



VITROVEX® – glass floatation housings

For deep ocean explorations to 12,000 meters



VITROVEX® glass floatation housings

made by Nautilus Marine Service are pressure resistant glass casings to provide buoyancy for deep ocean research applications.

Nautilus Marine Service provides VITROVEX® high quality glass instrument housings in different shapes, sizes and pressure ratings to full ocean depth along with associated services and accessories.



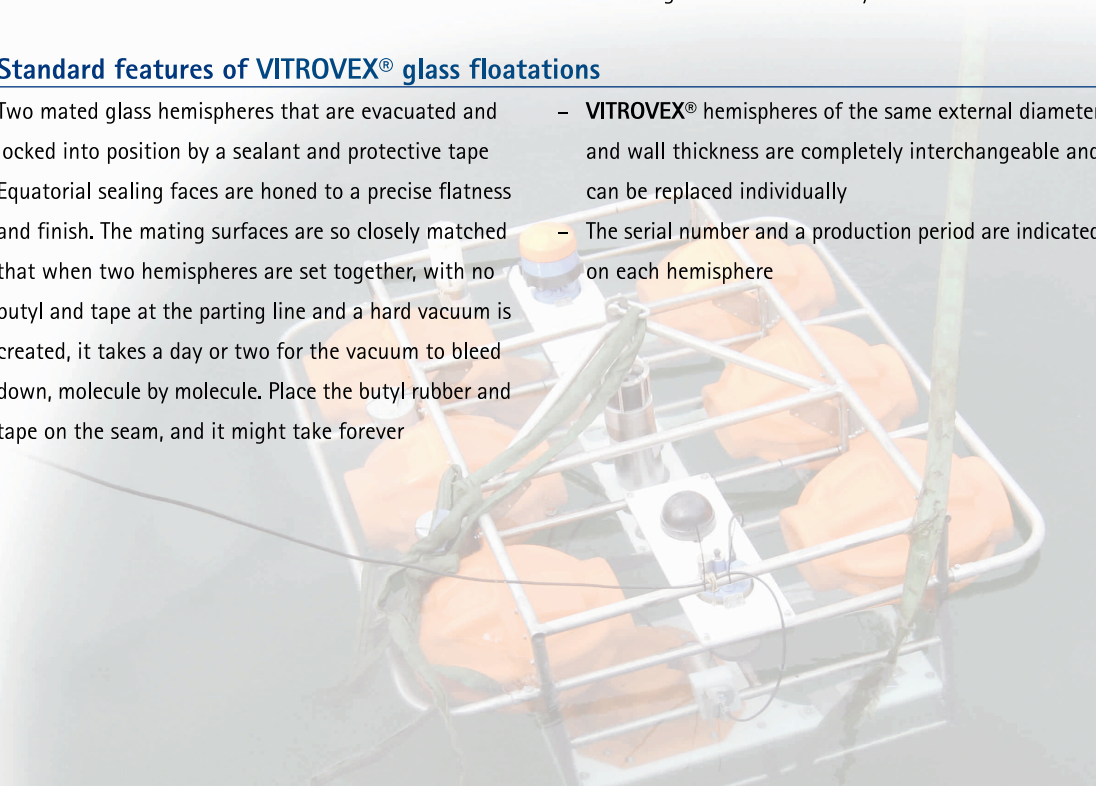
■ Advantages of VITROVEX® glass floatations

All stationary and autonomous instrumentation for observational activities in ocean research have two things in common, they need pressure-resistant housings and buoyancy to bring instruments safely back to the surface. The growing use of VITROVEX® glass spheres as an ideal solution for such requirements is a direct result of the following properties when compared to other products and materials:

- Immense strength to weight ratio
- Resistant to breaking (low thermal expansion coefficient)
- Remarkable transparency and clarity with smooth, pore-free surface
- Inherently inexpensive
- Corrosion resistant, non-polluting and ecologically acceptable
- Non-magnetic and electrically non-conductive

