



# Installations and Commissioning Procedure for Hinged Doors

Global leader in advanced door, window and wall safety solutions



**RAPP  
BOMEK**



Document type: Assembly instruction

**Installation and Commissioning Procedure for  
Hinged Doors**

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## **1 PREFACE**

After many years of experience with welded and bolted installation of doors (both hinged and sliding) during the site installation phase, Rapp Bomek strongly recommends bolted installation as the best and cheapest method for the following reasons:

- During welding of the door frames to the bulkhead there will be considerable heat which will warp the frame and put it out of alignment. This means there will be a problem with the door leaf not fitting and closing properly in the frame.  
This is not a problem with a bolted installation since no distortion will occur.
- Our experience is that the bulkheads are often not 100% aligned and the bulkhead therefore has to be rectified prior to installing the door frame by welding.
- This is not normally necessary for bolted installation since shims can be used between the frame and bulkhead to compensate for the misalignment of the bulkhead. This is an easy solution and much quicker for the yard than having to re-align the bulkhead.
- Bolted installation also means that a door can be adjusted or replaced at a later stage during construction or operation of the platform. There often occur distortions in the module walls and bulkheads during module lifting and the bolted installation ensures that the doors can be re-aligned after such module lifting, this will not be possible (very difficult and expensive) with a welded door installation.
- Welding of frames to bulkhead also damages the surface finish on the frames which will have to be re-blasted and the paint repaired. There is no such damage during bolted installation.
- Use of bolted installation avoids the need for hot work and associated safety requirements which have to be followed for welded installation.

## **2 GENERAL**

### **2.1 RAPP BOMEK CONTACT ADDRESS.**

Address: Rapp Bomek AS, Kvitberget 5, 8012 Bodø, Norway

E-mail: [office@rappbomek.com](mailto:office@rappbomek.com)

Phone: (+47) 75 59 16 00

### **2.2 INSTALLATION INSTRUCTION SCOPE**

This Rapp Bomek Fire Door Installation Procedure covers the standard range of door types delivered and also all Fire Rated, Non-Rated and Louvered Door's where not otherwise specifically noted.

### **2.3 INSTALLATION PERSONNEL**

Experienced personnel must execute door installation. We recommend workers from our Fire Door Fabrication and Installation Department. Installation should as a minimum be supervised by Rapp Bomek personnel.

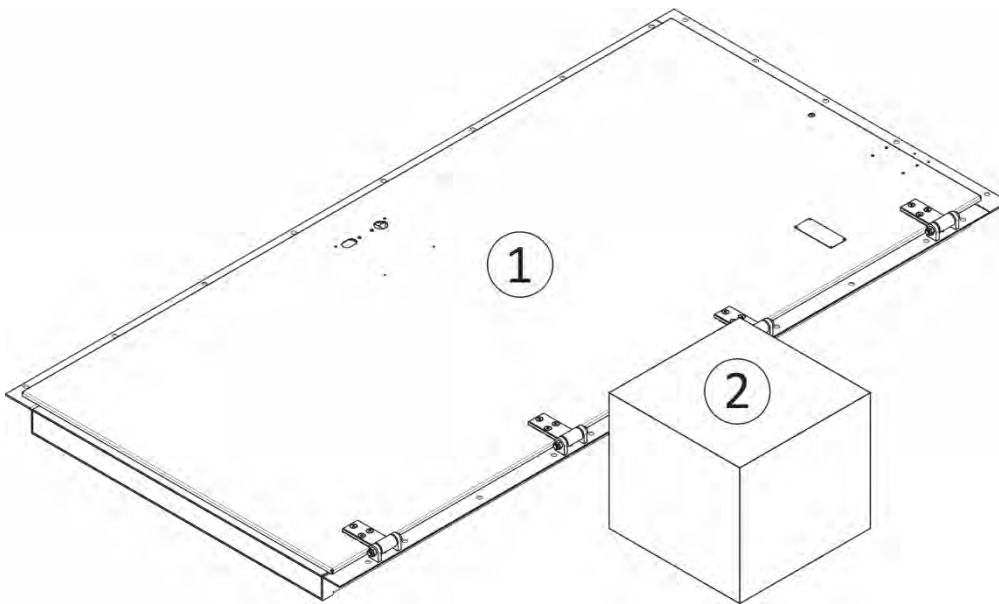
## 2.4 INSTALLATION EQUIPMENT AND MATERIALS

The following equipment and materials is normally necessary, and shall be made available throughout the whole installation work period. Supplied by installation contractor, if not specifically agreed otherwise.

- GA Drawing
- Marking pen.
- Lifting gear, including shackles, lifting strap and wires.
- Drilling tools.
- A non-inflammable tarpaulin.
- Ladders, scaffolding etc.
- Fire-retardant sealing compound and/ or compriband for sealing of opening between frame and bulkhead (can be supplied by RB on request).
- Miscellaneous steel profiles for use in shimming, aligning and levelling of bulkheads and floors during door installation (Rapp Bomek offer shims for door frame on request).

## 3 DELIVERY STATUS

- The Rapp Bomek doors are delivered as complete units in accordance with specifications.



Pos no.1: Doorleaf and frame.

Pos no.2: Shipped loose items/not installed items (as listed in the packing list).

### SHIPPED LOOSE ITEMS:

Certain parts are delivered shipped loosed for the following reasons:

- Items which are to be installed by yard e.g. fixing bolts, washer, nuts and gasket for doors frame to bulkhead.
- Items, which have to be installed, and adjusted/ tested after installation of door and frame, e.g. gas tight seals etc.

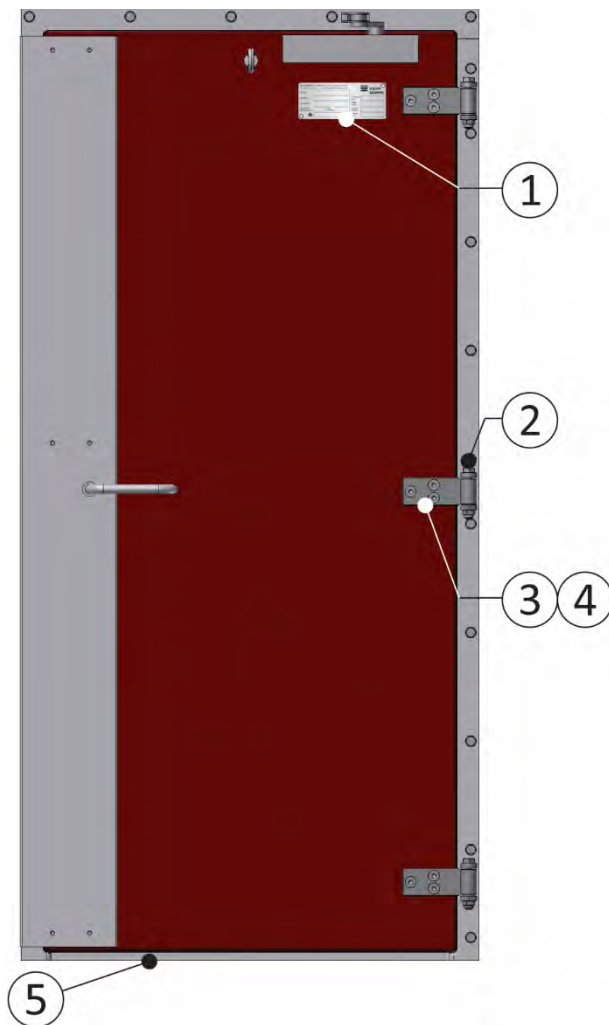
Such items are packed in boxes and delivered, packed together with each door. Customer must check that the packing list match the receive parts and report any missing parts or damage to Rapp Bomek immediately on receipt of doors (see chapter 2.1).

### VISUAL INSPECTION TO IDENTIFY TRANSPORTATION DAMAGE.

At the installation site, each door shall be thoroughly, visually, checked for damage of any sort to surface, structure or parts. Any damage shall be reported to Rapp Bomek and should be repaired prior to installation (see chapter 2.1).

## 4 MARKING OF THE DOOR.

Each door is marked with a reference number (door/tag no), which on architectural drawings identifies where the door is to be installed. The door installation is in strict accordance with door architectural plan and door number marking.



