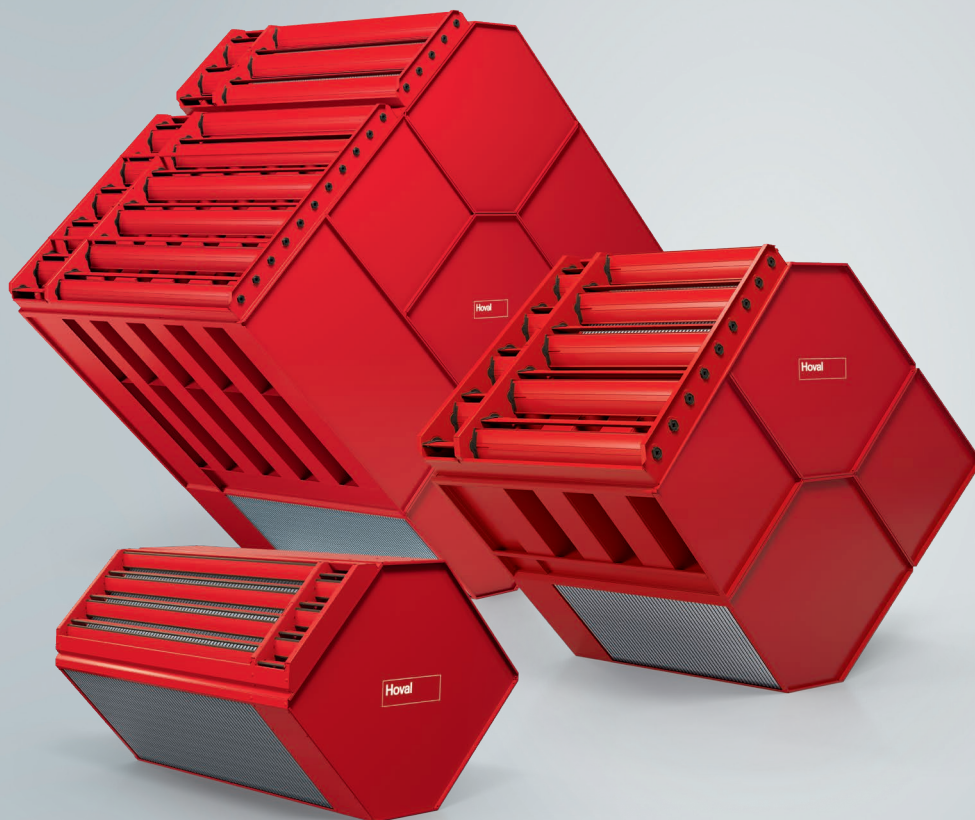


Gotthard plate heat exchanger

Instructions for installation and maintenance



Gotthard GV-
Gotthard GVC
Gotthard GVF

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1 Use

1.1 Intended use

Hoval plate heat exchangers of design G (Gotthard) are energy recovery units for installation in ventilation and air-conditioning units. They transfer energy through thin separating plates and work according to the counterflow process. The following application limits apply in operation:

Temperature		
Exchanger	-40...90	°C
Dampers	-40...80	°C
Max. differential pressure	2000	Pa

Table 1: Application limits

Intended use also includes compliance with these instructions. Any usage over and above this use is considered to be not as intended. The manufacturer can accept no liability for damage resulting from improper use.

1.2 User group



Caution

Risk of injury from incorrect work. The exchangers may only be installed and maintained by authorised and instructed personnel who are well acquainted with the units and are informed about possible dangers.

These instructions are for operating engineers as well as specialists in building, heating and ventilation technology.

2 Safety

2.1 Symbols



Caution

This symbol warns against risk of injury. Please heed all instructions designated by this symbol to prevent injuries and/or death.



Attention

This symbol warns against property damage. Please heed the respective instructions to prevent risk of damage to the unit and its functions.



Notice

This symbol denotes information about the economic use of the equipment or special tips.

2.2 Operational safety

The exchangers are constructed in accordance with the state of the art and are safe to operate. Despite every precaution being taken, potential and not immediately obvious risks always remain, for example:

- Danger from suspended load
- Danger from trapping of body parts
- Danger from tilting
- Danger from sharp edges
- Danger from falling objects
- Danger when working on the electrical system

Therefore:

- Please read the instructions before unpacking, installing, commissioning and before maintaining the equipment.
- Store the operating instructions so that they are easily accessible.
- Observe any attached information and warning signs.
- Follow the local safety and accident prevention regulations at all times.
- The exchanger may only be installed, operated and serviced by authorised, trained and instructed skilled personnel:
 - Specialists as defined by these operating instructions are those persons who, based on their training, knowledge and experience as well as their knowledge of the relevant regulations and guidelines, can carry out the work assigned to them and recognise potential hazards.
- Unauthorised reconfiguration or modification of the exchanger is not permitted.

