

froling

Installation and operating instructions

Pellet suction screw



Translation of original German version of installation and operating instructions for technicians and operators.

Read and follow all instructions and safety instructions.
All errors and omissions excepted.

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1 General

Thank you for choosing a quality product from Fröling. The product features a state-of-the-art design and conforms to all currently applicable standards and testing guidelines.

Please read and observe the documentation provided and always keep it close to the system for reference. Observing the requirements and safety information in the documentation makes a significant contribution to safe, appropriate, environmentally friendly and economical operation of the system.

The constant further development of our products means that there may be minor differences from the pictures and content. If you discover any errors, please let us know: doku@froeling.com.

Subject to technical change.

Issuing a delivery certificate

This is an incomplete machine as defined by the Machinery Directive. The incomplete machine must only be started up when it has been confirmed that the machine, in which the incomplete machine has been installed, conforms to the provisions of Directive 2006/42/EC.

Compliance with the open provisions and verification of the correct installation must be confirmed in the delivery certificate of the declaration of installation (included in documentation).

2 Safety

2.1 Hazard levels of warnings

This documentation uses warnings with the following hazard levels to indicate direct hazards and important safety instructions:

DANGER

The dangerous situation is imminent and if measures are not observed it will lead to serious injury or death. You must follow the instructions!

WARNING

The dangerous situation may occur and if measures are not observed it will lead to serious injury or death. Work with extreme care.

CAUTION

The dangerous situation may occur and if measures are not observed it will lead to minor injuries.

NOTICE

The dangerous situation may occur and if measures are not observed it will lead to damage to property or pollution.

2.2 Permitted uses

The Froling pellet suction screw is solely designed for discharging fuels from suitable stores. Only use fuels specified in the “Permitted fuels” section.

The unit should only be operated when it is in full working order. It must be operated in accordance with the instructions, observing safety precautions, and you should ensure you are aware of the potential hazards. The inspection and cleaning intervals in the operating instructions must be observed. Ensure that any faults which might impair safety are rectified immediately.

The manufacturer or supplier is not liable for any damage resulting from non-permitted uses.

Only original spare parts or specific alternative spare parts authorised by the manufacturer may be used. Any kind of change or modification made to the product will invalidate the manufacturer’s conformity with the applicable guideline(s). In such cases, the product will need to undergo new hazard evaluation procedures by the operator. The operator will then be fully responsible for the declaration of conformity according to the valid guideline(s) for the product and will need to issue a corresponding declaration for the device. This person will then assume all of the rights and responsibilities of a manufacturer.

2.2.1 Permitted fuels

Wood pellets

Wood pellets made from natural wood with a diameter of 6 mm

Note on standards

EU:	Fuel acc. to EN ISO 17225 - Part 2: Wood pellets class A1 / D06
and/or:	ENplus / DINplus certification scheme

General note:

Before refilling the store, check for pellet dust and clean if necessary.

2.3 Qualification of assembly staff

CAUTION



Assembly and installation by unqualified persons:

Risk of personal injury and damage to property

During assembly and installation:

- Observe the instructions and information in the manuals
- Only allow appropriately qualified personnel to work on the system

Assembly, installation, initial startup and servicing must only be carried out by qualified personnel:

- Heating technicians/building technicians
- Electrical installation technicians
- Froling customer services

The assembly staff must have read and understood the instructions in the documentation.

2.4 Personal protective equipment for assembly staff

You must ensure that staff have the protective equipment specified by accident prevention regulations!



- During transport, erection and installation:
 - wear suitable work wear
 - wear protective gloves
 - wear safety shoes (min. protection class S1P)

2.5 Qualification of operating staff

CAUTION



If unauthorised persons enter the Storeroom:

Risk of personal injury and damage to property

- The operator is responsible for keeping unauthorised persons, in particular children, away from the system.

Only trained operators are permitted to operate the unit. The operator must also have read and understood the instructions in the documentation.

2.6 Protective equipment for operating staff

You must ensure that staff have the protective equipment specified by accident prevention regulations!



- For operation, inspection and cleaning:
 - suitable work wear
 - protective gloves
 - sturdy shoes

2.7 Design information

Carrying out modifications to the system and changing or disabling safety equipment is prohibited.

Always comply with all fire, building and electrical regulations when installing or operating the system, in addition to following the operating instructions and mandatory regulations that apply in the country in which the tank is operated.

NOTICE! All design information such as installation and approval of the system, chimney connection/chimney system etc., see installation instructions for the boiler.

2.7.1 Standards

The system must be installed and commissioned in accordance with the local fire and building regulations. The following standards and regulations should always be observed:

ÖNORM / DIN EN 60204	Safety of machines; Electrical equipment of machines, Part 1: General requirements
TRVB H 118	Technical directives for fire protection/prevention (Austria)
ÖNORM H 5170	Construction and fire protection requirements (Austria)
ÖNORM H 5190	Heating systems - Acoustic insulation
EN ISO 13857	Safety of machines; Safety distances for maintaining a safe distance from hazardous areas
EN 13501	Fire classification of construction products and building elements

2.7.2 Requirements at the installation site

- All walls and load-bearing elements must support the static load. The construction requirements should be agreed with a structural engineer if necessary. Observe the local fire regulations.
- Water lines should not be located in close proximity to the pellet store or the feeder units due to the dangers posed by condensation and bursting water pipes.
- Clad pipes that cannot be easily removed and which intersect the path of the pellets during filling to protect them against the flow and prevent breakage (e.g. deflector plate, wooden boarding). Design the cladding in such a way to divert the pellets without damaging them.
- Do not install any electrical components such as switches, lights, distribution boxes or other ignition sources in the pellet store. Install the necessary installations so that they are explosion-proof and comply with the locally applicable regulations.
- Doors, windows and hatches to the pellet store must open outwards and be fitted with a dust-proof seal all the way round, to prevent dust escaping from the store, particularly into other rooms.
- The system is only suitable for interior rooms which are frost-proof and protected against the elements.
 - ➔ ["Assembly information for hose lines" \[▶ 26\]](#)

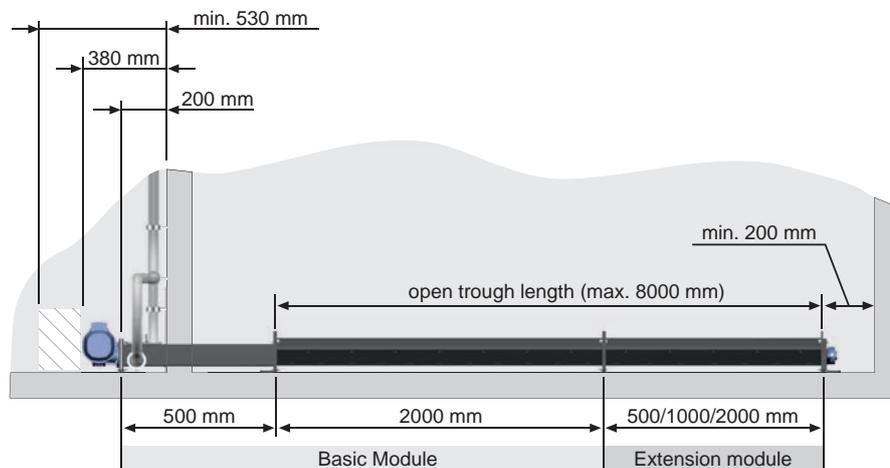
Refer to the further information about the technical features of the pellet store!

➔ ["Store layout and construction" \[▶ 10\]](#)

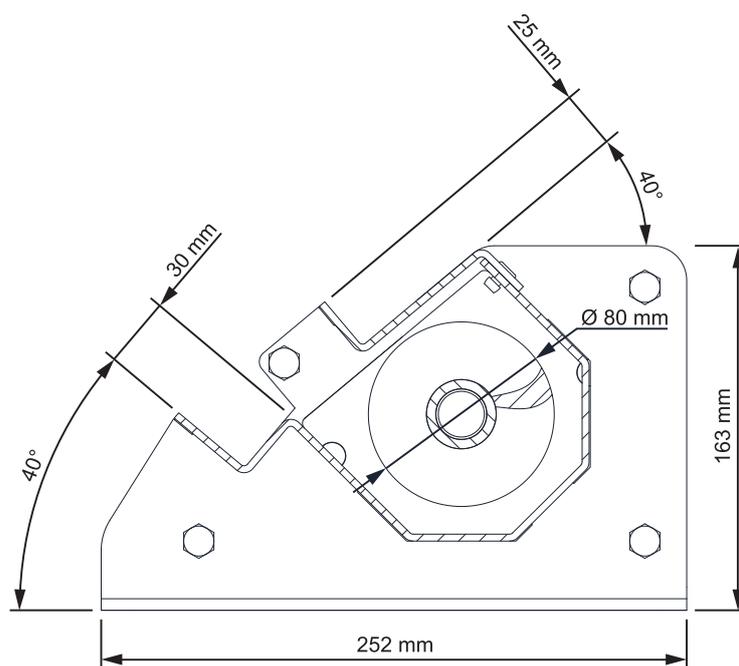
3 Technology

3.1 Dimensions

3.1.1 System lengths



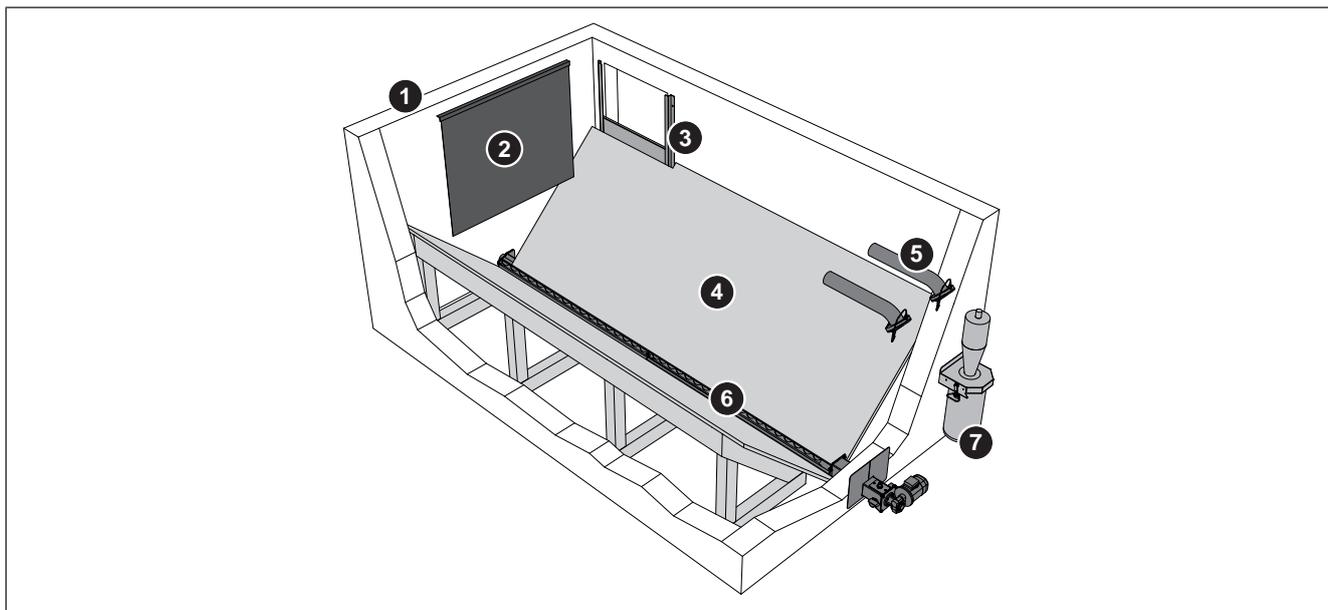
3.1.2 Trough dimensions



3.2 Technical specifications

Designation	Value
Drive motor supply	230 VAC / 50 Hz
Drive motor power consumption	0.37 kW

