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Praszke Sluzby
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Czech Republic

Plant number 070-7310 line 4
Atomizers type F-100EMC s/n 2240 and 2241

GEA Niro

**Subject: Report of the first maintenance of atomizer F-100 EMC
s/n 2240 and s/n 2241.**

18.10.2020

- **Atomizer F-100EMC s/n 2241:**

The above-mentioned atomizer F-100 s/n 2241 has reached the first 6.000 hours since start up.
This atomizer was still complete build up with the liquid distributor and atomizer wheel.

It was asked at the staff from Praszke Sluzby to dismount the atomizer wheel and it was seen that they where unknown how to do this.

Seen that also a new motor should be placed the complete atomizer was bring down to the special “atomizer workshop”.

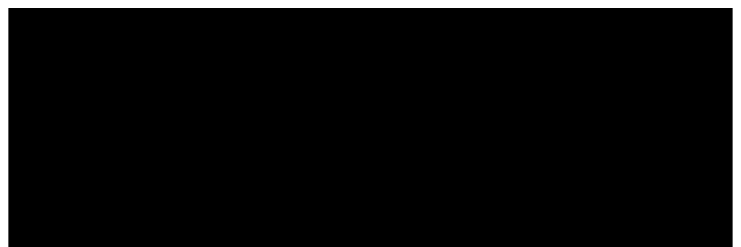
The atomizer is opened complete, complete cleaned and all parts are checked.

Start was to disassemble the part below the base plate.

The skirt type I is the coated one with Hastelloy tip 017886-0009.

At this skirt the coating was loosen below the flange, this is for the operation without any risk or problem but must be repaired or change out. GEA Process Engineering A/S is already informed about this issue.

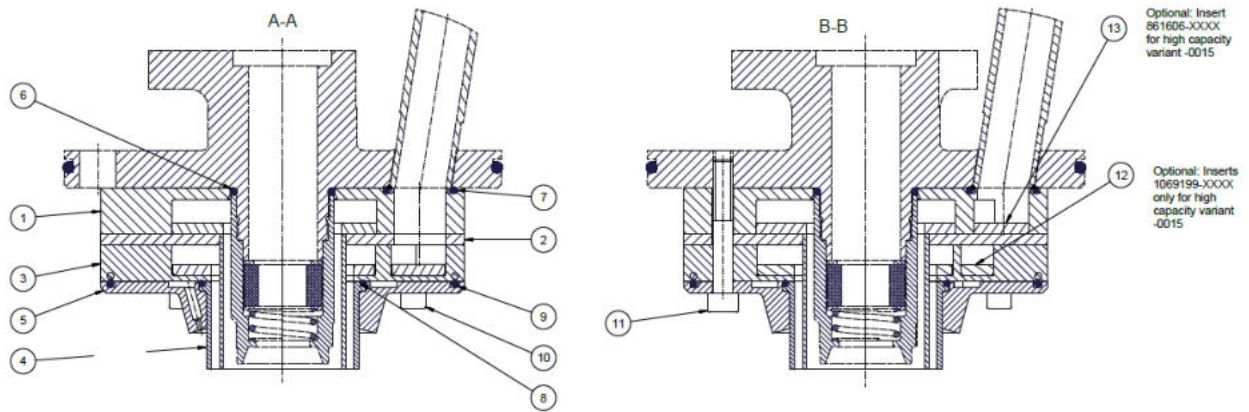
See pictures below:





This atomizer has a twin volute liquid distributor 761492-0017, means an upper (inner) volute 761494-0418 what is not in use and for the wastewater a lower (outer) volute 671977-0416 with 2 pc inserts 1069199-2004 (2 x 4 mm)

See below sketch:



After dismantling the volute distributor, it was showed that both volutes were used and both feed pipes showed a rest product from the wastewater.

See pictures below: This is the lower (outer) Volute what is the correct one. Seen from the front of the atomizer the feed pipe on the left side.

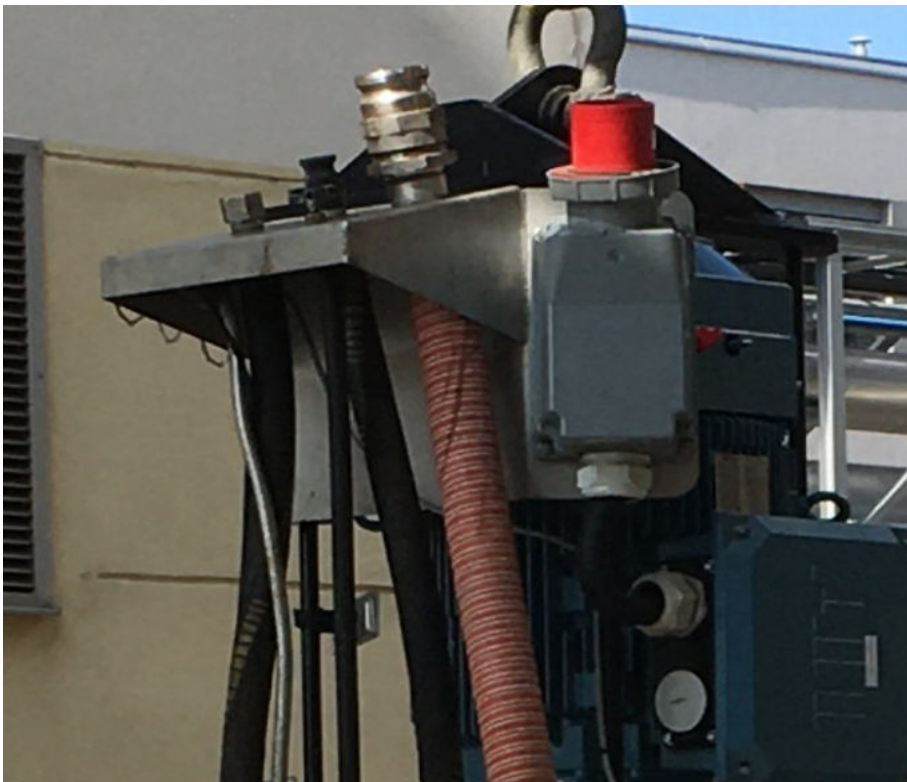
The spring 010136-0001 was nearly cone and this gives the guide bearing 010612-0001 no load anymore. After contact Denmark we will use only a spring 010136-0002 (Monel) and washer 10132/010134-0003 from Hastelloy.



