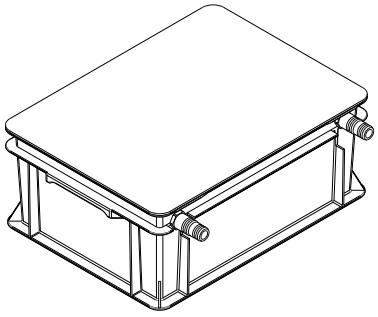
Installation instructions
Neutralisation unit HNB-0400, -0800, -1200, -1600
UltraGas® 2, UltraGas® 2 D

Hoval

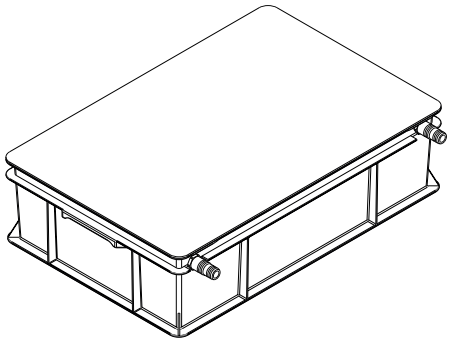
- These instructions are intended for the specialist!
- When installing the siphon and condensate drain, the project engineering guidelines for condensate drains must be complied with.
- Before commissioning, fill the siphon and the neutralisation unit with water.

1. Technical information on the neutralisation unit HNB

1.1 Operation



HNB-0400, HNB-0800



HNB-1200, HNB-1600

Fig. 01

Condensate is produced during the operation of boilers. Depending on the sewer system (materials used and waste water in the sewer system), the acid condensate from the boilers can damage the sewer system in such a way that waste water seeps out. If the acidic condensate is passed through the neutralisation unit filled with neutralisation granulate, the neutralisation granulate removes the acid contained in the condensate and the condensate is neutralised.

1.2 Technical data

Type	HNB-0400	HNB-0800	HNB-1200	HNB-1600
Boiler heat output	up to max. 400 kW	401-800 kW	801-1200 kW	1201-1600 kW
Dimensions	See page 4			
Neutralisation granulate fill quantity	3 kg	6 kg	9 kg	12 kg
Service life	Up to one year depending on the mode of operation			

1.3 Material subject to degradation

The neutralisation granulate for refilling the neutralisation unit can be ordered from Hoval under the following article number:
- Art. no. 2028 906: 3 kg neutralisation granulate

2. Installation

2.1 Condensate drain engineering guidelines

The condensate should be led from the condensate drip tray of the gas condensing boiler to a siphon and from there via a hose or fixed pipework for condensate drainage to the sewer system or independent waste water treatment facility. The following points must be observed during installation:

Requirements and directives
Local regulations pertaining to the condensate discharge must be observed.
- **Before planning** condensate drainage, check with the responsible authority about the local regulations to be observed.
- Regulations in Germany:
  - Worksheet DWA-A 251 Condensate from condensing boilers from the DWA code of practice
  - Worksheet DVGW VP 114 Neutralisation units for gas burners - Requirements and testing from the DVGW Gas code of practice.
- Requirements and directives in Austria:
  - ÖNORM H 5152 Calorific plants - Planning guidelines
  - and above all the directives for customer natural gas systems (G K series) of the ÖVGW Gas code of practice.
- Switzerland/Liechtenstein:
  - See Suissetec information sheet regarding condensate

Material
The boiler condensate drain must be made of corrosion-resistant material. The following materials are suitable for condensate discharge:
Stoneware, glass, stainless steel and the following plastics: PVC, PE, PP, ABS and UP.

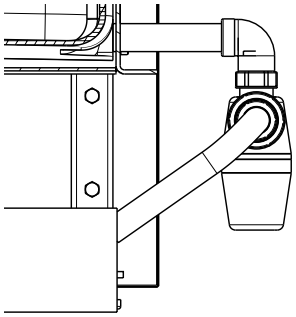
Siphon
The siphon (included in the scope of delivery of the heat generator) must be installed at the condensate drain of the heat generator and the condensate drain must be installed at the condensate drain of the siphon.

Neutralisation
Without neutralisation, condensate discharge is only permitted if the waste water pipes and the sewer system are made from plastic or ceramic material (the local authority may approve a derogation).
If required by the local authority, the condensate must be neutralised before being discharged into the sewer system. In this case, a neutralisation unit must be installed in the condensate drain.

