

GETINGE

GETINGE 86-SERIES
USER MANUAL
502607400



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GETINGE

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FOREWORD

This user manual is intended for users of Getinge 86-series washer disinfectors.

The instruction manual describes the design and operation of the machine and the maintenance for which the user is responsible. The purpose of the information in the manual is to ensure safe operation and optimum efficiency.

Before using the machine for the first time, users must have read this instruction manual and familiarized themselves with the operation of the machine and its safety instructions.



Read the user manual before using the machine.

The information in this manual describes the machine as dispatched from Getinge. There may be differences due to customization.

The machine is accompanied by the following documentation:

- User manual (this book)
- Installation manual
- Technical manual
- Spare parts list

Getinge reserves the right to change the specification and design without prior notice.

The information in this manual was up to date on the date of issue of the manual.

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SAFETY REGULATIONS

This machine has been designed with a number of built-in safety devices. To avoid injury, it is highly important not to bypass or disable these safety devices.



The equipment must be used in accordance with the safety instructions below. If in doubt, contact a representative of the reseller without delay.

Important

- Read the instruction manual thoroughly before using the machine.
- The equipment must only be used by personnel who know about it and are trained to use it. Personnel must also receive regular training on this equipment.
- Take care when handling the chemical agent used in the machine. Read the details on the container or contact the manufacturer:
 - if the agent comes into contact with the operator's eyes or skin or if the vapors are breathed in, etc.
 - about storing the agent and disposing of empty containers.
- Take care, because the machine uses hot water and possibly steam.
- Installation and service work must be done by personnel trained in the use of this machine.
- Never bypass the door switch of the machine.
- Leakage in the system, due to a worn door seal for example, must be dealt with immediately.
- The electric power must be switched off before the machine cabinet is opened. (The machine cabinet contains electrical components).
- Make sure that there is always detergent in the bottles. This is important both for the operation of the machine and for keeping the washing chamber free from staining.
- The machine will only work properly if it is kept clean.
- Do not wash down or hose down the machine with water.
- Spare parts must be obtained only via Getinge EDC.

Product liability

Any modification or incorrect use of the equipment without the approval of Getinge Disinfection AB invalidates Getinge Disinfection AB's product liability.

This product was manufactured by:

GETINGE DISINFECTION AB

Ljungadalsgatan 11, Box 1505

351 15 Växjö, Sweden



In an emergency

- Switch off the main switch
- Close stopcocks in the water and (where present) steam supply lines.

INTRODUCTION

Intended field of application


Getinge 86-series washer disinfectors are intended for cleaning, disinfecting and drying surgical instruments (solid and tubular), dishes, hand bowls and baby feeding bottles, containers, anesthesia equipment (critical objects such as surgical instrument and anesthesia equipment must also be sterilized before use), laboratory glass and OP shoes.

The items must be placed in the proper accessories, recommended by Getinge Disinfection AB.

The customer is responsible for ensuring that an Installation Qualification and a Performance Qualification according to ISO 15883 are carried out before the product goes into service.

Incorrect use may result in damage and injury.

Symbols on the machine

 Warning, see instruction manual.

 Warning, hot surface.

 Warning: electrically live parts.

Attention symbols

Some of the warnings, instructions and advice in this manual are so important that we use the following special symbols to draw attention to them. The symbols and designs used are:

This symbol indicates a warning in the text of the manual. It warns of a hazard that may lead to more or less severe injury and in certain cases mortal danger.

It also highlights warnings to avoid damage to equipment.

General



The machine is a fully-automatic washer disinfectant for cleaning and disinfecting goods in hospitals, laboratories and the pharmaceutical industry.

The machine has two spray arms and two dockings and can be equipped with several different accessories for different cleaning requirements. These accessories are presented in a special accessories catalogue.