3 Delivery

3.1 Scope of delivery

Plate heat exchangers are delivered on pallets and packaged in film. The scope of delivery includes:

- Plate heat exchanger
- Damper shaft for actuator (for exchangers with dampers)
- Adapter for actuator (option)

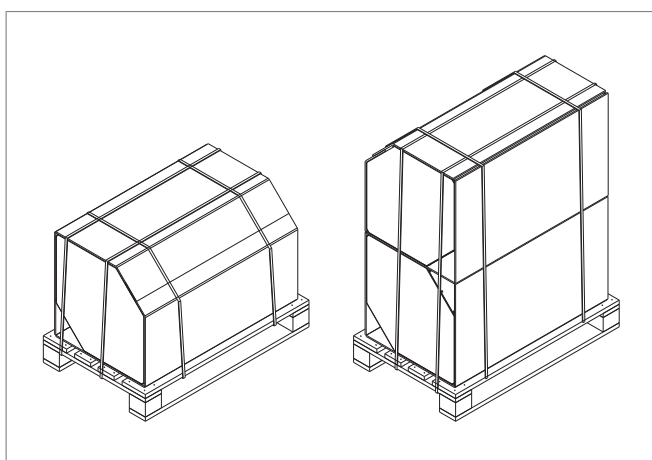


Fig. 1: Delivery of the exchangers on pallets

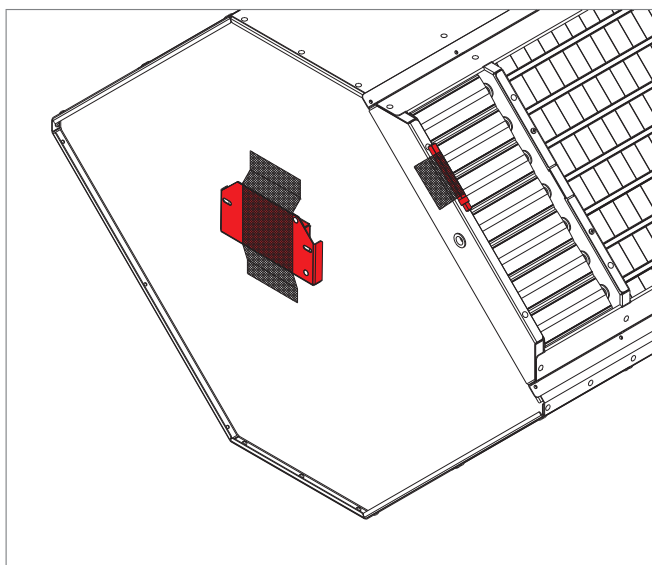
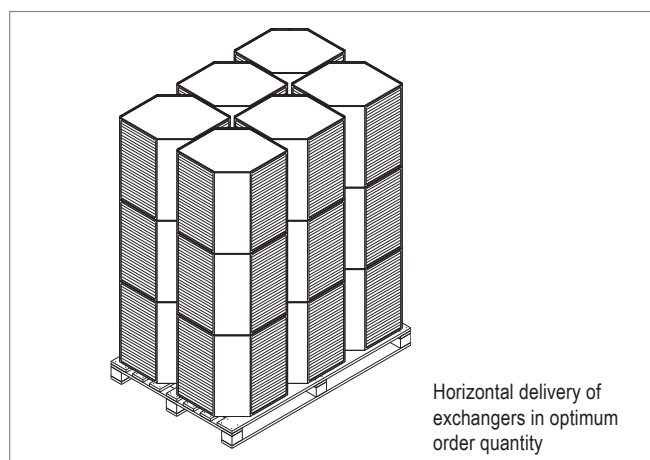
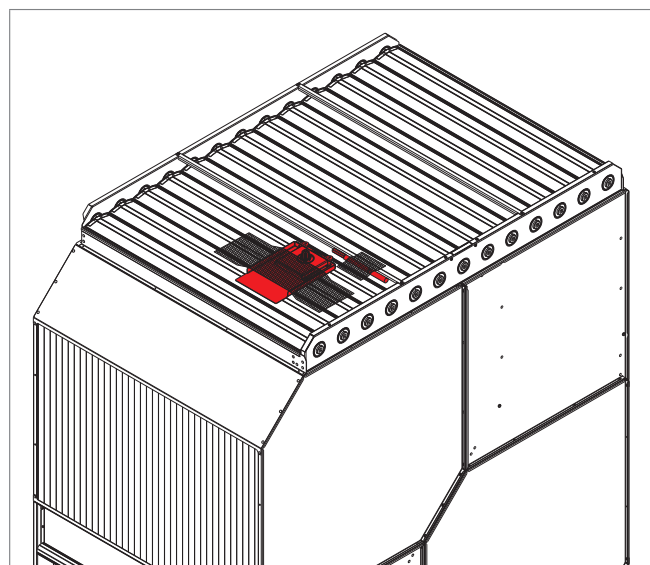


Fig. 2: Delivery of damper shaft and adapter for actuator (option)



3.2 Identification and test

The type label contains important information for identifying the plate heat exchanger.