4 Store layout and construction



1	Fuel store for wood pellets ➔ "Size of fuel store" [▶ 11]
2	Buffer mat opposite inlet nozzle ➔ "Buffer mat" [▶ 11]
3	Boarding on the fuel store door ➔ "Boarding on the fuel store door" [▶ 12]
4	Sloping sides ➔ "Sloping sides" [▶ 12]
5	Filling couplings for loading fuel ➔ "Filling couplings" [▶ 13]
6	Pellet suction screw Ø 80
7	PST pellet deduster (optional)

4.1 Size of store space

The storage area should be able to hold approximately 1.5 times the annual amount of pellets needed independently of the system heating load.

Rule of thumb: **1 m³ store space / kW heating load**

NOTICE



Formation of dust from pellets

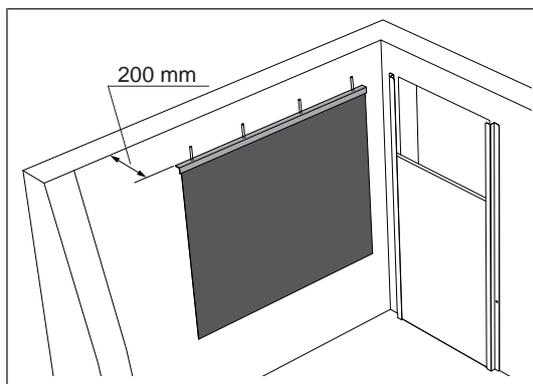
Dust formed over time from the pellets which sinks to the floor can impair the discharge of pellets from the store space

- Completely empty and clean the store space on a regular basis
- Check the store space before refilling and clean if necessary

TIP: We recommend that you fit the PST pellet deduster to guarantee a long and reliable service life for the boiler system.

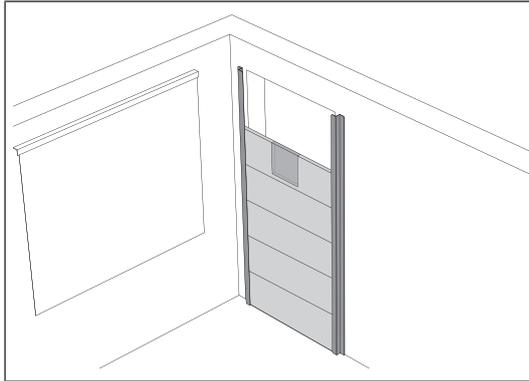
4.2 Buffer mat

NOTICE! During the filling process, the buffer mat stops pellets from hitting the wall and breaking up as well as knocking plaster off the wall. Broken pieces of masonry, plaster and other foreign objects can block the discharge system and disrupt the pellet feed into the boiler thus causing a system failure. Warranty claims are not covered by such faults.



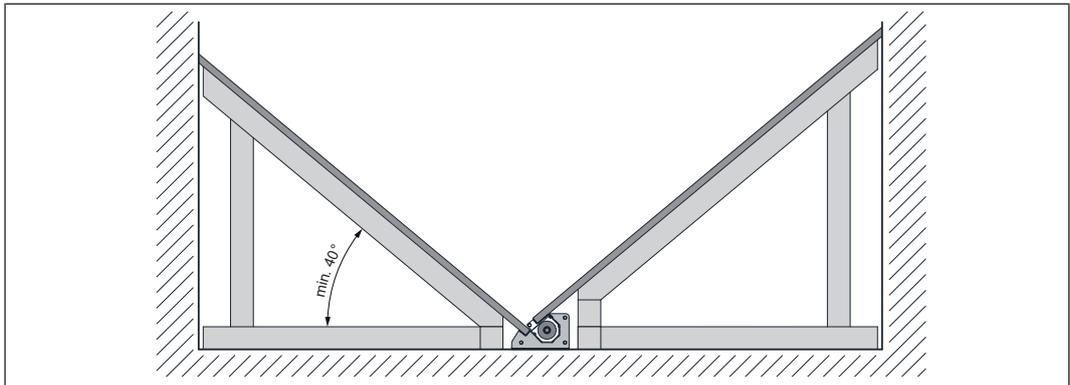
- Install buffer mat opposite the inlet nozzle
- Install at a right angle to the trajectory of the pellets
- Minimum distance of 200 mm to the wall

4.3 Planking on the store door



- Install a fire door on the pellet store in accordance with local regulations
- Board the inside of the store with wooden boards
 - Door rails and baffle boards for the door are available from Fröling GesmbH
- TIP: Install a viewing window

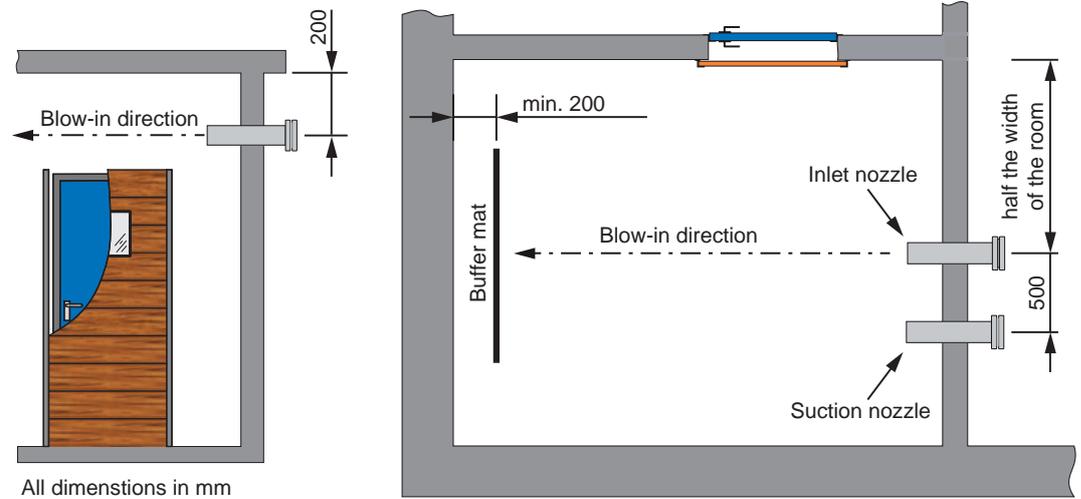
4.4 Sloping floor



- Position the trough of the pellet suction screw in the centre of the room
- Design the construction in such a way that the weight of the pellets is absorbed and is transferred to the substrate
Rule of thumb for calculating the total weight: **1 m³ pellets $\hat{=}$ 650 kg**
- Ensure the sloping floor has an angle of at least 40° (optimum 45° to 50°)
- The sloping floor must not touch the walls to ensure vibrations are not transferred to the brickwork (structure-borne noise)
- Smooth surface of sloping floor so pellets can slide down
- No edges and ridges
- Ensure the sloping floor is sealed against surrounding walls to ensure pellets do not fall behind the sloping floor

4.5 Filling couplings

The filling couplings are used to fill the pellet store; the central coupling serves as an inlet nozzle and the off-centre one serves as a suction hose for dust.



The holes in the wall for the pipes must have a diameter of at least 150 mm. Position the filling couplings 200 mm below the ceiling. To fix the filling couplings in the masonry, they must be bricked in or cemented in with rotation protection. Filler couplings that are fixed in place using foam compounds may come loose when the filling hose is coupled. The filling couplings must be earthed in order to prevent the build up of electrostatic charge.

5 Assembly

5.1 Transport

The product is delivered on pallet(s) in cardboard packaging.

NOTICE



Possibility of damage to components if handled incorrectly

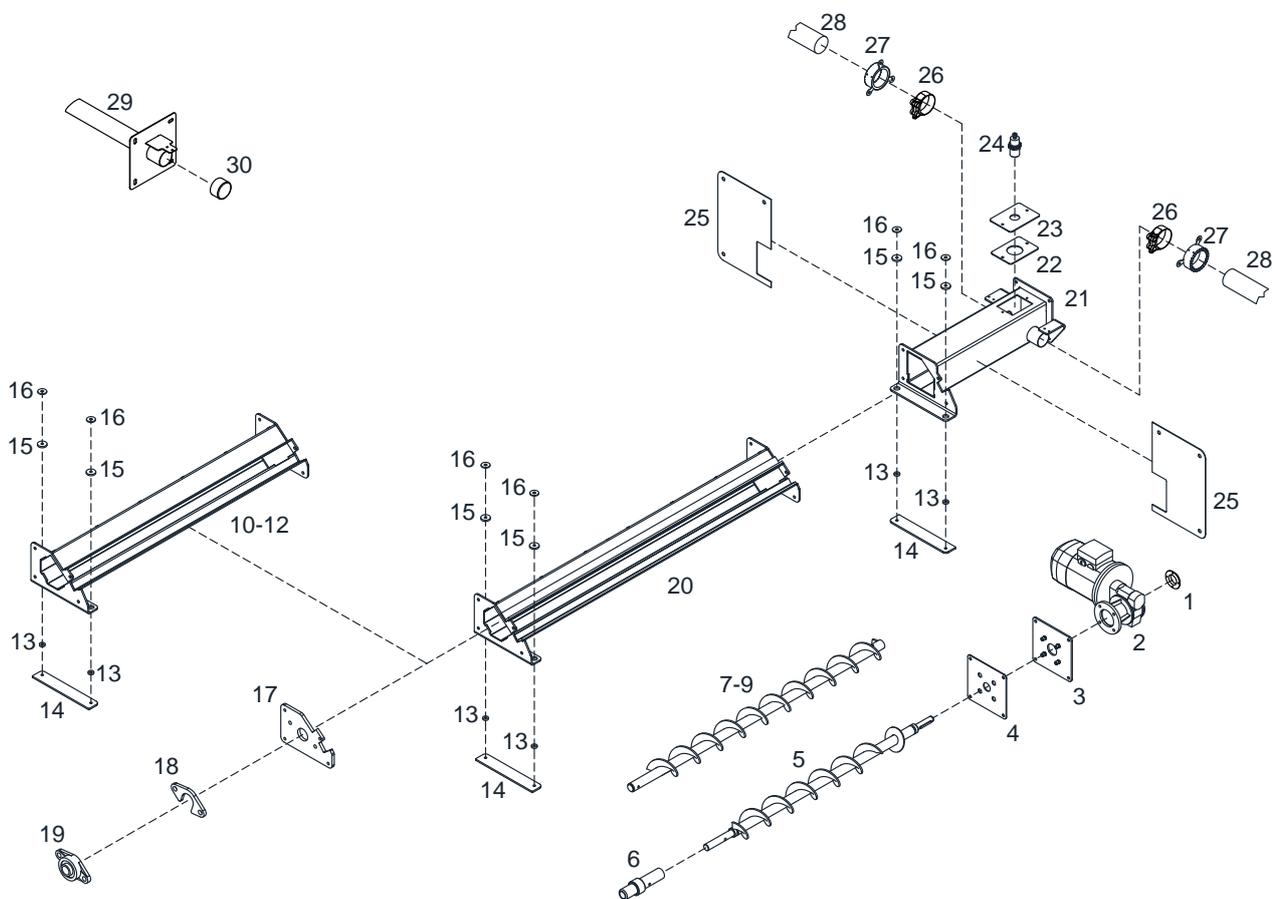
- Follow the transport instructions on the packaging
- Transport components with care to avoid damage
- Protect components against damp
- Pay attention to the pallet's centre of gravity when lifting

