



HygroMATIK[®]

SteamKit H

Heater Steam Humidifier Kit



Manual



KITH.EN
E-8881178

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SteamKit H

KIT H02/03/06/09/15

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 WARNING

Risk of electrical shock!

Hazardous electrical voltage!

All electrical work to be performed by certified expert staff (electricians or expert personnel with equivalent training) only.

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1. Introduction

Dear Customer,

Thank you for choosing a HygroMatik steam humidifier kit (referred to as „kit“ in the descriptions following hereafter).

HygroMatik kits represent the latest in humidification technology.

In order to operate your kit safely, properly and efficiently, please read these operating instructions.

Employ your kit only in sound condition and as directed. Consider potential hazards and safety issues and follow all the recommendations in these instructions.

If you have additional questions, please contact your expert dealer.

For all technical questions or spare parts orders, please be prepared to provide unit type and serial number (see name plate on the unit).

1.1 Typographic Distinctions

- preceded by a bullet: general specifications
- » preceded by an arrow: Procedures for servicing or maintenance which should or must be performed in the indicated order
- ☑ Installation step which must be checked off.
- italics* Terms used with graphics or drawings

1.2 Documentation

Retention

Please retain these operating instructions in a secure, always accessible location. If the product is resold, turn the documentation over to the new operator. If the documentation is lost, please contact HygroMatik.

Versions in Other Languages

These operating instructions are available in several languages. If interested, please contact HygroMatik or your HygroMatik dealer.

Co-applicability

If the kit is ordered and delivered with a HygroMatik control, the manual of that control must be regarded as an applicable document.

1.3 Symbols in Use

1.3.1 Specific Symbols related to Safety Instructions

According to ANSI Z535.6 the following signal words are used within this document:



DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



NOTICE is used to address practices not related to physical injury.

1.3.2 General Symbols



This symbol is used whenever a situation requires special attention beyond the scope of safety instructions.

1.4 Intended Use

HygroMatik electric heater steam humidifiers serve for steam production based on tap water, partially softened water or fully desalinated water/cleaned condensate.

Proper usage also comprises the adherence to the conditions specified by HygroMatik for:

- installation
- dismantling
- reassembly
- commissioning
- operation
- maintenance
- disposal

Only qualified and authorised personnel may operate the unit. Persons transporting or working on the unit must have read and understood the corresponding parts of the Operation and Maintenance Instructions and especially the chapter 2. „Safety Notes“. Additionally, operating personnel must be informed of any possible dangers. You should place a copy of the Operation and Maintenance Instructions at the unit's operational location (or near the unit).

By construction, the kit is not qualified for exterior application.

▲WARNING

Risk of scalding!

Steam with a temperature of up to 100 °C is produced.

Do not inhale steam directly!

2. Safety Instructions

These safety instructions are required by law. They promote workplace safety and accident prevention.

2.1 Guidelines for Safe Operation

2.1.1 Scope

Comply with the accident prevention regulation „DGUV Regulation 3“ to prevent injury to yourself and others. Beyond that, national regulations apply without restrictions.

2.1.2 Unit control

Do not perform any work which compromises the safety of the unit. Obey all safety instructions and warnings present on the unit.

In case of a malfunction or electrical power disruption, switch off the unit immediately and prevent a restart. Repair malfunctions promptly.

2.1.3 Unit Operation

▲ WARNING**Risk of scalding!**

Uncontrolled hot steam escape in case of leaking or defective components possible. Switch off unit immediately.

NOTICE**Risk of material damage!**

The unit may be damaged if switched on repeatedly following a malfunction without prior repair.

Rectify defects immediately!

The unit must not be operated on a DC power supply.

The unit may only be used connected to a steam pipe that safely transports the steam.

Regularly check that all safety and monitoring devices are functioning normally. Do not remove or disable safety devices.

2.1.4 Mounting, dismantling, maintenance and repair of the unit

NOTICE

Make sure that the unit is not object to dripping water in the mounting location.

Installing a kit in a room without water discharge requires safety devices to protect against water leakages.

- Use genuine spare parts only
- After any repair work, have qualified personnel check the safe operation of the unit

2.1.5 Electrical

▲WARNING**Risk of electrical shock!**

Hazardous electrical voltage!

Any work on the electrical system to be performed by certified expert staff (electricians or expert personnel with comparable training) only.

Disconnect unit components from electrical power supply prior to work.

After electrical installation or repair work, test all safety mechanisms (such as grounding resistance).

NOTICE

Regularly check the unit's electrical equipment. Promptly repair any damage such as loose connections or burned wiring.

Responsibility for intrinsically safe installation of the kit is incumbent on the installing specialist company.

2.2 Disposal after dismantling

NOTICE

The operator is responsible for the disposal of unit components as required by law.

3. Transport

3.1 Overview

Please note

Proceed carefully when transporting the kit in order to prevent damage due to stress or careless loading and unloading.

Qty.	Item
1	Clamp 20 - 32 mm for steam hose DN25
1	5 wire 4 mm ² connection coupling
4	Blade receptacle for connection of solenoid valve and blow-down pump
4	Insulating sleeve
1	Ring cable lug for grounding

3.2 Packing

Please note

Pay attention to the icons affixed to the packing box.

Pls., check whether the equipment is complete and all parts are in perfect condition.

3.3 Interim Storage

Store the unit in a dry place and protect from frost and strong sunlight.

Please note

A main contactor is not included and must be supplied on-site. For selection, pls. keep max. current draw of the kit in mind as specified in the electrical connection section (section 10).

3.4 Check for complete and correct delivery of goods

Upon receipt of the unit, confirm that model and serial number on the name plate match those specified in the order and delivery documents.

Claim

In case of damage from shipment and/or missing parts, immediately notify the carrier or supplier in writing.

Time limits for filing freight claims with shipping companies are*:

Scope of delivery

Qty.	Item
1	Console with steam cylinder/ cylinder base, solenoid valve, blow-down pump, internal tubing with elbow
1	SteamKit manual
1	Control Basic (optional)
1	„Control Basic“ manual
1	Control Standard (optional)
1	„Control Standard“ manual
1	Steamhose adaptor
1	O-Ring for cylinder base and steamhose adaptor

Shipping company	After receipt of goods
Carriers	no later than 4 days
Parcel service	immediately

* Time limits for some services subject to change.

4. Functional Description and Device Composition

4.1 Mode of Action

The immersion heater principle

Depending on the output rating, one or three heater elements are arranged within a closed cylinder. The cylinder is filled with either tap water of varying quality, fully desalinated water or partially softened water. The heat introduced by the heater element(s) heats up the cylinderwater to approx. 100 °C, transforming the water into steam with a temperature of approx. 100 °C and very little positive pressure (so called pressureless steam). This steam is virtually mineral-free and germ-free. When fully desalinated water is used, the cylinder water is almost totally clear of minerals. This situation guarantees a long lifetime of the cylinder and the heater element(s), since virtually no hardeners will fall out and no mineral deposits will occur.

Such, the number of inspections and/or maintenance operations required will be reduced to a minimum.

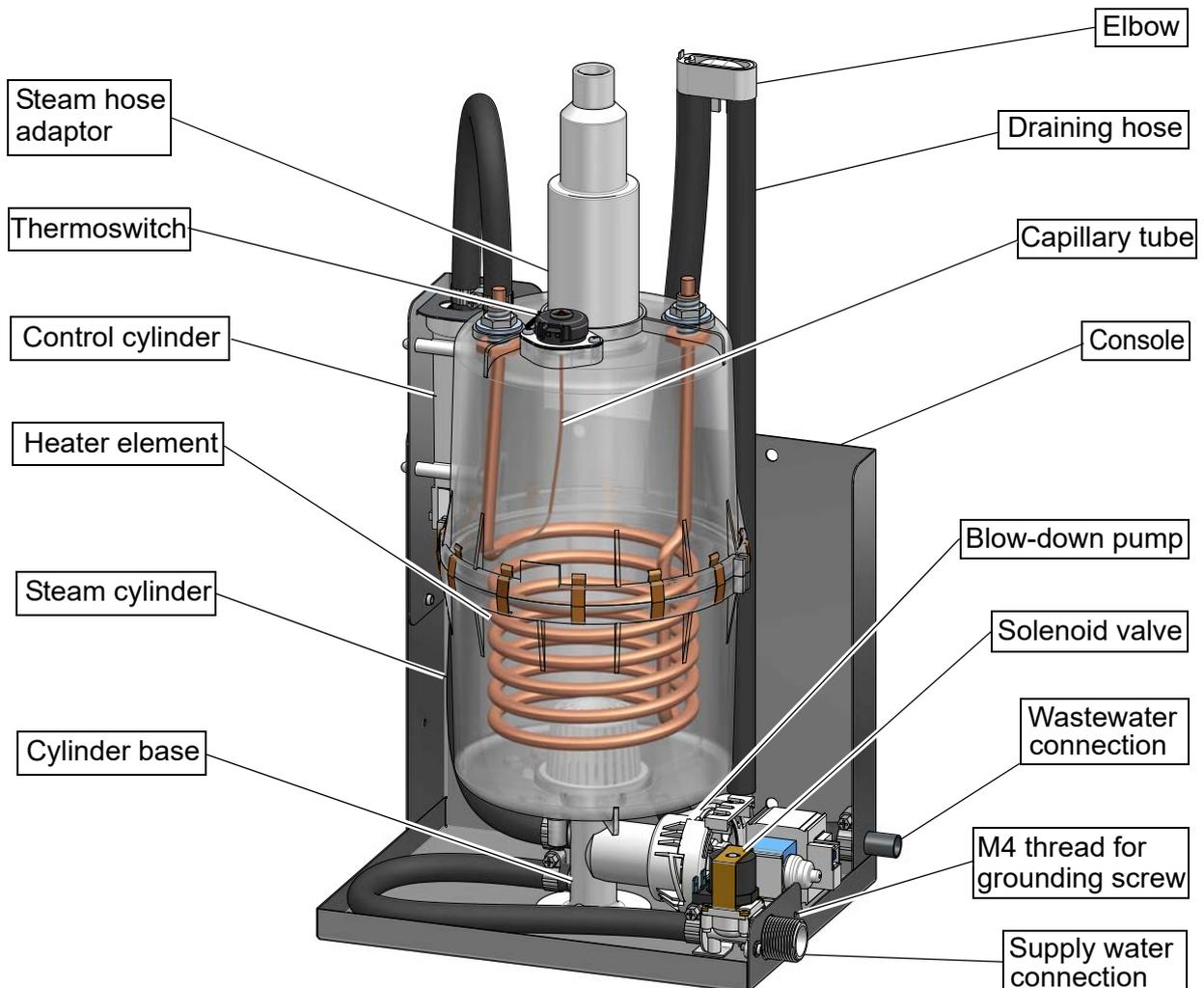
When tap water is used for operation, some of the minerals dissolved in the water are likely to settle in the cylinder in form of solids of various compositions. However, most of the solids are flushed out by cyclic blow-down with the help of a heavy-duty blow-down pump.