- Pos no.1: Door/tag sign.  
2: Rapp Bomek ID number, Hard stamped, door frame, above centre hinge.  
3: Rapp Bomek ID number, Hard stamped, centre hinge.  
4: Rapp Bomek ID number, Hard stamped, underneath the centre hinge joint.  
5: Only doors with removeable threshold, Rapp Bomek ID number, Hard stamped underneath.

## **5 SITE PREPARATION**

The installation area shall be properly cleaned and cleared before commencement of work. The installation contractor shall ensure that other work will not interfere, and that traffic through the installation area is reduced to a minimum.

The door installation supervisor shall ensure that all items that could be a hindrance to handling of the door during installation or items that may be damaged during the installation work period are carefully removed from the area.

All previously installed panels, flooring, electrical equipment's etc., shall be properly covered to ensure that any damage from door installation work is avoided.

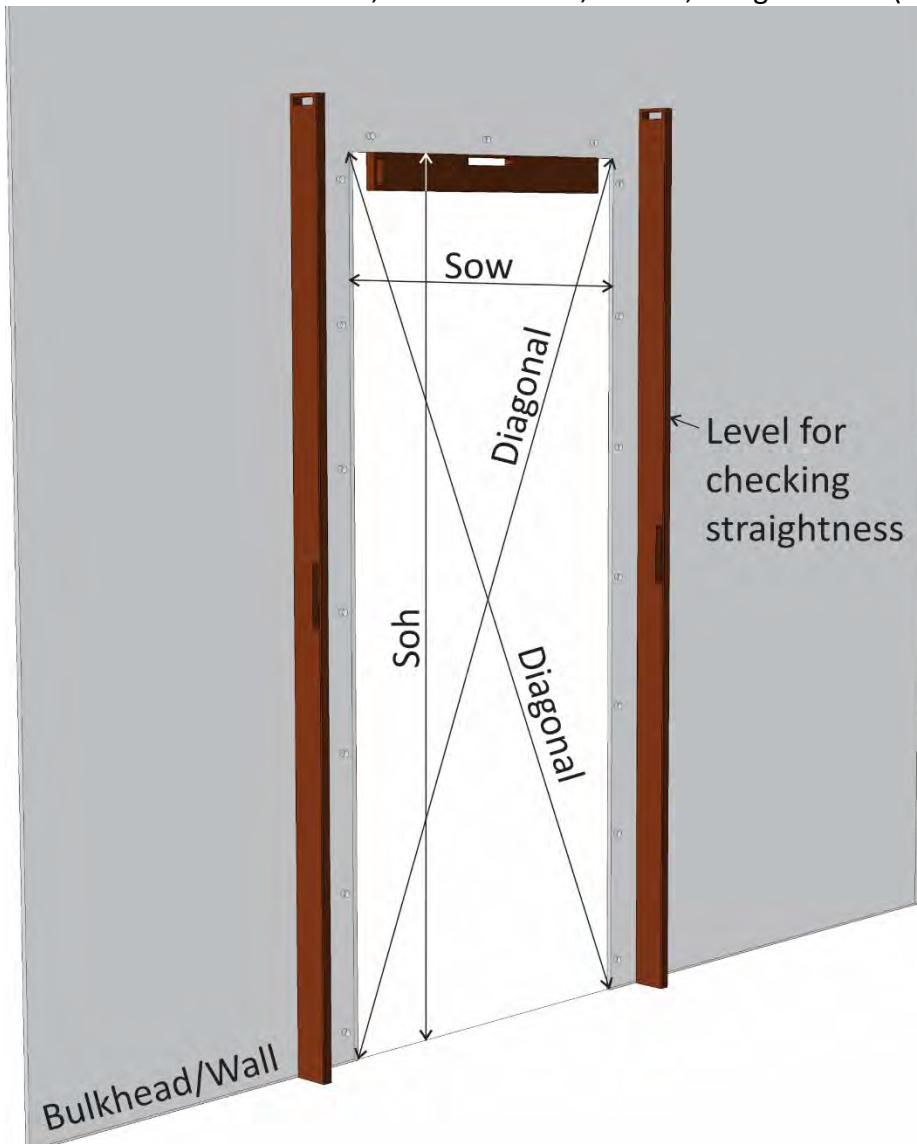
The installation contractor shall be responsible for proper system for door transportation and lifting of the door into the installation zone.

The installation supervisor shall, prior to commencement of work ensure that HSE are strictly complied with.

## 6 CHECK OF WALL/BULKHEAD CUT-OUT.

Wall/bulkhead cut-out perimeter shall be checked against drawing- both height, width and diagonal measures to be checked in addition to surface straightness and horizontal / vertical orientation. Maximum plate buckling at the perimeter of the cut-out shall be 5 mm along a straight edge. Deviations that may interfere with proper door installation must be mended through adding or removing material around the perimeter. (ref. chapter 6, Norsok C-002, Section 7.12).

General tolerance for cut-out, ref. ISO 2768-1, table 1, designation m (medium).



Sow = Structural Opening Width  
Soh = Structural Opening Height



## 6.1 NORSOK REFERENCE:

NORSOK C-002, 7.12 Frames:

Door frames shall be installed, as appropriate, by either bolting through air tight isolation gaskets, or by a continuous fillet weld all round. Frames shall be reinforced at hinges, locks and closer device positions. Detailing shall minimise galvanic corrosion.

To reduce transmission of forces from the bulkhead into the door-frame, which may affect proper alignment and operation of doors, the maximum plate buckling at the perimeter of the cut-out shall be 5 mm along a straight edge. Where buckling is in excess of this, or where required for structural reasons, the cut-out shall be terminated at a welded angle profile into which the door frame may be welded or bolted.

## 6.2 PREPARING THE DOOR BEFORE INSTALLATION:

### Self-adhesive protective plastic.

For doors with brushed finish are delivered with a Self-adhesive protective plastic sheeting to protect the surface of the door leaf during site and hook-up stage. This sheet must be removed as late as possible in construction phase

### Correx sheets.

Door leaves with correx sheets, are added to protect the surface of the door leaf during site and hook-up stage. The correx sheeting should be removed as late as possible in construction phase.

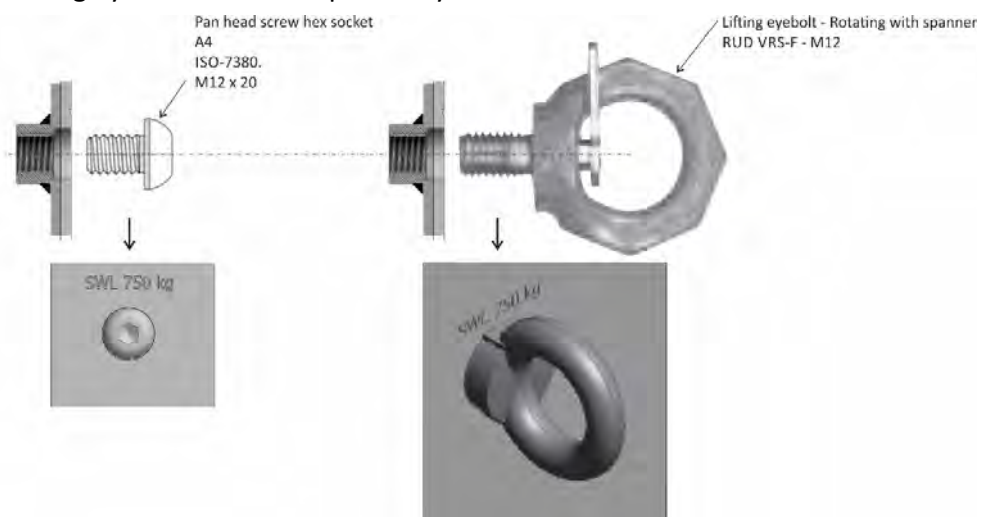
### Doors to be installed in Atex area.

The door are covered with a self-adhesive protective plastic sheeting and correx sheets, these to be removed before transporting the door into atex area.

### Lifting points.

See General Arrangement (GA) Drawing.

For doors delivered/equipped with M12 lifting eyebolt (shipped loose); Replace the M12x20 Pan head screw (Ref. GA Drawing) with the shipped loose M12 lifting eyebolt, keep the M12x20 Pan head screw on a safe place until the installation of the door are done. After installation of the door, the M12 lifting eyebolt must be replaced by the M12x20 Pan head screw.



