

Cinderella[®]

MOTION MAINTENANCE MANUAL



Version 2.2.

Cinderella Motion Maintenance Manual

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1.0. Important information

Important note: Cinderella operates in an extreme environment, with high temperatures, acids and exhaust fumes. This results in the need for preventative maintenances.

1.1. Maintenance intervals

PART	MAINTENANCE	INTERVAL
Ash container	Cleaning the ash container (3.1.)	With a contaminated ash container.
Exhaust fan	Checking the exhaust fan (10.0.)	At the same time as the catalytic converter.
Catalytic converter	Cleaning the catalytic converter (4.0.)	First check after 250 incineration cycles. Then a fixed interval must be determined based on the amount of pollution.
Thermocouple	Checking the thermocouple (5.0.)	With overheating problems.
Burner	Maintenance burner (7.0.)	Only when problems persist after checking the other parts.
Spark plug	Inspecting spark plug (9.0.)	With the yearly check-up.
Hatch incineration chamber	Cleaning the chamber (11.0.)	With the yearly check-up and with signs of contaminated parts or hatch opening/closing problems.
Gas burner fan	Checking the fan (8.0.)	With the yearly check-up.
Burner tube	Cleaning the burner tube (7.0.)	Only when problems persist after checking the other parts.
Motor & motor arm	Checking the motor & motor arm (12.0.)	With signs of hatch opening problems.
Gas valve upper & lower	Checking the solenoid valve (13.0.)	With gas supply problems.

1.2. Operational messages

NB: The toilet is reset by holding down the start button for 8 seconds, then a long beep is heard, and the button can be released.

Message schedule

Error	Red	Yellow	Green	Sound	Measures
Exhaust fan error	Flashes		Flashes	10 bleeps	<ol style="list-style-type: none"> 1. Reset the toilet by holding the "start button" down for approx. 8 sec. to a long "beep" sound is heard. 2. Restart incineration. If the error persists, check 10.0.
Gas fan error	Flashes	Flashes	Flashes	10 bleeps	<ol style="list-style-type: none"> 1. Reset the toilet (see above). 2. Restart incineration. If the error persists, check 8.0.
Error with gas burner after 3 ignition attempts. temperature monitor triggered.		Flashes		Continuous bleep	<ol style="list-style-type: none"> 1. Check if the gas is connected and the valve is open. 2. Check to see if the thermo switch has been tripped and reset if necessary. 3. Reset the toilet and re-start incineration (see above). If the error persists, check 6.0.
Hatch failure	Flashes			10 bleeps	<ol style="list-style-type: none"> 1. If the toilet is hot: Open and then re-close the toilet lid without loading a new bowl liner, then press the "start" button. If this does not help, open the lid, put in new bowl liner, pour 3 cups water into the bowl liner, close the lid and press the "start" button again. If that still does not clear the error, wait until the toilet is cool (the fan has stopped). When the toilet is cool: Open toilet lid and press the "start" button. This will put the toilet into service mode, the bowl hatch and the incineration chamber hatch will open and remain open allowing for manual clearing of the material that is causing the "jam".
Ash container in wrong position.	Flashes	Flashes		3 bleeps	<ol style="list-style-type: none"> 1. Wait for the toilet to cool (fan has stopped), then reposition the ash container.

Toilet lid is open.	Flashes				1. Close toilet lid.
Error with thermocouple.		Flashes	Flashes	Continuous bleep	1. Reset the toilet. If the error persists, check 5.0.
Thermo switch released, incineration stops.		Flashes		Continuous bleep	1. Check thermo switch. If triggered, you can hear and feel it.
Ash container clearing alert, reminder.	Flashes	Flashes		3 beeps	1. Empty the ash container. 2. Do not shut off the power.
Ash container is emptied without power on the toilet.	Flashes Red + yellow flashes alternately	Flashes Red + yellow flashes alternately		Continuous beeping	1. If these errors occur, the ash container is taken out without power on the toilet. 2. Turn power on. 3. Take out the ash container. 4. Wait ten seconds. 5. Put ash container back. 6. Reset toilet.
No lights, no sound when opening the toilet lid.					1. Check the caravans main switch and/or battery voltage. 2. Check that the toilet main switch is turned on. 3. If the error persists, check the repair manual .
Burnt smell outside					1. Rinse catalytic converter. Attach bundled winter "chimney".


Other sound/ light signals

>11,5 V = the normal operating voltage (green led stays on).

<11,0 V = low voltage (green led flashes continuously).

<10,5 V = the minimum allowed battery voltage (green led flashes continuously).

<9,5 V = critically low voltage (10 long beeps). After which the toilet is immediate shut down. (10 beeps and shutdowns directly).



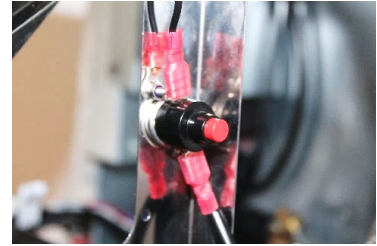
WARNING

It is important to react immediately if there are any irregularities in smell, poor incineration or other malfunctions to avoid consequential damages and unnecessary repair costs.

1.3. Resetting the thermo switch

The thermo switch is on the right hand side of the toilet. The outer shell needs to be open.

1. Use a finger to gently press the button on the thermo switch, a click will be experienced when it has been reset. *Do not press too hard.*



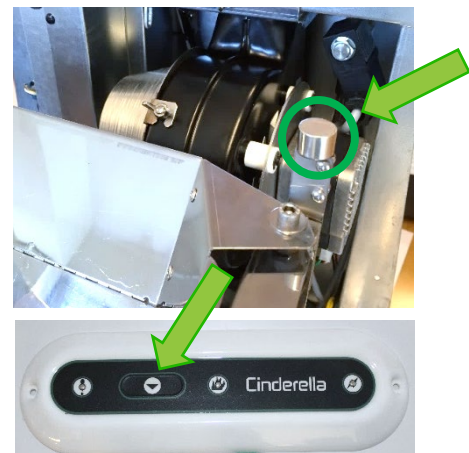
1.4. Service mode

Components / materials:

- Magnet (a magnet is not arranged in the part list of the toilet, arrange a magnet by yourself).

Activate service modes

1. Put a magnet on top of the hall sensor.
2. Press the start button on the control panel to initiate a burn.

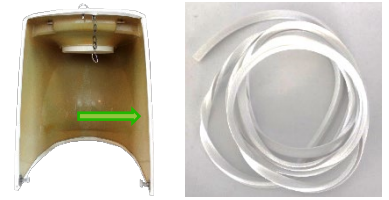


When the hatch from the incineration chamber opens, take the magnet off from the hall sensor.

Important note: service mode only works when the temperature in the toilet is below 50°C.

2.0. The outer shell

Import note: *the seal of the outer shell needs to be replaced when it gets out of shape. The toilet is not tight anymore and that could lead to smoke and smell problems.*



2.1 Opening The outer shell

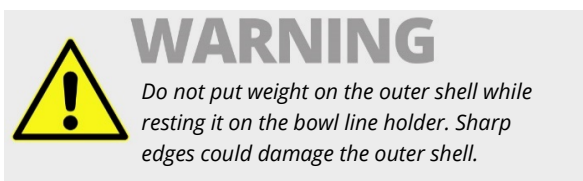
The outer shell needs to be removed to maintain your Motion toilet. The outer shell is opened in three steps. The first step is resting the outer shell on the bowl line holder. This is used to disassemble the chain. The second step is resting the outer shell in the notches. This step is the most common way to maintain and replace in the back side of the toilet. The third step is taking the whole shell off the toilet. This step is used if the parts, which you want to maintain are too difficult to access.

Step 1, resting the outer shell on the bowl line holder

To open the outer shell, turn the quarter twist lock to the left.



Lift The outer shell to the front and rest the outer shell on the bowl line holder.