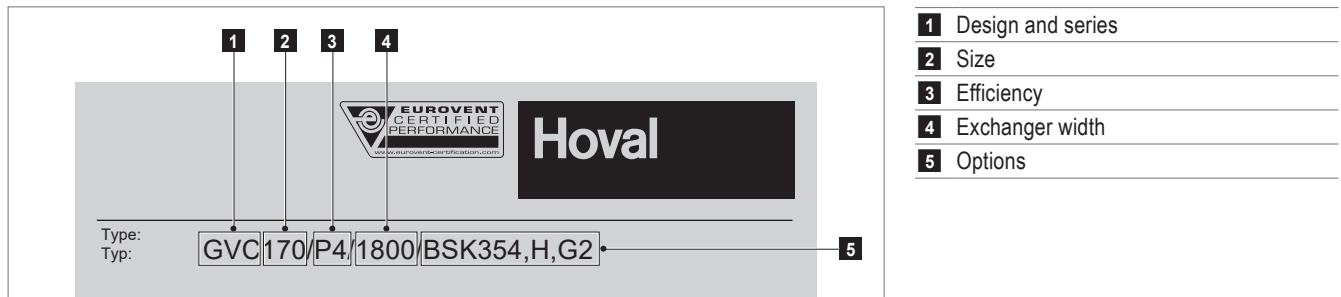


Fig. 3: Type label

- Check the consignment against the delivery documents and nameplate to ensure that it is correct.
- Check the delivery for visible transport damage.
- Report any wrong deliveries and possible transport damage immediately in writing.

3.3 Storage

If you do not install the exchanger immediately:

- Keep the exchanger in the original packaging.
- Place the exchanger on a level surface.
- Store the exchanger in a dry, dust-free room.
- Storage temperature: -20 ... 50 °C
- Do not place any loads on the exchanger.

Before commissioning after storage:

- Clean the exchanger and check the functionality of the dampers.

4 Tools and aids

You will need the following tools to install the adapter for actuator (option):

- Cross-head screwdriver (size 2)
- Flat-head screwdriver

5 Lifting the exchanger



Caution

Risk of injury caused by falling load or improper handling. During all work:

- Wear personal protective equipment.
- Do not stand under suspended loads.
- Observe safety and accident prevention regulations.



Attention

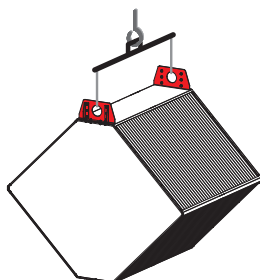
Danger of damage to property due to incorrect handling. The exchanger casing and the plate blades can be damaged very easily. Follow the lifting instructions included.

- Lift the exchanger only by the side walls.
 - The tensile direction must be vertical.
- Bolt the lifting kit to the flange of the side wall (only for the GV- and GVC designs).
- Lift the exchanger with an appropriate hoist.
- Always suspend the exchanger via a crane beam rather than from a single point.
- Do not lift the exchanger by the dampers.
- Do not lift the exchanger by its open surfaces.
- Do not lift the exchanger with a forklift.

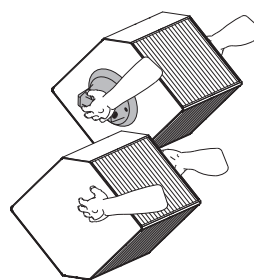
Single exchanger
Horizontal lifting kit



Single exchanger
Vertical lifting kit



Single exchanger
Flat side walls



Combi block
Vertical lifting kit

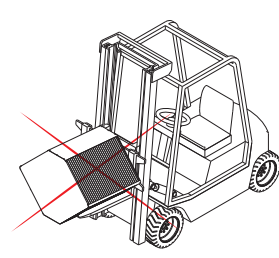
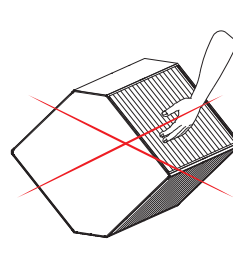
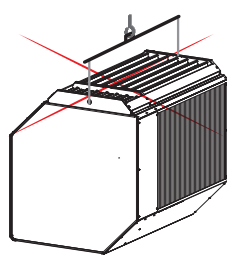
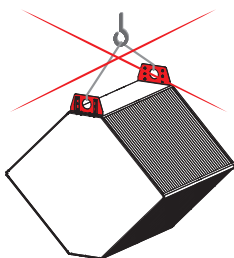
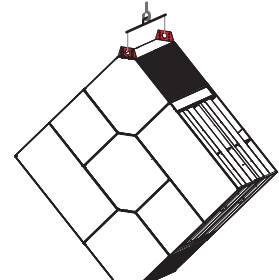


Fig. 4: Lifting the exchanger

6 Installation in the air handling unit



Caution

Risk of injury caused by falling load or improper handling. During all work:

- Wear personal protective equipment.
- Do not stand under suspended loads.
- Observe safety and accident prevention regulations.

Please observe the following points when installing the exchanger in the ventilation unit:

- In its standard design, the exchanger is built for vertical installation, i.e. the plates are arranged vertically.
 - With vertical plates, the exchanger can be installed in the air handling unit in any position (even standing on its tip).
- If there is an "L" in the type code, the exchanger may also be installed horizontally (plates arranged horizontally).
- Install the exchanger so it can be cleaned in its installed position.
- Fit inspection ports before and after the exchanger.
- If condensate is expected:
 - Install the exchanger at a slight angle (5° incline towards the extract air outlet), so that no water can gather in the exchanger.
 - Install a condensate drip tray with condensate drain under the entire exchanger.
 - Take measures to prevent ice formation.
- For exchangers with dampers:
 - Insert the supplied damper shaft(s) into the damper at the side.
 - Install the actuator.