## **7 BOLTED INSTALLATION OF HINGED DOORS**

### **WARNING!**

When lifting the door in position by using strap or equal, make sure to secure the items before loosen the strap.

### **INSTALLATION SEQUENCE:**

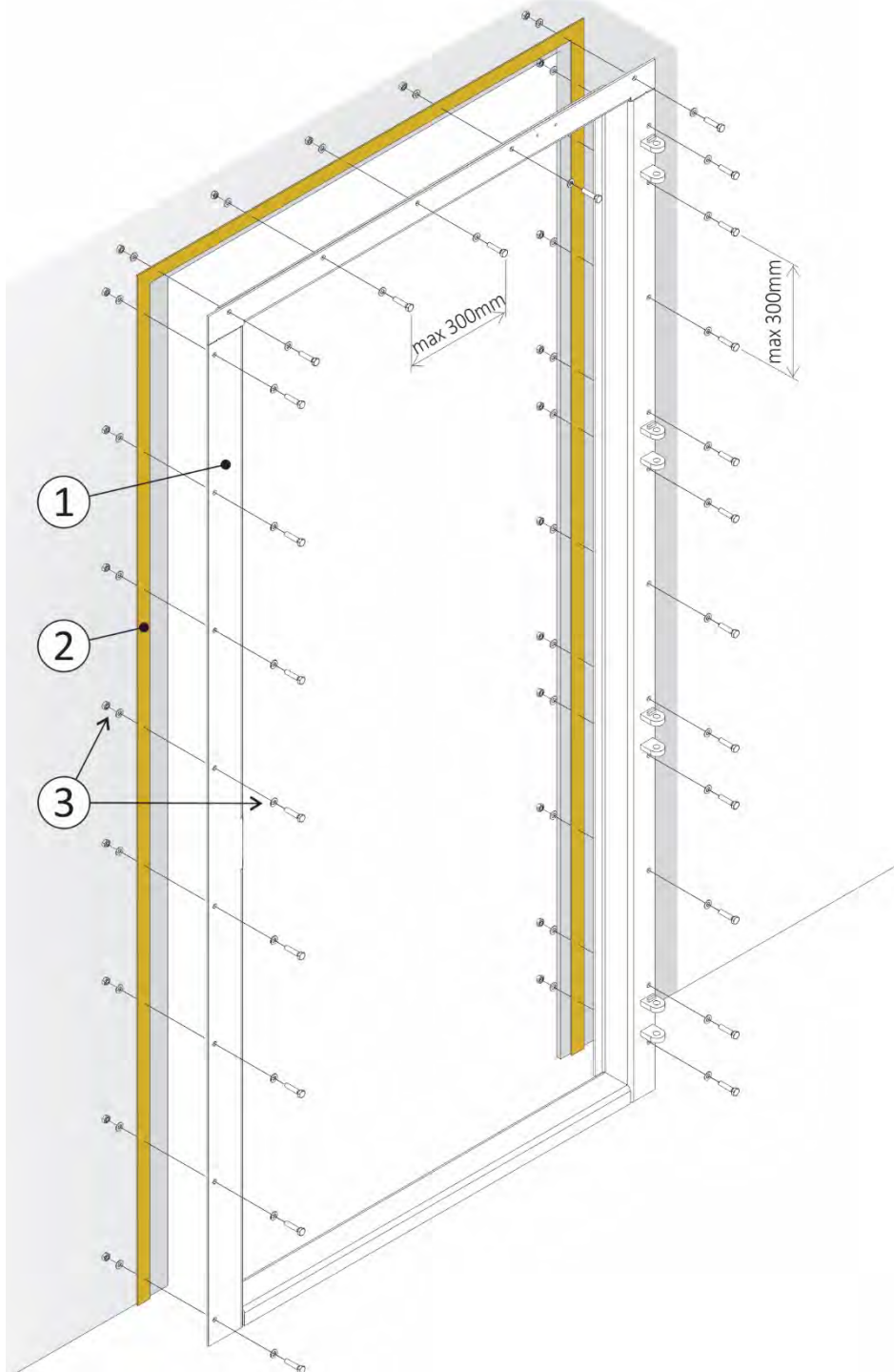
1. Drilling of wall/bulkhead:
2. Gasket 30x3mm glued to doorframe.
3. Installation of Door (complete with the frame).
  
4. Mounting of Door handle.
5. For doors equipped with door closer.
6. Temporary brackets and spacers used during erection to be removed.

### **Note:**

- In hook up phase, hinged doors with dropdown threshold should be adjusted/locked in open position to avoid damage due to cables etc. running through the door opening.
- Rapp Bomek recommend that the door and doorframe are installed as one unit.
- Due to heavy work during the commissioning period we recommend the vertical panic bar and key cylinder to be installed as late as possible.

### 7.1 DRILLING OF WALL/BULKHEAD:

- **Alternative 1:** Doorframe is predrilled or drilled on site before being erected in opening. Door and frame is positioned in opening and wall is marked for drilling of holes. Door and frame is removed whilst holes are drilled in bulkhead. Fixing holes distance cc. max. 300mm.
- **Alternative 2:** The door and frame is positioned in the wall opening and drilled through the frame and wall in one operation. Fixing holes distance cc. max. 300mm.

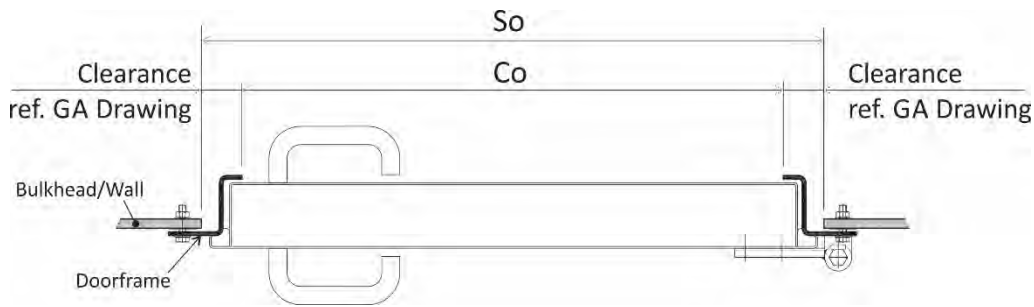


Pos no. 1: Doorframe

Pos no.2: 3x30mm gasket, to be glued to doorframe.

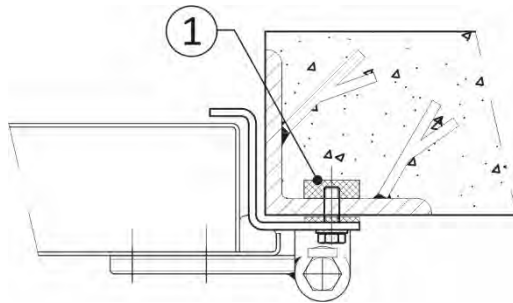
Pos.no.3: Fixing bolts with nut and washer.

Clearance, ref General Arrangement (GA) Drawing.



Abbreviation:  
So – Structure opening  
Co – Clear opening

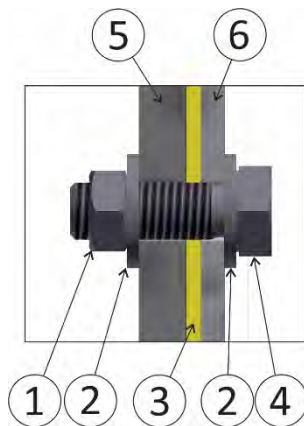
Alternative; Bolting concrete.



Pos no.1: Expanded polyester/Isopor.

