

## INSTRUCTIONS FOR USE

# Typhoon



The model name and serial number should always be provided when ordering spare parts or during queries per telephone or written correspondence:

Serial number of the machine:

.....

Machine model:

.....

## **WARNING**

To avoid injury, always read this *Instructions for Use* and accompanied documents before using the product.



**Mandatory to read the *Instructions for Use*.**

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# PREFACE

This Instructions for use describes the design and operation of the machine and the maintenance for which the user is responsible. The Assembly and installation instructions describes the machine's installation. The Technical manual describes necessary information for operators and maintenance personnel. The information in the manual must be complied with to ensure safe and error-free operation.

Users must read through the Instructions for use before using the machine for the first time, as well as familiarizing themselves with the operation of the machine and its safety instructions. Operators and maintenance personnel must have completed training through the marketing organization of Arjo.

The information in this Instructions for use describes the machine as dispatched from Arjo. There may be differences due to customization for customers or countries.

The machine is accompanied by the following documentation:

- Instructions for use
- Assembly and installation instructions
- Quick reference guide

The following documentation shall be provided by the sales company to the end-user on request:

- Technical manual
- Spare parts list

The accompanying Quick reference guide must be hung up and clearly visible in the installation area.

Arjo reserves the right to change the specification and design without prior notice. The information in this Instructions for use was up-to-date on the date that it was issued.

## Definitions in this IFU



**Safety warning.** Failure to understand and obey this warning may result in injury or machine damage.

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**Hot surface.** Risk of injury.

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**Dangerous voltage.** Risk of injury.

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**Automatic door.** Risk of getting stuck.

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**Note!**

**Note means:** This is important information for the correct use of this system or device.

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# 1 SAFETY PRECAUTIONS

The machine has a number of built-in safety mechanisms. To avoid injury, it is highly important not to bypass these safety mechanisms.

## 1.1 Important

- Read the Instructions for use thoroughly before use.
- The machine should only be handled by authorized personnel. Personnel must also receive regular training.
- If any part is missing or damaged - do NOT use the product.
- Exercise caution when using the machine, as it uses hot water and possibly steam. Because the machine uses hot water, there may be hot surfaces in the facility.
- Exercise caution when handling chemical agents used in the machine. Follow the instructions for the packaging the agent comes in:
  - if the agent is swallowed, comes into contact with the eyes or skin or if vapors are inhaled.
  - for instructions on dosage amount and washing temperatures.
  - for instructions regarding storage and sorting/disposal of packing.
- Make sure that the machine has access to detergent before the process starts. This is important both for the operation of the machine and for keeping the washing chamber free from staining.
- The machine must be kept clean if it is to work properly.
- Do not wash down or hose down the machine with water.
- Installation and service work must be performed by trained personnel.
- Never bypass the machine's door switch under any circumstances.
- Leakage in the system, due to a worn door seal for example, must be repaired without delay.
- Spare parts must only be obtained from Arjo sales companies.
- If a serious incident occurs in relation to this medical device, affecting the user, or the patient then the user or patient should report the serious incident to the medical device manufacturer or the distributor. In the European Union, the user should also report the serious incident to the Competent Authority in the member state where they are located.

## **1.2 Isolator switch**

The machine must have a lockable switch for the electric power supply. The switch must be easily accessible on a wall close to the machine. The installation must conform to and be marked in accordance with local provisions. A switch is not required on machines fitted with an electric plug.

## **1.3 In an emergency**

- Switch off the main switch.
- Close shut off valves in the water supply line.



## 2 PRESENTATION

### 2.1 Intended field of application

Flusher-disinfector for emptying, cleaning and disinfecting, bedpans, urine bottles and other containers for human waste, including suction bottles.

The customer is responsible for ensuring that an Installation Qualification, Operating Qualification and Performance Qualification according to ISO 15883 are carried out before the product is put into use.

### 2.2 Components of flusher-disinfector

Typhoon is one of Arjo's series of flusher-disinfectors.

