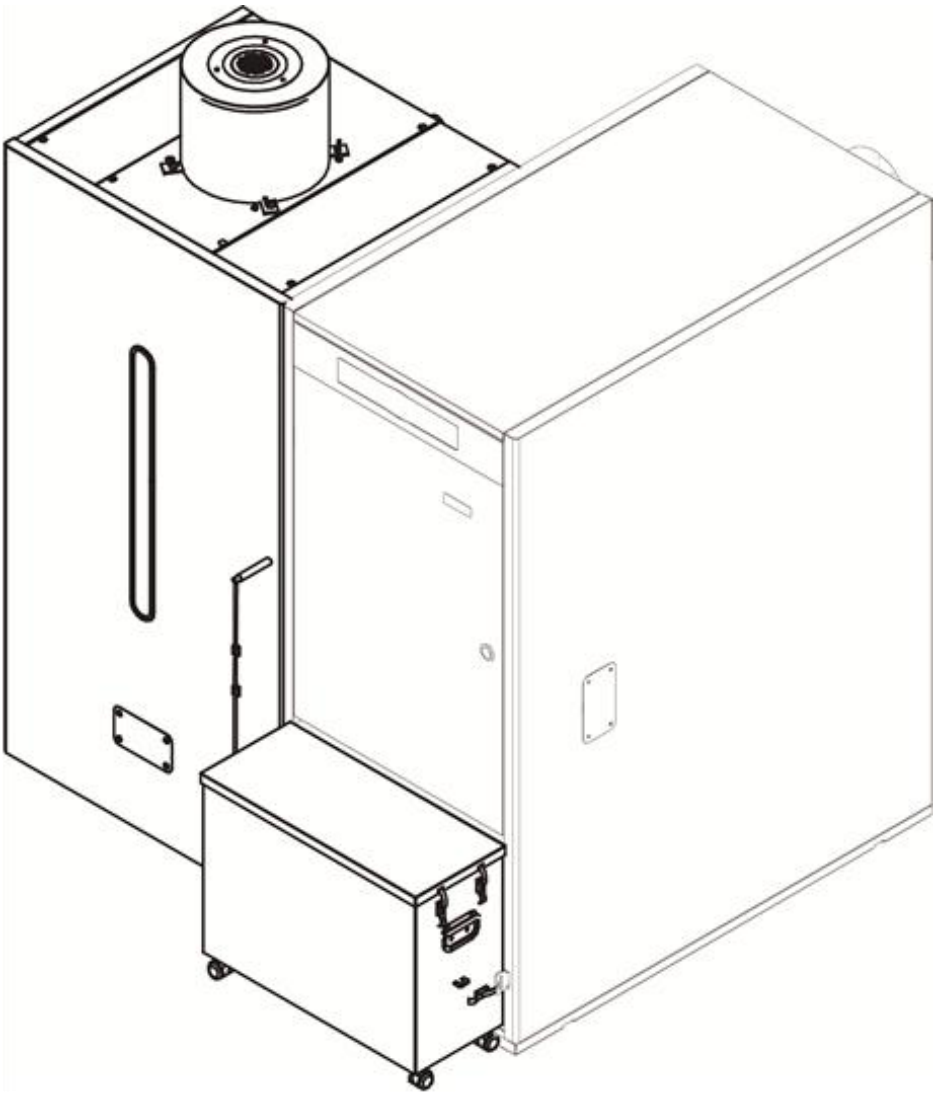
DOMUSA TEKNIK

FUEL SUCTION SYSTEM
ASH COMPRESSOR DRAWER

Bioclass iC 66 | Bioclass HC

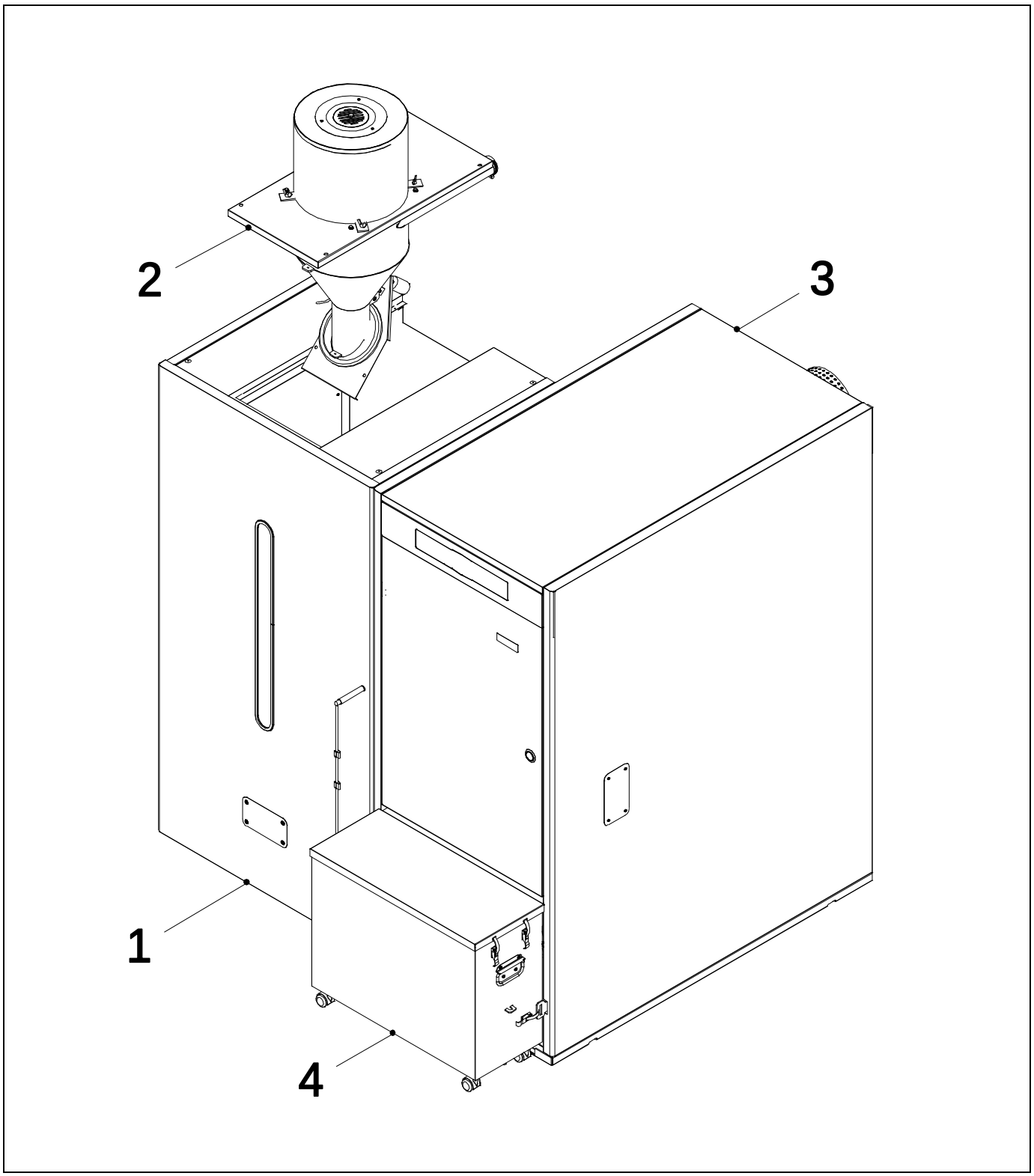


EN | INSTALLATION AND OPERATING INSTRUTIONS

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1 LIST OF COMPONENTS



1. Pellet hopper.
2. Fuel suction system.
3. BioClass iC / HC boiler.
4. Ash box.

2 FUEL SUCTION SYSTEM INSTALLATION

To guarantee optimum functioning of the **Fuel Suction System** and a long lifetime, the installation and maintenance must be carried out by qualified personnel authorised by DOMUSA TEKNIK. The installer is responsible for any devices or controls not supplied with the boiler.

This appliance must only be used for the purpose for which it has been expressly designed. Any other use is considered unsuitable and therefore hazardous. The manufacturer shall not be considered liable under any circumstances for damage caused by unsuitable, erroneous or irrational use.

The **Fuel Suction System** is specifically designed to convey 6 mm diameter pellets from a main silo to a cyclone on a boiler reserve tank, providing it is installed together with a suction system (a DOMUSA TEKNIK Kit Spider) or a DOMUSA TEKNIK prefabricated textile silo including a pneumatic extraction device (cyclone) or a **DOMUSA TEKNIK** suction nozzle kit for on-site tanks..

