

Fig. 44: Example: Assembling exhaust air piping (similar to picture)

Caution

Steps must be taken to ensure that the flow of hot air emitted from the furnace's exhaust outlet flap is not hazardous to people, property or the building.

If the furnace is installed in a "passive house" it must be ensured that the room has an adequate fresh air supply. Because of potential aggressive vapors, we do not recommend that it is connected to the house ventilation system. We recommend a separate furnace room that can be ventilated adequately.

Note

Roof work and/or masonry by the customer is required for the exhaust gas discharge. The size and design of the exhaust gas discharge must be determined by a ventilation technician. The national regulations of the local country apply.

Volumetric Flow Quantities and Temperature Behavior

Use the exhaust air volumetric flow rates in the table below to calculate the exhaust air piping via the bypass connector. If the exhaust air piping is designed continuously rising with DN 80 according to our recommendations, it can be assumed that this value will be achieved if this volume of air can also be fed to the room from outdoors (ventilation opening with a minimum cross section of 50 cm²).

In the case of furnaces with an exhaust air flap and also the fresh air fan option the volumetric flow rate is much higher and can be extracted from the room only in combination with an exhaust air hood (flue).

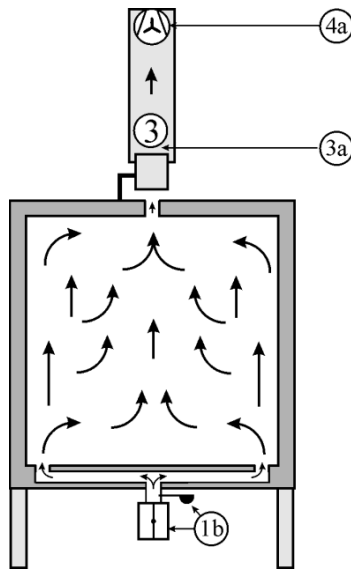
Furnace model	Maximum temperature inside the furnace in °C	① Flow rate of cooling fan ¹ m ³ /h	② Flow rate of exhaust air flap ¹ m ³ /h	③ Flow rate of bypass connector ¹ m ³ /h	④ Flow rate of exhaust air hood ¹ m ³ /h
N 40 E(LE) – N 300(H)	1300	-	-	approx. 25	-
N 300(H)	1300	max. 600	approx. 40	-	approx. 260
N 440(H)	1300	max. 600	approx. 40	-	approx. 260
N 660(H) – N 1000(H)	1300	max. 600	approx. 40	-	approx. 400
Top 16 – Top 220	1300	-	-	approx. 25	-
①a	1x cooling fan D05 ambient air (~ 25 °C)				
②a	Additional air drawn from the environment (mixing air flow) (~ 35 °C)				
③a	The exhaust air must be dissipated and the maximum temperature defined by the customer. It must be ensured that the flow of hot air emitted from the furnace is not hazardous to people, property or the building.				
④a	Recommended exhaust air fan (not part of the delivery/must be provided by customer)				
¹ if present (model-related)					

Fig. 45: Flow rates and temperature patterns

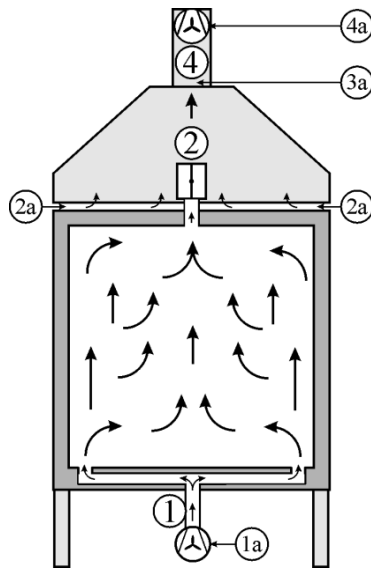
The information described above and in the table relates exclusively to extraction of the gases from the furnace. The heat occurring in case of fire may make additional room ventilation necessary, depending on the size of the room. As the heat depends to a great extent on the firing program, it is not possible to provide precise data. 1/3 of the heat output of the respective furnace can be used as a guide for dimensioning room ventilation.

Warning:

Active ventilation of the installation room must not cause underpressure in the room, as otherwise extraction of the exhaust air from the furnace via the bypass connector will be affected.



Example: Furnace with air inlet valve/flap (1b) and bypass connection



Example: Furnace with cooling fan, exhaust air flap, and exhaust air hood (flue)

4.7.4.1 Installing the Exhaust Hood(s)(design and number depending on furnace model) (Accessories)



When the furnace is delivered, remove the packaging materials. The exhaust hood/s must be visually checked for damage. We recommend that at least two or more persons perform the work of transporting and installing.

