

## Surface Abandonment

### **Inflatable Freeboard Extender**

Night time transit to an exercise area, an emerging problem requires you to surface into a black night with a worsening Force 7 and a North Westerly. On surfacing a freak wave hits the boat, water cascades into the control room. The problem just got worse, a fire is burning out of control and you have lost propulsion, dense smoke fills the lower compartments and the boat is pitching wildly. Confusion reigns, men are injured, the situation is now out of control and is worsening.....

IFE increases the freeboard, your options, reduces risk and keeps you in control...

**No matter what the emergency.**



# INFLATABLE FREEBOARD EXTENDER

Evidence and modelling studies show that a significant number of submarine emergencies will occur on the surface. Such events may lead to an untenable situation where the boat is at risk of sinking and the crew is forced into an evacuation. In an increasing sea, with water washing over the decks you may be denied the use of all the available emergency escape routes other than through the fin. With only a single escape option available how can you effect the controlled evacuation of a submarine in distress, quickly and safely?

The Inflatable Freeboard Extender - IFE, developed jointly by James Fisher Defence and Ballonfabrik of Augsburg, places choice back in the hands of the on-scene commander. IFE enables the use of all rescue hatches to effect the rapid escape from a distressed submarine in high sea states. IFE increase evacuee safety whilst preventing flooding of the submarine through the open hatches. With IFE fitted all rescue hatches can be utilised even in adverse weather conditions which makes mustering on the casing and entry into the water a safer procedure than current systems.



## IFE - THE SYSTEM

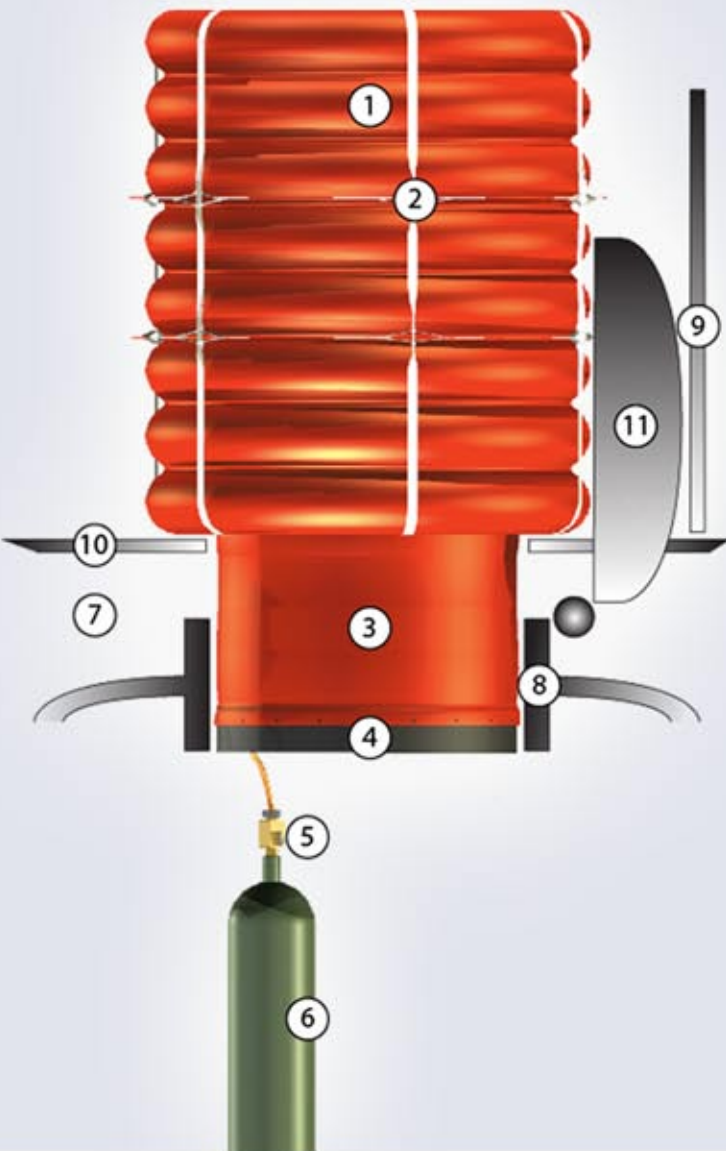
The vacuum packed assembly's compact size allows full access to the trunking, hatch and hatch mechanism. With the hatch open and the IFE positioned the IFE self-inflates rapidly to maximum height and pressure which is maintained for in excess of 60 minutes.

