

# MOUNTING INSTRUCTIONS

for  
Rotary Heat  
Exchangers in split design  
for types: RRS / RRSE  
up to constructional size  
3000

## Index

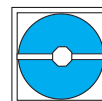
1. Bill of material of the parts delivered
2. Mounting tools required
3. General conditions by customers
4. Vertical rotor/horizontal division
  - 4.1 Conditions by customers
  - 4.2 Mounting description
  - 4.3 Redressing of the arrangement of bearings
  - 4.4 Mounting in case of restricted space
5. Upright rotor/vertical partition
6. Horizontal rotors
  - 6.1 Conditions by customers
  - 6.2 Mounting description
7. Mounting of the drive
8. Mounting for the gaskets
9. Controll works

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**KLINGENBURG**  
ENERGIERÜCKGEWINNUNG

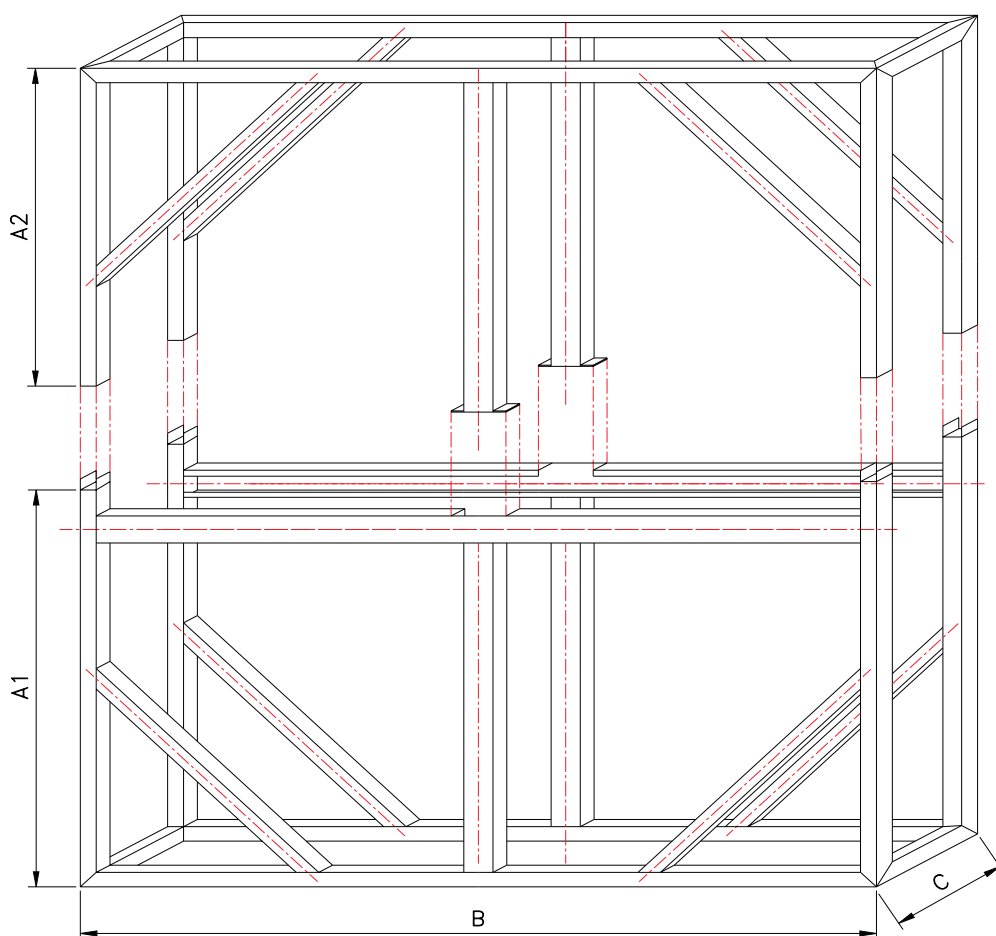


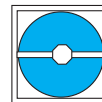
## 1. Bill of material of the parts delivered

As a standard the frames of the rotary heat exchangers of the constructional sizes RRS/RRSE up to 3000 are made of galvanized steel sheet.

Frame dimensions of the split heat exchangers (without packing) as follows:

RRS / RRSE	Height A1 + A2 (mm)	Lower frame A1 (mm)	Upper frame A2 (mm)	Width (mm)	Depth (mm)
2500	2500	1350	1150	2500	440
2750	2750	1475	1275	2750	440
3000	3000	1600	1400	3000	440





## 2. Mounting tools required

In addition to the normally used mounting tools we´d recommend the use of:

- ▶ Hammer 1500 gr.
- ▶ plastic tip hammer
- ▶ hardwood
- ▶ 2 pieces round bars,  $d = 25 \text{ mm}$ ,  $l = 600 \text{ mm}$
- ▶ 2 pieces of spanners, respectively, with openings of 17, 19, 24 mm
- ▶ flexible reversible ratched handle with
  - socket for wrenches with openings of 7, 8, 17, 19 mm
  - hexagon insert socket driver 4, 6, 8, 10 mm
- ▶ electr. impact screwdriver
- ▶ engineer´s pliers or side cutter
- ▶ double ladder
- ▶ screwdriver small 2,8 mm
- ▶ screwdriver big 10 mm
- ▶ 2 pieces drifts made of 12 mm round stock
- ▶ joint filling hand pistol, incl. permissable sealing materials

## 3. General conditions by customers

For stress-free positioning of the rotor the surface shall be flat. External forces of channel connections shall not be lead into the rotor frame. Observe that the rotor is evenly and straightly blown against. For inspection purposes the rotor shall be accessible within the installation.