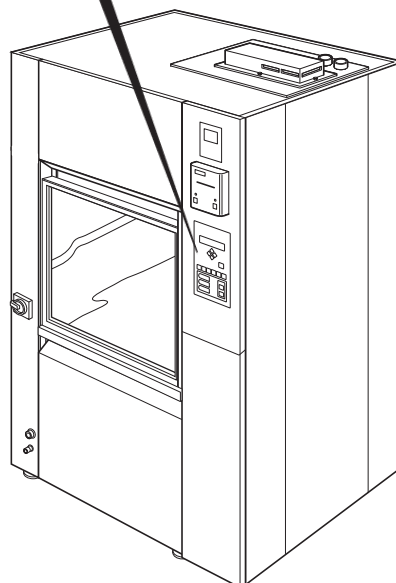
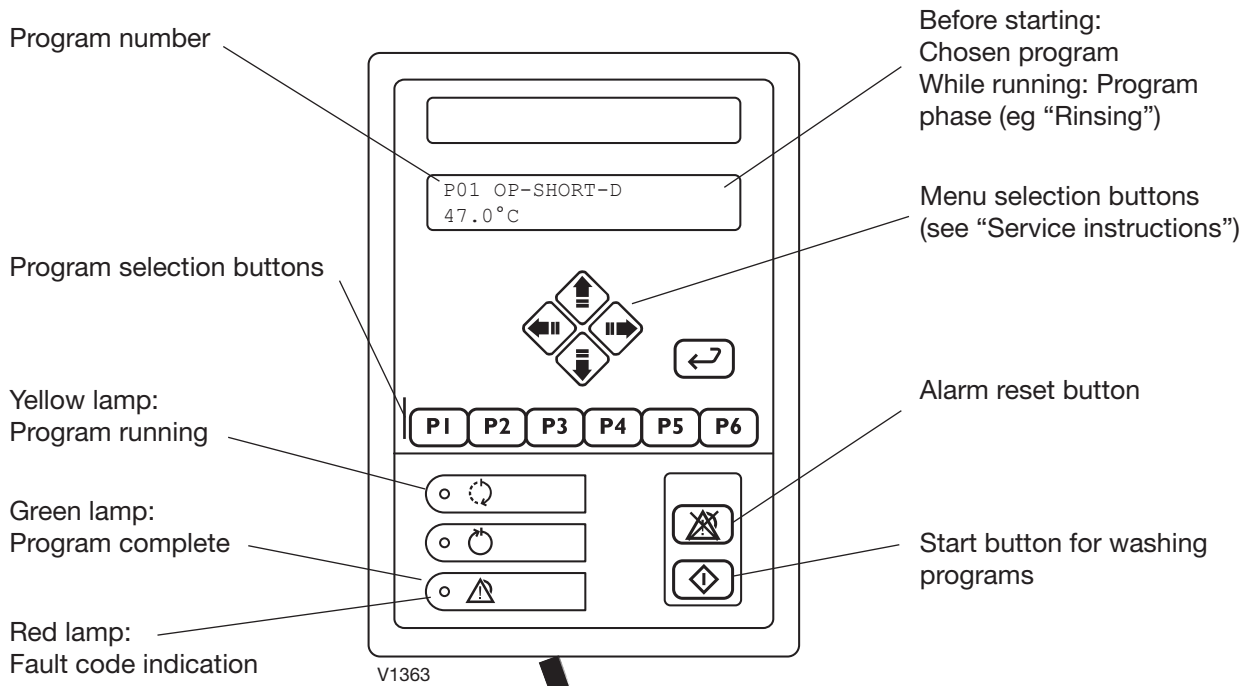
There are several possible ways of installing and equipping the machine depending on its field of application:

- Heating by electricity or steam.
- Connection of distilled or de-ionised water.
- Electrically-heated booster tank for the water for the final rinse.
- Single or double door.
- Extra dosing pumps which allow chemical disinfection of heat-sensitive goods, for instance.
- Infeeder/outfeeder
- Air Glide System (AGS)
- Handheld scanner/Fixed scanner
- Automatic program selection (basket indication)
- Audible signal on fault code.

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Control panel

The machine is operated from the control panel to the right of the soiled-side door. The picture below shows the location of buttons and indicators.



Control system

The machine has an electronic controller which can hold up to 10-15 programs. Six of these programs can be chosen with the program selection buttons. Other programs are chosen with the menu buttons; see Operating instructions.

The machine comes with a number of standard programs in the control system (see the separate program sheet). Contact the your reseller for customized programs.






Programming may only be done by authorized personnel.


Door function

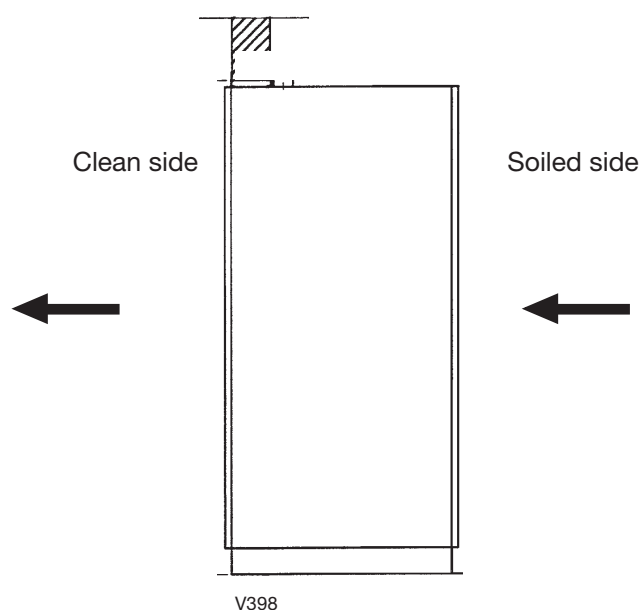
The machine can be fitted with a single door or double doors. All doors are of the vertical sliding type.

The doors can be motorized for automatic opening and closing. The doors have efficient anti-crush protection.

Machines with double doors have a system of interlocks to ensure that only one door can be opened at a time. This means that the clean-side door must be closed and locked by pressing the  button before the soiled-side door can be opened.

When you press , the door is locked and a yellow lamp flashes for about 10 seconds. If  is pressed again during this “cancel time”, the dirty-side door is unlocked and the door can be opened manually or alternatively it opens automatically.


In standby mode, the door can be opened and closed with  by pressing the button for 10 seconds.





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Manually-operated door

When the door is closed manually and  is pressed, the door is locked automatically, the yellow lamp flashes and the program starts.

