INSTRUCTION MANUAL

Sterile 0.9-1.2-1.5-1.8

ID: 807129

Important user information

Please read this entire manual to fully understand the safe and effective use of this product.

In case you have any comments about this manual we will appreciate receiving them at the address below.

Warranty and Liability

Jouan Nordic A/S guaranties that the product delivered has been thoroughly tested to ensure that it meets its published specifications. The warranty included in the conditions of delivery is valid only if the product has been installed and used in accordance with the instructions supplied by Jouan Nordic A/S.

Jouan Nordic A/S shall in no event be liable for incidental or consequential damages, including without limitation, lost profits, loss of income, loss of business opportunities, loss of use, and other related exposures, caused by e.g. incorrect use of the product.

Symbols used in this manual

	**WARNING** Used in case of danger of a serious accident or when documentation needs to be consulted.
	**NOTE** Used to direct attention to a special item.

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1. Introduction

The Holten LaminAir Sterile series are thoroughly tested products designed to protect the work process and the handled product against particle or microbiological contamination.

The HV series comply with I.E.S. Recommended Practice; IES-RP-002-86; January 1986; Laminar Flow Clean Air Devices and the Nordiska R^3-föreningenns Norm för öppna LAF-enheter.

In order to avoid unintended wrong attendance, please read this instruction manual carefully.

2. Description

A confined workspace in which stable vertical unidirectional flow (laminar flow) provides protection for the product handled against particulate contamination from the surroundings and the operator.

All operations take place through the front opening. Pressure in the work chamber keeps the clean air flowing from the work chamber to the surroundings, avoiding introduction of particulate contamination to the work chamber.

3. Technical description

Air flow in the work chamber
Through the perforated opening in the top of the bench air from the surrounding room is drawn into the bench. The air is pre-filtered through a filter with medium efficiency.

Prefilter
The prefilter efficiency is 83 % Ashrae 52/76 (grav.) corresponding to EUROVENT 4/5 classification EU 3.The air is then led to the fan.

Fan
The air is led to the fan in the top of the bench where the air is pressurised. The fan is of a selfcompensating type and has only an insignificant drop in supplied air volume by an increase in back pressure. By means of a built-in transformer the fan can be made to operate with increased power. From the pressure plenum the air passes the main filter.

Main filter
The filter efficiency of the main filter is 99.999 % of particles 0.3 µm (D.O.P.test). Air flows from the main filter through the work chamber in a vertical unidirectional flow of clean air. Immediately before reaching the tabletop the air separates and partly flows out through the perforated back wall, partly flows out through the work opening. The air returns to the suction opening of the bench passing through the surrounding space.

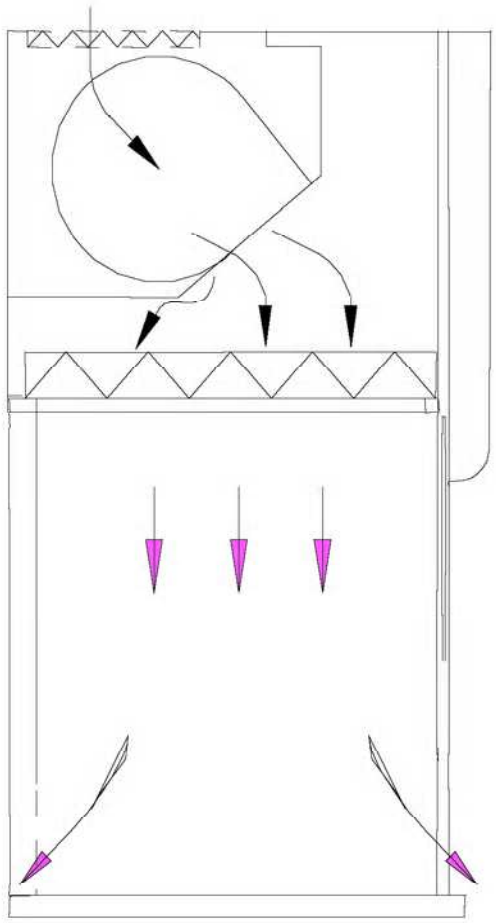

Figure 1.

