

Nordmann NOVAP 3000

Steam Humidifier



OPERATING INSTRUCTIONS

Introduction

You have purchased a NORDMANN steam humidifier which, provided you observe the operating instructions, will ensure fully automatic operation and reliable, low-maintenance service. Therefore, read these operating instructions carefully and pay particular attention to the safety instructions and warnings.

Should you have any queries that go beyond the scope of these operating instructions, please contact the company from which you purchased the humidifier. As the manufacturers, we are, of course, always ready to be of assistance, since we want all of our customers to be completely satisfied with our products.

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Safety instructions

Please read and observe the operating instructions before fitting and putting into operation.

Very important!

The operating instructions should always be readily available and kept in the immediate vicinity of the humidifier.

All work must be done only by persons who are familiar with the product and are sufficiently qualified to perform the work.

The NOVAP 3000 steam humidifiers have been designed and constructed in accordance with the latest technology and the accepted safety regulations. However, if misused, the humidifier can present a danger to both the user and third parties.

Apart from these safety instructions, you should observe all national and local regulations.

Proper use

The NOVAP 3000 steam humidifiers are intended solely for indirect (via a steam-distribution pipe in a ventilation duct) or direct (with either a separate or a humidifier-mounted fan) humidification. Used in any other way, or in a way that goes above and beyond the one described above, is contrary to its intended usage. The manufacturer/supplier cannot be held responsible for any damage resulting therefrom. The user shall bear the risk.

Alterations to the humidifier

Without NORDMANN's written approval, no alterations may be made to the humidifier itself, the components or the accessories.

The use of non-original spare parts may lead to our refusal to accept responsibility for any damage arising therefrom.

Safety instructions

Whenever you see either of these signs, particular care must be taken.



1. Installation

1.1 Dimensions

Dimensions of the NOVAP 3000 humidifiers

Type	Fig.	mm A	mm B	mm C	Steam outlet	Drainage	Empty weight kg	Full weight kg
4	1	390	585	230	1 x Ø 22	1 x Ø 22	11	14,5
8	1	390	585	230	1 x Ø 22	1 x Ø 22	12	18,5
15	1	470	645	305	1 x Ø 35	1 x Ø 22	17	32
23	1	470	645	305	1 x Ø 35	1 x Ø 22	18	33
32	1	525	715	360	1 x Ø 35	1 x Ø 22	28	53
45	1	525	715	360	2 x Ø 35	1 x Ø 22	29	54
64	2	975	730	385	2 x Ø 35	2 x Ø 22	62	112
90	2	975	730	385	4 x Ø 35	2 x Ø 22	64	114

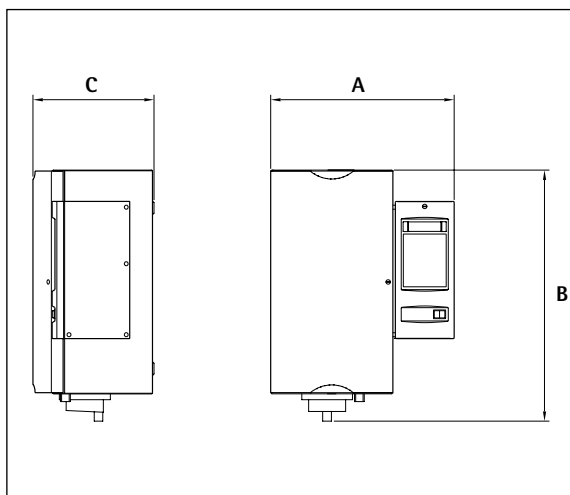


Fig. 1

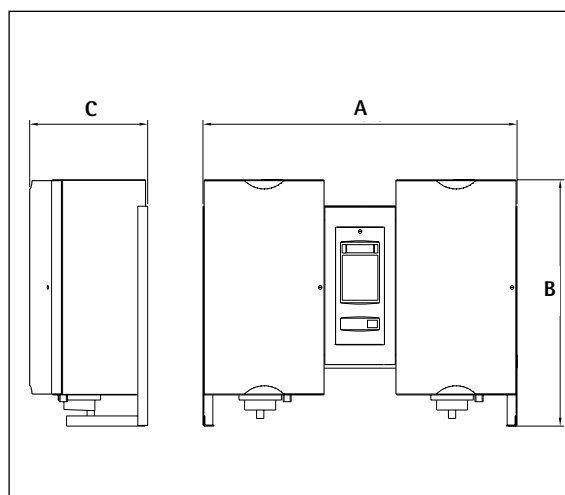


Fig. 2

Fixing holes for type 64-90 kg/h (mm)

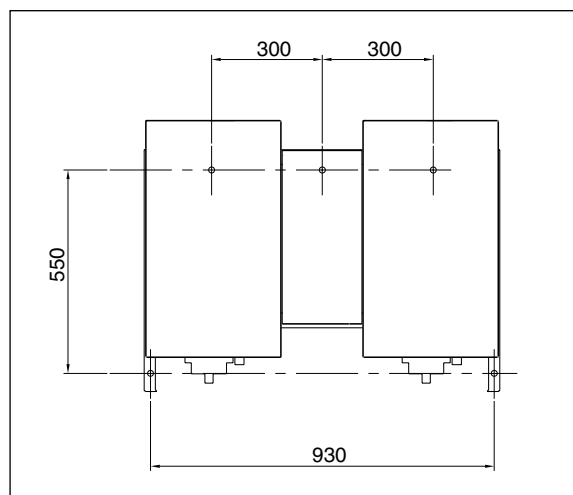


Fig. 3

Fixing holes for type 4-45 kg/h

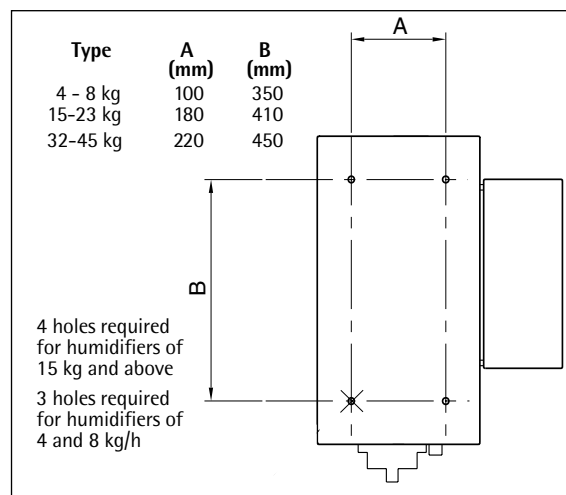


Fig. 4

Dimensions of the steam-distribution pipes

Type/mm	A	B	C	D	Fig.	Art. no.
22-300	300	Ø 22	176	60	5	902 00 00
22-450	450	Ø 22	300	70	5	902 00 01
22-650	650	Ø 22	504	70	5	902 00 02
22-850	850	Ø 22	696	70	5	902 00 03
35-300	300	Ø 35	200	55	5	902 00 04
35-450	450	Ø 35	300	80	5	902 00 05
35-600	600	Ø 35	425	90	5	902 00 06
35-900	900	Ø 35	680	110	6	902 00 07
35-1200	1200	Ø 35	935	110	6	902 00 08
35-1500	1500	Ø 35	1275	110	902 00 09	

