



Recuperator Spa

The heat exchanger

Installation manual for sectorized rotor in vertical position

rev 2.2

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Revision	Date	Author	Note
1.0	03/02/2021	PL	Emission
1.1	04/02/2021	PL	Added screw info
2.1	12/01/2022	MM	New drawings
2.2	02/08/2022	PL	Video link added

1. Description

This guide is a support to help the operator to install a sectorized wheel inside the Recuperator casing in vertical position. Together with this guide short videos are delivered too, to show in detail the needed steps to complete the task.

Link to watch the video: [Link Youtube](#)



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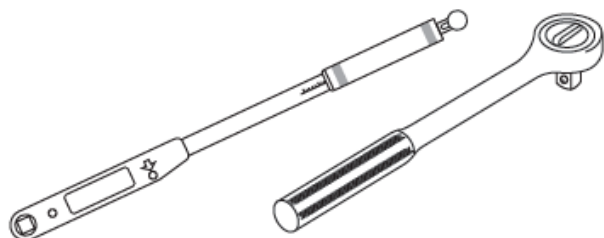


2. Tools

ASSEMBLY – SPLIT ROTOR

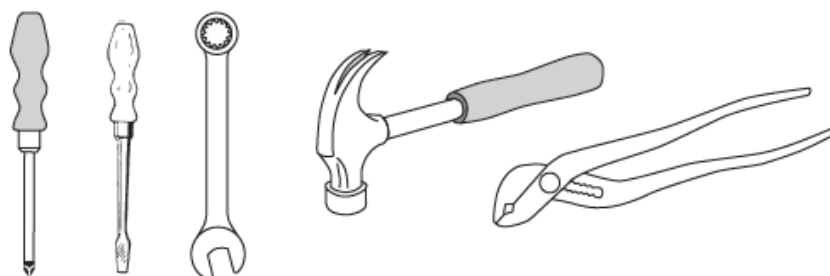
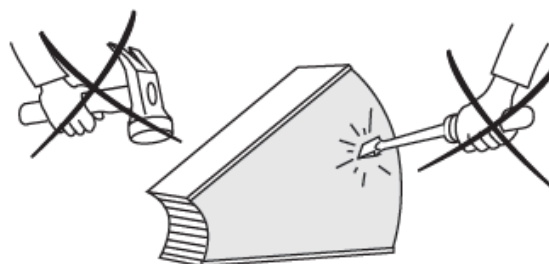
To assemble a heat exchanger in the split version.
Tools and materials necessary.

HANDLE THE ROTOR WITH GREAT CARE

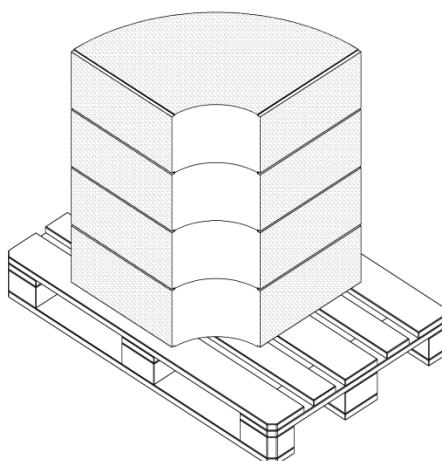


Torque wrench, 0 – 90 Nm

Ratchet with sockets



3. Delivered and content



The different sectors are delivered in horizontal position in order (1,2,..) inside a box together with the other components:



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- Sectors (4x)
- Hub with shaft and bearing and connector
- Spokes (4x or 6x)
- Circular rim plates without holes (4x or 6x), one for each sector
- Tighten Clamping strap (8x or 12x)
- Necessary bolts, nuts and washers and a threaded rod for assembling the clamping straps.
- Rim plate for the hub (2x for each side)

4. Installation

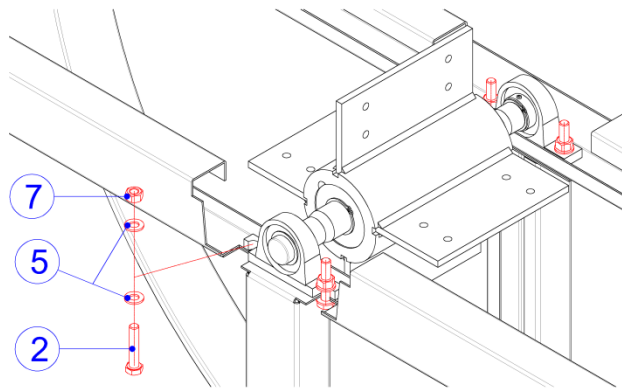
4.1 Hub installation

The Hub should be installed using the connector to the cross beam of the casing. The two lateral bolts of the connector should be installed from the bottom socket head M10x30mm. The middle hex head M8x60mm will be used to make the adjusting of the shaft at the end of the process.

