

Weekly Maintenance

Items you will need for Weekly Maintenance

- Kitchen Scale
- Bucket that fits on top of the kitchen scale
- Calibration Sticks
- Stiff Brush
- Brush Test Strips
- Piece of Cardboard

- Take the robot out of operation



1. Tap the right bottom corner

- Move the robot arm to the service position



1. Tap
2. Tap **Actions**
3. Tap **Today's Actions**
4. Tap **Clean Robot Arm**
5. Tap **Move robot arm to service position – start**

- **Calibrate Cup Offsets** – you will need the 4 grey calibration sticks

1. Make sure the cups and laser are clean



2. Tap
3. Tap **Actions**
4. Tap **Calibrations**
5. Tap **Cup Offsets**
6. Tap **Go to Scan Position**
7. Place the sticks in the teat cups
8. Select **Start Scanning**
9. Wait until the status is **Done**
10. Make sure all values are between -4 and +4
11. If the value is outside of this range:
 - Adjust the vertical position of the teat cup
 - Repeat the scanning process
12. Select **Save calculated values**
13. Remove the 4 sticks
14. Select **Go to home position**
15. Make sure teat cups are exactly under the jettors
16. If a teat cup is not under the related jettor
 - Adjust the vertical position of the teat cup

- Repeat the scanning process

- **Adjusting the Vertical Position of the Teat Cup**

1. Using a screwdriver to turn the adjustment screw until the teat cup is perpendicular with the mothership base
2. Turn the adjustment screw clockwise to adjust the teat cups towards the mothership cover
3. Turn the adjustment screw counter clockwise to adjust the teat cups away from the mothership **cover**
4. Refer to figure 92 for an example of the vertical position for the teat cups

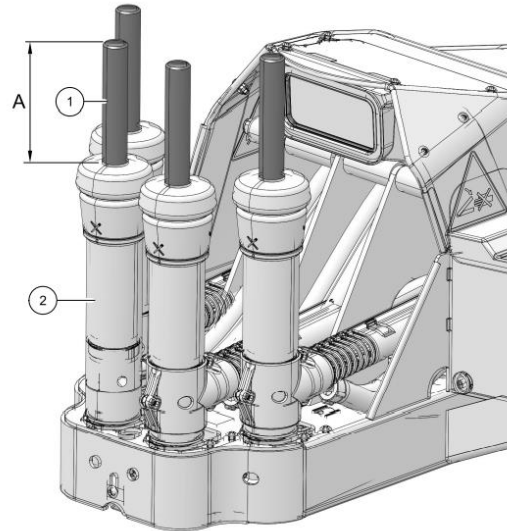


Figure 92. TDS-II test tool

KEY:
1. TDS II test tool - 2. Teat cup - A: 10 cm (3.9 in)

- **Verify Rope Length**



1. Tap
2. Tap **Tests**
3. Tap **Test Menu**
4. Tap **Mothership**
5. Tap **Cups**
6. At **Cord cups** select LF & RF **Loose**
7. LR **Loose**
8. RR **Loose**
9. Pull one cup up, if the bottom is in line with the opposite cup, it's at the perfect length.
10. At cord cups, select **fixed** for LF & RF
11. Select loose for LR & RR
12. Pull one cup, if the bottom is in line with the opposite cup, it's at the perfect length

- **Clean Feed Bin & Feed Area**



1. Tap
2. Tap **Actions**
3. Tap **All Actions**
4. Tap **Clean the feeding system**
5. Clean the feed slide with a hard brush
6. Clean out the feed bin
7. Clean the window of the feed presence sensor with a soft moist cloth
8. Refer to figure 81 for the location of the feed bin and feed slide

