



Installation and Maintenance Instructions

Air handling unit KG Standard

(Translation of the original)



| Contents | Page |
|---|-------------|
| Reference symbols / Safety instructions | 3 |
| Standards | 4 |
| Delivery / Handling | 5 |
| Installation information..... | 6-11 |
| Electrical connection..... | 11-13 |
| Commissioning | 14-17 |
| Maintenance | 18-20 |
| Frost protection..... | 20 |
| Checklist..... | 21 |
| Notes | 22-23 |

Order-specific appliance details, such as weights, dimensions, noise data, spare parts, energy data, etc., can be found in the order datasheets.

Original WOLF spare parts can be obtained quickly by faxing +49 (0) 8751/74-1574, and stating the order number (on the type plate).

General information

These installation, operating and maintenance instructions apply only to Wolf KG Standard air handling units.

Before installation, carefully read and observe these "Installation, operating and maintenance instructions - Wolf air handling units KG Standard".

The installation instructions should be considered an integral part of the unit supplied, and should be retained in an easily accessible location.

Failure to observe the installation and operating instructions voids any Wolf warranty.

Reference symbols

The following symbols are used in these installation and maintenance instructions. This important information concerns personal safety, as well as operational reliability.



"Safety instructions" are instructions with which you must comply exactly, to prevent injury and material losses.



Danger through 'live' electrical components!

Please note: Turn OFF the ON/OFF switch before removing the casing.

Never touch electrical components or contacts when the ON/OFF switch is in the ON position. This would result in a risk of electrocution that may lead to injury or death.

The main supply terminals are 'live' even when the ON/OFF switch is in the OFF position.

Please note

"Please note" indicates technical instructions that you must observe to prevent material losses and appliance malfunctions.

In addition to the installation and maintenance instructions, information labels are attached to the unit.

These must also be observed.

Safety instructions

Only qualified and trained personnel may be appointed for the installation, commissioning, servicing and operation of the unit.

VDE regulations [or local regulations] and those of your local power supply utility are applicable to electrical installation work.



Only operate the unit within its output range, which is stated in the technical documentation supplied by Wolf.

Correct use of the unit includes using it only for ventilation purposes. The unit may only be used for handling air. The air must not contain any harmful, combustible, explosive, aggressive, corrosive or otherwise dangerous substances.

Only operate the unit when it is in perfect technical condition. Any faults or damage which impact or might impact upon the safety or correct function of the unit must be remedied immediately by qualified personnel. Only replace faulty components and equipment with original WOLF spare parts.



Work on electrical equipment or component assemblies may only be carried out by an approved electrician in accordance with electrical appliance regulations.



Never carry out any work out in the immediate vicinity of an operational fan, as this poses a risk of injury.



In the event of a fire, the air handling unit must shut down automatically via suitable means, e.g. a fire damper (on site), as otherwise harmful substances will be blown into the connected rooms.

Check the unit's electrical equipment regularly. Rectify any loose connections or faulty cables immediately.

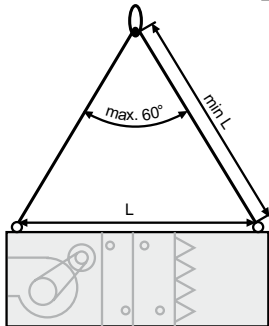
Delivery

KG 15-100 air handling units are delivered in transportable units. Upon receipt of the goods, check the appliance or components for transport damage. If there is any damage or even a suspicion of damage, the recipient must indicate this on the consignment note and have it countersigned by the haulier. The recipient of the goods must notify WOLF of the relevant facts without delay.

Handling

Please note

The units must only be transported in their installation position. Otherwise the installed components will be damaged which can lead to malfunctions.



Handle the units with lifting straps.

If moving the units with a forklift truck or on rollers, ensure that the supporting forks or rollers are positioned underneath the frame sections and not under the floor plates.

When lifting the units with the aid of eye bolts (on request), use lifting ropes that give you a minimum eye bolt distance L. Keep ropes at the same length.

Units with more than 4 eye bolts must be lifted with a lifting beam.

Space requirement

On the operating side, there should be at least one unit's width for installation, operation and maintenance (see list below).

Space requirement for installation, operation and maintenance:

| | |
|--------------------------------|-------------------------|
| Fan section | 0.8 x unit width |
| Cooler and heater section, RCS | 1 x unit width + 250 mm |
| Filter section | 1 x unit width |

If units are arranged next to one another, the space listed above is required on both sides for installation, operation and maintenance.

Units that require a siphon (scrubber, humidifier, cooler, KGX/KGXD plate heat exchanger, mist eliminator) must be sited in such a way that the siphon can be installed and operated unimpeded (observe height of foundations).

For units with a humidifier and/or cooler above rooms containing moisture-sensitive equipment (e.g. computer rooms, etc.), we recommend waterproof foundations.

For garage extractor fans, observe the conditions of the garage systems regulations [or local regulations].

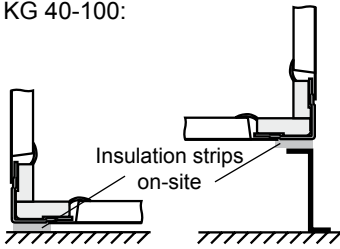
Installation room

Please note

Only site the KG air handling units in a room that is free from the risk of frost. If a risk of frost in the installation room cannot be excluded, take suitable steps to prevent water-carrying components from freezing. (See chapter "Frost protection measures".)