4.2 Mechanical Construction

The kits are designed for wall mounting or standing on a horizontal, level surface.

The composition of a kit with 1 heater element is shown in the fig. following hereafter.

For maintenance purposes, the steam cylinder is separable in the middle.



4.3 Operational Sequence

The operational sequence depends on the electrical interconnection and control of the kit. Following hereafter, the typical operational sequence is described for a setting of the kit with the HygroMatik control „Standard“:

The steam humidifier is switched on by pressing the control switch on the front panel to the „I“ position. When the controller generates a demand for humidification, the inlet solenoid valve (25)* opens and water is fed into the steam cylinder.

Filling level in the cylinder is controlled by a level control device (27)*. In a plastic cylinder, connected to the steam cylinder via hoses in the way communicating tubes are connected, a sensor for continuous proportional water level survey is located.

The cylinder water is periodically blown down. For usage of the unit with fully desalinated water, the blow-down function may be blocked.

Water blow-down is achieved by means of the blow-down pump (32)* that is continuously monitored during unit operation. In case of pump disruption, the kit is shut off.

With normal water quality, blow-down loss is in the range of 7 to 15 % of the steam amount produced. Depending on water quality, a full steam cylinder blow-down is run every 3 to 8 days.

Mineral deposits settle in the open area below the heater element(s) and are removed through periodic maintenance. The blow-down pump itself has wide openings and can flush out smaller pieces of mineral deposit. This extends the service life of the unit and reduces the required maintenance interval.

On blow-down, water flows from the pump into the drain hose system.

For maintenance purposes, the cylinder water may be pumped out by pressing and holding the control switch in the „II“ position.

*) numbers indicated correspond with those in the exploded view in the „Exploded view“ chapter.

4.4 Internal Output Setting

The description following hereafter relates to the usage of the steam humidifier kit with the HygroMatik controls „Basic“ and „Standard“.

Continuous control is achieved by proportional driving (pulse width modulation) of the heater element(s). In this way the steam humidifier kit can be proportionally operated across the entire output range of 10 % - 100 % of the nominal capacity.

5. Mechanical installation

▲ WARNING

Risk of foot injuries!

Prevent unit from dropping during installation! Helping hand of a second person is advisable.

▲ WARNING

Risk of electrical shock!

Hazardous electrical voltage. During installation, the unit must be disconnected from power supply.

5.1 Environment parameters to be met

- By design, the kits are not qualified for outdoor installation since electrical/electro-mechanical/electronic components (depending on configuration variant) and water-bearing parts may be damaged
- Ambient temperature must lie between +5 and +40 °C (+41 and +104 °F) ; frost may damage the steam cylinder, the solenoid valve and pump, as well as make hoses burst
- Relative humidity must not exceed 80 % r.h., since values beyond may lead to electronic malfunction or damage
- Installation in a closed room requires aeration and, eventually, temperature conditioning in order to meet the a.m. environmental conditions

5.2 Mounting recommendations

When selecting the installation site for the steam humidifier kit, take the following into account:

- The kit should be installed as close as possible to the steam manifold. Optimum performance is only guaranteed when steam and condensate hoses are kept short
- Make use of existing water connections for supply and draining
- Hoses must be laid at a consistent 5 to 10 % incline/decline; sagging and kinking prevention is a must
- Mount the unit on a stable, preferably solid wall offering the bearing capacity required (s. unit technical specifications) or standing on a horizontal, level surface. If such a wall is not at hand, the unit may be attached to a stand bracket firmly bolted to the floor.
- The steam humidifier console heats up during operation. Take care that the construction on which the unit is to be mounted is not made of temperature-sensitive material.
- The elbow is to be attached to a suitable vertical surface by means of a screw

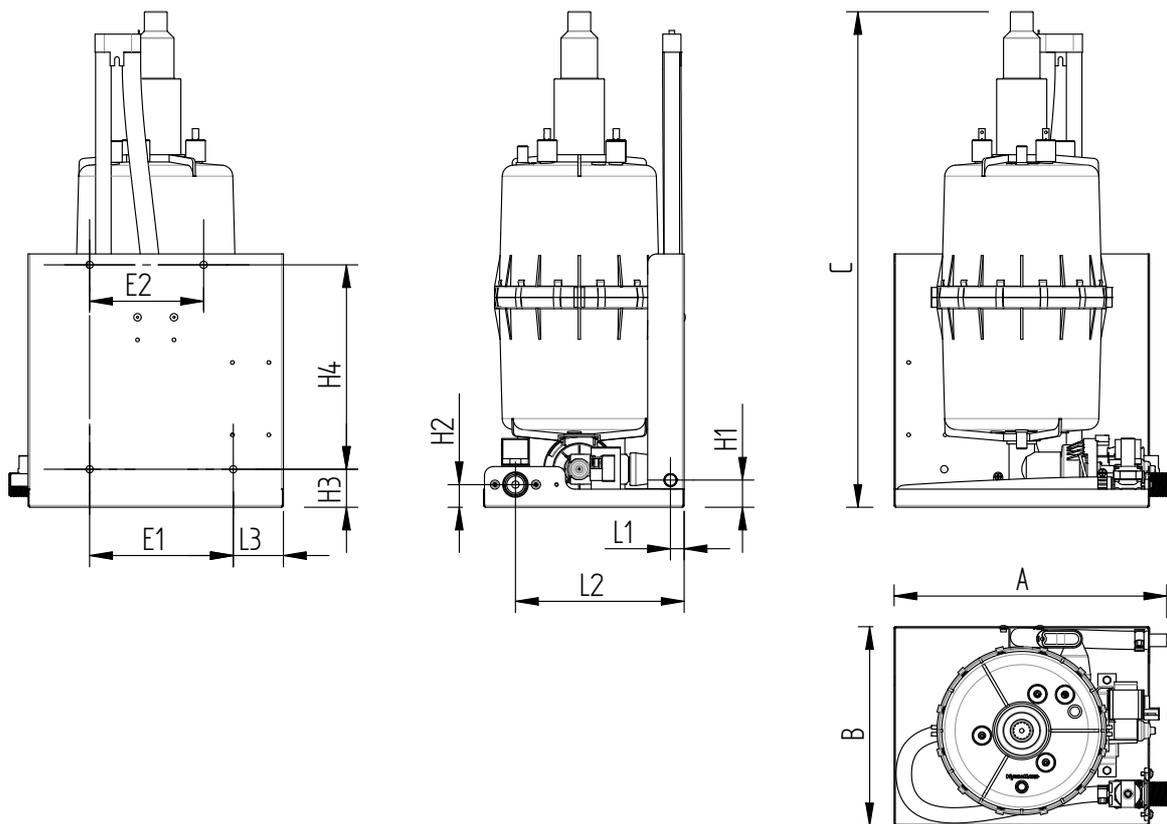
When selecting the mounting material to be supplied by the customer, attention must be paid to adequate strength. For the correct functioning of the steam humidifier it is required that the device is mounted level and plumb.

After mounting the kit make sure that it sits firmly.

5.3 Dimensions

Table of dimensions

Model	A [mm]	B [mm]	C [mm]	E1 [mm]	E2 [mm]	H1 [mm]	H2 [mm]	H3 [mm]	H4 [mm]	L1 [mm]	L2 [mm]
KIT H02	300	220	400	157,5	125	30	25	42	226	15	185
KIT H03	300	220	530	157,5	125	30	25	42	226	15	185
KIT H06	300	220	530	157,5	125	30	25	42	226	15	185
KIT H09	300	220	530	157,5	125	30	25	42	226	15	185
KIT H15	350	285	730	270	270	35	25	80	160	15	250



5.4 Unit Installation Check

Before start-up, pls. check proper unit installation following the list below:

- Kit perpendicularly aligned in both the vertical and horizontal axis ?
- Steam hose installed with a 5 - 10 % minimum incline/decline (see chapter "Steam line") ?
- Condensate hose features a loop functioning as a steam barrier (see chapter „Condensate hose“) ?
- Steam manifold(s) properly positioned?
- All bolts and clamps properly tightened?
- Steam manifold(s) horizontally mounted and suspended on the free end, if required ?
- All seals (o-rings) in place?

5.5 Absorption Distance B_N

The "absorption distance" (B_N) is defined as the distance from the steam feed to where the steam is completely absorbed in the treated air. Within the absorption distance, steam is visible as mist in the air stream.

Condensation may occur on anything installed within the absorption distance.

Although steam outside the absorption distance (B_N) is completely absorbed, it is not yet evenly diffused in the duct. If you plan to install any parts or devices inside the absorption distance, such as sensors or elbows, we recommend increasing the absorption distance using the formulae below. The absorption distances required for certain installed fittings are distinguished by separate symbols and calculated as a multiplier of the absorption distance B_N .

Absorption Distance	
B_N	for normal obstructions such as sensors, ventilators, outlets
$B_C = (1.5...2) \times B_N$	for fine filters, heat registers
$B_S = (2.5...3) \times B_N$	for particle filters
$B_d = (3...5) \times B_N$	for humidity sensors, duct humidistats

The absorption distance has no fixed value, but depends on many factors. These are depicted in the absorption distance nomogram below.

5.5.1 Determining the Absorption Distance

To determine the absorption distance, the following parameters are required:

- Air humidity before humidification x_1 in g/kg
- Air temperature after humidification t_2 in °C (with steam humidifiers the change in air temperature due to humidification may be disregarded t_1 or t_2)
- Specific increase in humidity Δx in g/kg (can be determined in the h,x diagram)

- quantity of steam introduced $\overset{o}{m}_D$ in kg/h.
- air speed w_L in m/s in air duct
- Total length l_D of the steam manifold installed in the air duct

Length l_D of the usable steam manifold depends on the dimensions of the air duct. The length of the absorption distance can be reduced by using multiple steam manifolds (also see section on the steam manifold).

Method:

Graphically determine absorption distance B_N using the absorption distance nomogram (also see Section „Absorption Distance Nomogramm“). Enter the value of the parameters enumerated above into the respective quadrants. The resulting point of intersection indicates the value of the desired absorption distance B_N .