Protective gloves must be worn when installing the exhaust hood/s.

The danger of falling is still present (from the roof of the furnace, from the ladder or from the scaffolding). Observe the occupational safety regulations of the respective country of installation.

When positioning the exhaust hood make sure the orientation is correct. Position the cut-out of the exhaust hood on the side of the shaft (1) of the exhaust-air flaps (if included).

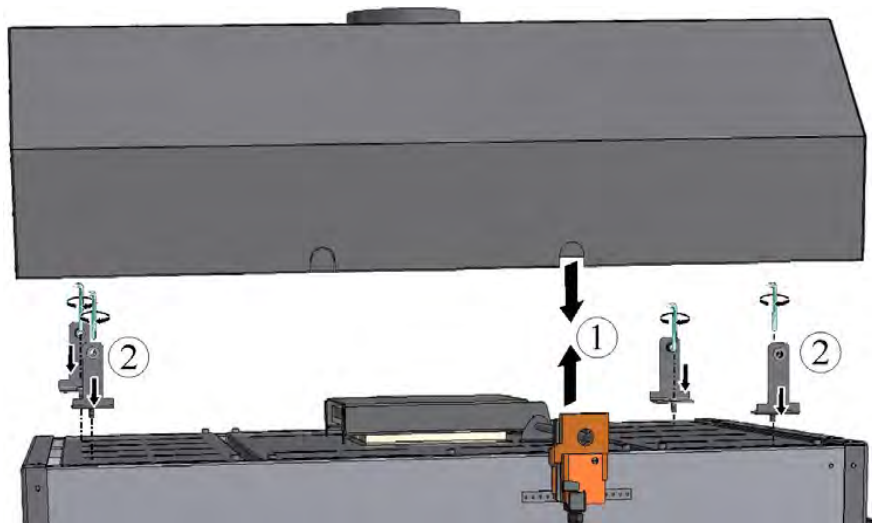


Fig. 46: Example: Positioning the exhaust hood/s (similar to picture)

The screws (2) for fastening the exhaust top hat are on the roof of the furnace. Position the exhaust top hat/s where the screws have been screwed in at the factory. The quantity and positions of the screws may vary from one model to the next. Tighten the screw materials to the furnace turning clockwise and make sure they are firmly in place. The exhaust-air flap/s under the exhaust top hat/s must be able to move freely.

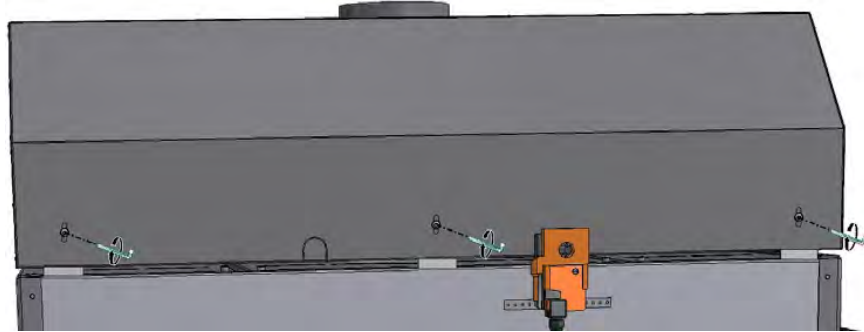


Fig. 47: Example: Positioning and fastening the exhaust hood/s (similar to picture)



Caution – Danger of Falling

Ignoring this can lead to death. Danger of falling exists at a height less than 1.00 m above the ground or another sufficiently broad bearing surface (for example, on elevated operating positions and workplaces, working platforms, galleries, landing platforms, footbridges, flying bridges, ramps and stairways). Openings and recesses through which people can fall (for example in floors, platforms, installation openings, hatchways and pits, non-bearing roofs).

4.7.4.2 Setting the Height of the Exhaust Hood

There should always be a slight underpressure under the exhaust hood (if included), in relation to the surrounding air pressure, when the cooling blower (if included) is switched on. For this reason, when an active suction system is used, the suction power should be adjustable (e.g. by using a throttle flap). The distance (2) of the exhaust hood from the furnace sets the admixture air flow.

When starting up, you must ensure that enough fresh air (room ventilation) comes into the room (for example: by opening windows).

The height of the exhaust hood can be continuously set using the screws (1) at the holders all around the hood. Use a suitable tool to remove the screws. Make sure that a uniform clearance is maintained between the exhaust hood and the furnace all around the hood.