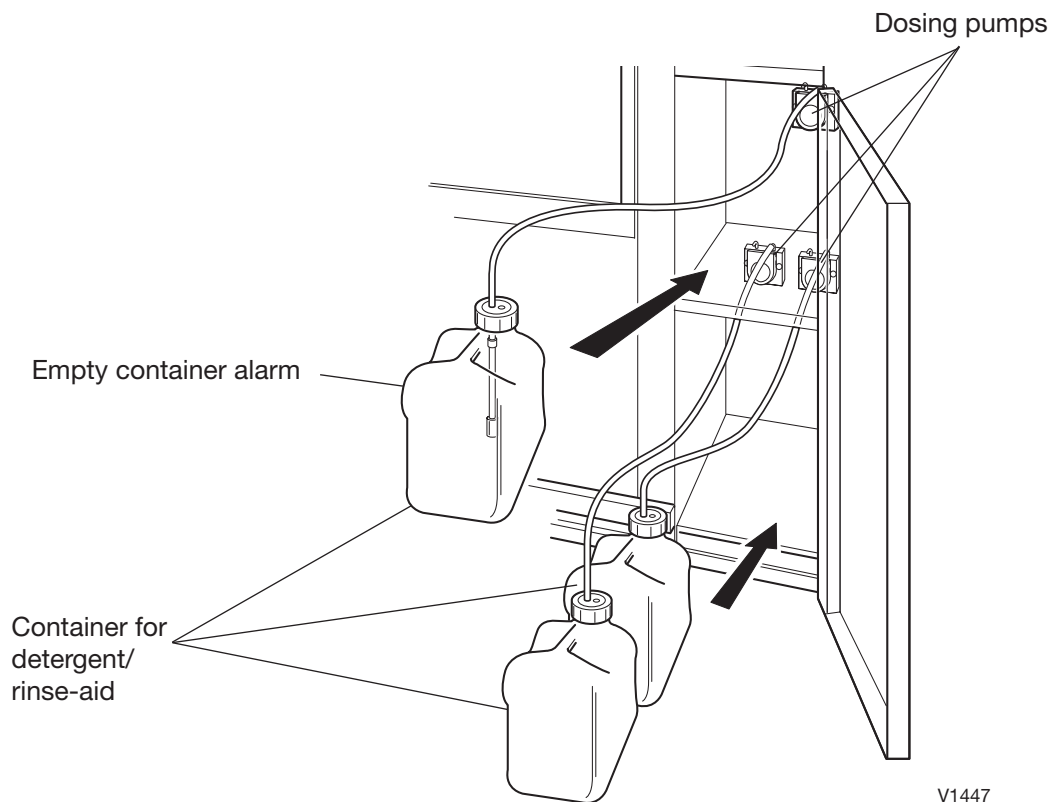
When the program is complete, a green lamp lights up on both sides (if there are double doors) and the clean-side door is unlocked. When the door has been opened manually, the green lamp goes out. With double doors, the clean-side door must be closed and locked by pressing the  button before the soiled-side door can be unlocked.

Automatically-operated door

When  is pressed, the door is locked, the yellow lamp flashes and the program starts. When the program is complete, a green lamp lights up on both sides (if there are double doors) and the clean-side door opens automatically. When the door is fully open the green lamp goes out on both sides. With double doors, the clean-side door must be closed and locked by pressing the  button before the soiled-side door opens automatically.

Dosing system

In standard form, the machine has two dosing systems. One is for alkaline detergent and one is for rinse-aid or acid detergent. The dosing amount can be set individually for each program. The machine cannot be started until detergent has been added. If the detergent holder is empty, “DOS 1 LOW LEVEL”, for example, appears on the display. A third and a fourth dosing system for heat-sensitive goods or instrument milk, for example, can be installed.



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OPERATING INSTRUCTIONS

Machine without barcode scanner

Loading goods to be washed into the machine

- Load the items to be washed on to the trolley and run the trolley into the machine. Examples showing how to load the trolley are shown on the goods positioning sign and in the loading handbook.
- Do not load the machine with more than **75 kg**.
- Make sure that the washer arms can rotate freely without touching the goods.
- On a machine with manual door, close the door:

Choose program

- Choose a program in one of the following ways:
 - Press one of the program selection buttons **P1** - **P6**
 - Press . The display now shows "CHOOSE PROGRAM".
- Press  again.
- Choose a program from the list with  and .
- Press  to confirm your choice.
- You can see the machine programs on the separate program sheet.
- Press . A yellow lamp flashes for 10 seconds. During this time, the program can be aborted by pressing  again.





A fine filter must be used when cleaning and disinfecting tubular instruments with a passage smaller than 3 mm, to prevent particles getting stuck in the instruments. Blocked or reduced water flow may result in ineffective cleaning and disinfection.



If the program is aborted after starting, the goods will not be properly washed or disinfected.

While a program is running




While the program is running, a yellow lamp at  is lit and the program phase (eg "Rinse") and the current temperature are shown on the display. Press  to see how much time remains.

When the program is complete

- When the program is complete, a green lamp lights up at  and the door opens (with double doors, the clean-side door). On a machine with manual door, the door is unlocked and can then be opened:



If the items are still hot after a program, handle them with care to avoid burns.

- Empty the machine (and if the machine has double doors, close the clean-side door).
 - For a machine with automatic door: Press  to close and lock the clean-side door.
 - For a machine with manual door: First close the door, then press  to lock the clean-side door.
- If the same program is to be used again, there is no need to select the program again. Simply press  once.

Note:

The display switches to standby mode after 30 minutes and returns automatically when a program is started or selected.