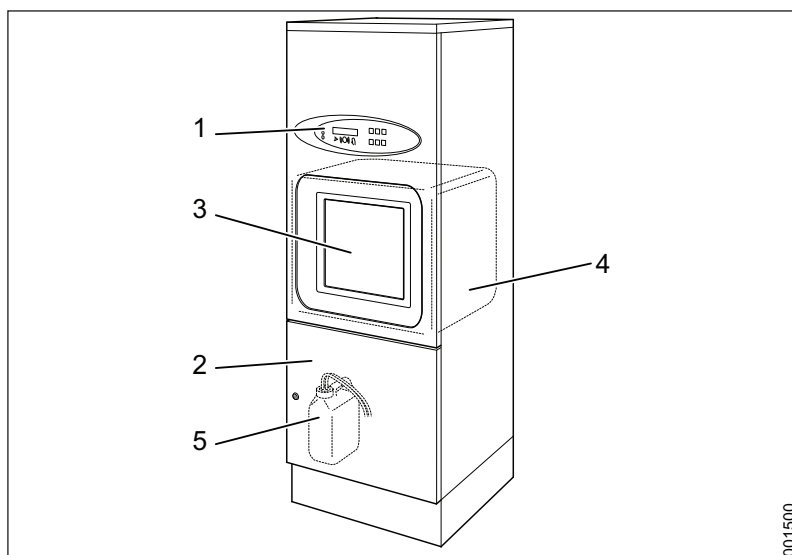


Figure 1. Components of flusher-disinfector

1. Control panel
2. Door to machine cabinet
3. Door
4. Flushing chamber
5. Container for descaler and/or detergent

### 2.3 Cleaning principles

The goods are cleaned by flushing with cold and hot water and then disinfecting with steam.

### 2.4 Container

The holder in the flushing chamber, in which the goods are placed, is available in several models. All models come with separate instructions for positioning the goods.

## 2.5 Control panel

### 2.5.1 Components

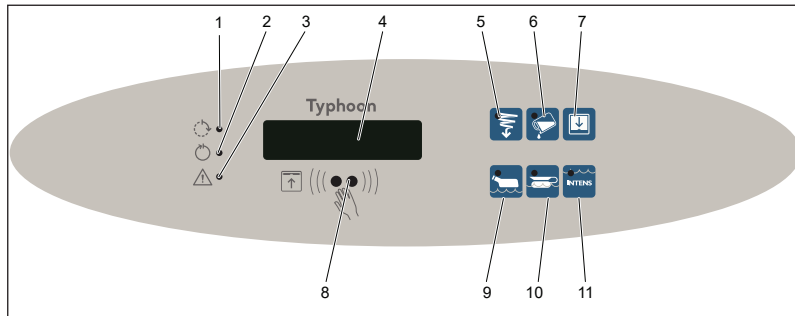













Figure 2. Control panel

1. Yellow: Process running
2. Green: Process complete
3. Red: Disinfection not achieved or other error code F
4. Display
5. Rim flushing
6. Option (detergent)
7. Open/close door.
8. Sensor to open/close door and to start preselected program
9. Economy program
10. Normal program
11. Intensive program

## 2.5.2 Functions

**Note! Disinfection is not included in the rim flushing program.**

Button/lamp	Function
	When the yellow light comes on: The machine is running a program. The temperature/A0-value/time and cleaning phase can be seen on the display.
	When the green light comes on: The program is complete. The green lamp goes out when the door is opened and the maximum temperature of the process shows on the display.
	When the red light comes on: The machine has not reached the disinfection temperature or another error has occurred (Error code F).
	Button to start the economy program for urine bottles.
	Button to start the normal program for normally soiled goods.
	Button to start the intensive program for heavily soiled goods.
	The button combination for selecting programs with cleaning agents for heavily soiled goods.
	The button combination for selecting the program with cleaning agents for general circulation goods.
	Button to start rim flushing Without disinfection!
	Sensor to open/close door and to start preselected program
	Open/close door

## 2.6 Display options

A service technician can set the information to be shown in the display.

### 2.6.1 Displayed while a program is running

The display can be set to show one of the following alternatives while a program is running:

- Temperature
- $A_0$  value
- $A_0$  value / Temperature
- Remaining Time
- Temperature / Remaining time
- $A_0$  value / Remaining time
- $A_0$  value / Remaining time / Temperature

If an alternative with more than one parameter is selected, the parameters will be displayed alternately. The  $A_0$  value always remains at 0 until the thermal disinfection begins. When the temperature reaches 85°C, the  $A_0$  value will increase in line with the temperature and time.

### 2.6.2 Display after program end

The display can be set to show one of the following alternatives once a program has finished:

- Max. temperature
- $A_0$  value
- $A_0$  value / Max temperature

If an alternative with more than one parameter is selected, the parameters will be displayed alternately.