01_HUB.mp4

4.2 Side plate for sectors installation

Once the hub has been installed, proceed with the installation of the spokes. It is very important to install the spokes in the right side of the hub (follow the "X"). Follow this procedure for all the 4 spokes.



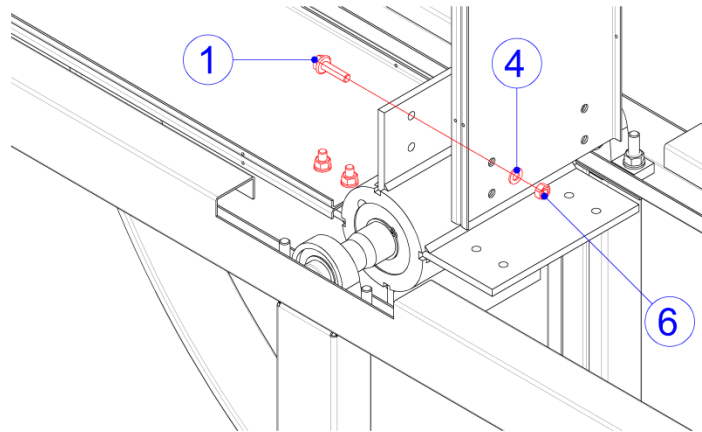
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02_Spoke.mp4, 03_Spoke.mp4, 04_Spoke.mp4, 05_Spoke.mp4, 06_Spoke_end.mp4

Once all the spokes have been installed, these should be blocked in a way that could not be able to rotate during the sector inserting. **Be careful, the rotor is unbalanced – risk of injury!!**

07_Spoke_block.mp4

4.3 First sector installation

Once the spokes are unable to rotate, proceed with the installation of the first sector. Important to insert the whole sector in its cot.

08_First sector

4.4 Sector installation

Once the sector has been installed, proceed with the installation of the rim plate (without holes) and the clamping straps. Start with one clamping strap, using the bolt and nut, start to tight it. The clamping strap should be installed with the chamfered corner face outwards. The same with the second clamping strap. The tightening should be done in steps (M10x80mm).

09_Firs_Rim_Plate.mp4, 10_First_clamping_strap.mp4, 11_First_clamping_strap.mp4,
12_First_clamping_strap.mp4



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Follow with the other sectors in sequence with the same procedure remembering to block every time the rotation of the sectors. **Be careful, the rotor is unbalanced – risk of injury!!** If it could be helpful, use wooden battens too inside the hub to secure the rotor.

13_second_spoke_block.mp4, 14_second_spoke_block.mp4, 15_second_sector.mp4

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Connect the third clamping strap with the previous once using the nut.

16_second_clamping_strap.mp4, 17_third_sector.mp4, 18_fourth_sector.mp4, 19_Clamping_strap_block.mp4

4.5 Adjust of the rotor sectors

Once all the sectors and all the clamping strap have been installed, proceed with the adjust of the rotor sectors. Compensate for any deviations by releasing the clamping straps of the relevant rotor sector and moving the sectors out or in.