## 4. Vertical rotor/horizontal division

### 4.1 Conditions by customers

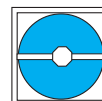
A free space of at least 400 mm is required above the rotor because the upper part of the housing is placed after the mounting of the segments. In case this space is not available see details of item 4.3.

### 4.2 Mounting description

- ▶ Alignment of the lower part of the rotor and fixing to the floor.

This work is **not** done by Klingenburg personnel.

**Important:** Observe correct mounting direction of the rotor for in case of use of a scavenging chamber functioning is no longer given!

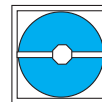


## Table of frames and storage mass weights as well as the storage mass segments valid for rotary heat exchangers

RRS / RRSE	Storage mass diameter (mm)	compl. weight exchanger (kg)	Weights		Segments of storage mass
			frame weight (kg)	compl. Storage mass weight (kg)	
2500	2340	620	310	310	6
2750	2590	780	410	470	6
3000	2840	1000	600	400	6

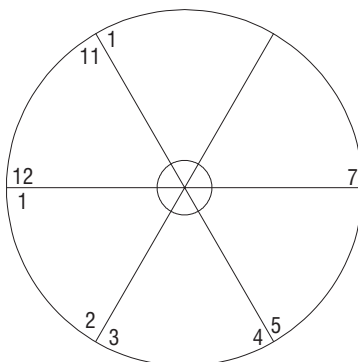
## Table of mounting accessories

RRS / RRSE	Mounting accessories of the lower part of the exchanger					
	nut M 16 (DIN 934)	Screw M 10 x 95 and nut (DIN 931 / 985)	Screw M 12 x 16 and nut (DIN 912 / 934)	Screw M 8 x 16 (DIN 912)	V-belt SPA incl. Lock (m)	Dust cover for bearing cover (Piece)
2500	24	12	12	34	8,1	2
2750	24	12	12	34	9,1	2
3000	24	12	12	34	9,6	2



- ▶ At delivery, half of the amount of the rotor segments is already assembled and pread-justed. The connection points of the individual segments are numbered continuously.

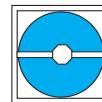
### RRS / RRSE 2500 - 3000



- ▶ Block rotor against rotation with 2 pieces round bars, ( $d = 25 \text{ mm}$ ,  $l = 600 \text{ mm}$ ) between the root of the rotor, the welded threaded rods at the bordering sheet and the bearing frame.
- ▶ Insert segments according to numbering. The rotor surface shall be protected during these works. Do not use plain washers!