## 2.7 Door function

### 2.7.1 Opening the door

- Move your hand toward the sensor, stopping about 3-4 cm from the panel.
- Keep your hand still for one 1 second.
- The door opens automatically.

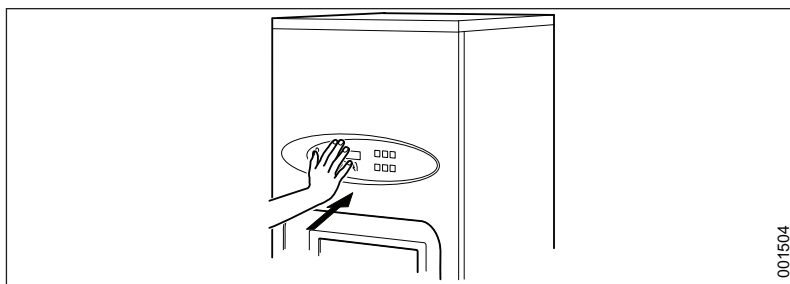


Figure 3. Open door using sensor

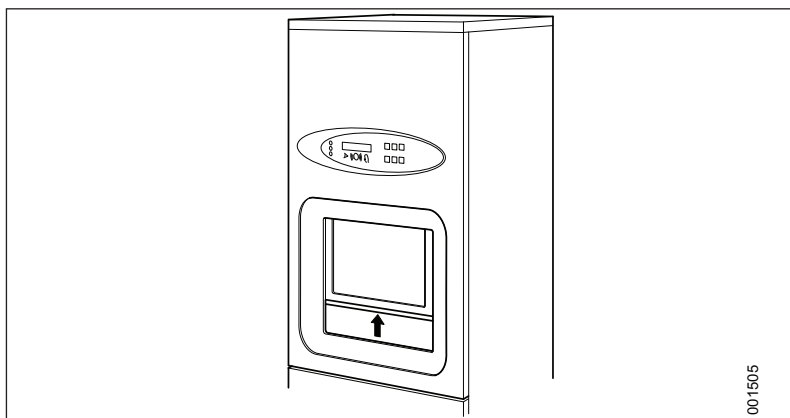


Figure 4. Door opens

### 2.7.2 Closing the door



#### **WARNING!**

Keep hands and arms away when an automatic door has been activated in order to avoid the risk of getting stuck.

- Activate the sensor.
- Alternatively, the door can be closed by choosing a program.

### 2.7.3 Aborting door closing

- Activate the sensor again when the door is coming down. The closing sequence stops and the door goes up again.

### 3 OPERATING INSTRUCTIONS




#### WARNING!



To prevent contamination, use personal protective equipment, such as gloves and protective glasses, when handling soiled waste containers and loading the goods into the flusher-disinfector.

#### 3.1 Program overview

Program	Economy	Normal	Intensive
Degree of soiling	Lightly soiled	Normal soiling	Heavily soiled
Press button			
Program sequence	Cleaning Disinfection Cooling End of program	Cleaning Disinfection Cooling End of program	Cleaning Disinfection Cooling End of program
Program time	6-8 min	7-9 min	9-10 min
Energy	0.25 kWh	0.25 kWh	0.25 kWh
Water (including cooling)	25 l ± 10%	31 l ± 10%	39 l ± 10%

The flushing-disinfector's three standard programs are described above. Other programs may be available using the buttons, , , and/or , see Technical manual.






## 3.2 Run a program

### 3.2.1 Start a program



**If the machine has not been used for more than 72 hours, it is necessary to run a program with an empty chamber before using the machine to clean goods.**

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1. Open the door. (Use the door sensor on the machine.)
2. Place the goods to be cleaned in the holder according to the attached instructions.
3. If the holder has become stuck in the wrong position, press  (open door) to reset the holder to the starting position.
4. The door closes when a program is selected, or when the door sensor is activated.
5. Choose a program from the table below.
  - Economy program: Press .
  - Normal program: Press .
  - Intensive program: Press  if the goods are badly soiled.
  - To add detergent, press .
6. The yellow light under will blink for 6 seconds and during the time it is possible to abort the program.