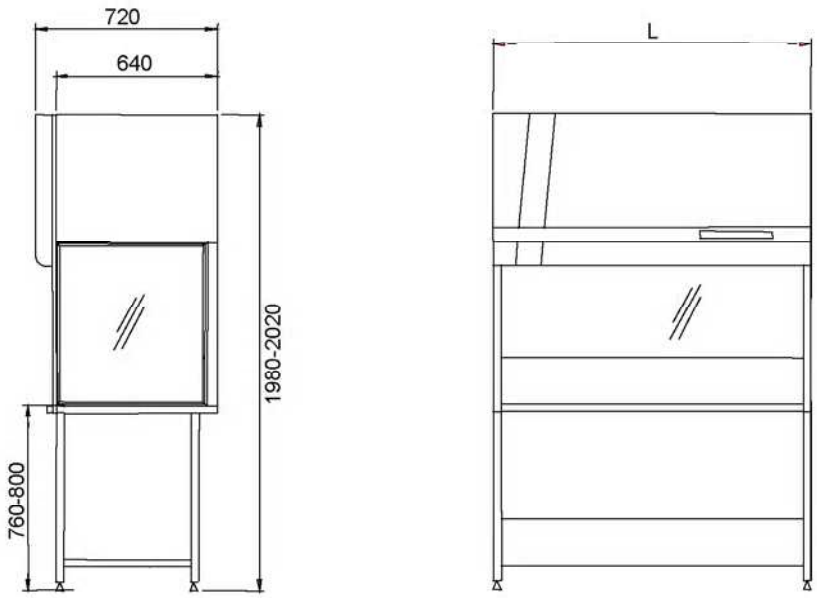

Figure 2. Dimensions of Sterile.

4. Technical data

	Sterile 0.9	Sterile 1.2	Sterile 1.5	Sterile 1.8
Length	965 mm	1265 mm	1565 mm	1865 mm
Weight	150	160	250	300
Quantity of recirculated air	825 m^3/h	1100 m^3/h	1375 m^3/h	1650 m^3/h
Dry heat emitted to the surroundings	135 W	180 W	225 W	270 W
Mains voltage	220 V	220 V	220 V	220 V
Mains frequency	50 Hz	50 Hz	50 Hz	50 Hz
Current intensity	3 A	3 A	6 A	6 A
Equipment				
Maximum 3 safety wall sockets. Each of them can be loaded to 6 A. Total load from all wall sockets, maximum 6 A.				
Required mains cut out	10 A	10 A	10 A	10 A
Sound level according to ISO 6081.2	55 dB(A)	55 dB (A)	55 dB (A)	55 dB(A)

Table 1.

Subjects	Material	Treatment
Front window and side window	Clear polycarbonate	
Window frames	Polyoxymethylene	
Upper part and back wall	Mild steel plate ST 1203, DIN 16023	60 µm polyestercoating pretreated to corrosion class 1
Stand	Iron pipe	60 µm polyestercoating pretreated to corrosion class 1
Tabletop	Stainless steel AISI 304	

5. Functional parts

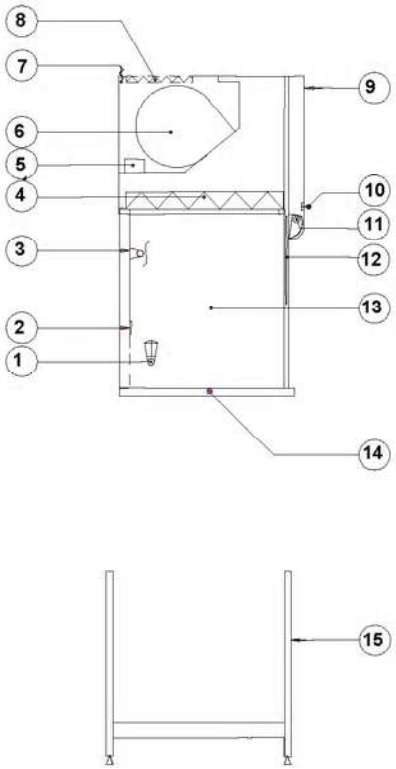

Figure 3. Functional parts of Sterile

1. Valves*
2. Electric outlets*
3. UV-light*
4. Main filter
5. Electrical parts
6. Centrifugal fan
7. Mains connection
8. Pre filter
9. Front Panel of Cabinet
10. Control panel
11. Light fittings
12. Front window
13. Work chamber
14. Table top
15. Floor stand*