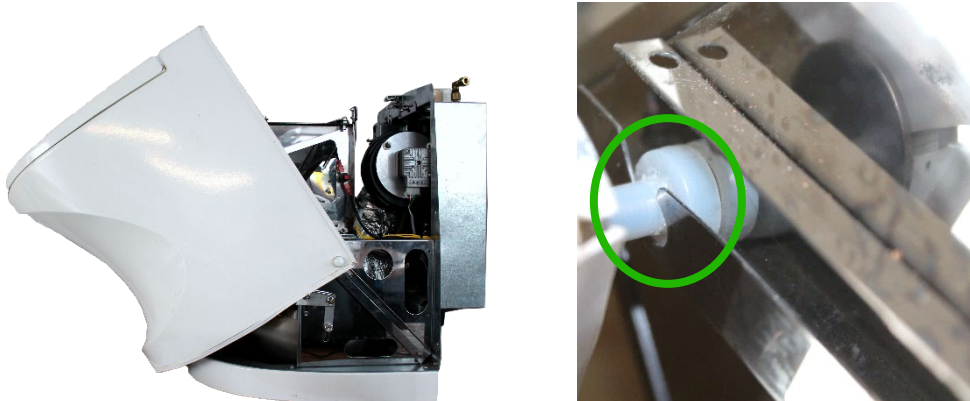


Step 2, resting the outer shell in the notches.

Disassemble the chain.



Now the chain is disassembled, the outer shell can be lifted until the plastic wheels are in the notches. Be careful because the outer shell is not very stable in those notches.

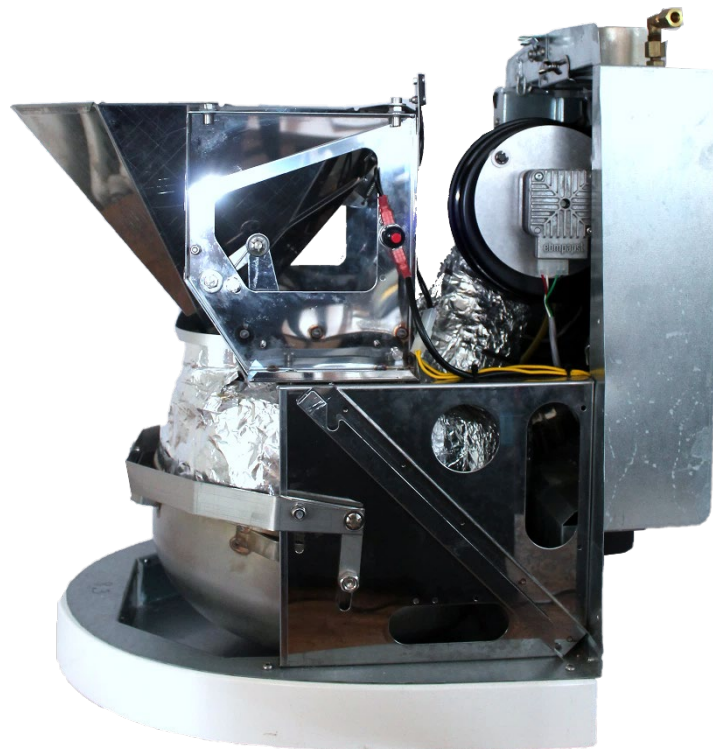
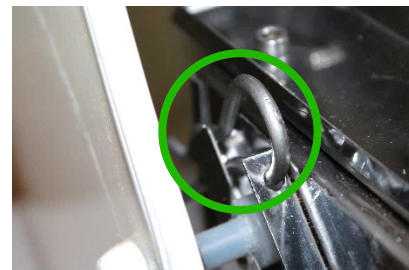


Step 3, taking the outer shell completely off the motion

If step 1 and 2 are not enough to access the parts, that need maintenance, the outer shell can be removed completely of the toilet. Be careful not to damage the outer shell.

Be sure that steps 1 and 2 are executed correctly before starting step 3. Pull out the split pins on both sides. The split pins are located above the notches in the rails.

After pulling the split pins out, the outer shell can be lifted out of the rails. With the outer shell removed from the toilet, the parts can be accessed more easily.



3.0. Ash container



3.1. Cleaning the ash container

1. Take out the ash container.
2. Urinary salts and burnt on residue can be dissolved by pouring hot water into the bowl and letting it stay for 15-30 min. Clean out using a brush. Avoid using sharp objects to prevent damage to the stainless-steel surface.



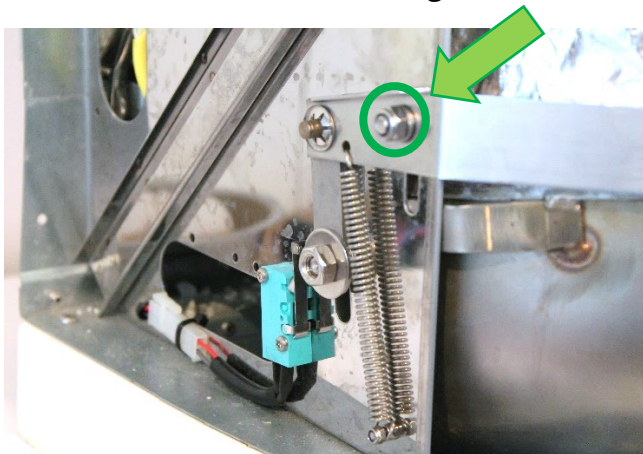
WARNING

Do not use detergents containing chlorine as this can corrode the insert and damage the catalytic

3.2. Not completely closed ash container

Checking if the ash container is completely closed.

If there are any signs of a heat leaking ash container, check to see if the locking hoop nut from the ash container is still tight.



When the nut is loose, put it back in the top of the slit and fasten it.



Residual waste due to poor incineration is the result when the ash container is open.

Checking if the edges of the ash container are still flat

If the problems persist after fastening the bolt, it is possible that the ash container is not completely flat. Put the ash container upside down on a flat surface. If there's space between the surface and the ash container, the ash container is not completely flat. See if it can be fixed by cleaning the edges or if the ash container is deformed.

Important note: Deformed ash containers should always be replaced. Replacement instructions can be found in the **repair manual**.

3.3. Corroded ash container

Important note: With moisture and heat, the ash container may corrode with time. When the ash container is corroded, chances are that there are more parts damaged. A corroded ash container should always be replaced.

Corrosion due to Medication

Extensive corrosion of parts inside the incineration chamber can be a sign that harmful substances are continuously inserted into the incineration process resulting in abnormal wear. Residue from certain medications can contain substances that are aggressive towards steel and other metals. Depending on severity of the wear an increased service interval and check of critical parts can be necessary to recommend the customer. If extensive corrosion is found in one part, then please inspect the following parts too:

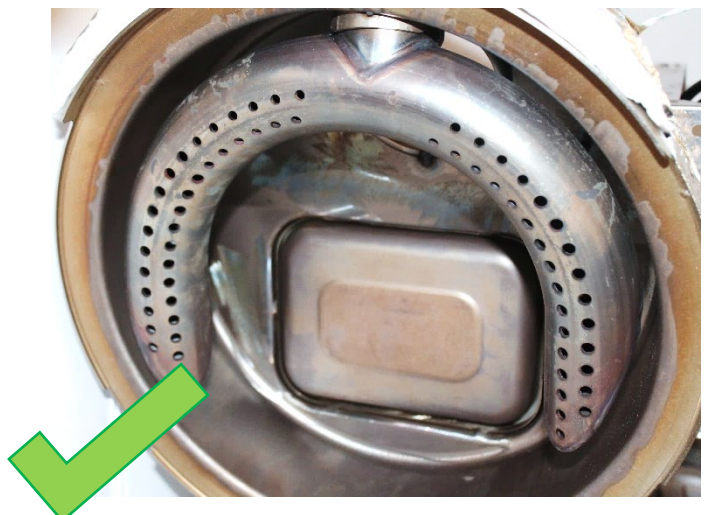
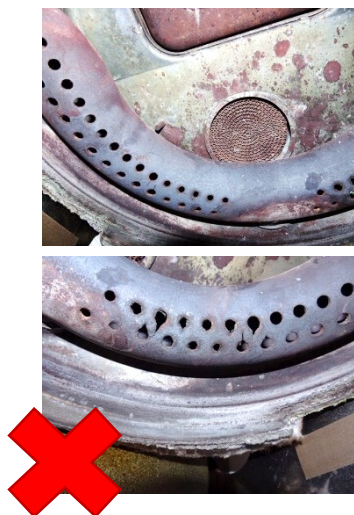
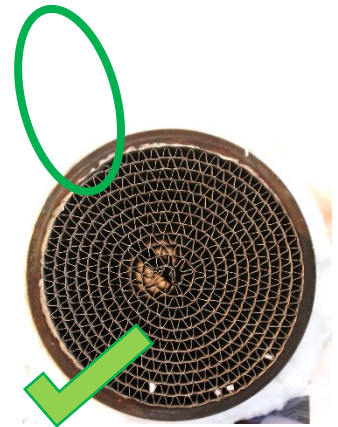
- *Catalytic converter*
- *Spark plug*
- *Thermocouple*
- *Burner tube*

Catalytic converter: check if the structure does not look corroded and the air shafts in the catalytic converter are not deformed.

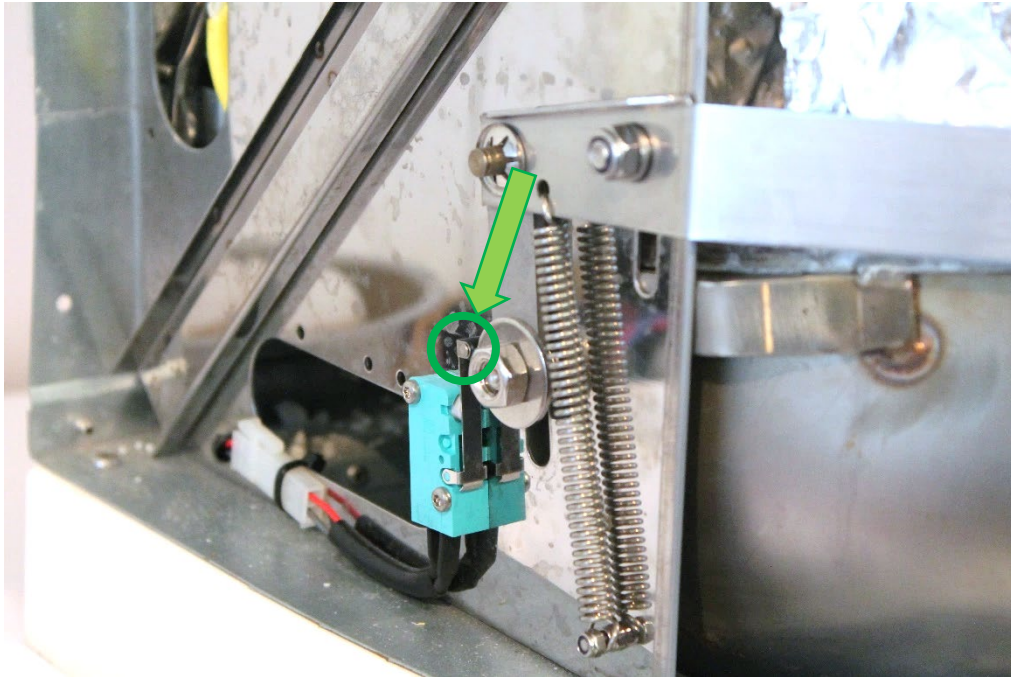
Spark plug: check if the igniter and the ceramics are not corroded.

Thermocouple: check if the metal part is not corroded.

Burner tube: check if the structure from the holes in the burner are still in good shape. It should not look corroded. Check if the metals from the burner are still thick and in a good shape. This can be achieved by carefully hitting the metals, with a small hammer.



3.4. Micro switch ash container



Check if the roller in the micro switch is still rolling smooth and check if the micro switch is not bent. If it is bent check the ***troubleshooting manual***.

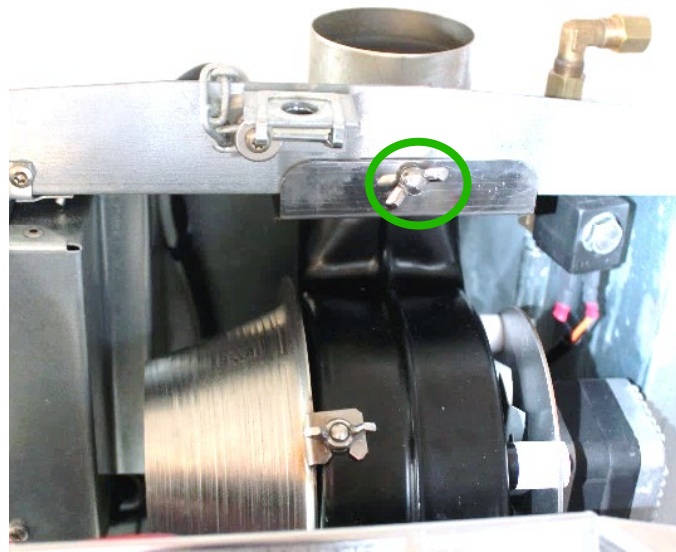
4.0. Catalytic converter

Important notes: *If the catalytic converter is damaged, replacement is needed. A bad catalytic converter causes several problems. Bad smell and a poor incineration could be the consequence of a bad catalytic converter.*

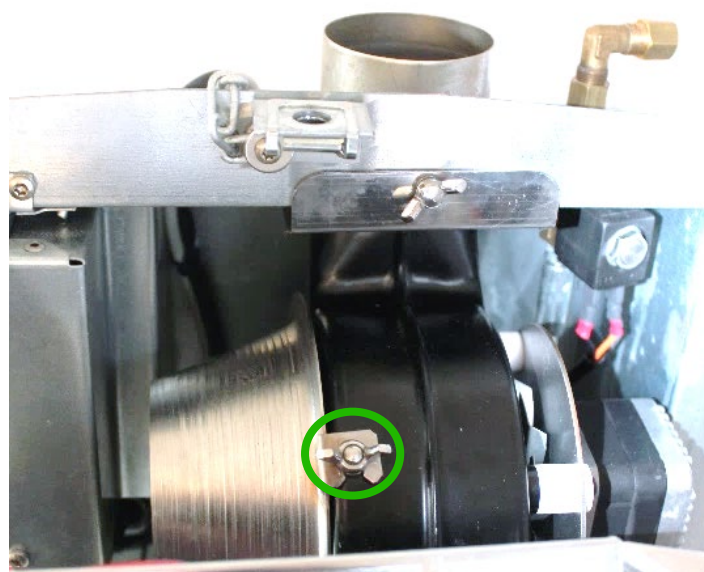


4.1. Rinsing the catalytic converter

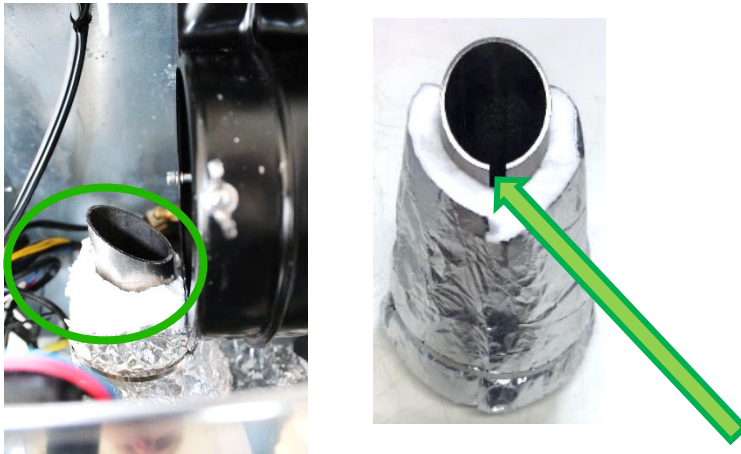
1. Empty and clean the ash container (3.1.).
2. Place the toilet in *service mode* following 1.4. "Service mode".
3. Loosen the wing nut to remove the inlet housing of the fan.