The IFE incorporates strap ladders which provide structural rigidity, tensioning vertically as the tower inflates and holding it firmly against the submarine casing. The system enables an egress rate of 2-3 submariners per minute. Once safely evacuated the relief valve can be opened and the IFE deflated and quickly re-stowed.

Existing submarine configuration

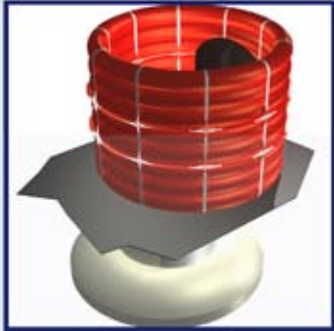
## SYSTEM COMPONENTS

- 1 - Main Inflation Tower
- 2 - Tensions Mesh (internal & external)
- 3 - Ribbed Skirt
- 4 - Clamping Ring
- 5 - Flow Regulator
- 6 - Dedicated 15 Litre Air Supply
- 7 - Cofferdam
- 8 - Escape Hatch Trunking
- 9 - Casing Section Hatch
- 10 - Submarine Casing
- 11 - Hatch



# INFLATABLE FREEBOARD EXTENDER INTEGRATION

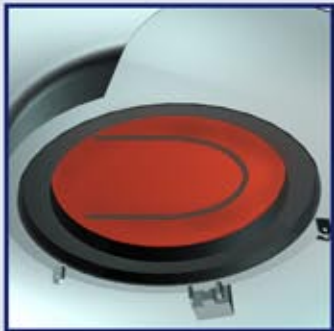
The IFE has been designed from the ground-up to be integrated into either existing or new build submarines. The system can quadruple the amount of usable Freeboard and raises its height by up to 1500mm. Jointly engineered by James Fisher Defence and Ballonfabrik, the IFE comes with a comprehensive support and training package that includes onsite training and qualification of client Safety Equipment Fitters to maintain serviceability through life. Alternatively, James Fisher Defence and Ballonfabrik can provide through life on-site maintenance, repair and replacement.



IFE housed in submarine casing

## IFE FOR NEW SUBS

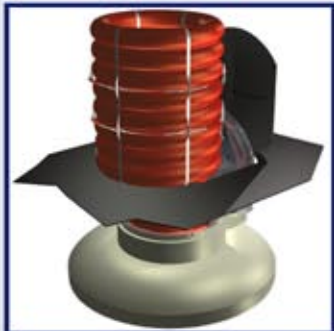
- Does not interfere with deck profile
- Integrates into casing
- Mounts around the rescue seat
- Integrates with HP air system
- Maintains constant pressure
- Can incorporate additional cover
- Does not reduce escape trunk diameter
- Accommodates 5 submariners
- Allows hatch to be closed whilst inflated



IFE located in LET manway of submarine

## IFE FOR EXISTING SUBS

- Includes own 15 litre HP air supply
- Maintains pressure for >60 minutes
- Mounts in trunking below escape hatch
- Reduces trunking diameter by 95mm
- Compatible with existing hatch types
- Independent of all onboard systems
- No alteration to escape hatch structure
- Ease of integration
- Single-man fitting operation
- Easy stowage
- Can be fitted on leaving port or during emergency
- Rapid deployment and recovery



Inflated IFE on submarine

For existing submarines IFE offers an immediate and readily available, risk-free solution to extend the freeboard without any need to breach the integrity of the pressure hull.



