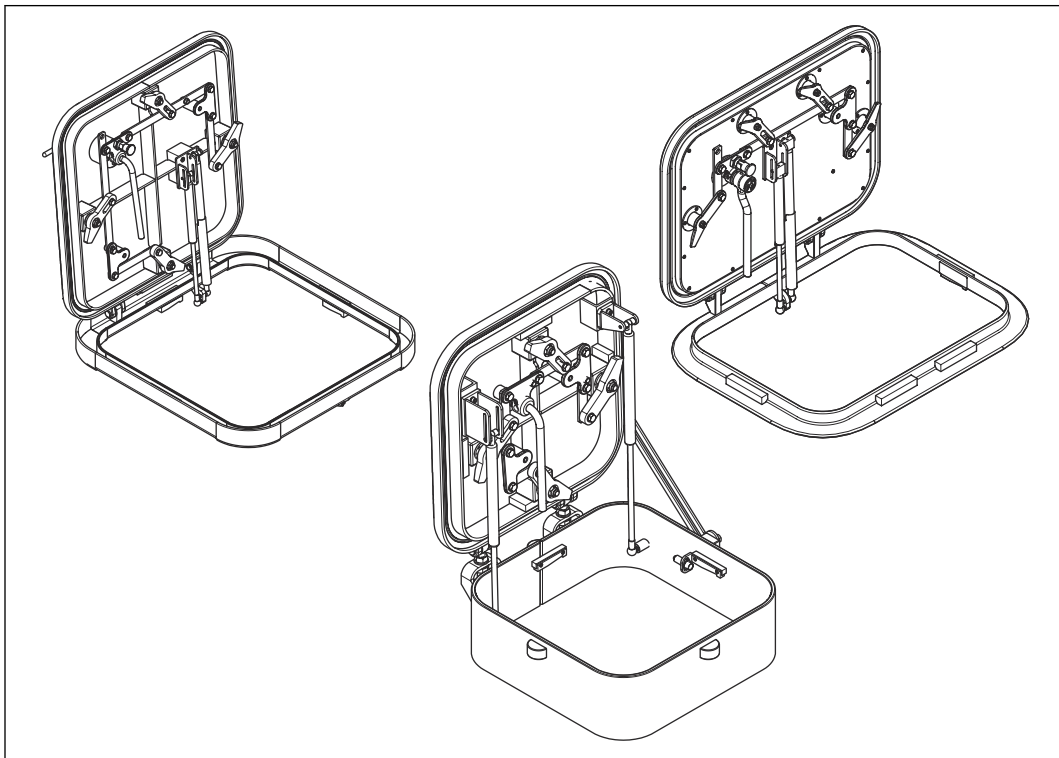




# Installation Manual

## Musketeer Hatch

with gas springs



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# 1 About this manual

## 1.1 Contents of this manual

This manual contains information about the installation of the Winel Musketeer hatches with gas springs. This manual is applicable to the hatches with one of these coamings:

- Angle bar
- Flush coaming
- Raised coaming.

This manual refers to the Musketeer hatch as "the product".

## 1.2 Intended audience

This manual is intended for:

- Personnel that installs the product.
- Personnel that operates the product.
- Personnel that does maintenance and repairs on the product.

## 1.3 Copyright and disclaimer

© WINEL BV. All rights reserved.



No part of this document may be reproduced, distributed or transmitted in any form or by any means, electronically or mechanically, including photocopying and recording for any purpose, without the express written authorisation by WINEL BV.

WINEL BV continuously improves its products, therefore the designs and specifications in this manual are subject to change without prior notice.

## 1.4 Revision history

Version	Date	History
1.0	March, 2024	Initial version

## 1.5 Symbols used in this manual

Symbol	Type	Description
	Danger	This indicates a situation with a high level of risk which, if not avoided, can cause death or serious injury.
	Warning	This indicates a situation with a medium level of risk which, if not avoided, can cause serious injury or serious damage to the product.
	Caution	This indicates a situation with a low level of risk which, if not avoided, can cause minor to moderate injury or damage or the product.
	Note	This provides useful background information that is not hazard related.