During installation or before any servicing, the following indications must be observed to prevent personal injury or material damage:

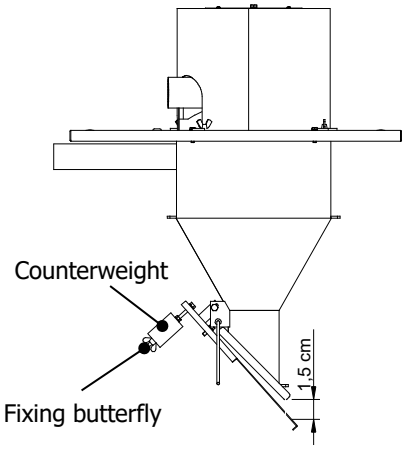
- Remove all the packaging and check the content is complete. In case of doubt, do not use the **Fuel Suction System**. Contact your supplier. The packaging elements may be dangerous so keep them out of reach of children.
- Unplug the boiler from the mains before any servicing and during installation.
- For safety reasons, another person should always be present when you access the pellet store. If access to the store is difficult, we recommend a second person waits outside to guarantee the safety of the person entering the store, to be able to let them out in case of hazard without endangering their own life.
- Before entering the pellet store, ensure it is correctly ventilated (there may be a lack of oxygen or concentration of unknown gases).
- Always wear a protective mask (standard mask) inside the pellet store for protection from airborne dust.
- Keep children away while you are working in the pellet store.
- If the pellet store is flooded there is no risk of contamination of the groundwater, the soil and/or the building, although the tank and pellet removal system could be damaged.
- When it is decided not to use this **Fuel Suction System**, you MUST disable all parties may constitute potential sources of danger.