The below picture shows the upper (inner) Volute, what should be complete clean because this feed line was blocked at the start up.



The next step was to check the feed inlet on the extension part of the main motor, here we see that someone changed the inlet from the left (lower volute) to the right side (upper volute)



At checking the other atomizer s/n 2240 it showed that here was all the same as at the start up in 2019 and the feed line was connected to the lower volute (left feed line).

The atomizer wheel is AX8-210 017313-0019 18 0129 with 4 pc inserts 011725-0017 (Sic/Hast) and 4 blinds 011713-0002.

The atomizer wheel is complete opened and showed low wear.in the inserts. A nice layer of product was seen in the wheel.



Only the ring around the bottom wear plate 063507-0002 showed some marks.

The complete wheel is cleaned and build together with new O-rings. The inserts are turned 180°

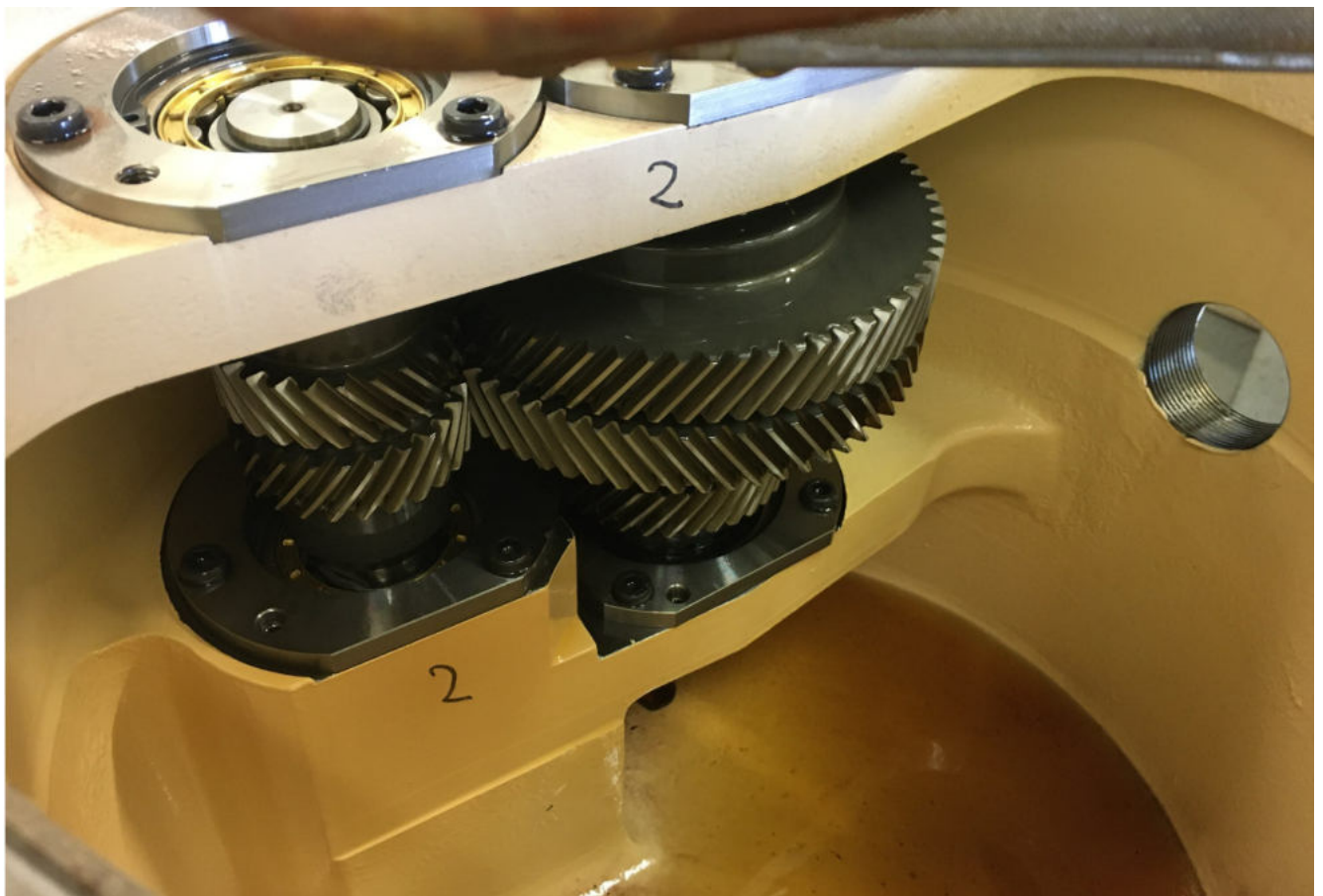
The spindle 011201-0001 themselves was in a good condition, just new bearings 6305 MA/C3 and 6006 MA/C3. The coupling , bearing bushing and labyrinth are used again. Run out after mounting: 0,05/0,05 mm.