Machine with barcode scanner

Every wash trolley has its own unique five-digit number. The first two digits indicate which wash program is to be used; the third digit is for extra equipment and the last two are the trolley's ID.

Loading goods to be washed into the machine

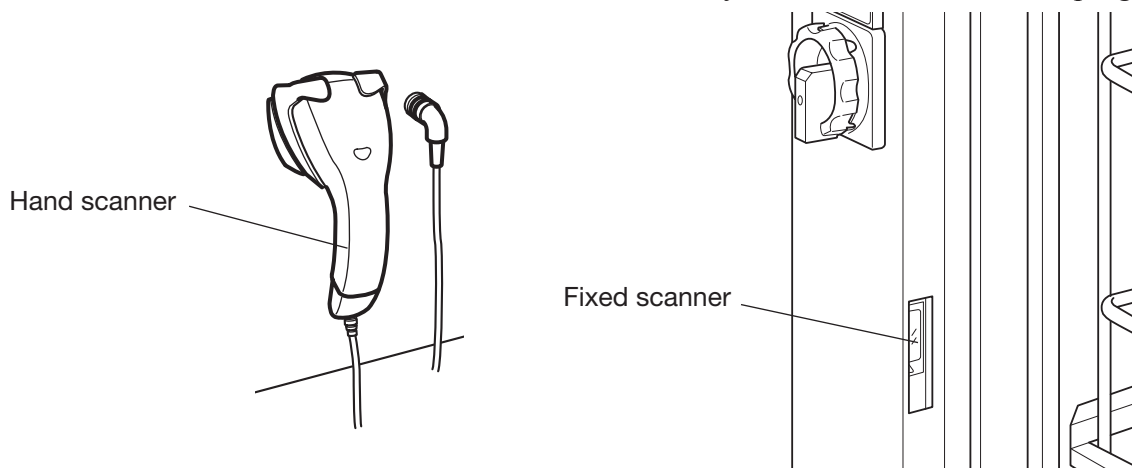
- Load the items to be washed on to the trolley and run the trolley halfway into the machine.
- Examples showing how to load the trolley are shown on the goods positioning sign.



A fine filter must be used when cleaning and disinfecting tubular instruments with a passage smaller than 3 mm, to prevent particles getting stuck in the instruments. Blocked or reduced water flow may result in ineffective cleaning and disinfection.

Choosing a program

- Scan the barcode of the trolley with the barcode scanner. For a machine with a fixed scanner, the trolley must be moved so that the barcode gets scanned. On the basis of the barcode, the machine automatically chooses the correct wash program.



This is what to do if you want to use a different washing program from the scanned one:



- Press one of the program selection buttons **P1** - **P6**
- Press . The display now shows "CHOOSE PROGRAM". Press again.
- Choose a program from the list with and .
- Press to confirm your choice.
- Run the trolley into the machine.
 - With an automatic door, the door closes and locks. The program then starts automatically.
 - With a manual door, close the door and press on the soiled side to lock the door. The program starts when the door is locked.




If the program is aborted after starting, the goods will not be properly washed or disinfected.

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While a program is running



While the program is running, a yellow lamp at  is lit and the program phase (eg “Rinse”) and the current temperature are shown on the display. Press  to see how much time remains.

When the program is complete

- When the program is complete, a green lamp lights up at  and the door opens (with double doors, the clean-side door). On a machine with manual door, the door is unlocked and can then be opened:



If the items are still hot after a program, handle them with care to avoid burns.

- Empty the machine (and if the machine has double doors, close the clean-side door).
 - For a machine with automatic door: Press  to close and lock the clean-side door.
 - For a machine with manual door: First close the door, then press  to lock the clean-side door.

Positioning the goods

Note:

All vessels must be thoroughly emptied before they are loaded into the machine.

- Use inserts and special inserts correctly and only for the items and utensils that are to be washed.
- Make sure that the water jets reach all surfaces of the goods. Any surfaces that are covered will not be completely clean.
- Do not block the spray arm.
- Make sure that the strainers in the machine are clean and that water can flow through them. It is important to clean and check the strainers regularly.
- Empty all vessels to be washed before they are placed in the machine.
- Position sharp and pointed utensils in such a way that they cannot cause injury or damage during loading and unloading.
- Make sure that utensils are not lying on top of each other, so preventing water from reaching all surfaces.
- Position vessels with their openings downwards in the correct inserts. Water must be able to flow freely into and out of the vessels.
- Goods with a convex bottom must be positioned on a tilt so that water does not collect in the convex surface.
- Anodised aluminium and nickel-plated instruments are not suitable for washing in a washer disinfectant.
- Rigid endoscopes must be dismantled in accordance with the manufacturer's instructions before washing.
- Open all valves and remove covers and seals so that the channels can be thoroughly flushed out to achieve the desired cleaning result.
- Optics and light guides must be approved by the manufacturer for thermal disinfection.

Working with detergents etc



Empty out all residue of acid, especially hydrochloric acid, solvents and chloride-containing solvents from the vessels before placing them in the machine.