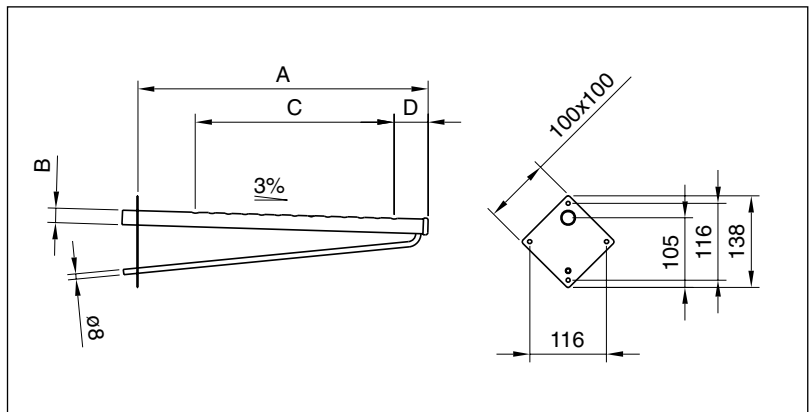


Fig. 5

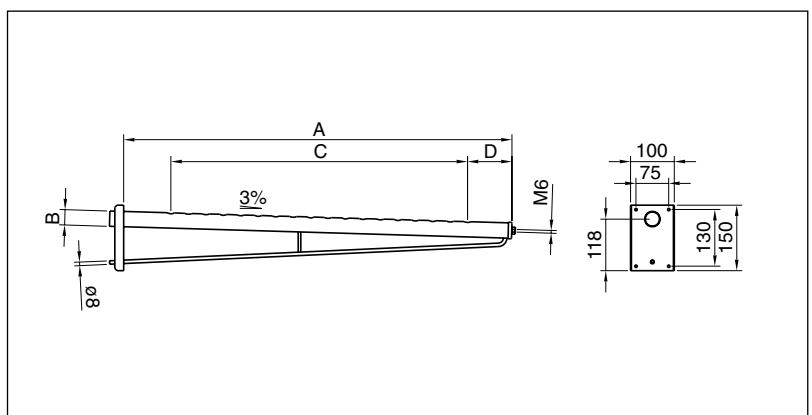


Fig. 6

Dimensions of the 4-23 kg/h steam blowers

Fig.	Type	A mm	B mm	C mm	D mm	E mm	F mm	G mm
8	4 - 8 kg/h	230	205	220	145	165	Ø 22	Ø 8
9	15-23 kg/h	310	275	295	255	285	Ø 35	Ø 8

**Fixing holes for
4-23 kg/h steam blowers**

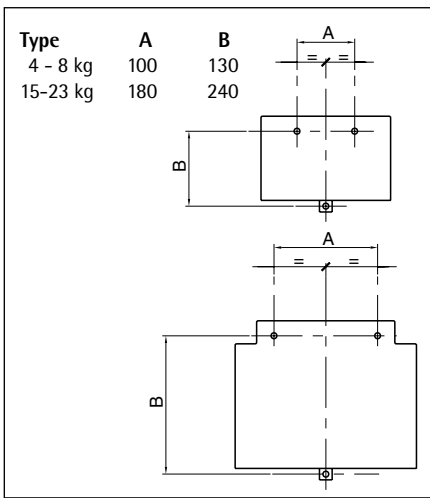


Fig. 7

**Dimensions of the 4-23 kg/h steam blowers
Type 4-8 kg/h Type 15-23 kg/h**

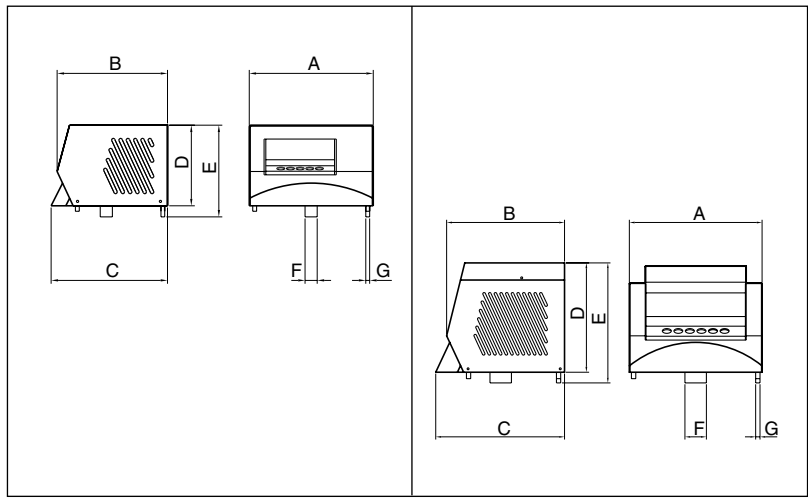


Fig. 8

Fig. 9

**Dimensions of the Turbo 32
and 45 kg/h steam blowers**

Fig.	Type	A	B	C	D	E	F	G	H	I
10	32 kg/h	Ø	505	255	Ø	M10	185	235	Ø 35	Ø 8
11	45 kg/h	200	505	255	350	M10	185	235	Ø 2 x 35	Ø 8

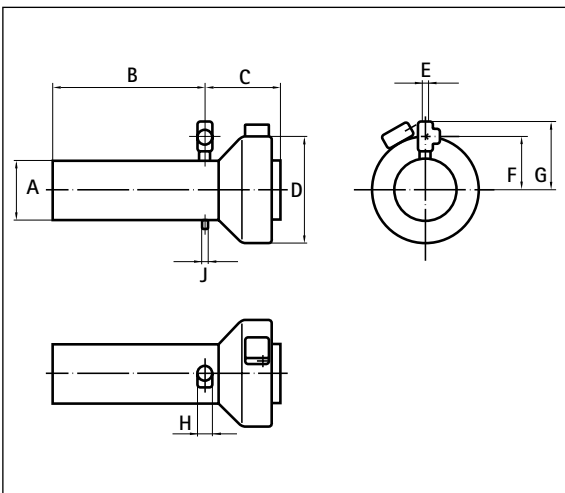


Fig. 10

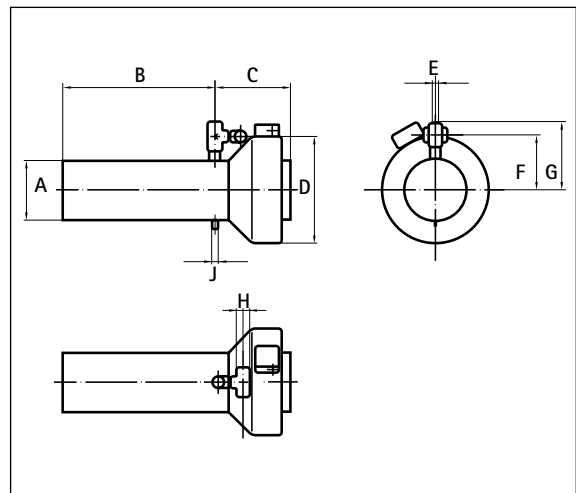


Fig. 11

1.2 Steam nozzle

For smaller outputs of up to 4 kg/h, we offer a steam nozzle which can be either fitted in air ducts, for instance, or used for direct room humidification. The rules for vaporisation lines (lines needed to mix the steam adequately with air) must be observed here, too.

When the steam nozzle is employed, the length of the steam hose should not exceed 1.5 metres.

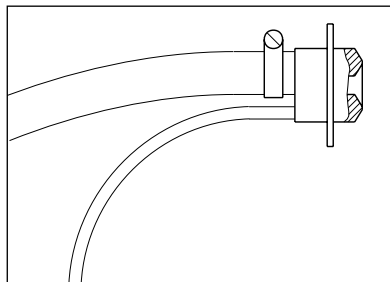


Fig. 12

1.3 Fitting the humidifier



All installation work must be performed by trained personnel. The customer himself is responsible for verifying their qualifications.

When fitting the humidifier, use only the material supplied with the unit and observe the various minimum distances that have been stipulated.

To open the humidifier, turn the screw, using the correct screwdriver, in an anti-clockwise direction; the door to the water componentry or the electrics then opens. To close, simply push back into place (no screwing down is necessary).