The lower spindle bearing bushing 010064-0001 is renewed. This part was not on stock at Customer/Zauner but is taken away from the service car.

After finishing to dismount the lower part, the gear box was opened:

With the hydraulic pump 013516-0001 the coupling to main motor was dismount.

All looked very good, the gearbox was clean, no burned oil. See picture below:



The both oil nozzles are placed correctly, and oil pipe is mounted with new copper rings.

- Pinion Gear:

New bearings Nu306MA/C3, new circlip U30 and new KM4 and MB4 are placed. Both bearing bushings 010044-0001 and 010045 were in a good condition

- Intermediate Gear:

New bearings 6308 and NU308 and circlips U40 are placed. Both bearing bushings 010388-0001 and 010374-0001 were in a good condition.

- Drive Gear:

New bearings 6209 and Nu209, circlips U45 are placed. The pump coupling 010742-0001 is checked and in a good condition. Both bearing bushings 010748-0001 and 700093-0001 were in a good condition.

All surfaces on the gear box, Intermediate Ring and Eccentric top plate are checked by a stone and closed by new O-rings and paper gasket to be sure the gear box is closed against the oil

The oil pump is placed again and will be change out at the next overhaul at 12.000 total operation hours for a reconditioned one.

All the signals and electrical components are checked and tested:

- Oil flow control 748847-0004 is checked and cleaned. A new fine filter is mounted.
- Flow operated switch 013559-0001 is checked
- Fluid indicator 012402-0001 is checked
- Temperature Sensor PT-100 233468-0001 is checked.

The vibration probe with a Bruell Kjaer oscillator is adjusted at -10,5 Volt.

The complete gear is assembled with new O-Rings and Gaskets.

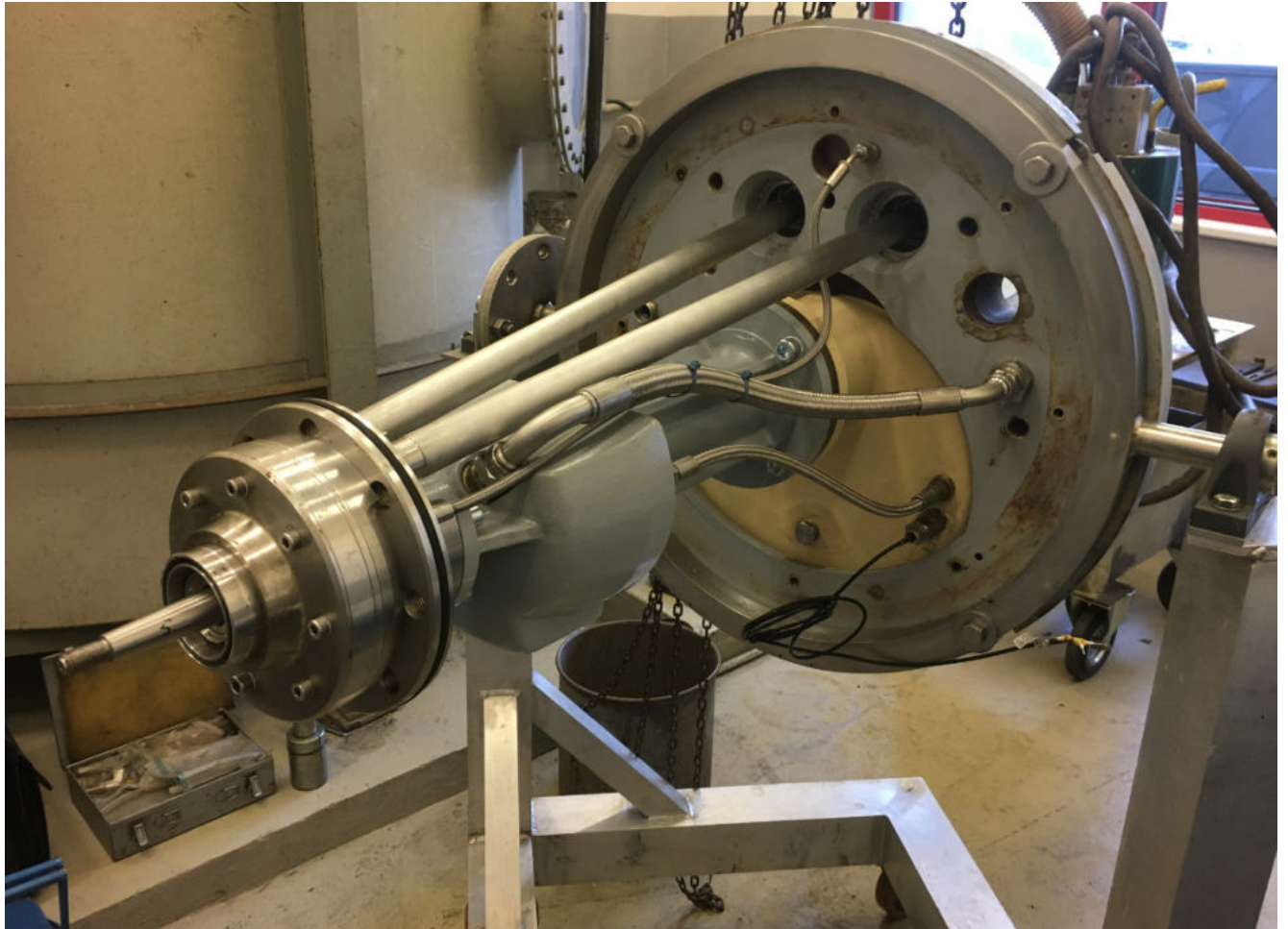
A new Guide Bearing 010612-0001 is mounted with a new spring 010136-0001, Washer 010132-0001, 010134-0001 and spring retainer 010138-0001. The new type spring and washers will be shipped from Denmark.

