Operation & Maintenance Instructions

Filling Tool



Masévon Technology
Molensteen 9
7773 NM Hardenberg
The Netherlands

Version date: May 4th, 2016
Doc. nr.: P-2512

These Operation Instructions are presented as: the “Original Instructions”

Preface

These Operation & Maintenance Instructions inform the operator about the safe operation and everyday maintenance of the Filling Tool.



Always keep these Operation & Maintenance Instructions near the Filling Tool.



Read these Operation & Maintenance Instructions carefully before putting the Filling Tool into use or before carrying out any operation. Only then optimal safety can be obtained.

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1 Introduction

1.1 Warning



Only qualified personnel are allowed to operate and maintain the Filling Tool.



Optimum safety is only ensured when you read these Operation & Maintenance Instructions carefully before putting the Filling Tool into use or before carrying out any operation.

1.2 Manufacturer

The Filling Tool is manufactured by:

Masévon Technology
Molensteen 9
7773 NM Hardenberg
The Netherlands

Phone: +31 (0) 523 238 560
Internet: www.Masevon.com
Email: info@masevon.com

1.3 Related documents

In addition to these Operation & Maintenance Instructions the following document comes with the Filling Tool:

- Software manual
- Manual Pfeiffer vacuum pump sets
- Electrical diagram
- Schemes pneumatics, nitrogen and vacuum system

1.4 Machine-identification

The machine is identified as: the Filling Tool. The year of manufacture of the machine is 2016. The machine-identification plate is located at the electrical cabinet.



Figure 1-1: Machine-identification

1.5 Copyright

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1.6 Liability

The manufacturer of the machine is not liable for unsafe situations, accidents and damage which are caused by:

- Neglecting warnings or prescriptions as shown on the machine or stated in these operation and maintenance instructions.
- The use of the machine for other applications or under other circumstances than stated in these operation and maintenance instructions.
- Modifying the machine in any way. This includes the application of other spare parts and changing the control program.
- Insufficient maintenance.

The manufacturer is not liable for resulting damage of machine malfunctions, such as product damage, operation breaks and production loss.

2 Safety precautions

2.1 Safety and precautionary symbols

In this document various safety and precautionary symbols are used. In order of increasing severity these are:



Suggestion to carry out tasks easier.



Draws attention to serious injuries to the operator if the instructions are not carried out carefully.

2.2 Warning pictorials

The following warning pictorials are attached to the Filling Tool:

- ***High voltage***
  on electrical cabinet.



Figure 2-1: Pictorial 'High voltage'

2.3 Operator

Only *qualified operators* are allowed to operate the Filling Tool.



The safety precautions in these Operation & Maintenance Instructions should be respected. Deviation from the precautions can cause unacceptable risks.

The operator has to be informed of chapters 1 through 5 of these Operation & Maintenance Instructions carefully before carrying out any operations on the Filling Tool.

While operating the Filling Tool the following Personal Protective Equipment (PPE's) must be worn:

- protective clothing
- protective gloves
- safety glasses



Figure 2-2: PPE's to be worn

2.4 Engineer

All maintenance activities are reserved to *specially trained engineers*.



The safety precautions in these Operation & Maintenance Instructions should be respected. Deviation from the precautions can cause unacceptable risks.

The engineer has to be informed of the entire contents of these Operation & Maintenance Instructions before carrying out any maintenance activities on the Filling Tool.

While maintaining or installing the Filling Tool the following Personal Protective Equipment (PPE's) must be worn:

- protective clothing
- protective gloves
- safety glasses



Figure 2-3: PPE's to be worn

2.5 General

The Filling Tool meets the essential safety and health requirements of the European Union. This means that the Filling Tool can be operated and maintained safely if all safety precautions are observed. However, dangerous situations can occur due to injudicious or negligent use.



Always stay alert for dangerous situations.

Observe the following general safety precautions:

- Pay attention to loose clothing and hair.
- Keep your hands away from dangerous zones.
- Check the functioning of the machine daily.
- Do not turn on the main switch if persons are in contact with the machine.
- Never start the machine if persons are in contact with the machine.
- Always turn off the main switch before performing maintenance activities.
- Always replace damaged or defective parts before putting the machine into use again.
- It is not allowed to make modifications to the machine without prior approval of the manufacturer.
- Never disassemble fluid lines or components while under pressure.