### 3.2.2 During ongoing program



**If the red indicator lamp lights up an error has occurred. The process is cancelled and must be repeated.**


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### 3.2.3 After the program ends



**The goods may be hot at the end of the program. If the goods are warmer than 60°C, U7 appears in the display.**

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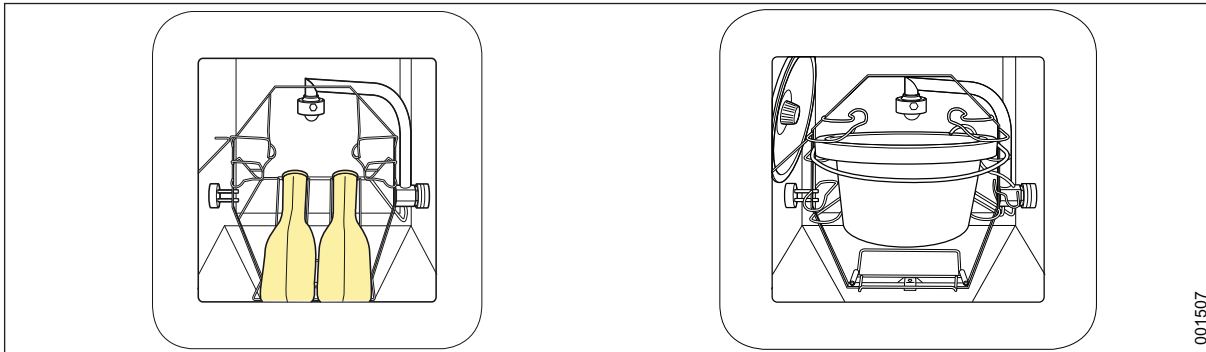
1. The green light comes on  when the program is complete. The door then opens automatically.
2. When the door has opened, take out the goods.

