# 9 Maintenance


9.1 Maintenance Plan 2
9.1.1 Customer/Operator Actions 2
9.1.2 Service Technician Actions 3

9.2 Purge Unit 4
9.2.1 Info & Tools 4
9.2.2 Serial commands 4
9.2.3 Cleaning 4
9.2.4 Lubrication points 5

9.3 Electronics 6
9.3.5 Fusion Board cooling filter replacement 6
9.3.6 Power supply Lambda(150VDC) 6

9.4 Encoder Ruler 7
9.4.1 Cleaning of the encoder ruler (phase grating graduation) 7

9.5 Cable chain 8
9.5.1 Info & Tools 8
9.5.2 Maintenance for cable chain 8

9.6 Rail Systems 9
9.6.1 Info & Tools 9
9.6.2 Serial commands 9
9.6.3 Lubrication and Conservation 10

9.7 Media Transport Table/Belt/Motor 12
9.7.1 Info & Tools 12
9.7.2 Table 12
9.7.3 Belt 12
9.7.4 Harmonic Drive Gear box 12

9.8 UV-Unit 13
9.8.1 Info & Tools 13
9.8.2 Air filter replacement 13
9.8.3 UV bulb replacement 13
9.8.4 UV reflector replacement 13
9.8.5 UV-quartz filter replacement 14
9.8.6 Other checkpoints 14

9.9 UV-Water Chiller 15
9.9.1 Info & Tools 15
9.9.2 Filter Replacement 15
9.9.3 Water Replacement 16
9.9.4 Radiator block cleaning 16
9.9.5 Other checkpoints 16

# 9.1 Maintenance Plan

### 9.1.1 Customer/Operator Actions

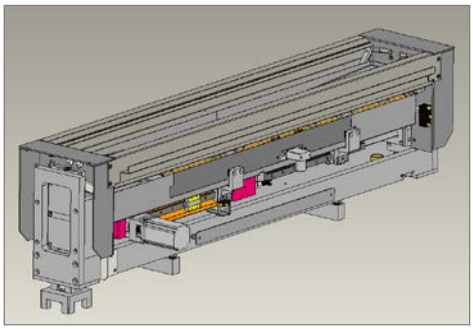
| Section | Rate | | | | | | Action |
|---|---|---|---|---|---|---|---|
| | 24h | 7 d | 2 weeks | 1 month | ½ year | 1 year | |
| Print Heads | x | | | | | | Maintenance according to "Printhead Maintenance" documentation (Service Video) |
| Print Plane | | x | | | | | Clean (with Face Plate Solution or Alcohol) |
| Purge Unit | | | x | | | | Clean (with Face Plate Solution or Alcohol) |
| Fusion Fan Filters | | | | x | | | Replace or clean |
| Cable Chain | | | | | x | | Check the conditions of the chain, regrease with Vaseline |
| Rail Systems | | | x | | | | Remove used grease at rail ends |
| Anti-Static Unit (Ionizer) | | | | x | | | Clean ionizer jets with compressed air |
| Media Transport Belt | | x | | | | | Clean the border vacuum holes on the transport belt table |
| UV-Unit | | | x | | | | Review/change of UV lamp air filters (Service Video) |
| UV Water Chiller | | | | x | | | Visual:<br>Check water quality, temperature, filling level and pressure drop on filter manometer, remove settled dust from radiator block |
| Lung Filters | | | | x | | | Inspection for leakage |

### 9.1.2 Service Technician Actions

| Section | Rate | | Action |
|---|---|---|---|
| | 1 year | 3 year | |
| Purge Unit | x | | Clean with alcohol, run both axis from software and make sure they are moving smooth and without "strange" noise |
| Purge-Unit Offsets | x | | Review of Purge In-Out / Up-Down Offset |
| Sledge Encoder Ruler | x | | Clean and check the ruler |
| Cable Chain | x | | Check for worn out cables/hoses and re-grease with Vaseline. |
| Fusion Board Cooling | x | | Remove dust and ink mist, make sure the cooling fans are running smoothly, replace or clean filters |
| Power supply Lambda | x | | Check and clean the 150VDC Power supply for the fire pulses |
| Rail-Systems | x | | Review the rails as mentioned below, remove used grease at rail ends |
| Media Transport Table/Belt | x | | Review and cleaning of belt and holes (mechanically) and review of belt tension |
| Media Transport Motor | x | | Refill grease into the Harmonic Drive gear box |
| Loading/Unloading Table | x | | Review belt for general condition and rubbing areas… |
| UV-Unit | x | | Review of, bulbs, quartz glasses, filters, air exhaust hoses, water pipes<br>Check for leakages in the water cooling circuit |
| UV Water Chiller | x | | Do the yearly maintenance (water and filter replacement) |
| UV exhaust air hoses | | x | Change the UV – exhaust air hoses |
| Ink Tanks | | x | Empty and flush, or replace |
| Main Ink Filters | x | | Replace |
| Lung Filters | | x | Replace |
| Light Trap/Park Tray | x | | Review and clean and repaint (mate, temperature resistant) if necessary |
| Head-Media-Distance | x | | Review of Head-Media-Distance |
| Crash sensors | x | | Check the function and adjustment of the crash sensors |