5.2 Temporary storage

If the system is to be assembled at a later stage:

- Store components at a protected location, which is dry and free from dust
 - ↳ Damp conditions and frost can damage components, particularly electric ones!

5.3 Materials supplied



1	Protective cap	17	Bearing flange
2	Geared motor	18	Ejecting flange
3	Motor flange	19	Flange bearing unit
4	Flange seal	20	Pellet trough, open 2000 mm
5	Basic screw 2695 mm	21	Suction piece
6	Shaft end for flange bearing	22	Fibre-glass seal
7	Extension screw 500 mm ¹⁾	23	Cover for proximity sensor
8	Extension screw 1000 mm ¹⁾	24	Proximity sensor
9	Extension screw 2000 mm ¹⁾	25	Wall lining
10	Trough extension 500 mm ¹⁾	26	Hinge pin clamp Ø 56-59 mm
11	Trough extension 1000 mm ¹⁾	27	Fire protection collars
12	Trough extension 2000 mm ¹⁾	28	PVC suction hose ²⁾
13	Soundproof washer Ø 18 mm ¹⁾	29	Wall duct
14	Soundproof plate ¹⁾	30	Protective cap Ø 50 mm
15	Soundproof washer Ø 30 mm ¹⁾	Not pictured	Pack of screws ³⁾
16	Spacer washer M8 Ø 28 mm ¹⁾		

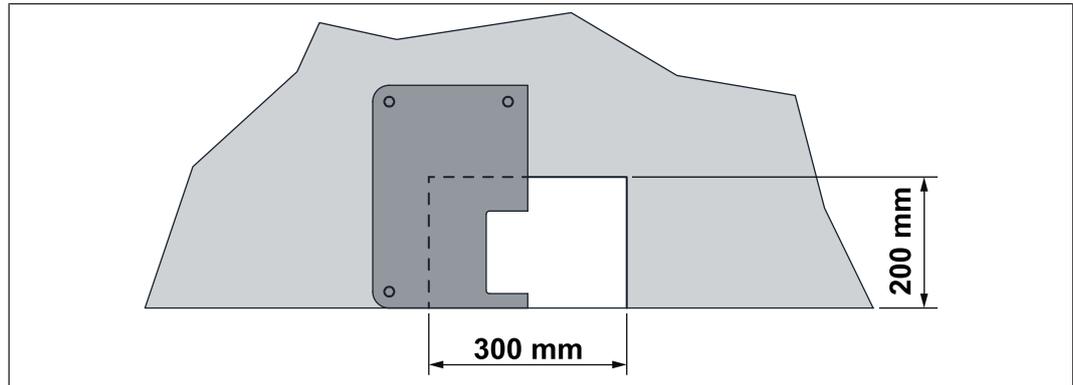
1. Quantity depends on length of open trough;
 2. Length depends on scope of delivery (12.5 m or 25 m);
 3. Contents depend on open trough length

NOTICE

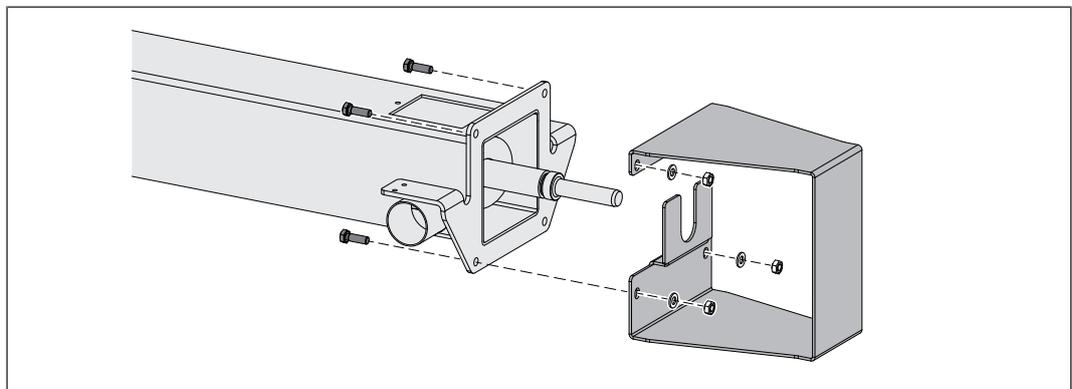
Depending on the characteristics of the surface, the fixings supplied must be replaced with suitable components!

5.4 Fitting the pellet suction screw

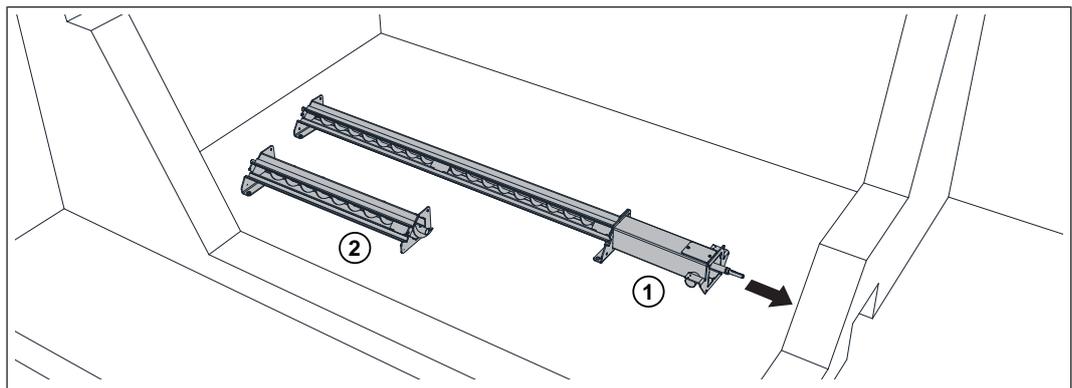
Before assembling the pellet suction screw, make a hole in the wall for the suction piece:



- Prepare hole in wall for suction piece (width 300 mm, height 200 mm)
- ↳ Position the hole in the wall so that the feed screw is in the middle of the room

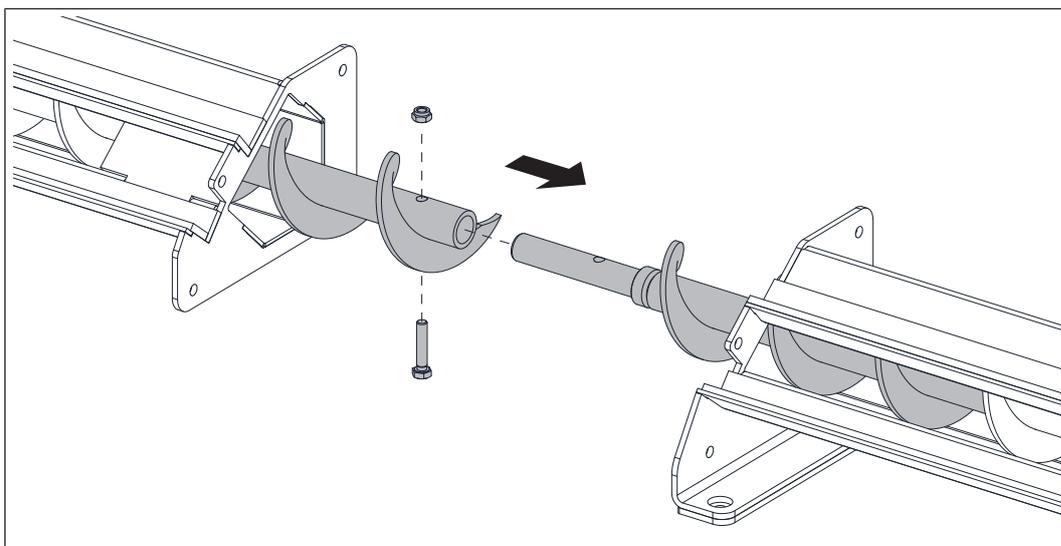


- Remove the transport guard from the suction piece
- ↳ The transport guard is no longer required

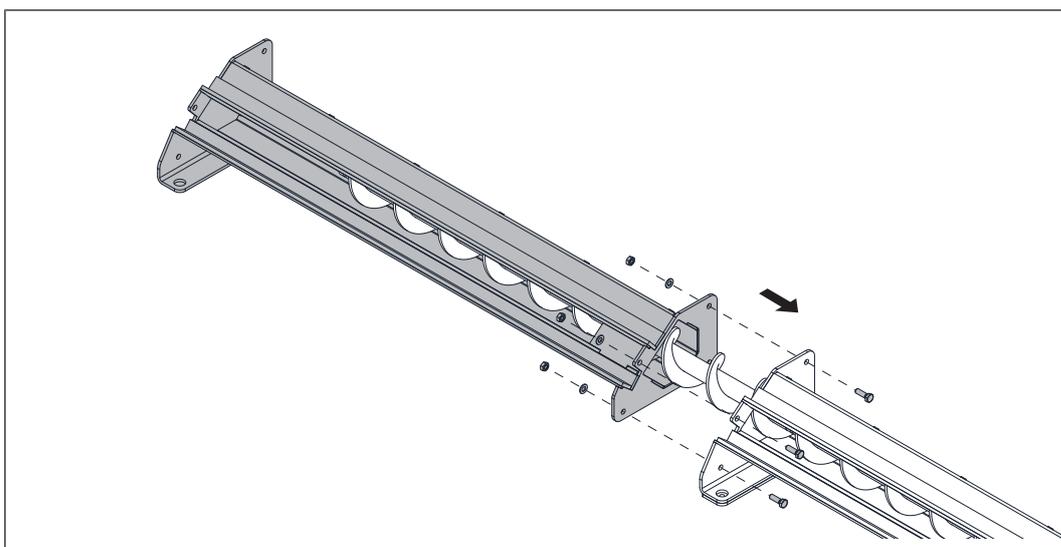


- Place main components in fuel store
 - (1) Suction piece with basic screw and trough
 - (2) Extension screw(s) with trough (quantity depends on model)
- Push suction piece from inside out through the hole in the wall