All coupling rubbers 053360-0001 from the coupling to main motor are changed out.

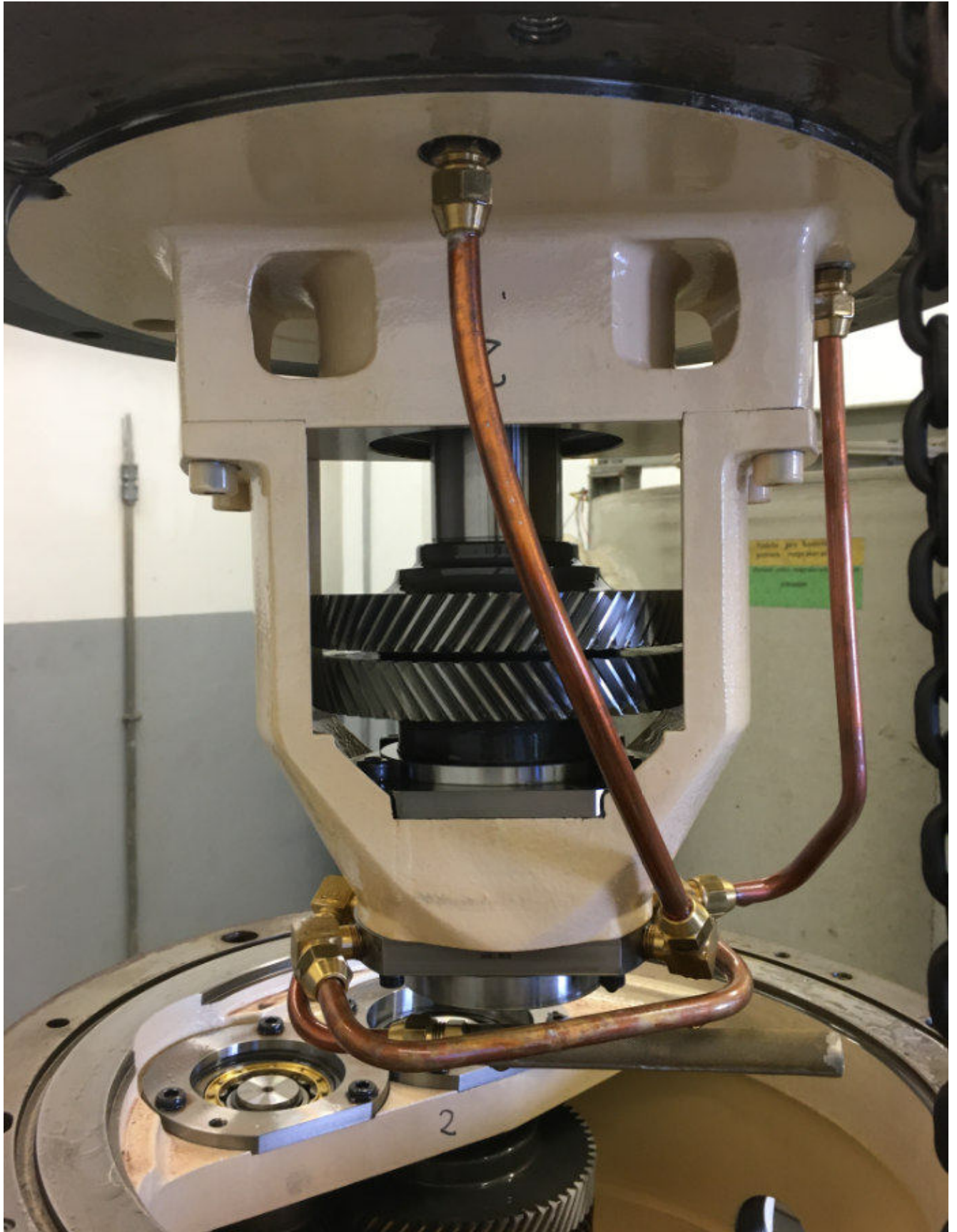
Below a picture of most of the cleaned parts before assembling:



The complete atomizer was built up with new gaskets and O-Rings.
See below the lower part of the atomizer after assembling:



The complete gear is mounted into the gearbox; new coupling inserts 010113-0001 are placed.
See picture below:



Oil was filled up: Mobil Nuto H46

Below a picture of the atomizer before mounting the skirt:



By hand is tested the oil circulation, all was working. The signals and vibrations will be tested during the test in the absorber.

The next step was to change out the main motor.

The reason to change out the main motor was that the both atomizers at line 1 have main motors with 380 Volt and these were 400 Volt motors what give problems with the soft starters if the atomizers will be change out to the other lines.