## 9.2 Purge Unit

### 9.2.1 Info & Tools



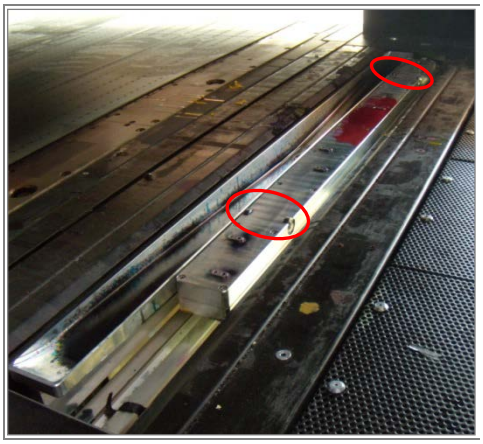
On all works with the purge unit (working with serial commands) be sure that the print sledge is on the left side of the printer and the head media on the highest position to avoid a contact between the printheads and the purge unit. Normally the print sledge is locked if a contact is possible (only for automatically movement not for moving by hand). To be on the safe side don`t move the print sledge during works on the purge unit.

| | | |
|---|---|---|
|  | Durst conservation oil „Schneeberger“ | E4201010 |

### 9.2.2 Serial commands

| | Command | Response | Description |
|---|---|---|---|
| **Head Media Init** | YHMI | YHMI xy<br>x... 0 ok<br>x... 1 error<br>y... distance in encoder-steps | The Print Head drives to the highest reachable position |
| **Purge Up/Down Init** | YPUI | YPUI xy<br>x... 0 ok<br>x... 1 error<br>y... distance in encoder-steps | Vertical initialization |
| **Purge Up/Down Distance Set** | PUDS | PUDS x<br>x... 0 ok<br>x... 1 error | |
| **Purge In/Out Init** | YPII | YPII xy<br>x... 0 ok<br>x... 1 error | Horizontal initialization |

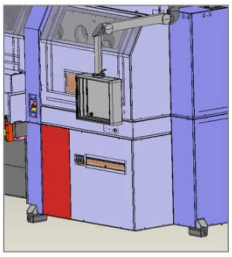
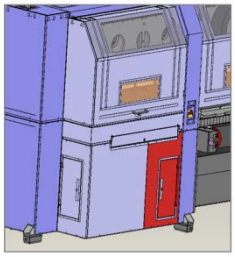
### 9.2.3 Cleaning



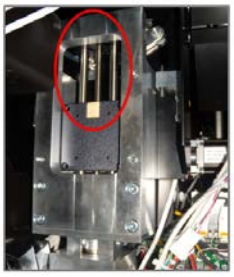
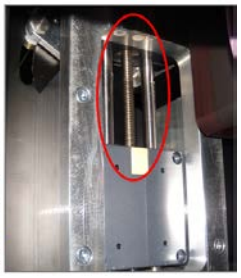
- At first reinitialize the printer to be ensure that the print sledge is on the highest position (serial command Head Media Init: "**YHMI**")
- Move the print sledge to the left position (automatically or by hand)
- Put in the serial command ("Others" tab) **PUDS100** (Purge Up/Down distance set)
- Now you have access to the vacuum unit
- Clean the whole unit including the ball bearings on the side as well
- Put in the serial command ("Others" tab) "**YPUI**" (Purge Up/Down Init) and the purge unit moves back to the starting position