Notes:

Air humidity before humidification x_1 :.....[g/kg]

Air temperature after humidification t_2 :.....[°C]

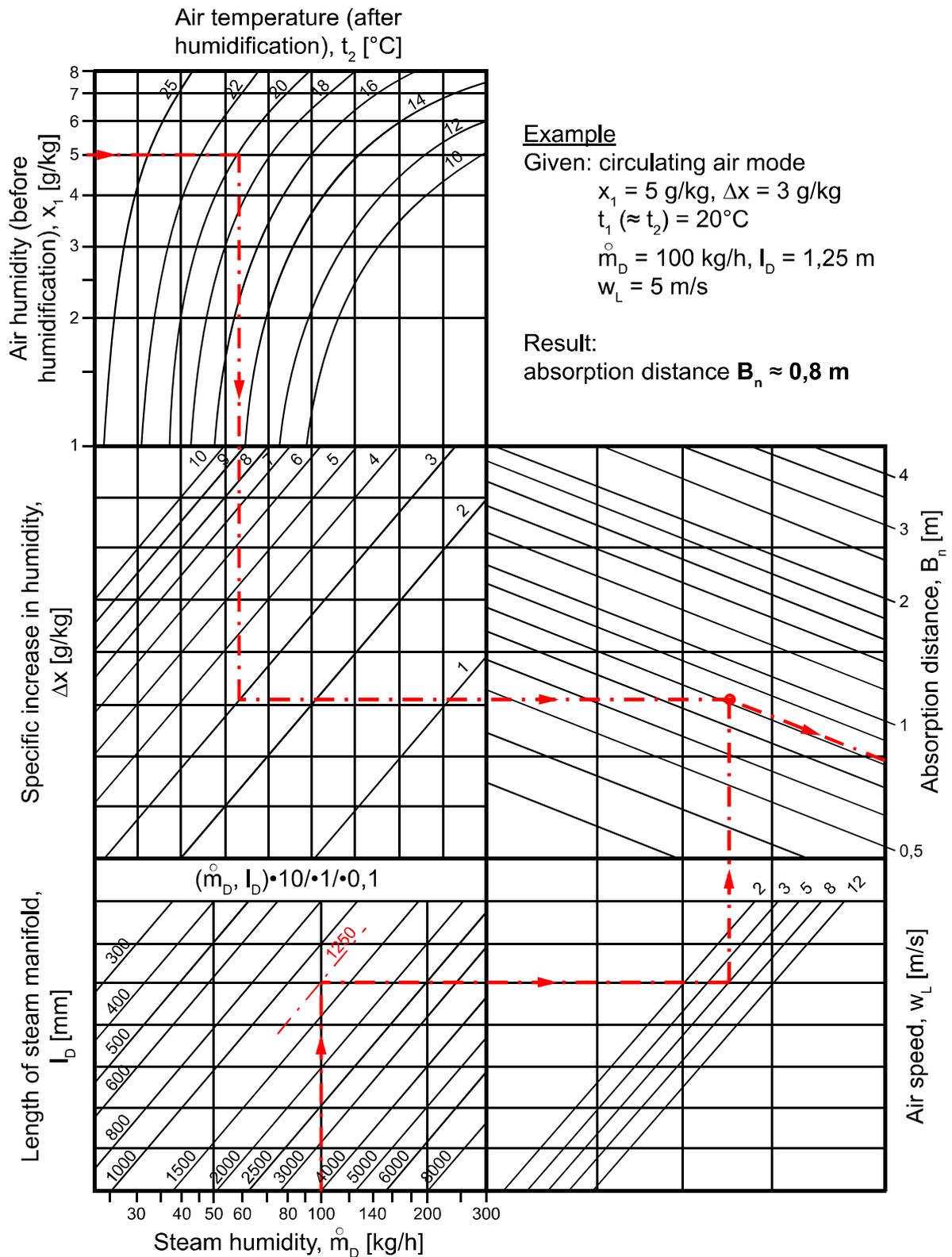
Specific increase in humidity Δx :.....[g/kg]

Quantity of steam introduced $\overset{o}{m}_D$:.....[kg/h]

Air speed w_L :.....[m/s]

Total length of steam manifold l_D :.....[mm]

5.5.2 Absorption Distance Nomogram



Source: Henne, Erich: Luftbefeuchtung (Air Humidification), 3rd Edition 1984 (Page 101), Oldenbourg Industrieverlag, Munich

5.6 Steam line and condensate hose layout

Please note

Because of the high requirements on hose material under the operating conditions given, it is recommended to use genuine HygroMatik hoses only.

5.6.1 Guide lines for steam line design

- Steam hose nominal diameter must not be smaller than the steam outlet of the HygroMatik steam humidifier (do not restrict the cross-section, otherwise back pressure will increase)
- Steam hoses must be laid without sags and kinks and with a continuous slope of 5-10% (otherwise sags may result).
- Steam hoses must be supported every 500 mm by clamp brackets
- Steam hoses should be kept as short as possible. Implement lengths beyond 5m as insulated fixed piping to keep energy loss and condensate generation to a minimum. Fixed piping is generally recommended for straight steam line segments
- When 2 steam manifolds are in use (other than with a standard implementation), place steam Y piece as close as possible to the steam manifolds. Such, for the main part of the piping just one steam hose is required and condensate loss is minimized. Some models of the HygroMatik steam humidifier portfolio, however, require that the Y-piece is mounted as close as possible to the steam exit with 2 steam lines (this is the case for e.g. FLE40 and FLE80)
- Allow easy access to the steam pipe/ steam hose installation
- Pressure conditions within the duct are influenced by device steam output, steam line layout and the duct composition itself. In some rare situations it may become necessary to optimize steam line layout for achieving the

results intended

- Respect minimum bending radii:
DN 25 Steam hose: Rmin = 200 mm
DN 40 Steam hose: Rmin = 400 mm

5.6.2 Condensate hose layout

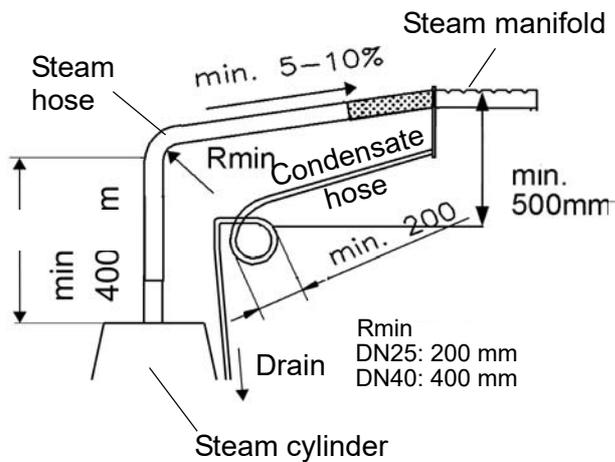
If a condensate hose is to be used, it must be run directly into a wastewater line or drain. The requirements on the routing of the condensate hose can be found in the fig. of the next section.

5.6.3 Steam line and condensate hose installation types

Installation type 1

Steam manifold is positioned more than 500 mm above device upper edge:

- » Run steam hose to a height of 400 mm minimum above the steam cylinder and then to the steam manifold with a continuous incline of 5 to 10 %.
- » Feed condensate hose from steam manifold with a decline into waste-water pipe or drain.
- » As a steam barrier, lay out a 200mm min. loop (s. schematic representation below). Minimum distance from steam manifold to loop must be 500 mm. Fill loop with water prior to steam humidifier commissioning.

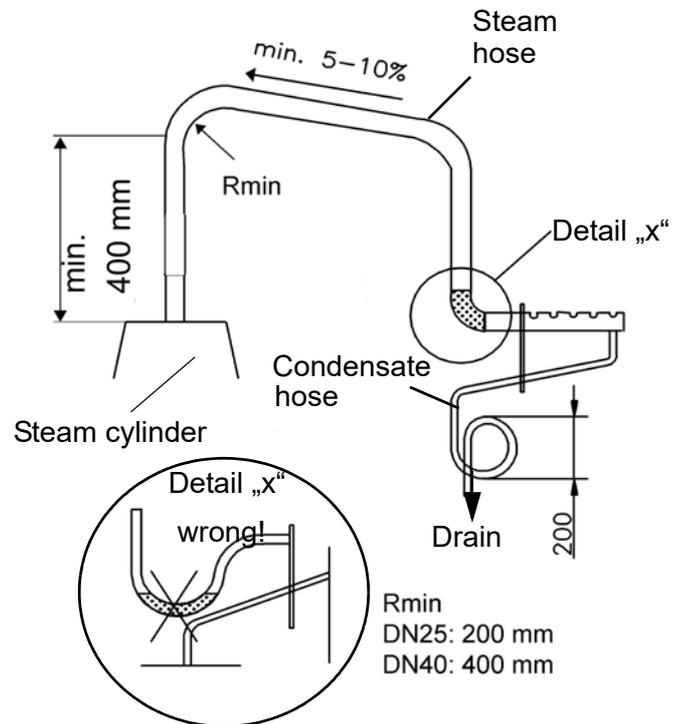


Installation type 1, schematic representation

Installation type 2

Steam manifold is positioned less than 500 mm above or below device upper edge:

- » Run steam hose to a height of 400 mm minimum above the steam humidifier and then to the steam manifold with a continuous decline of 5 to 10 %.
- » Feed condensate hose to a waste-water pipe/drain with a 200 mm diameter loop as a steam barrier. Minimum distance from steam manifold to loop must be 500 mm. Fill loop with water.



Installation type 2, schematic representation

5.7 Steam Manifold

5.7.1 General installation guidelines

When installing steam manifolds, pls. follow these guidelines:

Positioning within duct

- Install the steam manifold as close as possible to the steam humidifier in order to minimize steam loss through condensation
- Steam manifold placement on the supply side of the air duct is preferable
- Install steam manifold strictly horizontal in order to ensure proper condensate drain
- Shown installation and positioning dimensions are based on empiric values. Special environmental conditions may require adjustments. Pay special attention to avoid condensate generation in air duct

Allowable pressures

- Max. allowable pressure in air duct is 1500 Pa/.218 PSI (exemption: SLE02, SLH02, KIT E02 and KIT H02 only allow for 1200 Pa/.174 PSI)
- On suction side, max. -500 Pa (.07 PSI) is tolerable
- With high-pressure air conditioning systems, modifications of the unit's drain hose system may possibly be required depending on the overall pressure situation. These modifications must be **coordinated with your expert dealer.**

Water drain

- We point out that according to the German Association of engineers (VDI) guideline VDI 6022, a water drain must be provided within the absorption distance inside the air duct

When increased airflow speed is encountered

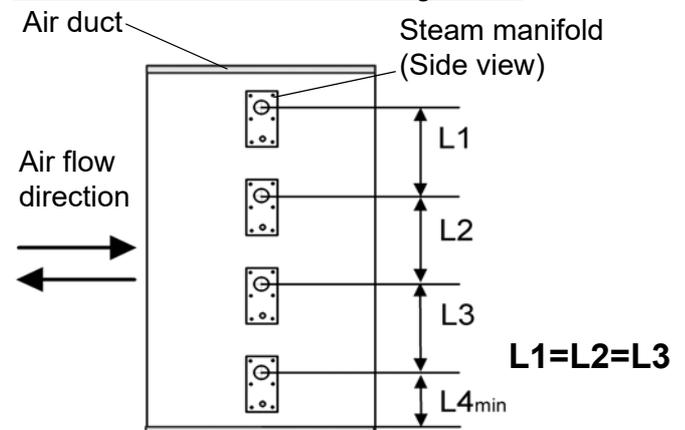
- Air flow rates beyond 3m/s (9.84 ft/s) may lead to condensate drainage problems at the steam manifolds due to vacuum built-up. A possible remedy is twisting the steam manifold in its horizontal axis by few angular degrees. In case of problems, pls. consult your expert dealer.

