

SOLAS AND WATERTIGHT DOORS

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SUMMARY

The purpose is to induce a more flexibility on the SOLAS interpretation regarding a regulation on the watertight doors.

1. INTRODUCTION

Often, due to the daily contact with the practical problems regarding the shipbuilding, the people in it employed pay attention to the some specific aspects connected with their activity.

Ship design, as other human activities, have to satisfy the imposed rules to guarantee the safety of the adopted solutions.

The SOLAS is the reference text for the ship designers but sometime it could be an unintentional obstacle to the evolution of the naval technic.

2. DESCRIPTION

An example of the content in the introduction is the Regulation 25-9 of SOLAS (Chapter II, Part B-1) in which the characteristics of the openings in watertight bulkheads and internal decks in cargo ships are listed.

In the point 2 of the regulation is fixed that “ *Doors provided to ensure the watertight integrity of internal openings which are used while at sea are to be sliding watertight doors capable* ”.

In our opinion the literally interpretation of the rule, when it impose the sliding type for a watertight door, limit without a reason the possibility in searching different solutions even if with the same safety grade of the sliding doors.

Moreover it seems to us that the literally interpretation of the above rule contrasts with the content of the Regulation 5 - Equivalence (Chapter I - General provisions, Part A) of the SOLAS in which different solutions are allowed if they assure and demonstrate the same efficacy.

This last rule is very important, in our opinion, because it stimulate the inventiveness and the search of solutions more sticking to the variety of problems, damage consequences in our case, that the ship design have to solve.

Going deeper in the problem, during the activity of the department of Naval Architecture (TR-ARC) of Fincantieri, examining the several flooding condition for same vessels, we observed the possibility to limit more the consequences of the damages, positioning watertight doors in selected locations of the ship.

Unfortunately, the fitting of sliding doors wasn't easy because of the disposable space.

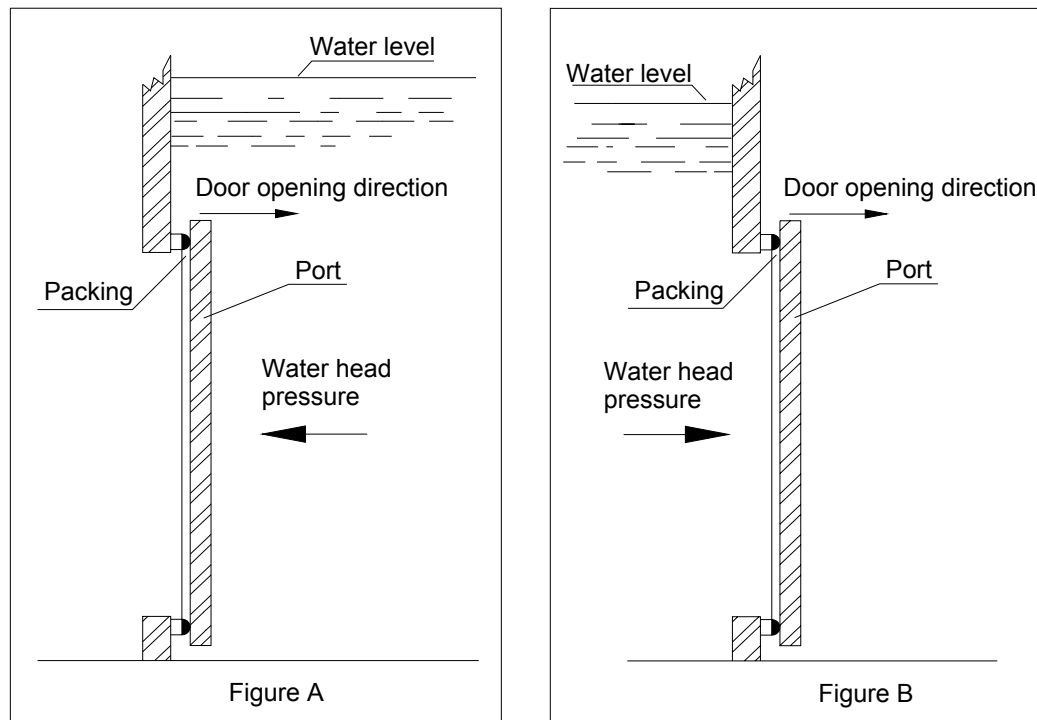
Among the examined possibilities, an hinged watertight door seemed the best solution.

In the hinged type the absence of the recess for the slidind part of the door was a favourable factor for its fitting.

Nevertheless, because of the possibility of a literally interpretation of the SOLAS that prescribe the sliding type, this solution was doubtful.

Going ever deeper in the problem, the question is: what are the reasons for which SOLAS impose the sliding type?

Examining all the differences between the sliding and the hinged door only one is the reason for which, in our opinion, the sliding type would be preferred.



Looking at the figure A in which an hinged door is schematized, the water head pressure, acting against the port and opposing to the door opening direction, force the packing and helps the closing system to produce the watertightness of the door.

In the figure B, the water head pressure acts according to the opening direction and reduce the closing force acting on the packing.

This means that the hinged type door hasn't, in both side, the same strenght to contrast the water infiltration through the packing.

In the sliding type door, on the contrary, the forcing strenght is the same for both side.

But if we adopt a closing system able to assure the same efficacy to contrast the water infiltration for both side of the port and meeting all the requests as for the sliding door, we think that an hinged door is equivalent to the sliding one.

All this stimulated the Naval Architecture Department of Fincantieri (TR-ARC) in the searching of a simple and reliable solution to the problem.

It was solved and now it's waiting for the practical testing.

3. REFERENCES

' SOLAS ', Consolidated edition 2001, International Maritime Organization. London, 2001