**Gasket 30x3mm glued to doorframe.**

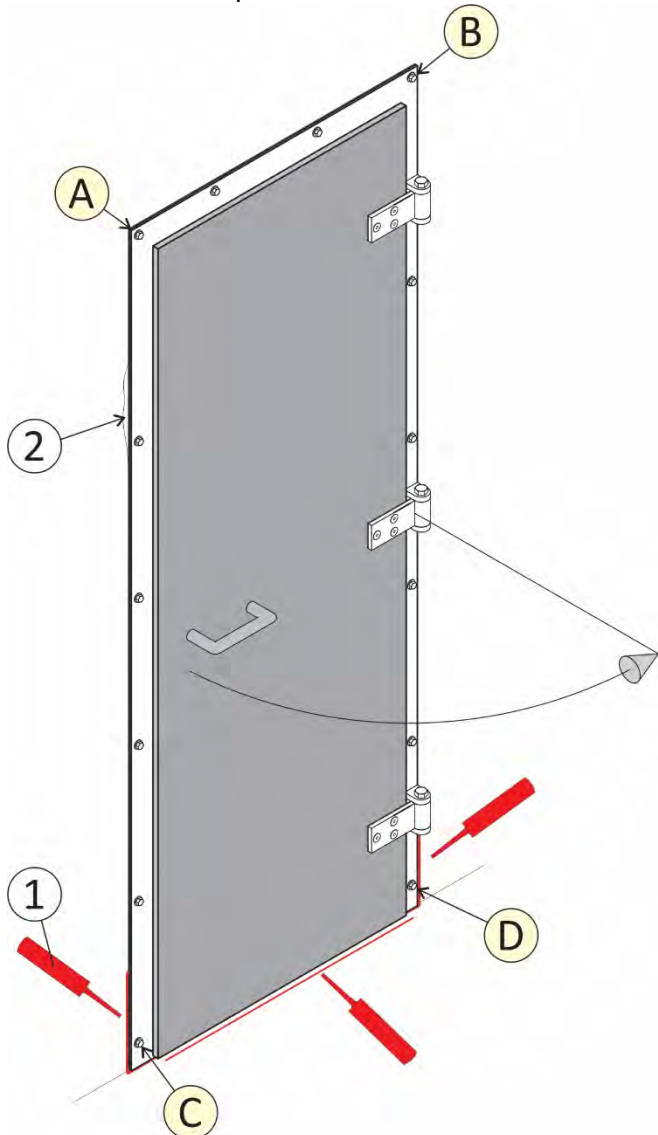
- Gasket 3x30mm, between doorframe and wall structure to be glued to doorframe.  
(see also chapter 9)



Pos no.1: Nut  
Pos no.2: Washer  
**Pos no.3:** 30x3mm Gasket, glued to doorframe.  
Pos no.4: Hex. Head bolt/screw  
Pos no.5: Wall/Bulkhead  
Pos no.6: Doorframe.

## 7.2 INSTALLATION OF DOOR (COMPLETE WITH THE FRAME):

- The door (and doorframe) is lifted into position. Secure the doorframe with four bolts (A-B-C-D) screwed in each corner (Check diagonal measure on the door frame).
- **Note!** If straps are being used to lift the frame in place, the frame must be secured before the straps removed.



Pos no. 1: Threshold should be sealed on both sides and 200mm up the sides of the frame with fire-retardant sealant

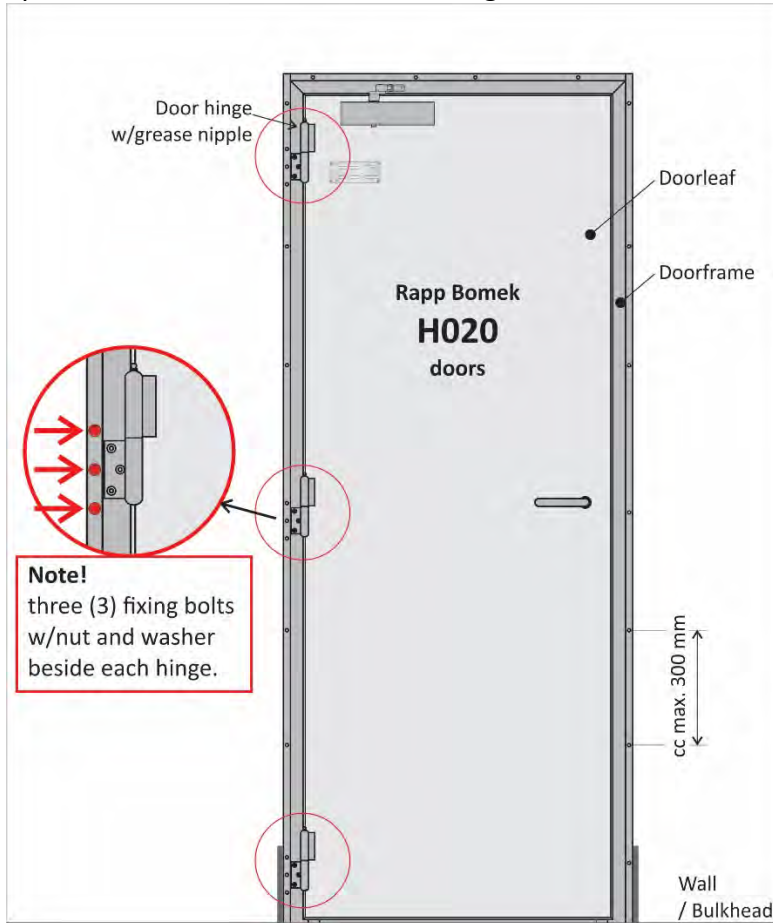
\*Pos no. 2: Clearance, distortions between frame and bulkhead up to 5mm to be corrected by using ceramic fibre insulation and sealed with fire-retardant mastic after all bolting is completed.

Pos no. A-B-C-D: Each corner is drilled, and bolt and nut is installed with washers, see also picture chapter 7.2.

- After fixing these four bolts (A-B-C-D), and removed distance pieces (chapter 7.5), alignment and function of door to be checked. Frame must be adjusted to the door leaf and checked continually during installation.
- Check that opening between frame and wall surface do not exceed 5 mm on average and should be filled in with ceramic fibre insulation and sealed with fire-retardant sealing compound after completion of bolting. On completion of frame installation, threshold should be sealed on both sides and 200mm up the sides of the frame with fire-retardant sealant.
- Bolting sequence should be done diagonally to minimise frame distortion (A-B-C-D).

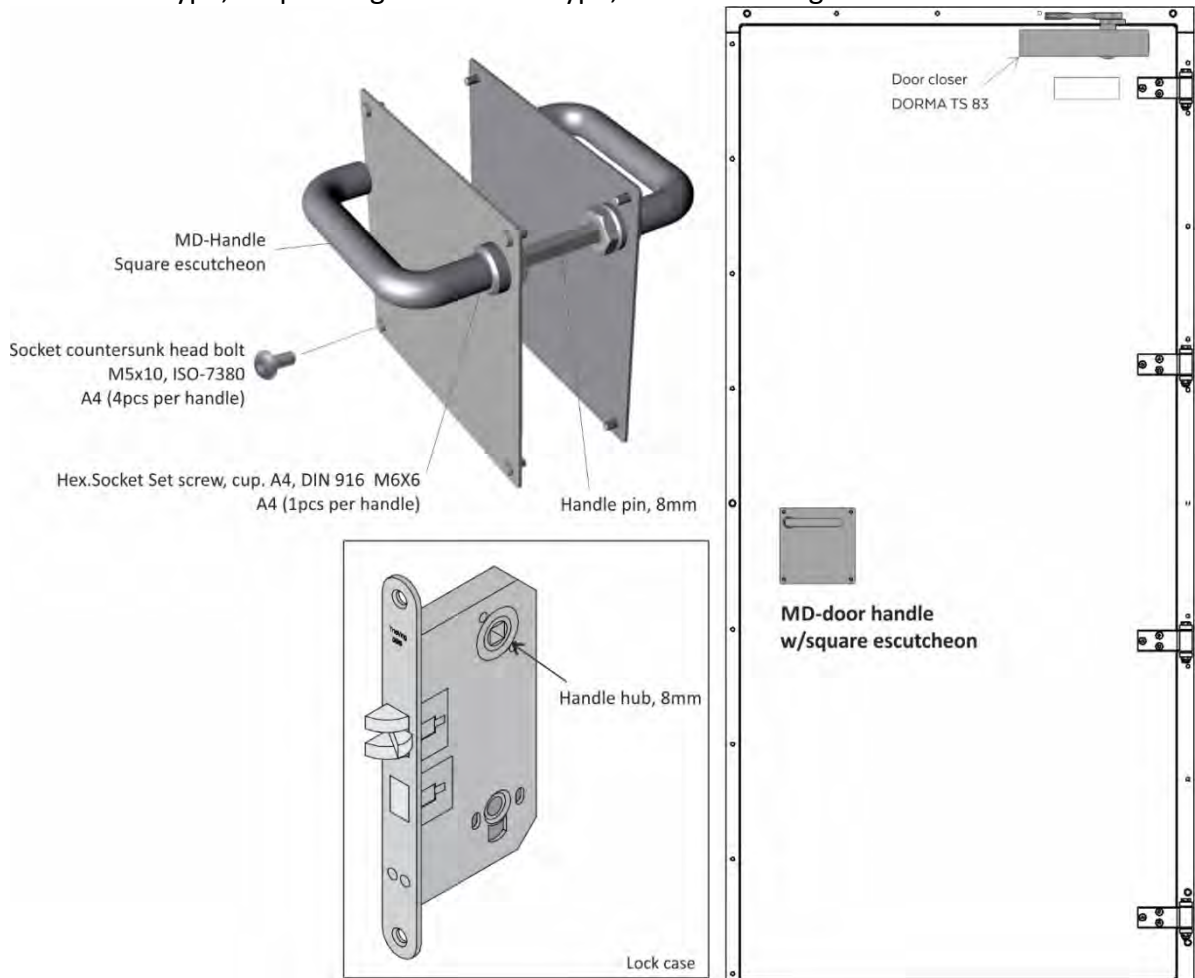
- If possible, the nuts should be tack-welded to the structure. As an alternative to tack welding nuts the use of a second nut (lock nut) is acceptable. This will enable adjustment of frame at later stage without cladding etc. having to be removed.
- Check all clearances against the relevant drawings.
- All seals should be glued in place (see chapter 9).
- Hinges to be greased with high quality grease.
- Hinges, locks and latches to be checked and adjusted and the door to be function-tested.