2.1 Installing the Fuel Suction System

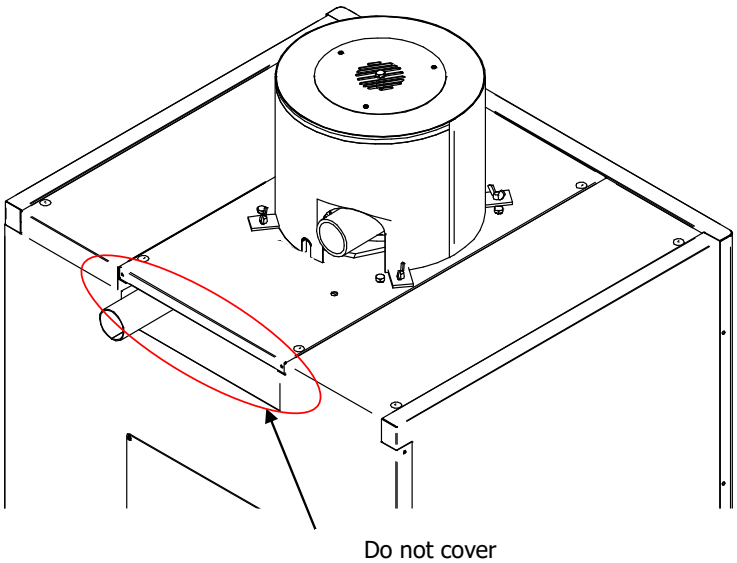
Carefully follow these assembly instructions for correct assembly and installation of all the **Fuel Suction System** components:

Cyclone

Before installing the cyclone on the reserve tank, adjust its counterweight so that the lower cover is 1,5 and 3 cm open. To do this, hang the cyclone vertically, loosen the butterfly nut fixing the counterweight and move the counterweight so that the cover is open by this distance. After adjusting the counterweight, remember to tighten the butterfly nut again, to prevent the counterweight maladjustment during system functioning.



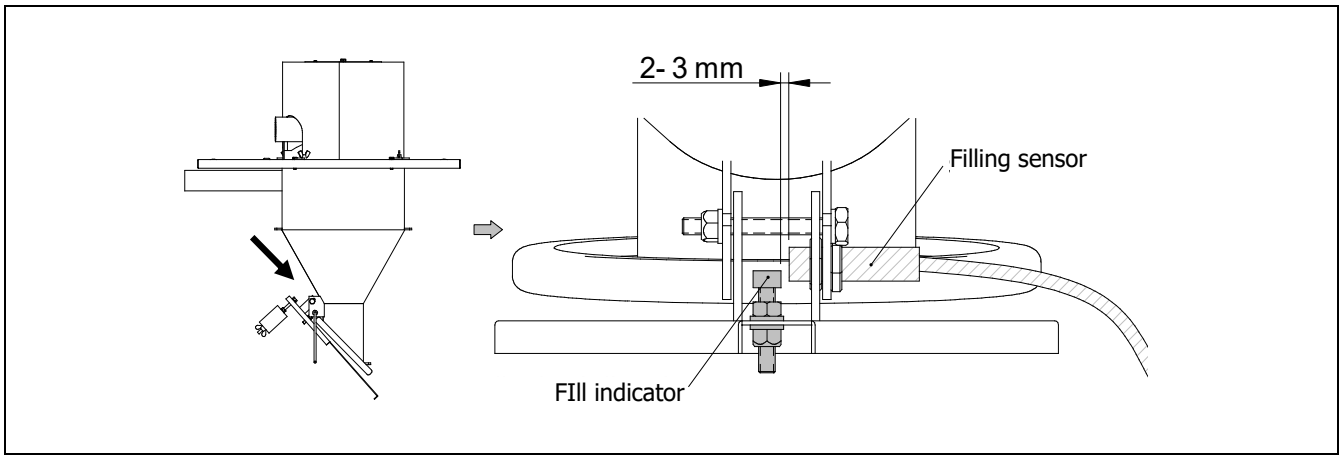
There is a ventilation slot on the rear of the tank to prevent a vacuum from being created inside it. Do not cover this slot, and keep it free from any obstacles that could block it.



Filling sensor

As in the case of the cyclone counterweight, it is necessary to regulate the position of the filling sensor relative to the fill indicator, so that there is a gap of between 2 and 3 mm. To achieve this, adjust the nut and the locknut of the sensor to obtain the correct distance.

The filling sensor is regulated from the factory therefore is not necessary to adjust it unless the filling sensor might have been maladjusted during the transport.