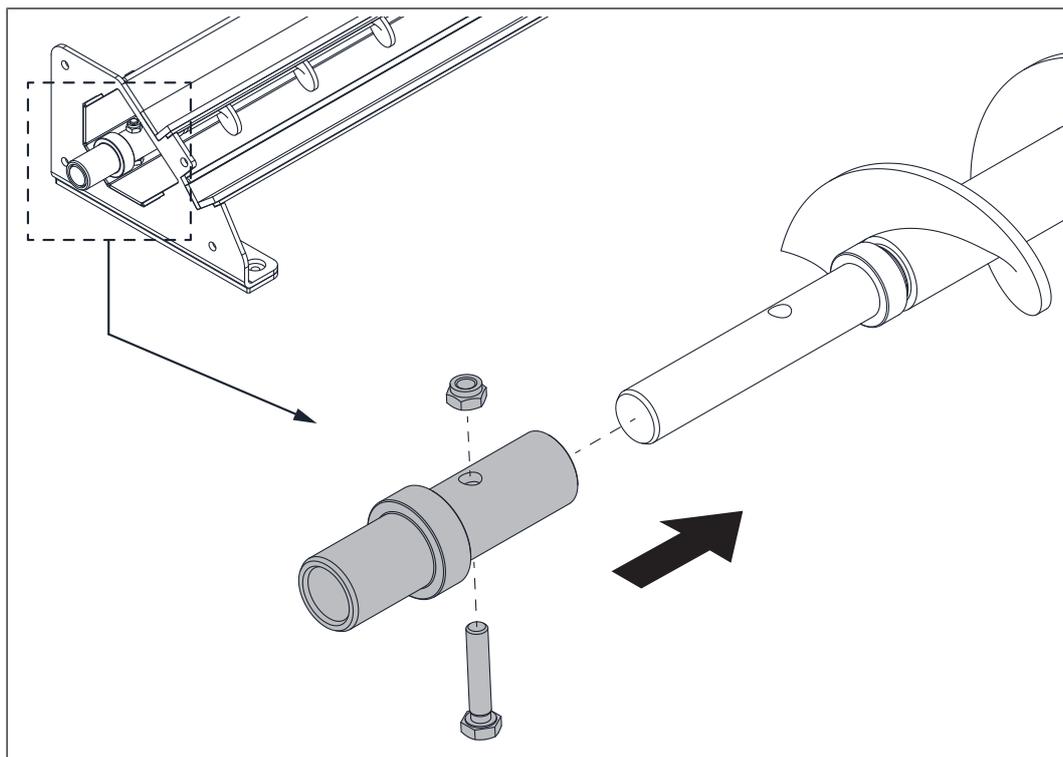
NOTICE! If an extension trough is not being used, skip the next two assembly steps.



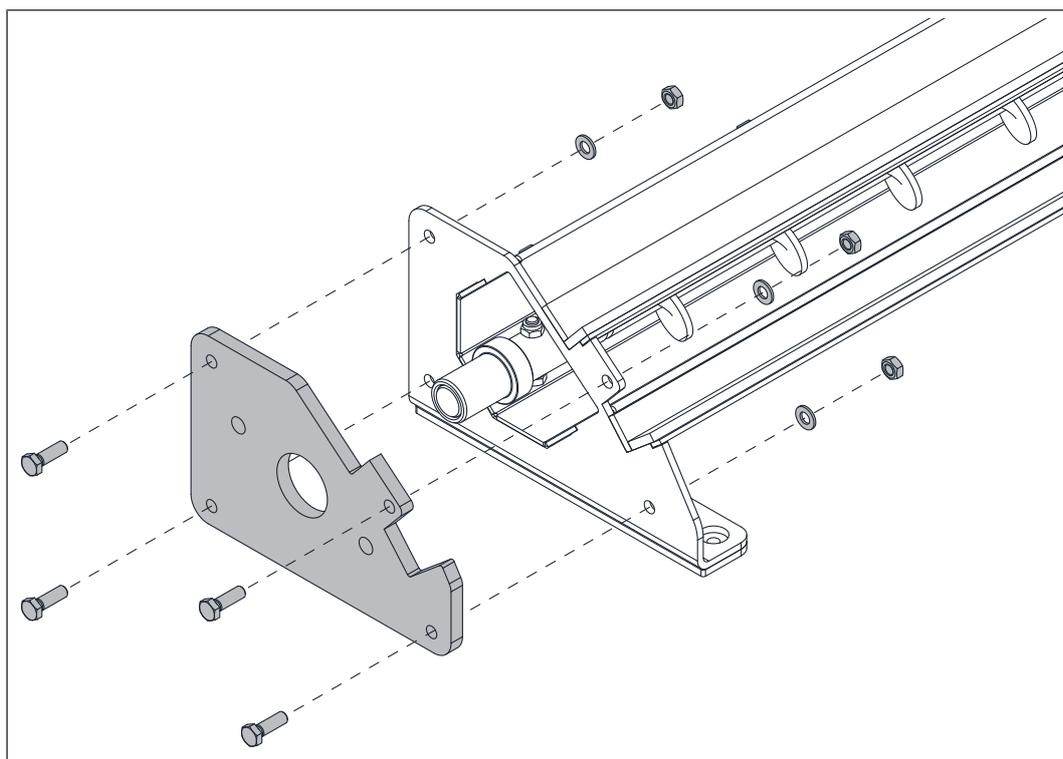
- Place the extension screw and trough at the basic screw
- Telescope the basic screw and extension screw
 - ↳ Ensure that the two ends of the screw blade are aligned and that there is a continuous slope
- Secure the joint with hexagonal screw M8 x 40 mm and safety nut



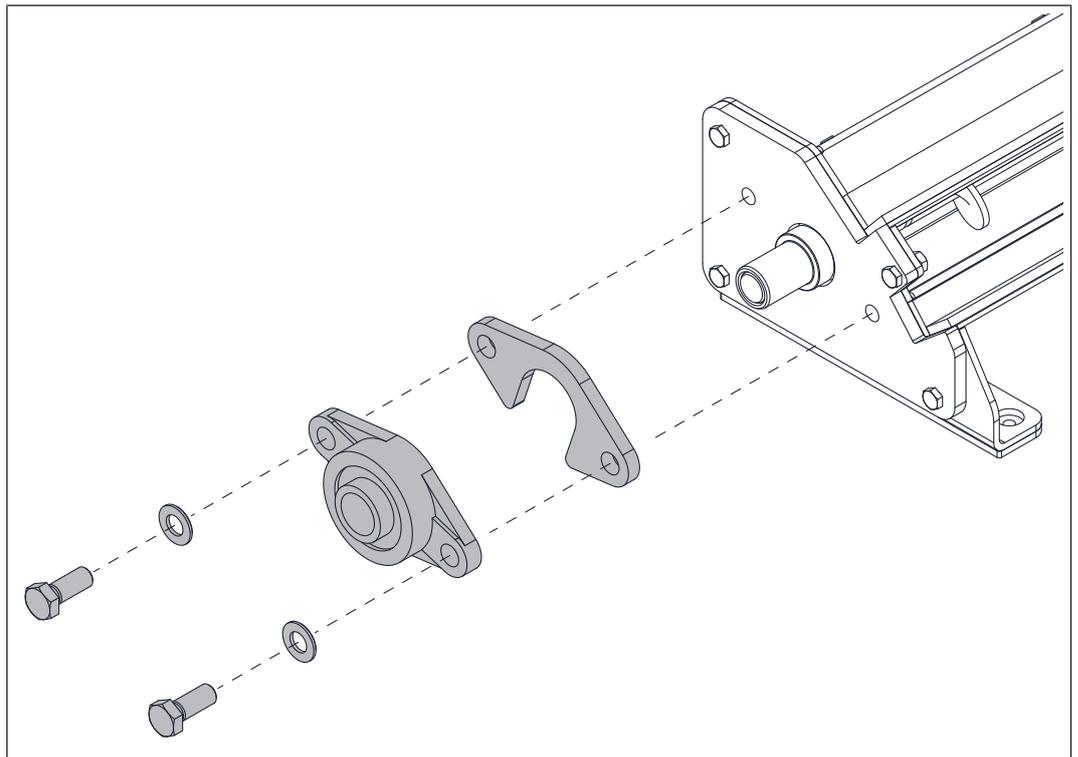
- Screw the extension trough to the trough of the base unit
- Repeat assembly steps for additional extension troughs



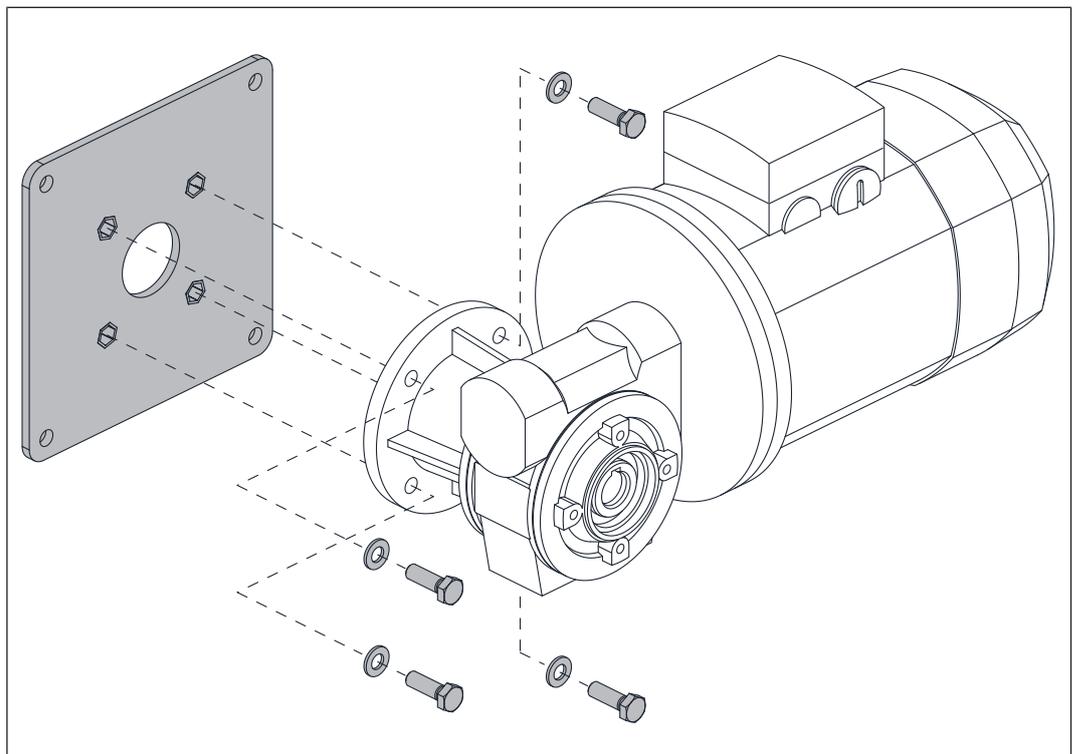
- Place the shaft endpiece on the end of the pellet screw as shown and secure with hexagonal screw M8 x 40 mm and lock nut