Always wear protective gloves when touching machine parts e.g. chambers and fluid reservoir or glass sheets, because sebum and tallow will disturb the production process.

2.6 Safety devices

The Filling Tool is equipped with the following safety devices:

1. Emergency stop button.
   - on the control cabinet
2. Light curtain.
   - on the front side of the machine

2.6.1 Emergency stop button



Figure 2-4: Emergency stop button

The Filling Tool is provided with an emergency stop button on the control cabinet. In case of danger for human (or damage to the machine):

- Always **press** the emergency stop button to stop the entire Filling Tool as quickly as possible.

Only use the emergency stop buttons in dangerous situations.

After an emergency stop, the machine will be terminated immediately. Except for the electrical cabinet, all machine parts will be switched off.

2.6.2 Safety light curtain



Figure 2-1: Safety light curtain

The Filling Tool has a safety light curtain to:

- Protect the users from the dangers behind this safety light curtain.

The safety light curtain protects the (un)loading positions for unallowed access. When one enters the secured area of the (un)loading positions while the machine is running, the machine will immediately stop. And as long as one is busy in the secured area of the (un)loading positions, e.g. for (un)loading products on the product fixtures, the safety light curtain prevents the machine from being able to start running.

3 Installation

3.1 Safety precautions

After installing, always check the functioning of the machine before putting the machine into use or before carrying out any operation on the machine.

After installing, always check that the safety provisions on the machine are available and functioning correct.

3.1.1 Placing the Filling Tool

- **Take** the dimensions of the units into account.
  - **Provide** enough room for the required working area and passages.
- **Place** the machine with a fork-lift truck or crane on a suitable floor.
  - **Make** sure both lifting eyes are used to lift the machine.

See Appendix 1 'Specifications' for the dimensions of the machine including the output track.

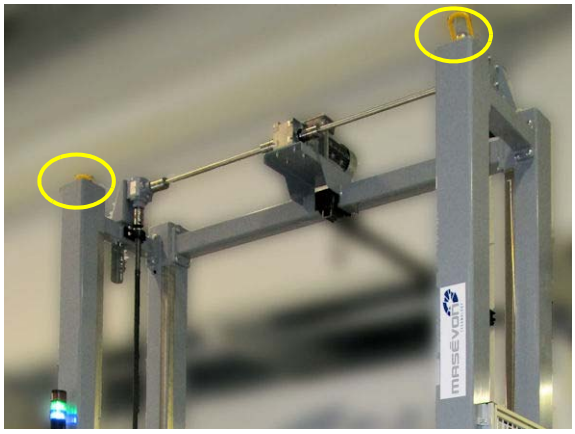


Figure 3-1: Placing the Filling Tool - Lifting eyes

Make sure that the site floor is flat, vibration-free and designed to be able to withstand the weight of the machine sufficiently.

- After placing, **level** the Filling Tool.
  - **Turn** out all levelling feet to level the machine.

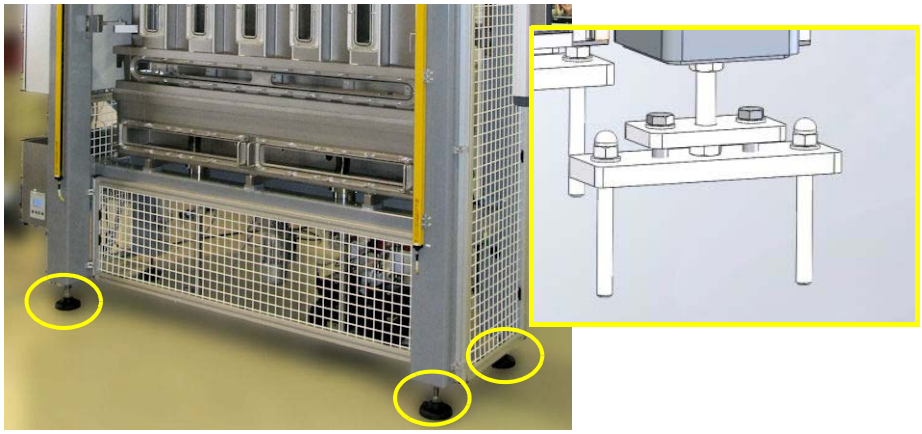


Figure 3-2: Placing the Filling Tool - Levelling feet

3.1.2 Installing the Filling Tool

See Appendix 1 'Specifications' for the required connections and the environmental specifications. If necessary, also see the electric diagram.