## 1.6

**Related documents**

Document name	Version
Operation & Maintenance Manual Musketeer Hatch with gas springs	2.0

## 2 Safety and warranty

### 2.1 General safety instructions

- Always read the instructions of this product before you operate the product.
- Do not endanger people and the environment. Obey the safety instructions.
- The product must be operated by qualified personnel.
- Follow the maintenance instructions given by WINEL BV. This is in the interest of safety and reliability of the vessel and of its crew and passengers.
- No modification to the product is allowed without prior written approval and permission of WINEL BV and the certifying authorities.
- Disconnect all electrical wiring before welding activities near the product. The welding current can cause damage to the electrics and electronics of the product.
- If the system is not functioning properly, do not try to force the system. Never overrule or ignore safety features.
- Performing proper maintenance and service to the system will prevent most of the malfunctioning.
- Small malfunctions must be solved immediately, if not this might lead to severe damage to the system or injury to operating personnel.

### 2.2 Specific safety instructions

- Do not open the gas springs. Device is under high pressure.
- Avoid the hydraulic oil to come into contact with food or potable water.
- Do not overheat the gas springs, and do not expose the device to open fire.
- Test the gas springs regularly for safe operation.
- Do not use grease on the bearings of these parts:
  - Hinges
  - Handle
  - Cleats

### 2.3 Use of spare parts

- Only use original WINEL BV spare parts or spare parts that are recommended by WINEL BV.

The use of other parts can result in unsafe operations and severe damage to the equipment, to personnel and to the environment.
- All damage resulting from the use of non-original spare parts is beyond the responsibility of WINEL BV.
- WINEL BV only accepts warranty claims if the maintenance instructions are carefully followed and if original WINEL BV spare parts have been used.

In case of neglected maintenance procedures and mounting non-WINEL BV parts, WINEL BV will not accept any responsibility.

## 3 Introduction to the product

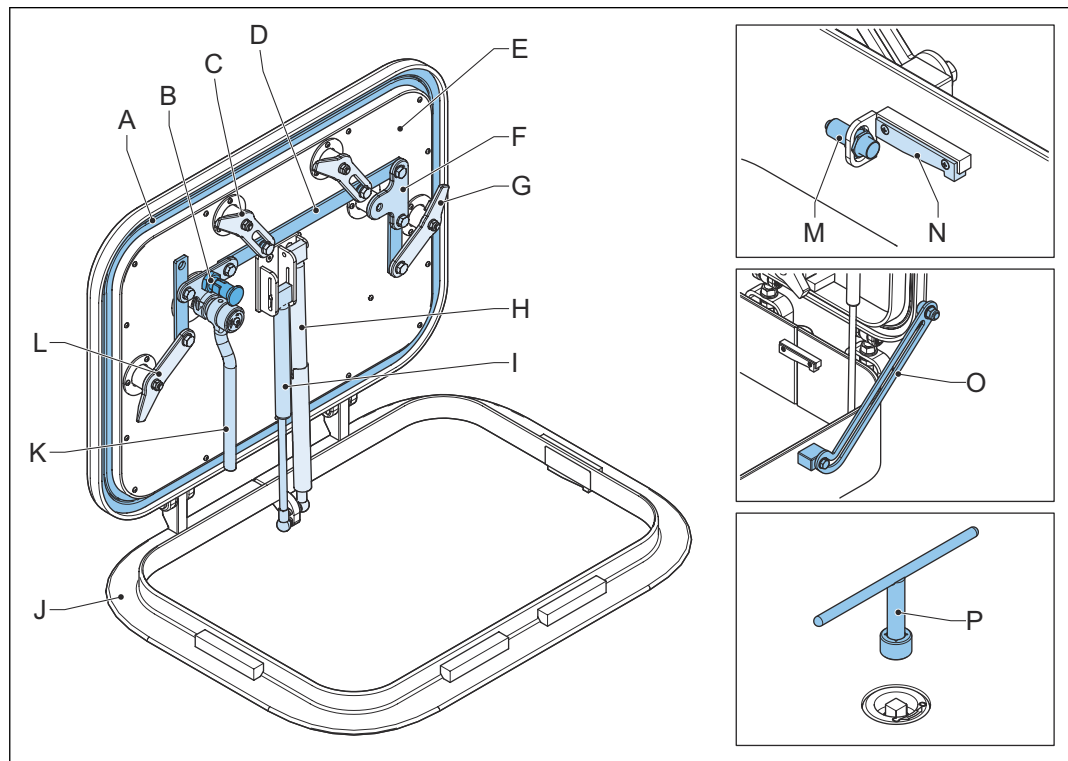
### 3.1 Intended use

All hatches produced by Winel BV are manufactured according to special customer requirements as well as to SOLAS and IMO regulations.

The hatches are designed to allow the passage of people and goods through a watertight or weathertight deck when opened. When closed, the hatches maintain the watertight or weathertight integrity of the deck in which the hatch is fitted.

