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HATCH COVERS - LEAKAGE & TESTING

1.0 INTRODUCTION

Defective hatch covers resulting in the ingress of water is of the major cause of wet damage to cargo.

As you already know that the global financial storm had already caused the freight and charter rates to sink, shipping companies to reduce employment and a number of ships to be laid up, cost cutting would be inevitable evil and very likely to exacerbate the situation. Aside from structural damage, ballast pipe and tank top corrossions, human error, the lack of maintenances and/or improper repair or replacements for spares especially on hatch covers and access is one of the primary causes of ingress of water resulting in cargo being wet and needless to say a threat to the safety of the crew. In short, '*A recipe for calamity*'

At this age in time, the values of the cargo claims have risen significantly and one of the primary causes of increase is, of course, the value of the product itself. Although the number of claims has reduced in the past, the value of claims had increased considerably. The writer opines that the number of claims to increase in the days ahead. In short, '*Expect the Expected!*'

2.0 INTERPRETATION

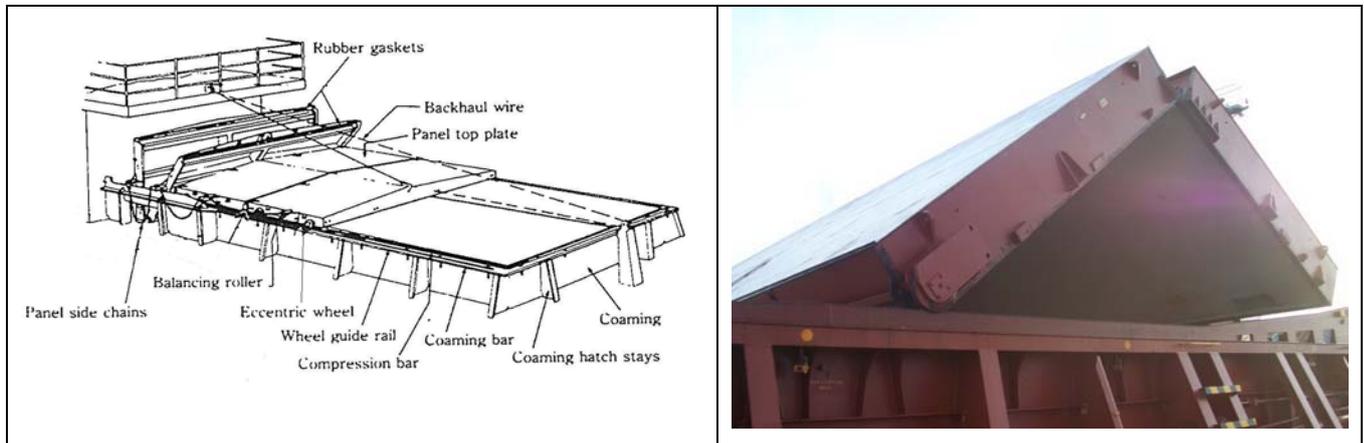
'*Weathertight*' - An enclosed structure sealed to prevent the entry of rainwater and/or seawater into it when exposed to weather and/or in any sea condition.

'*Watertight*' - An enclosed structure designed to keep water out in all directions under a fully wet environment or submerged underwater subjected to a specific depth or pressure.

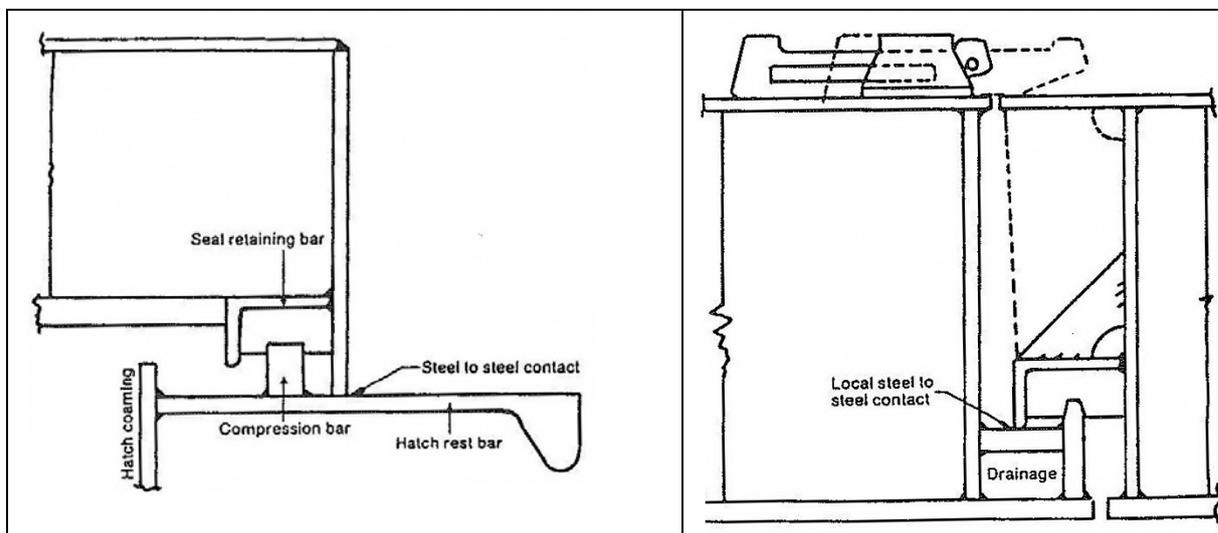
'*Cargoworthy*' – Said of a ship, being fit to carry a particular cargo