Special considerations when installing H020 doors, see note below.



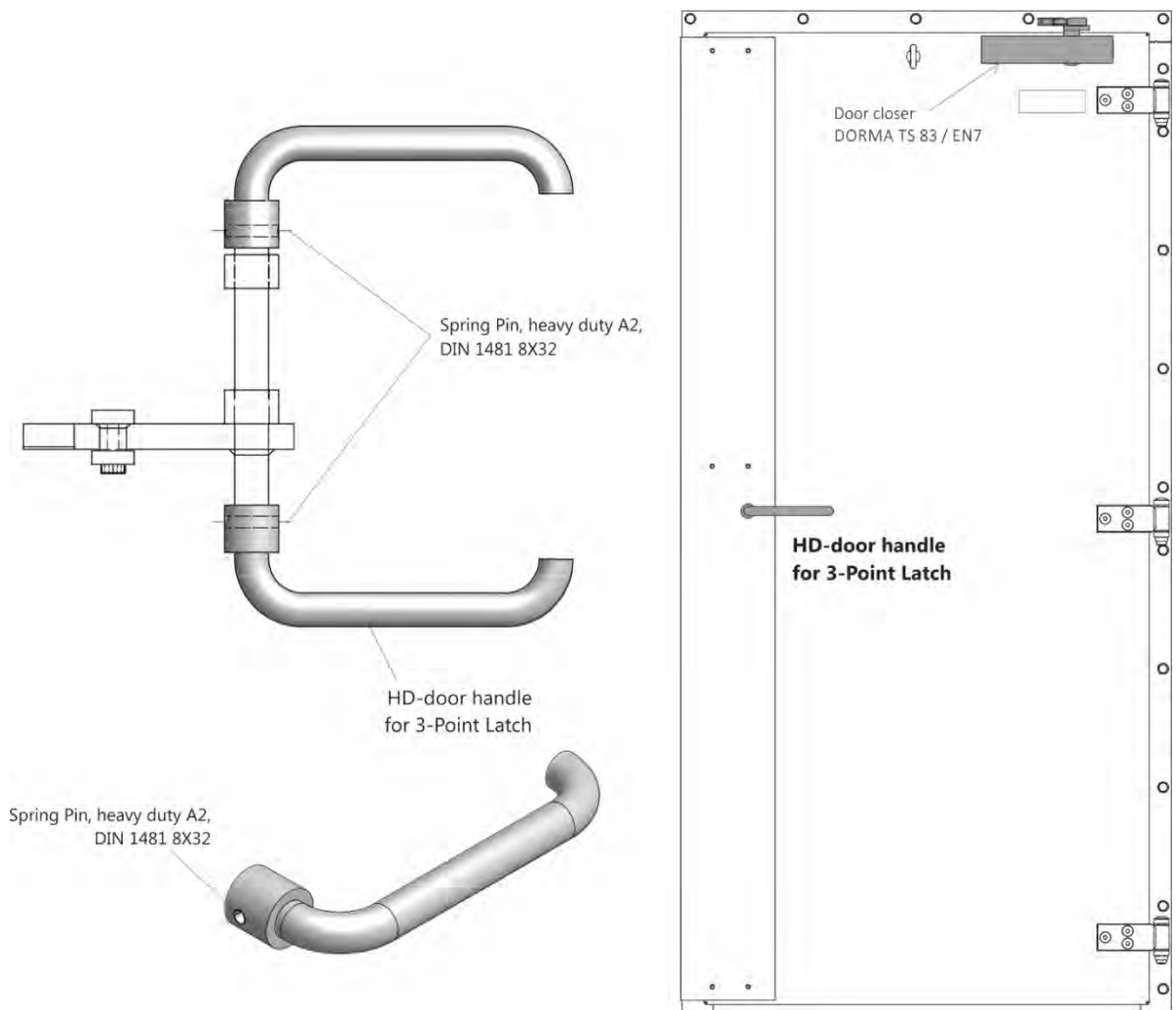
### 7.3 MOUNTING OF DOOR HANDLE.

Door handle type, -depending on the door type, ref GA Drawing.



MD-Door handle type.

Insert the handle pin through the handle hub in the lock case, install the door handle on opposite hinge side with the following screw (M5x10). Lock the handle pin to the door handle with the M6x6 screw. Install the hinge side door handle, and finally lock the handle pin with the M6x6 screw.



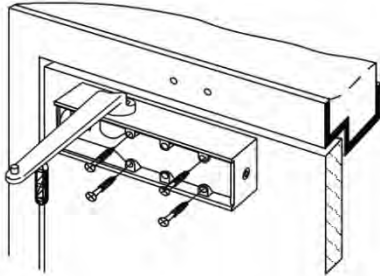
HD-Door handle type, for doors with 3-point lock.

The door handles to be locked in position with the following spring pin.



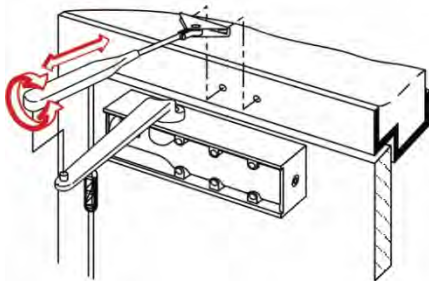
#### 7.4 FOR DOORS EQUIPPED WITH DOORCLOSER TYPE DORMA TS 83

- Door closer's installed in accordance with manufacturer's instructions enclosed with the door. The door -leaf and -frame are normally predrilled by Rapp Bomek.



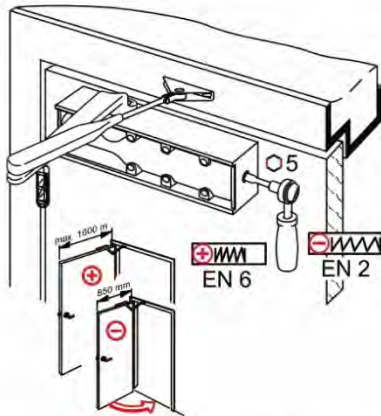
##### Installation of door closer on door:

Screw the door closer to the door leaf. If a mounting plate is used, this must first be fixed to the door leaf with the accompanying screws, after which the door closer is attached to the mounting plate.



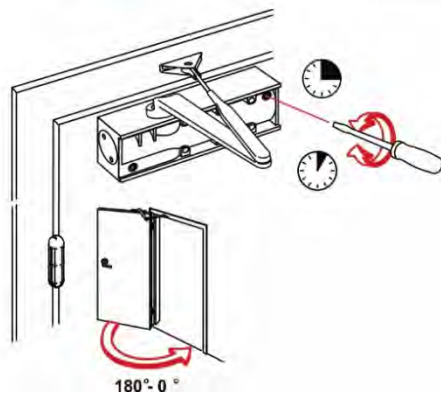
##### Connection of arm and door closer:

Next attach the forearm to the door frame. Join the arms together. In the starting position, set the arm system so the forearm is at right-angles to the door frame.