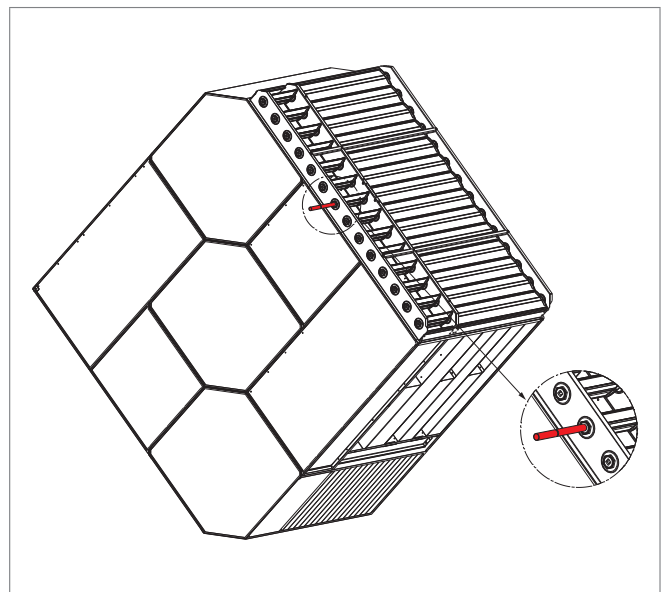
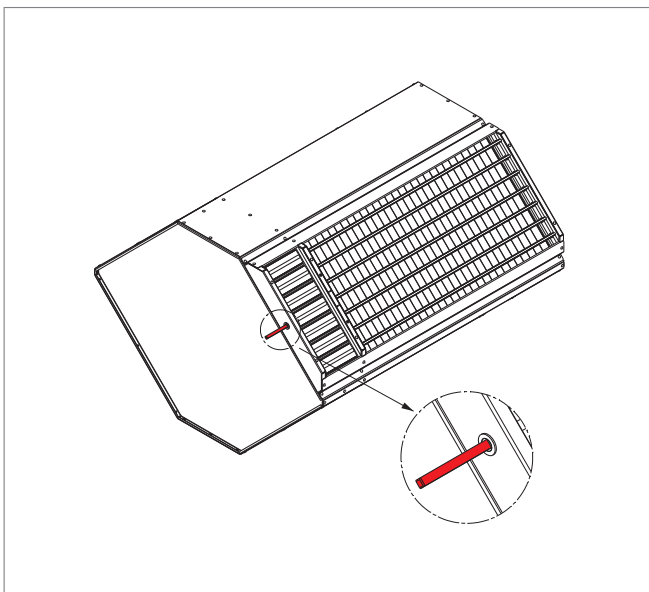


Fig. 5: Damper shaft for actuator

6.1 Damper connection for partitioned exchangers

In order to simplify transport and installation, exchangers with a width of 1201 mm and above are delivered in parts. If the exchangers are fitted with dampers, these must be connected during installation. Please note the following:

- One or several connecting bolts are preinstalled in one of the exchangers (see Fig. 6) or enclosed with the delivery.
- Turn the damper blades of the exchangers which need to be connected into exactly the same position.
- Push the exchangers together.
 - The connecting bolts connect the dampers so that they can be powered by a single actuator.
- Check that the dampers move smoothly and function correctly.

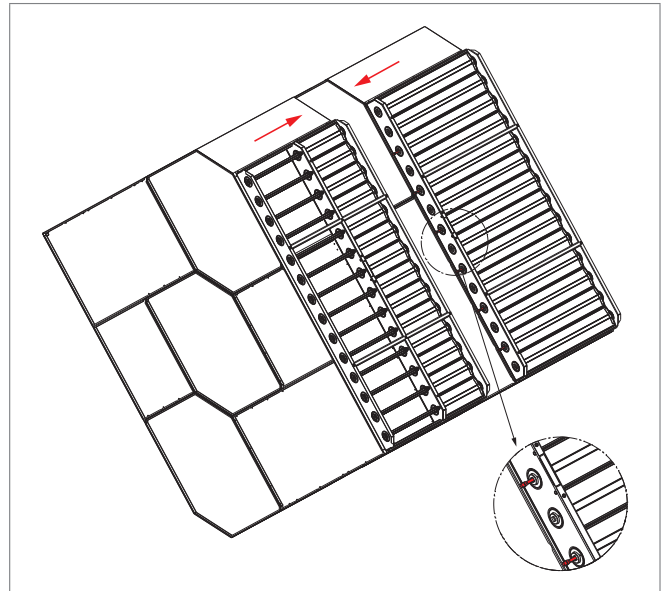
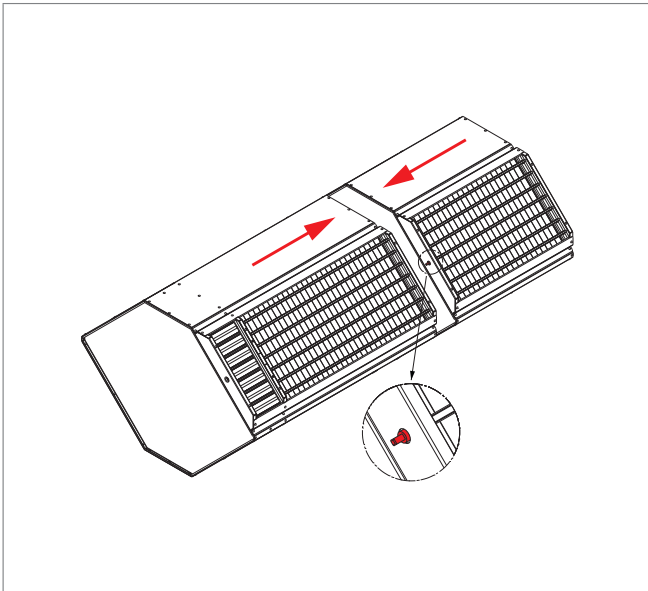


Fig. 6: Connect the dampers of partitioned exchangers with connecting bolt(s).