Foundation

KG 40-100:



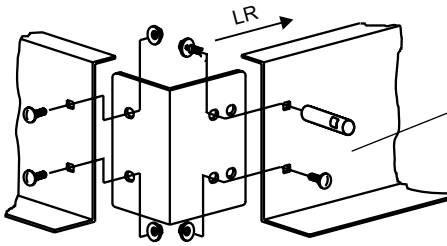
Please note

A level, horizontal and load-bearing surface is required to site and install the units and unit components.

Base frames must be levelled horizontally; foundation plinths must also be level and horizontal.

The entire lower unit frame must sit on the foundation; point loads are not permissible.

To prevent structure-borne noise being transmitted from air handling units to the building, insert a permanently flexible intermediate layer between the plinth/foundation and the unit/base frame. This intermediate layer should ideally take the form of insulation strips, fitted lengthwise below the unit frame sections.

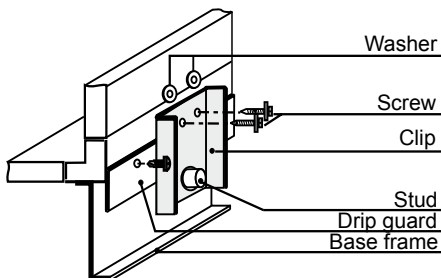


Base frames are delivered either securely fitted to the unit or loose (in advance).

If the base frame is delivered in advance, replace the screw with the stud provided.

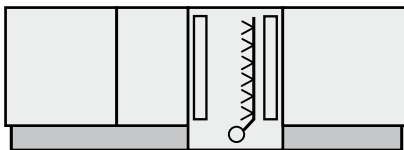
Loose base frames are delivered in individual sections and must be assembled on site in accordance with the instructions supplied with the base frame, levelled, and secured to the plinth.

If units are delivered in sections with the base frame fitted, the base frame and unit will be split at the same points.



When being positioned on the base frame or foundation plinth, align the units in such a way that a gap of approximately 10 mm is maintained between the base frame or foundation plinth and the drip guard.

When installation is complete, securely fix the air handling units to the base frame or foundation plinth using the clips provided.



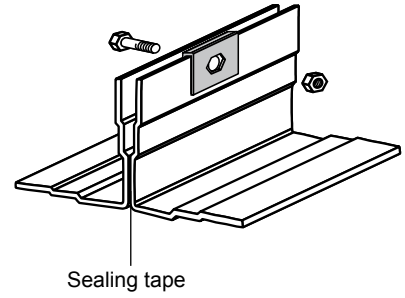
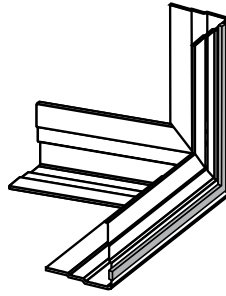
For units with a scrubber, use a base frame or foundation plinth because the scrubber base is lower than the remaining unit base. The required height of this base frame depends on the type of scrubber and is determined individually when designing the unit.

Unit connection

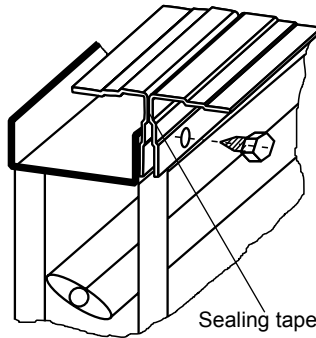
The connection is made using M6 screws and spacer clips, for which holes are provided at the appropriate points in the cubes. All small parts required for assembly, plus loose accessories, are supplied in a unit with an inspection door (preferably a fan section). This unit will be marked with a label reading "Accessories inside unit".

In order to completely waterproof the unit, apply the self-adhesive sealing tape supplied with the unit to one side before the cubes are joined.

KG 15-100



KG 40-100



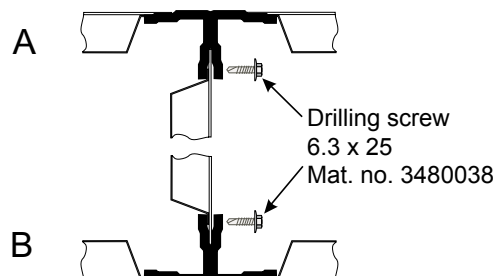
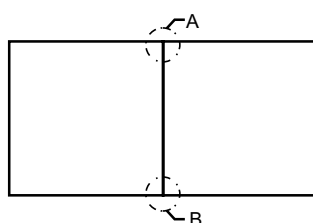
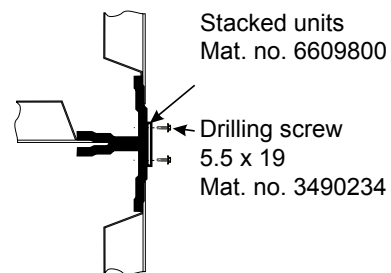
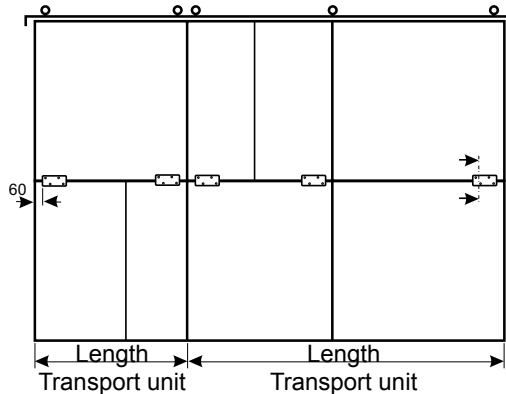
Only with recirculation air damper with self-tapping hexagon screws $\text{Ø } 8 \times 25$

Unit arrangement: stacked or adjacent

Stacked units are delivered separately and must be linked together on site using the unit connectors and drilling screws provided.