- **Connect** the machine to the required main facilities:
  - **Connect** the machine to the voltage supply.

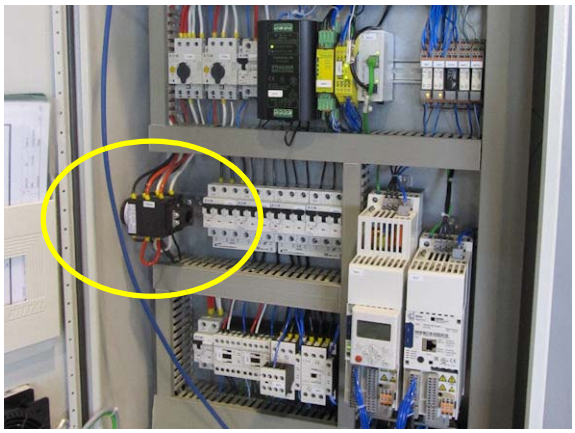


Figure 3-3: Connecting the Filling Tool to the main facilities - Part 1

- **Connect** the compressed air hose to the compressed-air supply.
  - **Adjust** the compressed air supply to 6.0 bars.

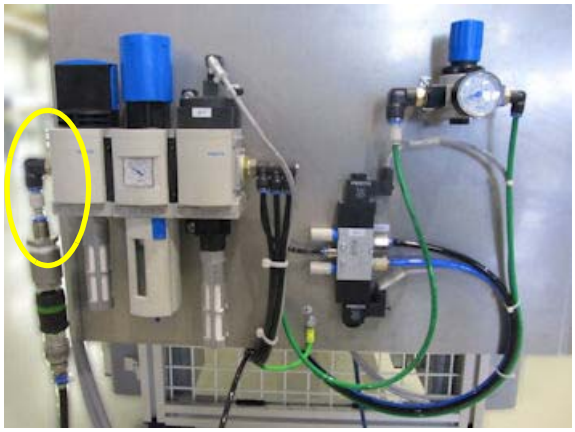


Figure 3-4: Connecting the Filling Tool to the main facilities - Part 2

- **Connect** the nitrogen hose to the nitrogen supply.
  - **Adjust** the nitrogen supply to 1.5 bars.

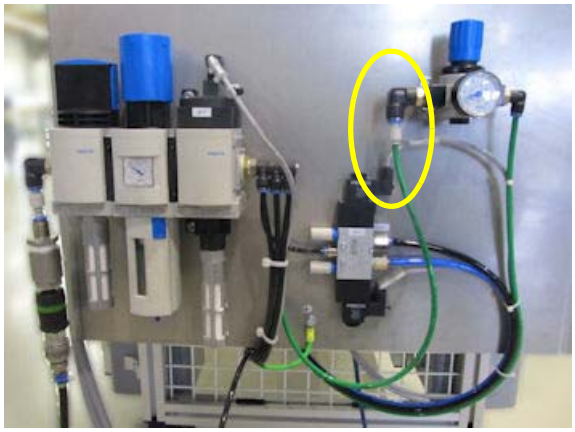


Figure 3-5: Connecting the Filling Tool to the main facilities - Part 3

After installing the Filling Tool ...

- **Remove** all transport materials that are still present at the machine parts (and any other materials used to fixate moveable machine parts during transport).

3.1.3 Commissioning the Filling Tool

- **Check** the state of the machine.
  - **Look** for broken bolts.
  - **Look** for damaged machine parts.
  - **Look** for machine parts that are out of position.
  - **Look** for damaged electric wiring and air hoses.



Make sure that the machine has no damage before commissioning. If so, consult Masévon Technology for support.

If the state of the Filling Tool is OK …

- **Turn** ON the machine.
- **Check** the machine functioning.
  - **Test** all separate machine movements.
  - Also **test** the available safety provisions such as the functioning of the emergency stop button and the safety light curtain.



See the software manual for information about operating the machine and testing machine parts.



Check at each step for the correct functioning of the machine parts. Immediately stop running if you observe any malfunctions and first take care of recovering these malfunctions.

4 Machine description

4.1 Function

The Filling Tool has the following function:

- Filling double glass sheets with LCD fluid;



It is not permitted to use the Filling Tool for any other purposes than those listed above.