Positioning the humidifier

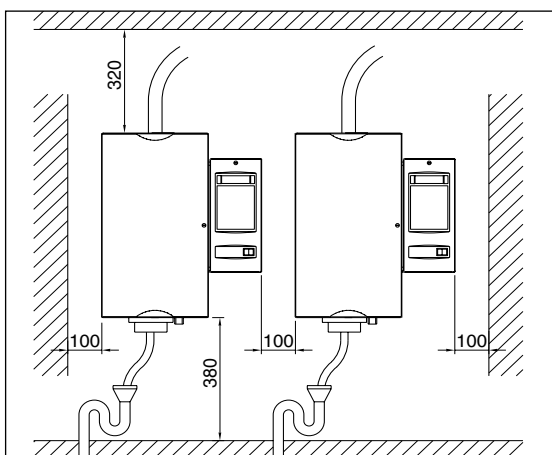


Fig. 13

Ensure that there is sufficient room to perform servicing and maintenance work, and that the unit is easily accessible. To facilitate such work, mount the unit at eye level.

We recommend that you fit the humidifier as near as possible to the steam-distribution pipes. The highest degree of efficiency is attained when the humidifier is linked to the steam-distribution pipe by the shortest possible steam hose.

When installing the double units sizes 64 and 90 kg/h next to each other, ensure that each drainage pipe is fed to a funnel of adequate size.

1.4 Fitting the steam-distribution pipe



All installation work must be performed by trained personnel. The customer himself is responsible for verifying their qualifications.

The visible jet of steam issuing from the steam-distribution pipe dissipates in the air only after a certain distance. In order to prevent condensation, a certain minimum distance to other parts of the installation (such as ventilators, filters or pipe bends) must, therefore, be maintained.

The steam-distribution pipes can be fitted either vertically or horizontally, though you must ensure that the steam outlets are always vertical to the air flow. If fitted horizontally, these apertures must be at the top.

An adhesive template is supplied with each steam-distribution pipe to facilitate installation in, for instance, an air duct. NORDMANN's steam-distribution pipes are designed so that, if fitted straight, there is automatically a slight decline of 3% which ensures that any condensate flows back again.

The ends (reverse side of mounting plate) of the longer steam-distribution pipes (types 35-900, 35-1200 and 35-1500) are equipped with an M6 fixing bolt.

Guidelines on fitting the steam-distribution pipes

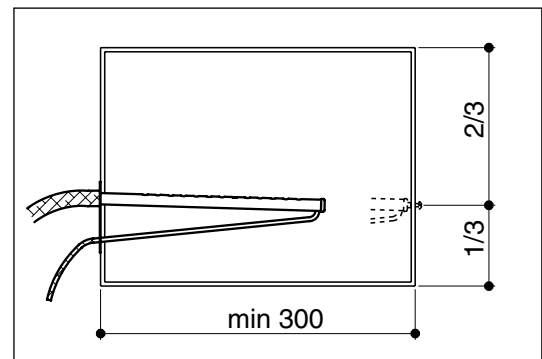


Fig. 14

Various fitting methods

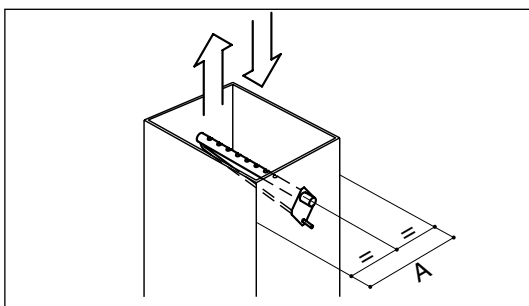


Fig. 15

A = min. 200

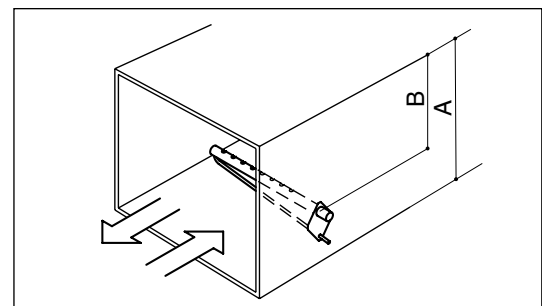


Fig. 16

A = min. 250
B = min. 150

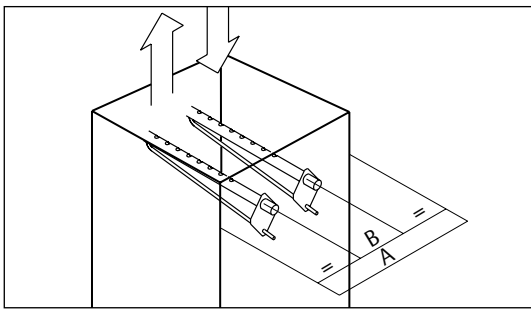


Fig. 17 $A > 300$
 $B = 0.5 A$

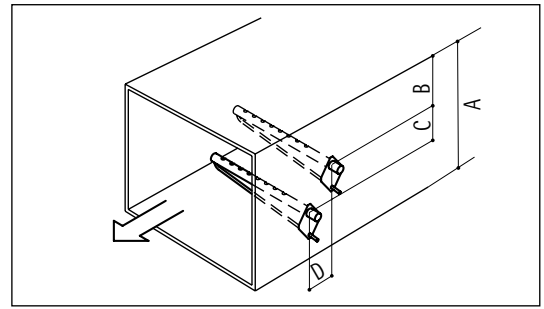


Fig. 18 $A > 350$
 $B = \text{min. } 150$
 $C = 0.3 A$
 $D = \text{min. } 100$

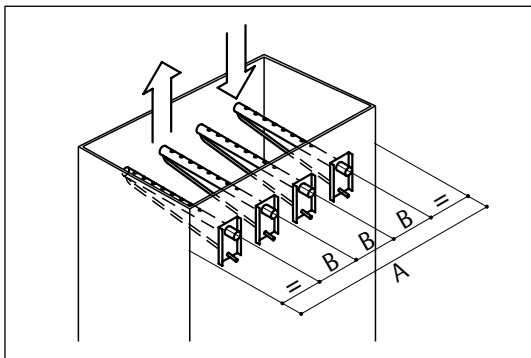


Fig. 19 $A > 500$
 $B = \text{min. } 100$

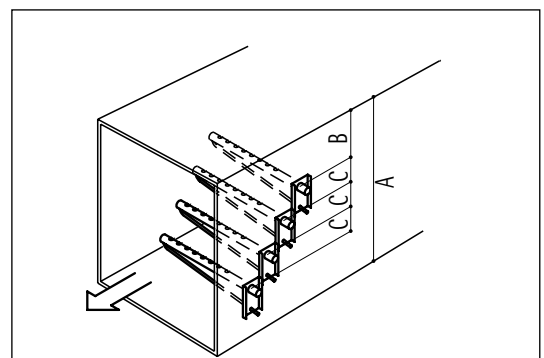


Fig. 20 $A > 500$
 $B = \text{min. } 150$
 $C = \text{min. } 0.15 A$

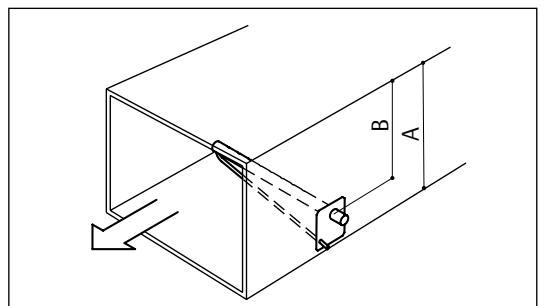


Fig. 21 $A = \text{min. } 175$
 $B = \text{min. } 100$

Steam-distribution pipe fitted on suction side

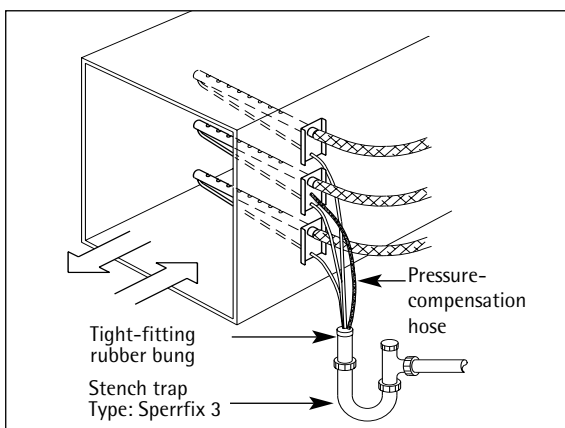


Fig. 22

Because of the under-pressure in the appliance or duct part, condensate may be present in the steam-distribution pipe. If there is an outlet in the empty part (intended for the distribution pipes) of the humidifier, the condensate can be bled off in the immediate vicinity. An alternative method of bleeding off the condensate can be seen in the diagram.

