



Inflatable Freeboard Extender (IFE)



Introduction

The IFE is an easy to operate, cost effective, and reliable escape system.

Developed in partnership with Survitech, JFD's IFE is designed to assist submariners in rapidly escaping from a distressed submarine in high sea states. IFE allows the use of all casing hatches for surface abandonment in increased sea states. It provides increased evacuee safety whilst preventing flooding of the submarine through the open escape hatches. IFE is available in two configurations:

- External IFE; for new-build submarine classes
- Internal IFE; for existing submarine classes

Benefits

- Enables use of casing hatches in adverse conditions
- Increases number of usable escape routes
- Prevents water ingress during surface abandonment
- Re-usable
- Proven technology
- Improves safety at sea

External IFE

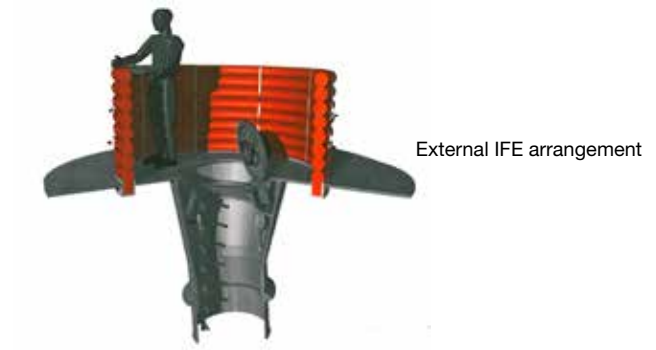
The externally fitted IFE is designed as a permanent, reusable escape option, fitted between the rescue seat and the escape hatch of a submarine. Stored in a deflated state within a GRP housing, the external IFE is fitted beneath the lip of the rescue seat under the casing. When stowed for transit in normal use, the IFE is stored in a free-flooding compartment. The benefits over the internal IFE is that it inflates before opening the hatch, has a larger safe haven and is readily reusable.

Internal IFE

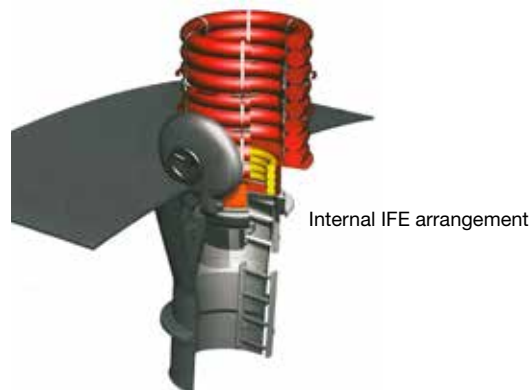
The Internal IFE option is designed to be deployed, when required, to the inside of the submarine escape tower or casing escape hatch. Testing has confirmed that utilising the IFE will enable submariners to use a casing hatch, previously unusable in such circumstances, to escape from a submarine in a surface abandonment or emergency situation. An escape rate of 2-3 submariners a minute has been achieved during testing of IFE. No modification is required to the existing trunk or hatch opening to retro-fit the IFE, making it suitable for use across a wide range of existing submarine types.

Integration & Operation

All IFE options are inflated by the operation of a single valve on a panel, outside the escape tower. This interface has been designed to enable fast and simple operation during pre-abandonment. Once inflated the tower forms a rigid freeboard structure, sealing the escape hatch and preventing sea-water ingress. The IFE is inflated either by air taken directly from the host submarine gas supply or via a separately stowed charged gas cylinder, enabling fast, even and controlled inflation of the IFE in a series of stages. Deflation is the reverse of this procedure, all controlled through a single valve. The IFE is drawn back into its GRP housing and when fully deflated secures itself in place ready for immediate re-use.



External IFE arrangement



Internal IFE arrangement



JFD's Inflatable Freeboard Extender - trials on RUBIS Class Submarine



JFD's Internal IFE fully inflated