* Optional extras

- Valves for gasses, vacuum or liquids are placed in the left or right side window.
- An authorised technician should carry out connection.
- The fan is built into the upper part of the bench and is accessible from the top through the cover at the back of the bench or from the back.
- The electronic control panel is built into the lamp cover. Main connections, fuses and transformers are placed underneath the cover at the top of the bench.
- The window is fixed.
- The hinged window, which is made of polycarbonate, can be opened and kept open by means of damped gas pressure springs.
- The sash window is made of polycarbonate. It is adjustable in height and keeps itself in place.
- The lighting of the work chamber is placed outside the work chamber behind the lamp cover.
- The lighting is glare-free and causes neither turbulence nor undesired heating of the work chamber.

- All switches, pushbuttons and signal lights for operation are together with hour counter gathered in a control panel on the front of the lamp cover.

6. Installation

Placement:

Check that the dimensions of the bench (see figure 2, page 5) make free access to the wanted site possible. The lamp cover can be demounted for obtaining a minimum width of 650 mm.

☞	**NOTE** The demounting should be carried out by a qualified service technician (Contact your local dealer for further information).

The place of installation should be a place without draught and a place where passing-by of persons is avoided.

On existing tabletop:

Before placing the bench, make sure that the existing tabletop is able to carry the load of the bench. (See section 4 technical data).

Floor stand:

- Place the table stand on the wanted place of installation.
- Lift the bench onto the floor stand in such a way that the aluminium plugs slide into the floor stand.
- Use the fastening screws to fasten the stand to the bench.
- Adjust the levelling screws on the stand so that the tabletop is horizontal.

	**WARNING** Prior to electric connection it must be checked that the mains supply corresponds to what is stated on the type plate. For increased safety the connection can be carried out as a fixed installation.

7. Operation

If mounted see figure 3.

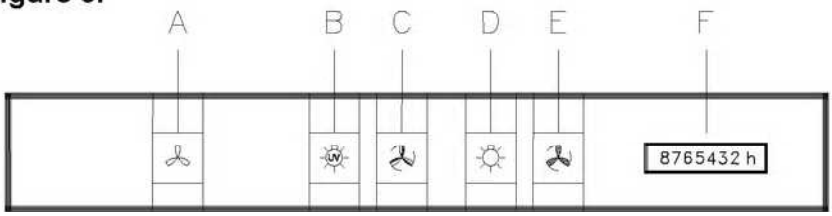

Figure 4. Control panel of Sterile.

A. Alarm signal lamp.

B. Pushbutton switch for UV-light.

C. Pushbutton switch for changing between normal and reduced speeds and signal light (yellow) for reduced fan speed.

D. Pushbutton with signal light (blue) for switching the light in the work chamber on/off.

E. Pushbutton for start/stop of fan and signal light (green) for normal fan speed.

F. Hour counter.

Re Red alarms light for insufficient flow. The velocity in the laminar flow is below the wanted minimum value. The green lamp **E** turns off when the alarm is on.

Re B Yellow lamp for UV-light, can only be activated when the main light is off.

Re C With the yellow switch it is possible to choose between normal and reduced fan speed. By operation at reduced speed the effectiveness of the product protection is also reduced.

When a product is handled in the unit it is therefore essential that the unit is operated at normal fan speed.

Operation at reduced speed is only to take place when the unit is not in use.

The use of reduced speed reduces the risk of contamination of the work chamber between handling of products.

Re D the work chamber lighting can be switched on and off.

8. Working rules

8.1. Working rules before work is started

- About 15 minutes before work is started the fan of the bench is switched on for operation at normal speed. A green control light indicates proper operation.
- The work chamber is to be carefully cleaned and/or disinfected. Use 70 % ethanol or the like. It is recommended to use special lint-free wipes. Use preferably aqueous detergents on the front window and on the side windows - never use detergents containing chloride. Use mainly a soft cloth in order not to scratch the windows.
- Objects and remedies must be carefully cleaned and/or disinfected before being brought into the work chamber.
- Necessary remedies for use during work must be placed within reach.
- Put on necessary personal clothing for reducing particle emission from operator (e.g. gloves, masks and general clean room clothing). Special attention should be focused on hands and lower parts of arms, as these are the parts of the person most likely to emit particles near the product.