### 9.2.4 Lubrication points

➢ **Up/down**

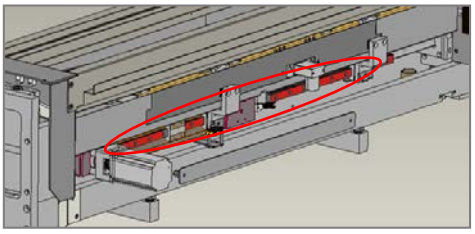



- Remove the purge tank cover and the cover before the Spii-controller to have access to the lubrication points

- Put in the serial command "YPUDS100" (Purge Up/Down Distance Set)
- Now clean the spindle from settled dust and old ink
- These spindle is guided with plastic sockets, therefore only a conservation with the Durst conservation oil is needed
- Put in the serial command "YPUI" (Purge Up/Down Init) to drive the purge unit down
- Drive up and down a few times with the serial commands and check if the unit is running smooth

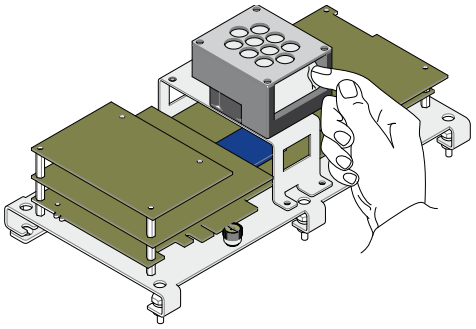
➢ **In/Out**



- Put in the serial command "YPII" (Purge In/Out Init)
- Remove settled dust and ink from the rails and clean it
- Afterwards lubricate the rails with Durst conservation oil
- This unit must run very smooth to avoid motor overloads

## 9.3 Electronics

### 9.3.5 Fusion Board cooling filter replacement



- Remove old filter (filter housing is open on one side)
- Use a new replacement filter (or clean filter with compressed air)
- Insert the filter with **fine side to the fan** and the rough side to the outside

Filter: LH2020668

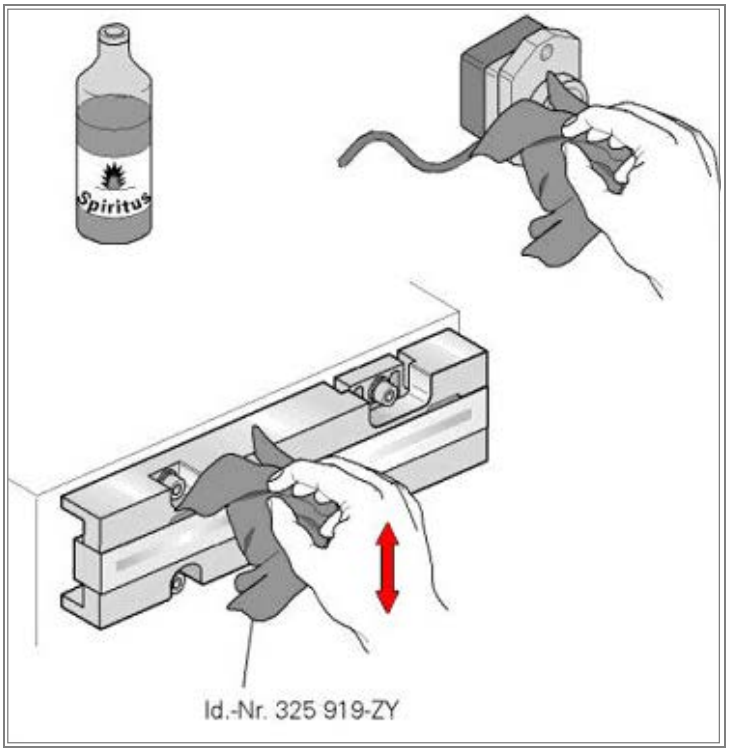
### 9.3.6 Power supply Lambda(150VDC)