4. Loosen the wing nut of the fan, pull it loose and drop it down.



5. Remove the catalytic converter by pulling it straight up.

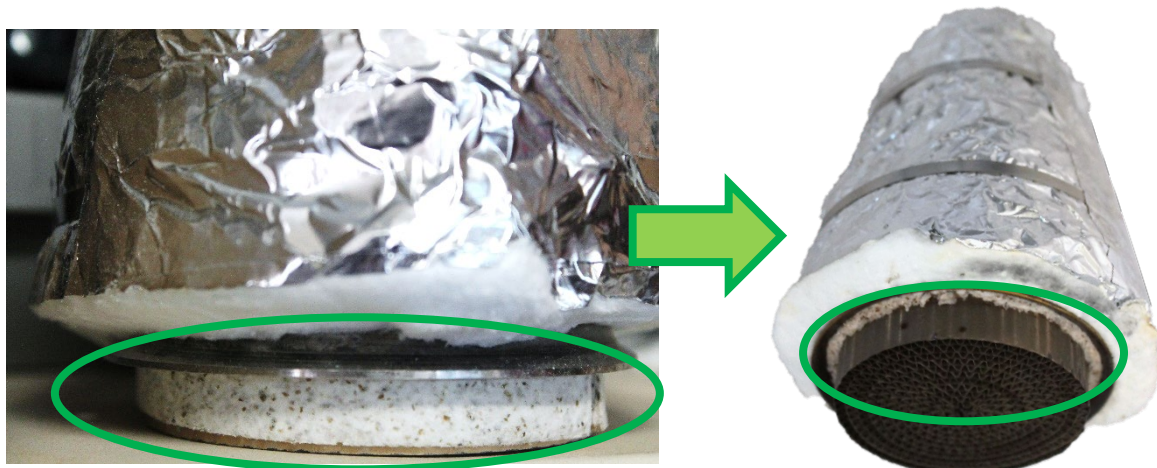


Important note: Note how the catalyst is placed as there is only one way it can be fitted.

6. Rinse the catalytic converter with hot running water until all channels are cleared and all ash residue is gone.
7. Reinstall the catalytic converter, reinstall the fan and inlet flange.
8. Replace The outer shell.
9. Start an incineration process to dry the catalytic converter.

4.2. Check if the catalytic converter connection is tight

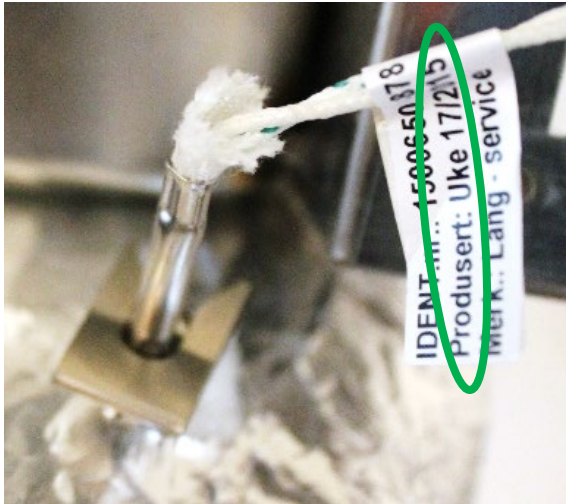
If the catalytic converter shows signs of heat leakage, be sure that the catalytic converter fits well into the incineration chamber. Cut away the insulation on the part that inserts into the incineration chamber.



5.0. Thermocouple



Important notes: On the label you can find the month and year of manufacturing of the sensor. Thermocouple before **week 20 of 2018** could have a connection problem. Check if the cables are still fixed correctly in the housing of the sensor.



This is the place where the date is located. Replacement instructions can be found in the **repair manual**.

5.1. Checking if the wires are still tight

The wires in the thermocouple could get loose, this can happen due to the heat. The heat could melt the white sock.

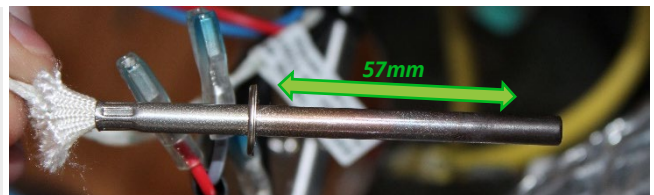


If you are having a thermocouple before week 20 of 2018, check if the wires are still tight. Try to pull the wire gently out of the housing and jiggle it. If undesirable movement occurs, replace the thermocouple. Replacement instructions are found in the **repair manual**.



WARNING

By reassembling the thermo sensor the distance between the end of the thermo sensor and the star lock must be 57MM.



Important note: Measure if it is 15 mm above the star lock on the thermocouple. If it has not 15mm above the star lock the thermocouple is not at the right height.

6.0. Burner tube



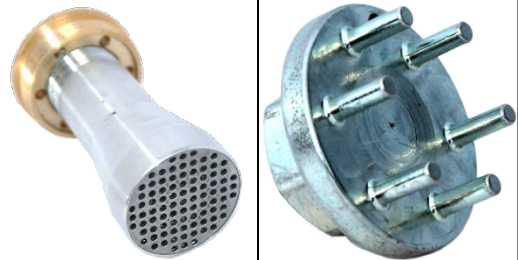
6.1. Maintenance burner

1. Check the thickness of the metals from the burner. This can be achieved by carefully hitting the metals, with a small hammer.
2. Inspect the structure of the holes. Be sure they are rounded and do not look corroded. (see picture above).

7.0. Burner assembly

Tool:

- 14 mm wrench
- 24 mm wrench
- Burner key (article number can be found in the part schedule.)



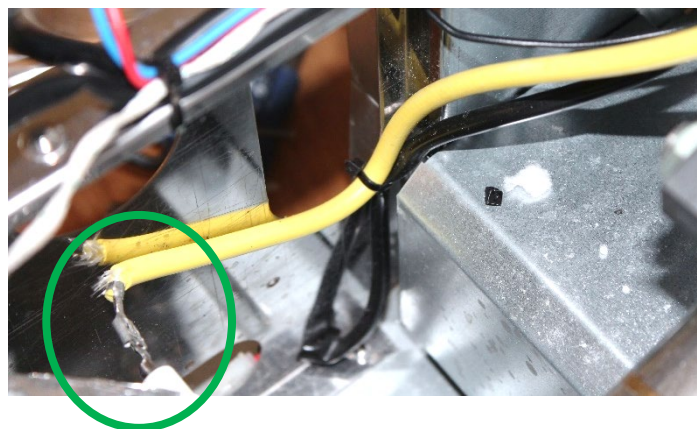
Burner key

7.1. Cleaning the burner tube

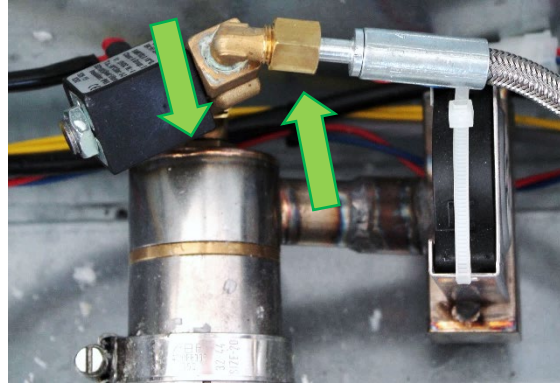
Important note: *never clean with water, chemicals or other corrosive materials.*