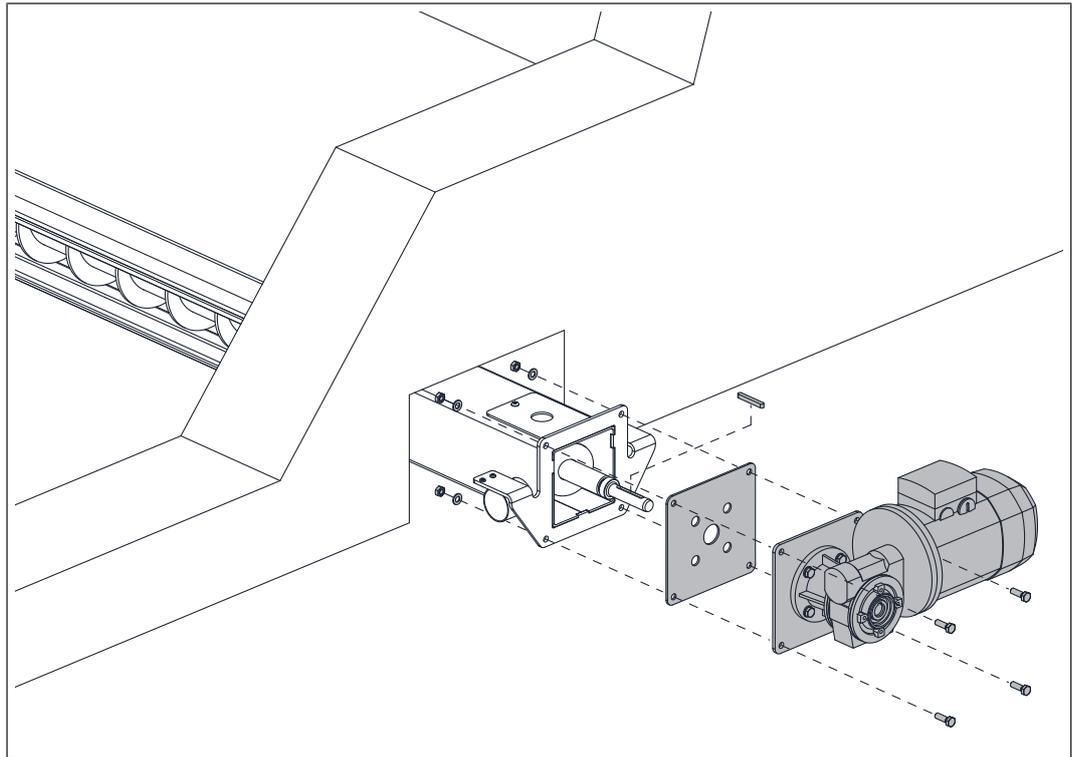
- Slide the flange plate over the shaft endpiece and screw to the trough



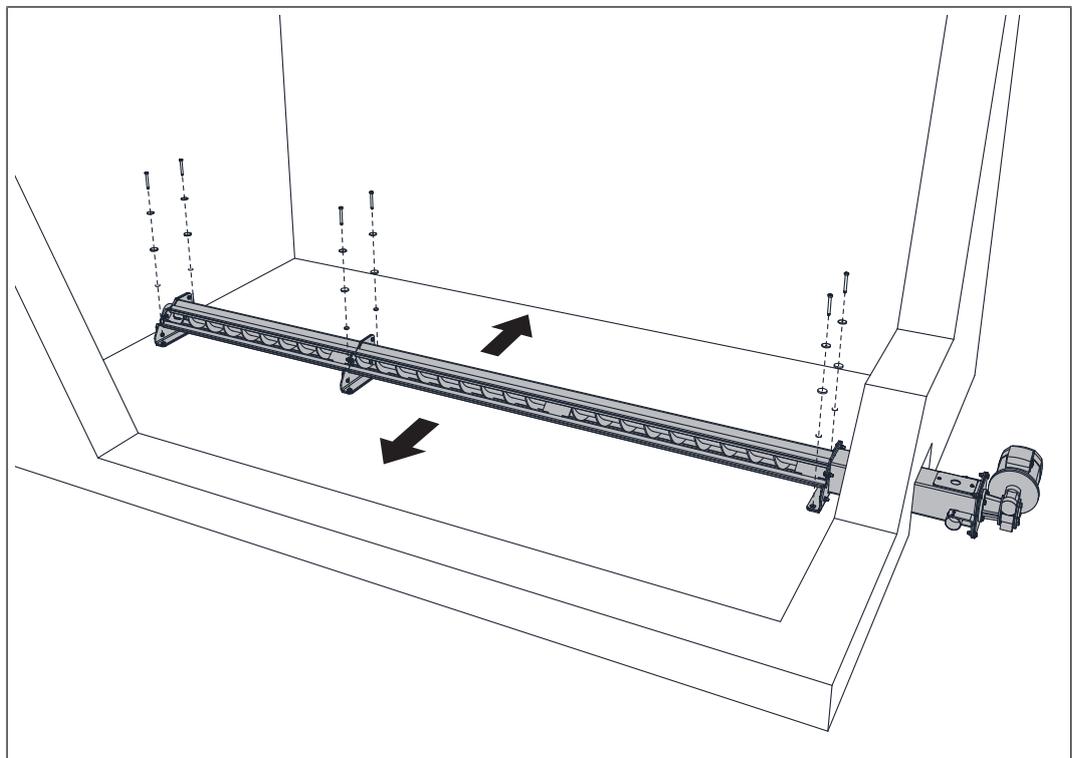
- Fit the ejecting flange and flange bearing to the flange plate
 - ↪ The opening of the ejecting flange must face down



- Fit the gear flange to the geared motor as shown

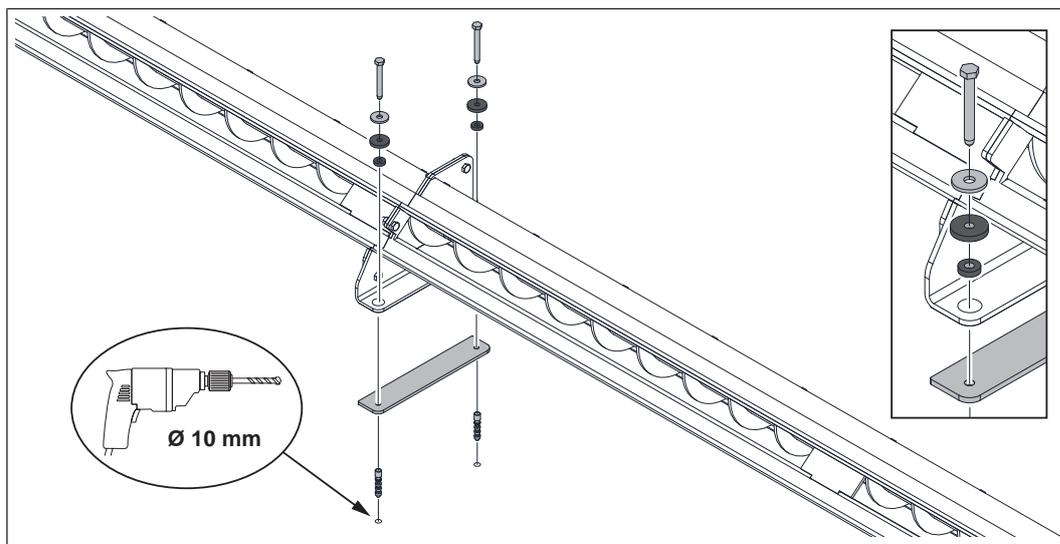


- Slide the flange seal onto the pellet screw and insert the key into the groove on the stub shaft
- Attach the geared motor and screw to suction piece
 - ↳ There is no particular installation position specified for the geared motor.

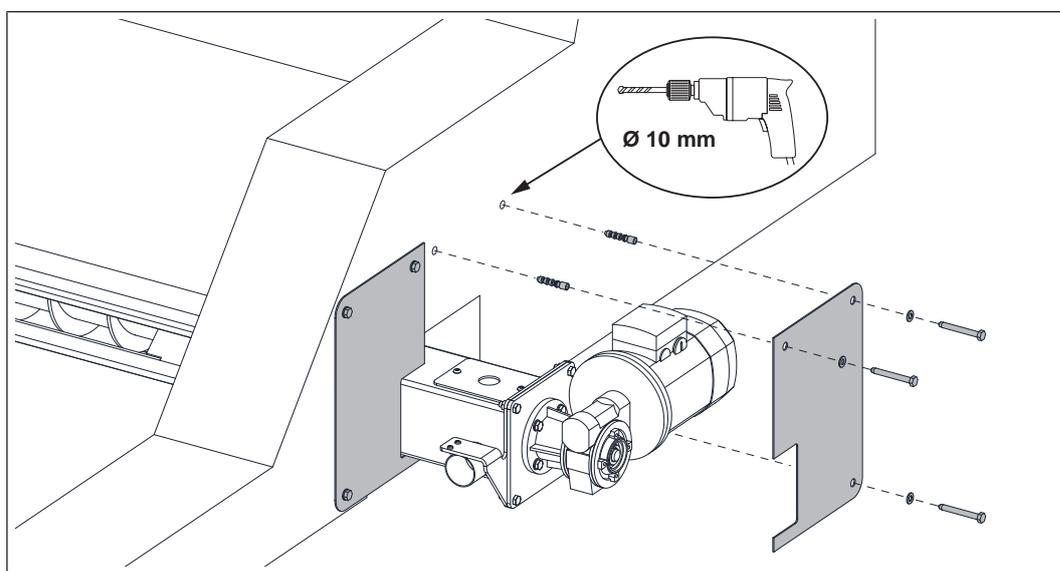


- Align the complete unit in the store so that it is parallel to the outer walls
- Align the height of the troughs, evening out any bumps in the ground with spacer washers under the soundproof plates