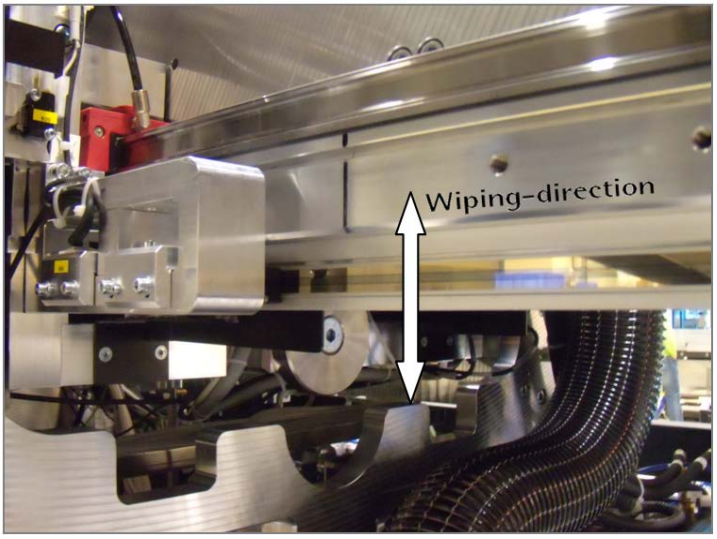
- Remove the metal covers on the left side of the printer
- Open the fixing screw to swing all head drivers
  now you can see the Lambda power supply (150VDC) for the fire pulses
- Clean all ventilation slots to avoid an overheating of the power supply

## 9.4 Encoder Ruler

### 9.4.1 Cleaning of the encoder ruler (phase grating graduation)

- Clean the graduation surface of the scale with a lint-free wiper (Durst cleaning wipers) and methylated spirits.
- Wipe the ruler in line direction (vertical)
- Don`t touch it with hand to avoid  grease stains



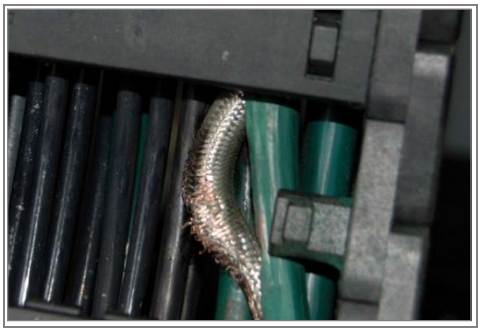
## 9.5 Cable chain

### 9.5.1 Info & Tools

| | | |
|---|---|---|
|  | Petroleum jelly (Vaseline) | E4235720 |
|  | Brush | |

### 9.5.2 Maintenance for cable chain

- Use the brush and the petroleum jelly to grease the cables/tubes inside and outside the cable chain at the area around the bridges.
- Move the print sledge by hand and check all areas where friction can occur.



- Review the whole cable chain of worn out cables and tubes
- Also check the cable chain itself of any damages or broken parts

Info: In case of a damaged cable chain part or broken cable take a look into the spare part list for the order number.

## 9.6 Rail Systems

### 9.6.1 Info & Tools

| | | |
|---|---|---|
|  | Klüber Isoflex Special Grease LDS 18 | E4201011 |
|  | Durst conservation oil „Schneeberger“ | E4201010 |
|  | Grease hand gun | E4290003 |
|  | Hand gun extension kit<br><br>Including parts: - Reinforced grease hose<br>- Extension nut<br>- Extension elbow<br>- Distance bolt | LE2099961 |

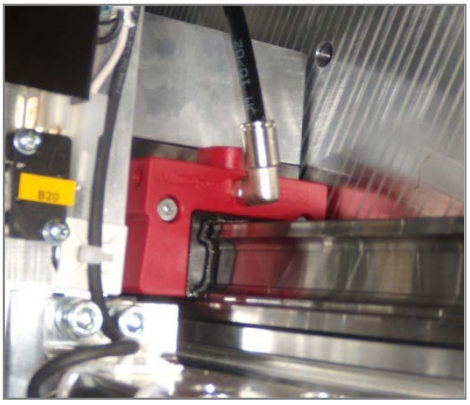
INFO: Only use the special grease as recommended above. Common greases have not the needed characteristics.

### 9.6.2 Serial commands

| | Command | Response | Description |
|---|---|---|---|
| **Media Feed Roll Init** | **YMRI** | YMRI xy<br>x... 0 ok<br>x... 1 error<br>y... distance in encoder-steps | The Feed-Roll-Unit drives to the highest reachable position |
| **Head Media Distance Set** | **HMDS50** | HMDSx<br>x... 0 ok<br>x... 1 error | Sets a HMD to get access to the grease nipple |
| **Head Media Distance Init** | **YHMI** | YHMI x.yyyy<br>x... 0 ok<br>x... 1 error | Initialize the HMD (sets the HMD to the highest position) |