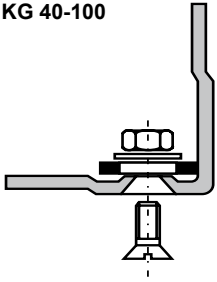
Upper and lower or adjacent unit sections cannot be fitted together until the various transport units have been assembled at the final installation site.

Stacked units



Version for disassembly (on request)

KG 40-100



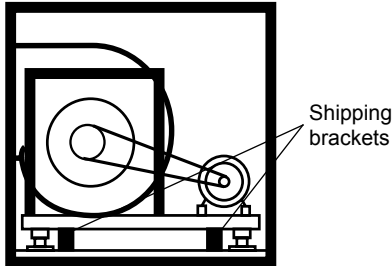
The units are delivered fully assembled. To facilitate handling, they can be taken apart and reassembled in the installation room.

With the version for disassembly, the frame sections split in the centre and are secured with a flat steel bar or angle bracket (secured with screws). To split the KG 40-100, remove any frame insulation that is in place and refit after the cubes have been assembled.

Fan section

Please note

The fan shaft must always be horizontal.



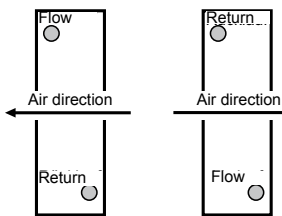
Canvas flange/
louvre damper

With fans mounted on anti-vibration spring mounts, remove the transport brackets.

When installing, ensure that the distance between the connection flanges is not greater than 100 mm, to enable the canvas flange to move fully.

The canvas flange and louvre damper may need to be insulated on site against both sound emission and the formation of condensate.

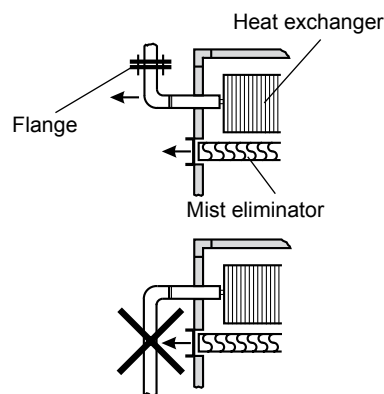
Heat exchanger



Please note

The heat exchangers (cooler, heater) operate using the countercurrent principle, i.e. the heat transfer medium or refrigerant is channelled in the opposite direction to the air flow. The relevant flow connection is therefore always located on the air discharge side of the heat exchanger.

The heat exchangers must be connected in such a way that no mechanical stress from the pipework is transferred to the heat exchangers. Furthermore, the transmission of vibrations and thermal expansion between the air handling unit and the pipework must be reliably prevented. Ensure that the connection lines do not hinder access to other parts of the unit (fan, filter, scrubber, etc.).



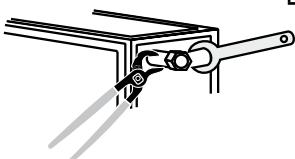
Regarding the heat exchanger (with flange), we recommend making the connection with bends, so that the heat exchanger and mist eliminator can later be extracted from the side for cleaning.

With steam coils, always arrange the steam intake at the top (large connection \varnothing) and the condensate drain at the bottom.

When connecting the flow and return lines, counterhold the threaded heat exchanger connectors to prevent them from being twisted, otherwise the application of mechanical force may detach the collector from the heat exchanger. This would destroy the heat exchanger.

Please note

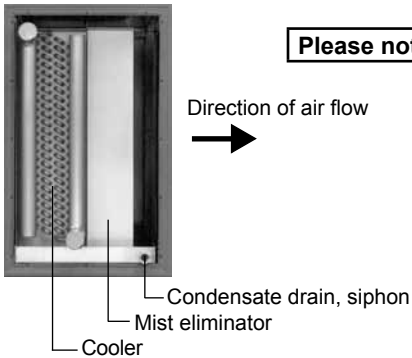
Ensure there are ventilation and drainage facilities on site.



Connect a siphon to the condensate drain connector on the cooler pan.

The connection pipes outside the external casing are insulated on site.

On-site cooler installation:



Please note

Remove casing and mist eliminator with condensate pan (mist eliminator is placed in the guide rails for shipping).
Apply sealant to the mist eliminator frame and secure to the cooler bank.
The condensate drain apertures in the mist eliminator must be facing downwards.

Depending on the direction of the air flow, the removable cover panel must be fitted at the air intake on the collector side of the cooler bank.

Arrangement of mounting parts in the direction of the air flow:
Cooler bank, mist eliminator, condensate drain.

Insert the fully assembled unit into the cooler section; the cooler bank will be held in place in the guide rails.
Fit casing.

Scrubber section

Please note

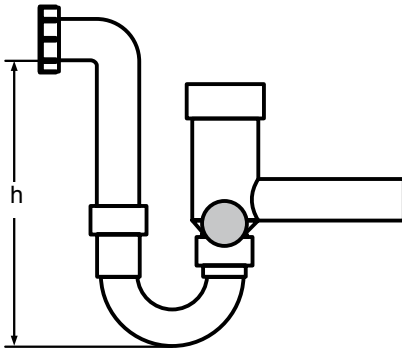
When installing the scrubber, ensure that no dirt or other solid matter enters the scrubber, as this would block the pump impeller and seriously impair or completely destroy the pump.