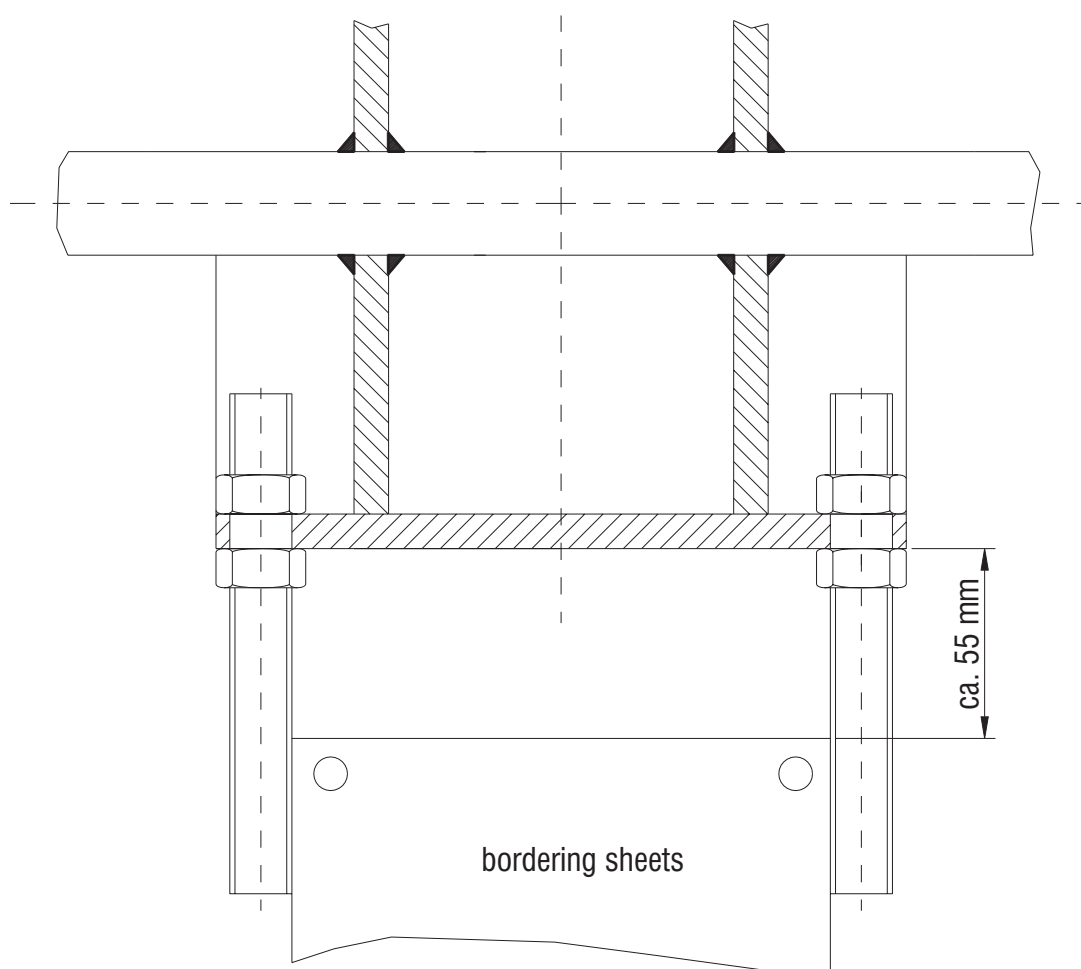


- ▶ Fix nuts of the threaded rods by a locknut.



**Attention:**

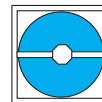
The space between the outer edge of the root of the rotor and the bordering sheets shall be at about 55 mm. This measure is only for your orientation to insert all segments. If this measure is not kept it is difficult to insert the last Segment.



- ▶ Install external screw fitting of the bordering sheets. Drive home screws.

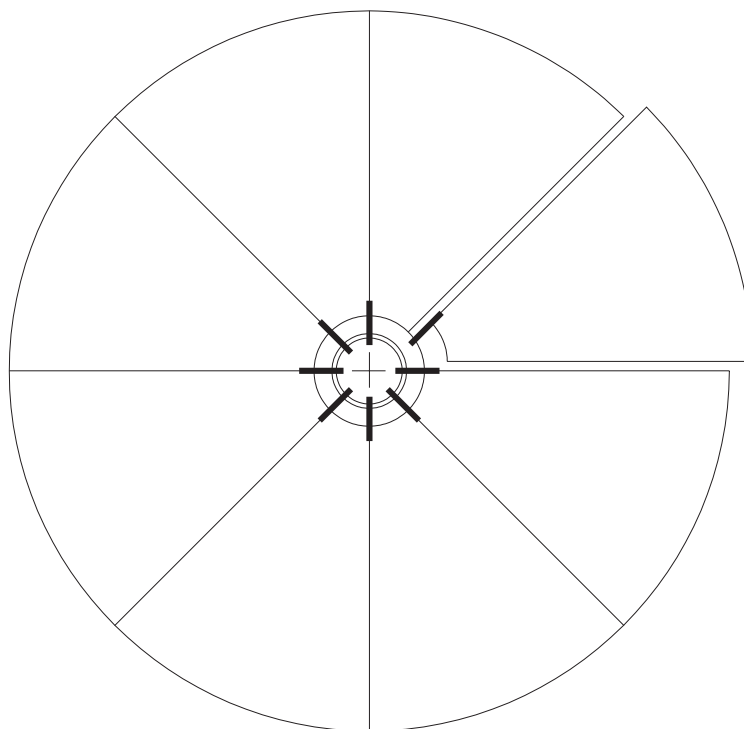
**Important:**

The bordering sheets shall be contiguous without gap. In case of a gap the nuts at the threaded rods have to be adjusted accordingly.



- ▶ In case of jamming of the final segment slightly loosen the neighbouring segments from the root. The final segment can be inserted into the root of the rotor with the threaded rods. In case the air gap of the last mounted segment is too big all segments have to be fetched about 2 to 4 mm closer to the root of the rotor.

**Important:** Drive home all screws, otherwise depth impact!

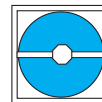


### 4.3 Redressing of the arrangement of bearings

The rotor bearing is basically adjusted by the manufacturer. In case of twisted assembly of the rotor, however, it may be necessary to redress the bearing.

- ▶ Mark segment bordering
- ▶ Turn rotor to the position where marked border is upside down
- ▶ Meter the distance of segment borders to rotor frame
- ▶ Turn marked border upside
- ▶ Repeat metering
- ▶ Both dimensions have to correspond with an allowance of + 2 mm
- ▶ Line bearing, if necessary
- ▶ Turn rotor to position where marked bordering is horizontal to rotor axle
- ▶ Meter distance of segment borderings to rotor frame
- ▶ Turn marked border to the other side
- ▶ Repeat metering
- ▶ Both dimensions have to correspond with an allowance of + 2 mm.
- ▶ Adjust one of the two bearings on the border frame, if necessary

Now, the rotor bearing is adjusted.