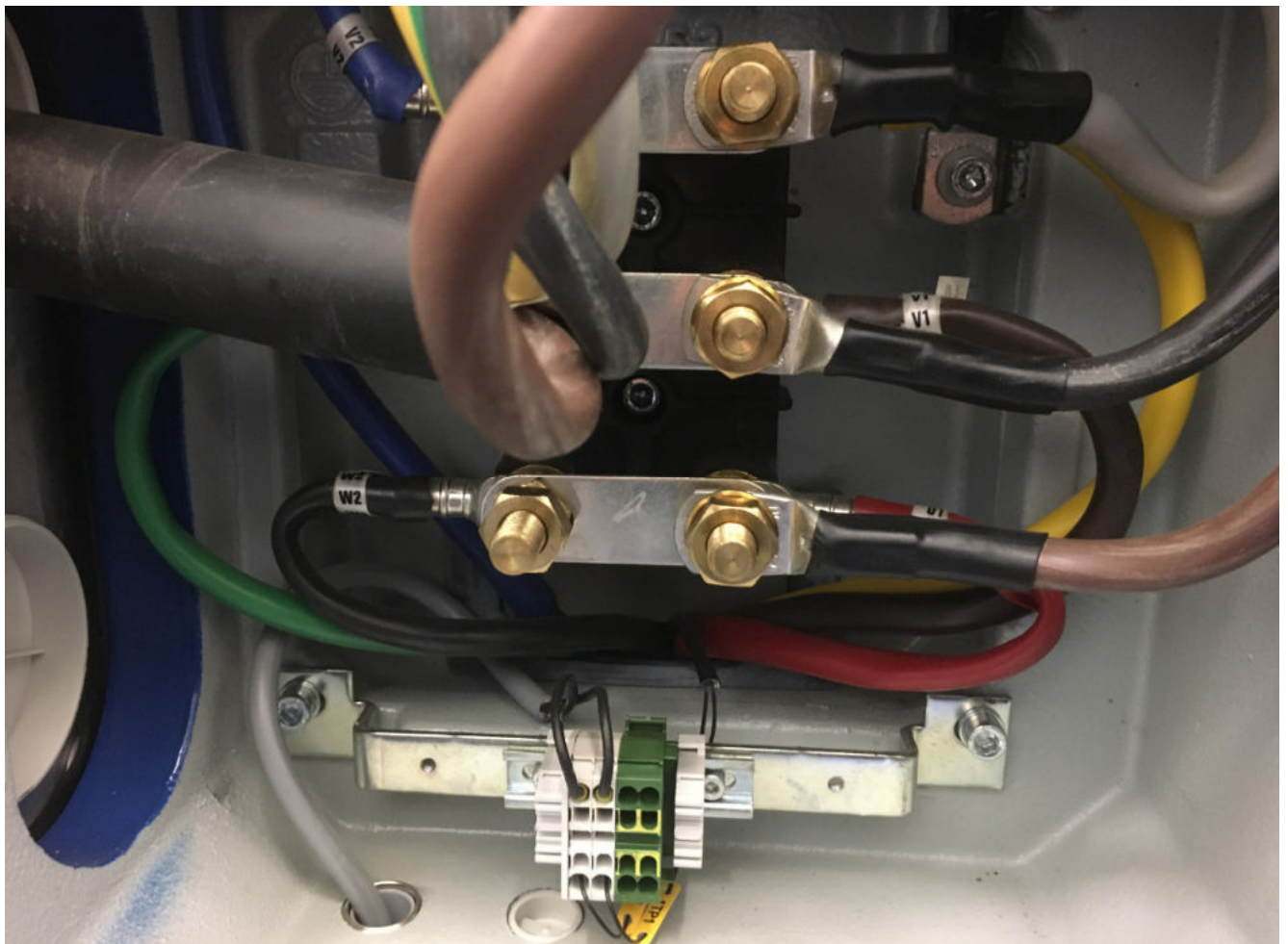
The specifications of the old motors:

- Type M3BP 200 MLB 2 IMV1/IM 3011
- 400 Volt
- 50 Hz
- 30 KW
- 2970 R/Min
- 52,2 A
- Cos: 0,88

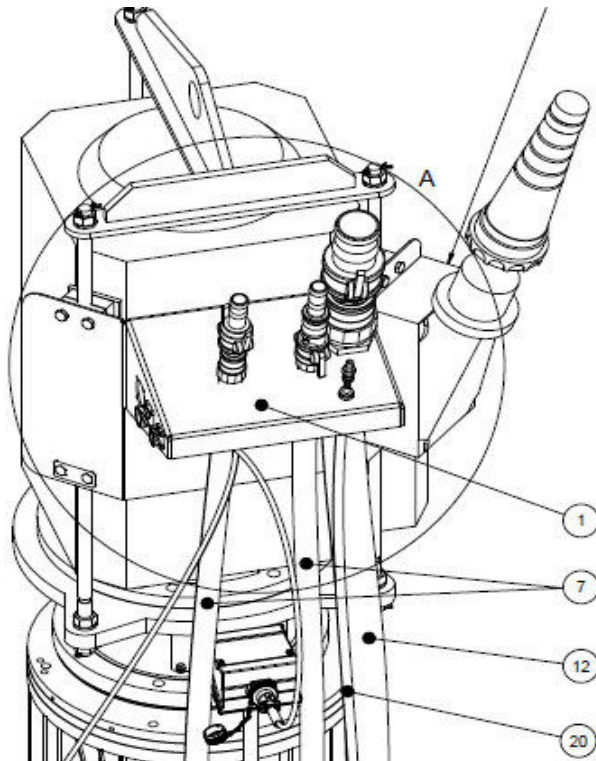
The specifications of the new motors:

- Type M3BP 200 MLA 2IMV1/IM 3011
- 380 Volt
- 50 Hz
- 30 KW
- 2949 R/Min
- 54,6 A
- Cos: 0,90

First was to dismount the main electrical connector and wires, see picture below:



Next step was to dismantle the lifting device, stay bolts and extension complete.