1.5 Fitting the blowers



**All installation work must be performed by trained personnel.
The customer himself is responsible for verifying their qualifications.**

The steam blower for distributing the steam in the room can be fitted either directly onto the humidifier itself (excepting types 32, 45, 64 and 90 kg) or onto a wall.

For the humidifier to work best, correct steam distribution is essential. For this reason, you must observe the minimum distances when installing the equipment.

Minimum distances for steam blowers of type 4-23 kg/h

Type	A min.	B min.
4 kg	600 mm	3 m
8 kg	900 mm	5 m
15 kg	1000 mm	7 m
23 kg	1000 mm	10 m

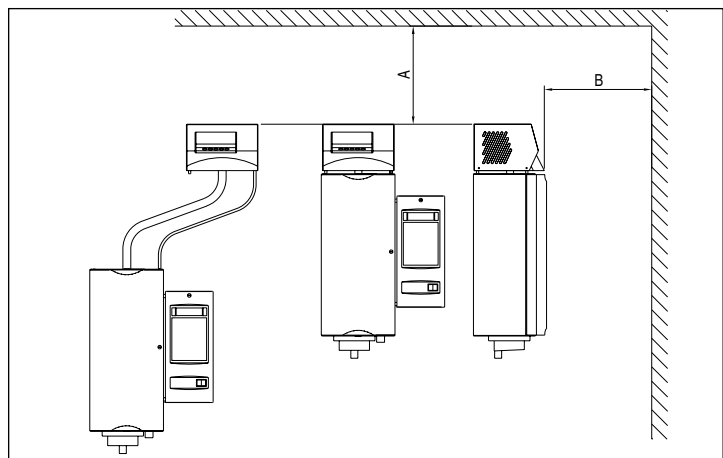


Fig. 23

Minimum distances for steam blowers of type 32-45 kg/h

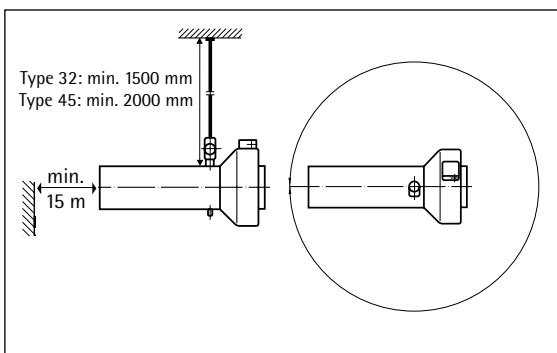


Fig. 24

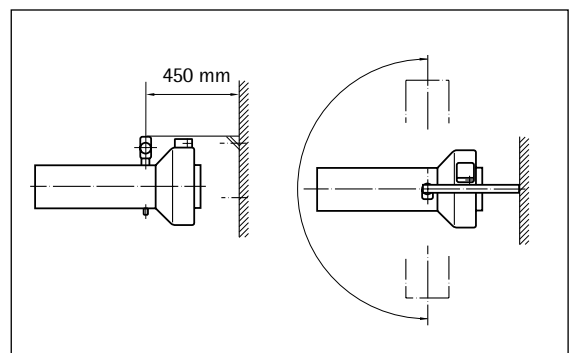


Fig. 25

Technical specifications for steam blowers

Max. steam output	Air volume m ³ /h	Power supply	Nominal rating	Weight kg	Steam pipe H	Condensate pipe G	Noise level (1m)
4 kg/h-8 kg/h	110	200/240 V	25 W	5	Ø 22 mm	Ø 8 mm	46 dB (A)
15 kg/h-23 kg/h	650	50/60 Hz	170 W	15	Ø 35 mm	Ø 8 mm	54 dB (A)
32 kg/h	800	220/240 V	110 W	8	Ø 35 mm	Ø 8 mm	72 dB (A)
45 kg/h	800	50/60 Hz	110 W	8	2 x Ø 35 mm	Ø 8 mm	72 dB (A)

1.6 Laying the steam hose

The steam hose should be kept as short as possible. It should not be possible to block or obstruct the steam supply lines in any way. Furthermore, they must be protected from outside interference (e.g. deformities, kinking etc.).

After the hose has been laid, it is advisable to re-check everything when the hose is warm.

It is equally important to avoid condensation pockets in the hose. Any curves should have as large a radius as possible.

Installation material

If a hose is used for the steam line, it must be the original one supplied by NORDMANN. If other hoses are utilised, NORDMANN cannot be held responsible for any damage that may occur.

A hose clamp should be used to link the hose to the steam-distribution pipe.

When laying the steam hose in pipes, cable ducts etc., you must verify their resistance to high temperature (min. 100 °C). All insulation material must also be checked for its resistance to high temperature.

If the steam line installed is of copper, small radii should be avoided wherever possible. Every bend causes an additional resistance. A steam line of copper must have the same diameter as the hose.

If the steam lines are long with a lot of bends and a relatively high internal duct pressure, water may be continuously forced out of the steam cylinder, which impairs performance.

Correctly installed

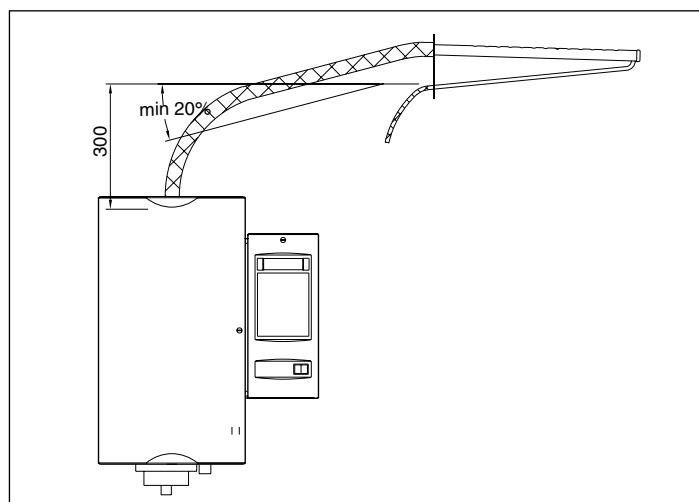


Fig. 26

Correctly installed

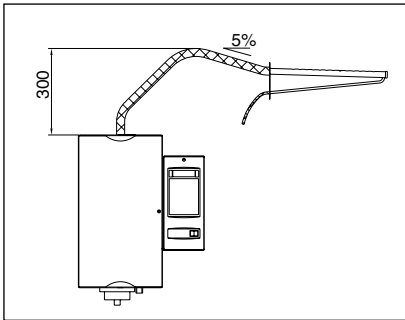


Fig. 27

Wrongly installed

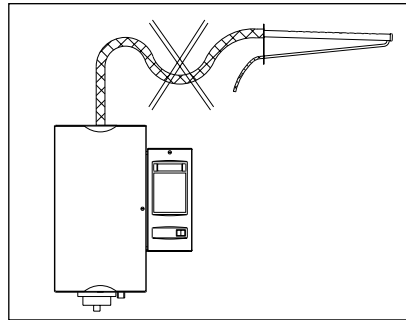


Fig. 28

Correctly installed

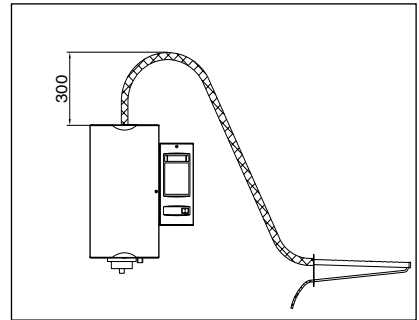


Fig. 29

1.7 Laying the condensate hose

It is advisable to lay the condensate hose as near to the vertical as possible and to feed the condensate either directly into an open funnel or below the siphon.