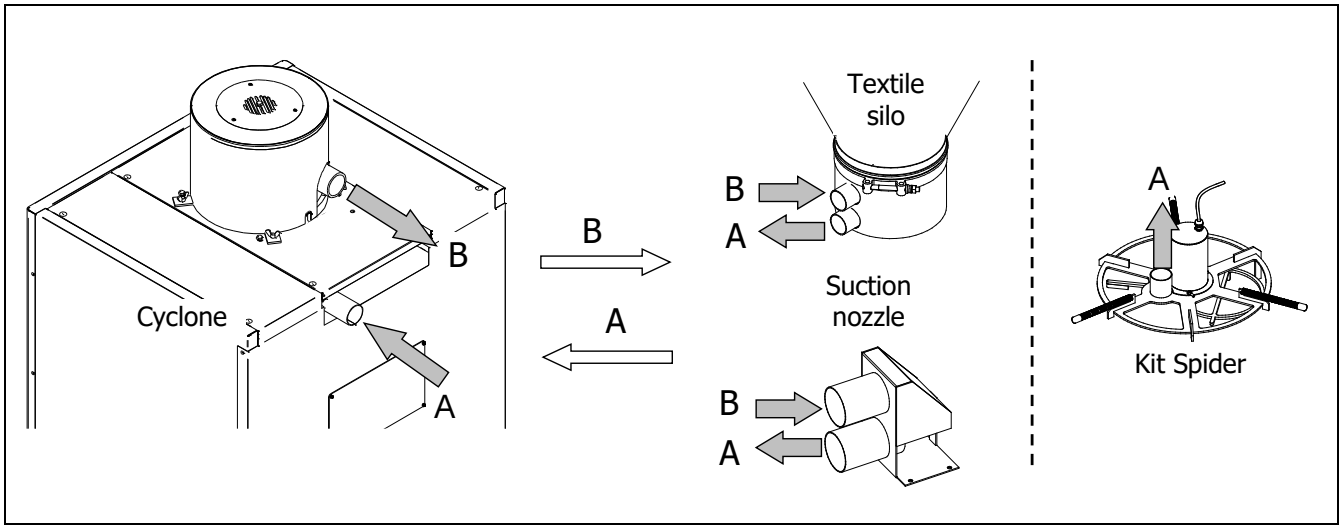


Connecting the suction hoses

The various Fuel suction system components must be connected pneumatically using a hose with an interior diameter of 50 mm, preferably a flexible plastic hose with electrostatic charge accumulation protection.

To ensure the system is correctly connected and sealed, the **Fuel Suction System** includes 4 cable ties for fixing the hose ends to the respective pneumatic components of the kit.

The figure below shows the pneumatic connection of the different **Fuel Suction System** components.



Run a hose from the main storage silo (intake A) and connect it to the intake of the cyclone (intake A).Run a hose from the air intake (intake B) on the rear of the cyclone and connect it to the intake **B** of the textile silo or Suction nozzle.

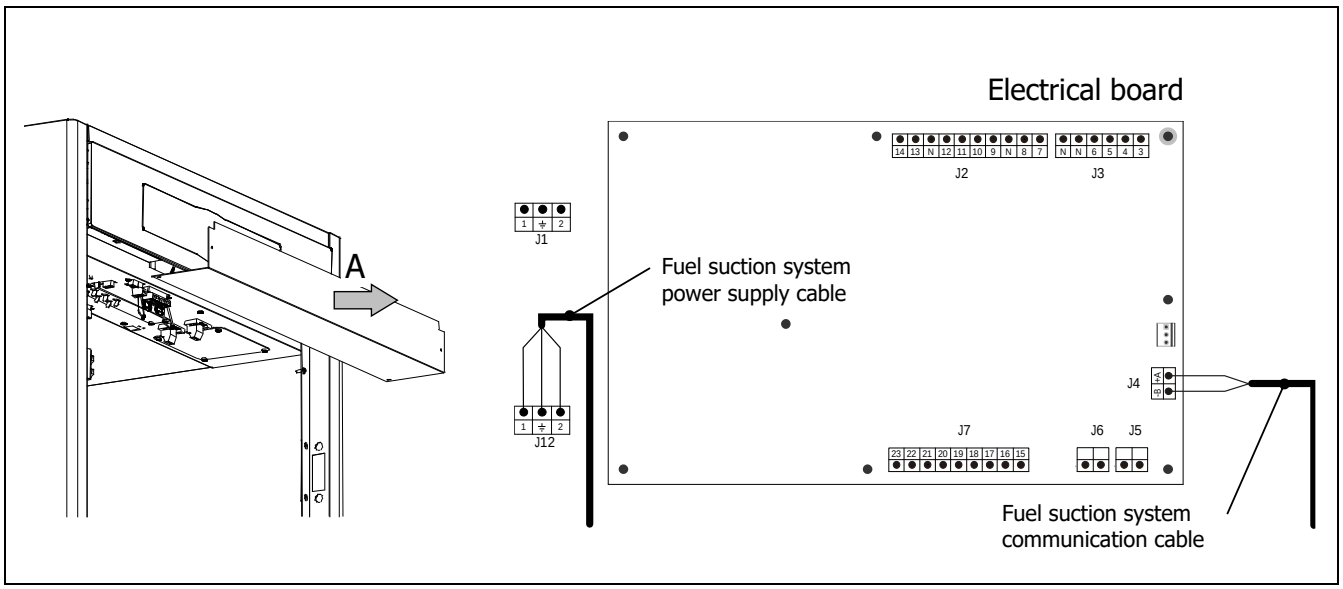
If you are using a **Kit Spider** removal system, it is not essential to run the return hose to the silo, but we recommend doing so to prevent the areas the hose opens onto from getting dirty.

Electrical connection with the boiler

The CVS Suction System can be connected either with any of the BioCLass HC boilers.