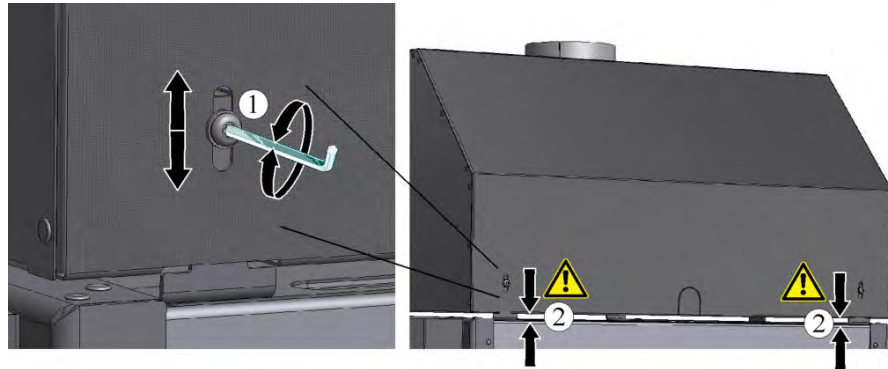



Fig. 48: Setting the height of the exhaust hood (similar to picture)

! DANGER	
	<ul style="list-style-type: none"> • Fire hazard for components installed under the exhaust air hood. • Fire hazard. • There must be an even gap of at least 10 mm all round between the bottom of the exhaust air hood and the top of the furnace. <p>The gap between the bottom of the exhaust air hood and the top of the furnace can be adjusted upward using the screws on the brackets on all sides.</p>

Exhaust air control with exhaust air hood and fresh air fan (optional)

The exhaust can be removed passively by the natural draw of the extended piping or actively by the suction unit provided by the customer.

A passive or active suction system must be able to draw off the air flows and temperatures produced by the furnace. Any bottleneck or backing up in the direction of the furnace is not permissible.

There should always be a slight underpressure under the exhaust hood, in relation to the surrounding air pressure, when the cooling blower (1) is switched on. For this reason, when an active suction system is used, the suction power should be adjustable (e.g. by using a throttle flap). The admixture air flow can be set by the distance (2) of the exhaust hood to the furnace.

When starting up, you must ensure that enough fresh air (room ventilation) comes into the room (for example: by opening windows).

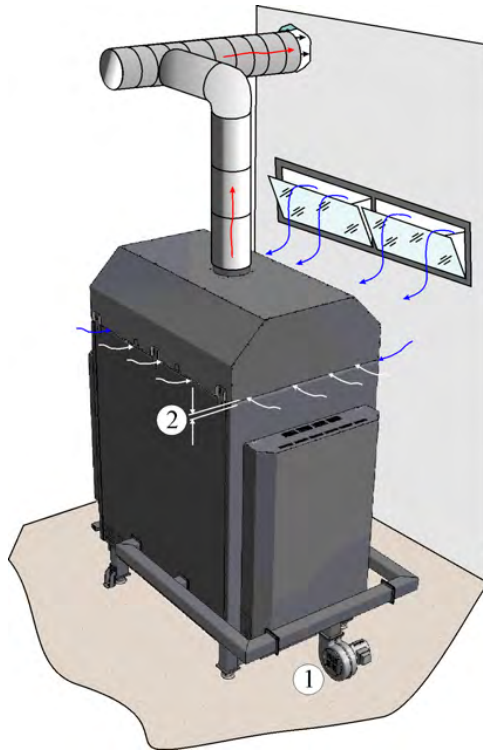


Fig. 49: Example: Venting exhaust air removal through an exhaust hood (similar to picture)

4.7.5 Connecting the Furnace to the Power Supply

The customer must ensure that the surface has adequate load-bearing capacity and that the necessary energy (electricity) is provided.

- The furnace must be installed according to its intended use. The power connection must correspond to the values on the furnace's type plate.
- The power socket must be close to the furnace and be easily accessible. The safety requirements are not met if the furnace is not connected to a socket with a protective ground contact.
- With **230 V** furnace models pay attentions that:
the distance between the circuit breaker and the power socket that the furnace is connected to is as short as possible. NO power board or extension cable is used between the power socket and the furnace.
- The power cable must not be damaged. Do not place any objects on the power cable. Lay the cable so that no one can stand on it or trip over it.
- Power cables may be replaced only with similar, approved cables.



Note

Before connecting the power, make sure that the power switch is set to "Off" or "0".