- Pre-treatment with detergent or disinfectant and certain types of dirt may result in increased lather formation. The lather may affect the washing and disinfection result.
- Follow carefully the manufacturer's instructions for detergents and special products. To avoid chemical reactions (eg oxy-hydrogen gas) and damage to materials, the detergent must only be used for the purpose stated by the manufacturer.
- Handle liquid agents (for cleaning, rinsing, disinfection and neutralizing) with care. The substances often consist of acids or caustic solutions. Do not add organic solvents as this may result in an explosion. Use safety glasses and protective gloves when handling these substances. Always follow the manufacturer's safety instructions when handling chemical agents.
- Do not use domestic dishwasher detergent.
- Follow the dosing instructions of the detergent manufacturer. Different detergents may have different cleaning effects. If cleaning results are not satisfactory, try changing to a detergent of a different quality before contacting Getinge.

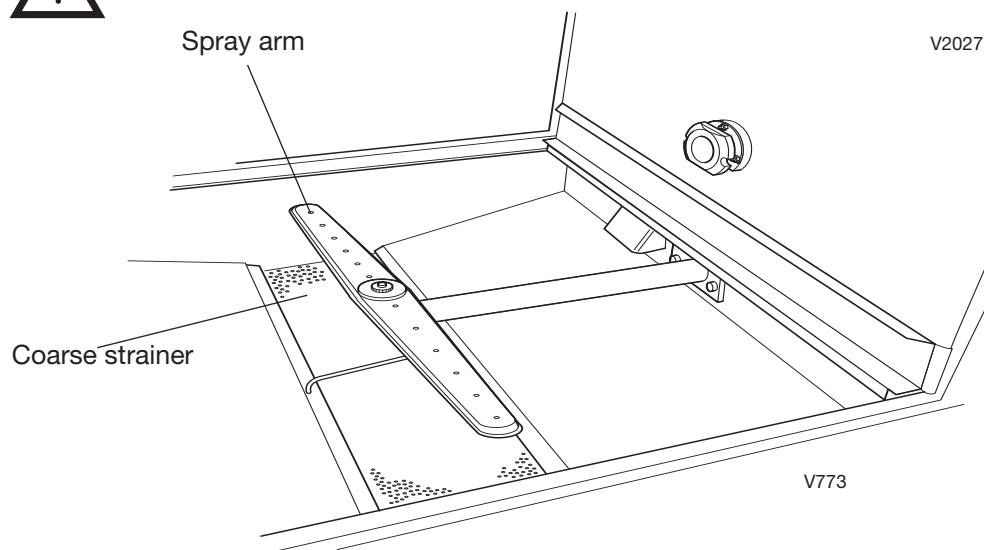
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Daily inspection

- Check that no objects have fallen down into the bottom of the washing chamber. Loose objects may cause blockages and seriously reduce the performance of the washer disinfecter.
- Check that the spray arms can rotate freely. Check that the holes in the spray arms are not blocked. Blocked spray holes may adversely affect the cleaning result.
- Check that the goods to be cleaned are retained in the insert.
- If the spray arms need cleaning, remove them by unscrewing the central nut. The arm can then be lifted off and washed clean. Check that the arm can rotate freely when re-installed.
- Remove and clean the strainer in the bottom of the washing chamber. A dirty coarse strainer may prevent water from circulating and create the conditions for the growth of bacteria.



The heating coils under the coarse strainer may be hot.



- If necessary for cleaning, open the strainer with the two nuts.
- Open the detergent containers and check that they contain detergent/rinse-aid.
- Check that the wash trolley docks properly to the water connections.
- Check the accessories of the machine visually with regard to their intended use and function. For example, blocked channels, worn and missing parts that might affect the performance of the machine.
- Check that the spring movement of the docking mechanisms moves easily. Press in the docking mechanism and release it. It must return to its initial position.
- Check the cleaning instructions of the goods manufacturer.
- To achieve the intended level of performance and safety, distribute the load evenly over the washing surface.
- Check the cleaning result visually when the process is complete.
- The spray arm journal must be checked daily and replaced every five years.

If necessary

Washing chamber

Do not allow deposits to form in the wash chamber. Remove any deposits as follows:

- Open the door and dispense 200 ml NEODISHER BU descaler (sold by Dr. Weigert) into the wash chamber.
- Close the door and run the descaling program.

NOTE: There must not be any items in the machine with this program. It is only used to descale the machine and insert.

The outside

The front and side walls can be cleaned and disinfected with an alcohol-based cleaner, medical spirit or ordinary detergent. The control panel can be cleaned in the same way.

To remove stains, use ordinary stainless steel cleaner.

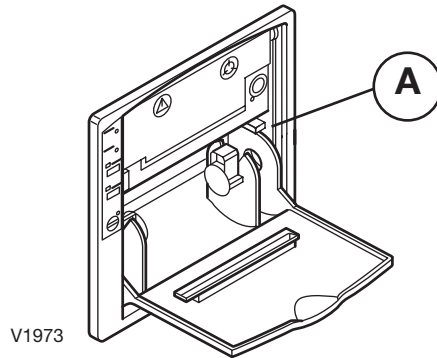
It is important to maintain a good level of hygiene around the machine.