If the steam-distribution pipe is fitted above the humidifier, the condensate can be fed back to the unit by placing the end of the hose in the filling cup. In this instance, a small siphon should be formed with the condensate hose.

If the condensate is drained off directly, it is advisable to feed back the condensate hose separately. The end of the condensate hose should be in the open air. If the end of the hose is submerged in water, the condensate is prevented from draining away.

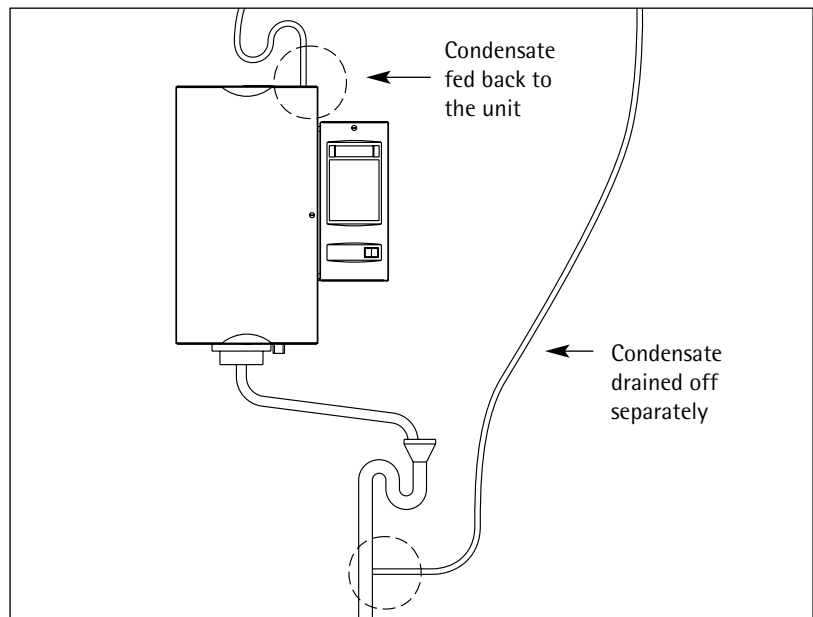


Fig. 30

2.1 Quality of the water

NORDMANN humidifiers use ordinary tap water for the production of pure steam. The electrical conductivity should be between 125 and 1250 microsiemens per cm.

The hardness of water is measured in accordance with the international unit millimol, calcium and magnesium ions per litre (mmol/l), previously the degree of German hardness (DH):

Soft water:	up to 1.3 mmol/l; up to 7° DH
Fairly hard water:	1.3 to 2.5 mmol/l; to 7-14° DH
Hard water:	2.5 to 3.8 mmol/l; 14 to 21° DH
Very hard water:	over 3.8 mmol/l; over 21° DH

Other international units:	1° DH = 1.79° French hardness
	1° DH = 1.25° English hardness
	1° DH = 1.05° American hardness
	1° DH = 10 mg/l CaO
	1° DH = 17.9 mg/l CaCO ₃ (ppm)

NORDMANN's electrode steam humidifiers allow you to use water ranging from soft to very hard, without the need for prior treatment. However, for fairly hard water and above, we recommend the use of the SC system (NORDMANN's self-cleaning system), since this greatly reduces the amount of maintenance required for the cylinder.

2.2 Water intake and drainage



**All installation work must be performed by trained personnel.
The customer himself is responsible for verifying their qualifications.**

Please observe local regulations concerning the connection of appliances to the pressure and drainage systems.

The humidifiers are designed to operate on ordinary tap water. If you intend using treated or de-mineralised water, consult your NORDMANN representative beforehand.

Connecting to the cold-water supply, with stop cock

Where the water pressure is between 1 and 10 bar (0.1 to 1 MPa), the unit can be connected directly to the water supply. If it is over 10 bar (1 MPa), connection must be via a pressure-reduction valve (set to 4-6 bar, = 0.4-0.6 MPa).

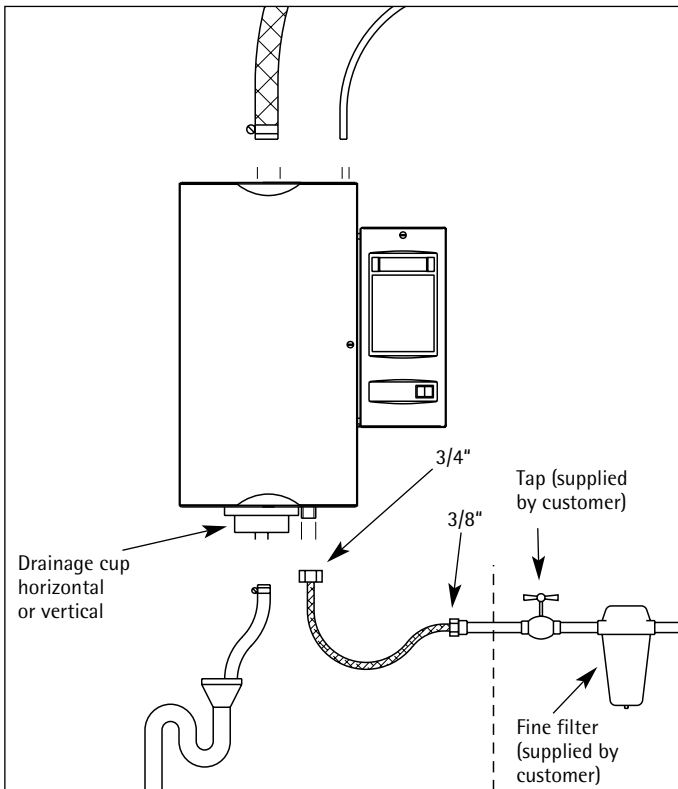


Fig. 31

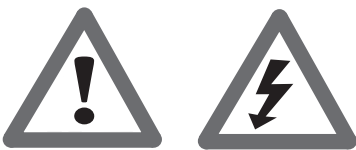
In any case, the water feed pipes that you have laid must be flushed thoroughly before connecting them to the humidifier. You should use copper piping only.

Note that the drainage facility should provide the possibility of performing cleaning and maintenance. The drainage pipe should have a decline to the drainage system of at least 5%.

A fine filter should be fitted at the water intake to the humidifier; this prevents the rapid build-up of impediments in the inlet filter of the inlet valve.

3. Electrical connections

3.1 Safety instructions



All work pertaining to the electrical installation must be carried out by qualified personnel only. The customer is responsible for verifying the qualifications of the technicians concerned.

Before performing any electrical work, all power to the humidifier must be disconnected.

Please observe local regulations concerning electrical installations.

The installation must be fitted with a device which disconnects the unit (with a contact opening of at least 3 mm) on all phases from the mains power supply.

NORDMANN humidifiers are designed to be connected to the earth lead and are categorised as belonging to Protection class 1 for electrical equipment.

The connection details are provided in the wiring diagrams for each type of unit. Each unit is supplied with the appropriate wiring diagram.

External fuses per phase (A)

Type	424	824	434	834	1534	2364	3264	4564	6464	9064
Heating voltage										
380 V	16	25	10	16	25	35	50	70	2 x 50	2x70
400 V	16	25	10	16	25	35	50	70	2 x 50	2x70
415 V	16	25	10	16	25	35	50	70	2 x 50	2x70
Type	422	822	432	832	1532	2362	3262	-	6462	-
Heating voltage										
220 V	20	50	16	25	50	63	100	-	2 x 100	-
230 V	20	50	16	25	50	63	100	-	2 x 100	-
240 V	20	35	16	25	50	63	80	-	2 x 80	-

3.2 Control voltage



The standard control voltage of 220-240 V must be applied to terminals L1 and N.