8.2. Important in order to work under clean conditions

- Never perform any work with the fan at reduced speed.
- Work with tranquil movements.
- Never overload the work chamber.
- Reduce the number of transports into the work chamber.
- Avoid remedies with strong emission of heat.
- Do not place the bench on places with direct draught towards the work opening.
- Avoid placing the bench where many persons pass by.
- For reliable operation it is important that the airflow conditions are as undisturbed as possible. Therefore, never overload the work chamber - only remedies necessary for the actual work should be placed in the work chamber.

8.3. Working rules during work

- All work in the bench must be performed with tranquil movements. Quick arm movements in the work chamber may cause slipstreams that will draw contaminated air into the work chamber.
- The number of transports into the work chamber must be minimized. Transport of possibly contaminated material may in addition to the mechanical transport also cause formation of airflow's which create connection between product and the contaminated surroundings.
- Heat-emitting products or remedies in the work chamber may disturb the wanted air movements. Around sources with strong emission of heat. The air is hand thus creates an up-current that will cause unstable conditions in the unidirectional flow. The protective effect of the bench may then disappear.

- Use preferably bunsen burners with possible hand or foot-operated reduction of the effect.
- Draught towards the work opening can destroy the protective effect of the unidirectional flow.
- Passing-by of persons in front of the bench should be minimised. An onward movement in front of the work opening will create a pressure wave in front of the person. Passing-by of a person might therefore cause air from the surrounding space to be pressed into the work chamber. The effect is intensified the faster the person is moving and the closer to the opening the passing takes place.

9. Maintenance

9.1. Recommended maintenance

Daily

The work area is cleaned. Be especially careful when cleaning the work surface.

Weekly

Wipe the exterior of the bench with a mild detergent of household type. Antistatic spray can be used for cleaning the front window.

Regularly

Reliable operation of the bench is based on the following conditions:

1. Correct air velocities.
2. Efficiency of installed HEPA-filter.

☞	**NOTE** These parameters should be tested by a qualified technician after approx. 5000 hours of operation or at least once a year.

On the right gable of the lamp cover there is a label stating the time for the next service check-up. Testing of air velocities involves measurement of the air velocity in the vertical unidirectional flow (see also the enclosed test report).

Testing of the efficiency of the installed HEPA-filters.

By means of special measuring equipment - particle counter or photometer - the effectiveness of the filter is tested (see also the enclosed test report).

☞	**NOTE** Contact your local supplier for further information on test procedures.

9.2. Change of electrical parts

- Light tubes incl. starter and choke coil, control panel and electrical plate are placed behind the lamp cover. When changing these parts, the two bottom fixing screws of the lamp cover are removed. The lamp cover is lifted by hand and secured by means of the installed rods. Afterwards, the lamp cover is refitted and screwed on.

- Transformer and main fuses are placed on a separate electrical plate underneath the prefilter cover. When changing these parts unscrew the cover, replace the broken parts, replace the cover and fasten.

If mounted see figure 3.

☞	NOTE If UV-light is mounted, this is placed on the back wall of the chamber. Be sure that the UV-light is turned off before trying to replace it.

9.3. Change of filters

Change of pre filter.

☞	NOTE Change of prefilter should be made whenever the surface of the prefilter turns grey.

- Remove the prefilter metal net.

- Remove the prefilter and replace with a new prefilter.

- Never try to clean the prefilter as it is of a disposable type.

Change of main filter.

- Open the lamp cover, demount the strips. Remove the front lid by cutting the silicone sealant.

- Loosen the special filter fasteners.

- Remove the filter from the bench.

- Carefully install the new filter; please be particularly careful with the filter gaskets.

- Fasten the filter using the special filter fasteners.

- Fasten the filter so there is about 3 mm between the aluminium frame of the filter and the filter mounting frame of the bench.

- Refit the front lid.

Test:

- Correct air velocities.

- Efficiency of installed HEPA-filter.

10. Trouble shooting

If none of the following attempts to set the bench right will bring the bench to operate satisfactorily; a qualified technician should be called.

Problem	Possible setting-right
The bench will not start and the light will not turn on.	• Check that the bench is connected to the wall socket. Is it switched on? If necessary, try with other equipment to see whether there is normal voltage on the wall socket. • The bench is equipped with a fuse cut-out placed on the electrical plate placed underneath the prefilter cover. Try changing the fuse.
The bench starts, but the light will not turn on.	• Change starter and/or light tube.