5.7.2 Recommendations for dimensioning

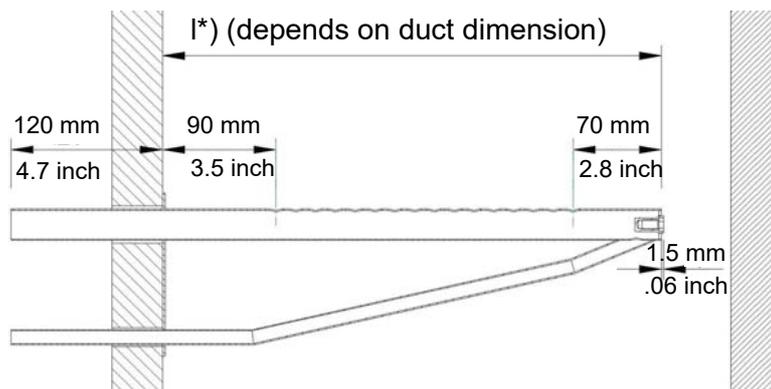
The recommendations given below are based on homogenous air flow in the duct.

Horizontal installation of steam manifold

Standard steam manifold arrangement:

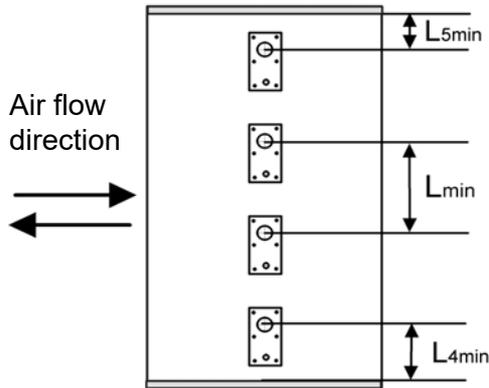


An even distribution of steam manifolds ensures a uniform steam distribution.



Please use the total height of the duct!

*) s. table of manifold lengths **Horizontal assembly position in duct**



Minimum distance for condensation avoidance:

$L_{min} = 210mm/8.3\text{ inch}$: „Steam manifold - Next steam manifold“ distance

$L_{4min} = 120mm/4.7\text{ inch}$: „Lowest steam manifold - Duct bottom plane“ distance

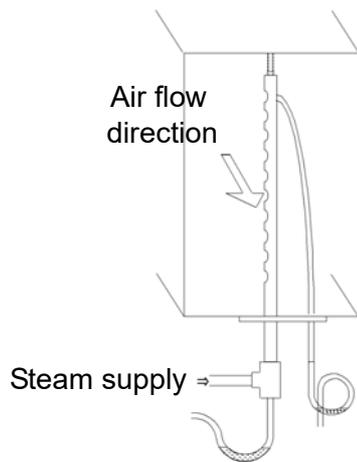
$L_{5min} = 120mm/4.7\text{ inch}$: „Highest steam manifold - Duct ceiling plane“ distance

Steam manifold arrangement for special air duct shapings

flat	steam manifold laterally staggered (with respect to air flow direction) in case of L_{min} (s. above) not to be met	<p>Air flow direction</p>																
very flat	<p>by tilting the steam manifold 30 - 45° towards the air flow direction, the minimum upper clearance can be reduced to 70 mm/2.8 inch.</p> <table border="1" data-bbox="383 1422 901 1612"> <thead> <tr> <th>Min[mm/inch]</th> <th colspan="2">H1</th> <th>H2</th> </tr> <tr> <td></td> <th>30°</th> <th>45°</th> <td></td> </tr> </thead> <tbody> <tr> <td>DN25/1"</td> <td>182/7.2</td> <td>168/6.6</td> <td>225/8.6</td> </tr> <tr> <td>DN40/1 1/2"</td> <td>193/7.6</td> <td>179/7.2</td> <td>230/9.1</td> </tr> </tbody> </table>	Min[mm/inch]	H1		H2		30°	45°		DN25/1"	182/7.2	168/6.6	225/8.6	DN40/1 1/2"	193/7.6	179/7.2	230/9.1	<p>narrow channel</p> <p>Air flow direction</p>
Min[mm/inch]	H1		H2															
	30°	45°																
DN25/1"	182/7.2	168/6.6	225/8.6															
DN40/1 1/2"	193/7.6	179/7.2	230/9.1															
narrow, high	identical lengths one on top of the other, staggered laterally if possible																	
square	identical lengths, staggered vertically and laterally																	
low, very wide	facing each other																	

Vertical steam manifold installation

Steam manifold arrangement



Horizontal installation of the steam manifolds is preferable. However, vertical installation into the air duct from below is also possible.

Standard manifold dimensions [mm]/ [inch]:**

220/ 8.7	400/ 15.7	600/ 23.6	900/ 35.4	1200/ 47.2	1450/ 57.1
---------------------	----------------------	----------------------	----------------------	-----------------------	-----------------------

*** Special lengths on demand.

Number and size of the steam manifolds available as well as the nominal diameter of the respective steam and condensate hoses may be taken from the tables shown in chapter „Technical Data“.

6. Water connection

▲WARNING

Risk of scalding!

Very hot water to be found in and around the kit during and after operation.

Have all installation work done by expert staff in order to avoid scalding hazards due to improper water guidance.

▲WARNING

Risk of electrical shock!

Hazardous electrical high voltage!

Before starting installation work ensure that the unit is not yet connected to the power supply.

General Rules

- Obey local water utility regulations
- Verify that necessary safety measures have been taken – in compliance with either German Technical and Scientific Association for Gas and Water (DVGW) guidelines (DIN EN1717) or local regulations – to eliminate backflow of polluted water into drinking water treatment facilities. This may require the installation of a system separator and free discharge into the drainage system
- Supply water must not exceed 40 °C (104 °F)
- Allowable range of water pressure: 100000 to 1000000 Pa (14.5 to 145 psi)
- For connection to the water supply pipe, make use of a water hose
- Blow-down water must drain freely
- Min. conductivity of the supply water must be 3 S/cm

6.1 Water supply

NOTICE

Foreign material in water supply pipe may cause premature wear of the solenoid valve.

Flush the water supply pipe before making connection to the solenoid valve. This is of particular importance in case of a newly installed pipe.

On-site, a shut-off valve and - if required by the water quality - a water filter in the supply line is to be installed. Use a connection hose with a 3/4" cap nut für connection to the water inlet (solenoid valve) of the kit.

Water pressure of the supply line is allowable from 1 to 10 bar (100×10^3 to 100×10^4 Pascal, 14.5 to 145 psi).

Please note

Strainer must be placed inside the solenoid valve.

6.2 Water discharge

⚠ WARNING

Risk of scalding!

During blow down up to 0.3 l/sec (.08 gal./sec) are being drained with a temperature of about 95 °C (203 °F).

Ensure that the drain hose is reliably fastened and wastewater can drain freely and pressureless.

Please note

Humidifier kit installation location and wastewater discharge must be on the same pressure level.

Guidelines for water discharge composition

- Do not buckle drain hose
- Discharge line and drain pipe material must be temperature resistant up to 95 °C (203 °F)

How to proceed

- » Fit 14 mm (.55 inch) drain hose with a clamp to the wastewater connection and run into a pressure-free outlet according to DIN EN 1717.

6.3 Water connections final check

Go down the following water installation checklist:

- All screws and clamps properly tightened?
- Water supply line flushed before making connections?
- Water connection properly installed?
- Water discharge properly installed?
- Does blow-down water drain freely?
- Water supply line and water discharge leakage-free?

7. Electrical connection

⚠ WARNING

Danger of electrical shock!

Dangerous electrical voltage!
All work relating to the electrical installation may only be carried out by designated specialist personnel (electrician or qualified person with equivalent training).

Do not connect the steam humidifier to the live power supply before all installation work has been completed.

Please note

The customer is responsible for monitoring the qualifications of the specialist personnel.

General installation rules

- All local rules concerning the implementation of electrical installations must be obeyed
- Install the electrical connections according to the wiring diagram

NOTICE

Possible electronical components destruction through electrostatical discharge!

Prior to commencing electrical installation work, steps must be taken to guard the sensitive electronical components of the unit control against damage from electrostatical discharge.

7.1 Electrical installation approach

- » Provide fuses with a contact gap of at least 3mm per pole.
- » Make main connection according to the table below.

Main connections

Model	Main connection
KIT H02 KIT H03 KIT H06	208 - 240 VAC/1~/N/ 50 - 60 Hz
KIT H06 KIT H09 KIT H15	380 - 415 VAC/3~/ 50 - 60 Hz

Other operating voltages on request.

Fusing

HygroMatik recommends the use of slow blowing up to middle time-lag main fuses (only applies to the a.m. mains supply voltages).

Please note

The kit installation should incorporate an individual residual current device (RCD).

Maximum current draw of the kit models and the required fusing resulting from that can be taken from the table below.

1-phase connection

Model	Current draw [A]	Fusing [A]
KIT H02	6.8	1x10
KIT H03	10.2	1x16
KIT H06	20.4	1x25

3-phase connection

Model	Current draw [A]	Fusing [A]
KIT H06	11.7	3x16
KIT H09	17.5	3x20
KIT H15	17.1	3x20

7.2 Safety interlock

The descriptions following hereafter relate to the usage of a kit in combination **with a HygroMatik control**. If the kit is used without a control „Basic“ or „Standard“, it is the responsibility of the kit operator to implement a safety (interlock) system.

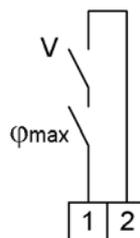
⚠ WARNING

Risk of electrical shock!

Hazardous electrical voltage!

When standard wiring was made, terminal 1 shows 208 - 240 VAC after commissioning.

Across terminal 1 and 2 the so-called safety interlock is wired. This wiring allows for integration of safety devices. In case of an open safety interlock the steam humidifier does not operate.