N.B.: When performing cleaning and maintenance work on the unit, all power to the humidifier, including the control voltage, must be disconnected.

3.3 Heating voltage

The cross-section of the electrical wires and the minimum fuse size should be chosen in accordance with the connection requirements (cf. technical specifications) of the type of humidifier employed. The electric supply cables must be connected to the unit's terminals correctly. We recommend to re-tighten the screw terminals after a few days.

Type of humidifier	Terminals mm ²	Cross-section of heating wire mm ²	Cross-section of control cable mm ²	Screw terminals for heating voltage
4xx	4	2,5	0,75	PG 11
822	10	4	0,75	PG 16
8xx	4	2,5	0,75	PG 16
1532	10	2 x 2,5	0,75	PG 21
15xx	6	2,5	0,75	PG 16
2362	16	2 x 4	0,75	PG 36
23xx	10	2 x 2,5	0,75	PG 21
3262	35	2 x 4	0,75	PG 36
32xx	10	2 x 2,5	0,75	PG 21
45xx	16	2 x 4	0,75	PG 36

Double units

6462 = 2 x 3262 6464 = 2 x 3264 9064 = 2 x 4564

3.4 Proportional adaptor (option)

The proportional adaptor can be either factory fitted or fitted subsequently by the customer simply by inserting it onto the electronics unit.

The following control signals from humidity controllers can be processed:

0-2 V 0-5 V 0-10 V 0-16 V
0-20 V (SCS) 1-5 V 2-10 V 0-20 mA
4-20 mA potentiometer min. 135 Ohm

4.1 How the humidifier works

NORDMANN humidifiers use ordinary tap water to produce steam. The water is converted directly into steam in a steam cylinder by electrode heating using electrical energy. In so doing, the water acts as the electrical resistance. Vaporisation occurs at atmospheric pressure (non-pressurised).

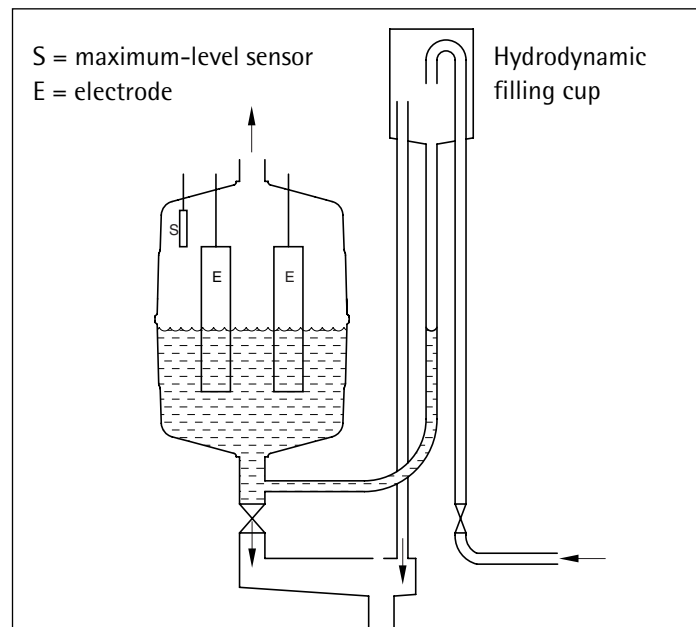


Fig. 32

The electronic control system, with its highly-integrated microcontroller, regulates the vaporisation process in accordance with a new principle developed by NORDMANN which allows rapid output changes to be made. The humidifier adapts itself fully automatically to the quality of the water used. Due to this ability to set the optimum water concentration in the steam cylinder, the smallest of adjustments to the water level can effect a change in the steam output. Therefore, the unit reacts quickly and accurately to any setpoint changes. Because of its ultimate degree of efficiency, this new type of control system ensures perfect drainage, i.e. the process of water deconcentration in the cylinder.

The use of fuzzy logic technology improves the controllability. The microcontroller of the NOVAP 3000 series works with fuzzy-logic algorithms. This regulates the conductivity or mineral concentration in the steam cylinder and achieves ideal operating conditions while, at the same time, maximising the operational reliability. Furthermore, the output fluctuations which occur during normal operation are kept to a manageable minimum by the automatic water-intake and drainage functions.

4.2 The steam cylinder

A regular check of the steam cylinder ensures trouble-free operation.

If the humidifier indicates U1 (LED flashing green), it can still be run for a few days before the steam cylinder needs to be replaced. We recommend that you keep a spare cylinder in stock for each unit.

NORDMANN's steam cylinders are so economical that it is usually cheaper to replace the cylinder than to clean it. To clean the cylinder, it should first be emptied by pressing the black button for manual drainage located on the electronic print (see Fig. 34) and then removed. After the drainage filter has been taken out, the cylinder can be well flushed with tap water (using no chemical substances).

4.3 The SC-System (option)

The SC-System is a patented self-cleaning system developed by NORDMANN for its electrode steam humidifiers. Because the minerals are kept in suspension, there is little accumulation of deposits on the floor of the cylinder. The loose minerals are flushed away during normal drainage operations. The steam cylinder's service life is considerably lengthened and the time spent on maintenance is reduced.

The serviceable life of a steam cylinder is dependent on both the quality of the water supply and the unit's actual operating hours.