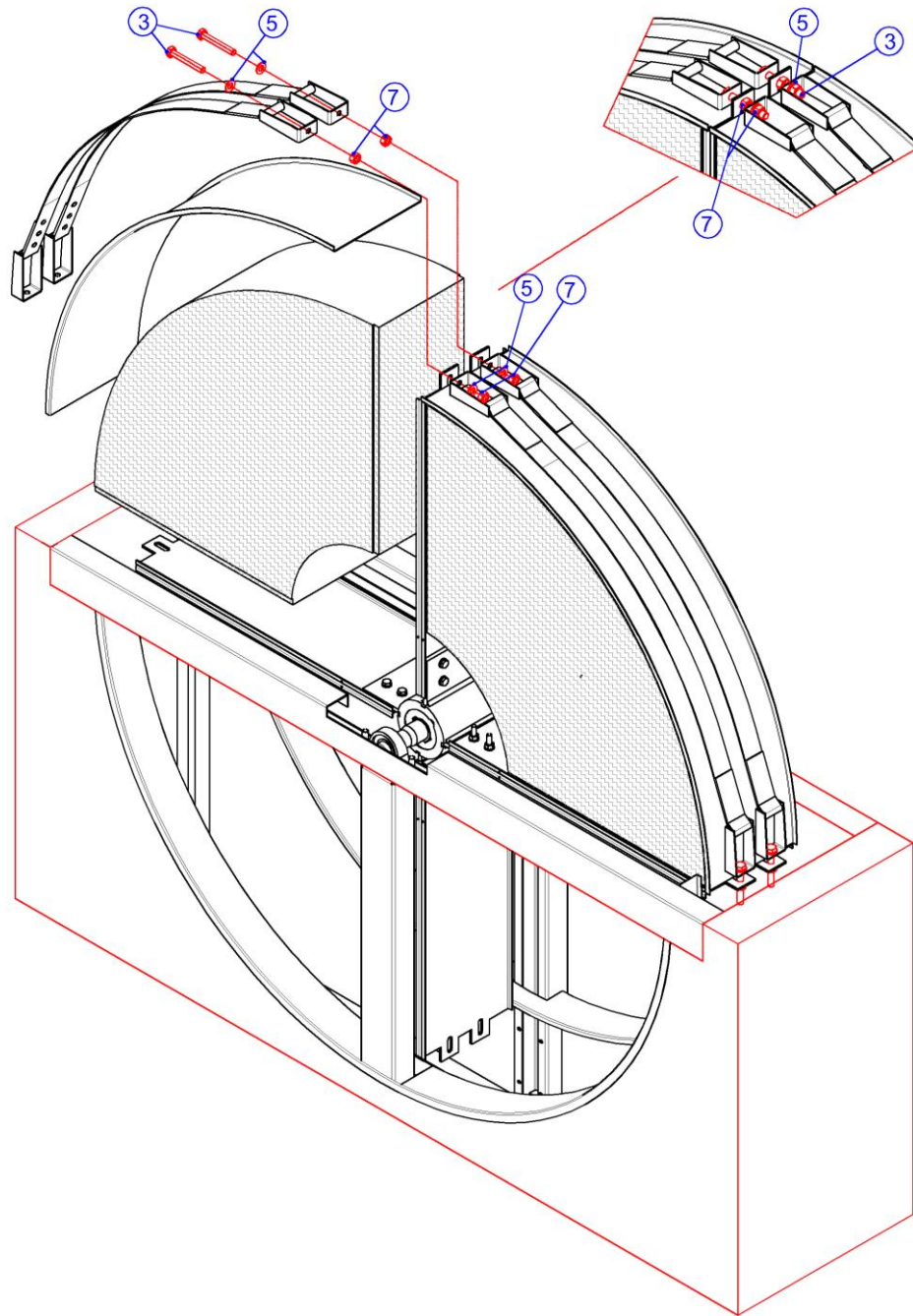
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Tighten the bolts of the clamping straps in steps. Make sure that the distances between the clamping strap ends are about the same at every spoke. First tighten all bolts to a torque of 10 Nm, then to 20 Nm and finally to 25. After the clamping strap bolts have been tightened to 25, check again the positions of the spokes and the circularity of the rotor.



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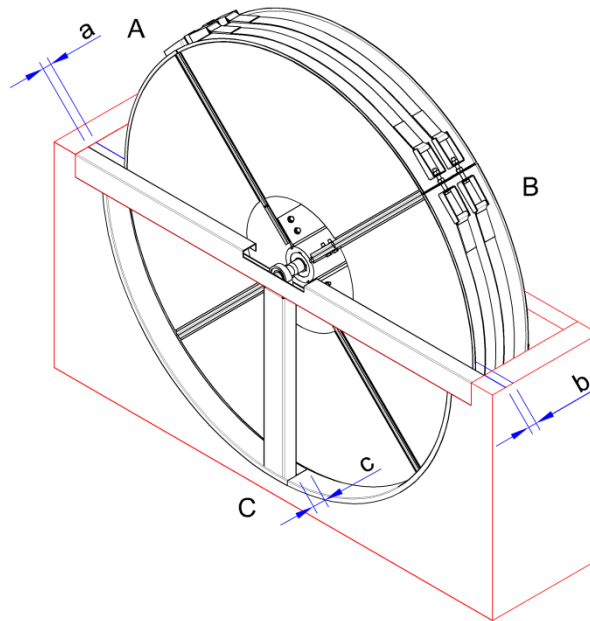
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4.6 Adjust of the rotor shaft



Inspection of the rotor shaft. Mark one spoke at A with an X. Measure dimension "a" at the spoke marked X between the sealing plate and the flange. Measure dimension "b" and "c" at B and C at the same spoke. If "a" = "b", the rotor shaft is perpendicular in the horizontal plane. If "a" = "c", the rotor shaft is perpendicular in the vertical plane. The maximum permissible difference between dimensions "a", "b" and "c" is 2 mm

In the horizontal plane, "a" = "b". Release bolts of the rotor mountings. Push the rotor by hand to the correct position. In the vertical plane "a" = "c". Release bolts of the rotor mountings. The rotor shaft can easily be adjusted by means of adjusting screws. After completing the adjustment work, tighten rotor mounting bolts to a torque of 50 Nm.