Also, the motor coupling must take off:



All was mounted and connected again on the new motor. The dust cover was dismantled as we did in the time at the old motors to win lifting high in the plant. Therefore, we mounted in the time shorter stay bolts.

The atomizer and motor were connected by forklift outside of the building and the complete unit was transported to the crane:



Below some pictures during transport up to the penthouse of line 4:

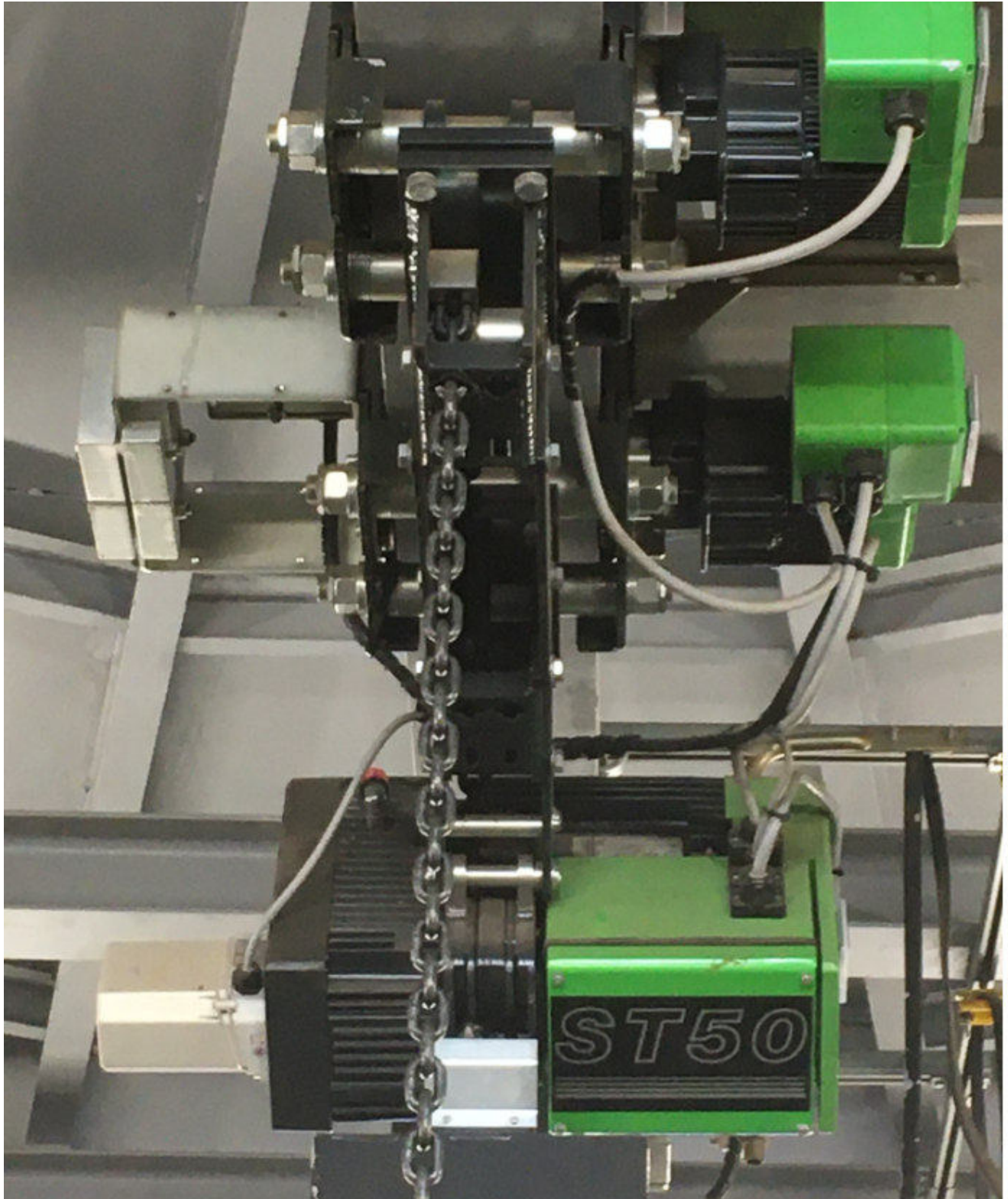




The atomizer was placed on a platform below the absorber and by crane of line 4 we lift the complete atomizer.

We saw at lifting of the atomizer that the lifting beam was vibrating very heavy and it was needed to stop several times till the beam was stopping vibrating.

On the picture we can see that the chain is not in the middle of the beam, this is mounted for a 2-chain system....It is easy to change this by changing the washers! In my opinion a must seen the very have vibrations of the lifting beam!!



- **Atomizer F-100EMC s/n 2240:**

The atomizer is opened complete, complete cleaned and all parts are checked.

Start was to disassemble the part below the base plate.