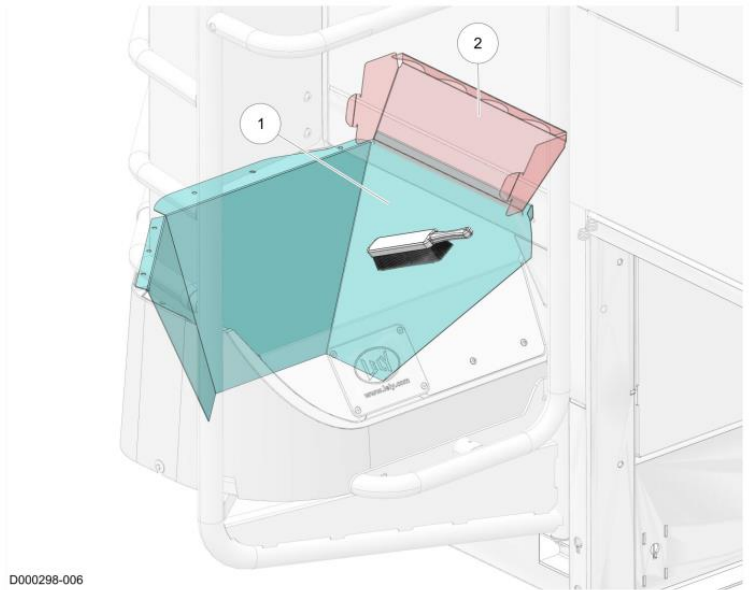


Figure 81. Clean the feed bin

KEY:
1. Feed bin - 2. Feed slide

- **Calibrate the Feed** – make sure the feed bin is empty of leftover grain



1. Tap
2. Tap **Actions**
3. Tap **All Actions**
4. Tap **Calibrate the feed portion**
5. At **Select feed type** the feed type
6. Tap **Start Dose**
7. Wait until the feed unit is finished
8. Put a bucket on the scale
9. Reset the scale to zero
10. Remove the bucket
11. Go into the box
12. Put the feed from the feed bin in the bucket
13. Go out of the box
14. Put the bucket with the feed on the scale
15. Make a note of the weight
16. Empty the bucket

- **Adjust the feed portion**

1. On the robot screen **Enter quantity**
2. Enter the value you noted
3. Select button **Save**

- **Clean Display Screen**



1. Tap
2. Tap **Actions**
3. Tap **All actions**

4. Tap **Clean touch screen**
5. Tap **Start** to disable the touch screen for 25 seconds
6. Clean the display screen with a soft lint free cloth made moist with warm water
7. Dry the screen with a dry soft lint free cloth

- **Measure brush disinfecting using test strip**



1. Tap
2. Tap **Tests**
3. Tap **Test menu**
4. Tap **Cleaning**
5. Tap **Pre treatment**
6. in the field **brush cleaning** select button **On**
7. put a cup below the brush rollers and collect the spray
8. Tap button **Off**
9. Put a test strip in the mixture
10. Remove the test strip, shake the test strip to remove excess fluid
11. Wait approximately 30 seconds
12. Compare the colour of the test strip to the bottle

- **Verify Brush Operation**



1. Tap
2. Tap **Tests**
3. Tap **Test menu**
4. Tap **Cleaning**
5. Tap **Pre treatment**
6. in the field **brush cleaning** select button **On**
7. Are the brushes spinning?
8. Tap button **Off**
9. Tap button **Off**

- **Verify Teat Spray Operation**



1. Tap
2. Tap **Tests**
3. Tap **Test menu**
4. Tap **Mothership**

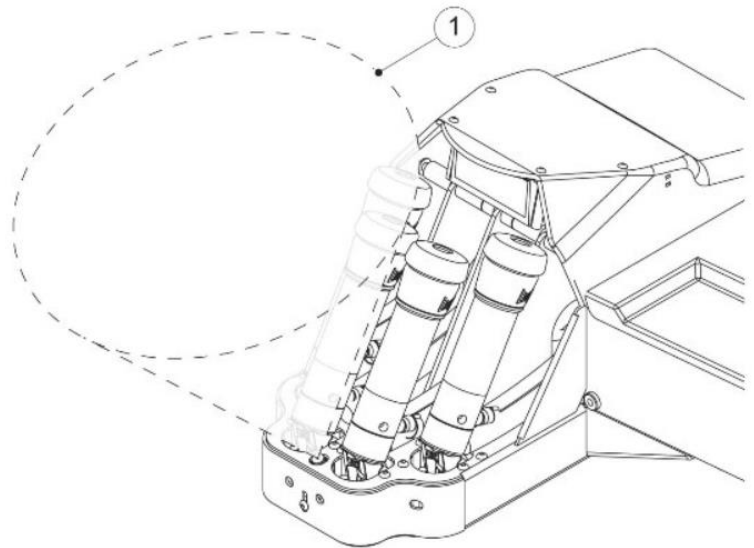


Figure 2.2 Verify Teat Spray Operation

5. Tap **Other**
6. Place a piece of cardboard over top of the nozzle
7. At **Disinfection nozzle** button **On**
8. Did it create an even cone shape?
9. At **Disinfection Nozzle** button **Off**
10. Refer to figure 2.2 for the correct shape