### 9.6.3 Lubrication and Conservation

➢ Sledge-Rails



- Remove the wasted grease at the rail ends
- Clean the rail from ink and other waste
- Review the sledge-rail of visible damage
- Check the bearings for visible damages
- Give a thin film of the special Durst conservation oil Schneeberger on the rails

➢ Sledge bearing greasing (Lubcon-units)

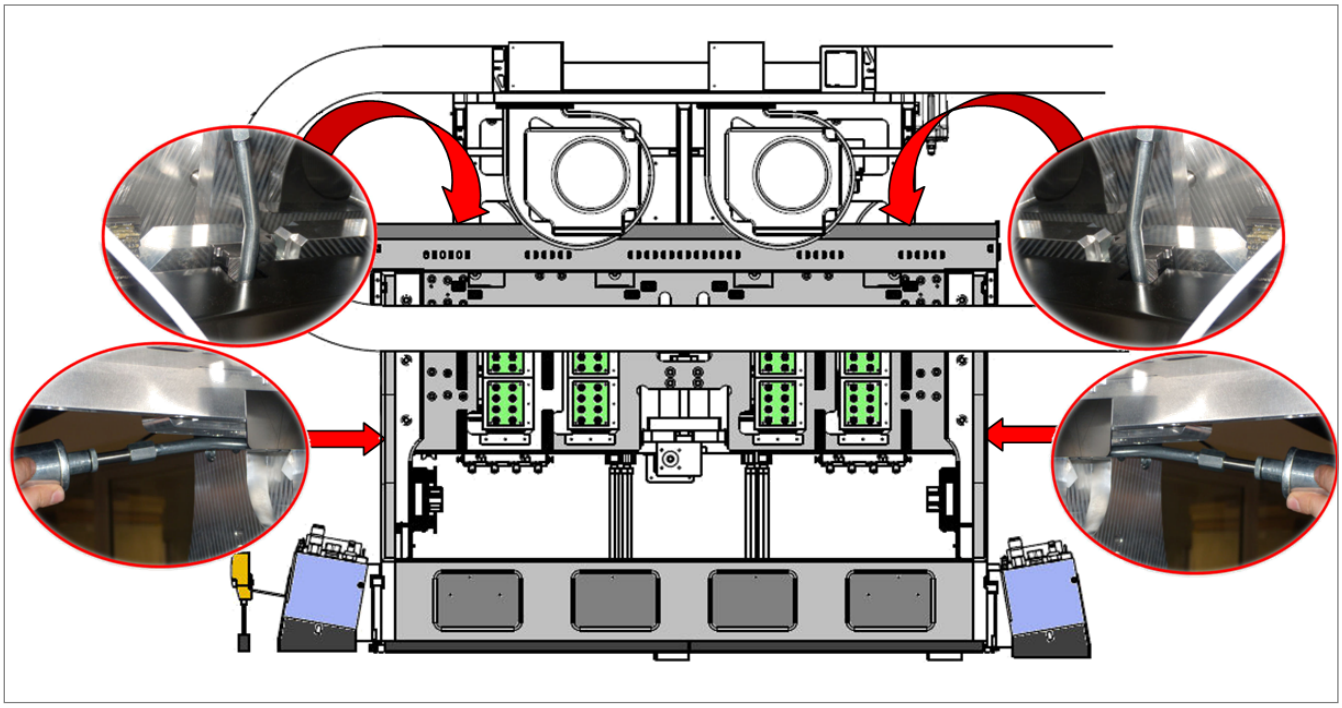

The lubrication of the sledge rail is done automatically by the Lubcon units. There are two units, one for each sledge-rail.
This unit can´t be refilled with new grease. Once the unit is empty an error message will appear on the printers screen. In this case the whole unit has to be exchanged.

- On the Lubcon-unit there is a level indicator and on top of this indicator a LED lights up if the tank is empty and you get back an error message
- To replace the Lubcon-unit switch off the printer
- Disconnect the two lubrication-hoses and take off the control cable of the unit
- Remove the fastening screws and take off the empty unit
- Take the new Lubcon-unit and mount it in reverse order
- The old unit will be taken back from Durst for recycling

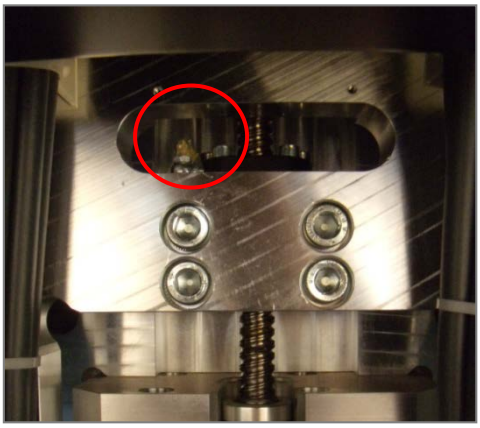
Info: If the error message comes up it is possible to keep on printing but the empty Lubrication-unit should be changed within the following 2 days till it's totally empty.

