1 x cylinder
1 x vacuum port
(installed) with
accompanying drill hole
evacuated, assembled, packed

Available sizes: 4.5", 5"
(max. length of 1500mm)
6.5"
(max. length of 1000mm)

Depth rating: dependent on length

Tubes require drill hole specification by customer.

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Services and accessories

Connectors (bulkheads)

Connectors of any major supplier supported

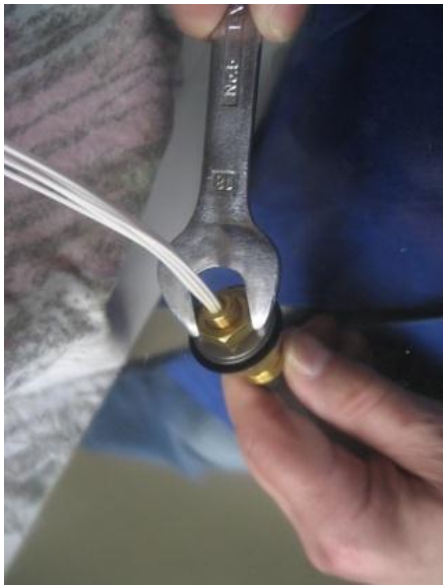
- Installation with adaptor plates recommended

- Thread length has to be between 30mm

Services and accessories

Connectors (bulkheads)

- Do not tighten the connector too strong but tough enough to avoid any movement during deployment/re-deployment.



Tighten the nut with low force until all surfaces have a good contact and the o-rings are compressed. Then turn the nut additionally 180° (for 7/16" - 20 UNEF) or 240° (for 7/8" - 20 UNEF) respectively to compress the disc spring.

Customers who applied a torque of 14 Nm have also made good experiences to fix the connector.

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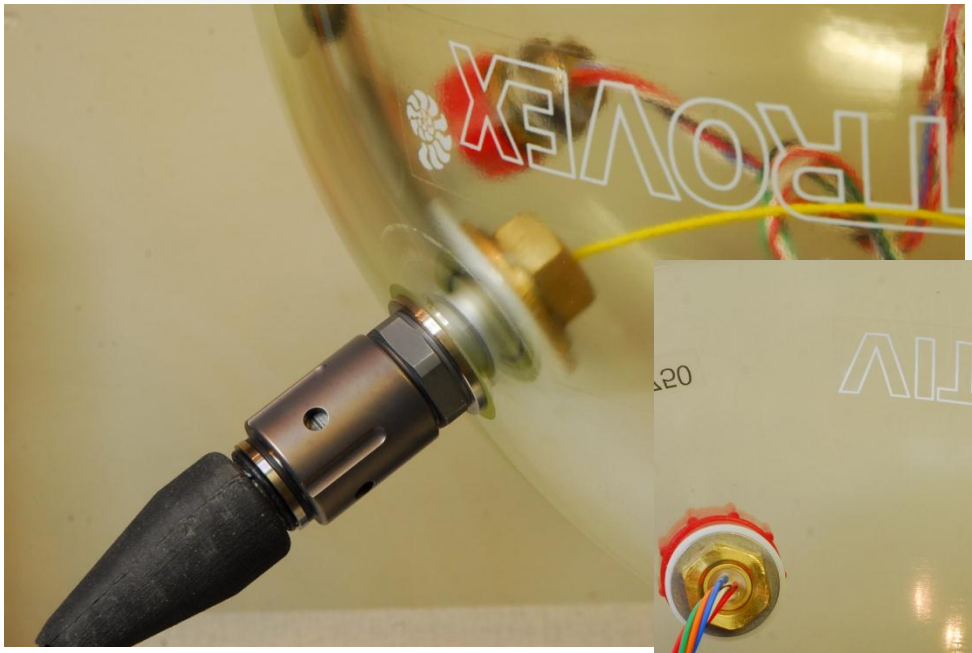
Services and accessories

LEK fiber connector for camera application



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Services and accessories

Optical polishing and optical glass

- 13" and 17" hemispheres can be polished
- Hemispheres smaller than 13" can be made of optical