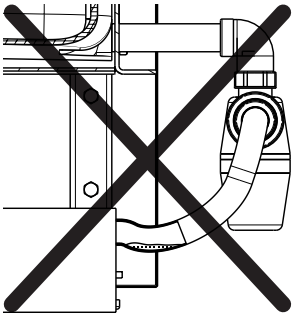
! **NOTICE**

Condensate with corrosive effect
Depending on the sewer system (materials used and waste water in the sewer system), the acid condensate from the heat generator can damage the sewer system in such a way that waste water seeps out.
- Before the condensate drain is installed, check with the responsible public authority whether the condensate must be neutralised before being discharged into the sewer system.

Condensate drain
Route the condensate drain so that the condensate can flow out:
- The minimum inner diameter of the condensate drain must be 15 mm.
- Use a hose or fixed pipework for condensate drainage.
- The hose connections of the condensate drain must be laid with a constant downward gradient from the siphon to the neutralisation unit (if present) and to the sewer system. If a constant downward gradient in the condensate drain is not possible, a condensate pump must be installed in the condensate drain before the gradient change.
- No water trap is allowed in the condensate drain. For this reason, the individual hose connections must be as short as possible to prevent them from sagging. If necessary (e.g. if the neutralisation unit is positioned next to the heat generator), pull an empty tube over the hose connection as reinforcement.



Hose connection with constant downward gradient



Water trap in hose connection

Fig. 02

NOTICE

Flue gas accumulation in the heat generator
If the condensate cannot drain off, it will accumulate in the boiler / flue gas collector. The flue gas can no longer be transported away without any obstruction.

- Always route the condensate drain with a downwards slope in such a way that the condensate is always guaranteed to flow out without any obstruction.
- Check and clean the siphon, neutralisation unit (if present) and condensate drain at least 1x a year.

Discharge into the sewer system

WARNING

Germ contamination from the sewer system
If the condensate drain comes into contact with the sewer system (e.g. drain pipe), the condensate drain and the heat generator can be contaminated by germs flowing back from the sewer.

- The condensate drain **must not** come into direct contact with the drain pipe (distance min. 20 mm).

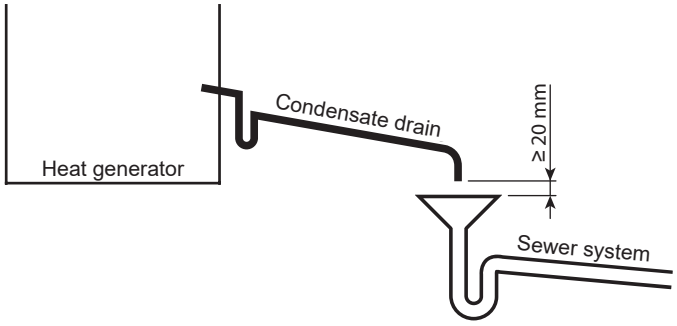


Fig. 03

Before commissioning the gas condensing boiler

WARNING

Flue gas outlet
If there is no water in the siphon, or too little water, then flue gas can escape through the condensate drain. The concentration of flue gas in the air can represent a fatal hazard.

- Before commissioning, fill the siphon and the neutralisation unit with water.

2.2 Installation of the condensate drain and siphon – neutralisation unit – sewer system

NOTICE

Blockage by granulate dust

Fine granulate dust can block the neutralisation unit and the condensate drain.

- When filling the neutralisation unit, make sure that the granulate is free of dust.

1. Screw double nipple (1) and siphon (2) onto the condensate drip tray and tighten securely (connection must be tight!).

Positioning example

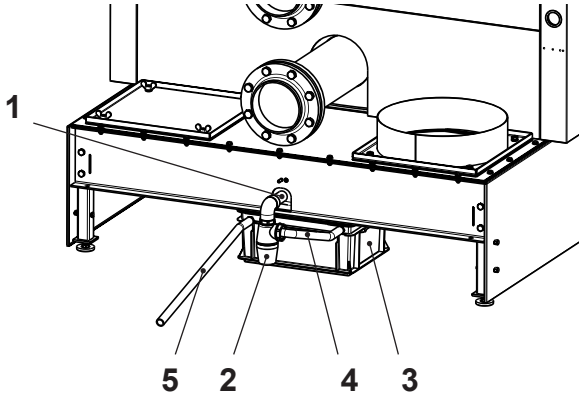
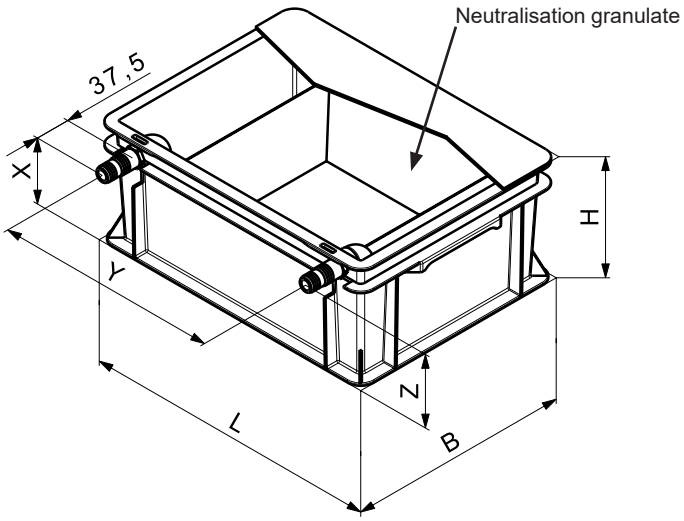