If standard requirements apply, the water used for the scrubber must have at least the following quality:

| | | |
|--|--------------------------------|------------------------|
| Appearance | clear, colourless, no sediment | |
| pH value | 7 to 8.5 | |
| Total salt content | < | 800 g/m ³ |
| Electrical conductivity | < | 100 mS/m (at 20 °C) |
| Calcium ion content | > | 0.5 mol/m ³ |
| Carbonate hardness | < | 4.0 °d |
| Carbonate hardness if using hardness stabilisers | < | 20 °d |
| Chloride content | < | 180 g/m ³ |
| Sulphate content | < | 290 g/m ³ |
| KMnO ₄ consumption | < | 50 g/m ³ |
| Bacteria count | < | 1000 ml ⁻¹ |

If connecting the scrubber to the public water supply system, observe DIN 1988 [or local standards].

Ball siphon



In order to drain away the condensate reliably, join a ball siphon to the condensate drain connector onto the drain pan for the cooler/direct evaporator and onto the KGX/KGXD plate heat exchanger pan.

Please note that a siphon must be fitted to every condensate drain connector. It is not permissible to join several drains to a common siphon.

The ball siphon is self-filling. A float ball prevents air being drawn in when the system is dry, so the initial condensate created can fill the siphon. The ball also acts as a non-return valve and prevents the siphon from being completely drained.

In order to be able to fit the siphon, ensure that the **foundation** is of the correct **height**.

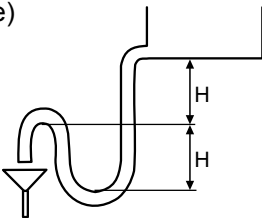
The effective siphon height h (mm) must be greater than the maximum under- or overpressure at the condensate connector (1 mmWC = 10 Pa).

$$h = 1.5 \times p \text{ (mmWC)} + 50 \text{ mm (min.)}$$

| | |
|------------|--|
| p | Under- or overpressure in mmWC according to appliance design |
| 50 mm (WC) | Reserve (imprecision in design, evaporation) |
| 1.5 | Additional safety factor |

The siphon drain line must not be connected directly to the public sewage system, but rather must be able to run out freely. Vent longer drain lines to prevent condensate backing up in the line.

Double siphon (on site)



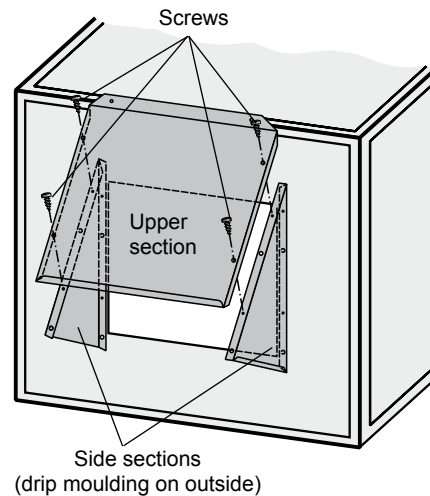
If the siphon is provided on site, establish the height of the siphon with reference to the adjacent diagram.

The effective siphon height H (mm) must be greater than the maximum under- or overpressure (in Pa) in the air handling unit (1 mmWC = 10 Pa).

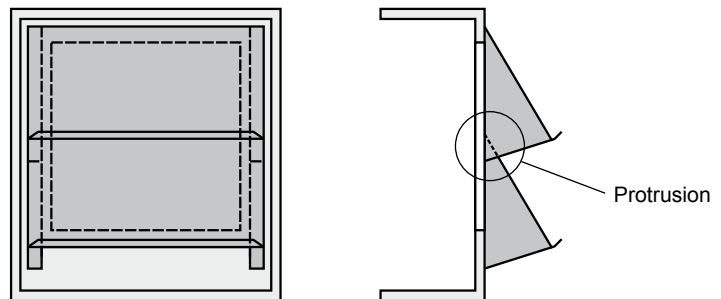
The height differential between the unit discharge and the siphon overflow should also equal H (mm).

Intake/discharge hood

Fit the side sections and top section as shown in the diagram using the screws provided.



In the version with two intake/discharge hoods, one above the other, the upper hood protrudes over the lower one.



Electrical connection

Ensure that the appliance is isolated from the power supply.
Secure against reconnection.

Making the electrical connection

Check that the connecting cables are fitted correctly.

Always install an earth conductor.
Check the earth conductor.



Risk to life through electrocution.

Only use cables that meet the prescribed wiring regulations with regard to voltage, current, insulation material, load, etc.

Ensure that there is sufficient protection against contact.

Before working on an electrical connection, the mains connections and PE must be short circuited.

Check whether the data on the type plate corresponds to the connection data.

Before connecting the unit, ensure that the mains voltage corresponds to the fan voltage.

Only use cables that are designed for the intensity of current according to the type plate.

Electrical connection



Electrical connection should only be carried out by an electrician in accordance with the applicable regulations (VDE, power supply utility, etc.).

If the supply or extract air fan is shut down or fails, all control valves must close automatically and the hot/cold water and scrubber pumps must stop. Only use normally closed control valves and a frost stat without restart lock. Otherwise, some components will continue to operate when the system is shut down, which will prevent the safety equipment from working (e.g. frost protection would not be guaranteed).

In order to safely shut down the air handling unit, install a lockable maintenance isolator for every drive motor.

If, due to structural requirements, additional protective equipotential bonding is required, this should be provided on site. The user or the certified electrician is obliged to ensure correct earthing of the units in accordance with the applicable national and local electrical and installation regulations.

Make the electrical connection in accordance with local regulations. After making the electrical connection, a safety check of the installation must be carried out in accordance with VDE 0701 Part 1 and VDE 0702. During commissioning, it is important to ensure that the rotational direction of the fan is correct. Observe the indicator arrow on the back panel of the unit.