11. Recommended spare parts for Sterile 0.9

Description	Amount	Mark	Specifications	Holten no.
Pre filter	1 pcs.	Filtrair	VNF 290	95400103
Main filter	1 pcs.	Camfil	MDLA GW 610-915-66	95200003
Light tubes	1 pcs.	Phillips	TLD. 30/83	844035
Starter	1 pcs.	Osram	ST 111,220-240 V-4-80W	844053
Fuse cut-out	1 pcs.	Osram	5*20 mm 10 AT	841274
If mounted				
UV-tube	1 pcs.	Phillips	TUV 30 W	9400000
Starter	1 pcs.	Osram	ST111, 220-240V 4-80W	844053

12. Recommended spare parts for Sterile 1.2

Description	Amount	Mark	Specifications	Holten no.
Pre filter	1 pcs.	Filtrair	VNF 290	95400103
Main filter	1 pcs.	Camfil	MDLA GW 610-1220-66	95200004
Light tube	1 pcs.	Phillips	TLD. 36/83	844027
Starter	1 pcs.	Osram	ST 111, 220-240 V-4-80W	844053
Fuse cut-out	1 pcs.	Osram	5*20 mm 10 AT	841274
If mounted				
UV-tube	1 pcs.	Phillips	TUV 30W	9400000
Starter	1 pcs.	Osram	ST111, 220-240V 4-80W	844053

13. Recommended spare parts for Sterile 1.5

Description	Amount	Mark	Specifications	Holten no.
Pre filter	1 pcs.	Filtrair	VNF 290	95400099
Main filter	1 pcs.	Camfil	MDLA GW 610-1525-66	95200005
Light tubes	1 pcs.	Phillips	TLD. 58/83	844028
Starter	1 pcs.	Osram	ST 111,220-240 V-4-80W	844053
Fuse cut-out	1 pcs.	Osram	5*20 mm 10 AT	841274
If mounted				
UV-tube	1 pcs.	Phillips	TUV 30 W	9400000
Starter	1 pcs.	Osram	ST111, 220-240V 4-80W	844053

14. Recommended spare parts for Sterile 1.8

Description	Amount	Mark	Specifications	Holten no.
Pre filter	1 pcs.	Filtrair	VNF 290	95400098
Main filter	1 pcs.	Camfil	MDLA GW 610-1830-66	95200006
Light tube	1 pcs.	Phillips	TLD. 58/83	844028
Starter	1 pcs.	Osram	ST 111, 220-240 V-4-80W	844053
Fuse cut-out	1 pcs.	Osram	5*20 mm 10 AT	841274
If mounted				
UV-tube	1 pcs.	Phillips	TUV 30W	9400000
Starter	1 pcs.	Osram	ST111, 220-240V 4-80W	844053

DC 81-33
Revision 1

EC-Declaration of conformity

Jouan NORDIC

We:

Jouan Nordic A/S
Gydevang 17-19, DK-3450 Allerød
Denmark

declare under our sole responsibility that the product

Model: **Holten Sterile 0.9 - 1.2 - 1.5 - 1.8**

to which this declaration relates is in conformity with the following standard(s) or other normative document(s):

EN 292-1:1991 - Safety of machinery.
Basic concepts - General principles for design.
(Basic terminology, methodology).

EN 292-2:1991 - Safety of machinery.
Basic concepts - General principles for design.
(Technical principles and specifications).

EN 60204-1:1999 - Safety of machinery - Electrical equipment of machines.
(General requirements).

EN 61010-1: 2001 - Safety requirement for electrical equipment for measurement, control and laboratory use.
(General requirements).

EN 61000-6-3:2001 and **EN 61000-6-1:2001** - Electromagnetic compatibility.
(Generic emission / immunity standard - Residential, commercial and light industry).

EN 61000-6-4:2001 and **EN 61000-6-2:2001** - Electromagnetic compatibility.
(Generic standards - Emission / Immunity for industrial environment).

EN 1050:1996 - Safety of machinery.
(Principles for risk assessment).

following the provisions of:

Directive **98/37/EEC** Machinery

Directive **73/23/EEC** Low voltage

Directive **89/336/EEC** Electromagnetic compatibility

Allerød, 2003.04.22

Jan Bøger, Managing Director

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