The Fuel suction system is equipped with 2 cables, communication cable and power supply cable, which are provided with pin terminal blocks in order to help their connection to the boiler (+A -B and 1 ⏚ 2). Unroll the cables and lead them to the bottom of the electrical board of the boiler introducing them through the back of the boiler

To correctly connect the **Fuel Suction System** to the boiler, first open the boiler door. The electrical connection must be made at the lower part of the electrical board of the boiler. To access the lower part of the electrical board, remove the cover from the connection strips (**A**), as described in the figure. The +A -B communication cable must be connected to the J4 connector and the power supply connector 1 ⏚ 2 must be connected to J12, following the "*Electrical diagrams*" section of this manual carefully.



During installation or before any servicing, the following instructions must be observed:

- Before carrying out any work on the boiler's electrical installation of the Fuel suction system, always ensure the boiler is disconnected from the mains.
- Make sure that none of the cables come into contact with a hot surface (e.g. fireplace or smoke chamber).

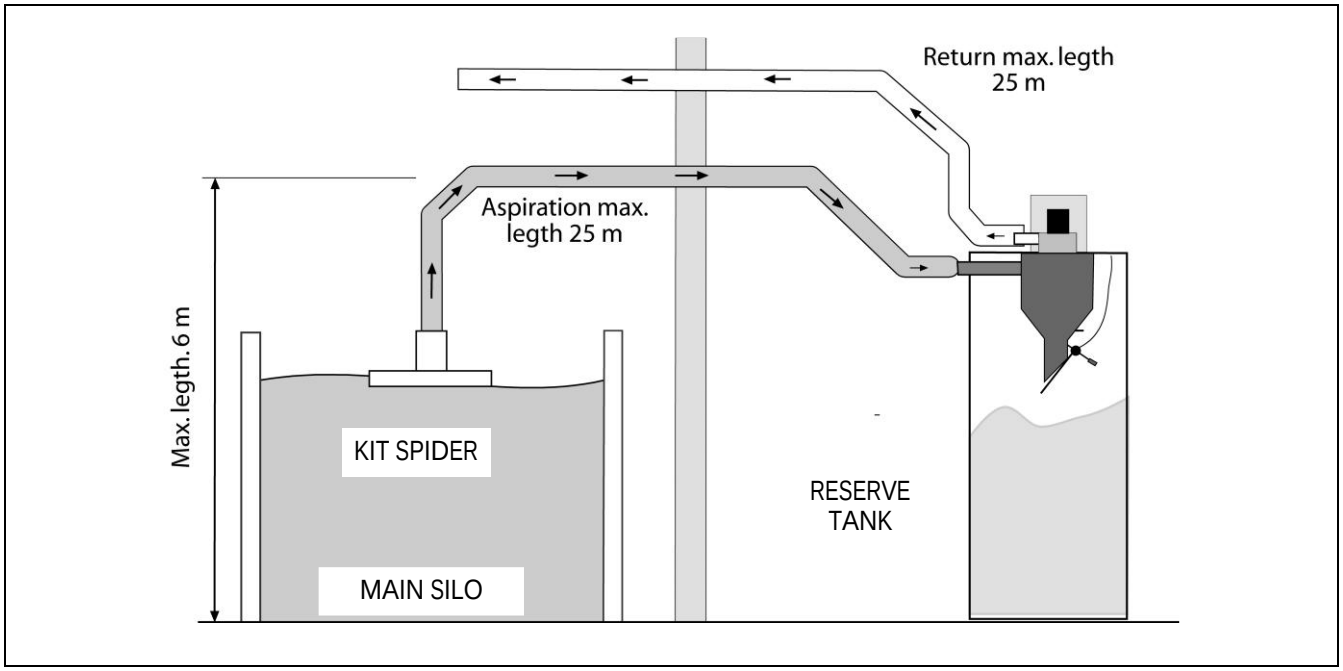
2.2 Installing the suction hose

The **Fuel Suction System** is specially designed to function as part of an installation with a plastic hose with an interior diameter of 50 mm. This hose must have a static electricity discharge system, preferably a copper wire wound around its entire length. This copper wire must be earthed at all the hose joints and ends.

Whatever the type of hose used, it must be made of a suitable material for transporting wood pellets and it must always have an interior diameter of 50 mm. The following recommendations must also be complied with for correct installation:

- The maximum permitted hose length is 30 metres for flow from the main silo to the cyclone and 30 metres for return.
- Bend angles of over 45º must be avoided whenever possible. If these cannot be avoided, any **curves** with angles over 45º must have a radius of curvature greater than 125 mm.
- If rigid plastic tubing is used, do not use standard 90º elbows. If these are necessary, the curves constructed must have a minimum radius of 125 mm.
- The flexible tube can be mounted in straight sections of a maximum of 4 meters. Incorporating small bends reduces tube wear.
- The **maximum height** difference permitted for the installation is 6 metres.
- Avoid any splicing or coupling in the hose installation wherever possible, as this may narrow the circuit, which can cause clogging of the pellets being transported and could block the system. Most importantly, avoid any joints in the hose section leading from the main silo to the boiler reserve tank cyclone, as the pellets are conveyed through this section.
- If there is no alternative to splicing and extending the installation, straight rigid tubing with an interior diameter of 50 mm must be used. It is preferable for any splicing and joining of the hose to be done in the pneumatic suction system return section, as only air is conveyed in this section. All the hose sections must be earthed at all coupling points and at the ends of the hose.
- The most vital factor for ensuring maximum suction power for the system is the airtightness of the installation, and great care must therefore be taken when installing the tubing. All coupling points in the installation must be secured with brackets, taking special care to prevent leakage. We recommend avoiding hose crossover in the installation whenever possible. The flow and return hoses of the pneumatic installation should be laid out parallel to each other.
- For correct assembly of the hoses, they should be fixed to the walls and/or floor using suitable fasteners throughout the entire installation, to ensure stability. The recommended maximum distance between the fixing points is 80 -110 cm.