'*Cargoworthiness*' – Fitness of a ship to carry a particular cargo

3.0 FUNCTION & DESIGN OF THE HATCH COVERS

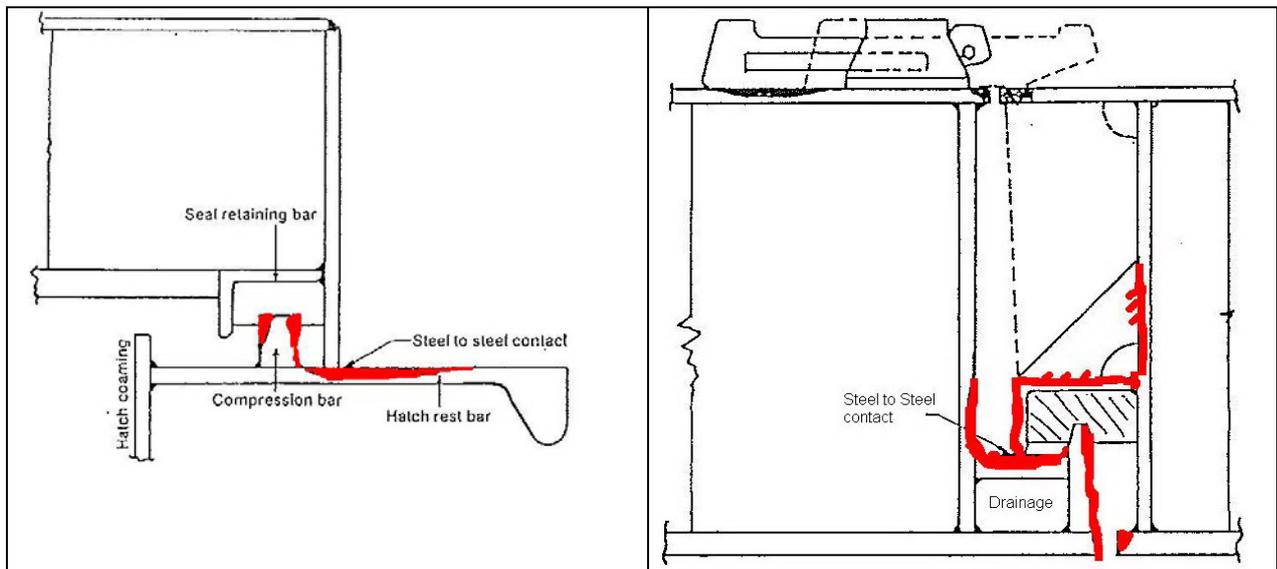


Hatch covers are designed to be weathertight and the function of a hatch cover and its coamings is to prevent any penetration or ingress of water into a vessel's cargo hold. MacGregor hatch covers are designed to fit in a manner where **steel-to-steel** contact is continuously achieved between the hatch and the coaming which then will allow maximum penetration of the rubber gasket by the compression bar



4.0 COMMON DEFECTS AND CORROSION

One of the most common causes of water ingress is attributable to lack of maintenance and corrosion. Below are the typical areas of corrosion found on hatch covers:-



5.0 TEMPORARY REPAIRS

Temporary repairs carried out that will only alleviate the problem until permanent repairs can be carried out as soon as possible. The question is whether the temporary repairs carried out on the hatch covers are effective during the remaining voyage?

The use of sealing tapes or “Ram Nek” tapes at the cross joint of the hatch covers is common sight and some Shipper or Charterer have specifically insist to use them.



Seemingly, it looks like an additional precaution to enhance weathertightness. However, there are negative aspects to using hatch cover sealing tapes which include:-

- The adhesive tape cannot fully seal the hatch joint surface area due to the presence of cross-joint cleats or other uneven fittings
- The adhesive tape can wash off in heavy seas
- The adhesive tape can obstructed drain holes trapping water in the cross joint

- After usage, the removal of the adhesive tapes may eradicate the necessary coatings on the steel structure thereby exposing a higher risk of corrosion

The application or use of expanding foam, which when sprayed onto the joints produces hardened foam to obstruct entry of water. In practice, this hardened foam may block drain holes and drain channels which defeats the purpose of having drainage within the hatch covers design. When the hatch covers drainage systems are blocked with any foreign matter, any ingress of water might find its way into the cargo rather than draining out.

Finally, the presence of 'Ram-nek' tapes or expanded foam would only give a false sense of weathertightness and some cargo interests might allege that the vessel might not have been *cargoworthy* before the onset of the voyage.

6.0 WEATHERTIGHTNESS / HOSE TEST

In the past and presently, testing of hatch covers for weathertightness are carried out by several methods such as Chalk test, Light test and Hose test. Recently, the use of Ultrasonic testing with hand-held detectors is a familiar method but can be costly and only performed by a qualified person.

It is **NOT** part of the design for the quick-acting cleats or cross-joint wedges to attain weathertight integrity. The purpose of the cleat and wedges are designed to restrain the hatch from moving during the vessel's conveyance at sea. The steel panels should contact horizontally without any vertical displacement or misalignment between them in order to achieve full weather-tightness integrity.

"Hose test for water leak detection" requires the application of a powerful jet of water from a 20-30mm diameter hose fitted with a 12mm diameter nozzle held at a distance of 1 ½ metres from a hatch joint, moving along the joint at a speed of 1 metre every 2 seconds at a recommended water pressure of not less than 200kN/m².

Once again, the cleat and wedges need not be in a secured position. The securing of cleats and cross-joint wedges will not in any way improve hatch cover weathertightness. Hatch cover manufacturers usually test for weathertightness without engaging cleats. The overall weight of the steel hatch covers is more than sufficient to acquire the necessary gasket compression.

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P.S: We welcome any comments or suggestions with regard to the above article. Kindly e-mail to the writer at raj@cjamarine.com

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