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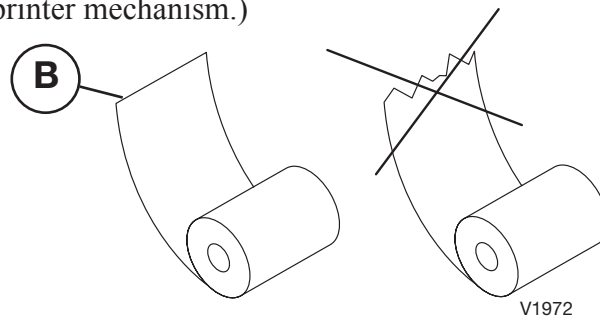
Printer (optional)

Replacing the paper roll

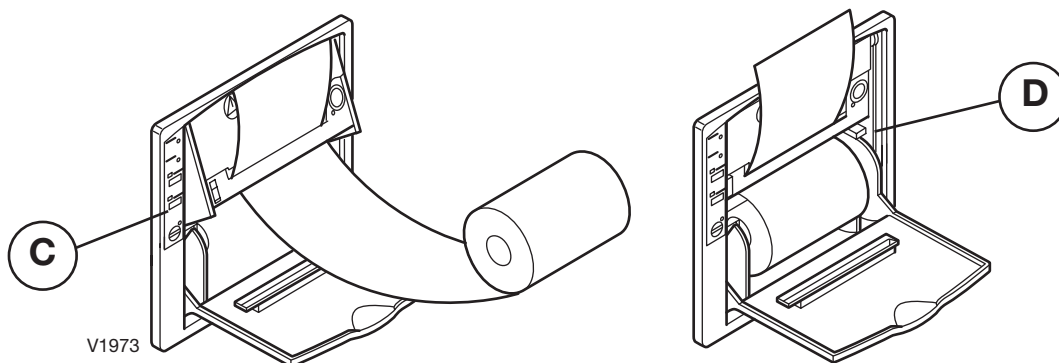
- Open the front door of the printer.
- Remove any paper residue.
- Fold down the printing mechanism by pressing the latch marked PUSH (A).



- Cut the end of the new roll square (B). (This makes it easier to thread the paper into the printer mechanism.)



- Insert the paper into the opening of the print mechanism and press the FEED (C) button on the printer. The paper is now automatically fed through the printer mechanism.



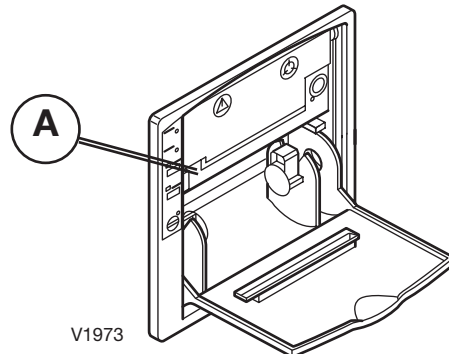
- Fold away the printing mechanism and lock it with the latch (D).
- Tear off the paper and close the front panel of the printer.
- The printer is now ready to use again.



**Never use the printer without paper and/or ink ribbon.
Do not pull on the printer feed when the printer is on.**

Ribbon cassette replacement

- Open the front door of the printer.
- Remove the ink ribbon by pressing gently on the left-hand side of the ribbon cassette.



- Insert the new ribbon cassette. The printer is now ready to use again.



Never use the printer without paper and/or ink ribbon.

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PROCESS

Changing parameters

Normally the preset parameter settings of the installed programs are used, but in special cases it may be necessary to adjust certain parameters for matching to a specific wash process. Information about the parameters that can be changed and their limit values can be found under heading “A- or P-parameters” in Chapter 4 of the service manual.

Printing out a program for a machine with printer (option)

