

Maritime Safety Quest



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MSQ is a loss prevention guide and provide essential information for numerous maritime professionals such as Shipowners, Charterers, Ship-managers, P&I Clubs, Surveyors, Underwriters, Lawyers, etc.

HATCH COVERS - LEAKAGE & TESTING

1.0 INTRODUCTION

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

We are all too familiar with the rhetoric headlines that plague out news everyday, beginning with the global financial storm, which, applied to the maritime industry, has already caused turmoil to the freight and charter rates, culminating in shipping lines' reciprocal response in the reduction of employment, ships to be laid up and of course, other cost cutting policies which form an inevitable evil. The effect of cost cutting, whether in terms of cutting back on repairs or maintenance would of course have bearing on the topic under focus.

Structural damage, ballast pipe & tank top corrossions and human errors are some of the common causes of ingress of water into a vessel's cargo Hold. However, the lack of maintenances and/or improper repairs or replacements on hatch covers 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*'.

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*' - Fitness of a ship to carry a particular cargo.

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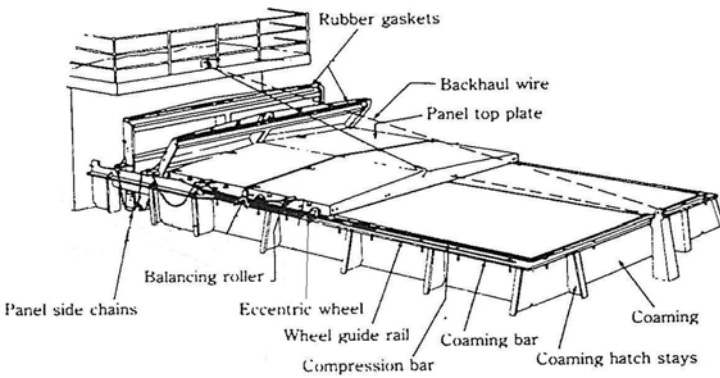
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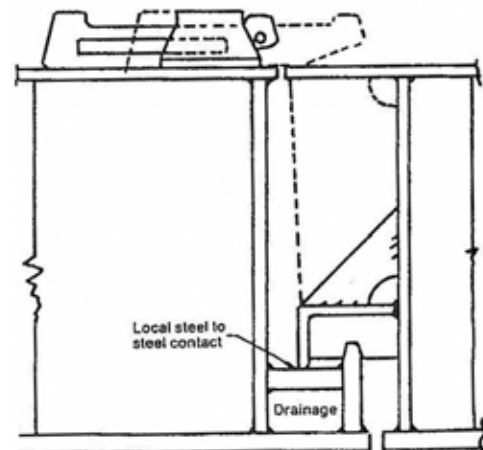
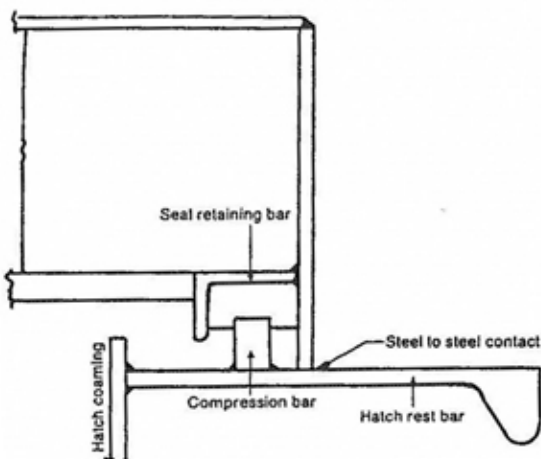
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3.0 FUNCTION AND DESIGN OF THE HATCH COVERS

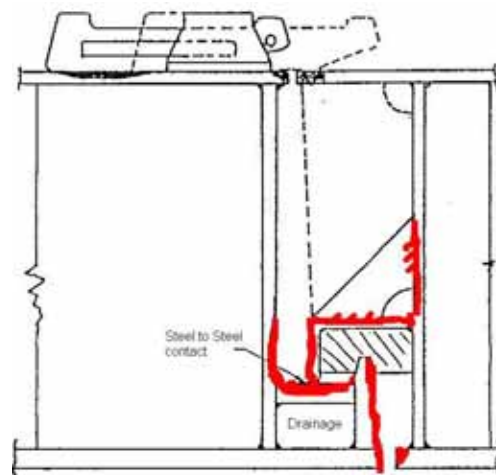
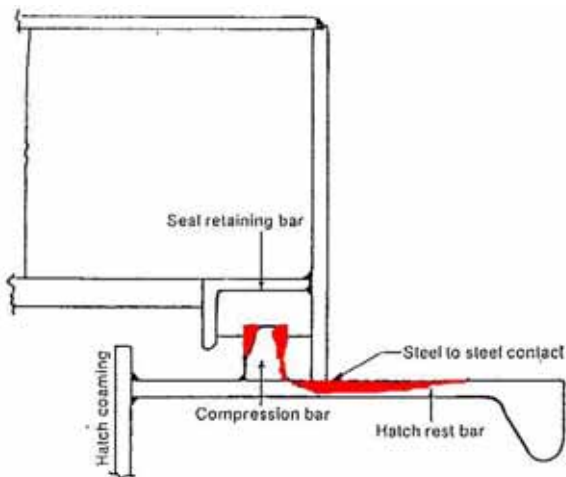


Hatch covers are designed to be **weathertight**. The function of a hatch cover and its coamings is to prevent any penetration or ingress of water into a vessel's cargo hold. MacGregor hatch covers are designed to fit in a manner where **steel-to-steel** contact is continuously achieved between the hatch and the coaming which will then 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 (marked in red below) found on hatch covers:-



5.0 TEMPORARY REPAIRS

Temporary repairs carried out 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 a common sight and some Shipper or Charterer have specifically insisted in using them.



Seemingly, it looks like an additional precaution to enhance weathertightness. However, there are several ill-effects in using hatch cover sealing tapes, amongst these are:-

- 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 obstruct drain holes trapping water in the cross joint; and
- 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 defeat 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* from the onset of the voyage.

6.0 WEATHERTIGHTNESS / HOSE TEST

In the past and presently, testing of hatch covers test for weathertightness are carried out by several methods such 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 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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*Understanding **RISK** is knowing where to draw the line*

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

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