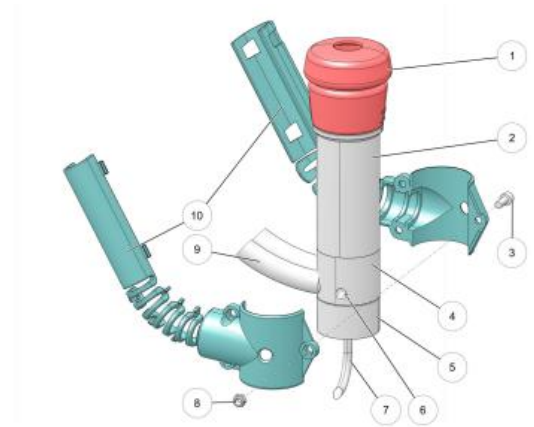


Figure 22. Teat cup

KEY: 1. Teat cup liner - 2. Teat cup shell - 3. Bolt - 4. Milk collection cup - 5. Centering cup - 6. Bleed hole - 7. Cup cord - 8. Nut - 9. Twin tube - 10. Twin tube cover

- **Check milk hoses for damage**

1. Open robot control room door
2. Look at the hoses that are attached to the milk jar
3. Are they damaged? Leaking milk?

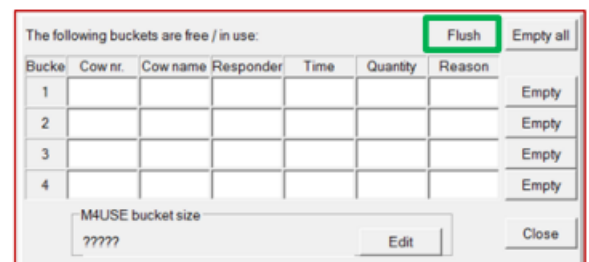
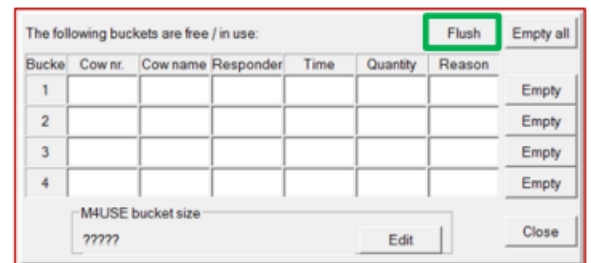
- **Check Liners**

1. Squeeze the top of the teat cup liner in multiple spots
 - Are there noticeable cracks?
2. Put a finger inside of the teat cup liner and feel the side of the liner
 - Are there cracks inside of the liner?

3. If you answered yes to any of the questions, refer to page 6 &7, figure 74 to replace the liners

- **Flush M4USE Line**

1. Click on the M4USE icon on the robot screen
2. A pop-up window will appear on the screen
3. First make sure all of the M4USE buckets are empty from milk or water
4. Press the **flush** button, located on the right, top corner of the pop-up page
5. The M4USE flush will take approximately 6 minutes to complete
6. The flush will fill the buckets
7. Clean the buckets and empty the cleaning water out of the buckets
8. After cleaning, rinse the buckets with cold water so the buckets are not contaminated with cleaning water residue
9. Place the clean and empty buckets back in the rack
10. After the flush, remember to empty the buckets on the robot screen by pressing the button **Empty All**



- **Check Oil Level in the Vacuum Motor**

1. Open the doors of the **central unit**
2. Look inside and look at the oil levels in the vacuum pump
3. Refer to figure 2.2 for the appropriate oil level
4. Refer to figure 9 for the location of the vacuum motor

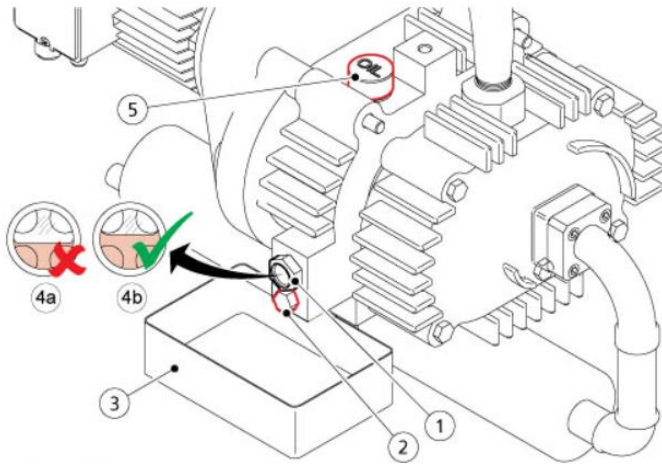


Figure 2.2

KEY:
 1. Sight glass - 2. Drain plug - 3. Container - 4. Sight glass - 5. Fill plug