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Technical Progress and Improvements

- ✓ Long-term tests of new adapter plates
- ✓ Instrument housing cycles tests to full ocean depth in order to verify the glass quality
- ✓ From standard to high accuracy drill holes

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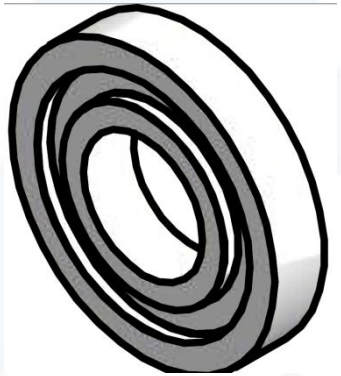
New adapter plates

The Woods Hole Oceanographic Institution OBS lab lead by John Collins tested new DELRIN adapter plates during 12 month operation time

- vacuum port penetrator adapter
- small and large penetrator adapters



"We now are saying that the o-ring adapters solve the problem" (Ken Peal, 2011)

(a paper, probably for an IEEE Oceans

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13" instrument housing cycle tests done by the University of California

- 40 cycles per day
- Rapid cycling, assuming that is the hardest on the spheres
- To a maximum of 500
- A total of 200 cycle

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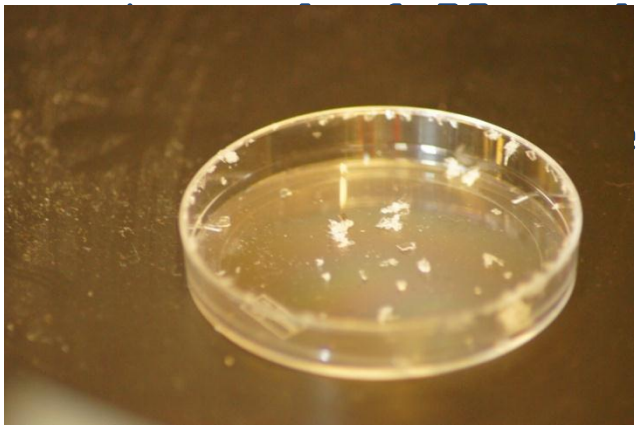
13" instrument housing cycle tests done by the University of California

- Instrument housings were inspected after every 10 cycles
- A minimum of glass spalling were observed during each inspection



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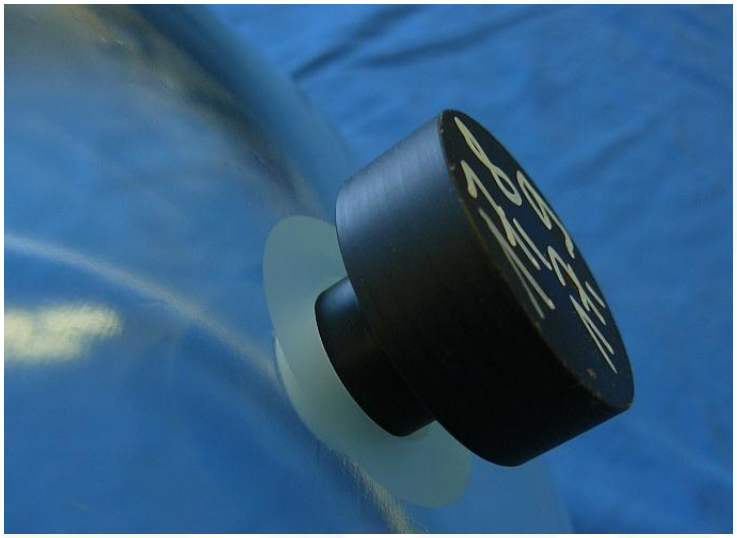
High accuracy drill holes

standard (±0.2mm) and tight tolerances (±0.1mm) available.



Quality check with measuring gauges made of non metallic material

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Ideas

- Digital vacuum online registration
- Numeric code online identification
- New vacuum port
- ….