Notice

Very wide exchangers with bypass can be joined together during assembly in such a way that the bypass comes to be located roughly in the middle.

6.2 Installing the adapter for actuator (option)

G-055 - G-085

Using the adapter for the actuator, the exchanger dampers can be driven within the ventilation unit with conventional actuators. Proceed as follows:

- Remove the sheet metal covering in the middle of the gearbox with an appropriate tool (e.g. with a flat-head screwdriver).
- Loosen the 2 prefitted screws in the gearbox.
- Place the adapter on top.
 - Make sure that the gears are positioned correctly in relation to one another.
- Fasten the adapter with the 2 screws. Tighten the screws hand-tight.
- Plug the supplied damper shaft into the adapter.
- Fix the actuator into the adapter slots.

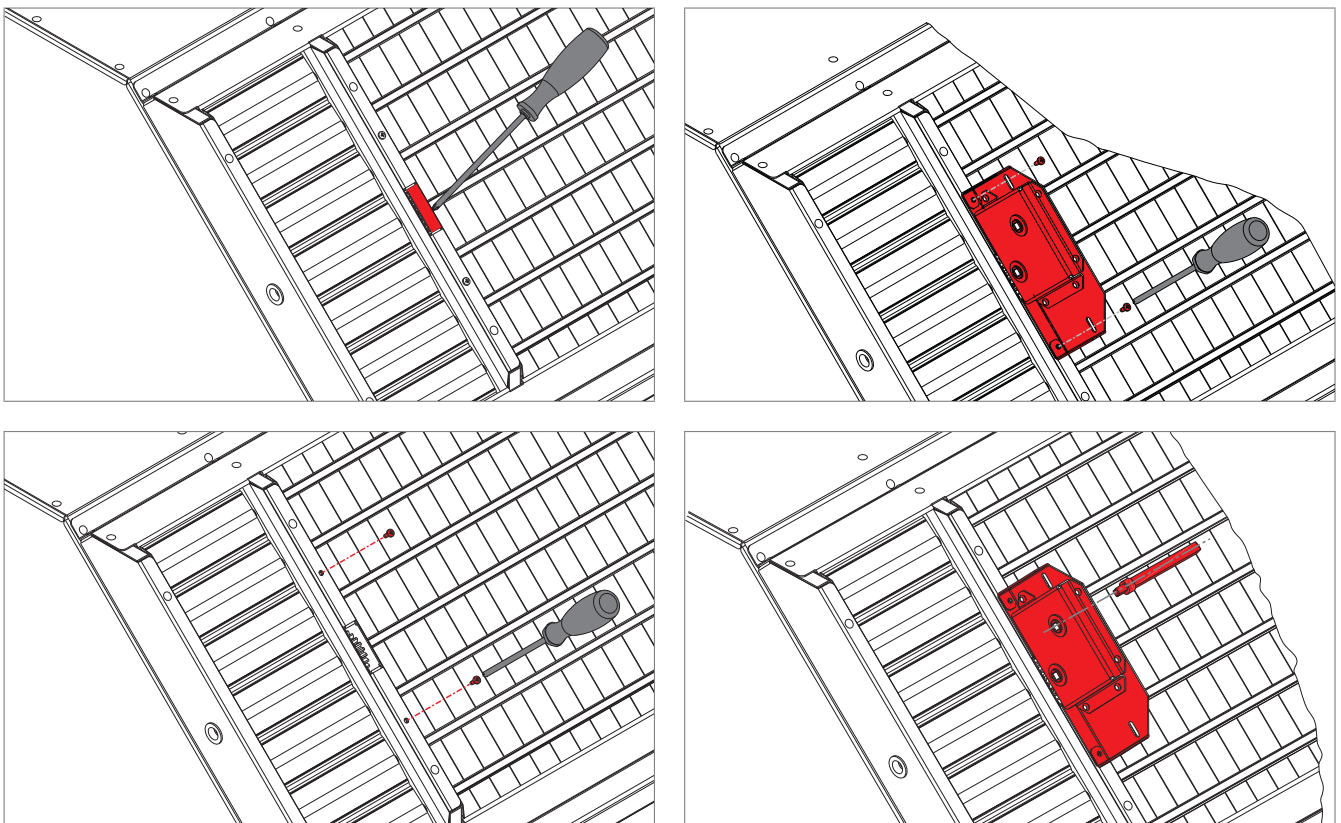


Fig. 7: Installing the adapter for actuator

G-110 - G-255

Using the adapter for the actuator, the exchanger dampers can be driven within the ventilation unit with conventional actuators. Proceed as follows:

- Remove the sheet metal covering in the middle of the gearbox with an appropriate tool (e.g. with a flat-head screwdriver).
- Loosen the 4 prefitted screws in the gearbox (2 on top, 2 on the side).
- Place the adapter on top.
 - Make sure that the gears are positioned correctly in relation to one another.
- Fasten the adapter with the 4 screws. Tighten the screws hand-tight.
- Plug the supplied damper shaft into the adapter.
- Fix the actuator into the adapter slots.