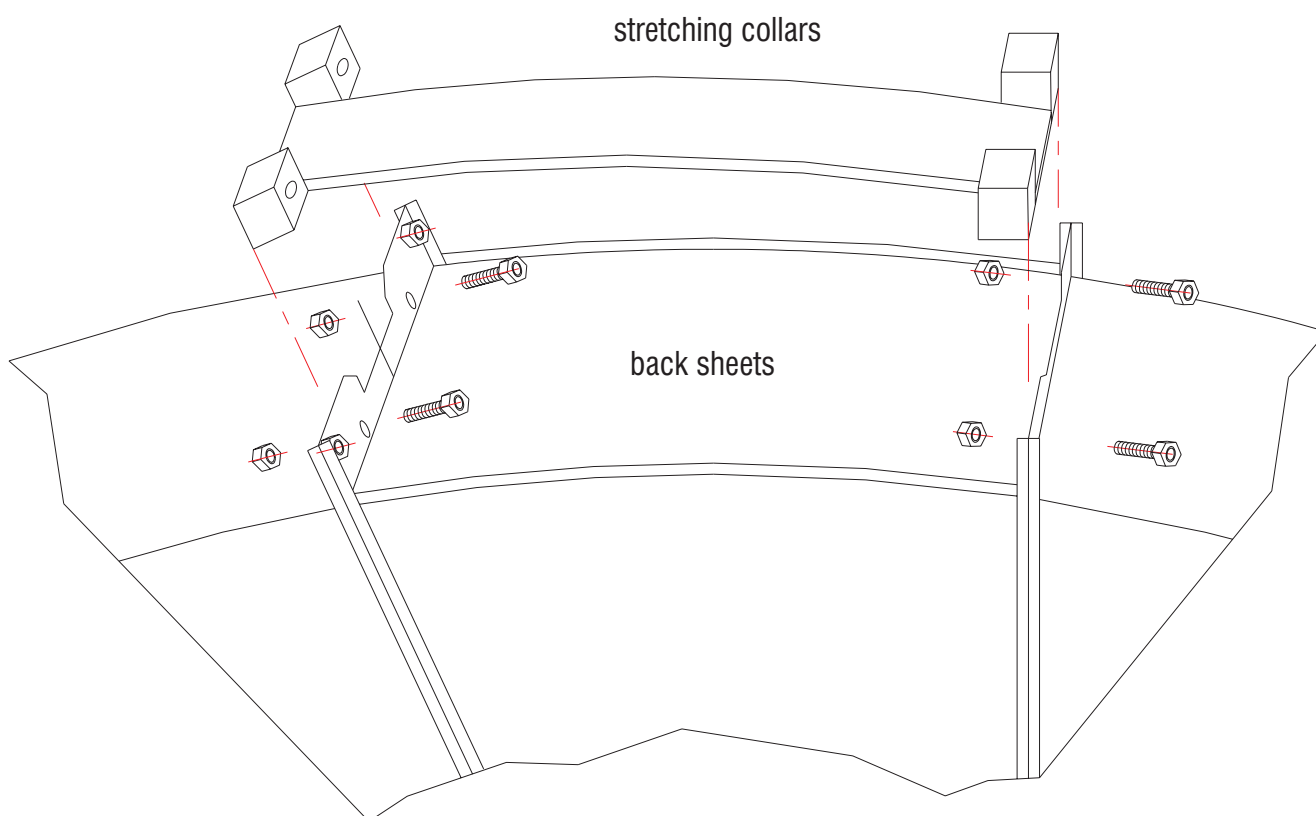


- ▶ The individual segments are adjusted at the threaded rods of the root of the rotor. A side impact exceeding 3 mm shall not be permitted.

With rotors **up to the constructional size RRS/RRSE 3000**, now back sheets and allround-stretching collars are mounted and tensed. Check again rotor alignment before final fastening of the screw connections.

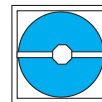
**Important:** Even screw down of the stretching collars (2 stages)

- ▶ Fasten screws until even tensioning of the segments is visible.
- ▶ Coining of the stretching collars along the entire circumferential by means of a plastic tip hammer or hard wood and hammer. Then, refastening of all screw connections.
- ▶ Check wobble and depth impact.



- ▶ Screw down tightly all screw connections.
- ▶ Place upper part of the housing and screw it down.