Every hatch is factory tested and adjusted as far as possible. On site installation is therefore limited to welding of the frame into ship construction and adjustment of cleats/hinges.

### 3.2 Overview of the product



A	Rubber gasket	I	Gas spring
B	Locking pin / piracy lock (option)	J	Frame
C	Cleat	K	Handle
D	Latching device	L	End cleat
E	Hatch	M	Sensor (option)
F	Corner piece	N	Wedge
G	End cleat	O	open holder (option)
H	Gas spring with open holder (option)	P	Key (option, a handle on the upperside is standard)

Optional, the hatch can have one of these open holders:

- Open holder (type ESI) on one of the gas springs (H)
- Open holder on the outside (O). Only possible on models with a raised coaming.

For specific details about the hatch that is installed on the vessel, refer to the general arrangement drawings and the documentation enclosed.

### **3.3 Working principle**

The user can open and close the hatch with the handle or hand wheel on the hatch from both sides. The handle or hand wheel operates the latching device.

When the hatch is closed and latched correctly, the compression of the gasket makes the hatch weathertight/watertight.



## 4 Installation

### 4.1 Delivery, insurance and acceptance

#### 4.1.1 Delivery

The product including the frame is placed on a pallet and strapped with bands. All components are premounted if possible. If necessary, depending on the scope of supply, components are delivered separately.

#### 4.1.2 Insurance

The responsibilities of transport and insurance are stated in the sales order confirmation and in the general conditions of sale of WINEL BV.

#### 4.1.3 Acceptance

During acceptance of the delivery, WINEL BV recommends to proceed as follows:

##### Procedure

1. WINEL BV recommends to have an authorized official of the transportation company present during this procedure.
2. Check if the packing and all the pallets and/or boxes are undamaged and if all parts are present.
  - a) Compare the labels with the WINEL BV packing list and the order confirmation.
  - b) If there is damage or if parts are missing, immediately report this to the sales department of WINEL BV.

### 4.2 Recommendations for handling and unpacking

#### General

- Use a fork lift or a hoist to transport the pallets or the boxes as closely to the installation site as possible.
- Do not use hooks or other tools that may penetrate the packing and cause damage to the packed items.
- Only use lifting equipment with adequate capacity for the load.

For the weights and dimensions of the delivery, refer to the General Arrangement drawings enclosed.

- Only unpack the parts in the cardboard boxes just before you install them. This prevents parts from being lost.
- Use a sharp knife to open the cardboard boxes but take care not to cause damage to the parts inside the boxes.

#### Hatch assembly (frame with hatch and components)



##### Danger:

- The product is heavy.
- Use correct and certified lifting materials.
- Only authorized personnel are allowed to operate the lifting equipment.
- Follow the appropriate safety procedures.

- Remove the bands that hold the product to the pallet.
- Make sure that the hatch is secured in the closed position. This prevents that the hatch moves during the lifting operation.
- Use at least two steadying lines to guide the product during the lifting operation.

## 4.3 Storage

### 4.3.1 Warehouse storage

- Store the parts in a safe, dry and dust free environment.  
This prevents unnecessary damage and wear of the parts.
- If the parts were unpacked from their transport packing, repack the parts using appropriate packing materials.
- Use the original WINEL BV pallet to store the product.
- Do NOT stack pallets with the products on top of each other.

### 4.3.2 On-board storage

- Store the parts as close as possible to the future position.
- Make sure to place the hatch assembly on the correct deck.
- Make sure to protect the parts from damage caused by work in the vicinity of the parts.
- Re-pack or cover the hatch assembly and the other parts in order to prevent damage by grinding or welding nearby.

## 4.4 Welding

### 4.4.1 General welding recommendations



**Danger:**

- Welding the frame into or against the structure must be done by a certified and qualified welder and according to the requirements of the shipyard and the applicable class society.
- WINEL BV cannot be held responsible if the welding recommendation and the advised welding procedures were not followed.

WINEL BV can only make welding recommendations with respect to the product, not with respect to the construction of the vessel to which the product is installed.