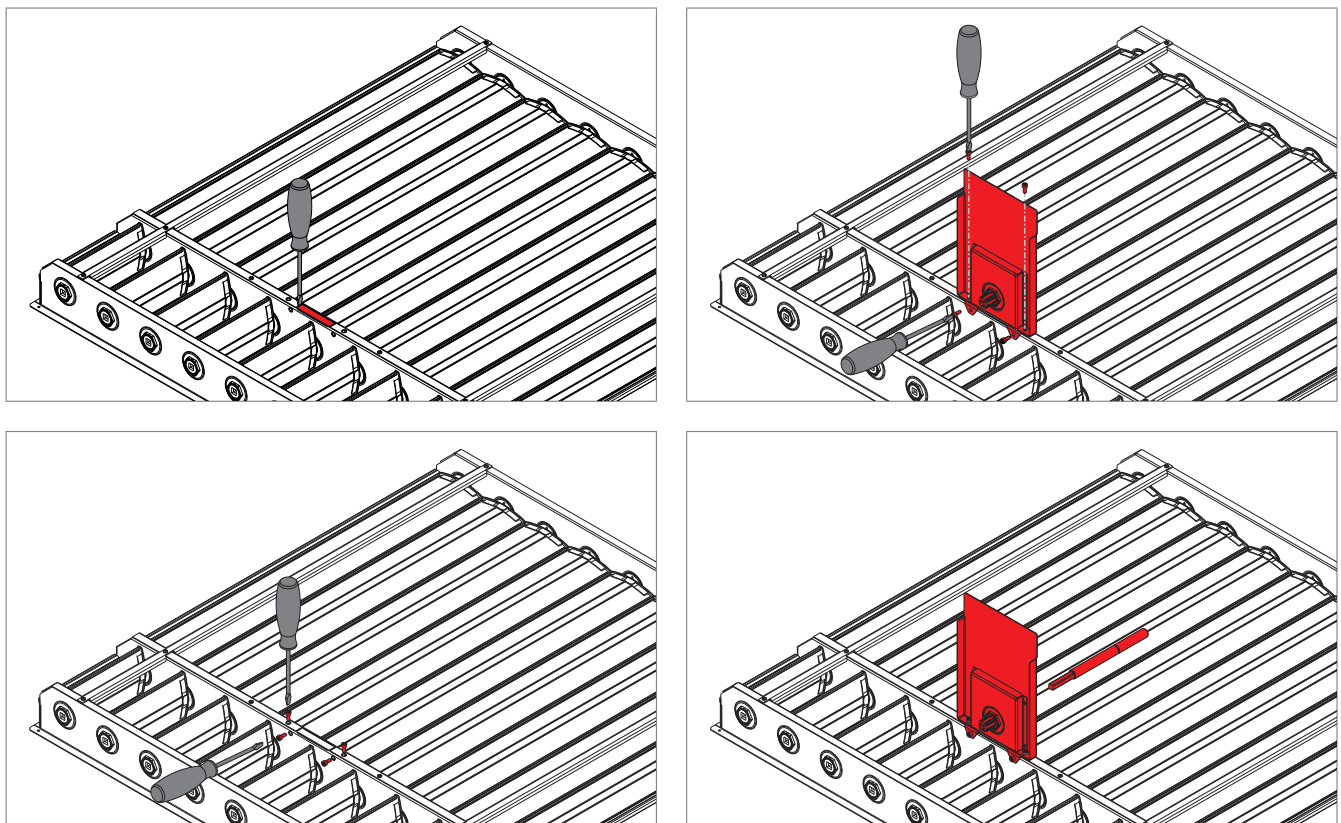
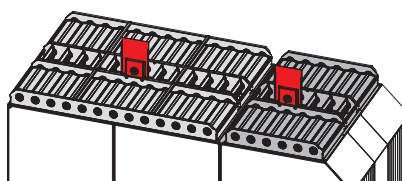


Fig. 8: Installing the adapter for actuator



Notice

On exchangers of sizes G-225 to G-255, the control dampers are partitioned. 2 actuators are required.



7 Maintenance and repair



Caution

Risk of injury from incorrect work. Maintenance and repair work is only allowed to be carried out by qualified personnel.

7.1 Maintenance schedule

Activity	Interval
- Visual inspection of the exchanger for dirt build-up, damage, corrosion and leakage - Damper function test	For the first time 3 weeks after commissioning Following that, 2 × per year, according to VDI 6022-1

7.2 Cleaning the exchanger package

- Choose a suitable cleaning method depending on the contamination level and the type of deposits.
- Observe all relevant regulations (e.g. VDI 6022-1).

Before cleaning

- Switch off the fans of the ventilation unit and secure them against being switched back on.
- Make sure that the water used for cleaning can be properly drained off.