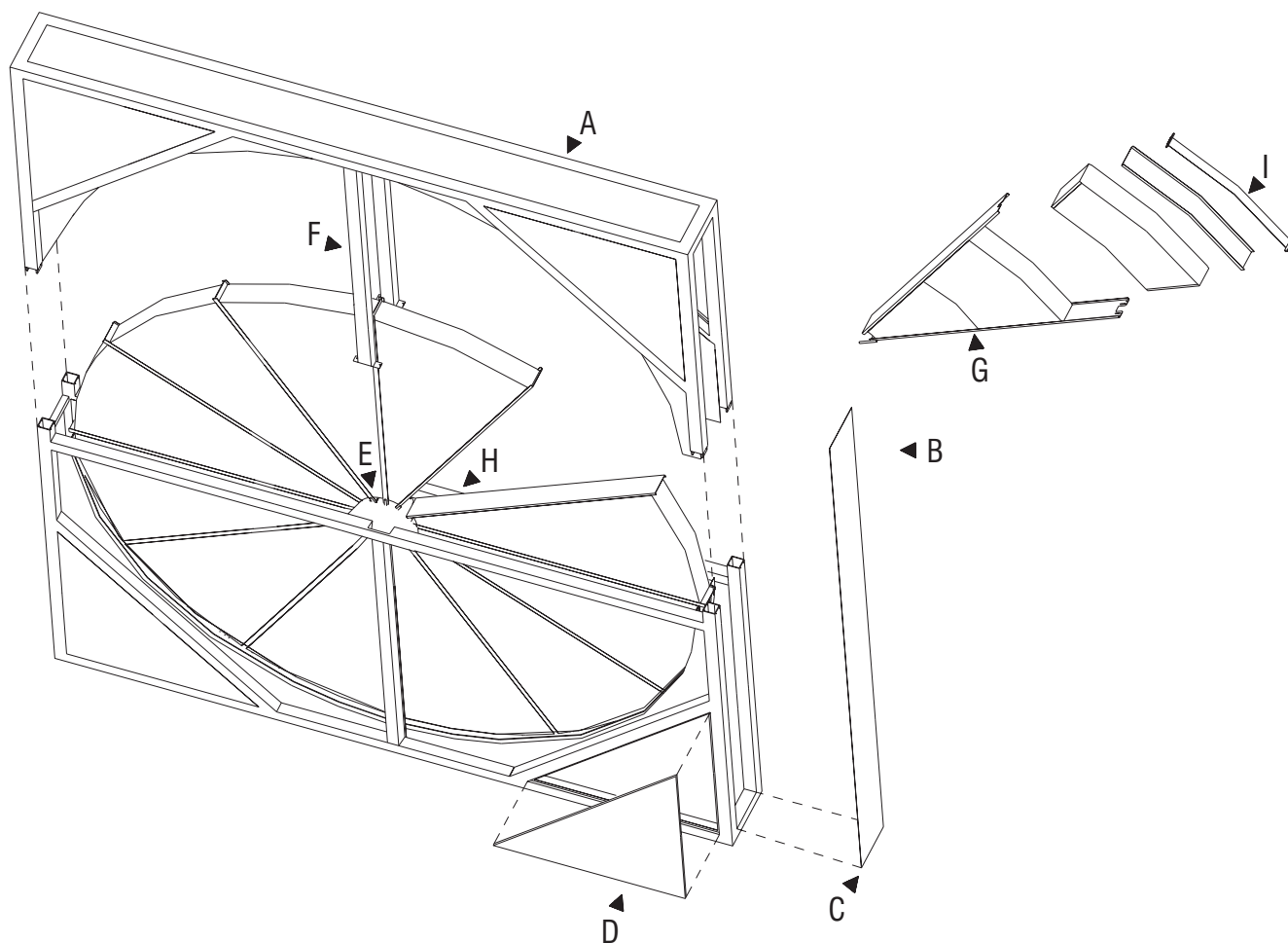




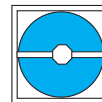
#### 4.4 Mounting in case of restricted space

In case of insufficient space (400 mm) above the rotor the rotor housing can be assembled before inserting segments. According to the figure, the upper rotor edge can be removed. The unscrewable edge is always located above the driving motor. The rotor segments can be mounted through this opening.

- ▶ about this see item 4.2.



- A) Housings are split from rotor size 2500 on
- B) The rotors are lined with removable sheets
- C) The motor is accessible from the front, from 2500 on by a triangular door
- D) Mounting edge always located above driving motor
- E) External bearings
- F) Bearing support stretcher
- G) Rotor sector
- H) Rotor cup
- I) Stretching collar



## 5. Upright rotor/vertical division

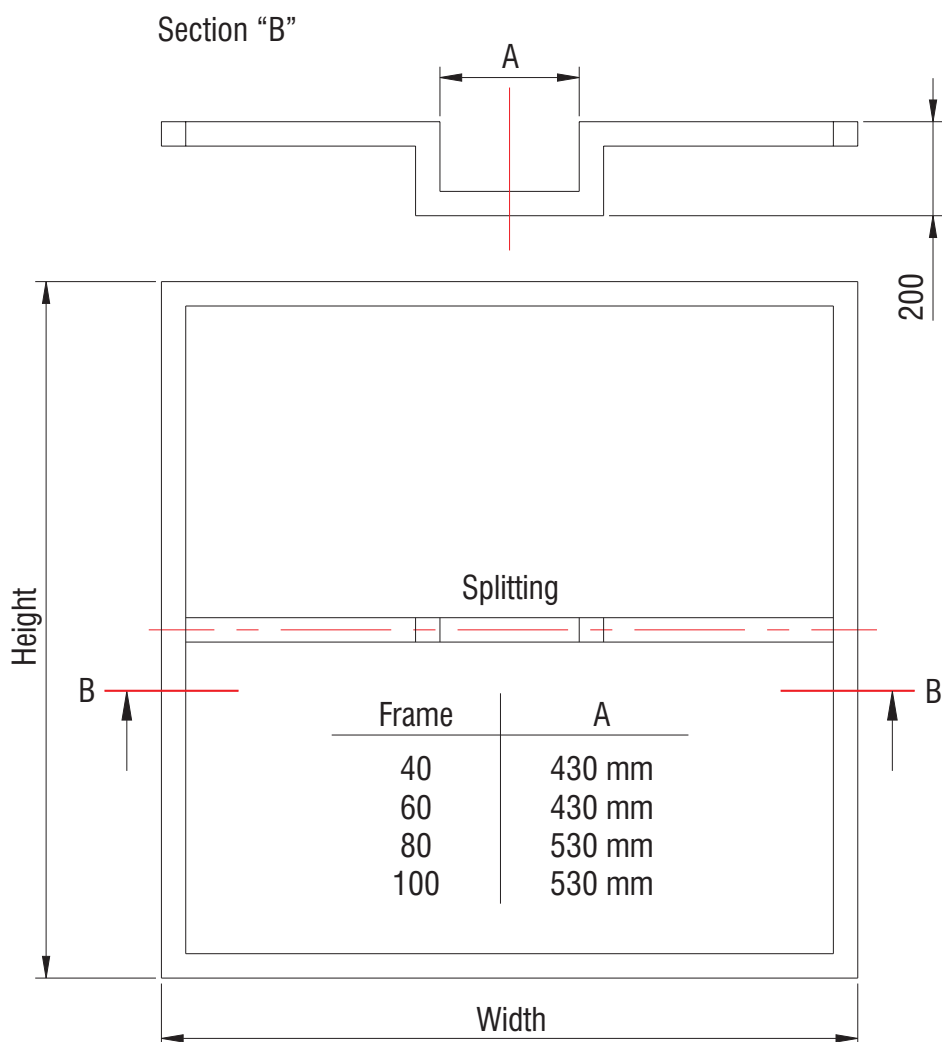
In some rare cases it may be necessary to vertically split the rotor housing. The housing, then basically, has to be completely assembled before inserting the segments. Mounting of the segments according to item 4.3.