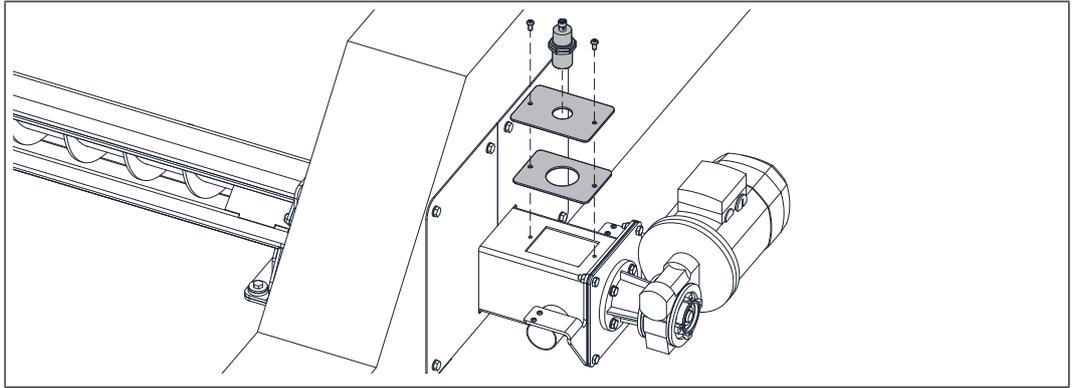
NOTICE! The assembly material provided for the following steps is a suggestion. Use a material that is best suited to the surface.



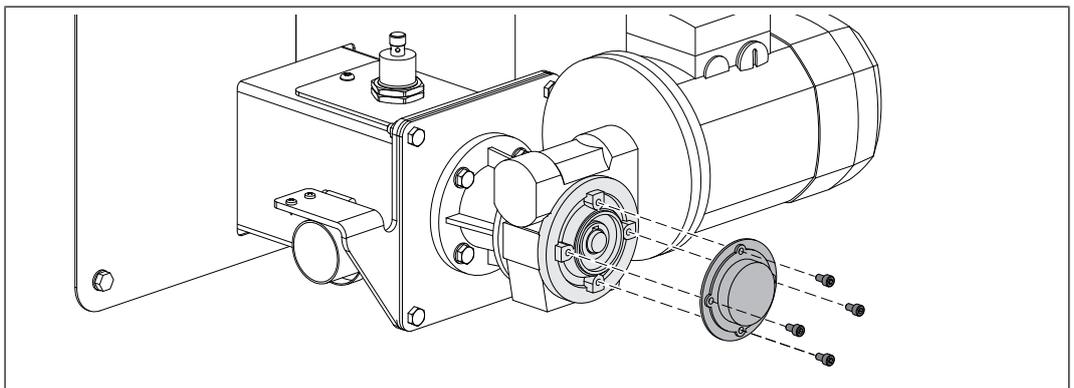
- Drill holes in the floor with a power drill (\varnothing 10 mm) and hammer in the nylon rawlplugs provided
- Fit a soundproof plate under each of the adjustable feet
- Insert a soundproof washer \varnothing 18 mm in each of the holes in the adjustable feet and position a soundproof washer \varnothing 30 mm on top
- Secure the adjustable feet to the floor with frame screws and spacer washers



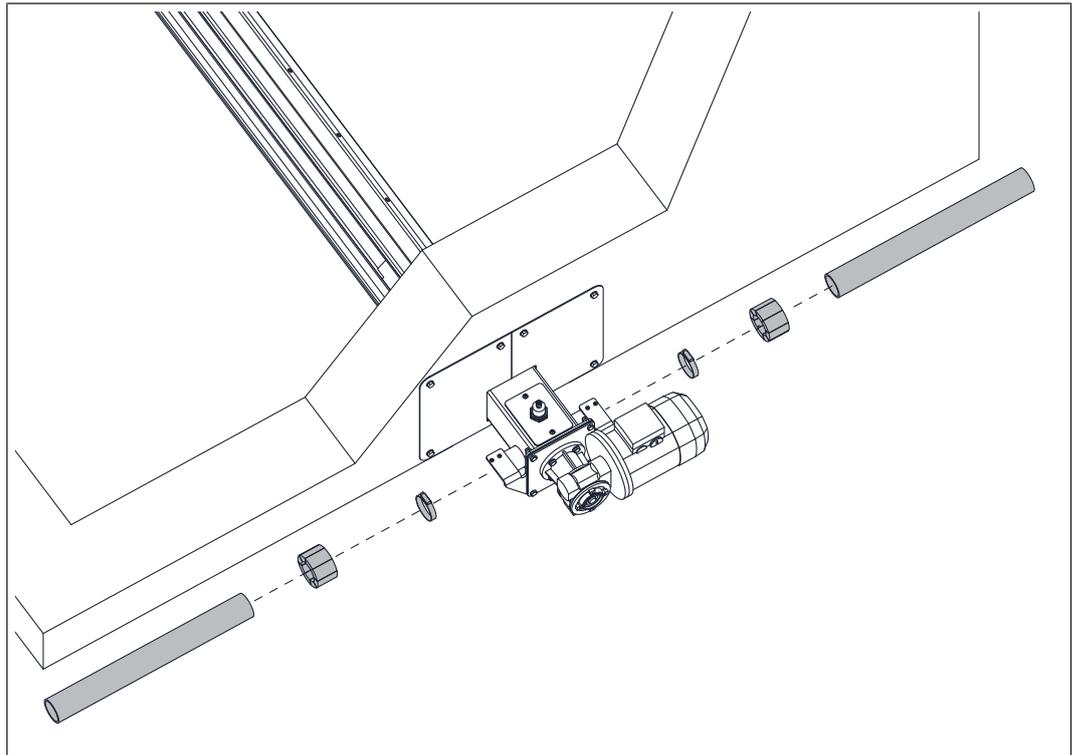
- Pack the space in the hole in the wall with a non-flammable material
 - ↳ The partition must be insulated to conform to ÖNORM B 3836 or DIN 4102-11!
- Drill holes in the wall lining of the outer wall of the store with a power drill (\varnothing 10 mm) and hammer in the nylon rawlplugs provided
- Secure the wall linings with frame screws and spacer washers



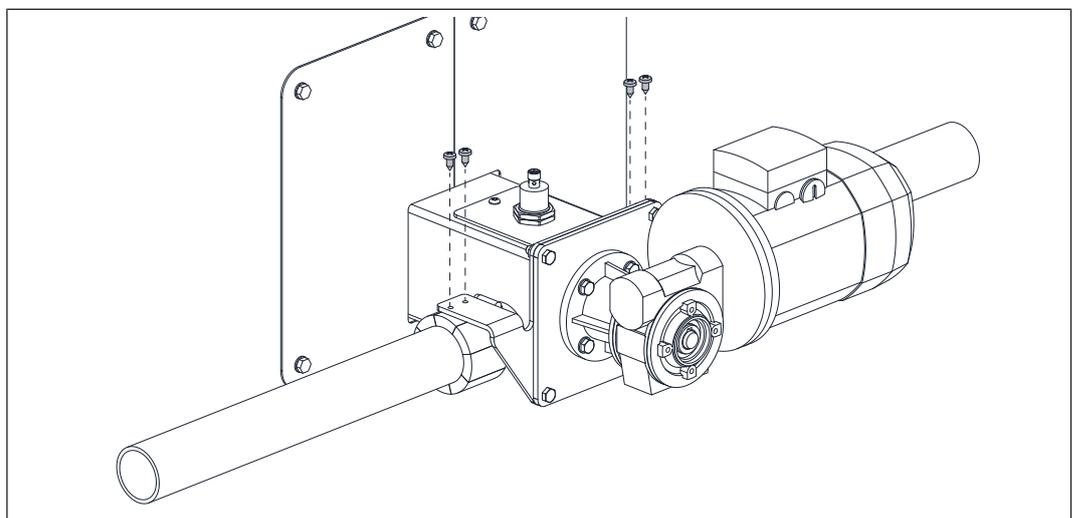
- Remove the inspection cover from the suction piece
- Unscrew the bottom nut on the jam sensor
- Push the jam sensor through the hole in the inspection cover and secure with the nut previously removed
 - ↳ The sensor should project approx. 1 cm into the suction piece
 - ↳ The sensitivity is set during initial startup
- Replace the inspection cover on the suction piece



- Fit the protective cap provided to the geared motor using four screws



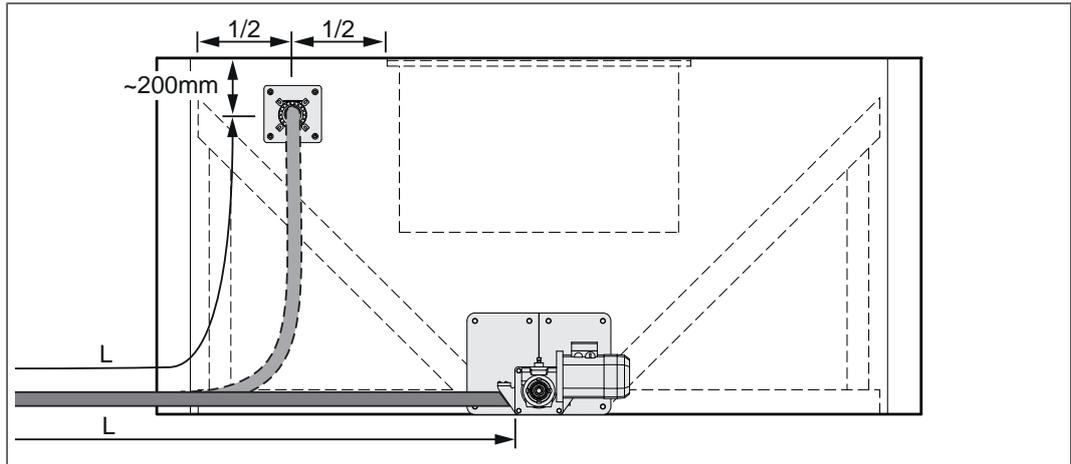
- Lay both hose lines in the boiler room from the boiler to the suction piece
- Slide a fire protection collar and hose clamp onto the hose lines
- Place the hose line on the suction piece and secure with hose clamp
 - ↳ When connecting the hose lines, beware of static discharge!