IFE onboard LR5 Sub-Rescue Vehicle

## IFE FOR RESCUE VEHICLES

- Extends existing freeboard by 650mm
- Easy to deploy, check & maintain
- Prevents second emergency on surfacing from rescue operation
- Can provide visual indication to support crew of potential emergency



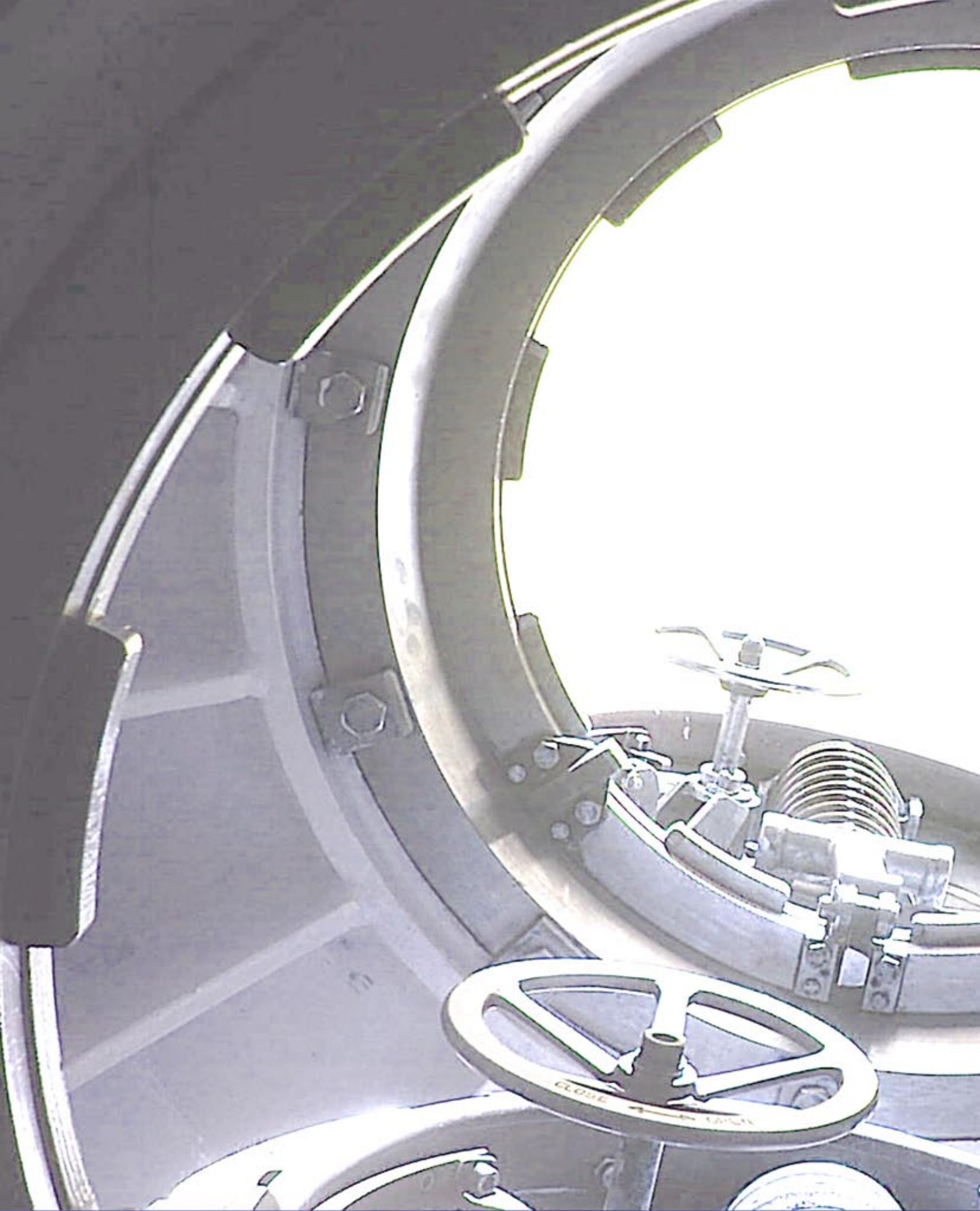
## IFE ONBOARD ROYAL NAVY SUBMARINES

With the support of the Royal Navy, the final stages of IFE trials were completed on board a Vanguard Class submarine at Faslane.

The trials demonstrated the perfect fit, impressive launch and speedy recovery of a retro-fit IFE and has allowed IFE to move into production.

A video of the trial is available online now at [www.youtube.com/JamesFisherDefence](http://www.youtube.com/JamesFisherDefence)





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