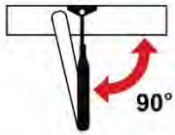
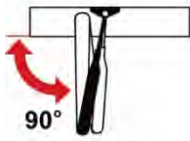
##### Adjustment of closing power:

TS 83 has an adjustable closing power of 2-6 EN. The closing power is adjusted on the short side of the closer using a 5 mm Allen key. Screw clockwise for stronger closure and anti-clockwise for weaker closure.



##### Adjustment of closing speed:

Closing speed from 180 to 0 degrees is adjusted with a valve under the closer's front cover. Screwing this valve clockwise will cause the door to close more slowly, while screwing it anticlockwise will give quicker closing. Closing speed must be approx. 5 seconds from a 90 opening position until the door is fully closed.



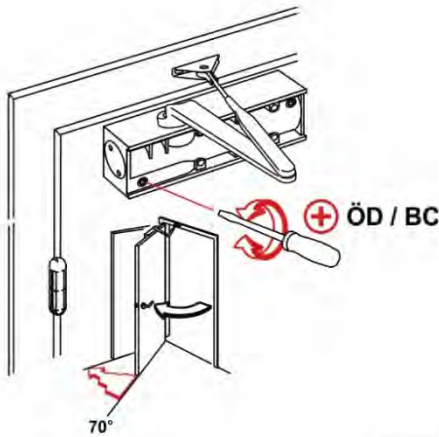
#### Adjustment of final closing sequence:

If final closing sequence is required, the main arm must be at right-angles to the closer housing when the door is closed. If final closing sequence is not required, the forearm (the arm fixed to the door frame) must be at right-angles to the door frame. This is achieved by lengthening or shortening the forearm.

#### Adjustment of backcheck:

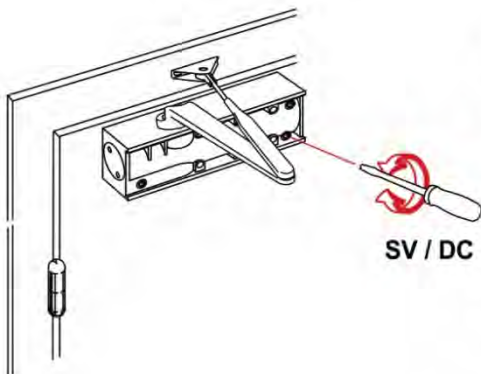
The backcheck is standard on the TS 83, and the valve is marked ÖD/BC. When the valve is screwed all the way out, i.e. to a level flush with the housing round the valve, the backcheck has been disengaged. When the valve is fully screwed in, the backcheck is at its maximum. The backcheck will cut in when the door is opened more than 70°.

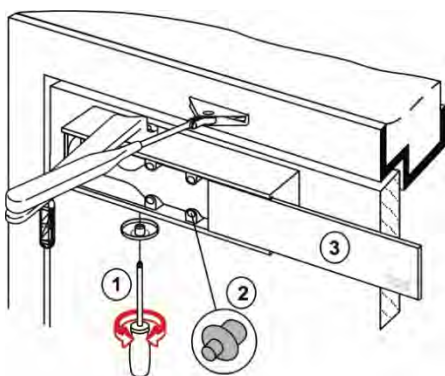
A slow opening of the door will give a weak checking action  
A rapid opening of the door will give a strong checking action



#### Adjustment of closing delay:

One variant of TS 83 has an additional function compared to the other variants. This is closing delay (SV/DC). Closing delay is used on doors where it is necessary to delay closure, e.g. doors in hospitals, entrances etc. This delay functions from 120-70 and operates steplessly. Screwing the valve all the way in will give maximum closing delay, while if it is fully screwed out (valve flush with closer housing), there will be no closing delay. Closing delay may be used on fire doors (ref. SS-EN 1154)





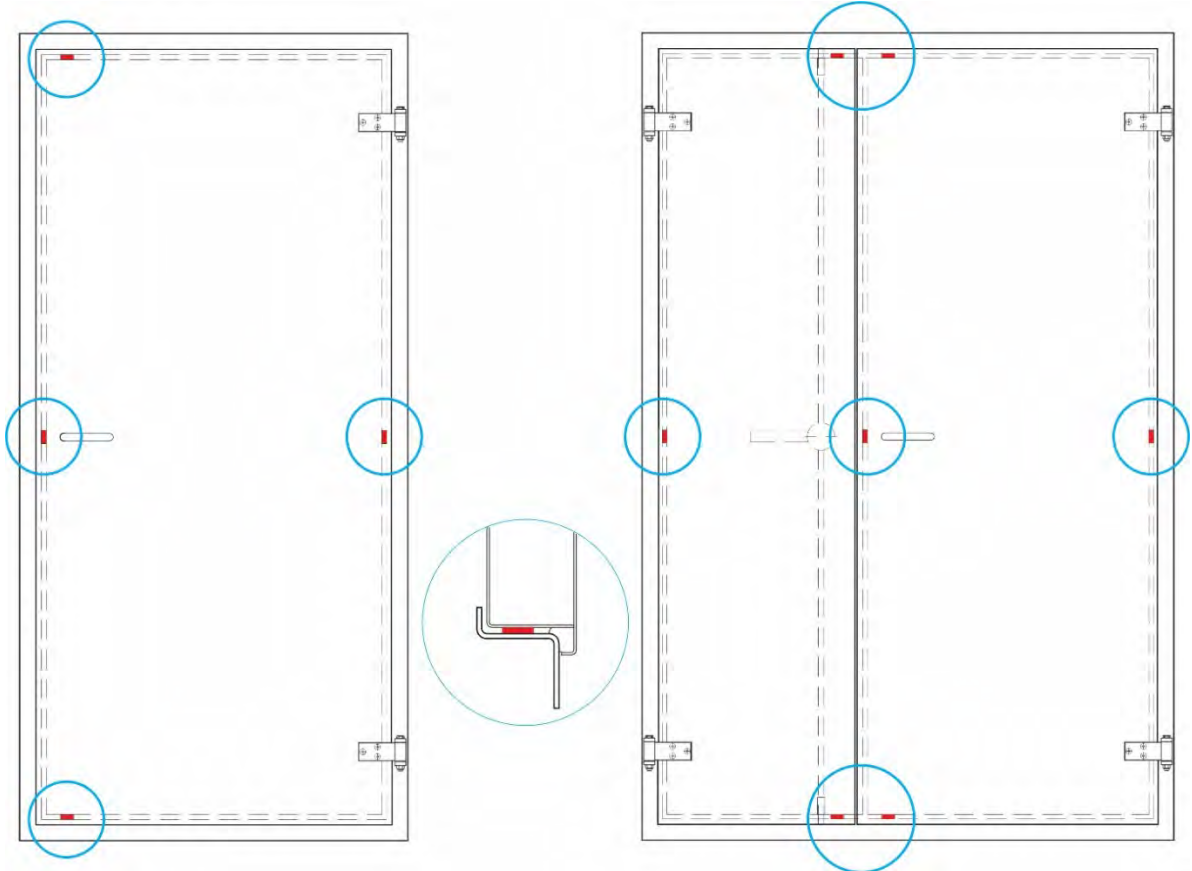
**When installation is complete:**

1. Attach the cover plate to the shaft on the opposite side of the arm with a screwdriver.
2. A small rubber plug is included in the bag of screws, and this should be inserted in one of the spare holes on the door closer housing to prevent the front cover sliding to the side during use.
3. Push the front cover into place.  
Remember that the DORMA label on the cover plate must be the right way up.

**Tips for adjustment of closing strength on TS 83:**

1. Screw the Allen screw for closing power clockwise until you feel the screw go slack.
2. Screw the valve for closing speed almost all the way in. (The door will close slowly again).
3. The door closer is now so weak that it will be unable to close the door. Use the Allen key and gradually screw in the closing power screw to increase the door closer's strength. At the correct power the lock will latch itself. The door closer is now strong enough for the door.
4. Due to pressure differences in buildings, we recommend the use of pressure equalisation valves.
5. Adjust the closing speed valve so the door closes in about 5 seconds from an open position at right-angles.