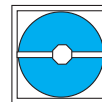
## 6. Horizontal rotors

### 6.1 Conditions by customers

For stress-free positioning of the rotor the surface shall be flat. External forces of channel connections shall not be lead into the rotor frame. Observe that the rotor is evenly and straightly blown against.

**Important:** By customers, the point of support of the lower rotor bearing shall be solidly supported and easily accessible for maintenance purposes. The following describes our proposal for a corresponding design.





## 6.2 Mounting description

- ▶ Place housing part containing the premounted half of the rotor mass onto the seat construction.
- ▶ Stick second part of the housing and fasten frame with supporting construction.

**Important:** Observe correct mounting direction of the rotor!

Due to its dead weight the rotor settles about 5 mm as soon as the rotor is layed down. Therefore, the premounted rotor segments are pretensioned to this measure. Mounting of the segments is done analoguous to the mounting of the upright rotors. For this see item 4.2. and 4.4.

## 7. Mounting of the drive

The rotor drive is premounted by the manufacturer. It is fixed to a motor-driven rocker dolly switch, which itself is kept tensioned by a tension spring. The V-belt is loosely attached. The flex connector is premounted on one side.

- ▶ Fix one end of the V-belt to the rotor circumferential by means of an adhesive or a wire and draw it around the wheel by turning the rotor.
- ▶ Shorten belt which is delivered with overlength to necessary size.
- ▶ Connect ends with flex connector.
- ▶ Put belt on pulley.
- ▶ See that V-belt is sufficiently tensioned and does not abrade at the housing.
- ▶ V-belt stretchens during operation. Thus, if necessary, it needs to be shortened.

## 8. Mounting of the gaskets

Center and circumferential gaskets are premounted by manufacturer. Do not press gaskets against rotor mass because the motor is exceedingly retarded and may be damaged.

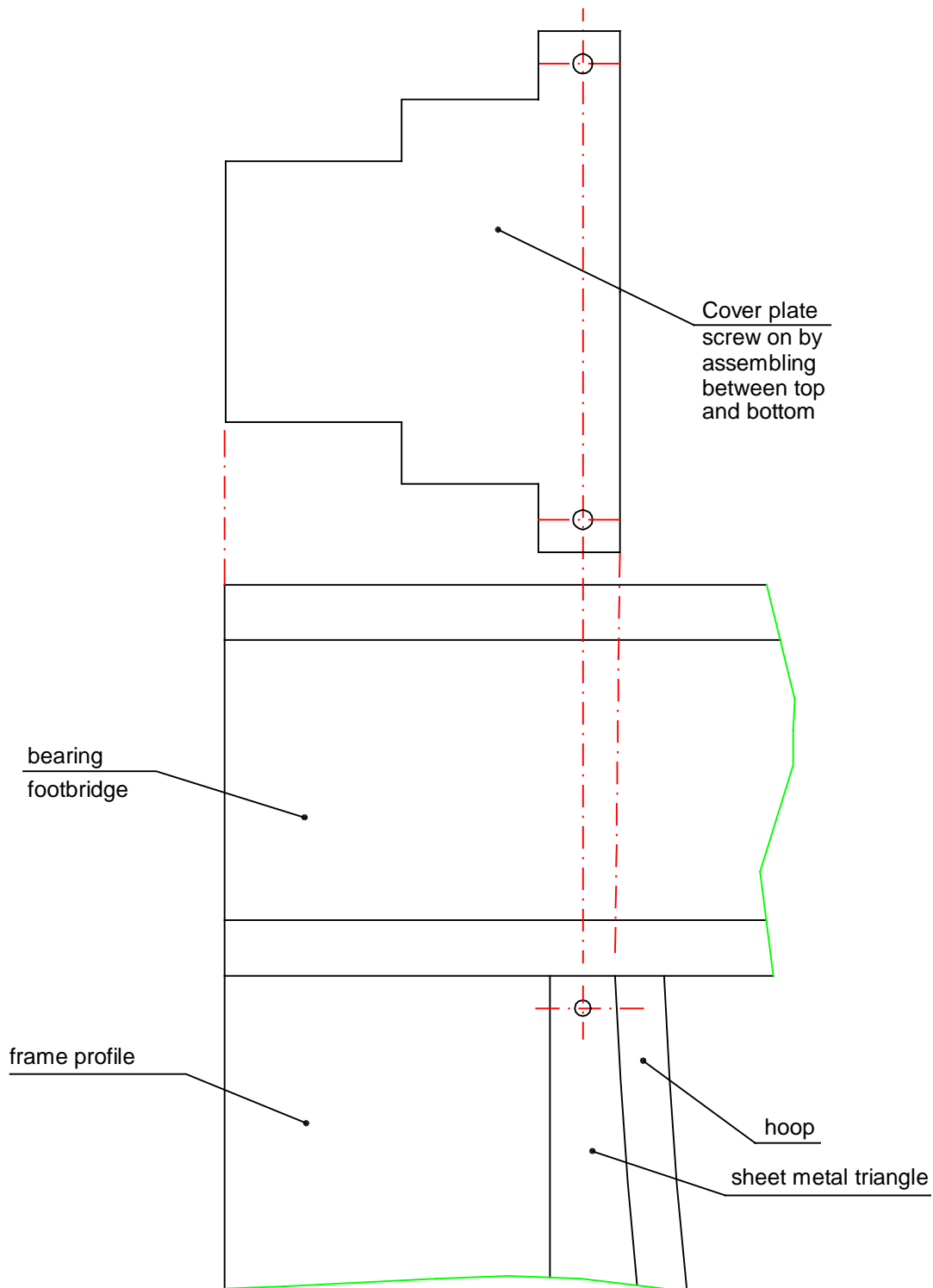
**Hint:** Push gaskets to final position during slow rotation of the rotor.