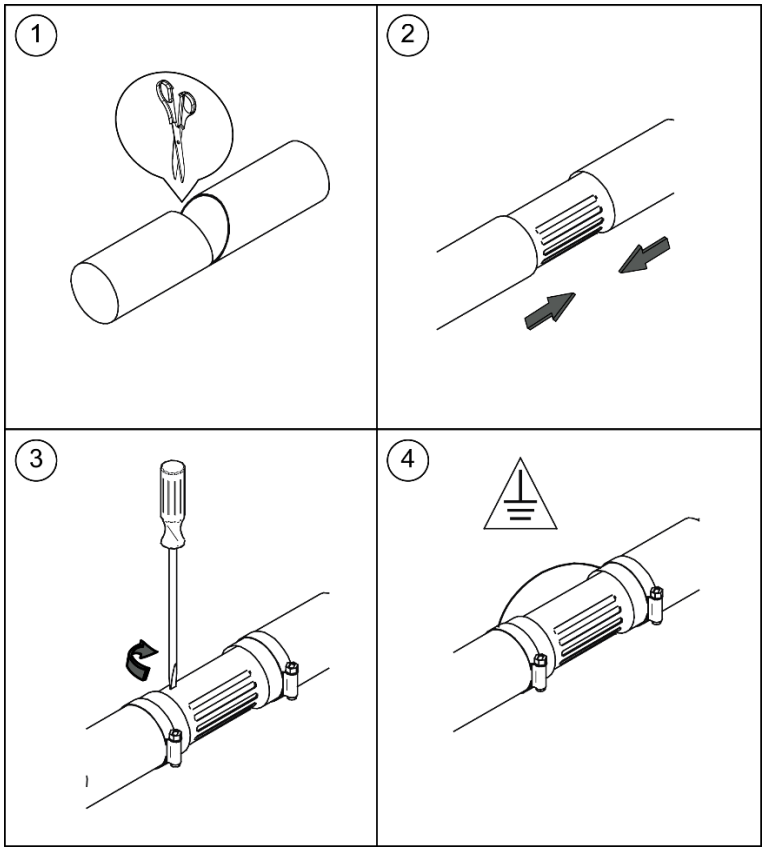
Some of these recommendations are illustrated in the figure below:



IMPORTANT: **At each end of the pellet suction and air return hose, the copper cables must be connected to the earth connection terminals provided for this purpose.**

IMPORTANT: DOMUSA TEKNIK **will hold no liability for malfunctioning of the** Fuel Suction System **if the installation does not comply with the above recommendations.**

2.3 Installing the aerator accessory



The aerator accessory supplied with the kit can be fitted in order to avoid blockages or clogging of the pellet suction system. This aerator will ease the transport of fuel to the CVS, avoiding clogging and blockages.

To install the aerator accessory, partially cut the suction pipe, 250 mm from the end closest to the storage silo, without cutting the internal copper cable. Then fit the aerator accessory to the sectioned part, securing it with two clamps.

To ensure the correct working of the suction system, cover or clear the slots of the aerator until optimal extraction is achieved

IMPORTANT: It is essential to ensure that both sections of the suction pipe are earthed

2.4 Start-up

In order for the guarantee to be valid, the Fuel suction system must be started up by personnel authorised by DOMUSA TEKNIK. Before beginning the start-up process, the following must be complied with:

- The **Fuel Suction System** must be connected to the electrical mains power.
- The main storage silo must be filled with pellets.
- The pneumatic hose installation must have been carried out.

The start-up sequence is as follows:

- Check the pneumatic installation of the 50 mm interior diameter hose has been performed correctly.
- Check the correct type of fuel is being used (EN 14961-2 class A1 grade or higher).
- Check the Fuel suction system is working correctly.

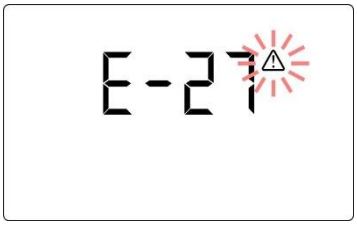
3 FUEL SUCTION SYSTEM OPERATION

The **Fuel Suction System** is an automatic pellet conveying and suction system equipped with an electronic control that governs the functioning of a suction device (suction turbine), by controlling the signal from a sensor which detects the fill level of the tank, located in the cyclone of the reserve tank. Furthermore, a programmable timer can be accessed via the display on the boiler so that the operation may be disabled at night to avoid any noise and disturbance which may be caused by the suction system during its operation. It can also manage the functioning cycles of a **DOMUSA TEKNIK Spider Kit**, if you choose to use this type of pellet removal system.