Please note

Use only electric motors that are designed to drive fans.

It is essential that you take note of the connection diagram in the terminal box, because if connected incorrectly, the motor may not be able to provide its full output or may be destroyed.

For motors with PTC thermistors, use a PTC thermistor trigger device; for motors with thermal contacts, use an interlock contactor; and for motors without PTC thermistors or thermal contacts, use a thermal overload relay.

If connecting several KG : Connect the thermal contacts and frost stats in series. Connect the KG motors and servomotors in parallel.

Electrical connection, EC fan

EC motors can be operated at variable speed across the entire range via a 0 – 10 V signal (DC). The motors are generally equipped with internally wired temperature monitors.

Never route the unit's control cables immediately parallel to the power cable. Ensure that there is as much clearance as possible.

Recommendation: Clearance > 10 cm (separate cable guide)

Please note

If the EC fan is only connected to the mains without connecting an additional control unit to the fan's control connection, a jumper must be inserted between the connections 0 – 10 V /PVM and +10 V. In this case, the fan runs at maximum speed or air volume.

Motor fault

To restart the motor, switch off the mains voltage for at least 25 s and then switch it back on.

RCD

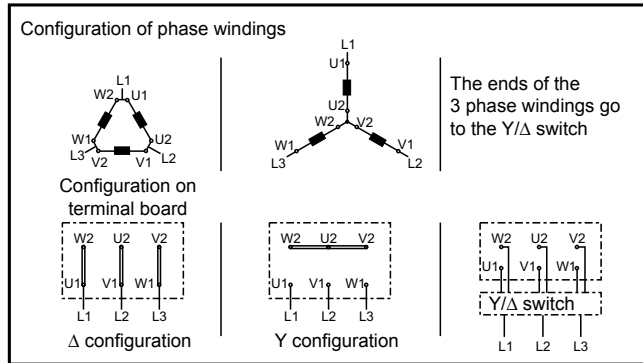
Only AC/DC-sensitive fault current safety devices (type B) are permissible. We recommend RCDs with a trip threshold of 300 mA.



Terminals and connections are live even when the unit has been switched off. Do not touch the unit for 5 minutes after disconnecting the power across all poles. If control voltage is present or a set speed is saved, the motor will restart automatically, e.g. following a power failure.

Single speed control

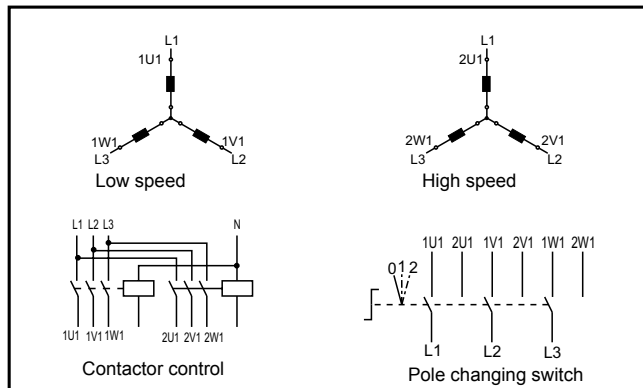
Motors up to 2.2 kW are usually started directly; from 3 kW they are started in star delta configuration.



Dual speed control

(2 separate windings)

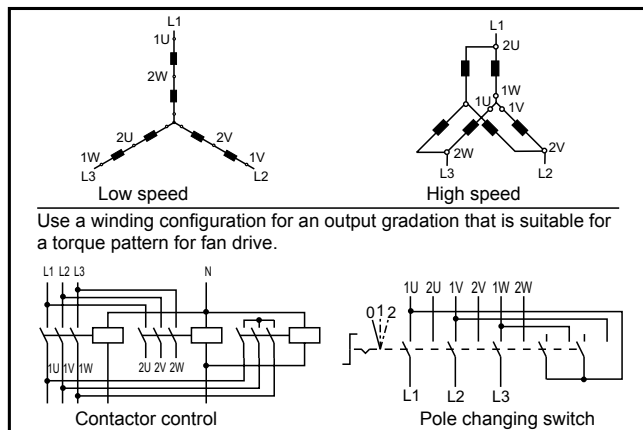
Version for e.g. 1000/1500 rpm or 750/1000 rpm



Dual speed control in a ratio of 1:2

(tapped winding configuration)

Version for e.g. 1500/3000 rpm or 750/1500 rpm



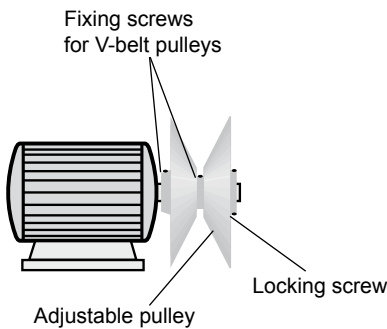


In accordance with DIN EN 1886, the unit must be opened with tools. Wait for the fan to come to a complete standstill before opening the inspection doors. When the doors are opened, negative pressure may draw in loose objects, which could destroy the fan or even cause a risk to life if items of clothing are drawn in.

Check that safety equipment such as V-belt or protective door grilles and monitoring equipment is fitted and functions correctly.

Fan section

Please note



- Commissioning may only be carried out if the ducts are connected and the inspection doors are closed. Otherwise there is a risk of motor overload.
- Check that the V-belt pulleys and locking screws in the clamping bushings are firmly seated.

Adjustable V-belt pulleys are not set before the unit is delivered, so must be adjusted accordingly on site when commissioning the air handling unit.

They allow the fan speed to be changed by 10 %.

