



BEJARO 
fire protection corporation

When Safe Just is not Safe Enough

FFS — Fail - Fail - Safe

The FFS Principle

FFS, or Fail - Fail - Safe, is based on the principle of functional redundancy. A vessel fitted with an FFS system can deploy its FS 49 C2® system even if one or more of its release mechanisms have failed.

This system is unique in having this high level of safety and functionality.

The HMS Visby Solution

Imagine a war ship incapable of carrying out its mission because of a small, but critical fire!

This scenario is unlikely for HMS Visby. The HMS Visby solution is a fire extinguishing system based on Clean Agent FS 49 C2® and FFS.

The system has been developed together with the Swedish Navy for a number of years using the best of knowledge and experience possible to find the best solution for war ships.



Electric Release Lockers



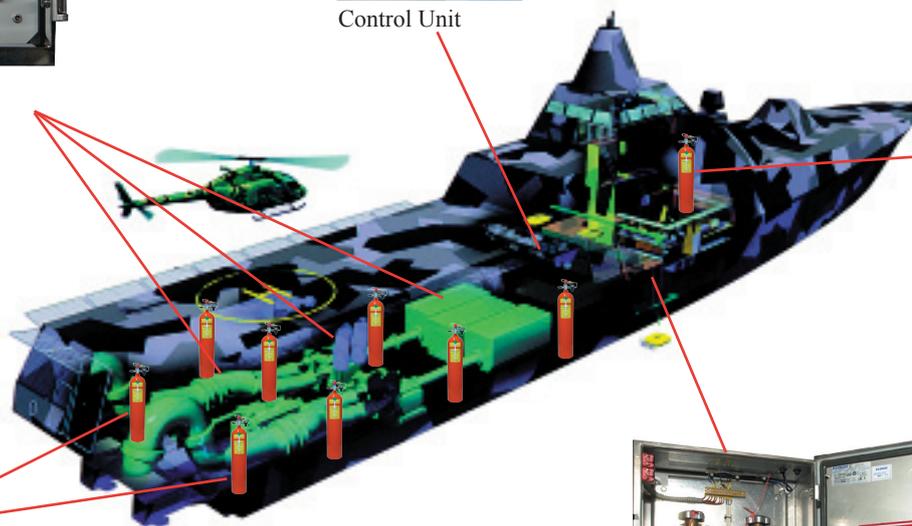
Control Unit



Pneumatic Release Locker (1 Zone)



FS 49 C2® Cylinders



System Layout for the Visby Class Corvette



Pneumatic Release Locker (4 Zone)

Clean Agent FS 49 C2[®] System

Halon 1301 Replacement Systems

Halon 1301 Replacement

FS 49 C2[®] was developed to provide a Halon 1301 replacement system, offering the same optimum characteristics yet with minimum impact on the environment.

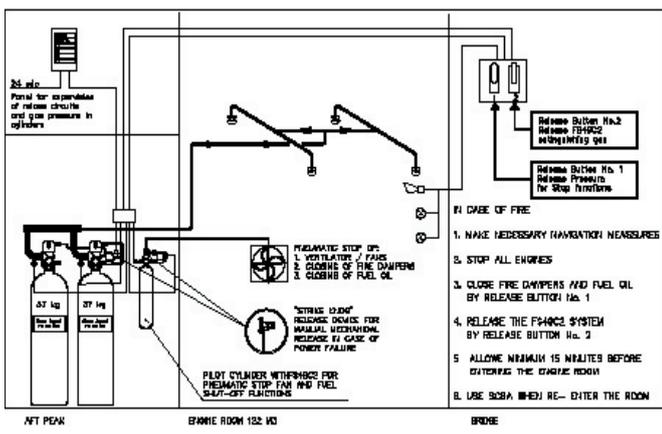
FS 49 C2[®] systems are installed to protect computer rooms, engines, transformers, switchboards and other areas at risk. These systems are designed for a quick discharge that fills the room quickly and efficiently without endangering personnel.

The FS 49 C2[®] system was developed with almost identical characteristics to Halon 1301 systems which can easily be converted to FS 49 C2[®] systems, using existing hardware and with minor technical adjustments as well as a slight increase in gas storage volume. (Assessment of this factor should be left to competent engineers).

The Ideal choice

FS 49 C2[®] is considered the best and most ideal choice for a new installation or upgrade/replacement of an existing Halon 1301 system to an environmentally friendly system.

FS 49 C2[®] is stored in condensed form at 25 or 42 bar, a slight increase in nozzle size and storage capacity is required in comparison with Halon 1301 systems. Release arrangement and pipe network in existing systems can be used.



High Speed Craft Laura
System drawing



JAS 39 Gripen - The Swedish Airforce's latest multi-role fighter,
hangar protected by FS 49 C2[®]



Hamina Class
Finnish Navy, protected by FS 49 C2[®]



High Speed Craft Laura
Engine room protected by FS 49 C2[®]

Flexible and Dependable

Our cylinders come with either the 18D or 38D valve fitted.

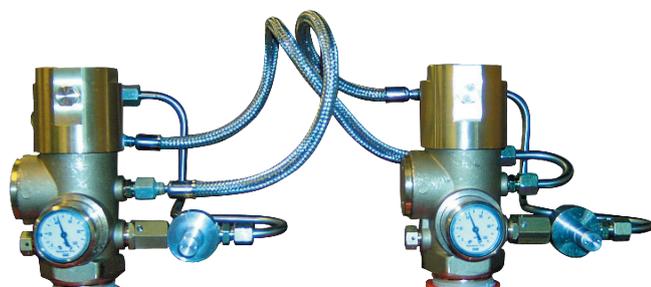
These valves can be fitted with a wide variety of release devices and combinations.

Should one of the devices fail another one can pick up the slack and still release the gas. This is one of the reasons why the FFS system works so well.

In the example below you can see two 38D valves that are interconnected. Should the solenoid on one of the valves fail, then the solenoid on the other valve will still release it thanks to the connection between them.



Cylinder with Valve 18D

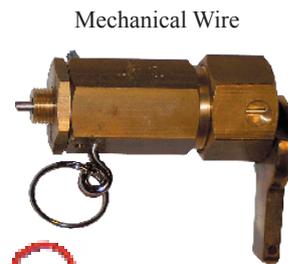


Example of double release device arrangement Valve 38 D with double solenoids

Available Devices



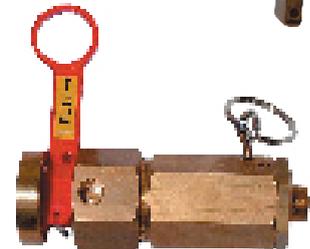
Pneumatic



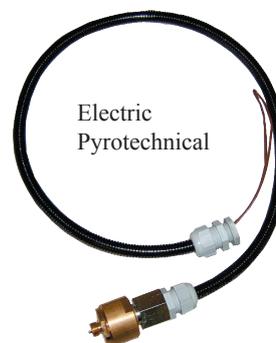
Mechanical Wire



Pressure Switch



Mechanical Push Knob



Electric Pyrotechnical



Electric Solenoid with fitted piping

Volume Comparison



FS 49 C2®



Halon 1301



Novec 1230



CO₂



Inert Gases (Nitrogen, argon and mixes thereof)

FS 49 C2® Advantages

- An ozone friendly clean extinguishing agent with 'zero' ODP factor
- Compatible with Halon technology
- May be used in existing Halon systems
- Quick-acting — Fast extinction
- Favourable weight/volume ratio
- No hazards to humans at extinguishing concentrations
- Thoroughly tested — favourable user response
- Suitable for explosion suppression