Safety interlock terminals 1/2

Please note

Factory setting leaves the safety interlock open!

Install contact interlocks, e.g. a max. hygrosat in series across terminal 1 and 2.

Please note

Contacts across terminals 1 and 2 must be potential free and rated for 240 VAC.

Best practice implies the integration of a max. hygrosat in the safety interlock wiring to protect against over-humidification due to a r.h. sensor malfunction.

7.3 Internal electrical connection

7.3.1 Overview

The customer is generally responsible for the electrical wiring of the kit. Three variants of setting-up a control are possible:

SteamKit H kit w/o HygroMatik control

Without a control logic, operation of the steam humidifier kit is possible by means of a simple control circuit. Section 7.4.1 depicts proposals for the wiring of such a circuit.

When unit enabling is present (e.g. via the S1b switch in combination with the simple control), the control of the steam production is achieved in a 1-step mode by the water level in the steam cylinder as signalled by the float switch. The float switch is part of the control cylinder included in the kit delivery scope.

SteamKit H kit in combination with the HygroMatik Control Basic

The control „Basic“ operates with all of the common control signals. It controls the steam production as well as the filling and blow-down processes. Water level control is through evaluation of the float switch that is included in the control „Basic“ delivery scope as part of the control cylinder.

The control logic also comprises the error detection for the various functional areas.

SteamKit H kit in combination with the HygroMatik Control Standard

The control „Standard“ operates with all of the common control signals. It controls the steam production as well as the filling and blow-down processes. Continuous water level control is through evaluation of the water level sensor that is included in the control „Standard“ delivery scope as part of the control cylinder.

The control logic also comprises the error detection for the various functional areas.

7.3.2 Internal electrical connection w/ o HygroMatik control

Blow-down

For blowing-down the cylinder water, the blow-down interval should be set in a way that after 60 mins of steam production the pump runs for 7 secs.

When running the kit with tap water, increasing the number of blow-down cycles may enlarge the specific maintainance interval.

If required, pls. contact your expert dealer or HygroMatik for advice.

Control cylinder

The Steamkit-H kit is delivered with a control cylinder that holds a floating switch array consisting of reed switches for the stepped monitoring of the water level. Three levels are discriminated. The wire colours are assigned as follows:

Red - max. level

Orange - refilling

Black - dry level

Brown - phase L1

Please note

Included in the delivery scope is a varistor the usage of which is recommended for the smooth operation of the kit.

The varistor smoothes the load peaks impacting on the reed switches. The wiring (across the solenoid valve connections) is depicted in the interconnection diagram (s. section 7.4.1).

7.3.3 Internal Electrical Connection when the kit is delivered with a HygroMatik control

Use of Control Basic

Part of the delivery scope of the control is a floating switch based on Reed switches that are only low voltage loaded (as compared to the floating switch used with kits that are not run with a HygroMatik control). As such, a varistor is not required and is not included in the delivery. Connection diagrams for the electrical interconnection of the kit with the Control Basic can be found in section 10 („Connection diagrams“) of the respective manual.

Use of Control Standard

Part of the delivery scope of the control is a level control for the continuous monitoring of the water level in the steam cylinder. Connection diagrams for the electrical interconnection of the kit with the Control Standard can be found in section 3.1.1 („Wiring diagrams“) of the respective manual.

7.4 Connection diagrams

In case of a HygroMatik Control Basic or Control Standard to be used with the kit, the according connection diagram can be found in the respective manual and must be followed. For all other types of application, the connection of the electrical components is the responsibility of the customer.

Following hereafter, pls. find 2 recommendations for setting up a simple control making use of the control cylinder supplied with the kits that are delivered without a HygroMatik control.

7.4.1 Simple control 220 - 240 VAC

Konzept:
 externe Freigabe 220-240V/1/N für Heizkörper
 mit 10A/16A/20A Absicherung

Konzept:
 external release 220-240V/1/N for heating element
 with 10A/16A/20A main fuse

Wasserzufuhr und HK gesteuert über Schwimmerschalter mit 3 Schaltkontakten für MV off, MV on und HK ein

Water level and heating element controlled by floating switch with 3 contacts for MV off, MV on und heating element on.

Hauptsicherung / main fuse size:
 10A in KITH02 1,5 KW Heizkörper / heating element
 16A in KITH03 2,25 KW Heizkörper / heating element
 20A in KITH06 4,5 KW Heizkörper / heating element

R1 in KITH02 1,5 KW Heizkörper / heating element
 R1 in KITH03 2,25 KW Heizkörper / heating element
 R1 in KITH06 4,5 KW Heizkörper / heating element

Thermosicherung / Thermal fuse:
 nur für / only for KITH02 1,5 KW Heizkörper / heating element

S3 MV Aus / off

S2 MV An / on

S1 min. Niveau, HK ein / Heating Element on

R1 Heizkörper / Heating element

STB1 Thermowächter / thermo switch

K1 Hauptschutz / Main contactor

K21 Hilfsrelais / auxiliary relay

Y1 Magnetventil / solenoid valve

M1 Abschlämppumpe / drain pump

VAR1 Varistor / varistor

(Benennung)
220-240V/1/N/50-60Hz
Einfachsteuerung / Easy control

(Zeichnung Nr.)
S-053507

HYGROMATIK
 Lise-Meiner-Str. 3
 D-24558 Henstedt-Ulzburg
 Germany

Telefax +49-(0)4193 / 895 - 33
 (Datei) **S-053507A.001**

Phone +49(0)4193 / 895 - 0

Blatt 1 von 1 Bl.

Zust.	Änderung	Datum	Name	Norm	Gepr.	Lue	Datum	Urspr.
a	erstellt	01.07.19	Lue				01.07.19	(Benennung) 220-240V/1/N/50-60Hz Einfachsteuerung / Easy control
c								(Zeichnung Nr.) S-053507
								HYGROMATIK Lise-Meiner-Str. 3 D-24558 Henstedt-Ulzburg Germany
								Telefax +49-(0)4193 / 895 - 33 (Datei) S-053507A.001
								Phone +49(0)4193 / 895 - 0
								Blatt 1 von 1 Bl.

7.4.2 Simple Control 380 - 415 VAC

<p>Konzept: externe Freigabe 220-240V/1/N für Heizkörper mit 16A/20A/32A Absicherung Wasserezufuhr und HK gesteuert über Schwimmerschalter mit 3 Schaltkontakten für MV off, MV on und HK ein</p>	<p>Konzept: external release 220-240V/1/N for heating element with 16A/20A/32A main fuse Water level and heating element controlled by floating switch with 3 contacts for MV off, MV on and heating element on.</p>																																																				
<p>S3 MV Aus / off S2 MV An / on S1 min. Niveau, HK ein / Heating Element on R1 Heizkörper / Heating element</p>	<p>Hauptsicherung / main fuse size: 16A in KITH06 4,5 KW Heizkörper / heating element 20A in KITH15 3,8 KW Heizkörper / heating element 20A in KITH09 6,75 KW Heizkörper / heating element 32A in KITH25 6,3 KW Heizkörper / heating element</p>	<p>STB1 Thermowächter / thermo switch K1 Hauptschütz / Main contactor K21 Hilfsrelais / auxiliary relay Y1 Magnetventil / solenoid valve M1 Abschlämpumpe / drain pump VAR1 Varistor / varistor</p>	<p>R1 in KITH06 4,5 KW Heizkörper / heating element R1 in KITH09 6,75 KW Heizkörper / heating element R1-R3 in KITH15 3,8 KW Heizkörper / heating element R1-R3 in KITH25 6,3 KW Heizkörper / heating element</p>																																																		
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8. Commissioning

The descriptions given hereafter particularly relate to the usage of a kit with the Control Standard and - with the exemption of step 3 - Control Basic.

▲WARNING

Risk of operating error!

Start-up of the unit is restricted to expert staff only (electricians or expert personnel with equivalent training).

Step 1: Check of mechanical integrity and wiring

- » Check cylinder seating.
- » Check steam, condensate and drainhose clamps.
- » Check that all electrical wire connections (including steam cylinder wiring) are tight and secure.

Step 2: Switching on the steam humidifier

- » Switch on main breaker.
- » Open water supply stopcock (operating pressure should be 1bar min., 10bar max.).
- » Switch on unit by setting control switch to "I".

Step 3: The unit performs a self-test and, then, commences normal operation

- During self-test, the display flashes for a couple of seconds (only with Control Standard)
- On completion of the test, the software version is displayed for a short moment (only with Control Standard). Consequently, normal operation is commenced. However, steam is not produced

Step 4: Trigger steam demand

- » Set control to 1-step operation, i.e. permanent steam demand, and close safety interlock.
- The water inlet solenoid valve opens and feeds water into the steam cylinder

Step 5: Monitor unit function and check for leakage

- » Let unit operate for 15 to 30 minutes.
- » If leaks appear, switch off the unit.

▲WARNING

Risk of electrical shock!

Hazardous electrical voltage!

Follow safety instructions for work on live components.

Step 6: Repair leaks

- » Find leaks and eliminate.
- » Check again for leaks.

9. Maintenance

9.1 General

For the achievement of a long unit life span, regular maintenance is a must. Maintenance works to be performed refer to unit assemblies that underlie either mechanical or electrical wear and tear, or may be impeded by residues in their proper functioning.

The steam humidifier kit's performance and maintenance intervals primarily depend on the water quality encountered and the amount of steam produced. A particular water quality may shorten or lengthen maintenance intervals. The amount of residues found in the steam cylinder allows for a hint on future maintenance intervals.

Maintenance work mainly encompasses checking and cleaning all of the unit parts including the steam cylinder inside and the level control device, and a unit test run

As part of the maintenance work, screw terminals and plug connections must be checked every time. If required, retightening the terminal screws is a must as well as ensuring tight fit of all of the plug connections.

Since steam and condensate hoses are subject to wear as well, hoses must also be checked regularly.

Seals are wear parts. As such, seal integrity checks and replacement if required, is also a part of the regular maintenance work (s. spare parts section -> O-ring sets).

9.1.1 Safety instructions for maintenance

⚠ WARNING

Risk of electrical shock!

Hazardous electrical voltage. Unit must be switched off and protected against restart by expert staff (electricians or expert personnel with equivalent training) before any maintenance work is commenced.

⚠ WARNING

Risk of skin burning!

Hot steam cylinder during operation and for some time afterwards.

Drain steam cylinder before any maintenance work is commenced. After that, wait approx. 10 mins before starting maintenance work.

Check steam cylinder temperature by cautious approximation with hand (do not touch!).

⚠ WARNING

Risk of scalding!

Water pumped or drained from the steam cylinder may have a temperature of up to 95 °C (203 °F).

Wear proper PPE (Personal Protection Equipment)!