### 3.3 Examples of goods and program selection

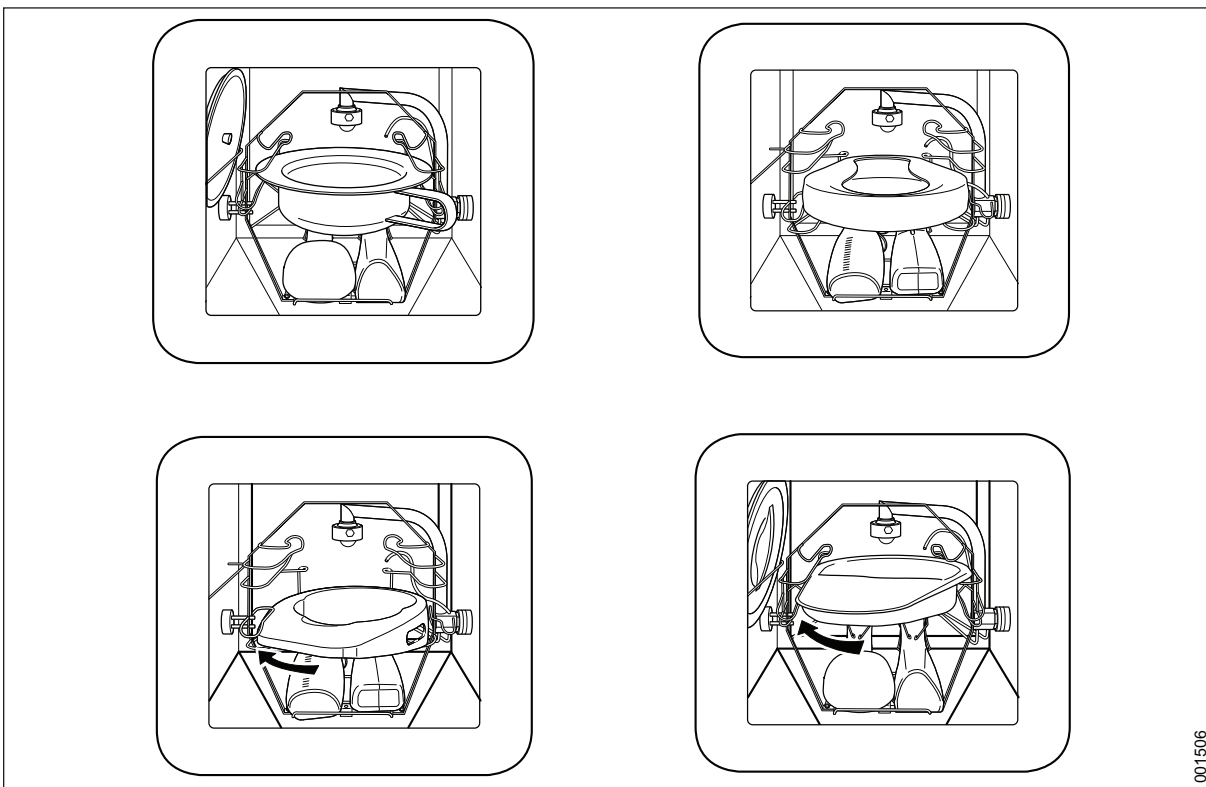
Economy program



Normal/Intensive program



Normal/Intensive program





## 4 MAINTENANCE

### 4.1 Flushing chamber

If limescale deposits occur, they must be removed with ordinary acid-based cleaning agent. There is no need to rinse it off. This happens automatically during the next program.

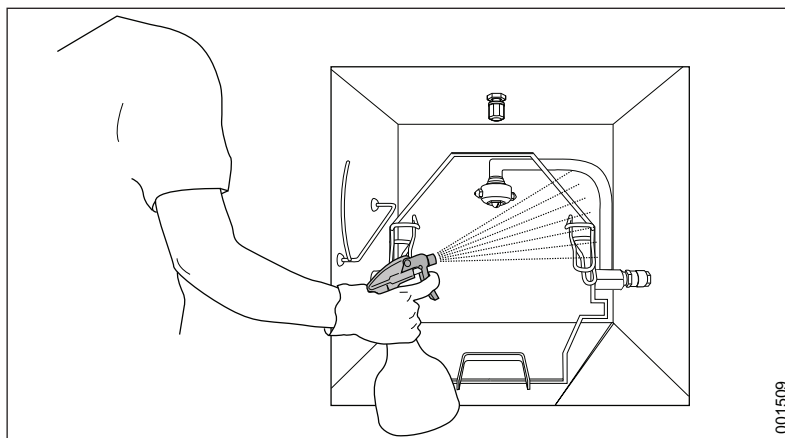


Figure 5. The wash chamber is cleaned using acid-based detergent

### 4.2 The outside



**Do not wash the machine down with water.**

The front and sides and the control panel can be cleaned and disinfected with an alcohol-based cleaner, medical spirits or a common cleaning agent. Remove stains with an ordinary cleaner for stainless steel.

### 4.3 Preventive maintenance

For safety purposes, never modify equipment or use incompatible parts.

#### 4.3.1 Periodic maintenance

Periodic maintenance and system testing must be performed to ensure safety and the machine's proper operation.

The amount of maintenance required depends largely on the quality of the incoming water and how often the machine is used. The maintenance interval will have to be determined in each individual case. Arjo recommends that the stated maintenance operations be performed at intervals according to the service table.

### 4.3.2 Service table



The machine is connected to the electricity supply and some components are live.



Maintenance may only be performed by authorized service technicians.

**NOTE!** The service table is only shown for information purposes.

The service table below shows recommended maintenance intervals.

In addition to system testing, we recommend that appropriate cleaning tests and temperature validation are performed according to EN ISO 15883.

	Measure	Every year / 10,000 cycles	Every other year / 20,000 cycles	Time* (minutes)
<b>1</b>	<b>General</b>			
1.1	Check the cabling and connection points.	•		10
1.2	Check that the panel decal is firmly affixed, is undamaged and legible.	•		2
1.3	Check that an goods placement sign and quick help instructions have been put up.	•		1
1.4	Check error codes and the number of processes.	•		2
<b>2</b>	<b>The chamber</b>			
2.1	Check that the rotating nozzles are moving freely. Clean as required.	•		20
2.2	Check that the fixed nozzles are not clogged with grime and deposits. Clean as required.	•		20
2.3	Check for leakage in the nozzle attachments and the hose connections to the chamber.		•	-
2.4	Check for proper operation of the temperature sensor.	•		10
2.5	Check that the door seal and chamber seal are tight. Clean or replace as necessary.	•		10