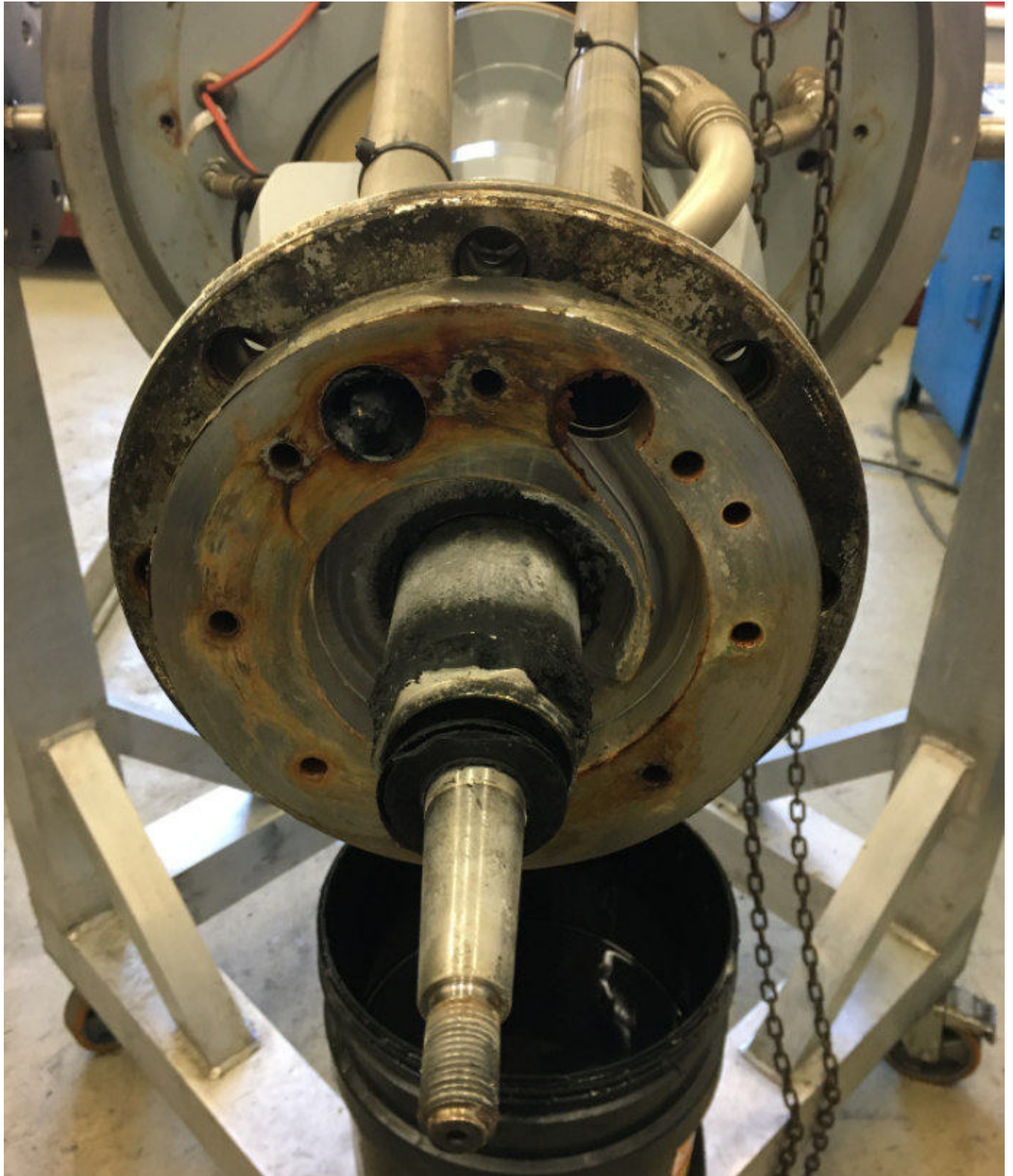
The skirt type I is the coated one with Hastelloy tip 017886-0009.

At this skirt the coating was in a good condition and nothing was loosen as seen at atomizer s/n 2241.