Lifetime of a steam cylinder at 100% steam output

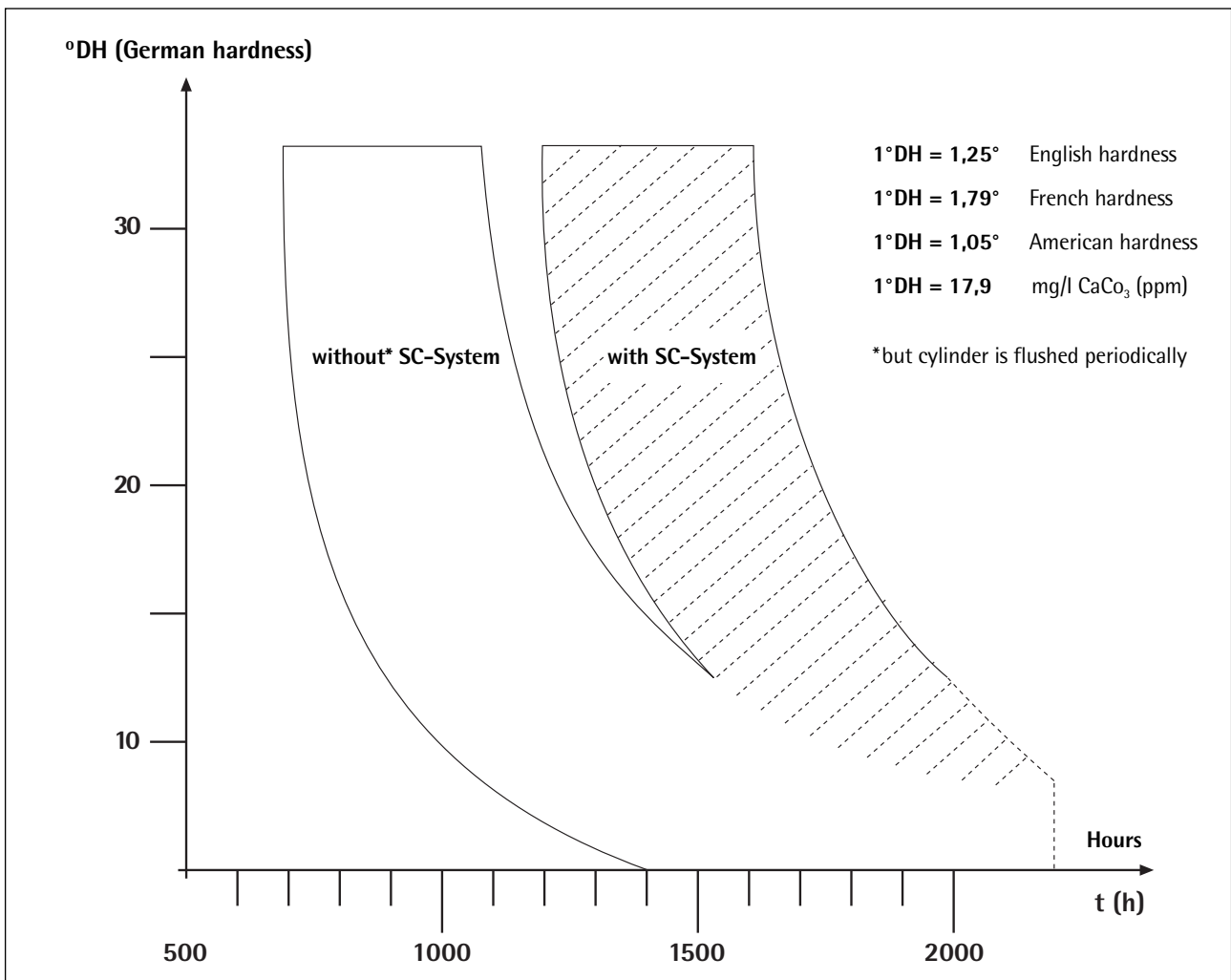


Fig. 33

4.4 Putting the humidifier into operation

After the steam hose, water feed pipe, drainage pipes and electrical cables have all been correctly connected, the NOVAP 3000 humidifier can be switched on using the black power switch. As soon as the humidistat or humidity controller demands humidification, the green Humidification LED lights up, the contactor is activated and, soon after, water is fed into the steam cylinder, whereupon fully automatic operation commences.

Of course, the humidifier will operate automatically only if (a) it was installed by a specialist and (b) the shut-off valve in the water feed pipe is open.

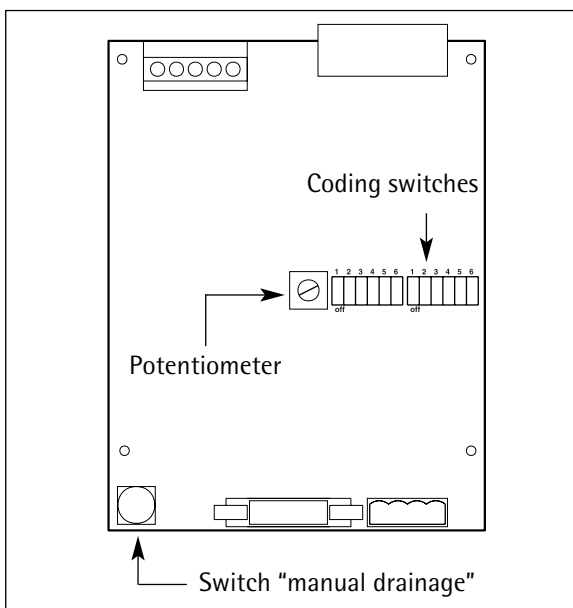
After the water in the steam cylinder has been heated up, the production of steam begins.

During the start-up phase, or after a new replacement cylinder has been fitted, the maximum water level, or Niveau max. can be attained. When Niveau max. has been reached, the inlet valve closes briefly; this is a normal occurrence during the steam cylinder's concentration phase. The length of this phase can differ; it lasts until the cylinder has reached the nominal rating. When the Niveau max. is attained, it will be indicated by a red flash in the green colour of the LED.

4.5 Automatic operation

The NOVAP 3000 series' special electronic controls unit with microcontroller regulates all operations automatically, so that the user does not need to take any action or make any settings during normal running.

4.6 Setting the output limitation



The NOVAP 3000 series enables an adaptation of the steam output. The steam output can be set from 20% to 100% capacity. For setting the output limitation, you must open the electric compartment and turn the potentiometer on the electronic print. Turning clockwise increases the steam output and turning anticlockwise reduces the steam output. All humidifiers are set ex works to 100% output.

Fig. 34

4.7 Indications of the two-colour LED

The newly-developed electronic controls unit with microcontroller continuously monitors the operations of the NOVAP 3000 humidifier. Any deviations from the operating condition (U codes) are shown with the two-colour LED. The status of the LED can be shining continuously or flashing in the red and green colours. The combination of these different possibilities permits the indication of all U codes.

4.8 System and servicing indications

Operation	LED shining green continuously The humidistat or humidity controller demands humidification. The NOVAP 3000 humidifier operates automatically. Without demand of humidity the LED remains dark.
Niveau max. attained	red flash in the shining green of the LED Occurs when the Niveau max. sensor has been attained.
Manual drainage open	LED flashing red-green-red-green When the manual drainage is activated by pressing the black button on the electronic print.
Code U1: Servicing signal	LED flashing green The steam cylinder can no longer attain the nominal output and needs, therefore, to be cleaned or perhaps replaced. A visual inspection of the inside of the cylinder is necessary to be able to decide whether it needs replacing. Code U1 is purely a servicing code; the unit does not switch off automatically. The humidifier continues to function at a reduced output. Acknowledgement is effected by switching the unit off and on with the black power switch.
Code U2: Excess current	LED shining red continuously Whenever there is excess current (140% of the nominal value) during normal operations, the humidifier switches itself off automatically for safety reasons. After the fault has been rectified, the humidifier is put back into operation by switching the unit off and on with the black power switch.
Code U3: Humidifier fills continuously	LED flashing red Either there is no heating phase or no water in the cylinder due to the water supply having been cut off. The humidifier switches itself off automatically after 30 minutes and is put back into operation by switching the unit off and on with the black power switch.
Code U4: Microcontroller uncoded	LED flashing red-red-green-green This signal appears if a replacement electronic controls unit has been fitted to the humidifier without being coded. The humidifier is prevented from operating. The signal disappears as soon as the electronic controls unit has been coded.

4.9 Remote indication

The standard, potential-free relay output enables the collective alarm message to be displayed remotely.

4.10 Safety functions

NORDMANN humidifiers are protected against running dry, i.e. the power is cut off automatically as soon as the electrodes in the steam cylinder protrude above the water level.

If current consumption becomes excessive (25% above the normal level), the outlet valve is opened automatically. Because the electrodes are then in contact with less water, current consumption falls back to the nominal value.

If current consumption fails to fall below 140% of the nominal level even after several drainage operations, the humidifier soon turns itself off automatically, and Code U2 appears on the two-colour LED.

5. Servicing and maintenance

5.1 Cleaning and replacing the steam cylinder



Before commencing, switch off all power to the humidifier and disconnect the unit from the mains.

The serviceable life of the steam cylinder depends on both the hours run and the hardness of the tap water used.

The cylinder should be replaced when the electrodes have become insulated so much (because of calcification) that the required steam output cannot be reached. At the same time, the water level in the cylinder continuously touches the Niveau max. sensor. In this case, the specially-constructed water filling cup offers additional protection by feeding excess water directly into the overflow facility, allowing it simply to drain away.

Whenever Code U1 appears, you should proceed as described on page 23. However, the humidifier can still be run for some time before you need to replace the steam cylinder.

Procedure for replacing the steam cylinder

- Open the drainage valve using the manual drainage switch (black round button) located on the electronic print; the cylinder then empties itself completely. **Let the cylinder cool down.**
- Before proceeding further, disconnect the unit from the mains.
- Loosen the clamp on the steam hose, pull off the hose and remove the electrical plug from the cylinder; the cylinder itself can now be removed.
- To fit the new unit, reverse the above procedure. It is advisable to wet slightly either the O-ring seal on the drainer or the outside of the cylinder's drainage aperture, since this makes it easier to fit the new cylinder.

The humidifier is re-started in accordance with the recommendations detailed in the chapter entitled "Putting the humidifier into operation".