The notice following hereafter is of particular significance when a HygroMatik control is used. It is a general rule, however, whenever electronic components are in use.

NOTICE

Take care of ESD protection!

The electronic components of the humidifier control are very sensitive to electrostatic discharges. In order to protect these components during maintenance, steps must be taken to guard against damage from electrostatic discharge.

9.2 Maintenance frame work when unit is operated with fully demineralised water and condensate

Instructions on maintenance and cleaning intervals are entirely based on empirical data.

Cycle time	Maintenance work
4 weeks after initial commissioning	Visual inspection of electrical and mechanical connections. Visual inspection of level control. Visual inspection of the steam cylinder interior.
anually	Visual inspection of electrical and mechanical connections. Visual inspection of level control. Visual inspection of heater element and thermo switch Visual inspection of steam cylinder interior. If required, cleaning of steam cylinder, heater element, thermo switch and level control followed by the replacement of all sealing.

9.3 Maintenance when unit is operated with tap water or partially softened water

No precise maintenance intervals can be specified because these always depend on water quality and the amount of steam generated. It is advisable to adjust the frequency of maintenance to the specific operational experience. HygroMatik recommends to check the opened steam cylinder 1 or 2 weeks after initial commissioning in order to quantify the amount of residue produced so far, allowing for determining future maintenance intervals and/or the adjustment of blow-down cycles possibly required.

Blow-down cycles

The vaporisation process causes hardness builders (calcium) in form of solids of various compositions to fall out within the steam cylinder. Cyclic blow-down by means of a powerful blow-down pump followed by fresh water refills remove parts of this solid built-up.

Water quality

When tap water is used, it must be taken into account that cleaning intervals shorten as the carbonate hardness level increases. As a general rule, it is preferable to operate the unit with fully demineralized water since operation will not be affected by mineral deposits and flushing loss will be minimized.

Please note

Possibly, maintenance intervals may be extended by moderately increasing the blow-down cycle rate. Please consult your expert dealer.

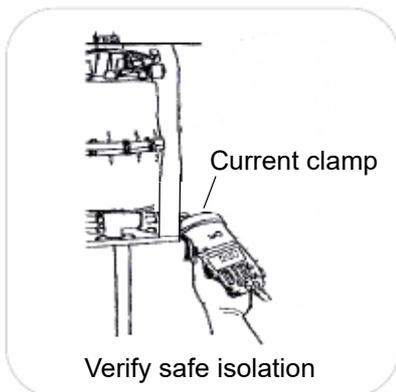
9.4 Removal and reinstallation of the steam cylinder

Steam cylinder removal

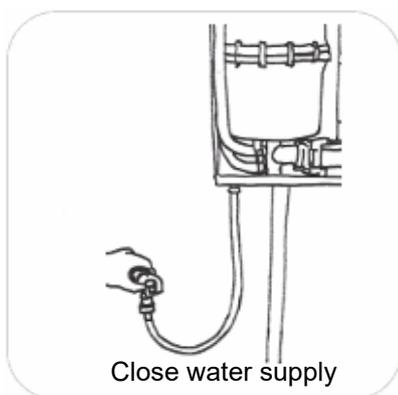
- » Drain cylinder water making use of blow-down pump.



Disconnect unit from power supply



Verify safe isolation



Close water supply

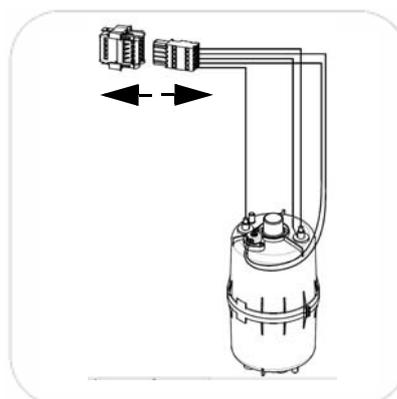


Wait 10 mins. Then check cylinder temperature by cautious approximation with hand (do not touch!)

- » Separate steam hose adaptor from steam cylinder



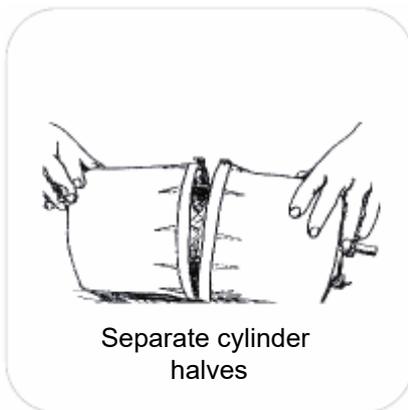
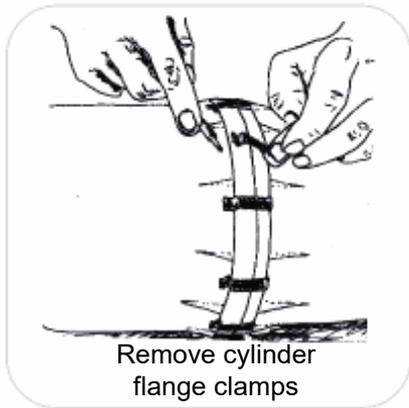
Lift steam cylinder off cylinder base



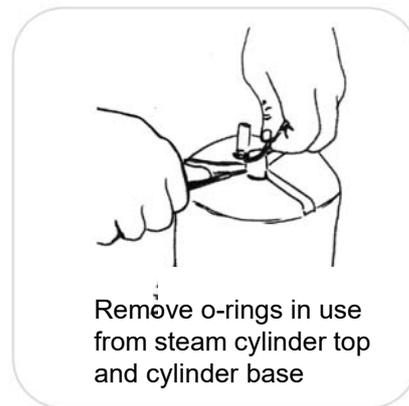
Separate connection plug from heater element harness

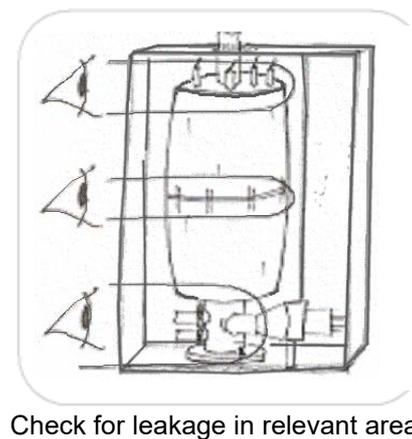
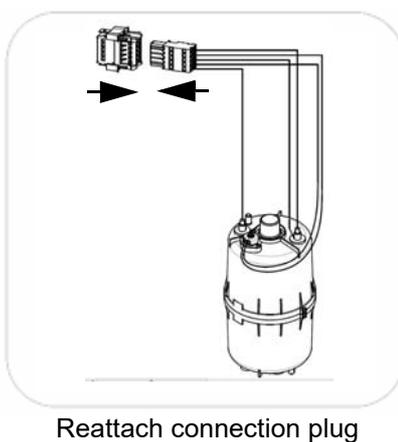
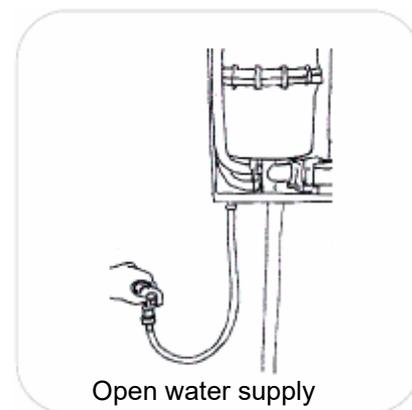
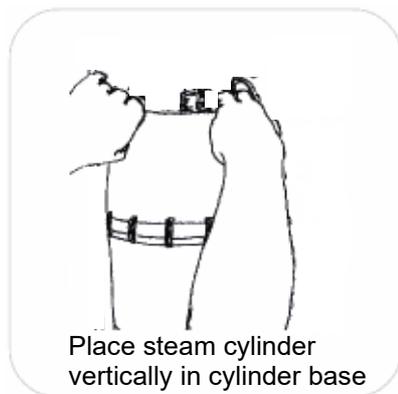
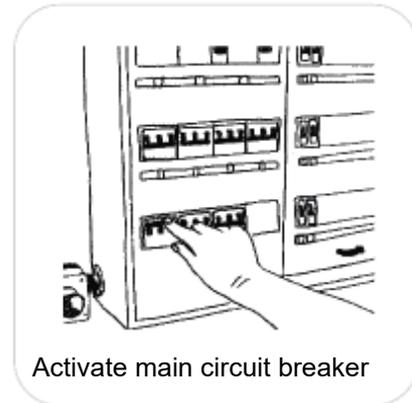
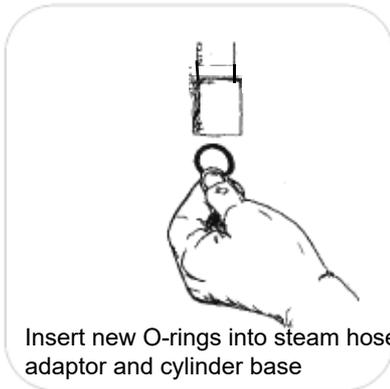
⚠ CAUTION

Risk of eye injuries!
The clips that fix the steam cylinder halves have sharp edges and can jump off during dismantling.
Eye injuries possible.
Wear proper PPE (Personal Protection Equipment)!



Reinstallation





- » Moistening o-ring in steam hose adaptor and pushing steam hose adaptor back on steam cylinder.

9.5 Steam cylinder and cylinder base cleaning

Removal of the steam cylinder is described in the „Removal and reinstallation of the steam cylinder“ section.

NOTICE

Risk of material damage!

Excessive force when cleaning the cylinder or the heater element(s) may harm these device parts.

Steam cylinder cleaning



NOTICE

Risk of functional disruption!

Use descaler or cleaning detergents only for cylinder and heater element cleaning. Do not introduce in cylinder base or apply to hoses!

Prior to restarting the unit, make sure that the device assemblies in question are thoroughly flushed or rinsed.

- » Remove all deposits. Small amounts of scale deposits on the heater element(s), however, are harmless.

Cylinder base cleaning

- » Just as the cylinder, the cylinder base and its connection joints must be checked for deposits and cleaned, if required.

9.6 Cleaning of the control cylinder (only applicable for kits w/o HygroMatik control or with Control Basic)

The control cylinder in charge of signalling the water level in the steam cylinder should also be cleaned whenever the steam cylinder is cleaned. To do so, the steam cylinder must be removed first.

For cleaning, pls. follow these steps:

- » Remove the 4 screws affixing the float switch to the control cylinder housing (60).
- » Pull out float switch and clean.
- » Remove seal and clean.
- » Clean sealing surface on control cylinder top.*)
- » Reassemble control cylinder assembly in reverse order.