	Measure	Every year / 10,000 cycles	Every other year / 20,000 cycles	Time* (minutes)
2.6	Check the mounting for the goods holder.	•		2
2.7	Check that the overflow drain connection to the chamber is tight.		•	-
2.8	Clean the inside of the flushing chamber.	•		10
<b>3</b>	<b>Process tank</b>			
3.1	Clean as required.	•		-
3.2	Check and clean the level sensor.	•		5
3.3	Check that the valves are working and that the connections are not leaking. Clean as required.	•		10
<b>4</b>	<b>Steam Generators</b>			
4.1	Check the connections to the steam generator for leakage and make sure the surrounding insulation is intact and no hot surfaces are exposed.	•		5
4.2	Check that the steam generator is working properly.	•		10
<b>5</b>	<b>Main pump</b>			
5.1	Check that the main pump is firmly attached and that there are no leaks in the connections.	•		5
<b>6</b>	<b>Dosing system</b>			
6.1	Check the hoses between the dosing pump and the detergent container. Replace if necessary.	•		5-10
6.2	Check the dosage amount. Adjust if necessary.	•		10-30
6.3	Replace hose in the dosing pump.	•		5
6.4	Check that the empty container alarm works. Clean or replace as necessary.	•		5
6.5	Check the function of the check valve in the steam generator	•		5
<b>7</b>	<b>Drainage connection</b>			
7.1	Check that the drain connection is firmly attached and that it is not leaking.	•		5
7.2	Check the condensation cooling nozzle head (option).	•		5
<b>8</b>	<b>Steam inspection (Option)</b>			
8.1	Check and adjust the needle valve.	•		10
<b>9</b>	<b>Automatic door</b>			
9.1	Check the automatic door for proper operation.	•		5

	Measure	Every year / 10,000 cycles	Every other year / 20,000 cycles	Time* (minutes)
<b>10</b>	<b>Function check (at each service)</b>			
10.1	Run a complete process and be sure there are no deviations according to the periodic checkpoints.			
10.2	Check that the panel's lamps and alarms are functioning.			


\*The time required is estimated with the top off and may vary depending on the installation settings, operating conditions and equipment level.

#### 4.4 Machines that are not in use

A machine that is not being used should be drained. Contact a service technician.



## 5 ALARM

### 5.1 Alarm

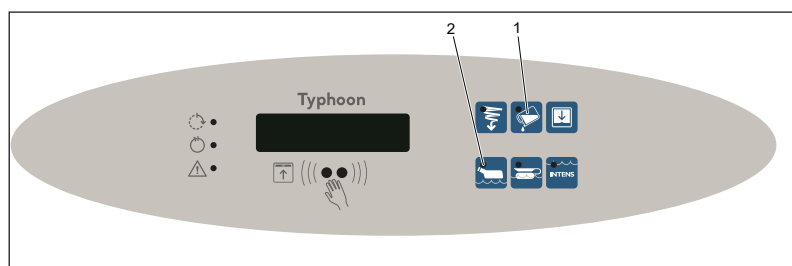
If the red lamp at  lights up, disinfection was aborted because of low temperature or some other error. The display shows an error code.

### 5.2 Acknowledgement of error message

Some error messages need to be acknowledged before the machine can be returned to run mode. When the cause of the error has been found and the error has been put right, the error message is acknowledged as follows:

First press the  button (1), then the  button (2). Keep both buttons pressed at the same time for 10 seconds.

The machine is now ready to operate. Re-run the aborted program if the goods are still in the machine. If the error persists, call service personnel.



### 5.3 During a power failure

If the power fails during a process, the machine remains locked. When the power returns, the machine restarts the process automatically.

## 6 TROUBLESHOOTING

### 6.1 List of codes

Error code	Description of error	Measure
U1	Lime binding agent low	Top up lime binding agent
U4	Process agent low level	Top up process agent
U6	Inspection request	Contact authorized service personnel
U7	Warning of high temperature for goodss	Let the goods cool down
U8	External communication	Contact authorized service personnel
H7	Battery error	Contact authorized service personnel
F1	Faulty temp sensor	Contact authorized service personnel
F2	Level sensor error, tank	Contact authorized service personnel
F3	Level sensor error, detergent	Contact authorized service personnel
F5	Logic error, machine configuration	Contact authorized service personnel
F6	Inspection request	Contact authorized service personnel
F7	Disinfection temperature not reached	Contact authorized service personnel
F8	Door open/unlocked during process	Contact authorized service personnel
F9	Settings incorrect	Contact authorized service personnel
F10	Could not fill/empty tank	Contact authorized service personnel
F11	Leakage	Contact authorized service personnel
F14	Operating time, door	Contact authorized service personnel
F15	Operating time, turner	Contact authorized service personnel
F16	Log. error, turner	Contact authorized service personnel
F18	Wrong machine type	Contact authorized service personnel

### 6.2 Types of codes

- Ux is an information code.
- Hx is a handling code.
- Fx is an error code.