After cleaning

- Allow the exchanger to dry.
- Put the fans back into operation.

Cleaning methods

Method	Remarks
Dry cleaning (for slight contamination)	- Remove dust and fibres with a soft brush, a vacuum cleaner and/or compressed air. - Use caution when cleaning with compressed air: - Min. 20 cm distance between nozzle and exchanger - Max. air pressure 8 bar - Direct the air jet at a right angle to the inflow surface.
Wet cleaning (for heavier contamination)	- Remove oils, solvents and similar with hot water and grease solvents. - Spray on grease solvents with a spray bottle. - Recommended cleaning agents are, for example: Frosch, Fairy, Largo - Remove cleaning agents with a high-pressure cleaner. - Use a 40° flat nozzle. - Min. 20 cm distance between nozzle and exchanger - Max. water pressure is 100 bar - Direct the water jet at a right angle to the inflow surface.

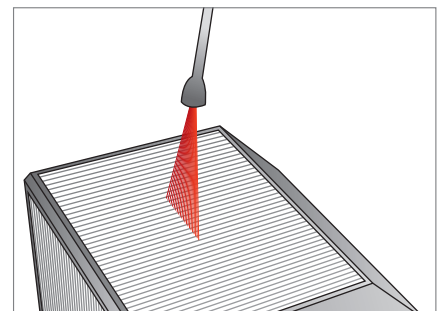


Fig. 9: Cleaning the exchanger package

Method	Remarks
Disinfection (after wet cleaning)	■ Spray on disinfectants with a spray bottle. – Recommended disinfectants are, for example: Bacillo® 30 Foam, Dr. Becher Schnelldesinfektion ■ Allow disinfectants to act for approx. 30 minutes. ■ Remove disinfectants with a high-pressure cleaner. – Use a 40° flat nozzle. – Min. 20 cm distance between nozzle and exchanger – Max. water pressure is 100 bar – Direct the water jet at a right angle to the inflow surface.
Descaling	■ Decalcifier: – NALCO ACITOL CL-931 as 10% solution ■ On-site circulation equipment with pH control is necessary ■ Maintain the pH value below 2.5 during descaling: – Add new ACITOL CL-931 as a 10% solution as required. ■ Repeat descaling until no more limescale residues are visually visible. ■ Remove decalcifier with a high-pressure cleaner. – Use a 40° flat nozzle – Min. 20 cm distance between nozzle and exchanger – Max. water pressure is 100 bar – Direct the water jet at a right angle to the inflow surface.