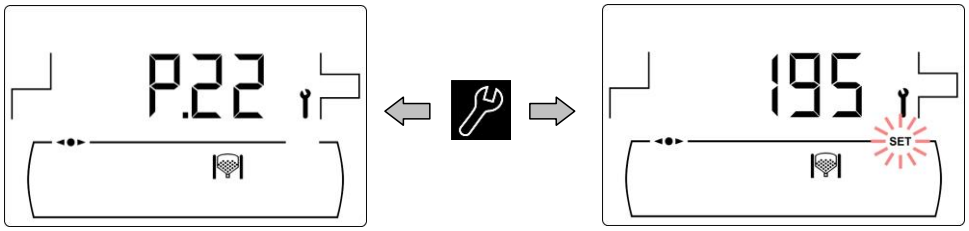
The operation is as follows: when the filling sensor detects a low pellet level, the electronic control starts up the suction unit, which begins to suck the pellets from the silo or main store and convey them to the cyclonic tank at the top of the boiler reserve tank. The suction turbine runs for a set duration (a cycle), while it fills the cyclonic tank. When the cycle is complete, the suction unit stops and the hatch on the underside of the cyclone opens, emptying the pellets inside it into the reserve tank. If the filling sensor continues to detect no pellets when the cyclonic tank has been emptied, the suction unit starts up again and runs for another full cycle. When the sensor detects the filling of the reserve tank (cyclone door open), the control disables the Fuel suction system and waits until it is reactivated.

During the time that the suction unit runs, the symbol is displayed blinking in the boiler's display.

If the filling sensor doesn't detect pellets after 9 consecutive cycles, the electronic control stops the system functioning and the alarm E-27 is activated (Fuel suction system lock out), in the display of the boiler. To unlock it, press reset and 9 more consecutive cycles or until the sensor detects the filling of the tank, as long as the time programming of the charging system allows it.



The cycle time could be adjusted using the P.22 setting of the "Technical" menu (see instructions of the boiler). This setting is used to optimise the filling time for the cyclone of the tank, adapting it to the different characteristics of each pneumatic installation (suction length, type of pellet removal system, etc.). The adjustable time range is from 35-195 seconds per cycle. Guidance regarding the recommended cycle times for different types of installations is given in the following sections.



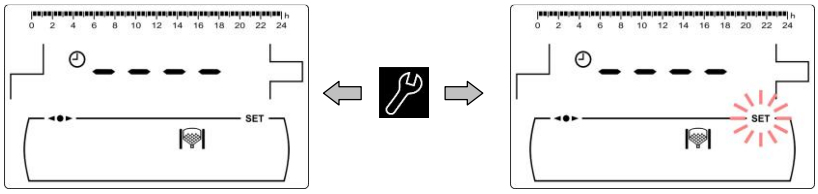
3.1 Time programmer functioning

The electronic control of the **Fuel Suction System** allows access, via the boiler control cover, to a programmable timer in order to disable its functioning at night, to prevent noise from the suction system.

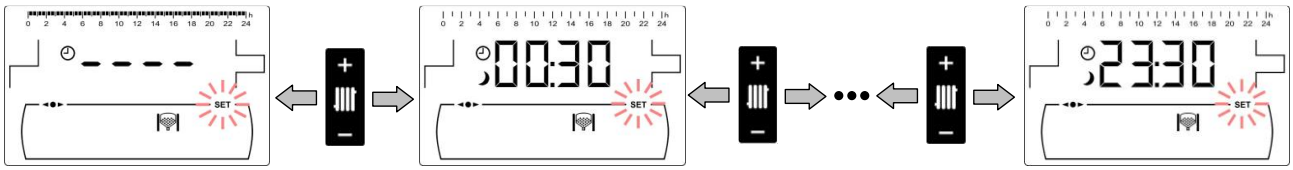
The pellet reserve tank has a 60 Kg capacity. For correct operation please note that the consumption of the boiler during the deactivated period of the CVS Suction System must not exceed the range of the hopper.

To program the system ON and OFF periods, proceed as follows:

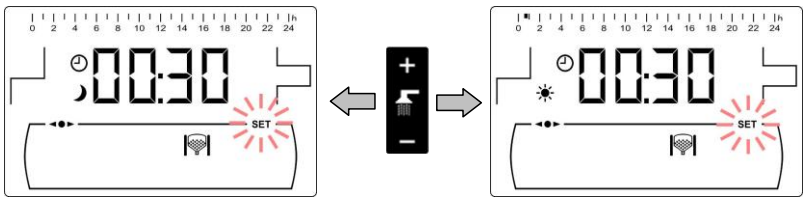
- Once you access to the "Configuration" menu of the boiler, by default the timer will be annulled and the display will be shown as in the figure. Press , the symbol SET blinks, and the adjustment of the timer starts.



- At the top of the display is shown the time zone, from 0 to 24 hours. Press + / - repeatedly to progress sequentially through the hours every 30 minutes to choose the desired time period.