Setting:

To alter the pulley diameter, the adjustable pulley can be moved axially on a threaded shaft (see adjacent diagram).

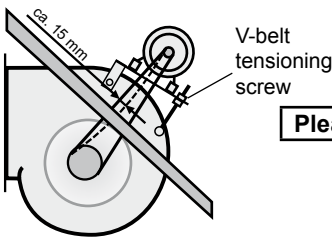
To do this, the V-belt must be slack and the locking screws in the adjustable pulley need to be undone using an Allen key. After adjusting the pulley, firmly retighten the locking screws and adjust the V-belt tension correctly. When tightening, both locking screws must rest on the flattened threaded shaft.

- Check that the V-belt has the correct tension (for retightening, see chapter on Maintenance). The V-belt pulleys must be in perfect alignment.
- Turn ON the ON/OFF switch.
- Check the rotational direction of the fan impeller by briefly switching on the drive motor. Correct the rotational direction if required.



Proceed with the utmost caution as it is necessary to open the door to the fan section for these steps. There is a risk that loose objects may be drawn in, which could destroy the fan or even cause a risk to life if items of clothing (ties) are drawn in.

KG 40-100



Please note

- Check the air volume. Check the pressure drop.
- Check the power consumption of the fan motor:

The motor current and motor rating must not exceed the values specified on the motor type plate. It is imperative that the maximum specified fan speed is not exceeded as otherwise the motor and fan would be destroyed by this overload and undone or flying parts could destroy other components.

Please note

Regarding air handling units with a controllable motor and/or variable recirculating air section, the maximum power consumption in the entire control range must be checked.

If necessary, correct the air volume by replacing the pulleys (with adjustable pulleys, alter the pulley(s); see above).

Louvre damper (accessory)



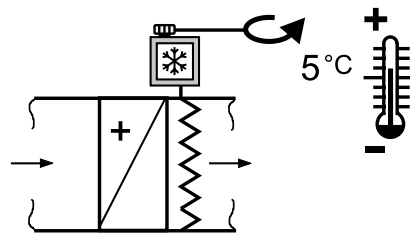
The louvre dampers may need to be insulated on site against both sound emission and the formation of condensate. In the case of louvre dampers, follow the separately supplied installation instructions for the damper servomotor.

Louvre damper drive shaft: □ 15 x 15 mm

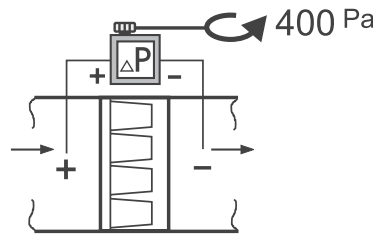
If louvre dampers are located on the pressure side, open them fully before commissioning the fan.

Starting up the fan against closed louvre dampers can cause damage to the unit.

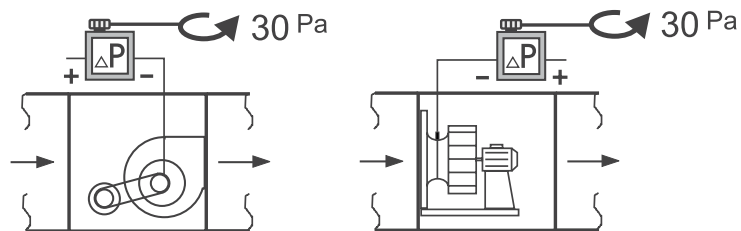
Frost stat



Filter monitor



Air flow monitor



Heater

(warm water/hot water/steam)

Before commissioning, check the entire pipework system for leaks.

- Vent the heat exchanger and pipework system.
- With steam coils, secure the condensate drain to prevent damage to the coil from steam hammers.
- Only start the heating water pump or open the water/steam valve when the fan is running, to prevent overheating caused by insufficient heat transfer.
- Check the discharge temperature: Maximum discharge temperature 40 °C if the heater is located on the intake side, otherwise there is a risk that the motor will overheat.
- Protect heat exchangers against frost.



Be careful of hot surfaces of heat exchangers and connectors. Risk of burns.

Electric heater

To prevent overheating, note the following minimum air volumes (in m³/h):

| Unit type KG | 15 | 20 | 25F | 40F | 40 | 63 | 100 |
|--|------|------|------|------|------|------|---------------------|
| Minimum air volume (m ³ /h) horizontal + vertical ↑ | 550* | 900 | 900 | 1600 | 1600 | 2500 | acc. to unit design |
| Minimum air volume (m ³ /h) vertical ↓ | 800* | 1300 | 1300 | 2200 | 2200 | 3200 | acc. to unit design |

*for 15 kW heating output

With multiple speed or variable speed motors, these air volumes must be maintained at the lowest motor speed, irrespective of the heating output of the electric heater.



Follow the relevant safety regulations for electric heaters.

Please note

It is essential to ensure that if the air flow fails, the electric heater will be switched OFF **automatically**. Furthermore, the electric heater bank must only be switched by one or more switching devices (contactors) the control current of which is routed via the safety temperature limiter connected in series. Ensure that at least one safety temperature limiter is located at the top on the inside of the heater.

The electric heater bank must be protected from moisture and water.

Cooler

(cold water)

Before commissioning, check the entire pipework system for leaks.

- Vent the heat exchanger and pipework system.
- Secure the condensate drain to prevent the condensate pan overflowing.
- If necessary, before commissioning a cold water cooler, check whether the concentration of the antifreeze in the coolant is sufficient for the anticipated temperature range. If antifreeze is added to the cold water, the output of the cooler will be reduced in inverse proportion to the rising concentration of the mixture.
- The discharge temperature must be above +2 °C (brine operation), otherwise there is a risk of hoar frost and the downstream frost stat will issue a fault message.