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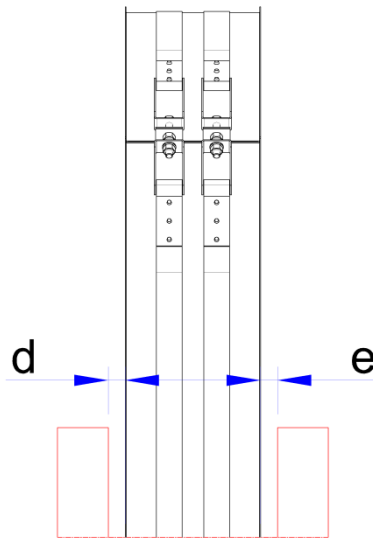
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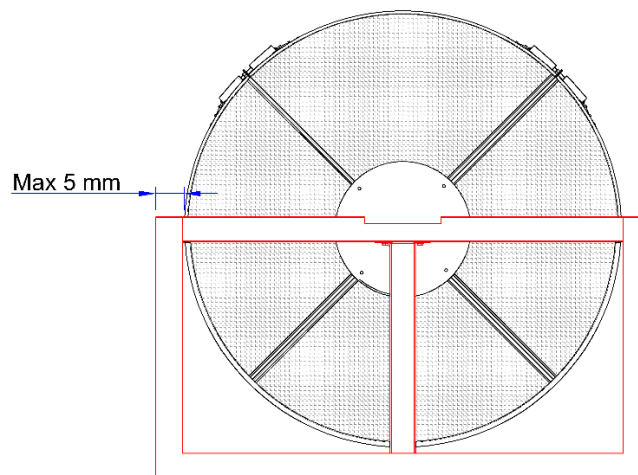


4.7 Adjust of the spokes



20_check_balance.mp4

Measure “d” and “e” at the periphery. Adjust the spoke so that “d” = “e”. A difference of up to 2 mm is acceptable. Adjust the spoke by releasing the bolts at the hub and then retightening them when the spoke is in the correct position. The tightening torque for the spoke bolts is 25 Nm. The spoke can be moved to the correct position by means of a clamp or lever. Turn the rotor and adjust the other spokes in the same manner. Check the circularity of the rotor. The maximum permissible deviation is 5 mm



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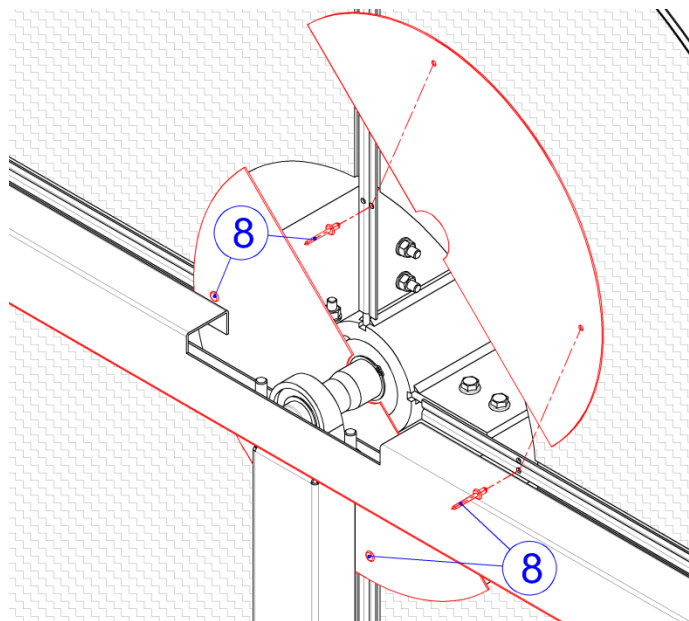


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4.9 Hub cover installation

Fit the cover plate over the rotor center. Use the blind rivet stainless steel mm long countersunk head screws supplied.



22_Hub_cover_plate.mp4

8	Blind rivet inox
7	Nut for screw ISO 4033 M10 inox
6	Nut for screw ISO 4033 M8 inox
5	Screw washer ISO 7089 M10 inox
4	Screw washer ISO 7089 M8 inox
3	Screw ISO 4017 M10x70 inox



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2	Screw ISO 4017 M10x50 inox
1	Screw DIN 6921 M8x40 inox
Pos.	Component description



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