➢ Head-Media-Rail

- On the Head-Media-Rail each rail bearing is equipped with a greasing nipple
- Generally there are 8 grease nipples for the HMD (4 on each side)
- Use the hand grease tool and mount the extension elbow
- Put it as straight as possible onto the greasing nipple
- Press approximately 3 pushes grease into the bearing
- Review the spindle-system off visible damage

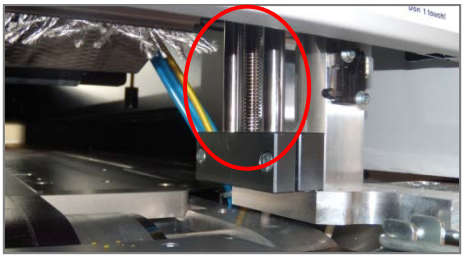


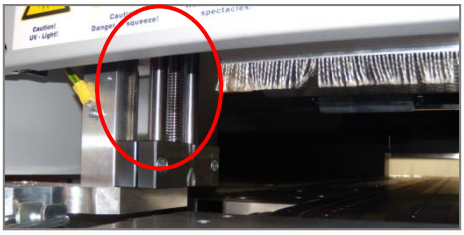
➢ Head-Media-Spindle



- Set the HMD to 5mm with the serial command (HMDS050) or load a media with an HMD lower than 5mm (to have access to the grease nipple)
- When the HMD is down you can see the grease nipples on the head-media-spindle bearing (there are two spindles input side and output side)
- Now clean the spindle from settle dust and put some drops of the Durst conservation oil on the spindle
- Press 3 pushes grease into every spindle bearing
- Review the spindle-system off visible damage

➢ Media-Feed-Roll





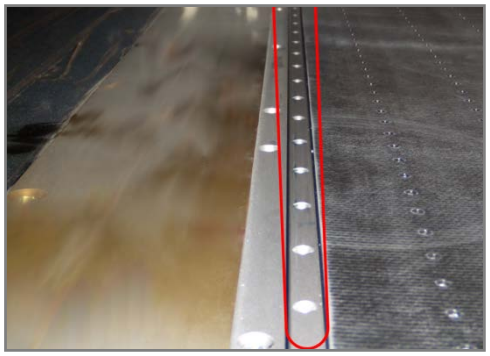
- Initialize the printer or use the serial command Media Feed Roll Init ("YMRI")
- Clean the two spindles of the "Media Feed Roll" system from settled dust and old ink
- These spindle is guided with plastic sockets, therefore only a conservation with the Durst conservation oil is needed
- Review the spindle-system off visible damage and check if everything is running smooth

## 9.7 Media Transport Table/Belt/Motor

### 9.7.1 Info & Tools

| | | |
|---|---|---|
|  | Gear grease Media Transport Belt Motor (each printer is delivered with 2 extra syringes) | E4290026 |

### 9.7.2 Table

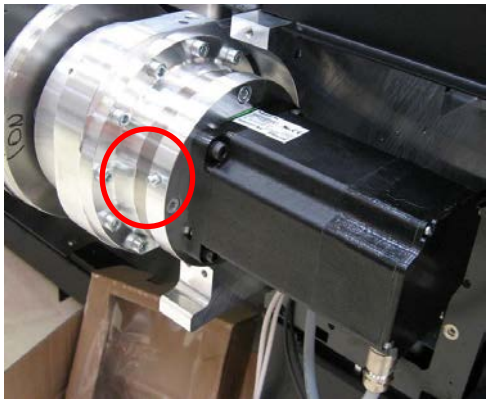


- Clean the border vacuum holes from the transport belt table
- Check if thin media is sucked right onto the table

### 9.7.3 Belt

- Clean the transport belt from ink and dust
- Recheck the tension of the transport belt
  (Refer to SM_06_Adjustments & Electronics)