An example of a program printout is shown below. In the example, program P02 OP-D, programmed on menu selection button **P2** is used.

```
PROGRAM:P2 OP-D
DATE:13/04/2004
PROGRAM START:13:44:46
MACHINE NAME:8666
MACHINE NO:1
CYCLE COUNTER:1

PARAMETER
WASH DOS TEMP      35.0C
WASH DOS 1         00:01:00
WASH TEMP.         60.0C
WASH TIME          00:03:00
FINAL R DOS TEMP   80.0C
FINAL R DOS 3      00:00:21
DISINF TIME        00:01:00
DISINF TEMP        90.0C
DRYING TEMP9       0.0C
DRYING TIME        00:18:00

SIGNALS
A107              TEMP INDEP. CHAMB

PROGTIME          A107

PH1-START
00:00:00          30.8

PH2-DRAINING 10 s
00:00:00          31.2

PH220-PRE RINSE CW
00:00:10          31.0

PH20-DRAINING 40 s
00:02:42          16.2

PH25-WASHING
00:03:51          18.1
00:05:52          35.2
DOS START
00:06:53          39.9
DOS.STOP
00:11:17          60.0
00:12:17          60.8
00:13:17          61.9
00:14:17          61.5
```

```
PH20-DRAINING 40 s
00:14:18          61.5

PH330-RINSE 1
00:15:29          61.5

PH20-DRAINING 40 s
00:17:39          55.1

PH360-RINSE 2
00:18:46          55.5

PH20-DRAINING 40 s
00:20:55          53.2

PH440-FINAL RINSE
00:22:03          53.5
00:27:53          80.1
DOS.START
00:28:15          81.5
DOS.STOP
00:30:26          90.0

PH450-DISINFECTION
00:30:27          90.1
00:31:26          92.3

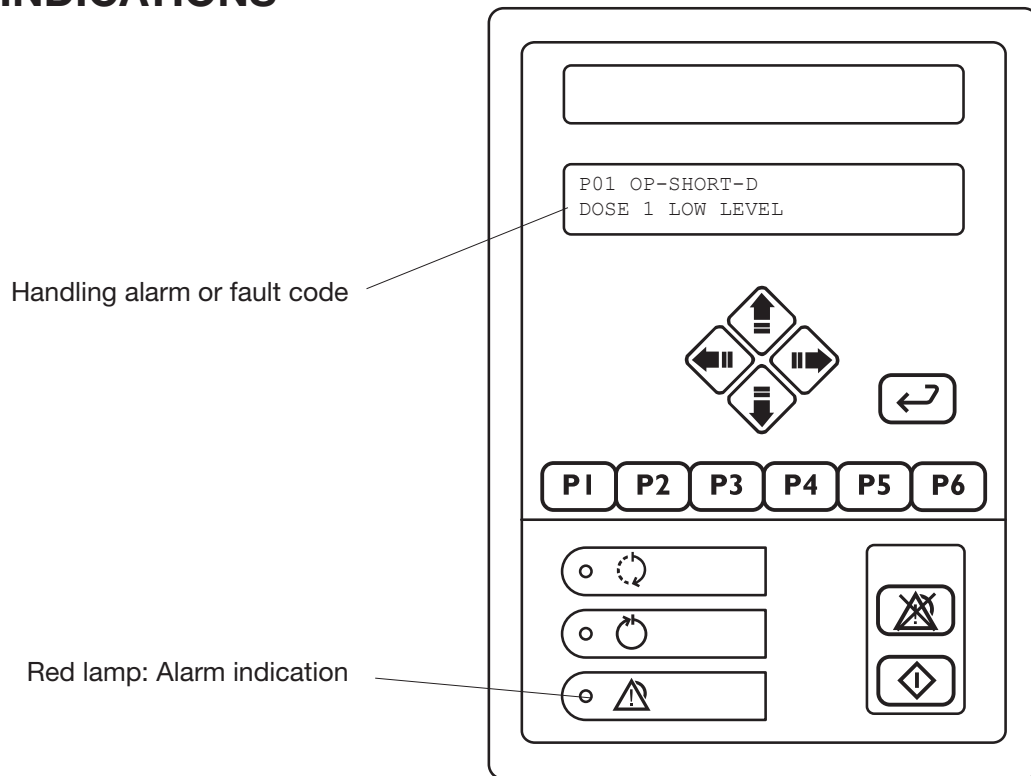
PH20-DRAINING 40 s
00:31:28          92.3

PH900-DRYING
00:32:36          91.7
00:51:27          80.8

PH1000-ENDING
00:52:43          81.1

SIGNATURE: .....
```

FAULT INDICATIONS



V1363

Handling alarms

Handling alarms appear on the display in plain text.



The machine cannot be started until the fault has been put right.

The following handling alarms can be displayed:

- | | |
|-------------------------|---|
| DOSE 1 LOW LEVEL | Empty container alarm 1. If detergent 1 is finished, a handling alarm is generated. The alarm is reset automatically when detergent is added. |
| DOSE 2 LOW LEVEL | Empty container alarm 2. If detergent 2 is finished, a handling alarm is generated. The alarm is reset automatically when detergent is added. |
| DOSE 3 LOW LEVEL | Empty container alarm 3. If detergent 3 is finished, a handling alarm is generated. The alarm is reset automatically when detergent is added. |
| DOSE 4 LOW LEVEL | Empty container alarm 4. If detergent 4 is finished, a handling alarm is generated. The alarm is reset automatically when detergent is added. |

Note:

When the handling alarm is activated (appears on the display) there is always enough detergent left for one run; in other words, if you have started a program it can run to the end.

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Alarms

If the red lamp at  lights up, the process has been aborted because of a fault. The display shows a fault code.



Acknowledging a fault code

Acknowledge the fault code as follows:

- Note the fault code
- Cancel the acoustic signal by pressing . The machine remains locked but the program has been stopped. The display shows the password entry menu.
- Correct the fault or call service personnel.
- Enter the password (558387) using the arrow keys and press . All liquid is drained from the machine and the soiled-side door is unlocked*.
- Open the door and remove the items.



The items in the machine are not clean and must be washed again from the beginning with a new program.

If the items are still hot, handle them with care to avoid burns.

* If the drain pump is faulty, water cannot be drained from the machine and the fault cannot be put right until the door has been opened. The soiled-side door is unlocked as soon as the password is confirmed.

Fault codes in the machine

Fault codes indicate that a serious fault has occurred in the machine or the washing process. The fault must be put right by an authorized service technician.

The following fault codes may occur:

Fault code	Description
F00	Power failure
F01	The motor cutout has tripped.
F02	Water filling takes more than 10 minutes.
F03	Draining takes longer than five minutes or there is water remaining in the washing chamber at the end of the draining phase.
F04	Water leakage in the dryer.
F05	The soiled-side door does not lock within 10 seconds of program start or if the door is opened while a program is running.
F06	The soiled-side door does not unlock within 10 seconds.
F09	The clean-side door does not close within 10 seconds of program start or if the door is opened while a program is running.
A09	The soiled-side door does not open within 20 seconds of the program ending.
F10	The soiled-side door does not unlock within 10 seconds..