Disassembly burner

1. Remove the top, follow the **repair manual**.
2. Remove spark plug cable, gently loosen spark plug and remove it.



3. Loosen banjo connector on nozzle.
4. Unscrew the nozzle.



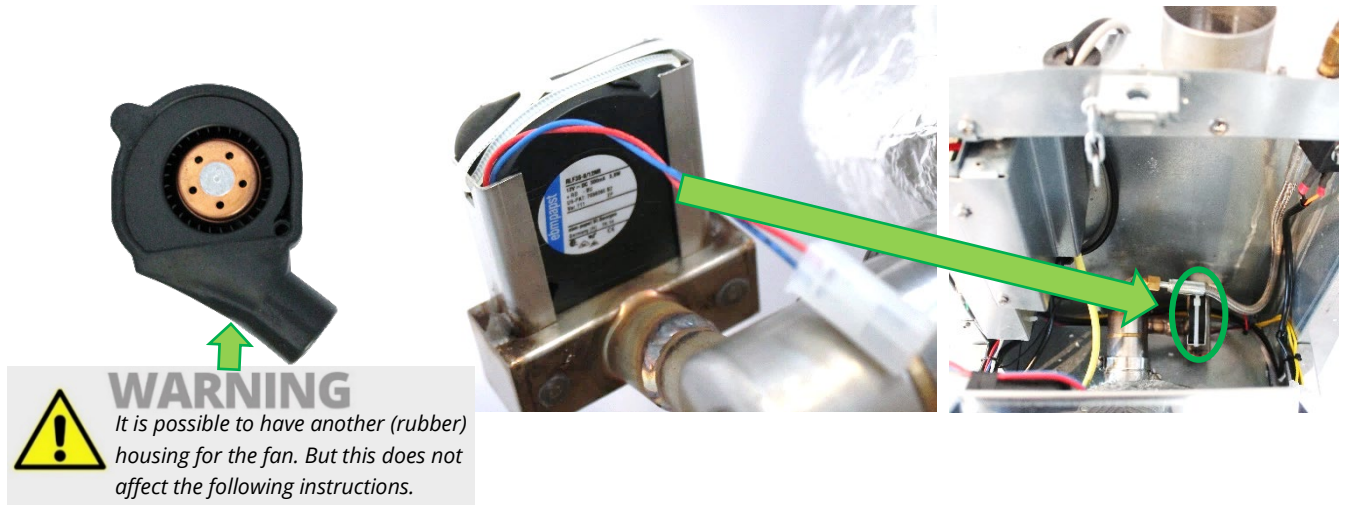
5. Open the assembly, it can be unscrewed with the burner key. The burner key can be found in the tool list.



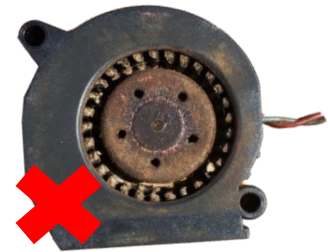
Cleaning the burner tube

1. Now the assembly is open like pictured before, the burner can be cleaned.
2. Clean it with a flued like break cleaner or something similar (do not use corrosive materials or aggressive chemicals).

8.0. Gas burner fan



The fan on the on the back side of the incineration chamber. Mounted to the burner tube. Check the wheel if the fan turns freely and is not clogged up with dirt.



8.1. Cleaning the fan

Important note: Never clean with water, chemicals or other corrosive products.

Tool:

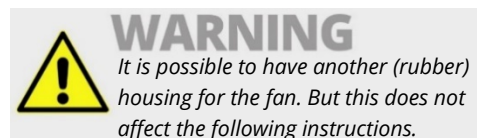
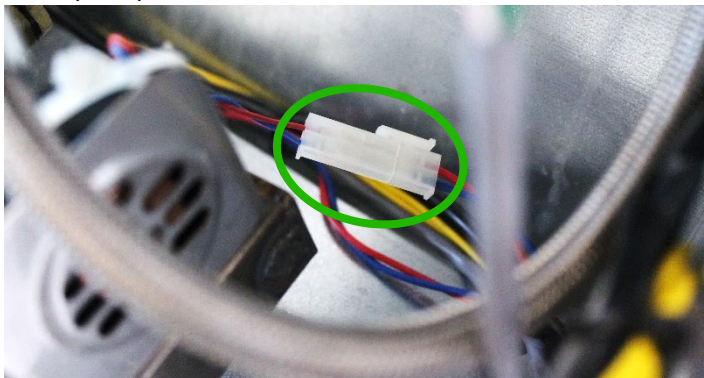
- Nippers

Components / materials:

- Exhaust fan assembly - 2018
- Cable Ties

Disassembly gas burner fan

1. Remove exhaust fan and catalytic converter following the **repair manual**.
2. Split quick connector for burner fan



3. Cut strips that hold the fan in place.



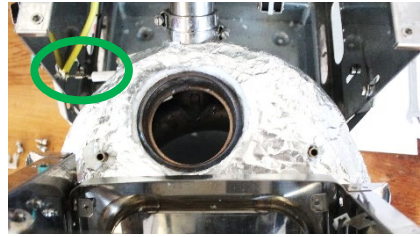
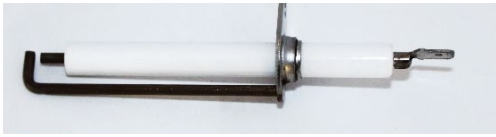
4. Remove the fan.

Cleaning the fan

Use air or a soft brush to clean the wheel. *Be careful* because the fan is fragile. Check if the wheel is turning without problems. Otherwise the fan should be replaced.

Replacement instructions are in the **repair manual**.

9.0. Spark plug



9.1. Carbonized spark plug



1. Clean the spark plug, do not use water, chemicals or other corrosive materials. Use a soft brush or a file or sandpaper to remove soot from the igniter.
2. Check if the coal is burnt in the igniter. If the igniter still looks damaged after cleaning, replacement is needed.
3. Check if the ceramics are damaged, replacement is needed.

*If replacement is needed, follow the **repair manual**.*

10.0. Exhaust fan

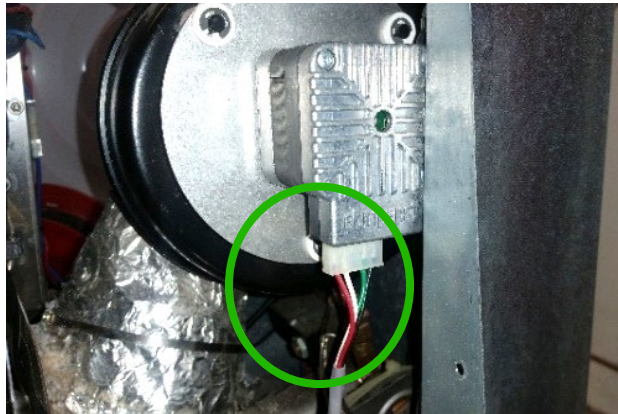
Inspect the fan. The wheel shouldn't be clogged up. In case of a filthy fan, clean it following 10.1. "Cleaning the exhaust fan".