## 9. Controll works

After mounting of lateral sheet and doors the eventually existing leakages can be caulked with permanently elastic sealing material.

- ▶ Check wobble an height impact of the rotor.
- ▶ Check fastening of all screw connections.
- ▶ Check correct tensioning of the V-belt.

For informations about the connection of the driving motor see controller documentation. Fix air conduits with sheet metal screws to aluminum frame.



Zchg.-Nr.: KL000759

Datum: 03.04.06


Bearb.: Pog.

Gepr.:

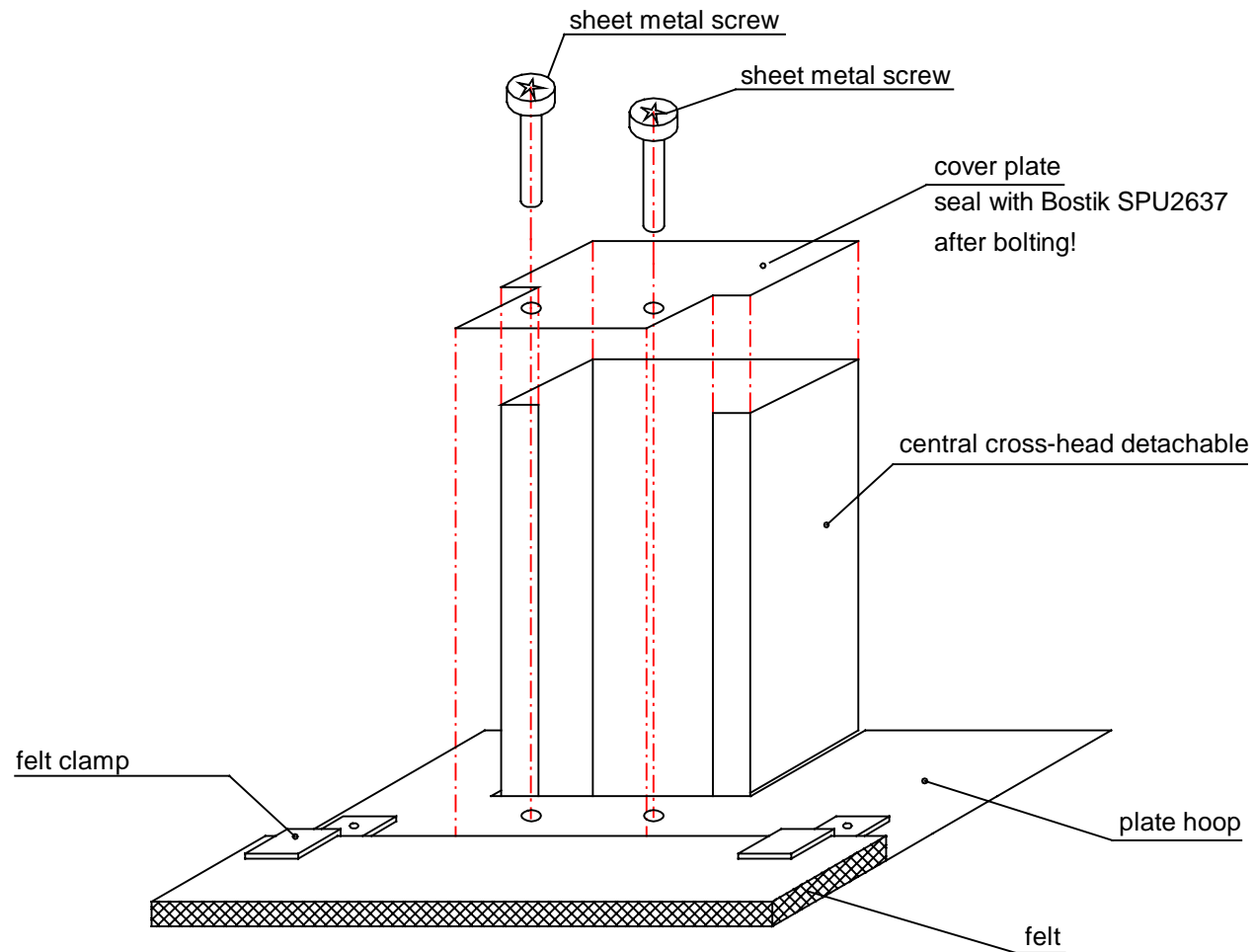
Material:


Maßstab: 1:2

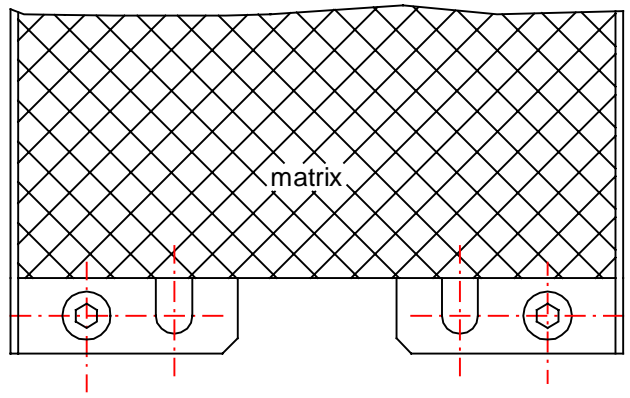
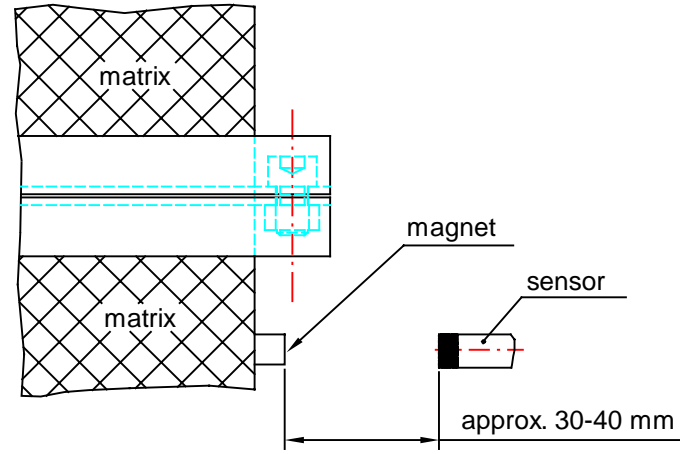
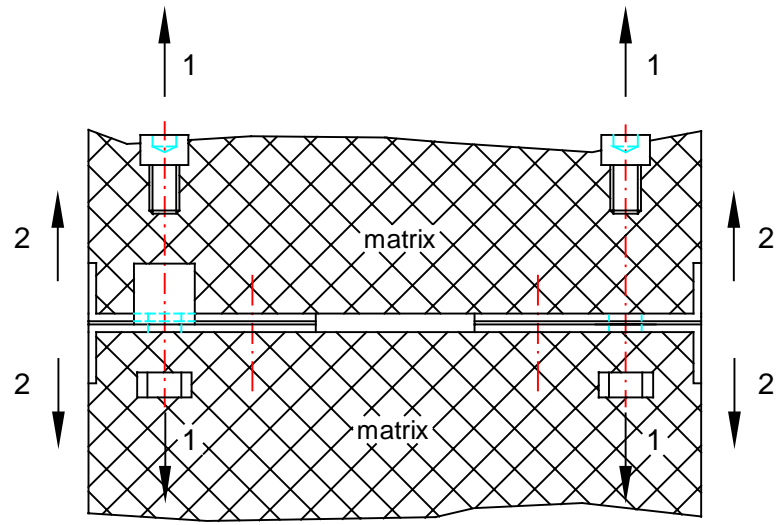
short instruction  
Rotor-housing made of steel

 **KLINGENBURG** GmbH  
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Änderung:



	Zchg.-Nr.: KL000720	<b>Assembly instruction for cover plate</b>   <b>KLINGENBURG</b> GmbH Boystraße 115 45968 Gladbeck
	Datum: 03.04.06	
	Bearb.: Pog.	
	Gepr.:	
	Material:	
Änderung:	Maßstab:	



One magnet are fitted to each rotor in order to check the rotor running.  
 Only 1 magnet per rotor is required in order to trigger the cleaning-off process.

	Drawing no: KL000758	<b>magnet for proximity switches</b> drawing applicable to all the rotors with a split design including running control system  <b>KLINGENBURG</b> GmbH Boystraße 115 45968 Gladbeck
	Date: 03.04.06	
	Processed by: Pog.	
	checked:	
	Material:	
Änderung:	Scale: 1:2,5	