4.1.1 Process description

First a reservoir with LCD fluid is placed in the holder in the lower chamber. The holder is lowered, the chamber closed with a valve and a vacuum applied. Next a sheet of double glass is placed in the glass holder. After the upper chamber is closed also a vacuum is applied.

When both chambers have reach their vacuum set point the valve is opened and nitrogen gas is supplied. The space between the glass sheet of the double glass is now filled with LCD fluid.

After the filling process has ended the upper chamber is open again the sheet of double glass (now filled with LCD fluid) is taken out.

4.2 Representation of the Filling Tool

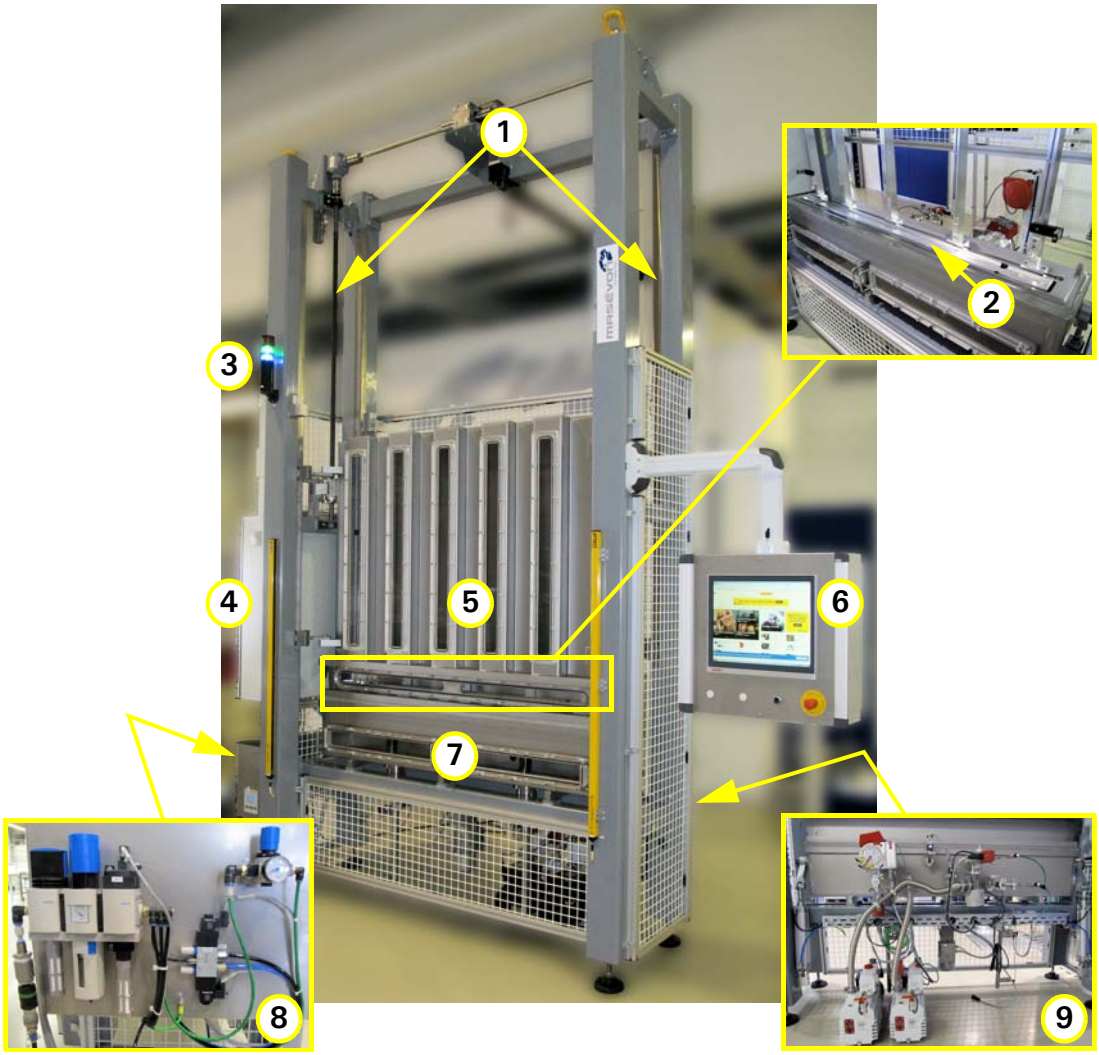


Figure 4-1: Overview of the Filling Tool

The Filling Tool comprises the following main parts:

1. Spindle with drive motor
2. Reservoir holder
3. Signal lights
4. Electrical cabinet with main switch
5. Upper chamber
6. Control cabinet
7. Lower chamber
8. Nitrogen an compressed air controls
9. Vacuum pumps

4.3 Controls

For the description of the vacuum pump sets controls. See the separate manual.