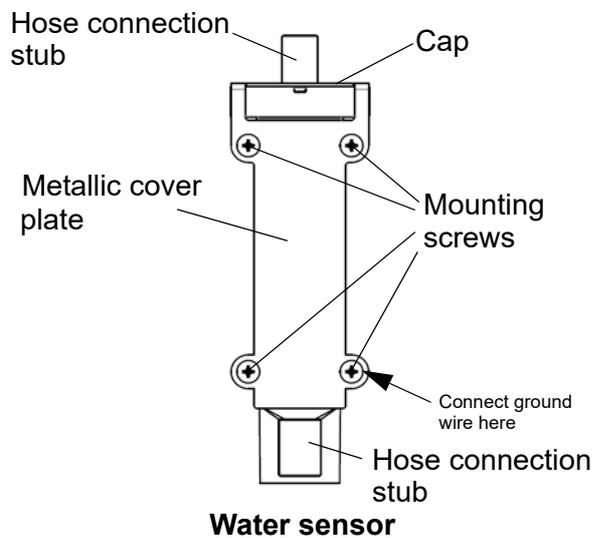
NOTICE

Risk of functional disruption!

The float switch tube must not be greased.

*) The design of the float switches differs slightly depending on whether the control cylinder is part of the kit delivery scope or comes with the Control Basic. However, the general approach for cleaning the control cylinder is not affected by this.

9.7 Level control device cleaning (only applicable when Control Standard is used)



The level control device is accessible only after removal of the steam cylinder.

- » Disconnect hoses from level control device connection stubs on upper and lower side.
- » Remove the 4 screws securing the metallic cover plate of the level control device and the device as such against the console. Memorize ground wire attachment position (under lower left hand side screw).
- » Remove level control device from console.
- » Unclip level control device enclosure cap with a flick of the thumb and remove.
- » Take out o-ring and dispose of.
- » Make visual inspection of level control device enclosure interior and clean, if required. Scratch out any deposits, if present.
- » Inspect both level control connection hoses and clean, if required.
- » Insert new o-ring.
- » Re-attach enclosure cap.
- » Align metallic plate with level control device enclosure mounting holes and insert screws in upper right and lower left position.

- » Hold level control device towards console wall and push mounting screws through bores in console wall while enclosure cap protrudes through cut-off.
- » Attach lock washers and cap nuts to mounting screws, do not fasten yet
- » Insert the 2 screws remaining into the open level control device enclosure mounting holes while positioning the ground wire connection eyelet under the lower right screw.
- » Attach lockwashers and cap nuts.
- » Handtighten all of the screws.

Please note

A functional check of the level control device may only be accomplished while the device is installed into the unit!

9.8 Heater element replacement

Removal

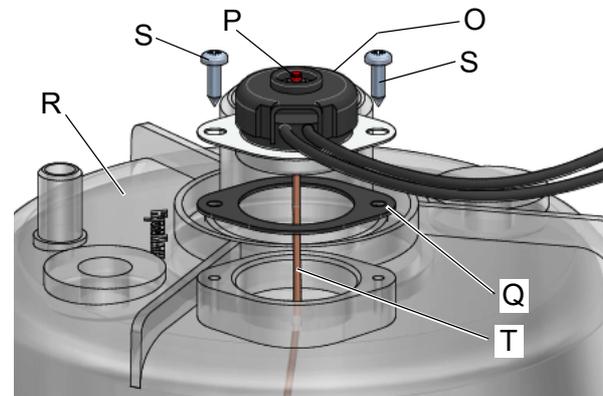
- » Remove and open steam cylinder as described in the „Removing and cleaning the steam cylinder“ section
- » Separate connection plug from heater element harness.
- » Separate thermo switch capillary tube from heater element(s) by detaching the retainer clips.
- » Remove wiring of the heater element(s) in question from connector terminals (mark positions for reclamping).
- » Unscrew heater element fixing nut(s) from cylinder cover.
- » Remove adjusting washer and grounding lug/lock washer (if present) and pull heater element/s downward out of steam cylinder cover.
- » Clean the sealing surface on the underside of the cover around the area where the new heater element will be installed.

Reinstallation

- » Install replacement heater element(s) (with sealing) while considering the correct sequence of all of the mounting parts. Ensure proper grounding and tighten nut(s).
- » Insert heater element wires into the terminals of the wiring connector following the markings made when disassembling. Polarity is not an issue.
- » Refit thermo switch capillary tube to heater element(s) using retainer clips.
- » Reassemble steam cylinder and reinstall in humidifier housing as described in the „Removing and cleaning the steam cylinder“ section.

9.9 Thermoswitch replacement

- » For thermal overload protection, the kits are equipped with a thermoswitch that is mounted on the steam cylinder top. The thermoswitch features a capillary tube for thermal coupling to the heater element.



- O: Thermoswitch
- P: Thermoswitch release button
- Q: Seal
- R: Steam cylinder
- S: Screw
- T: Capillary tube

Removal

- » Remove and open the steam cylinder as described above in “Removing and cleaning the steam cylinder” section.
- » Detach capillary tube (T) retainer clips from heater element.
- » Separate capillary tube from heater element(s) (4).
- » Unscrew the two screws holding thermoswitch (S) in place.
- » Pull out thermo switch (O) upwards off steam cylinder cover.

NOTICE

Risk of material damage!

Do not buckle the thermoswitch capillary tube!!

Reinstallation

- » Install replacement thermostwitch with a new sealing.
- » Properly connect the capillary tube to the heater element(s) so that the reliable contact is ensured and no lime layer may built up. If 3 heater elements are implemented, the capillary tube must be affixed to all of them.
- » Reassemble steam cylinder and reinstall in humidifier housing as described in the „Removing and cleaning the steam cylinder“ section.

9.10 Releasing a thermostwitch that has triggered

The thermostwitch trips when the temperature is $>155\text{ °C} \pm 5\text{ °K}$. When the kit is run with a HygroMatik control, this situation makes the main contactor K1 drop. The control will signal a fault.

After the thermostwitch has tripped, the release button (P) (s. fig. in preceding section) protrudes a few milimeters from its holder. After cooling down of the system, slightly push down the button. This will make the button return to its original position and unblock the mechanism.

Relasing the thermostwitch does not erase the fault message in the control fault memory (if applicable).

In case of the thermostwitch tripping repeatedly, the reason for this must be identified prior to further kit usage.

9.11 Inspection of wiring connections and heater element wiring

NOTICE

Risk of functional disruption!
Risk of material damage!

Loose cable connections may result in increased transition resistance and contact area overheating.

- » Check all cabling terminals and plugs for tight seating. Plugs must sit on their respective contacts as far as they will go.
- » Check heater element wiring for damaged insulation

9.12 Removal and reinstallation of the solenoid valve including fine filter cleaning

Removal

- » Shut off water supply and disconnect tap water hose cap screw connection.
- » Remove connecting hose (24) from solenoid valve.
- » Detach electrical cable connector from solenoid valve (25).
- » Unscrew solenoid valve mounting screws.
- » Remove solenoid valve from console bore.

Fine filter cleaning

- » Remove fine filter from solenoid valve tap water connection side and clean under running water.

Reinstallation

- » Reinsert fine filter into solenoid valve.
- » Reinsert solenoid valve with seal in console bore.
- » Bolt-down solenoid valve.
- » Reestablish tap water connection.
- » Reconnect electrical cable to solenoid valve.
- » Reattach connecting hose (24) to solenoid valve using clamp.
- » Turn on water tap.
- » Switch on unit and check for leaks after 15 to 30 mins of operation.

⚠ WARNING

Risk of electrical shock!

Hazardous electrical voltage!

Follow safety instructions for work on live components.

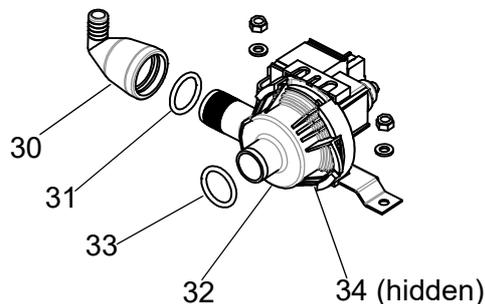
Leakages may invoke leak currents

- » In case of leakage turn off power supply and secure against being switched on again.
- » Find leakage and eliminate.
- » Check again.

9.13 Cleaning of blow-down pump

Removal and cleaning

- » Remove steam cylinder as described in „Removal and reinstallation of steam cylinder“ section.
- » Detach adapter (30) from pump (32).
- » Detach electrical cable from pump.
- » Remove nuts of pump fastening on console.
- » Remove cap nuts of cylinder base fastening.
- » Detach pump and cylinder base ((37) in the exploded view) from the console and pull pump out of cylinder base.
- » Open pump bayonet lock.
- » Remove residues from pump and drain hoses (replace O-ring (34) if required).



Blow-down pump

▲WARNING

Risk of electrical shock!

Hazardous electrical voltage!

Follow safety instructions for work on live components.

Leakages may invoke leak currents.

Reinstallation

- » Moisten O-ring (33) and insert into cylinder base (37) horizontal stub.
- » Push pump into cylinder base and position the combined assembly on the respective console studs.
- » Remount the pump nuts and the cap nuts of the cylinder base.
- » Moisten O-ring (31) and insert into adapter.
- » Slide adapter (30) onto pump stub.
- » Refit electrical cable to pump connector (no polarisation).
- » Open water supply.
- » Let unit run for 15 to 30 mins, then check for leakages.

- » In case of leakage turn off power supply and secure against being switched on again.
- » Find leakage and eliminate.
- » Check again.

9.14 Inspection of hoses

Since steam and condensate hoses are prone to wear as well, those hoses should undergo regular checks as well.

9.15 Functional check

- » Run the system with maximum output for a couple of minutes
- » Check all safety devices.
- » Check hose connections and seals for leakage.

10. Dismantling

Once the steam humidifier will no longer be used, dismantle (demolish or scrap) it by following the installation procedures in reverse order.

▲ WARNING

Dismantling of the unit may only be performed by qualified personnel. Electrical dismantling may only be performed by trained electricians.

Please note

Obey the safety guidelines in section “Safety Instructions,” especially the guidelines for disposal.