## 7 ENVIRONMENTAL PRODUCT DECLARATION

Component	Weight in kg (total 135 kg)	Weight as a percentage
Mechanical parts		
Stainless steel	80	59
Steel	20	15
Glass	2	1.5
Brass	2	1.5
Plastic	7	5
Rubber	3	2
Other mech. parts	4	3
Electrical / Electronics		
Wiring	1.5	1
Circuit boards	0.5	0.5
Other components	15	11

### 7.1 Comments

The “Other mech. parts” and “Other components” fractions comprise pumps, door motors, etc., which cannot be weighed or divided up in the same way as other fractions.

### 7.2 Distribution

The machines are packed on wooden pallets and clad with wood and Masonite, or wrapped in plastic. Users must make sure that the packaging material is sorted and recycled.

### 7.3 Use

The flusher-disinfector affects the environment during its entire life cycle. Our assessment is that electric power and water consumption have the greatest impact on the environment. Based on a service life of ten years and 7,000 processes per year, the machines consume about 1,750 kWh of electricity and about 215 cubic meters of water. About 35 liters of agent are discharged into the drainage system, depending on the programs/doses used in the machine. To reduce the environmental impact the user may use green electric power.

## 8 DETERGENT

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### WARNING!



To avoid eye and skin damage, always use protective glasses and gloves. If contact occurs rinse with plenty of water. If eyes or skin becomes irritated, contact a physician. Always read the material safety data sheet of the detergent.

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Using agents other than those tested and approved by Arjo may damage the machine (dosing pumps and hoses).

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Follow the instructions for the container for additional instructions on using the agent.

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The machine has been proven and tested with Arjo's detergents. We recommend that you use Arjo detergents.

### 8.1 Flushing detergent

Following detergents can be ordered from Arjo sales companies.

Agent	Description
■ ARJO LIQUIDS FLUSHER DETERGENT	A mild alkaline detergent to be used for automated cleaning of human waste containers.
■ ARJO LIQUIDS FLUSHER RINSE	A mild alkaline solution to be used for automated rinsing of human waste containers and system piping to prevent hard water scale build up.



## 9 WATER QUALITY



**It is the customer's responsibility to supply the washer-disinfector with water of the right quality.**

The quality of the water used in all stages of cleaning is important for good cleaning results. The water used in each step should be compatible with:

- The material that the washer-disinfector is made of.
- The chemicals used in the process.
- Process requirements for the various stages of the process

The main factors for good water quality are:

Hardness	High hardness will cause limescale deposits in the washer-disinfector, leading to poor cleaning results.
Ionic contaminants	A high concentration of ionic contaminants may cause corrosion and pitting on stainless steel. Heavy metals such as iron, manganese or copper cause instruments to tarnish.
Microbial contaminants	Goods to be washed are treated for microorganisms and their residual products, which may cause fever-like symptoms if they get into the human body. Use water that does not increase the biological load.
Sanitary chemicals	High concentrations of, and high exposure to, sanitary chemicals may cause corrosion and pitting on stainless steel.

Arjo recommends that water used in the pre-rinsing, washing and final rinsing phases should be of drinking quality in accordance with the guidelines. Recommended water quality is drinking water with max 5°dH. Detailed information about acceptable water quality can be found in "Guidelines for Drinking Water Quality, published by WHO.

Follow local standards if they are stricter than Arjo's recommendations. Especially when treated water is used for the final washing/disinfection phase. A typical specification for treated water is:

pH	5.5 to 8
Conductivity	<30 $\mu\text{s.cm}^{-1}$
TDS	<40 mg/l
Maximum hardness	<50 mg/l
Chlorine	<10 mg/l
Heavy metals	<10 mg/l
Phosphates	<0.2 mg/l as $\text{P}_2\text{O}_5$
Silicates	<0.2 mg/l as $\text{SiO}_2$
Endotoxins	<0.25 EU/ml
Total number of micro-organisms	<100 per 100 ml

Additional advice should also be obtained from the manufacturers of chemical and medical equipment.