### 4.4.2 Welding instruction



**Caution:**

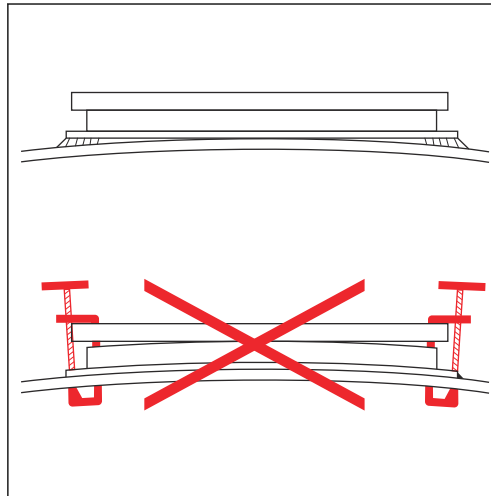
If you do not obey these instructions, you may cause damage to the product and the watertightness of the product is not guaranteed.



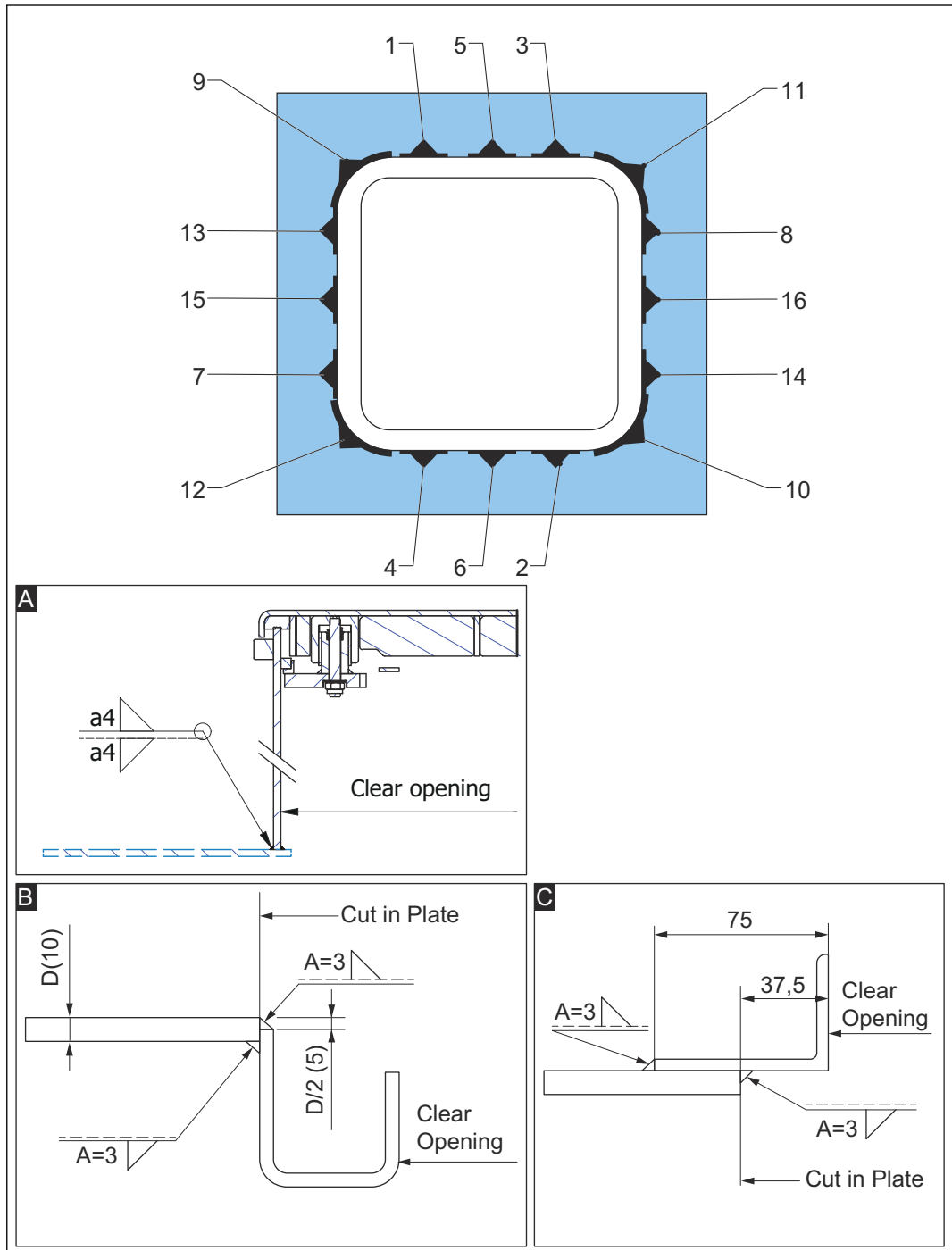
**Caution:**

Keep both hatch and frame straight. Do not force it towards the deck. Do not force the frame, for example with clamp tools.