11. Spare parts

*	KitH02	KitH03	KitH06	KitH09	KitH15	KitH25	Article No.	Description
Steam generation 208 - 240 V								
16	1						SP-01-01010	Steam cylinder KitH02 CY08 208-240V, incl. O-ring set
16		1					SP-03-01010	Steam cylinder KitH03 CY08 208-240V, incl. O-ring set
16			1				SP-03-01040	Steam cylinder KitH06 CY08 208-240V, incl. O-ring set
16					1		SP-04-01010	Steam cylinder KitH15 CY08 208-240 V, incl. O-ring set
4	1						B-2209031	Heating element CY02 2kg 208-240 V, incl. gaskets
4		1					SP-03-01100	Heating element CY08 3kg 230V, incl. gaskets
4			1				SP-03-01101	Heating element CY08 6kg 230V, incl. gaskets
4					3		SP-07-01100	Heating element CY17 5kg 208-240 V, incl. gasket
Steam generation 380 - 480 V								
16			1				SP-03-01041	Steam cylinder KitH06 CY08 380-415V, incl. O-ring set
16				1			SP-03-01070	Steam cylinder KitH09 CY08 380-415V, incl. O-ring set
16					1		SP-04-01011	Steam cylinder KitH15 CY17 380-415V, incl. O-ring set
16						1	SP-04-01040	Steam cylinder KitH25 CY17 380-415V, incl. O-ring set
4			1				SP-03-01102	Heating element CY08 6kg 400V, incl. gaskets
4				1			SP-03-01105	Heating element CY08 9kg 400V, incl. gaskets
4					3		SP-07-01101	Heating element CY17 5kg 400V, incl. gasket
4						3	SP-07-01104	Heating element CY17 8,4kg 400V, incl. gasket
Steam generation 440 - 480 V								
16			1				SP-03-01042	Steam cylinder KitH06 CY08 440-480 V, incl. O-ring set
16				1			SP-03-01071	Steam cylinder KitH09 CY08 440-480 V, incl. O-ring set
16					1		SP-04-01012	Steam cylinder KitH15 CY08 440-480 V, incl. O-ring set
16						1	SP-04-01041	Steam cylinder KitH25 CY08 440-480 V, incl. O-ring set
4			1				SP-03-01103	Heating element CY08 6kg 440-480 V, incl. O-ring set
4				1			SP-03-01107	Heating element CY08 9kg 440-480 V, incl. O-ring set
4					3		SP-07-01102	Heating element CY17 5kg 440-480 V, incl. O-ring set
4						3	SP-07-01105	Heating element CY17 8,4kg 440-480 V, incl. O-ring set
Steam generation general								
	1						AC-01-01000	O-ringset (pos. 3, 17, 31, 18, 33, 34, 35)
		1	1	1			AC-03-01000	O-ringset (pos. 3, 17, 18, 31, 33, 34, 35)
					1	1	AC-04-01000	O-ringset (pos. 3, 17, 18, 31, 33, 34, 35)
18	1	1	1	1	1	1	B-3216021	Cylinder flange clamps, set=24pcs
5	1	1	1	1	1	1	B-2205031	Thermal circuit breaker steam cylinder incl. incl. gasket, clips
	1						B-2209035	Protective tube incl. melting fuse
27	1	1	1	1	1	1	CN-07-01010	Water level sensor complete for Control Standard
60	1	1	1	1	1	1	B-2504171	Float switch w/o housing for Control Basic
60	1	1	1	1	1	1	B-2504173	Float switch w/o housing for simple control
1	1						E-3221002	Adaptor for steam hose for cylinder CY08 DN25
1		1	1	1	1	1	E-2209018	Adapter for Steam hose for cylinder CY08 DN40-25
1							E-2209008	Adapter for Steam hose for cylinder CY17/45 DN40-40
37	1	1	1	1			E-3220000	Cylinder base
37					1	1	E-2206086	Cylinder base
Water feed								
25	1	1	1	1			B-2304251	Solenoid valve KitH03-09 208-240V 0.2 - 10bar with mounting set
25					1	1	B-2304253	Solenoid valve KitH15-25 208-240V 0.2 - 10bar with mounting set
	1	1	1	1	1	1	on request	Water feed group incl. clamps (pos. 21, 22, 24, 37)
Water drain								
	1	1	1	1	1	1	B-2425005	Pump- drain- hose- system (pos. 6, 14, 15, 30, 31)
	1	1	1	1	1	1	B-2404027	Drain pump without mounting set, with 2 o-rings

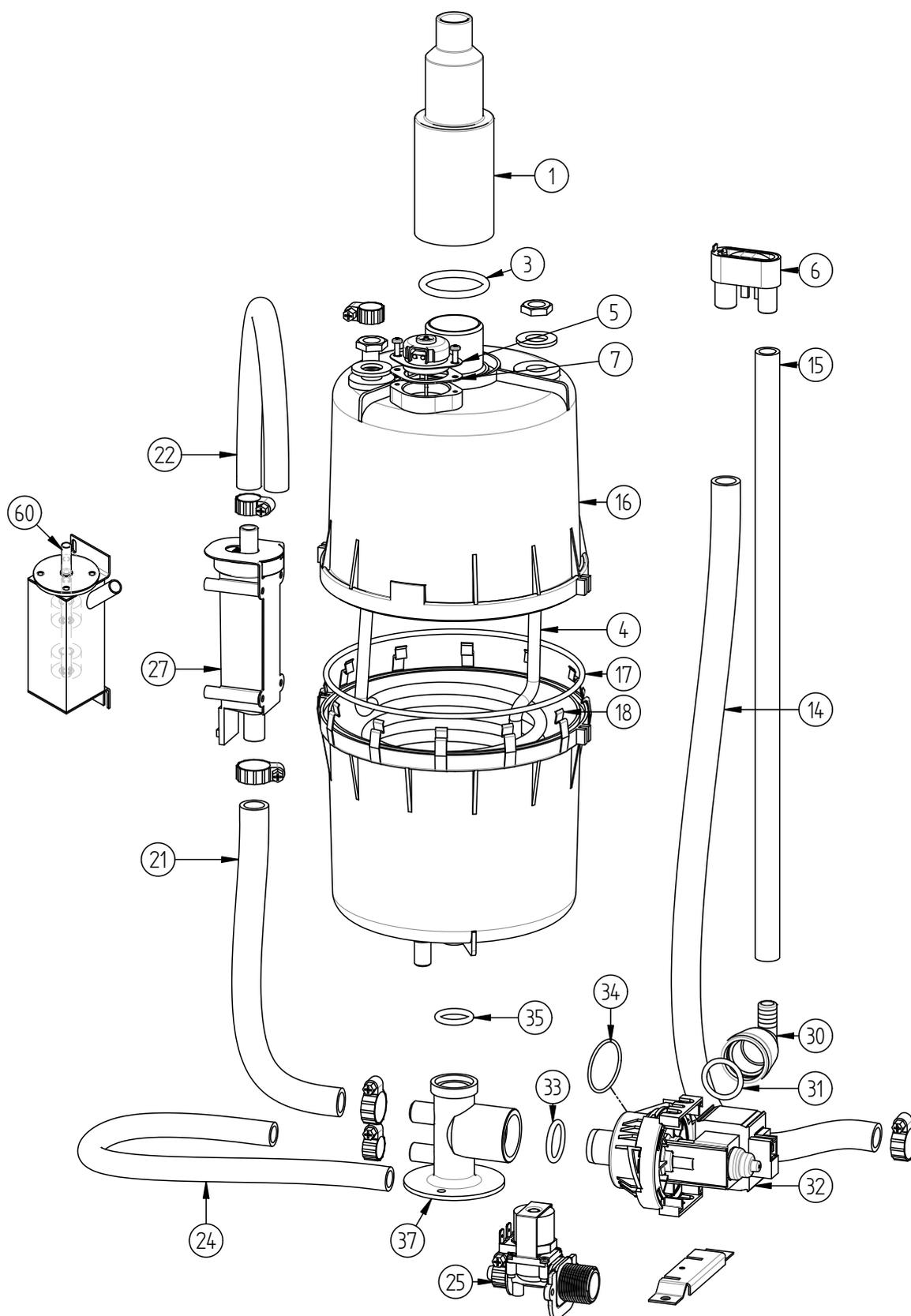
*)	KitH02	KitH03	KitH06	KitH09	KitH15	KitH25	Article No.	Description
								Electrics
	1	1	1	1	2	2	E-2525252	Solid state relay incl. heatsink
	1	1	1				WR-03-01000	Connector e- compartment - water compartment, plug + socket
				1	1	2	WR-07-01000	Connectore- compartment - water compartment, plug + socket
	1	1	1	1	1	1	CN-07-00000	Control Standard Mainboard incl. Plug
	1	1	1	1	1	1	E-0510010	Display
	2	2	2	2	2	2	E-0510012	Clip for display
	1	1	1	1	1	1	B-2526203	Control Basic PCB
	1	1	1	1	1	1	E-2502412	Control switch, double pole, middle position = "0"
								Accessories
							E-2604012	Steam hose DN25, per m
							E-2604013	Steam hose DN40, per m
							E-2604002	Condensate hose DN12, per m
							E-2604004	Condensate hose DN14, per m
							E-2404004	Steam hose clamp DN25
							E-2604016	Steam hose clamp DN40
							E-2304015	Condensate hose clamp DN12
							E-8501064	Condensate hose clamp DN14
							E-2604042	Connectors for steam distribution T-piece DN25, stainless steel
							E-2604023	Connectors for steam distribution T-piece DN40, stainless steel
							E-2604021	Connectors for condensate T-piece DN12

*) relates to position no. in exploded view

For ordering spare parts, a template can be found on the www.hygromatik.com website under the „Contact“ tab. Your spare parts order may as well be directed per e-mail to the HygroMatik main office using the address hy@hygromatik.de.

Please make sure to specify your unit model and serial number.

12. Exploded view



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14. Technical specifications

Technical specifications SteamKit H				
Model	KIT H02	KIT H03	KIT H06	KIT H15
Steam output [kg/h]	1.8 - 2.2	2.7 - 3.3	5.5 - 6.5	8.2 - 9.8
Electrical supply (with control Standard ⁽¹⁾)	220 - 240 V/1 Ph/N/50 - 60 Hz		380 - 415 V/3 Ph/50 - 60 Hz	
Power rating [kW]	1.4 - 1.6	2.1 - 2.4	4.1 - 4.9	6.2 - 7.3
Nominal current [A]	6.2 - 6.8	9.4 - 10.2	18.7 - 20.4	10.7 - 11.7
Circuit protection [A]	1 x 10	1 x 16	1 x 25	3 x 16
Control	optional: Basic or Standard			
Separate control voltage	220 - 240 V/1Ph/N /1.6 A			
Steam hose connection [mm]	1 x 25			
Empty weight console [kg]	4.5		5.4	9
Operational weight [kg]	9		11	24
Width [mm]	300			
Height [mm]	400		550	730
Depth [mm]	220			
Water connection	Fully demineralized water / cleaned condensate / partially softened water / tap water (different qualities) 1 to 10 bar, with 3/4" connection for external thread			
Drain water connection	connection Ø 14 mm			

⁽¹⁾ other voltages on request

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