7.5 TEMPORARY BRACKETS AND SPACERS USED DURING ERECTION TO BE REMOVED.



Single Hinged Doors:  
4 No. of distance pieces (fixed with glue)

Double Hinged Doors:  
7 No. of distance pieces (fixed with glue)

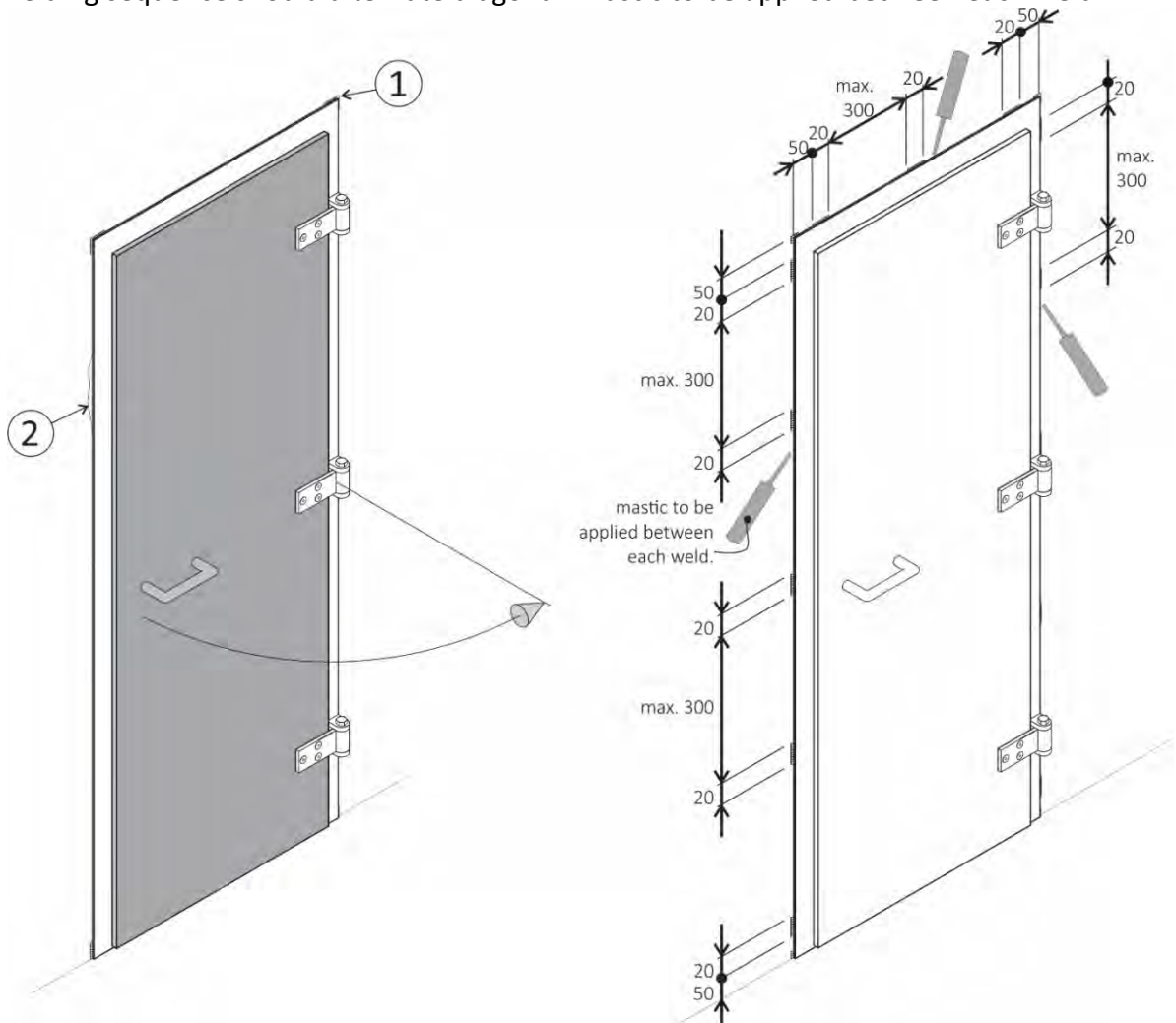
**Note:** Make sure to remove the distance pieces after installation of the door.

## 8 WELDED INSTALLATION OF HINGED DOORS.

Welded installation (not continuous welding).

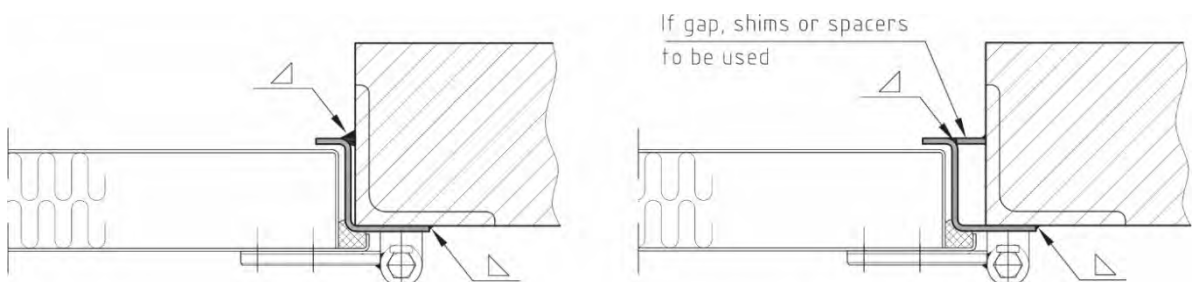
See also chapter 7.

Intermittent weld should be used with a length of 20 mm and maximum distance of 300 mm between each weld. Each weld to start approx. 50 mm from each corner of the door frame. Welding sequence should alternate diagonal. Mastic to be applied between each weld.



Pos no.1: Tack welding the corners and around the hinges.  
Pos no.2: Clearance, distortions between frame and bulkhead up to 6mm to be corrected by using shims, infix plate in order to minimise distortion after welding

Complete tack welding and apply mastic between each weld.



## 9 PROCEDURE FOR INSTALLATION OF GASKET/SEAL

Tabell, area of application of sealing compound and glue for hinged doors.

Product	No. of tubes normally enclosed with each door.			Area of application			
	Single Hinged	Double Hinged	Double Hinged w/top hatch	Rope gasket (silica fibre gasket)	Gasket 30x3mm (gasket between frame and wall)	Gas and weather tight sealing.	Sealing of frame/ bulkhead and threshold/baseplate.
Ceramic Glue Heatex for rope gasket (or equal)	-	-	-	(X)			
Fire-retardant sealing compound, SikaFiresil Marine N (or equal)	1 (see note)	2 (see note)	2 (see note)		X		X
Super glue – Super 7. (or equal) Only doors with gas or weather tight sealing	1	2	2			X	

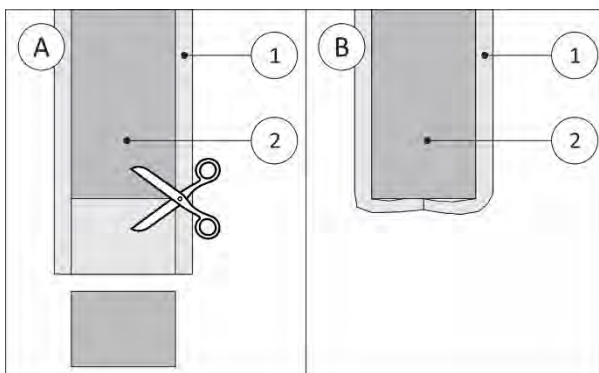
### IMPORTANT

G.A. Drawings should always be at hand when erecting gaskets and seals since there may be special instructions given.

- Note:**
- Welded installation, 3 tubes of Fire-retardant sealing compound delivered with each door.
  - The rope gasket is complete assembled in the door (and/or doorframe) of Rapp Bomek.
  - Gas/weathertight sealing, see chapter 9.2.

### 9.1 SILICA FIBRE GASKETS (ROPE GASKET)

The Silica fibre (rope) gasket is normally complete assembled in the door (frame) of Rapp Bomek. In cases where it is necessary to assemble the gasket, make sure that the gasket channel is clean. Apply glue for rope gasket in gasket channel and press the gasket in place. (Do not stretch the gasket). When cutting silica fibre gasket, pull the stocking of the core, cut core approximately 2 cm and put the sock protective back over core.