Antifreeze is harmful to health. It is essential to follow the manufacturer's safety instructions when using antifreeze on site.

Cooler
(direct evaporator)

Before filling the refrigerant circuit with refrigerant, take suitable steps to ensure that no residual moisture remains in the pipework system (e.g. evacuate or purge with dry nitrogen).

Check the discharge temperature and evaporation temperature: minimum temperature +2 °C. If the discharge temperature and refrigerant temperatures are below +2 °C, there is a risk that the heat exchanger will freeze and the downstream frost protection will respond.

Please note

The output for the direct evaporator can only be achieved if the refrigerant used is the one on which the design is based (R134a).



Never allow refrigerant to escape into the environment as this creates a risk of environmental pollution. Use a suitable suction device.

Scrubber

- Check pipework and pump for leaks.
 - Check that the nozzle holder and nozzles are firmly seated.
 - Check that the siphon drain is unrestricted.
 - Fill the siphon with water.
 - Fill the scrubber pan until water drains from the siphon.
 - To check the rotational direction, briefly start the scrubber pump and correct the rotational direction if required.
- Check the power consumption of the pump motor.

Please note

**Never let the scrubber pump run dry.
Running dry can destroy the pump.**

- Start the supply air fan.
- Start the scrubber pump.
- Adjust the float: Water level in the pan at least 10 mm above the pump intake; maximum 10 mm below the overflow outlet.
- If installed, adjust the run-dry protection and automatic desalination device (as explained in separately supplied instructions).

Note: Mist eliminators allow moisture through for a limited time due to their surface structure, resulting from their manufacturing process. This is not a technical fault.

Blow-down valve assembly
(on request)

Adjust the blow-down volume at the manual valve.
(This blow-down volume depends on the water hardness and the dust content in the air. As a rule of thumb, assume twice the evaporated water volume.)



Before starting any maintenance work, turn the system ON/OFF switch OFF and secure against reconnection. If it is switched ON again unintentionally, people who enter the unit are at risk from rotating parts.

Wait for the fan to come to a complete standstill before opening the inspection doors. When the doors are opened, negative pressure may draw in loose objects, which could destroy the fan or even cause a risk to life if items of clothing (ties) are drawn in.

Fan section

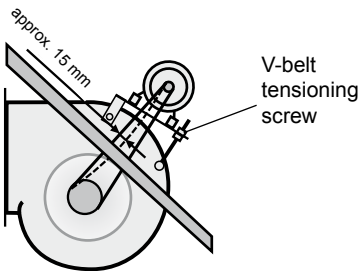
Initially recharge fan bearings with grease nipples with lithium soap grease after approximately 50 hours run, and then every 2500 hours run.

Maintenance-free bearings are permanently lubricated and are identified accordingly with labels.

Please note

Standard three-phase motors are maintenance-free.

In the case of special motors, follow the maintenance instructions of the motor manufacturer.



Initially adjust the tension of V-belts after one hour in use. After this, checks at regular intervals are required depending on the operating conditions, but should be carried out at least every 4 months.

When changing the V-belt in multi groove drives, replace the entire belt set.

In the KG 40-100 Standard, the drive motor is attached to a sloping frame. To adjust the tension of the V-belt, undo the locknut on the tensioning screw, tighten the tensioning nut to the correct belt tension, and retighten the locknut.

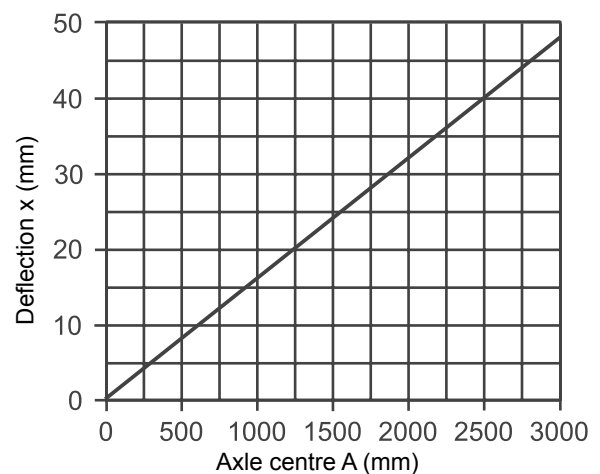
Correct V-belt tension:

After tightening, the V-belt at the halfway point between the motor and fan shaft must be able to be deflected by about 15 mm.

Check that the V-belt pulleys are aligned.

Applied test force (F) and deflection values (x) for high performance narrow V-belts DIN 7753

| Belt profile | Effective diameter of the small pulley (mm) | Force F (N/belt) |
|--------------|---|------------------|
| SPZ | 67 - 95 | 10 - 19 |
| | 100 - 140 | 15 - 20 |
| | 150 - 200 | 19 - 27 |
| SPA | 100 - 132 | 20 - 27 |
| | 140 - 200 | 28 - 35 |
| | 224 - 315 | 35 - 50 |
| SPB | 180 - 224 | 40 - 52 |
| | 236 - 315 | 46 - 60 |
| | 315 - 400 | 55 - 76 |
| | 400 - 500 | 67 - 90 |



Flat belt drive

Please note

Check that the fan drive shaft is exactly parallel to the motor drive shaft.

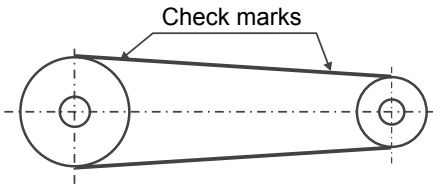
Check that the pulleys are in perfect alignment.