- **Clean Vacuum Motor Fan Cover**
 1. Make sure the vacuum motor fan, and the ventilation grills are free of dust and debris
 2. If necessary, clean the parts
 3. Refer to figure 9 for the location of the vacuum motor inside of the **Central Unit**
 4. Refer to figure 2.2 for an image of the vacuum motor
- **Check and record the temperature of the pre-rinse water. If there's an alarm, record in PROACTION Record 17**
- **Check and record the cleanliness of milking equipment (receiver jar, buffer tank, milk tank) (PROACTION Record 13)**
-
- **Putting the robot back in operation**
 1. Tap the right bottom

corner  button

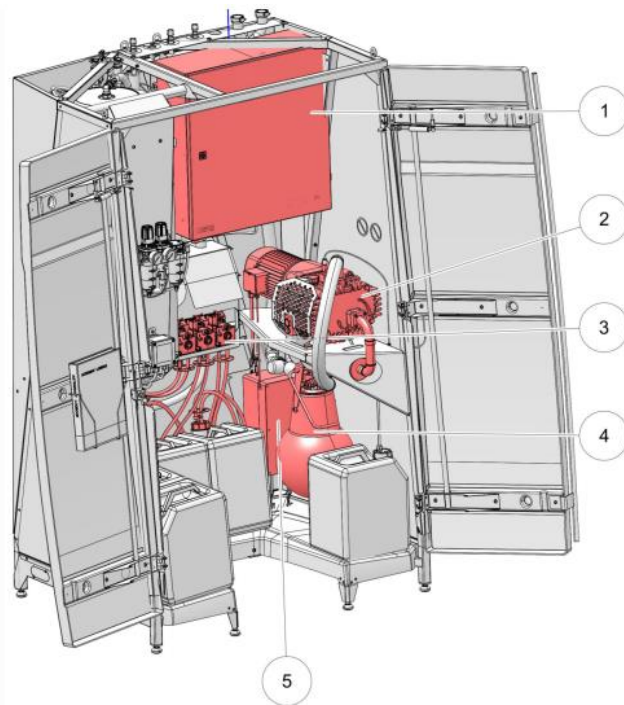


Figure 9. Central unit right side

KEY:
 1. Central control box - 2. Vacuum pump - 3. Pneumatic chemical pumps - 4. Vacuum buffer - 5. EMC filter

How to Change Silicone Liners

- You will need 4 silicone liners & the liner installation tool



1. On the robot screen, select
2. Tap **Actions**
3. Tap **All Actions**
4. Tap **Replace the liners**
5. At **Move robot arm to service position** tap **Start**. The robot arm will move to service position
6. At **Tilt Cups**, tap **Straight**
7. At **Cord Cups**, tap **Loose**

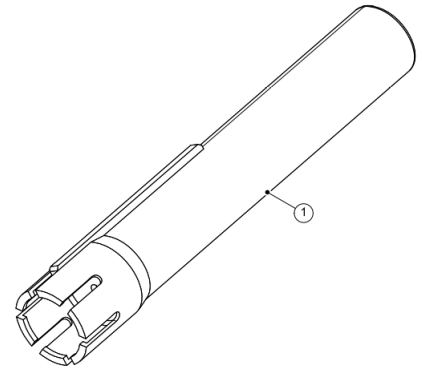


Figure 74. Installation tool

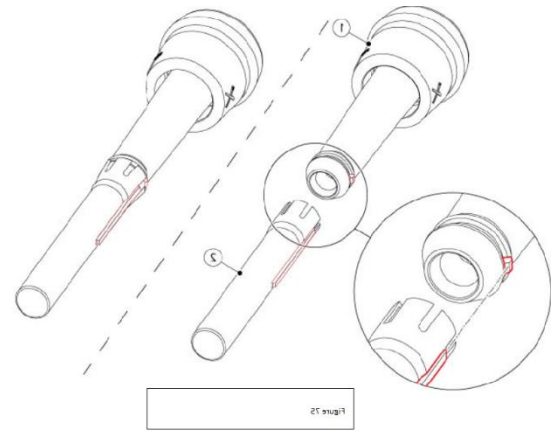
KEY:
1. Liner installation tool

Removal of the liners

1. Turn the shell counter clockwise until you can remove it from the milk collector.
2. Pull the liner at the upper side to remove it from the shell