Pos no.1: Silica fibre stocking

Pos no.2: Silica fibre core

### 9.2 GAS TIGHT/WEATHER TIGHT SEAL, U-PROFILE (TWIN LIP)

For hinged doors this seal is pressed and glued in place together with the silica fibre gasket. The gasket must have a good connection to the frame before glue is applied. Note that doors only primed (later painted by yard) the gasket to be shipped loose and fixed after painting.



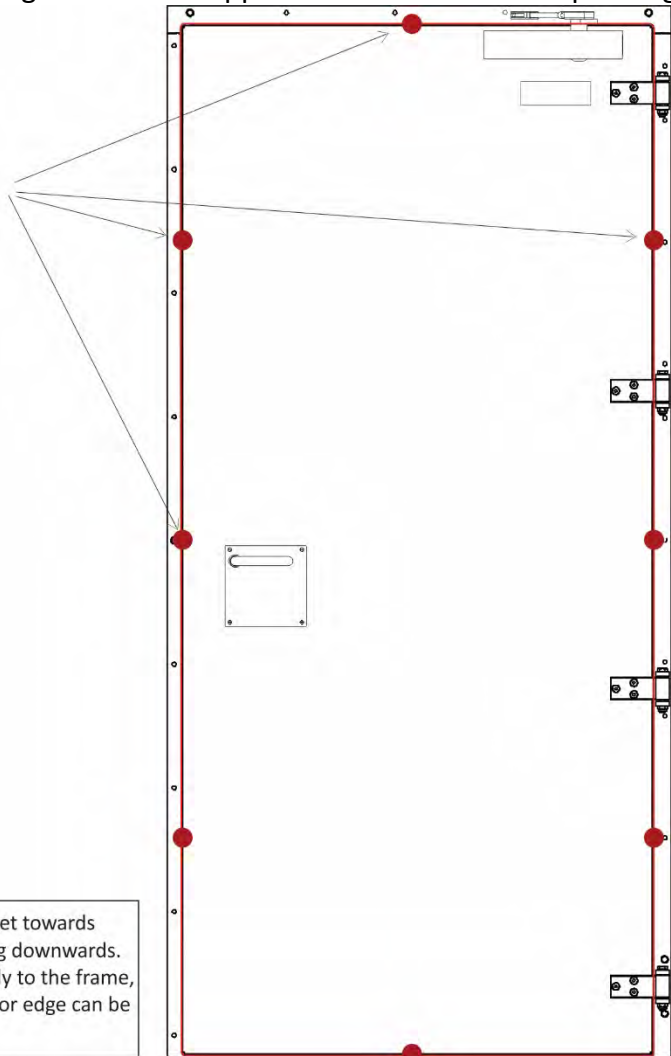
● **Note, Spot glue.**

Install/adjust sealing on door leaf, then add glue.



**NOTE**  
BEFORE ADDING  
ANY GLUE MAKE  
SURE GAS  
TIGHT SEALING  
SEALS PROPERLY  
TO DOOR  
FRAME IN ALL  
POSITIONS.

Press the weather tight gasket towards frame whilst dragging/moving downwards. When the gasket fits properly to the frame, glue between gasket and door edge can be applied.



### 9.3 SEALING

Fire-retardant sealing compound is attached with the door.

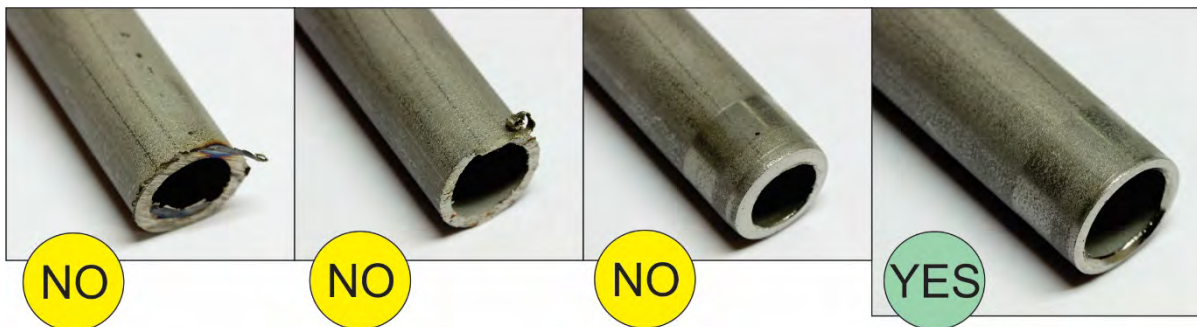
### 9.4 GASKET, SIL-TEX 3 X 30 MM

Apply Fire-retardant sealing compound, to back of frame; allow for curing, and erect strip in position. Holes need to be made in the strips for pre-drilled Frames.

## 10 PNEUMATIC HINGED DOOR

Rapp Bomek pneumatic operating hinged doors are delivered with following shipped loose equipment:

- Cylinder and lever arms
- Air reservoir.
- Control box.
- Emergency exhaust valve
- Push button valve (if included, see pneumatic user manual).
- Temperature feeler (fire rated doors, see pneumatic user manual)
- Shock absorber.
  
- Before the installation of the pneumatic system start, the installation personnel must have in hands the pneumatic user manual. The pneumatic user manual include: Installation description, adjustment, performance test procedure, operating instruction, maintenance, fault finding procedure and will normally include flow-sheet, hook-up drawing, and general arrangement drawing of door drive system.
- GA drawing of door.
- It is important to use a suitable tool, pipe cutter etc., to cut instrument pipes, as well as removing grades after cutting. Always blow thru pipes with compressed air before installing it, to make sure it is completely clean inside.
  - Example of incorrect and correct cutting of pneumatic tube:



### USE OF THREAD SEALANT OR THREAD TAPE

- Both can be used, this is normally a project requirement which method to be chosen.
  - Use of Thread sealant according to the makers instructions.
  - Use of Thread tape according to the makers instructions.
- Rapp Bomek recommend Loctite 577 or Swagelok PTFE tape for use.



## **11 COMMISSIONING PROCEDURE**

### **11.1 OPERATION SEQUENCE CHECK**

Due to the nature of the door design and the requirements as defined by the client (RB order confirmation/ purchase order) the door must fulfil a sequence of operations.

- Make sure that the distance pieces (transport) between the door leaf and frame are removed.
- Full opening of the door leaf(s).
- Door closing, the door must return to the fully closed position to re-establish the specified door fire rating.

### **11.2 VISUAL CHECK**

A visual check detailed below should be performed.

- A visual inspection must be performed to ensure that the correct auxiliary equipment and parts are being installed.
- A visual inspection must be performed to ensure that the gasket and seals are of an acceptable standard.
- A visual inspection must be performed to ensure that the door equipment is free from damage and of an acceptable standard.
- A visual inspection of door/tag sign to ensure that the door sign is correctly completed.
- A visual inspection of hinges, are hinges greased and does the door move easily on hinges.
- Check of final installation welding/bolting of door frame.
- Check that Fire-retardant sealant is correctly applied, at threshold and 200mm up the door frame, each side. Check that the door is installed mechanically in accordance with the drawings and installation procedure.
- Check that the gaskets and seals are installed according to drawing and installation procedure.
- Check and adjust if necessary door closer.
- Check that the locks and locking mechanisms work properly. Adjust if necessary.
- Inspect surface protection/ finish. Painted surfaces that are damaged must be repaired according to the current spec.
- For doors with vision panel: Make sure the glass is not damaged or broken/crushed.

### **11.3 FUNCTIONAL OPERATION CHECK**

All functional checks must be performed to ensure that the door functions and performs correctly in-line with the agreed specifications and requirements. The door to be open/closed minimum 5 times and checked with focus on:

- Door movements is smooth and correctly.
- Safety mechanisms function correctly.
- Door leaf opening sequence is correct.
- Door leaf closing sequence is correct.
- Door leaf reaches fully open position.
- Door leaf reaches fully closed position.

**Other check points:**

- For doors with lock, is lock mechanism function correctly.
- Are door handle properly installed.
- Are all bolts and screw properly tightened.

**Weather tight doors.**

- Weather tightness shall be verified by hose testing from the outside after installation.  
(nozzle inside diameter shall be 12,5mm)