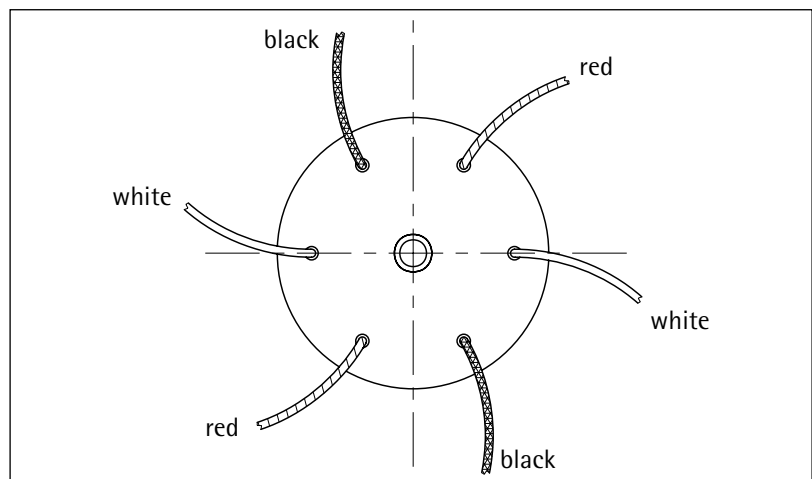


Fig. 35

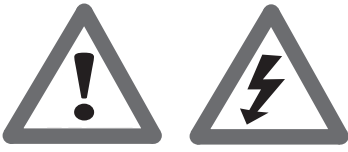
5.2 Drainage strainer in the steam cylinder



All NORDMANN steam cylinders are fitted with a removable drainage strainer which can be extracted easily for cleaning.

The cylinder can then be put back into place and the humidifier put back into operation.

5.3 Removing the electronics unit



All work pertaining to the electrical installation must be carried out by qualified personnel only. The customer is responsible for verifying the qualifications of the technicians concerned.

Before removing the electronics unit, all power to the humidifier must be switched off.

The electronics unit comprises a processor pcb (printed circuit board) and a small LED-pcb. All pcb's have plug-in connections, which facilitates their replacement.

5.4 Taking the humidifier out of operation



Should you wish to take the humidifier out of operation for a long period of time (e.g. in summer or when the air-conditioning system is inoperable), the steam cylinder must be emptied.

Before proceeding, switch off all power to the humidifier.

5.5 Regular servicing



Regular servicing helps to maintain the operability and reliability of the humidifier.

All work must be carried out by qualified personnel only. The customer is responsible for verifying the qualifications of the technicians concerned.

Before commencing work, all power to the humidifier must be switched off.

The following checks should be carried out on a regular basis:

- **Inspect and clean the steam cylinder.**

If there are any deposits in the steam cylinder, you should remove the drainage filter and flush the cylinder thoroughly with tap water (using no chemical substances). If the electrodes are worn, it is time to replace the steam cylinder.

- **Inspect the steam, condensate and water hoses.**

Check that they are still correctly laid and that the hose clamps are still tight. Check that the hoses are still in good condition.

- **Inspect and clean the inlet and outlet valves.**

If worn, or covered in scale deposits, replace the valves.

- **Check the drainage cup and, if necessary, clean or replace it.**

6.1 The humidifier produces insufficient or no steam

When a fault occurs, the problem is often sought only on the humidifier, though the fault may have been caused by a problem in the plant.

For successful trouble-shooting, some knowledge of plant technology (air-conditioning, controls) is necessary.

You should proceed in the following order:

- Observe
- Work out the problem
- Take action

The following causes are possible:

- The steam cylinder is new and merely in the start-up phase
- The humidistat/humidity controller is not demanding any humidity
- A safety element, such as a maximum humidistat etc., is not allowing humidification to take place
- The safety link between terminals L1 and H has not been made (if a proportional adaptor is used)
- The heating power is off or the electrode plugs have not been inserted
- There is no water in the steam cylinder because the water supply has been interrupted (e.g. stop cock is closed etc.)
- The filter or the nozzle in the inlet valve is blocked or damaged
- An output limitation has been set
- The cylinder needs replacing
- The humidifier is too small for the job
- The current transformer is either defective or not connected correctly
- The contactor coil is defective
- The steam hose is blocked or has a kink in it

7. Spare-parts list

Detailed drawings of spare parts with their article number are available from both your NORDMANN representative and the manufacturer.

8. List of options

All options can be fitted either at the factory or subsequently.

SC-System (Pat. pending)

Self-cleaning system for electrode humidifiers of NORDMANN.

Proportional adaptor

Allows the steam output of the NOVAP 3000 humidifiers to be set anywhere between 20 and 100%. The proportional adaptor can be simply inserted onto the electronic controls unit.

Step adaptor

Allows the steam output to be regulated in 2, 3 or 4 stages. The adaptor is simply inserted onto the electronic controls unit.

Steam output indication

With five LEDs, it indicates the level of steam output in % of nominal capacity (20, 40, 60, 80 and 100%). The option for double units is equipped with an output indication for each cylinder.

9. Technical specifications

Model	Type	424	434	824	834	1534	2364	3264	4564	6464	9064
Heating voltage*	Volt	400 Volt, 50/60 Hz									
Number of phases		1	3	1	3	3	3	3	3	3	3
Heating current	A	7.5	4.3	15.3	8.8	16.5	25.3	35.1	49.4	2x35.1	2x49.4
Model	Type	422	432	822	832	1532	2362	3262		6462	
Heating voltage*	Volt	230 Volt, 50/60 Hz									
Number of phases		1	3	1	3	3	3	3		3	
Heating current	A	13.0	7.5	26.5	15.3	28.6	43.9	61.0		2x61.0	
Steam output	kg/h	4	4	8	8	15	23	32	45	64	90
Output range	kg/h steam	0.8-4	0,8-4	1.6-8	1.6-8	3-15	4.6-23	6.4-32	9-45	6.4-64	9-90
Nominal power	kW	3	3	6.1	6.1	11.4	17.5	24.3	34.2	2x24.3	2x34.2
Control voltage**	Volt	220-240 Volt, 50/60 Hz									
Construction data:											
Steam cylinder	qty	1	1	1	1	1	1	1	1	2	2
Dimensions	width mm	390	390	390	390	470	470	525	525	975	975
	height mm	585	585	585	585	645	645	715	715	730	730
	depth mm	230	230	230	230	305	305	360	360	385	385
Weight (empty)	kg	11	11	12	12	17	18	28	29	62	64
Operating weight (max.)	kg	14.5	14.5	18.5	18.5	32	33	53	54	112	114
Accessories:											
Humidity controller	qty	1	1	1	1	1	1	1	1	1-2	1-2
Control adaptors:											
Proportional adaptor	qty	1	1	1	1	1	1	1	1	2	2
Step adaptor	qty	1	1	1	1	1	1	1	1	2	2
Steam nozzle	qty	1	1								
Steam-distribution pipes for duct use:											
22-300 mm, 22-450 mm, 22-650 mm, 22-850 mm	qty	1	1	1	1						
35-300 mm	qty					1					
35-450 mm	qty					1	1		2		4
35-600 mm	qty					1	1	1	2	2	4
35-900 mm	qty					1	1	1	2	2	4
35-1200 mm	qty					1	1	1	2	2	4
35-1500 mm	qty					1	1	1	2	2	4
Steam hoses:											
Ø 22/29 mm	qty x m	1	1	1	1						
Ø 35/43 mm	qty x m					1	1	1	2	2	4
Condensate hose:											
Ø 8/12 mm	qty x m	1	1	1	1	1	1	1	2	2	4
Steam blowers for direct room humidification:											
Fitted onto humidifier	qty	1	1	1	1	1	1				
Fitted separately	qty	1	1	1	1	1	1	1	1	2	2

* Standard heating voltage 400 V (380-415) or 230 V (220-240), 50/60 Hz. Also available: 200, 208, 277, 347, 440, 460, 480 and 500 Volt.

** Standard control voltage 220-240 V, 50/60 Hz. Others on request.



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