Thoroughly clean all pulley running surfaces of dirt, oil and grease.

Before the test run, turn the pulleys by hand to check the belt is running correctly.

After a 30 - 60 minute test run, check the belt drive and increase the pre-tension if required (max. 2 %).

If using flanged or edged pulleys, ensure that the belt does not come into constant contact with the flange or edge, as this could destroy the belt.



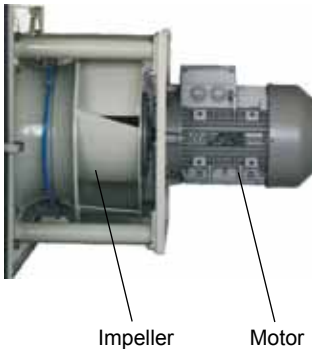
Examples - test mark distances:

| | | | |
|-----------|------------------------|--------|--------|
| Slack | 250 mm | 350 mm | 500 mm |
| Tensioned | as per imprint on belt | | |

Free-running impeller

Motor and bearings are maintenance-free.

If necessary, clean the impeller with a soapy solution.



Heat exchanger (heater/cooler)

Check for contamination and clean at regular intervals.

Clean the heat exchanger by one of the following means:

- vacuuming
- blasting with compressed air
- spraying with water or steam.

Please note

Air/water/steam pressure for cleaning not above 5 bar, otherwise there is a risk of the mechanical destruction of the components.

Check the condensate drain.

Open, clean and refill the siphon.

Clean the mist eliminator sections with commercially available descaling agent.

Louvre dampers

Never lubricate the louvre dampers. This could destroy the plastic used and compromise the function of the damper.

Blow compressed air through dampers; no other maintenance required.

Scrubber

Clean scrubbers and mist eliminators at regular intervals. The cleaning cycles depend on the operating mode, air condition and water quality.
For maintenance, drain the pan and rinse with clean water or a high pressure cleaner.

Please note Spray the pipework and nozzle holder only with reduced water pressure.
If the water pressure is too high, there is a risk of destroying components.

Commercially available descaling agents can be used.
Foaming cleaning agents are not suitable.
The scrubber pump is maintenance-free.
However, when cleaning the scrubber, we recommend flushing the pump and pipework with clean water.

Please note If the scrubber is idle for a prolonged period, run the pump once a week for approximately 5 minutes to prevent the bearings seizing up (never run dry).

Filters

To clean or replace the filter cartridges, open the inspection door and remove the cartridges from the side of the unit casing.

The grade G4 synthetic fibre filter mats used for the filter cartridges are renewable. You can beat them, blow air through them, vacuum them or wash them in lukewarm water with commercially available mild detergent.
Never wring out the mats.



Bag filters are not renewable; they have to be replaced due to contamination when they exceed the permissible pressure drop.

To replace filter cartridges that are held in the unit frame with clips, open the inspection door, release the clips and remove the cartridges from the side of the unit casing towards the dusty side.
Replace filter bags once the recommended final pressure drop has been reached.

Frost protection measures**Heat exchanger**

Warm/hot water heater, cold water cooler:

- Only site the KG air handling units in a room that is free from the risk of frost.
- Operation with commercially available antifreeze and frost stat.
- With the heating system switched OFF, drain all parts filled with water and blow out remaining water using compressed air.

Steam coil:

- With the heating system switched OFF, drain all parts filled with water and blow out remaining water using compressed air.

Electric heater:

- No frost protection measures required.

Scrubber

Insulate the water supply line on site; use a ribbon heater if required.

Drain pan and pipework; blow compressed air through pipework.

Drain pump (see separately supplied instructions from pump manufacturer).

Siphon

Protect siphon on site against freezing.

Recommended checklist for hygienic operation and maintenance of air handling systems

| Activity | Action if required | Months |
|--|---|--------|
| Outdoor and exhaust air apertures | | |
| Structural units/appliance casing | | |
| Check for contamination, damage and corrosion | Clean and repair | 12 |
| Air filter | | |
| Check for impermissible contamination and damage (leaks) | Replace affected air filters if last filter stage replacement was within last 6 months, otherwise replace entire filter stage | 3 |
| Steam humidifier | | |
| Wash with cleaning agent, flush and dry the humidification chamber, disinfect if required | | 6 |
| Check steam lance for deposits | Clean | 6 |
| Check the hygiene level | | 6 |
| Heat exchanger | | |
| Check for contamination, damage and corrosion | Clean and repair | 3 |
| Check the function of the siphon | Repair | 3 |
| Check the hygiene level | | 6 |
| Fan | | |
| Check for contamination, damage and corrosion | Clean and repair | 6 |
| Heat recovery | | |
| Check condensate pan and mist eliminator for contamination, corrosion and correct function | Repair | 3 |
| Check the function of the siphon | Repair | 3 |
| Check the hygiene level | | 12 |
| Air pipes and silencer | | |
| Check silencer for contamination, damage and corrosion | Repair | 12 |
| Terminal unit | | |
| Check terminal unit and outdoor air filter for contamination | Replace air filter, clean unit | 3 |
| Check heat exchanger in terminal units without air filter for contamination | Clean (vacuum cleaner) | 6 |
| Replace air filter | | 12 |

Wolf GmbH

Postfach 1380 • D-84048 Mainburg • Tel. +49 (0) 8751/74-0 • Fax +49 (0) 8751/74-1600

Internet: www.wolf-heiztechnik.de

Part no.: 3040530_201503

Subject to modifications