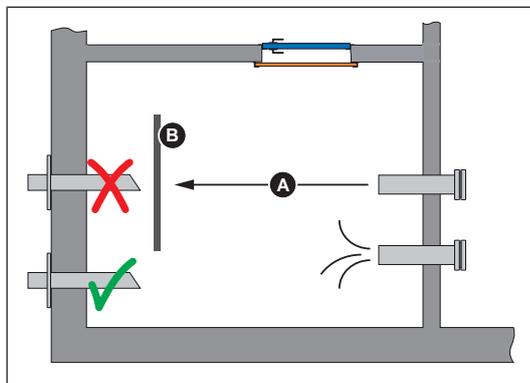
- Screw the fire protection collars to the brackets on the suction piece
NOTICE! The use of fire protection collars is stipulated by certain regional regulations (e.g. in Austria).

5.5 Install wall duct

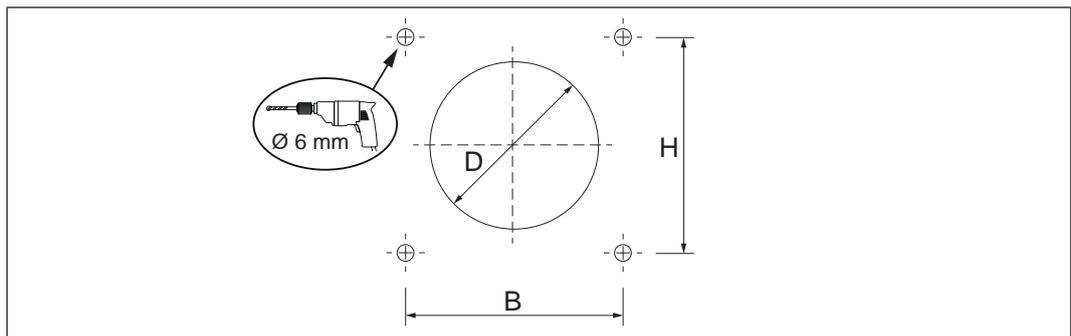
Assembly information:



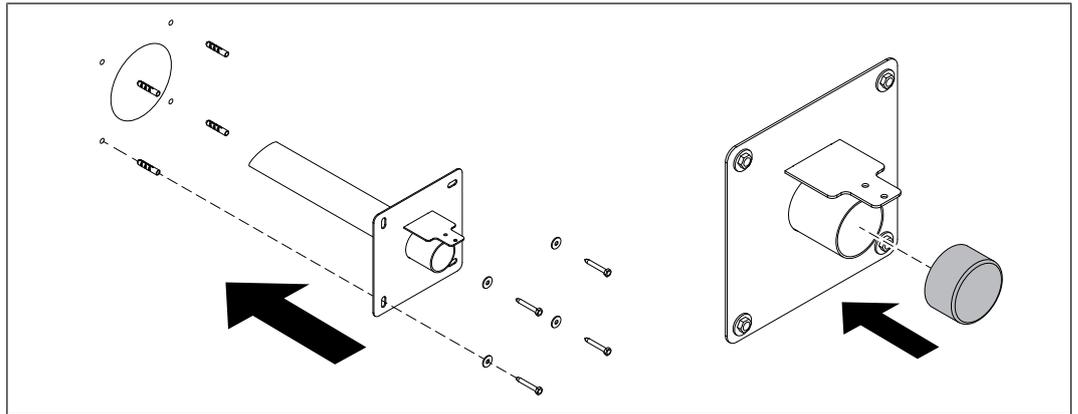
NOTICE! Position the wall duct so that the return-air duct can be easily changed with the existing hose length (L).



- Do not fit the wall duct in the path of the pellets (A) (risk of blockage!)
- Do not fit the wall duct directly behind the buffer mat (B)

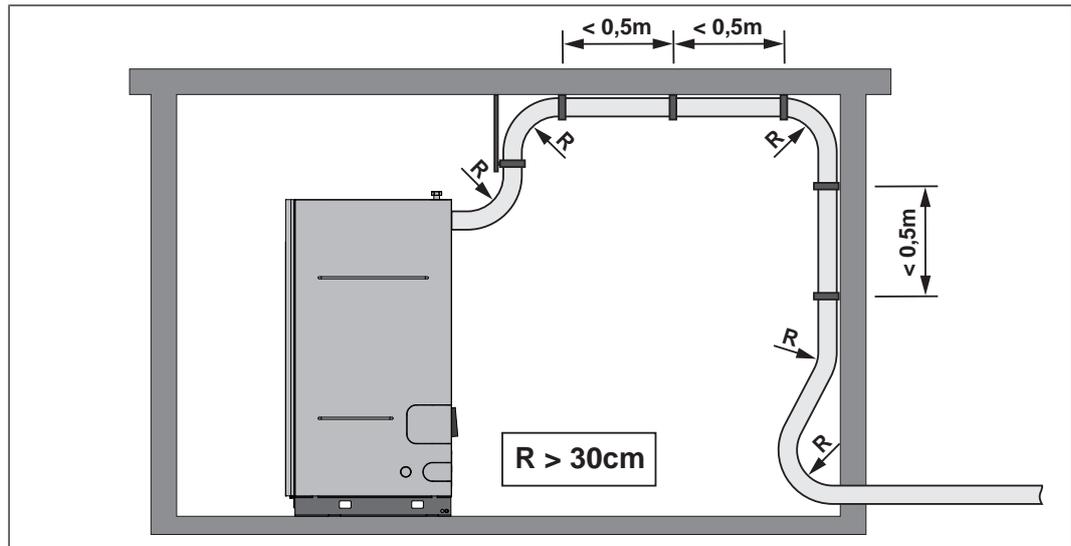


- Prepare wall penetration for the wall duct
 - ↳ Diameter D: 55 mm (maximal 100 mm)
- Mark the holes using the wall duct
 - ↳ W: 140 mm
 - ↳ H: 140 mm
- Drill four fastening holes with a diameter of 6 mm



- Hammer 4 x Ø 6 dowels into the fastening holes
- Secure the wall ducts with frame screws and washers
- Place the protective cap onto the return-air connection

5.6 Assembly information for hose lines

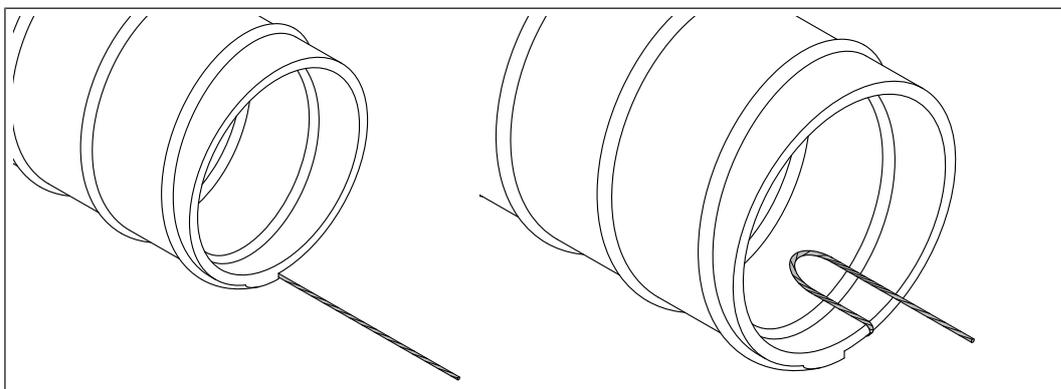


Please note the following with regard to the hose lines used in Froling vacuum discharge systems:

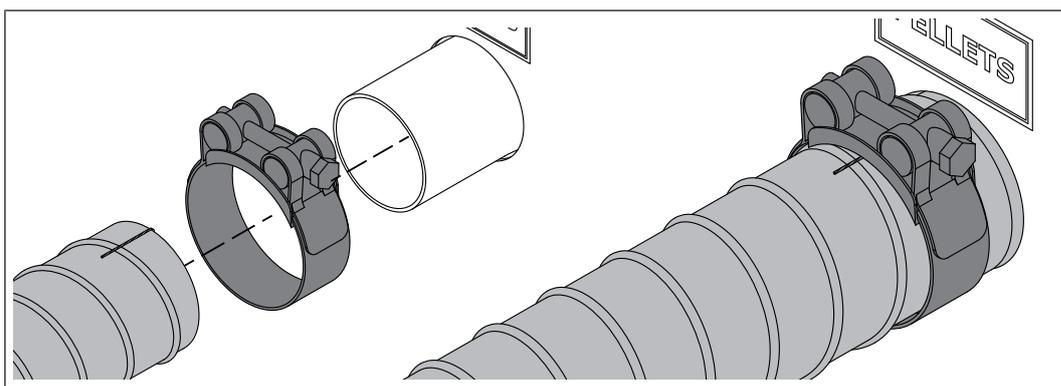
- Do not kink the hose lines! Minimum bending radius = 30cm
- Lay the hose lines as straight as possible! Sagging lines can lead to so-called “pockets”, which may cause problems with the pellet feed.
- Lay the hose lines in short sections away from walking areas.
- Hose lines are not UV-proof. Therefore: Do not lay the hose lines outdoors.
- Hose lines are suitable for temperatures up to 60°C. Therefore: Hose lines must not come into contact with flue gas pipes or uninsulated heating pipes.
- Hose lines must be earthed on both sides to ensure that no static charge builds up as a result of transporting the pellets.
- The suction hose to the boiler must be in a single section.
- The return-air line can be made up of several sections, but consistent potential equalisation must be established throughout the line.
- For systems over 35 kW, only suction hoses with PU inlet are recommended due to the increased load

5.6.1 Potential equalisation

When connecting the hose lines to the individual connections, ensure there is consistent potential equalisation throughout the line.