Table 2: Cleaning methods for plate heat exchangers

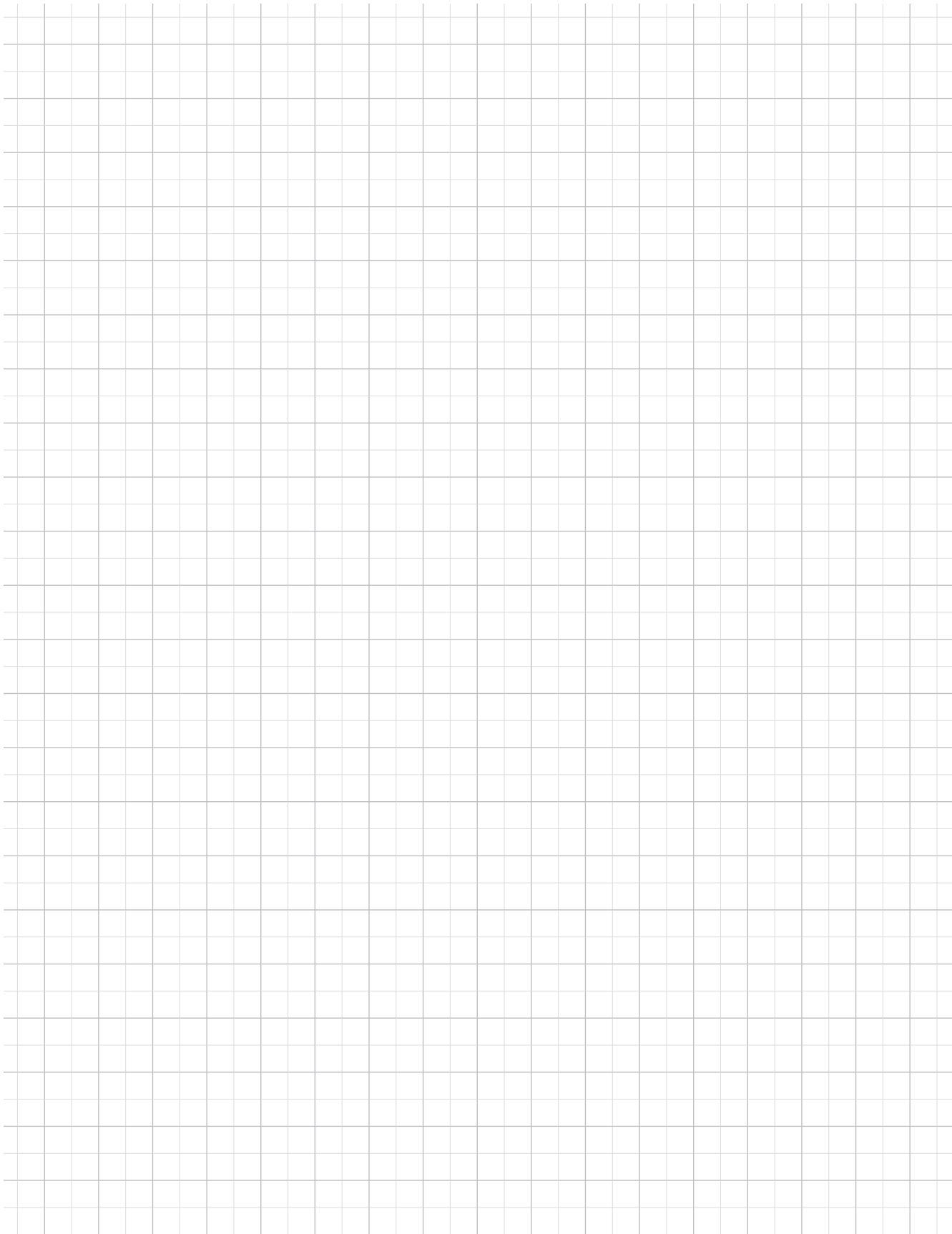
7.3 Spare parts

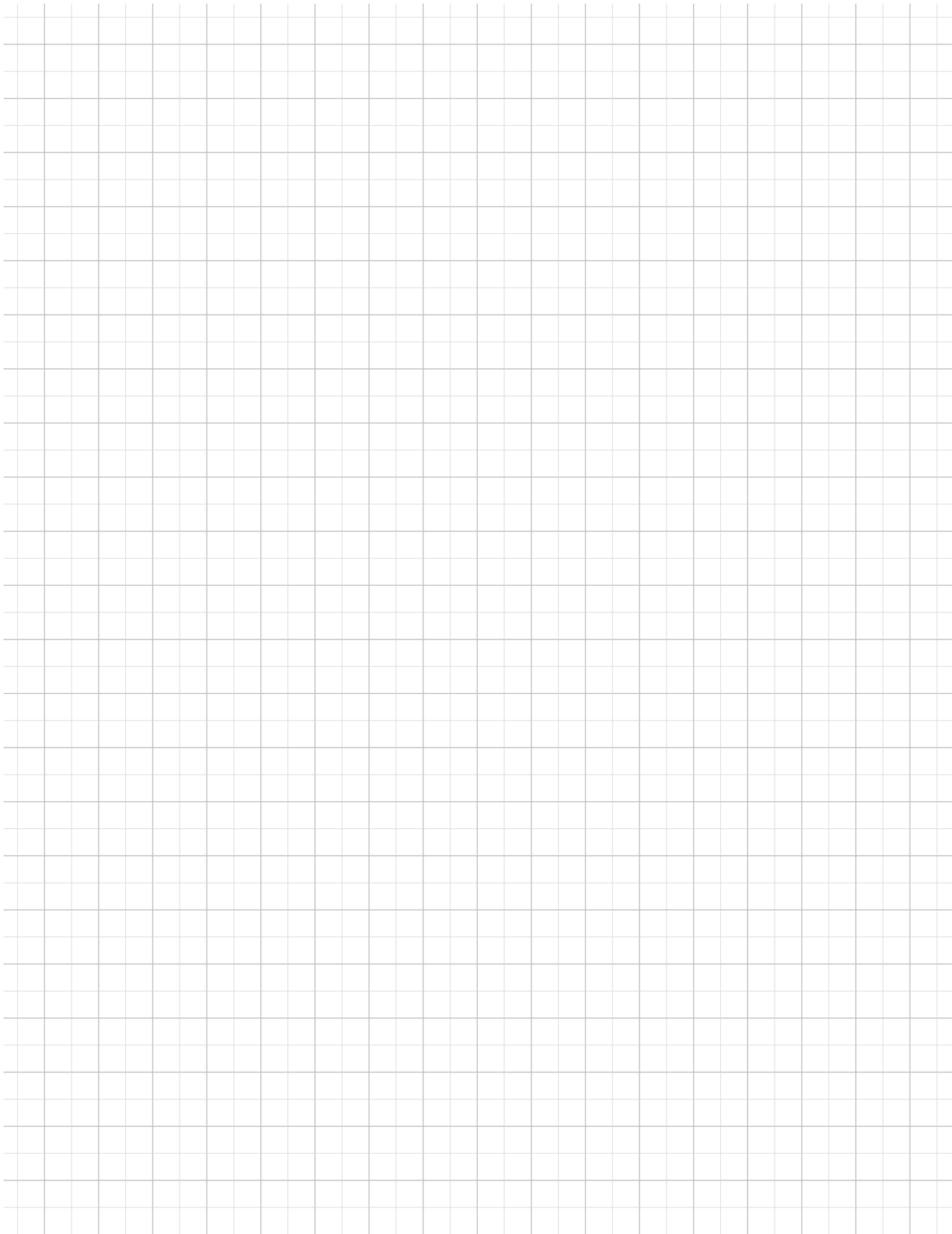
Hoval recommends the use of original spare parts.

If required, complete control dampers are available as spare parts.

7.4 Repair

Please contact the manufacturer's customer service if needed.





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