Fault code	Description
F15	Not enough detergent 1 dosed.
F16	Not enough detergent 2 dosed.
F19	Not enough detergent 3 dosed.
F20	Not enough detergent 4 dosed.
F23	High conductivity.
F24	Low pressure in drying unit.
F25	High pressure in drying unit.
F26	Low pressure from circulation pump.
F27	High pressure from circulation pump.
F28	Low temperature in drying unit.
F30	Faulty temperature sensor (controlling) in wash chamber.
F31	Faulty temperature sensor (independent) in wash chamber.
F32	Faulty temperature sensor in drying unit.
F33	Faulty temp sensor in wash chamber. (Temperature too low because of a heating fault.)
F34	Faulty temp sensor in wash chamber. (sensor fault)
F35	Faulty temperature sensor in booster tank.
F36	Fault message from independent monitoring system; see under Fault codes in independent monitoring system.
F37	Faulty temp sensor in wash chamber. (Temperature too high because of a heating fault.)
F38	Disinfection temperature lower than set temperature.

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Fault codes in the master supervisory system (option)

The fault codes indicate that the monitoring system has detected a serious fault in the machine or in the current wash program. All fault codes in the supervisory system must be acknowledged on the washer disinfector's control panel. The fault must be put right by an authorized service technician. When the fault is put right, the fault code is reset automatically.

The following fault codes may occur:

Fault code	Description
F00	Faulty temperature sensor (controlling) in wash chamber.
F01	Faulty temperature sensor (independent) in wash chamber.
F02	Incorrect pressure from circulation pump.
F04	Faulty temp sensor in wash chamber. (sensor fault)
F05	Low pressure from circulation pump.
F06	High pressure from circulation pump.
F08	Not enough detergent 1 dosed.
F09	Not enough detergent 2 dosed.
F10	Not enough detergent 3 dosed.
F11	Not enough detergent 4 dosed.
F13	High conductivity.
F14	Incorrect disinfection time.
F15	Disinfection temperature lower than set temperature.
F16	Fault message from the system
F17	Power failure, emergency stop

Detergents etc

The machine has been tested with Getinge detergents. We recommend that you use Getinge detergent or equivalent detergent from a reputable manufacturer.

Getinge detergent for mechanical washing of:

- A** - Surgical instruments **B** - MIS-instruments **C** - Anesthesia equipment
D - OP-shoes **E** - Containers **F** - Baby-bottles
G - Lab glassware

Products	Alkalinity	Surfactants	Phosphates	Enzymes	Suitable for optics and anodized Alu.	Goods to be washed
Getinge Power Wash	Amines	+	-	+	+	A, B, C, D, E
Getinge Wash Extra	Alkaline salts	-	+	-	(+)	A, C, D, (E), F
Getinge Wash Intensive	Caustic soda	+	-	-	-	A, C, D, F
Getinge Wash Enzyme	-	+	-	+	+	A, B, C, D, E
Getinge Wash LAB	Caustic soda	-	-	-	-	G

Acidic detergents and neutralizing agents

Products	Acids	Effects	Prewash for	Dosage lab glassware
Getinge Neutralization P	Phosphoric acid, Citric acid	Neutralization of alkaline residues, removal of mineral residues, e.g. rust and lime	Removal of mineral residues	First rinse after the alkaline wash for neutralization or prewash
Getinge Neutralization	Citric acid	Neutralization of alkaline residues		First rinse after the alkaline wash

Lubricants and rinse aids

Products	Ingredients	Effects	Dosage
Getinge Instrumentmilk	Paraffinum perliquidium emulsifying agents	Lubrication of instruments	Final rinse
Getinge Rinse	Surfactants	Reduction of surface tension of water, improved drying	Final rinse

Flusher detergents

Products	Alkali	Dispersion agents	Complexing agents	Surfactants
GD Wash	+	-	++	+
GD Flush	-	++	+	-

Getinge detergents etc can be ordered from resellers of Getinge products.

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Water quality - washer disinfectors

The quality of the water used in all stages of cleaning is important for good results.

The water used in each stage must be compatible with:

- * The material of which the washer disinfectant is made
- * 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 disinfectant, 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	The water used should not increase the biological load on the equipment that is being treated against micro-organisms and their residual products which may cause fever-like symptoms when they get into the human body.
Sanitary chemicals	High concentrations of and high exposure to sanitary chemicals may cause corrosion and pitting on stainless steel.

Getinge Disinfection AB therefore recommends that water used in the pre-rinsing, washing and final rinsing phases should be of drinkable quality in accordance with the guidelines. Detailed information about acceptable water quality can be found in “Guidelines for Drinking Water Quality 3rd Edition” published by WHO.

Getinge Disinfection AB also recommends following local standards. RO (reverse-osmosis) water (or similarly treated water) is used for the final washing/disinfection phase.

A typical specification for RO water is:

pH	5.5 to 8
Conductivity	<30 $\mu\text{s}\cdot\text{cm}^{-1}$
TDS	<40 mg/l
Maximum hardness	<50 mg/l
Chlorine	<10 mg/l
Heavy metals	<10 mg/l
Phosphates	<0.2 mg/l som P_2O_5
Silicates	<0.2 mg/l som SiO_2
Endotoxins	<0.25 EU/ml
Total number of micro-organisms	<100 per 100 ml

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

Where local standards are stricter than Getinge Disinfection AB’s recommendations, they should be followed. Note that it is the customer’s responsibility to supply the washer disinfectant with suitable water.

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