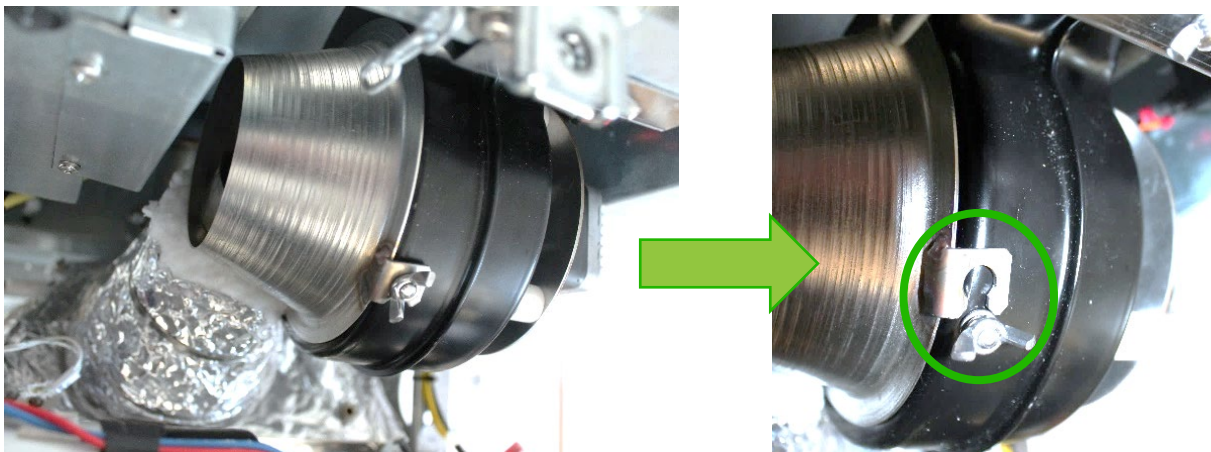
10.1. Cleaning the exhaust fan

Disassembly exhaust fan

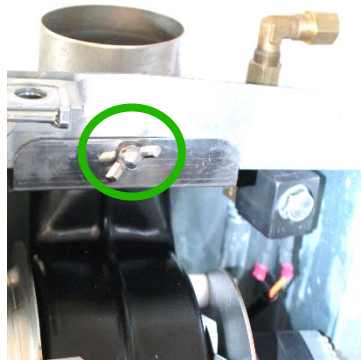
1. Remove the cable on the fan.



2. Loosen the wing nut, remove the fan flange from the fan.

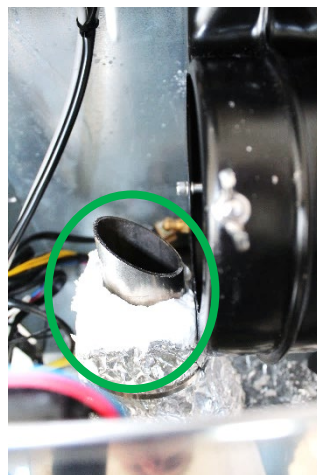


3. Unscrew the wing nut that secures the fan.

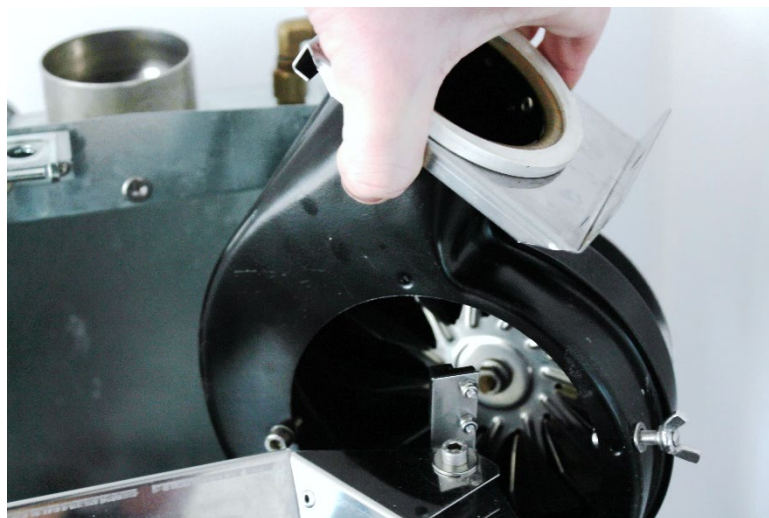


4. For easier removal of the fan, you can first drop the fan down and remove the catalytic converter by lifting it straight up and out.

Notice how the catalytic converter is placed, there is only one way in how it should be placed back. With the guide faced to the fan. So, the extraction from the inlet housing, shifts into the notch.



5. Pull the fan out as shown in the bottom image.



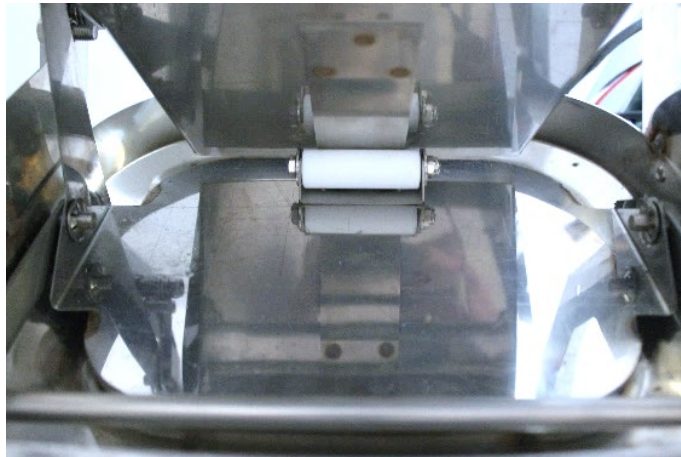
Cleaning the exhaust fan

Important note: *Never clean with water, chemicals or other corrosive products.*

1. Take a brush and clean the inside of the exhaust fan.
2. Also use the brush to clean the output exhaust of the fan.
3. After cleaning, reinstall the fan. Initiate a burn and listen for scrubbing sounds or other signs of resistance. If signs of resistance still occur, replace the exhaust fan. For replacement see the **repair manual**.



11.0. Hatch incineration chamber



11.1. Cleaning the chamber

Components / materials:

- Magnet (a magnet is not arranged in the part list of the toilet, arrange a magnet by yourself).

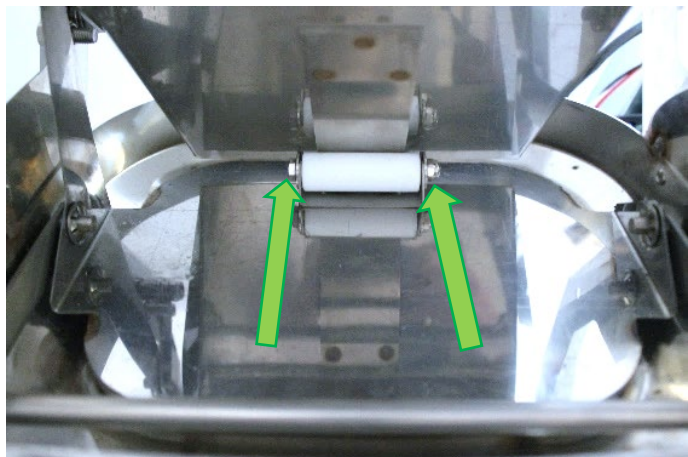
Chamber

1. Put the toilet in **service mode** 1.4. "Service mode".
2. When the hatch from the incineration chamber opens, take the magnet off from the hall sensor. Now the hatch is open, and the edges can be cleaned. Only clean with a brush, do not use water, chemicals or other corrosive materials.

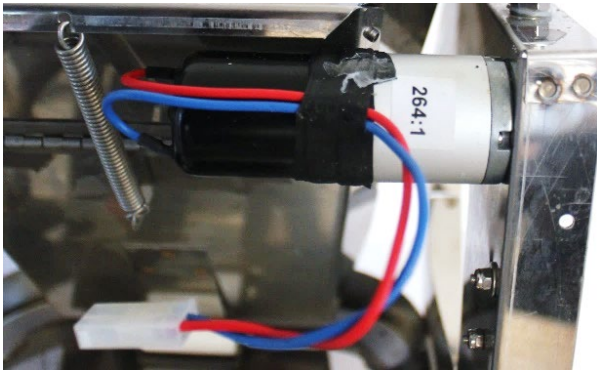
The roller

Clean the roller.