■ Standard features of VITROVEX® glass floatations

- Two mated glass hemispheres that are evacuated and locked into position by a sealant and protective tape
- Equatorial sealing faces are honed to a precise flatness and finish. The mating surfaces are so closely matched that when two hemispheres are set together, with no butyl and tape at the parting line and a hard vacuum is created, it takes a day or two for the vacuum to bleed down, molecule by molecule. Place the butyl rubber and tape on the seam, and it might take forever
- VITROVEX® hemispheres of the same external diameter and wall thickness are completely interchangeable and can be replaced individually
- The serial number and a production period are indicated on each hemisphere





Optional features of VITROVEX® floatations

- Protective shells are available for VITROVEX® glass spheres in smooth or ribbed design and bright orange colour. They can be used to assist mounting and retention or just as protection for the sphere. Protective shells are neutrally buoyant and made of polyethylene
- Pressure test prior to shipment to guarantee reliability during operation
- Manometer to monitor vacuum
- Fittings to attach buoyancy sets to mooring lines

Sphere attachment sets for VITROVEX® floatations

Sphere attachment sets, which were originally developed by the German Alfred-Wegener-Institute for Polar and Marine Research, are available to simplify mounting of VITROVEX® glass floats to mooring lines. They accommodate up to five VITROVEX® 17" floatation spheres and they are composed of neutrally buoyant and seawater resistant EDDYROPE or KINGROPE and swivelling mounting brackets EDDYGRIP or KINGGRIP.

EDDYROPE and KINGROPE are specially braided fibre ropes with a diameter of 10 mm and 16 mm and a breaking strength of 5.1 t and 12 t respectively. The ropes are splice terminated with a reinforced thimble and stopper at each end. The stoppers absorb weight and uplift.

EDDYGRIP and KINGGRIP are swivelling sphere attachment brackets which are bolted to the protective shell in order to affix the VITROVEX® glass floats onto the EDDYROPE or KINGROPE line segment.

Glass properties of VITROVEX®

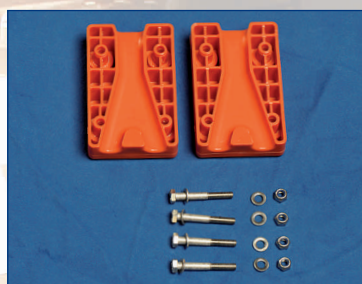
VITROVEX® spheres are made of borosilicate glass 3.3 with standardized physical, chemical, electrical, and optical properties, also well known as DURAN®. Borosilicate glass has a very high physical strength and very low thermal expansion coefficient, about one third that of ordinary glass. This reduces material stresses caused by pressure and temperature gradients, thus making it more resistant to breaking. As a result, VITROVEX® floatation spheres and instrument housings show very little deviation in shape even under the high pressure found in ocean trenches.



Protective shells



EDDYGRIP swivelling sphere attachment



Stopper to absorb weight and uplift



EDDYROPE line segment

Models and dimensions

Model	depth rating [m]	outer diameter [inch]	glass thickness [mm]	protective shell	weight in air [kg]	net buoyancy [lbs]	net buoyancy [N]
NMS-FS-6700	6,700	17.0	432	14 not available	17.20	38	260
NMS-FS-6700-S	6,700	17.0	432	14 smooth, orange	22.15	49	260
NMS-FS-6700-RO	6,700	17.0	432	14 ribbed, orange	22.75	50	260
NMS-FS-6700-RW	6,700	17.0	432	14 ribbed, white	22.75	50	260
NMS-FS-7000	7,000	13.0	330	12 not available	8.50	19	107
NMS-FS-7000-RO	7,000	13.0	330	12 ribbed, orange	11.10	25	107
NMS-FS-9000	9,000	17.0	432	18 not available	21.70	48	215
NMS-FS-9000-S	9,000	17.0	432	18 smooth, orange	26.65	59	215
NMS-FS-9000-RO	9,000	17.0	432	18 ribbed, orange	27.25	60	215
NMS-FS-9000-RW	9,000	17.0	432	18 ribbed, white	27.25	60	215
NMS-FS-12000	12,000	17.0	432	21 not available	25.40	56	178
NMS-FS-12000-S	12,000	17.0	432	21 smooth, orange	30.35	67	178
NMS-FS-12000-RO	12,000	17.0	432	21 ribbed, orange	30.95	68	178
NMS-FS-12000-RW	12,000	17.0	432	21 ribbed, white	30.95	68	178