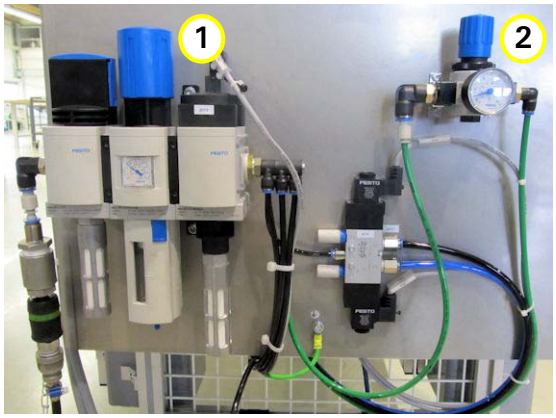


Figure 4-2: Overview of the controls

1. Pressure regulator compressed air
2. Pressure regulator nitrogen

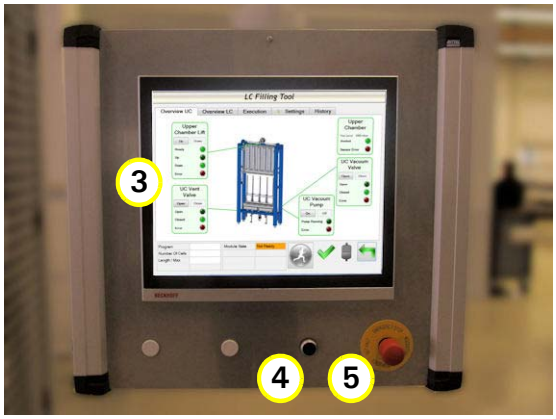


Figure 4-3: Overview of the controls

3. Touch screen
4. Reset button
5. Emergency stop button

For the functionality of the software. See the separate software manual.

5 Operation

5.1 Safety measures

Always wear the following personal protective equipment when working with the Filling Tool:
-protective clothing
-protective gloves
-safety glasses



Figure 5-1: PPE's to be worn

Always wear protective gloves when touching machine parts e.g. chambers and fluid reservoir or glass sheets, because sebum and tallow will disturb the production process.

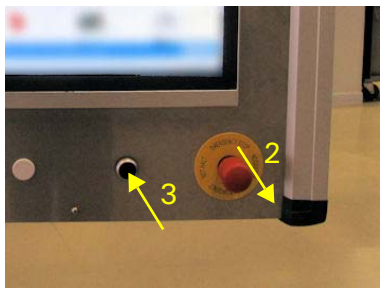
5.2 Switching on

To switch on the Filling Tool:

1. **Set** the main switch to the ON position.

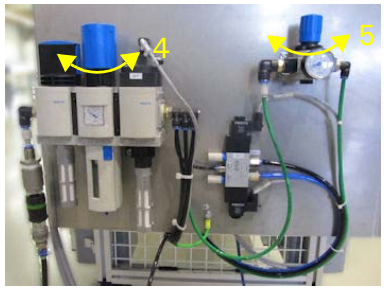


2. **Pull** out the emergency stop buttons.
3. **Press** the reset button.



If necessary:

4. **Set** the compressed air supply at 6 bar
5. **Set** the nitrogen supply at 1.5 bar.



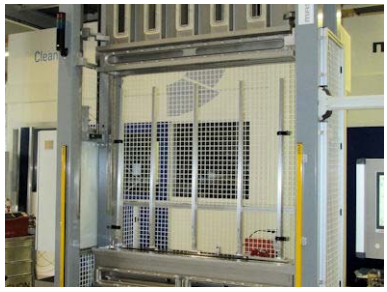
The Filling Tool is ready for operation, the signal light turns green.

5.3 Preparation before production

Always wear protective gloves when touching machine parts or glass sheets, because sebum and tallow will disturb the production process.

See the software manual for information about operating the machine and testing machine parts.