Max frame deflection: 1mm / mtr



- Close and latch the hatch on the frame. Keep the hatch closed during the entire welding procedure.
- Welding must be done carefully to prevent thermal stresses in the product.
- Make sure that the heat-dissipation into the hatch is as little as possible.
- Refer also to the instruction on the hatch.
- Weld also the backside of the frame by interrupted welding.
- Refer to the illustration, start at position 1, interrupted welding (length  $\pm$  100mm). Follow to position 2 – 3 – 4 etc.
- Complete the welding: Fill the open spaces between frame and deck.



**Note:** Do a check on the weld sizes in relation to the thickness of the plates.

## 5 Troubleshooting



**Warning:**

Always read the safety instructions in section *Safety and warranty* on page 6 before trouble shooting.

Do not endanger people and the environment. Obey the safety instructions.

Fault	Possible cause	Check	Remedy
The hatch is heavy to open.	The gas spring has no force at all.	Check the gas spring for damage and deformation.	If you see damage or deformation, replace the gas spring.
	The gas spring has a reduction in force.	Gas spring	Pressurize the gas spring.
Hatch cannot be opened or closed with handle	Bolts in cleating system come loose	Cleating system	Place new bolts/nuts (apply locking fluid)
	Safety bolt of handle is broken	Safety bolt operating handle	Place new bolt (apply locking fluid)
Hatch does not close well	Damage on frame, hatch, rubber gasket, musketeer system, frame is bent	Complete system, hatch, rubber gasket and frame	Repair and/or replace damaged pieces and/or parts. Then adjust cleating system and hinges
Hatch is leaking	Rubber gasket is compressed too little	Rubber gasket, cleating and hinges	Replace rubber gasket and/or adjust cleating system and hinges
	Damage on frame, hatch, rubber gasket, musketeer system, frame is bent	Complete system, hatch, rubber gasket and frame	Repair and/or replace damaged pieces and/or parts. Then adjust cleating system and hinges
Handle not operating correct and/or too heavy	Rubber gasket is compressed too much	Compression of the rubber gasket when the hatch is closed and latched	Adjust cleating system and hinges
	No grease on wedges	Wedges	Apply grease to wedges
	Sticking of handle in bush	Handle	Disassemble handle and clean or replace handle and/or bushes
	Cleating rod is bended	Cleating system	Repair or replace damaged parts
	Damage on frame, hatch, rubber gasket, musketeer system, frame is bent	Complete system, hatch, rubber gasket and frame	Repair and/or replace damaged pieces and/or parts. Then adjust cleating system and hinges
	Paint on system parts	Parts that should not be painted for paint	Remove the paint

If the problems cannot be solved using the instructions in the manual, contact WINEL After-sales department.

## 6 Annex

### Pressurize the gas spring



**Danger:** A gas spring is a device under high pressure. It can explode if handled incorrectly.

A gas spring can be filled when it does not operate correctly. Only qualified personnel with a Winel training are allowed to fill the gas spring. Use the correct filling tool to pressurize the gas spring. Follow the instructions that come with the filling tool.

Contact Winel in case of doubt.

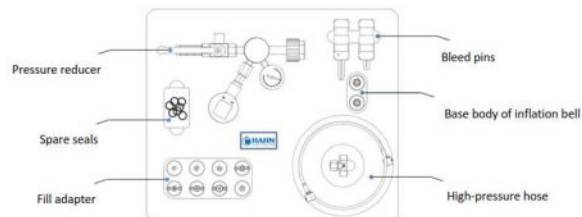
#### Filling case for gas springs with valve



With the HAHN filling case, we offer you the opportunity to fill your gas springs with the desired force on-site.

To ensure our products are used in a proper way, we provide training with our service technicians. Thus we can show you on site how to use our HAHN filling case equipment correctly.

The HAHN filling case includes the following accessories, which you need to fill your gas springs:



Please keep in mind that, to fill your gas springs, apart from our filling case, you will need a nitrogen gas bottle with DIN 477 cylinder valve number 10, purity 5.0.

You can fill all HAHN gas springs with a valve or cross valve.

#### Valve:

- Allows exact adjustment of the extension force of a HAHN spring to the desired conditions
- Is installed in the threaded pin of the fixed end of the compression spring
- Is installed as valve top on the piston rod of the tension spring

#### Cross valve:

- Is installed laterally at the end of cylinder on the fixed end side
- Allows filling in assembled condition
- Cross valves shall be considered in the length calculation of the gas spring

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