

# Watertight Doors – Crew Safety and Crushing Risks



## Introduction

Watertight doors are a critical component of a ship's watertight subdivision and damage stability arrangements. Ships are divided into watertight compartments in order to limit the spread of flooding following hull damage and to support vessel stability and survivability. To maintain watertight integrity, openings in watertight bulkheads are kept to a minimum and are fitted with specially designed watertight doors to maintain watertight integrity.

Depending on their category, location and operational requirements, certain watertight doors are required to remain closed at all times or during navigation, while others may only be operated under controlled conditions, in accordance with statutory requirements, flag State instructions and the ship's safety management system.

While watertight doors are designed to maintain watertight integrity, protect vessel survivability and maintain damage stability arrangements, they may also present significant crushing hazards to crew if operated incorrectly or without familiarisation and training. The movement of power operated watertight doors, particularly those operated remotely or automatically, may expose crew to crushing, trapping or impact injuries if adequate precautions are not followed.

This Risk Alert highlights the operational risks associated with watertight doors and provides practical safety considerations intended to promote safe operation, crew awareness and the prevention of serious injury or harm.

## Operational Risks

Power-operated watertight doors can exert substantial closing force during operation. Serious injuries and fatalities involving watertight doors have been reported, often during routine operations where familiarity, distraction, complacency or poor situational awareness may reduce the margin of safety.

Incidents frequently occur when personnel attempt to pass through a closing door, remain within the operating path of the door, or are unaware that remote closure has been initiated. Operational risks may arise from:

- incorrect operation or unauthorised bypassing of procedures;
- inadequate familiarisation or insufficient training;
- unauthorised operation by unqualified personnel;
- ineffective communication between personnel;
- distraction, complacency or reduced situational awareness;
- attempting to pass through closing doors;
- carrying tools, stores or equipment that restrict movement or visibility;
- defective alarms, indicators, hydraulic systems or operating mechanisms;
- poor understanding of door operating limitations, bridge control arrangements or emergency procedures; and
- unexpected remote activation or automatic closure during drills, emergencies or navigation.

Additional hazards may arise where watertight doors are operated remotely from bridge control systems, particularly during drills, testing, emergencies or automatic closing arrangements. Factors such as increased vessel movement, noise, poor lighting and confined machinery space environments may further reduce awareness during operations.

### **Training, Familiarisation and Risk Awareness**

Crew responsible for operating watertight doors should be properly trained and familiar with the specific arrangements fitted on board the vessel. Crew should understand:

- local and remote operating arrangements;
- audible and visual warning systems;
- emergency operating procedures and power failure arrangements;
- door status, operating modes and door categories;
- restrictions governing when doors may remain open;
- procedures for safe transit through watertight doors;
- bridge control and automatic operating modes where fitted; and
- the potential crushing force and operating speed of the door system.

Training, drills, familiarisation and effective supervision remain important in supporting the safe operation of watertight doors and reducing the risk of serious injury or fatality. Drills should include practical operation under both normal and emergency conditions. Where practicable, drills and familiarisation may include demonstrations of remote operation, emergency release arrangements and safe escape procedures in the event of power failure or malfunction.

### **Safe Operating Practices**

Crew should never attempt to pass through a closing watertight door or stand within the path of the door during operation. Adequate clearance should be ensured before operating watertight doors and both sides of the doorway should be confirmed clear prior to closure. Clear communication should be maintained when operating or transiting through watertight doors.

Extra caution may be required when carrying tools, stores or equipment through watertight doors, as restricted movement or visibility may increase exposure to injury. Attempting to rush through closing door openings or interfering with the normal operation of watertight doors should be avoided.

Where fitted, audible and visual warning systems should remain fully operational. Defects, abnormal operation, faulty alarms, hydraulic oil leaks or malfunctioning indicators should be reported immediately and addressed in accordance with shipboard procedures.

Watertight doors should never be obstructed, wedged open or prevented from closing unless required for safety reasons and permitted by shipboard procedures. Unauthorised interference with safety devices, limit switches or operating controls may significantly increase operational risk and compromise watertight integrity.

Additional caution may be required during maintenance, drills, emergencies, machinery space operations and periods of increased vessel movement.

## **Safety Management and Operational Control**

Operational instructions, door categorisation, operating limitations, inspection routines and emergency procedures associated with watertight doors should be clearly incorporated within the ship's safety management system and understood by all relevant crew.

Regular inspection, maintenance, testing and operational verification of watertight doors, alarms, indicators, remote controls and associated hydraulic systems remain important in maintaining both operational reliability and crew safety. Testing and maintenance routines may include verification of audible and visual alarms, operating speeds, local and remote controls, emergency release arrangements and the condition of hydraulic components where fitted.

Near misses, defects and unsafe operating practices involving watertight doors may also provide valuable learning opportunities and may assist in identifying recurring operational or human factor related risks.

Statutory requirements governing the operation, inspection, recording and permissible opening of watertight doors vary depending on vessel type, door category and flag State requirements, as set out in SOLAS. Crew should ensure they are familiar with the specific arrangements and operating limitations applicable to their vessel, as documented in approved shipboard procedures and the safety management system.

## **Conclusion**

Watertight doors are designed to maintain watertight integrity and support vessel survivability during flooding and other types of emergencies. However, the same operational characteristics that protect the ship may also present serious crushing hazards to crew.

Effective procedures, proper training, situational awareness, supervision and strict compliance with operational requirements remain essential in reducing the risk of serious injury or fatality involving watertight doors. Maintaining safe operating practices, effective communication and properly functioning warning and control systems remains important in supporting both crew safety and vessel integrity.

## Resources

MSC.421(98)  
MSC.474(102)  
MSC.1/Circ.1380  
MSC.1/Circ.1564

## Supportive Information

For further information on this or other Loss Prevention topics please contact the Loss Prevention Department, Steamship Insurance Management Services Ltd.

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