Installation of the Liners

1. Install the liner with the teat cup installation tool
2. Make sure the mark on the liner is aligned with the mark on the installation tool
3. Pull the installation tool with the liner in the shell
4. Push the upper part of the liner on the shell
5. Make sure the mark on the liner is lined up with the mark on the shell
6. Pull the liner with the liner installation tool in the shell
7. Make sure the bottom of the liners engages correctly in the bottom of the shell
8. Examine the O-ring of the shell for damage
9. Install the teat cups in the milk collectors and turn them clockwise while holding the milk collector into place



How to Change Rubber Liners

You will need 4 rubber liners & hose scissors

Take the robot out of operation



1. On the robot screen, select
2. Tap **Actions**
3. Tap **All Actions**
4. Tap **Replace the liners**
5. At **Move robot arm to service position** press **Start**, the robot arm will move to the service position
6. At **Tilt cups** press **Straight**
7. At **Cord cups** press **Loose**

Removal of the liners

1. Turn the shell counter clockwise until you can remove the liners from the milk collector
2. Cut off the bottom part of the rubber liner

Installation of the liners

1. Make sure the milk collector cup is clean
2. Install the O-ring on the shell
3. Install the rubber liner in the shell
4. Push the upper part of the liner on the shell
5. Make sure the mark on the liner is lined up with the mark on the teat cup sleeve shell
6. If necessary, turn the liner
7. Pull the appendix until the lock ring engages correctly in the bottom of the shell
8. Make sure the liner is not twisted inside of the shell
9. Cut the appendix with the hose scissors
10. Install the shell in the milk collector cup
11. On the robot screen at **Cord cups** select **Fixed**
12. At **Move arm to home position** select button **Done**, the robot arm will move to the home position and the exchange date of the liners is saved in Horizon

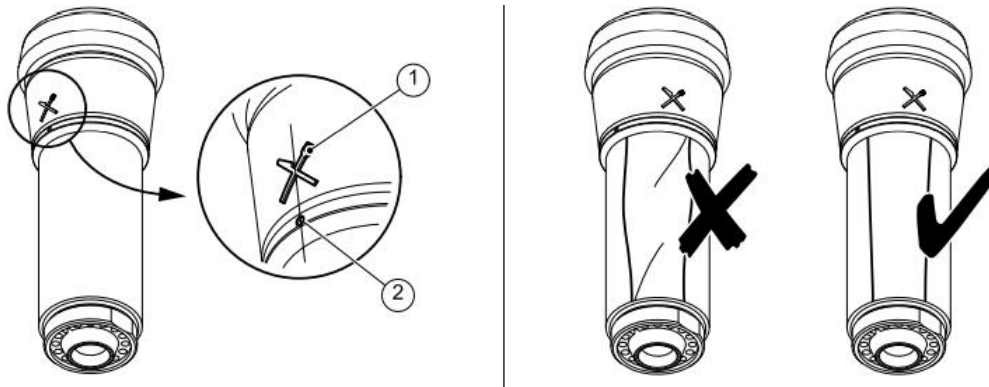


Figure 79. Align a rubber liner

KEY:
1. Alignment mark liner - 2. Alignment mark shell

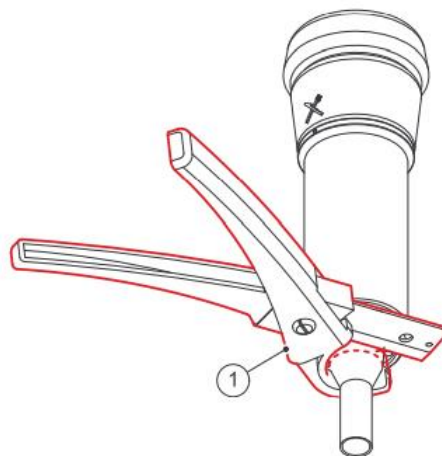


Figure 80. Hose scissors

KEY:
1. Hose scissors

How to change the cleaning brushes

- Take robot out of operation



1. On the robot screen, press
2. Tap **Actions**
3. Tap **All Actions**
4. Tap **Replace the cleaning brushes**
5. At **Move robot arm to service position**, press **Start**, the robot arm will move to the service position
6. At **Pre treatment arm** press **Open**

Removal of the cleaning brushes

1. Loosen the 2 Allen bolts
2. Remove the 2 brushes from the shaft

Installation of the cleaning brushes

1. Install the 2 new brushes on the shaft
2. Tighten the 2 Allen bolts
3. On the robot screen, **Move arm to home position**, press **Done**
4. At **Pre treatment arm**, press **Close**
5. Put the robot back in operation

Report any issues to _____