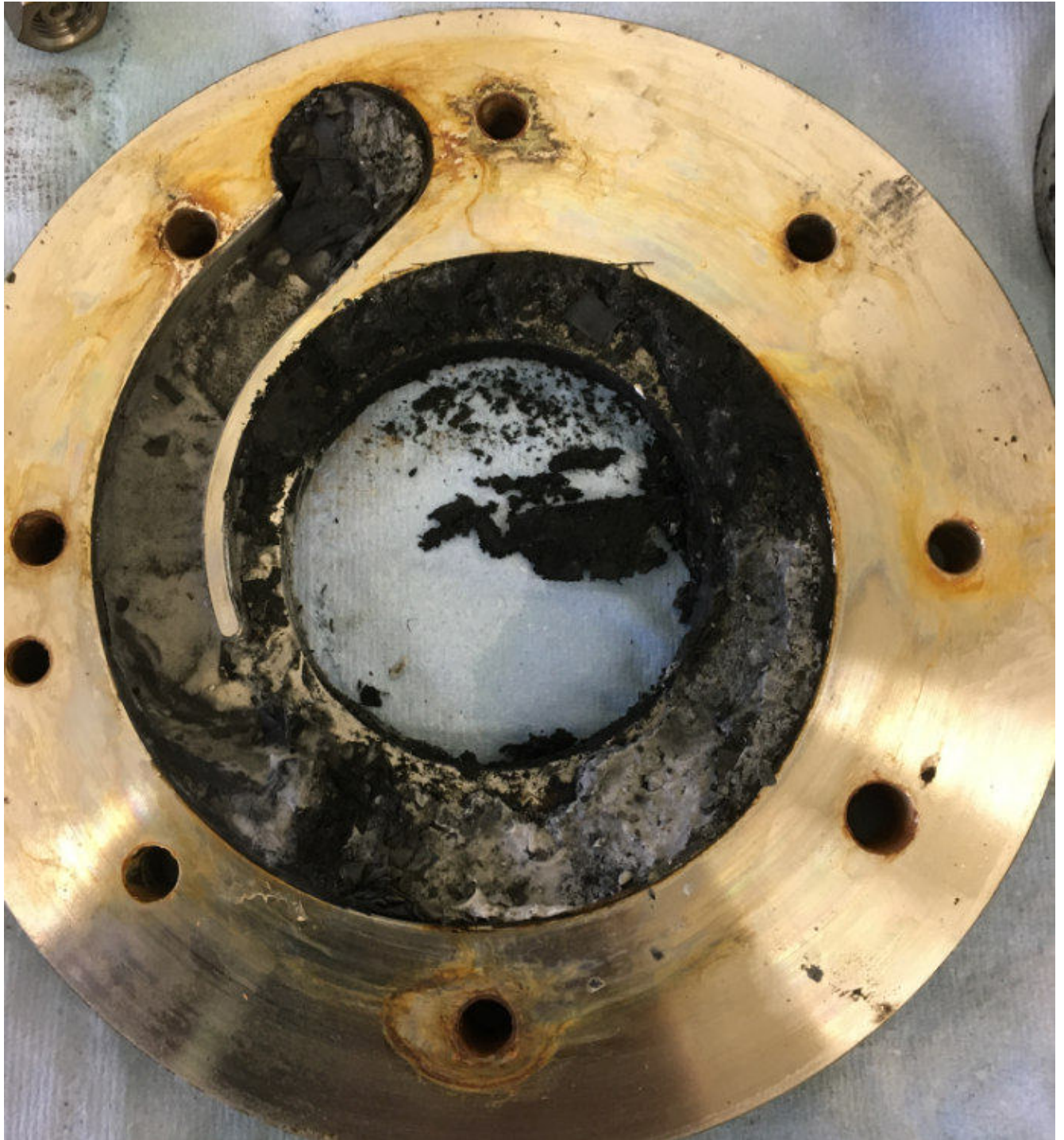


Also, here the spring 010136-0001 was nearly cone and this gives the guide bearing 010612-0001 no load anymore. Also, here we change to the Monel spring and Hastelloy washers. Also, all other atomizers will get this configuration.

At this atomizer we saw that just the lower (outer) distributor was used as it should be and the upper (inner) distributor was complete clean, see picture below of the upper volute:



The next picture shows the lower (outer) distributor:



The atomizer wheel is AX8-210 017313-0019 18 0130 with 4 pc inserts 011725-0017 (Sic/Hast) and 4 blinds 011713-0002.

The atomizer wheel is complete opened and showed low wear.in the inserts. A nice layer of product was seen in the wheel.

Only a small part of the lower wear plate was missing but as long the O-Ring is closing there is no problem to use it again, see pictures below:



Only the ring around the bottom wear plate 063507-0002 showed some marks.

The complete wheel is cleaned and build together with new O-rings. The inserts are turned 180°

The spindle 011201-0001 themselves was in a good condition, just new bearings 6305 MA/C3 and 6006 MA/C3. The coupling , bearing bushing and labyrinth are used again. Run out after mounting: 0,04/0,04 mm.

The lower spindle bearing bushing 010064-0001 was in a good condition and is used again.

After finishing to dismount the lower part, the gear box was opened:

With the hydraulic pump 013516-0001 the coupling to main motor was dismount.

All looked very good, the gearbox was clean, no burned oil.

The both oil nozzles are placed correctly, and oil pipe is mounted with new copper rings.

- Pinion Gear:

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All surfaces on the gear box, Intermediate Ring and Eccentric top plate are checked by a stone and closed by new O-rings and paper gasket to be sure the gear box is closed against the oil

The oil pump is placed again and will be change out at the next overhaul at 12.000 total operation hours for a reconditioned one.

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The vibration probe with a Bruell Kjaer oscillator is adjusted at -10,5 Volt.

The complete gear is assembled with new O-Rings and Gaskets.

A new Guide Bearing 010612-0001 is mounted with a new spring 010136-0001, Washer 010132-0001, 010134-0001 and spring retainer 010138-0001. The new type spring and washers will be shipped from Denmark.

All coupling rubbers 053360-0001 from the coupling to main motor are changed out.

Below some pictures of most of the cleaned parts before assembling:



The complete atomizer was built up with new gaskets and O-Rings.

See below the lower part of the atomizer after assembling:



After mounting the skirt, the oil was filled up hand the oil circulation was tested by hand.

The second motor was change out for the new one, the same as written at s/n 2241.

Also, this atomizer was lift to line 4. The both atomizer wheels were mounted before testing on 24.09.2020.

First was placed atomizer s/n 2241:

Tested was first to direction of the new motor. This was correct and we started up this atomizer:

All signals were ok, see also a picture of the electrical box in the penthouse with a view on the vibrations and oil temperature:



This shows a vibration of 4,5% = 45 μ peak-peak in empty mode running. The oil temperature shows 16,8°C.

The atomizer was tested around 20 minutes.

Atomizer s/n 2240 was tested as next, also first the test of the direction of the main motor and then starting up:



This shows a vibration of 3,1% = 31 μ peak-peak in empty running mode. The oil temperature shows 17,8°C.

This atomizer was also tested around 20 minutes.

Action points:

- Local people of the customer are unknown how to dismount and mount the atomizer wheel, they are trained in the time but Zauner did the job only at oil change and the wheel is never taken of between these times. The liquid distributor was all the 6.000 hours never taken away and cleaned.
- The atomizers were very dirty outside and never cleaned by the customer.
- Use always the protection pipe during the transport of the atomizer.
- Use a torque to mount the atomizer wheel : 65 Nm

Thanks for the good cooperation!



Mit freundlichen Grüßen

GEA TDS GmbH
GEA Niro

Roland van Silfhout