## 10 END OF LIFE DISPOSAL

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**WARNING!**

**The product may be contaminated and has to be disinfected before recycling.**
















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Equipment that has electrical and electronic components should be disassembled and recycled per Waste of Electrical and Electronic Equipment (WEEE) or in accordance with local or national regulation.

Disinfection liquids – if you have extra liquid, it's safe to pour it down the drain with running water. These products are water soluble and usually mixed with water when used for cleaning, your municipality will treat these cleaners the same way they would if you used them for cleaning.

The packaging containers should be recycled according to the national or local regulations.

## 11 SYMBOL EXPLANATION

Symbol	Explanation
	Warning
	Warning, hot surface
	Warning, dangerous voltage
	Warning, risk of getting stuck
	Wear protective gloves
	Wear eye protection
	Refer to instruction manual/booklet - Instructions for use should be read
	Name and address of the manufacturer
	Manufacturing date
	Use by date
	Catalogue number
	Serial number
	Indicates the product is a Medical Device according to EU Medical Device Regulation 2017/745
	Unique device identifier
	CE marking indicating conformity with European Community harmonized legislation Figures indicate Notified Body supervision
<b>IP21</b>	IP = Ingress Protection, a rating value for the protection against mechanical ingress and water ingress

Symbol	Explanation
	WaterMark certification label with license number WMK26397
	Intertek Warnock Hersey Certification Mark
	Electrical test label. Indicates ETL Certification through Intertek. The proof of product compliance to North American safety standards
	DVGW CERT Conformity Certificate
	Dutch safety certification for water safety
	Separate electrical and electronic components for recycling in accordance with the European Directive 2012/19/EU (WEEE)
	Recyclable, the number (2) indicates high-density polyethylene

## 12 ELECTROMAGNETIC COMPATIBILITY

Intended environment: industrial electromagnetic environment

Guidance and manufacturer's declaration – electromagnetic emission		
Emmision test	Compliance	Guidance
RF emissions CISPR 11	Group 1	This equipment uses RF energy only for its internal functions. Therefore its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.  This equipment is suitable for use in all establishments, including domestic establishments and those directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes.
RF emissions CISPR 11	Class A	

Guidance and manufacturer's declaration – electromagnetic immunity		
Immunity test	IEC 60601-1-2 test level / performance criterion	Compliance level / performance criterion
Electrostatic discharge (ESD) IEC 61000-4-2	±4 kV contact discharge / B ±8 kV air discharge / B	±4 kV contact discharge / B ±8 kV air discharge / B
Conducted disturbances induced by RF fields IEC 61000-4-6	3 V in 0,15 MHz to 80 MHz / A	3 V in 0,15 MHz to 80 MHz / A
Radiated RF electromagnetic field IEC 61000-4-3	10 V/m (80 MHz to 1 GHz) / A 3 V/m (1,4 GHz to 2 GHz) / A 1 V/m (2 GHz to 2,7 GHz) / A	10 V/m (80 MHz to 1 GHz) / A 3 V/m (1,4 GHz to 2 GHz) / A 1 V/m (2 GHz to 2,7 GHz) / A
Electrical fast transient/burst IEC 61000-4-4	±2 kV AC port / B 5 kHz repetition frequency	±2 kV AC port / B 5 kHz repetition frequency
Power frequency Magnetic field IEC 61000-4-8	30 A/m 50 Hz or 60 Hz / A	30 A/m 50 Hz / A
Surge IEC 61000-4-5	±1 kV line-to-line / B ±2 kV line-to-ground / B	±1 kV line-to-line / B ±2 kV line-to-ground / B
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0 % UT; 1 cycle / B 40% Utl 10/12 cycles* / C 70% during 25/30 cycles* / C 0% during 250/300 cycles* / C	0 % UT; 1 cycle / B 40% Utl 10/12 cycles* / C 70% during 25/30 cycles* / C 0% during 250/300 cycles* / C
*For example: "25/30 cycles" menas "25 cycles for 50 Hz test" or "30 cycles for 60 Hz test".		
Note: UT is the AC mains voltage prior to application of the test level.		

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At Arjo, we believe that empowering movement within healthcare environments is essential to quality care. Our products and solutions are designed to promote a safe and dignified experience through patient handling, medical beds, personal hygiene, disinfection, diagnostics, and the prevention of pressure injuries and venous thromboembolism. With over 6500 people worldwide and 65 years caring for patients and healthcare professionals, we are committed to driving healthier outcomes for people facing mobility challenges.



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