Fig. 04

2. Fill neutralisation unit (3) with neutralisation granulate:
   - For article no. and required filling quantity of the neutralisation granulate, see chapter «1.3 Material subject to degradation», page 1
   - Pour neutralisation granulate into the middle part of the neutralisation unit and distribute evenly.
3. Position neutralisation unit (3) under or behind the heat generator:
   - Positioning:
     - Close to the siphon
     - Hose connection as short as possible
   - Space requirements:



	HNB-0400,-0800	HNB-1200,-1600
Dimensions (LxWxH)	405x300x180 mm	605x400x180 mm
Installation height (Z)	128 mm	
Drain height (X)	118 mm	
Distance between the connections (Y)	approx. 350 mm	approx. 550 mm

Fig. 05

4. Make all hose connections (2 m hose is included with the neutralisation unit):
   - Hose connection (4)
     siphon – neutralisation unit
   - Hose connection (5)
     neutralisation unit – sewer system
5. Fill the siphon (2) and the neutralisation unit (3) with water.

After installation, before commissioning of the boiler, the following must be carried out:

- Check condensate flow.
- pH value measurement (before and after the neutralisation unit)
- Check all connections for leaks:
  - Double nipple – siphon
  - Siphon – neutralisation unit
  - Neutralisation unit – sewer system
- Check condensate drain.

2.3 Installation of the condensate drain and siphon – neutralisation unit – condensate pump – sewer system at higher level

NOTICE

Blockage by granulate dust

Fine granulate dust can block the neutralisation unit and the condensate drain.

- When filling the neutralisation unit, make sure that the granulate is free of dust.

1. Screw double nipple (1) and siphon (2) onto the condensate drip tray and tighten securely (connection must be tight!).

Positioning example

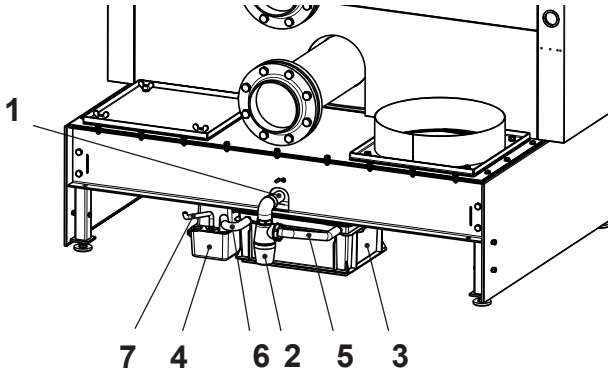


Fig. 06

2. Fill neutralisation unit (3) with neutralisation granulate:
   - For article no. and required filling quantity of the neutralisation granulate, see chapter «1.3 Material subject to degradation», page 1.
   - Pour neutralisation granulate into the middle part of the neutralisation unit and distribute evenly (see Fig. 05).
3. Position neutralisation unit (3) and condensate pump (4) under or behind the heat generator:
   - Positioning:
     - Close to the siphon
     - Hose connection as short as possible
   - Space requirements:
     - Neutralisation unit HNB-0400,-0800 and condensate pump:

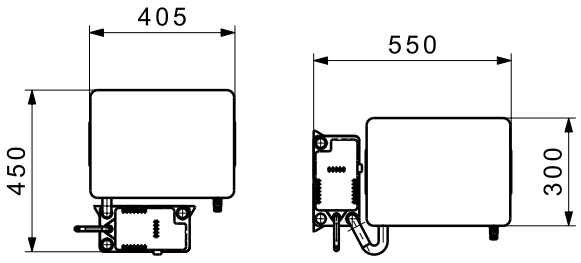


Fig. 07

   - Neutralisation unit HNB-1200,-1600 and condensate pump:

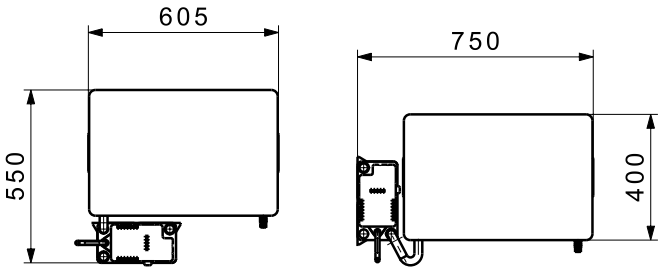


Fig. 08

4. Establish hydraulic connections (one hose each is supplied with the neutralisation unit and the condensate pump purchased from Hoval):
   - Hose connection (5)
     siphon – neutralisation unit
   - Hose connection (6)
     neutralisation unit – condensate pump
   - Hose connection (7)
     condensate pump – drain
5. Route the cable to the condensation pump (4) to the control and connect according to the wiring diagram.
6. Fill the siphon (2) and the neutralisation unit (3) with water.

After installation, before commissioning of the boiler, the following must be carried out:

- Check condensate flow.
- Check the function of the switching points of the condensate pump:
  - Liquid level switch for pumping out
  - Liquid level switch for locking the burner
- pH value measurement (before and after the neutralisation unit)
- Check all connections for leaks:
  - Double nipple – siphon
  - Siphon – neutralisation unit
  - Neutralisation unit – condensate pump
  - Condensate pump – drain
- Check condensate drain.

3. Maintenance

NOTICE

Reduction in the neutralisation effect

The neutralisation granulate in the neutralisation unit is subject to degradation. The pH-neutralising effect diminishes over time.

- Replace the neutralisation granulate in the neutralisation unit at least 1x a year or if the pH value of the condensate is < 6.5 after passing through the neutralisation unit.

NOTICE

Flue gas accumulation in the heat generator

If the condensate cannot drain off, it will accumulate in the boiler / flue gas collector. The flue gas can no longer be transported away without any obstruction.

- Always route the condensate drain with a downwards slope in such a way that the condensate is always guaranteed to flow out without any obstruction.
- Check and clean the siphon, neutralisation unit and condensate drain at least 1x a year.

WARNING

Flue gas outlet

If there is no water in the siphon, or too little water, then flue gas can escape through the condensate drain. The concentration of flue gas in the air can represent a fatal hazard.

- Before recommissioning, fill the siphon and the neutralisation unit with water.

3.1 Servicing neutralisation unit HNB

Carry out the following tasks while the heat generator is in operation and condensate is being produced:

1. Check the neutralising effect of the neutralisation granulate in the neutralisation unit (measure the pH value of the condensate after it has passed through the neutralisation unit. A pH value ≥ 6.5 is OK).
2. If there is a condensate pump, check the function of the switching points of the condensate pump:
   - Liquid level switch for pumping out
   - Liquid level switch for locking the burner

While the heat generator is disconnected from the electricity supply (blocking switch set to “0” heat generator disconnected from the mains (e.g. main switch, fuses)):

3. If present, remove condensate pump from condensate drain and clean condensate pump container.
4. Remove neutralisation unit.
5. Remove any deposits from the neutralisation unit and renew the neutralisation granulate if the pH value of the condensate is < 6.5.
   - For information about the neutralisation granulate required, see chapter «1.3 Material subject to degradation», page 1
   - Pour neutralisation granulate into the middle part of the neutralisation unit and distribute evenly.

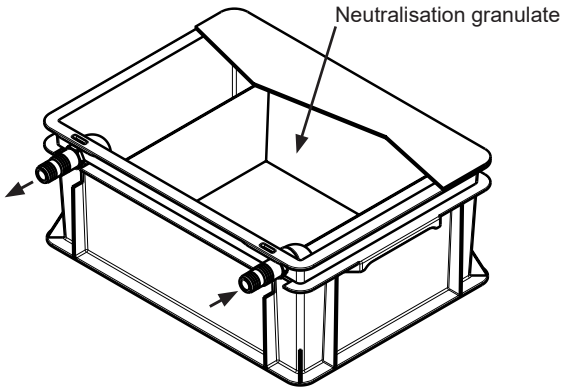


Fig. 09

6. Close neutralisation unit with cover.
7. Install neutralisation unit and, if present, condensate pump in cleaned condensate drain and position them.
8. Fill the siphon and the neutralisation unit with water.

After installation, before commissioning of the boiler, the following must be carried out:

- Check condensate flow.
- Check the function of the switching points of the condensate pump:
  - Liquid level switch for pumping out
  - Liquid level switch for locking the burner
- pH value measurement (before and after the neutralisation unit)
- Check all connections for leaks:
  - Double nipple – siphon
  - Siphon – neutralisation unit
  - Neutralisation unit – condensate pump
  - Condensate pump – drain
- Check condensate drain.