### 9.7.4 Harmonic Drive Gear box



- Insert 40ml grease (content of one syringe) with help of the grease pump
- Alternatively remove the grease nipple from the gear box and insert the grease direct from the syringe
- Each operator kit is equipped with two syringes

# 9.8 UV-Unit

## 9.8.1 Info & Tools

- This maintenance is needed twice a year
- Check the working hours of the UV-bulbs
- In case of an UV-bulb exchange check the reflectors as well
- Review the quartz-filters, air filters, air exhaust hoses, water pipes
- Check for leakages in the water cooling circuit

| | | |
|---|---|---|
|  | Loctite 272 (Reflector exchange) | |
| | Cleaning alcohol (Isopropanol/Aceton) | |
|  | Torque wrench (Reflector exchange) | |

## 9.8.2 Air filter replacement

- Check the air filter for pollution
- Polluted air filters should be changed to guarantee a perfect lamp cooling
- How to change the air-filter refer to the service video Rho1000 **"Replacement of UV-Lamp air filter"**

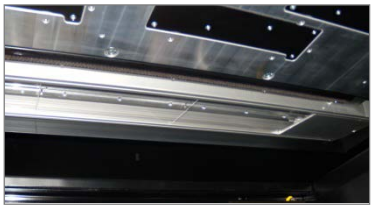
## 9.8.3 UV bulb replacement

- The UV-bulbs on the Rho1000 needs to be replaced after 1000 h
- You can screen the working hours of an UV-bulb on the µ-controller
- How to replace the UV-bulbs refer to the service video Rho1000 **"Replacement of UV-Lamp bulbs"**

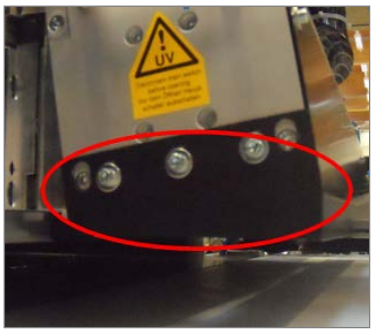
## 9.8.4 UV reflector replacement

- Review the UV-reflectors while changing the UV-bulbs
- Clean them from pollution with the cleaning alcohol
- In case of a damaged reflectors replace it
- For the replacement refer to the service video Rho1000 **"Replacement of UV-Lamp reflectors"**

### 9.8.5 UV-quartz filter replacement



- Check the UV-quartz filters as part of the UV-bulb exchange (after 1000h)
- To get a overview of the UV-quartz filters initialize the HMD (serial command: YHMI) and open the purge tray




- To change the filters shift the print sledge over the transport belt and remove the black side cover.
- Now take off the plug in plate to get access to the UV-quartz filters
- Finally change the damaged filters and clean the dirty filters with cleaning alcohol and reassemble the UV-system

### 9.8.6 Other checkpoints

- Check the water circuit for any leakages
- Check the mounting of the air exhaust hoses
- Check that nothing hits the rail during the movement (cables, water pipes, exhaust hoses…)

# 9.9 UV-Water Chiller

## 9.9.1 Info & Tools

- If the water filter pressure drop on the filter gauge is higher than 1,5 bar the filter needs to be replaced

Water filter cartridge E1390315

Refrifluid E4290028

## 9.9.2 Filter Replacement

- At first switch off the UV-Lamps and afterwards the water chiller
- Open the left side cover
- Close the water circuit with the two shifters
- Unscrew the filter box carefully and remove the filter cartridge
- Clean the filter cartridge
- Take out the old sealing rubbers and the O-ring
- Put in the new filter cartridge with the new sealing rubbers
- Mount back the filter box with the new O-ring and ensure that everything is watertight
- Open the water shifters and switch on the water chiller

### 9.9.3 Water Replacement

- Switch off the UV-Lamps and the Chiller
- Open the side covers
- To drain the tank use the water outlet on the floor
- Refill it with water (100l)
- Fill up with 1 liter Refrifluid
- The water level should be about 10-15 cm above the return hole

### 9.9.4 Radiator block cleaning

- Check the radiator block of any damages
- Remove the settled dust from the block
- Use compressed air and clean it from inside towards the outside

### 9.9.5 Other checkpoints

- Verify the pressure of the pump is ± 0,5 bar around nominal pressure 5,5 bar
- Verify the water level in the tank is above the minimum