

## The hinged inner covers on the duff and offal chute openings

We have previously mentioned that the inner covers of the duff and offal chutes on the Gaul were not designed to be of watertight standard.

This is an important point when we consider that the Admiralty Judge, who presided over the Formal Investigation, alleged that, had these “watertight” inner covers been “**used properly**”, seawater would not have been able to flood into the ship and thus the vessel and crew would have been saved.

So what does the phrase ‘watertight standard’ actually mean?

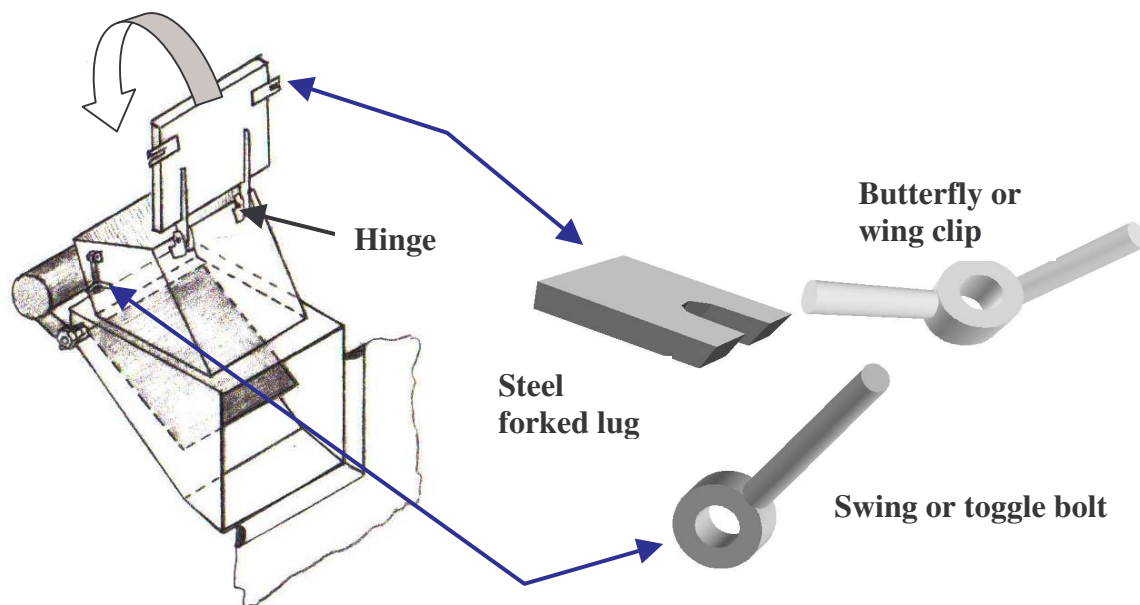
In the maritime world, fittings that are designed to be watertight and to seal openings in the hull and superstructures of vessels need to meet two important criteria:

1. They need to be capable of preventing water from entering or escaping from a space or compartment (in any direction).
2. They need to be strong enough to withstand the extremes of pressure and loading that they will be subjected to in seagoing service.

The inner covers on the duff and offal chutes on the Gaul were arranged to hinge inboard (which is contrary to the norm for WT doors, hatches and similar items onboard ships) and, as a result of this, only the cover’s hinges, toggle bolts and steel lugs provided the strength or resistance against the forces of the sea.

The principal reason why the inner covers on the Gaul were not of a ‘watertight’ standard is that they were deficient in strength. This deficiency is apparent when the Gaul’s inner covers are compared against the requirements of National and International Standards for inwardly hinged covers on ships that are categorised and meant to provide watertight standards of integrity.

In this respect the British Standard for Side Scuttles (BSMA 24) is most appropriate for comparison purposes.



**Duff chute schematic**

## **A comparison between the securing arrangements for the Gaul's inner covers and those required by BSMA 24 for watertight inner covers.**

In this comparison, the strength of the covers can be considered to be proportional to the thickness of load bearing parts in the cover's securing arrangement (i.e. the hinges, toggles and lugs).

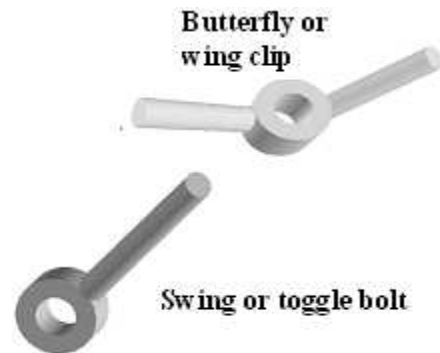
### **Toggle bolt and clip**

#### ***On the Gaul***

The swing bolt was half-inch (**12.7mm**) in diameter made from mild steel with the wing clip sized to suit.

#### ***In BSMA 24***

The swing bolt is required to be at least **24mm** in diameter (just less than one inch) made from mild steel with the wing clip sized to suit



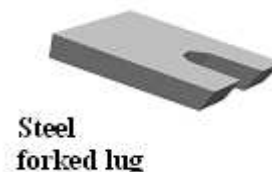
### **Steel forked lug**

#### ***On the Gaul***

The forked lug plate was 3/8 inch thick (**9.5mm**) made from mild steel.

#### ***In BSMA 24***

The forked lug plate is required to be more than one and a quarter inches thick (**32mm**) made from mild steel



### **Conclusion**

The suggestion by the court that if the crew had **used the inner covers properly**, this would have **assured** the safety of both the vessel and its crew is manifestly incorrect.

### **Strength of Gaul's hinged inner covers**



### **Strength of watertight hinged inner covers (BSMA 24)**