- ❑ Expose approximately 8 cm of the earth wire at the end of the hose line
 - ↪ **TIP:** Slit the insulation open along the wire with a knife
- ❑ Bend the earth wire inwards in a loop
 - ↪ This prevents the earth wire from being damaged by the pellet movement



- ❑ Slide the hose clamp onto the hose line
- ❑ Attach the hose line to the connector
 - ↪ Ensure that contact is established between the earth wire and the connector. Remove paint from the affected area if necessary
 - ↪ **TIP:** If stiffness occurs when trying to attach the hoses to the connectors, pour a few drops of water onto the pipe (do not use lubrication grease!)
- ❑ Secure the hose line with a hose clamp

5.7 Power connection

⚠ DANGER

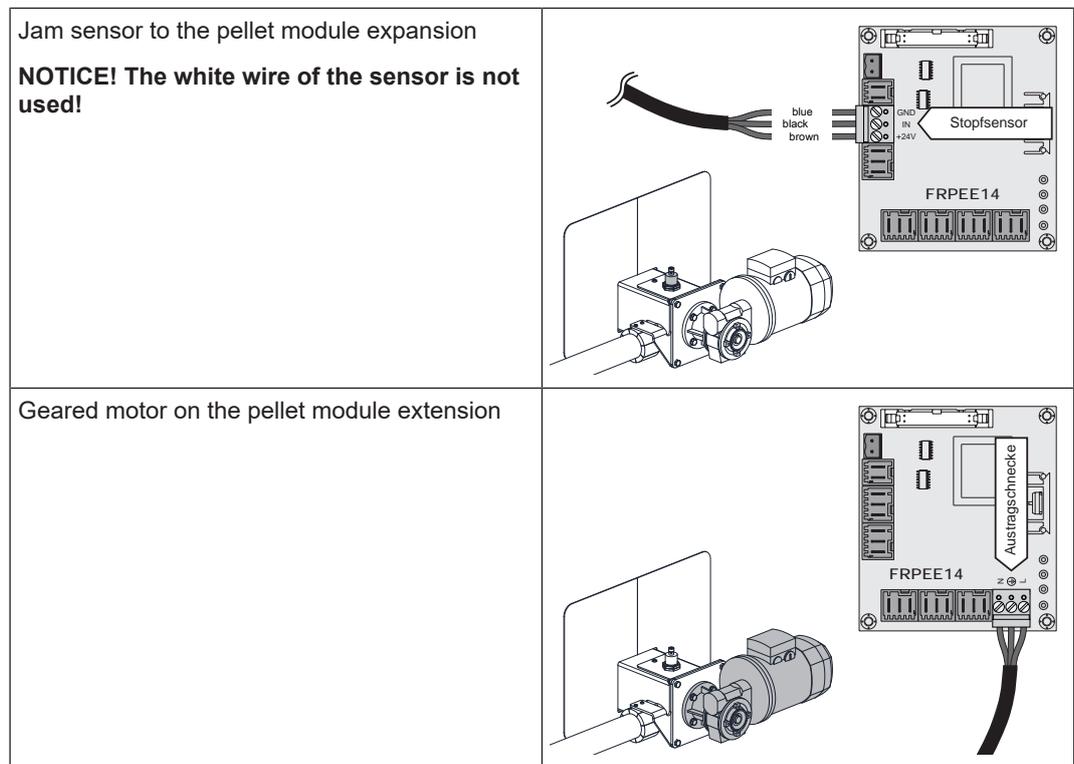


When working on electrical components:

Risk of electrocution!

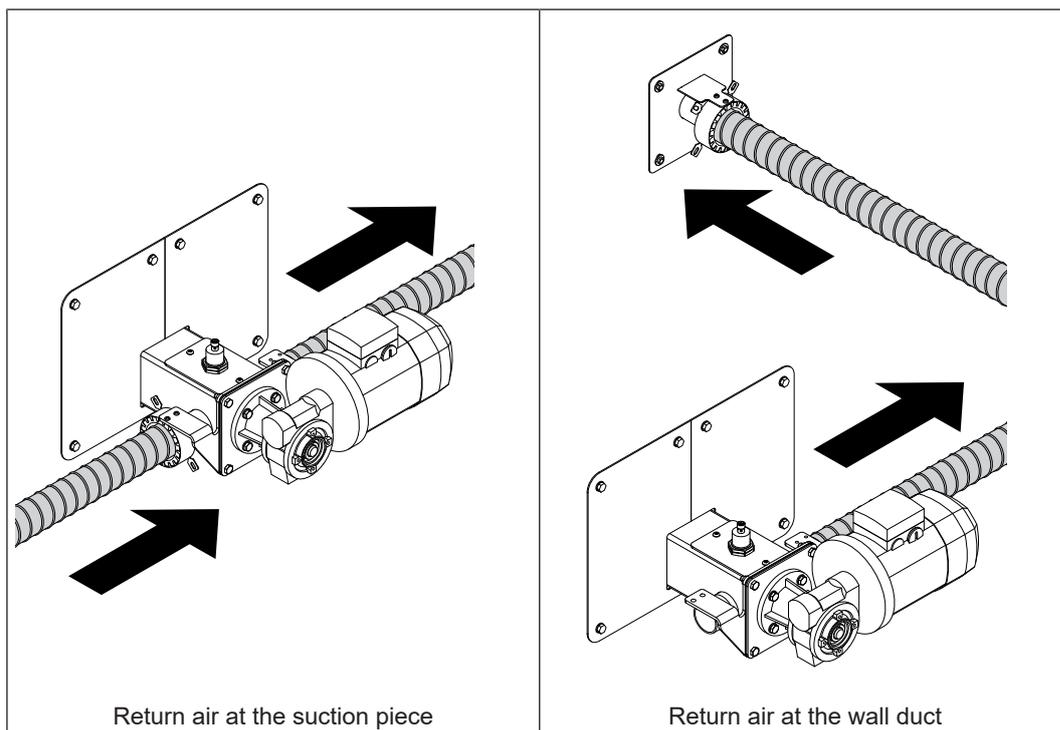
When work is carried out on electrical components:

- Always have work carried out by a qualified electrician
- Observe the applicable standards and regulations
 - ↳ Work must not be carried out on electrical components by unauthorised persons
- Complete the electrical connection of the pellet module extension according to the enclosed operating instructions of the boiler controller
 - ↳ Tuck any extra cable into the cable duct
- Install the cables of the following components for the controller and connect the cables to the pellet module extension in the controller box
 - ↳ Tuck any extra cable into the cable duct



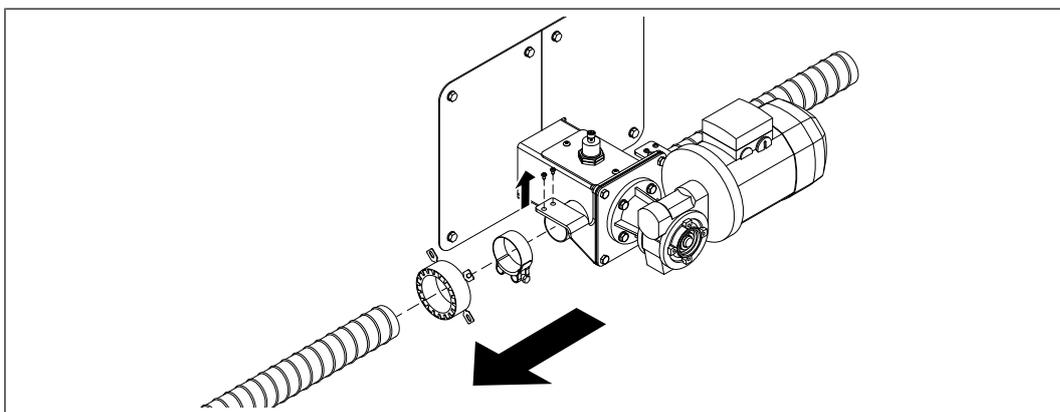
- Flexible sheathed cable must be used for the wiring; this must be of the correct size to comply with applicable regional standards and regulations

6 Information on return airflow

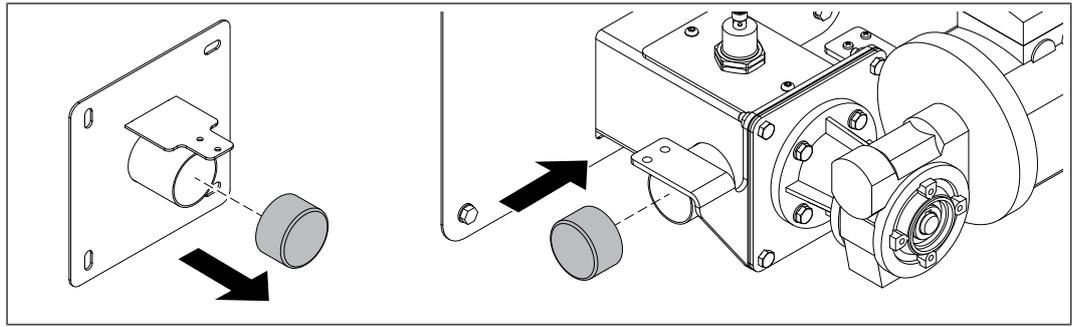


By default, the hose line for the return air is installed at the suction piece. If necessary (e.g. insufficient delivery volume) and after consultation with Froling customer services, the return air can be supplied to the fuel store through the wall duct above the pellet suction screw.

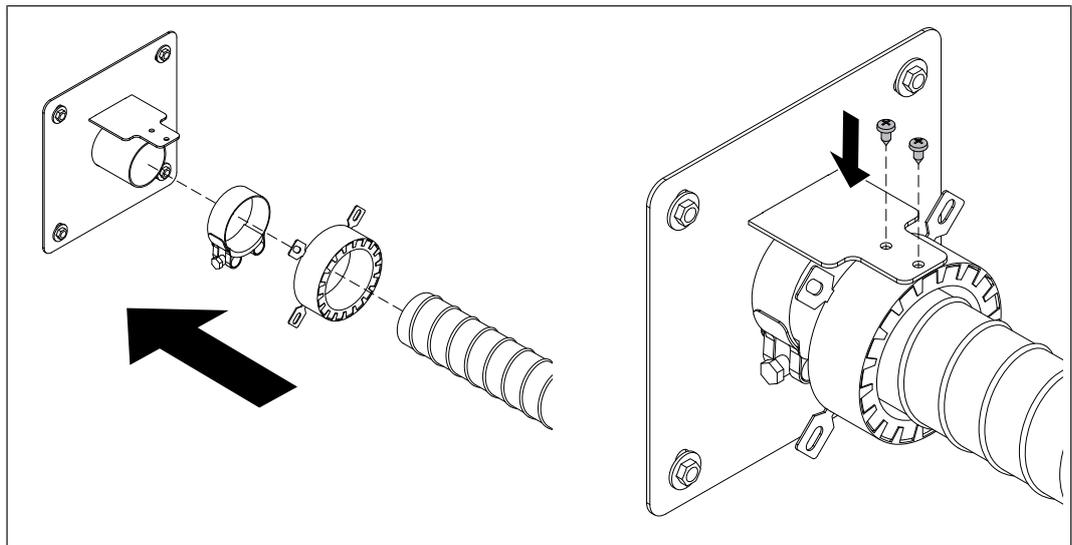
6.1 Change to return airflow



- Remove the hose clamp of the hose line (return air)
- Remove the fire protection collar and pull of the hose line



- Pull off the protective cap from the return-air connection
- Place the protective cap onto the connection of the suction piece



- Slide the fire protection collar onto the hose line
- Secure the hose line to the return air connection using a hose clamp
- Secure the fire protection collar with two screws to the wall duct

NOTICE



Only change the return airflow after consultation with Froling customer services.

Perform test suctions and change/adjust the settings of the chamber discharge system if necessary. If necessary, the suction power at the suction point can be adjusted by adding bypass air through the protective cap.

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