1. **Set** the upper chamber in the upper position.



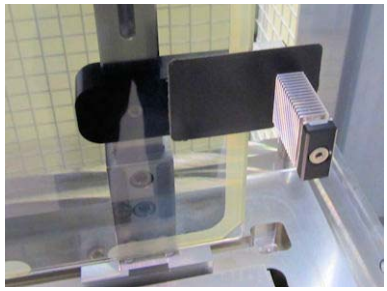
2. **Set** the reservoir holder in the upper position.



3. **Place** a fluid reservoir in the holder.
4. **Lower** the reservoir holder into the under chamber and **close** the gate.



5. **Place** a sheet of glass onto the glass holders.
6. **Lock** the glass with a plastic glass holding strip.



7. **Lower** the upper chamber.



When fully closed the machine is ready. See the software manual for information about how to start the production process.

5.4 Emergency stop

1. Press the emergency stop button.
2. The machine will to operating. Except for the control cabinet, all machine parts will be switched off.



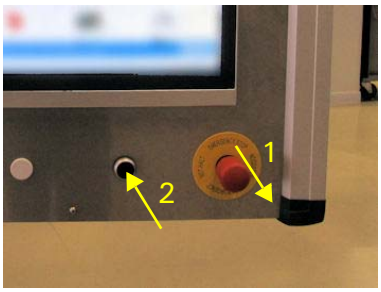
Only use the emergency stop button in hazardous situations.

5.4.1 Restart after an emergency stop

Make sure the cause of the fault/malfunction has been removed before starting up the machine again.

To restart the Filling Tool:

1. **Pull** out the emergency stop buttons.
2. **Press** the reset button.



The Filling Tool is now ready for operation, the signal light turns green. See the software manual on how to start the production process again.

5.5 Switching off

To completely switch off the Filling Tool:

1. **Set** the main switch to the OFF position.



6 Maintenance

6.1 Safety precautions

Make sure the machine is switched off COMPLETELY before carrying out any maintenance activities.

Only qualified personnel is authorized to carry out maintenance procedures at the Filling Tool.

Always lock the power supply before carrying out any maintenance procedures at the Filling Tool.

The vacuum pump sets also have its own manuals.

6.1.1 Lock pin

Always lock the upper chamber with the lock pins when carrying gout maintenance activities at spindle or spindle drive motor.

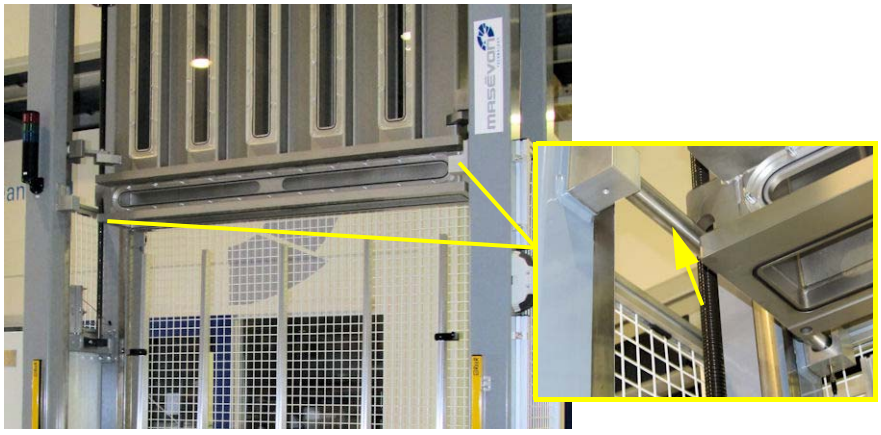


Figure 6-1: Upper chamber - Lock pins

6.2 Maintenance activities

- Check the functioning of the safety light curtain and emergency stop button.
  - Weekly

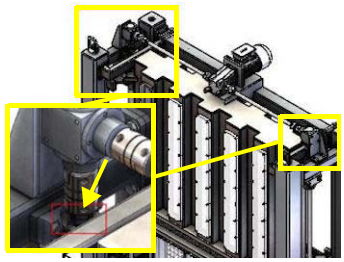


- Lubricate the left and right spindle.
  - Monthly



Only use Shell Gadus S2 V100 3 to grease the spindles.

- Check the M20 bolts for tightness.
  - Monthly



- Maintenance vacuum pumps



See separate manual for maintenance activities.