1. Unscrew the bolts.
2. Take the roller out and clean it with a rag. Never use water, chemicals or other corrosive materials.
3. The roller can be lubricated so that it rolls more smoothly.

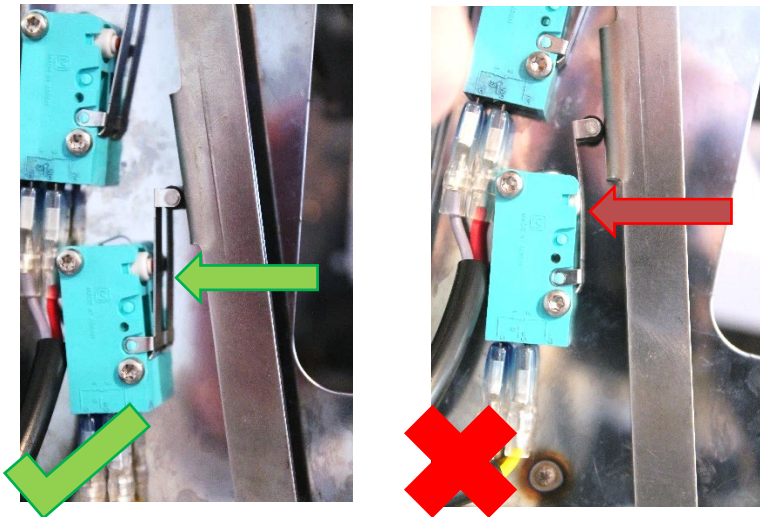


12.0. Motor & motor arm



Sometimes the hatch does not open correctly. Out of precaution the following parts should be checked.

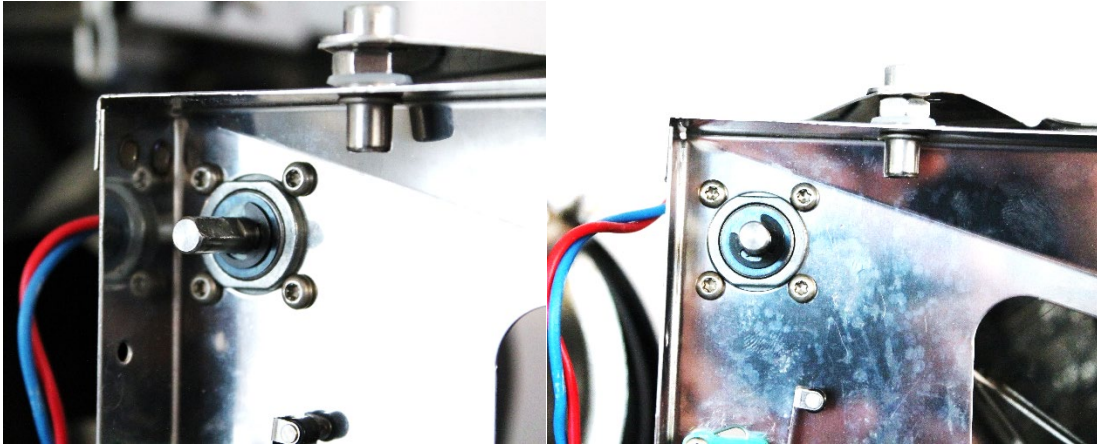
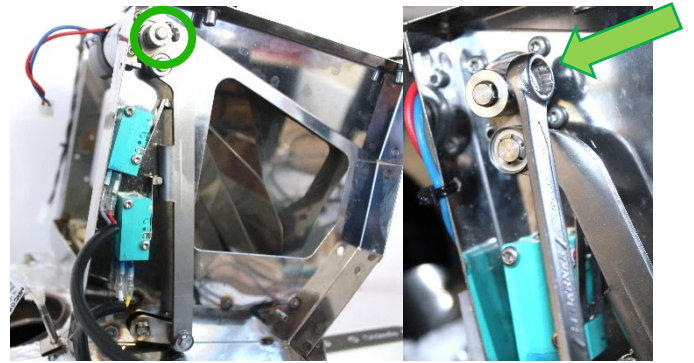
12.1. Inspect micro switch



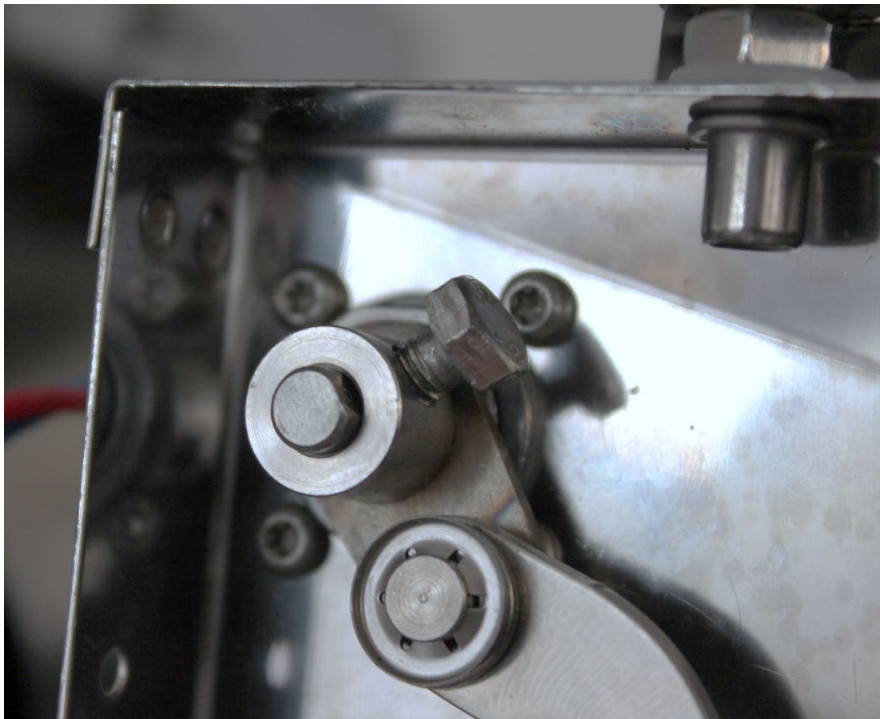
With a bent micro switch the motor arm stops too late and that could lead to a dysfunctional hatch or a broken micro switch. To fix this problem the motor arm needs to be adjusted. Check after adjusting if the micro switch is working correctly, if not replace it. Replacement instructions are in the **repair manual**.

Adjusting the motor arm

1. Unscrew the top bolt.
2. Disassemble the motor arm out of the shaft.
3. Check if the shaft is in good shape. (12.2.)
4. Adjust the motor arm, so the bolt is at the same place as the flat part of the shaft. The shaft should be facing slightly upwards as pictured below.

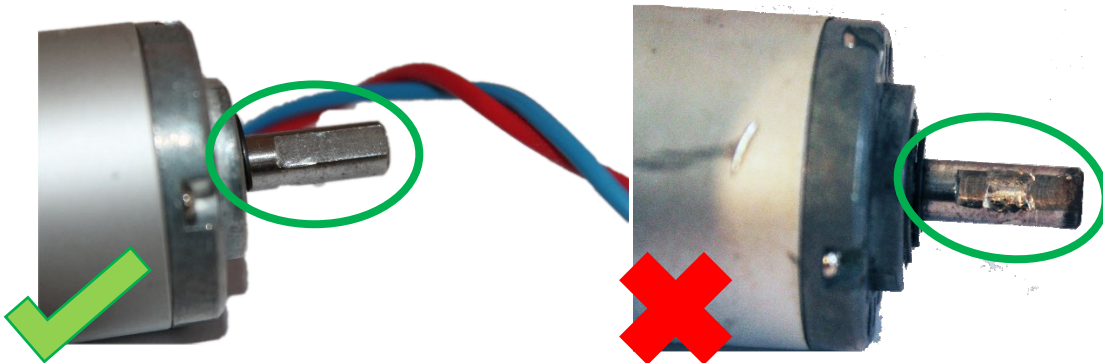


5. Test if the motor arm will not bend the micro switch.
6. Tighten the top bolt measure if the bolt is m5 if it is a m4 bolt drill the hole to m5. The bolt must be 12mm in length.