7 Transport

7.1 Safety precautions

Always check that the Filling Tool is disconnected from its power sources before transporting and storing the Filling Tool.

See for more information safety precautions in chapter 2.

7.2 Transporting the Filling Tool

Only qualified personnel is authorized to transport and store the Filling Tool.

- **Hoist** the machine with a fork-lift truck or crane onto the transport device.
  - **Make** sure both lifting eyes are used to lift the machine.

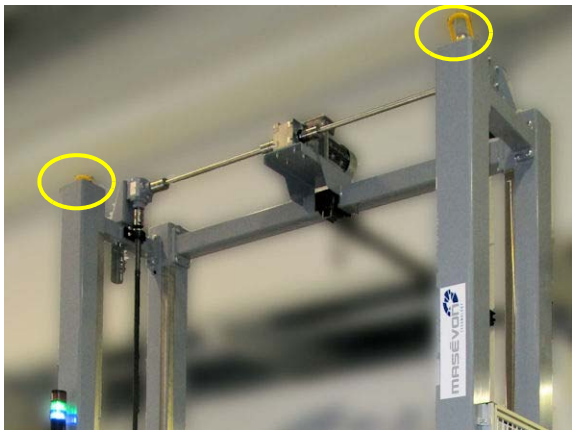


Figure 7-1: Transporting the Filling Tool - Lifting eyes

- **Mount** the transport clamps to the machine so the upper chamber is secured in place during transport.
  - **Make** sure both transport clamps are property affixed to the machine.

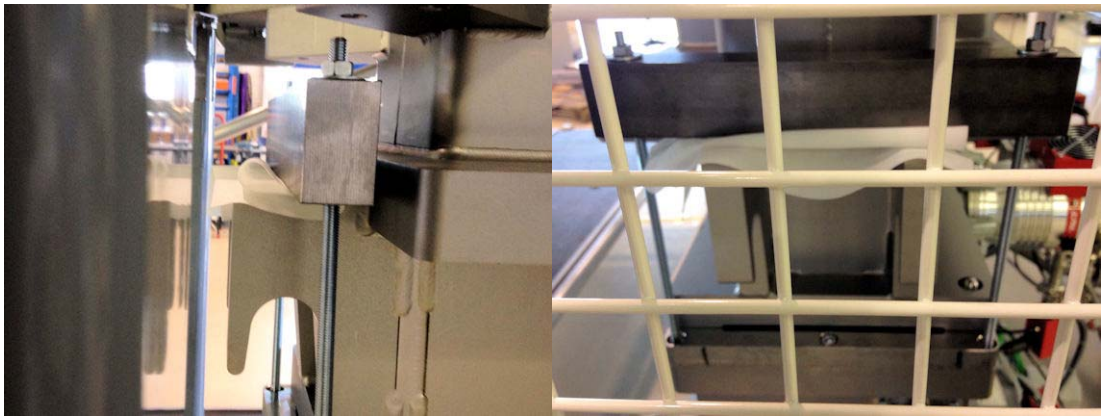


Figure 7-2: Transporting the Filling Tool - Transport lock

8 Disposal

8.1 Safety precautions



Switch off and drain the Filling Tool COMPLETELY before disposing of the Filling Tool.



Always check that the Filling Tool is disconnected from its power sources before disposing of the Filling Tool.



See for more information safety precautions in chapter 2.

8.2 Disposing of the Filling Tool

When disposing of the Filling Tool, always consult:

- Masévon Technology



Only qualified personnel is authorized to dispose of the Filling Tool.

8.3 Environmental aspects

Please observe the following environmental aspects:

- Dispose of the Filling Tool
  according to the legal and local regulations.
- Re-use parts and substances of the Filling Tool, and process these parts and substances in an environmentally-friendly manner if the re-use is impossible.
- Discharge harmful, dangerous and possibly contaminated substances (or liquids) according to the legal and local regulations.



Make sure the Filling Tool is disposed of in a SAFE WAY and according to the ENVIRONMENTAL RULES in the country of use.

Appendix 1 Specifications

Technical data Filling Tool

Item	Value
Dimensions LxBxH	1200 x 3600 x 4200 mm
Weight	3000 kg
Electrical	480V 60 Hz 16 A 2x 120V 60 Hz 20 A
Air	6 bar
Nitrogen	1.5 bar