12.2. Inspect motor shaft

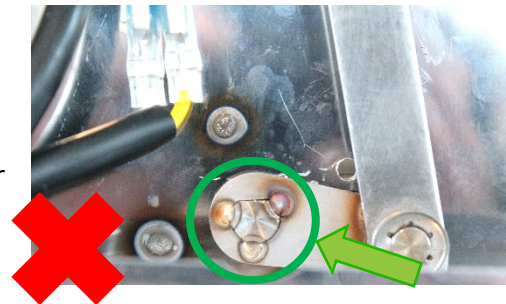
Sometimes the motor shaft gets damaged. By damages immediate replacement is needed. Replacement instructions can be found in the **repair manual**.



12.3. Inspect welds motor arm

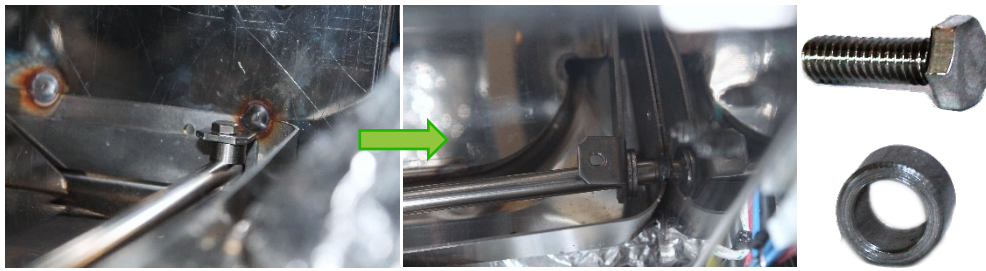
Some versions of the Motion are having point weldings on the motor arm. Those point weldings are at higher risk of breaking.

If the motor arm still has the point welds, replace or repair the motor arm out of precaution.

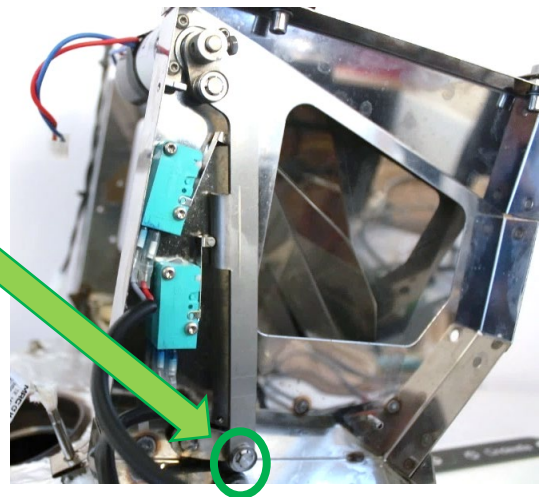


Taking off the motor arm for repair or replacement

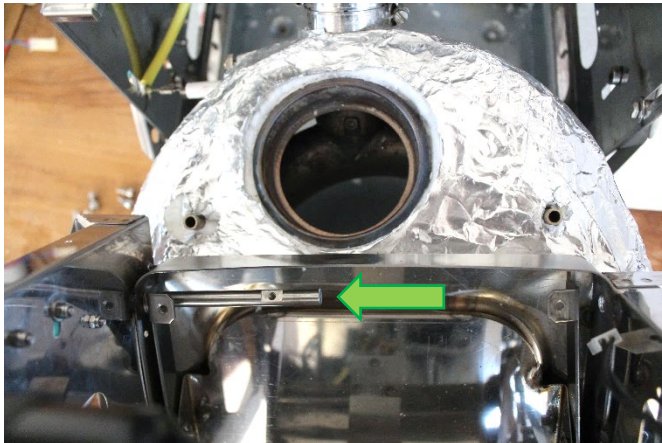
1. Unscrew the bolts on the back side of the bowl with hatch.



2. Take off the star lock that keeps the motor arm in place.



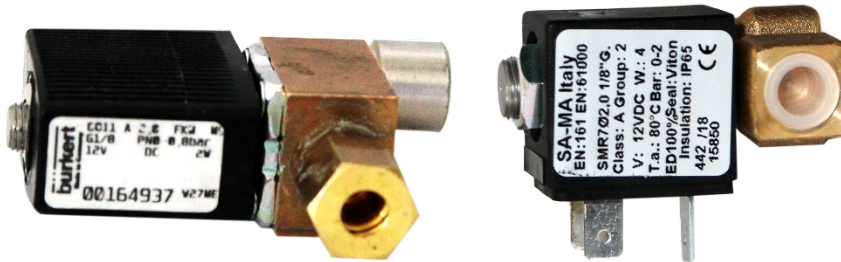
3. Replace the arm with the bad weldings.



13.0. Gas valve upper&lower

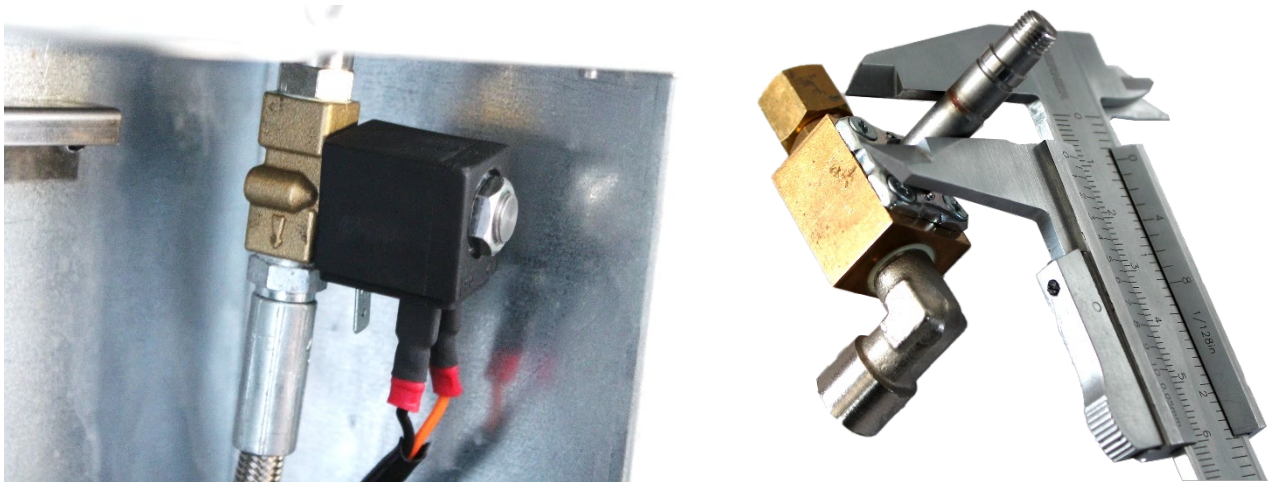
Important note: there are two types of solenoid valves.

Burkert valve and the SA-MA Italy valve.



It is easy to see which valve you are having. Measure the thickness of the *axle*.

- Burkert valve – 8mm
- SA-MA Italy – 10mm



13.1. Checking the solenoid valve

Applying a charge

Applying a charge to the solenoid valve. There are two wires that are connected to the valve. Connect a multi meter to the solenoid's power source. This sends a charge onto the valve. If the valve is working correctly the valve should open, a click-sound should be heard. In case of a dysfunctional solenoid valve, replacement is needed. For replacement instructions check the **repair manual**.