- At each time period pressing + / - the condition of the timer is adjusted. If appears the symbol "☽", the Fuel suction system stays "Off" and if appears the symbol "☀" the Fuel suction system stays "On". The periods adjusted with "☀"symbol will be marked in the time zone of the top of the display.



- Press to record the last timer adjustments and it returns to "Configuration" menu.

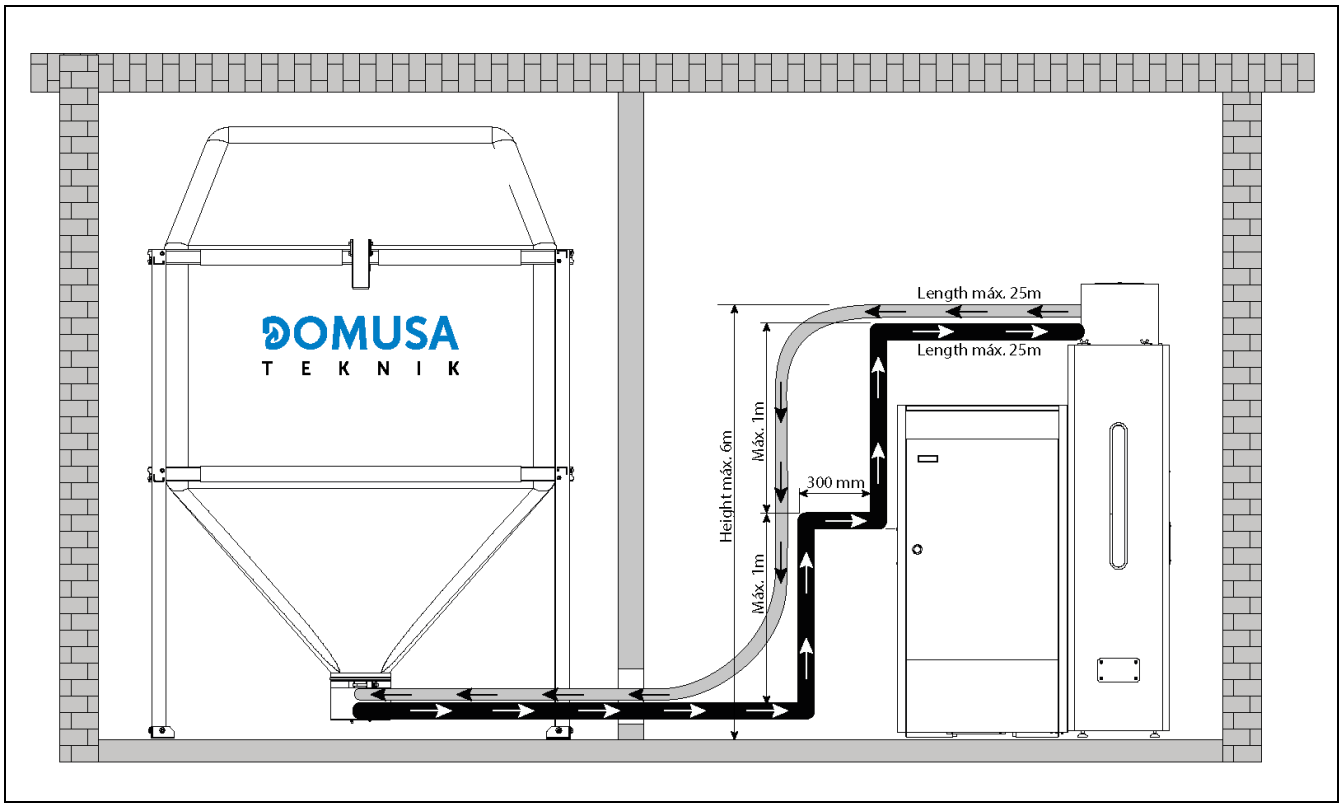
3.2 Functioning with a Textile Silo or Suction noozle

In the case of an installation with a fabric silo or suction nozzle kit supplied by **DOMUSA TEKNIK**, the suction turbine will be activated every time the cyclone sensor detects a lack of pellets and will remain in operation during the cycle time set by the user in parameter **P.22** of the "Technician" menu of the boiler. When the sensor detects the filling of the tank, the control will deactivate the operation of the suction turbine and will wait to be activated again. If after 9 consecutive cycles the sensor still does not detect the filling of the tank, the control will block the operation of the system and the alarm **E-27** (Blockage of the fuel suction system) will be activated on the boiler screen. To unblock the system, press reset on the boiler control holder and 9 more consecutive cycles will be run again or until the sensor detects the tank filling, as long as the time programming of the charging system allows it.

The optimum cycle time is the time required for the cyclone on the reserve tank to fill up to full capacity. The amount of pellets conveyed per cycle will depend on the length and route of the installation and the type of pellets used. Bearing in mind these variable fuel characteristics, the table below shows some recommended cycle times, depending on the length of the installation.

Installation length	Cucle time
5 m	MIN (35 sec)
15 m	60 sec
30 m	120 sec

The figure below shows a functional diagram of the Fuel suction system installed in combination with a DOMUSA TEKNIK textile silo:



NOTE: **If the suction system becomes blocked, this could mean there are not enough pellets in the main silo or that the pneumatic hose installation has become blocked or is defective.**

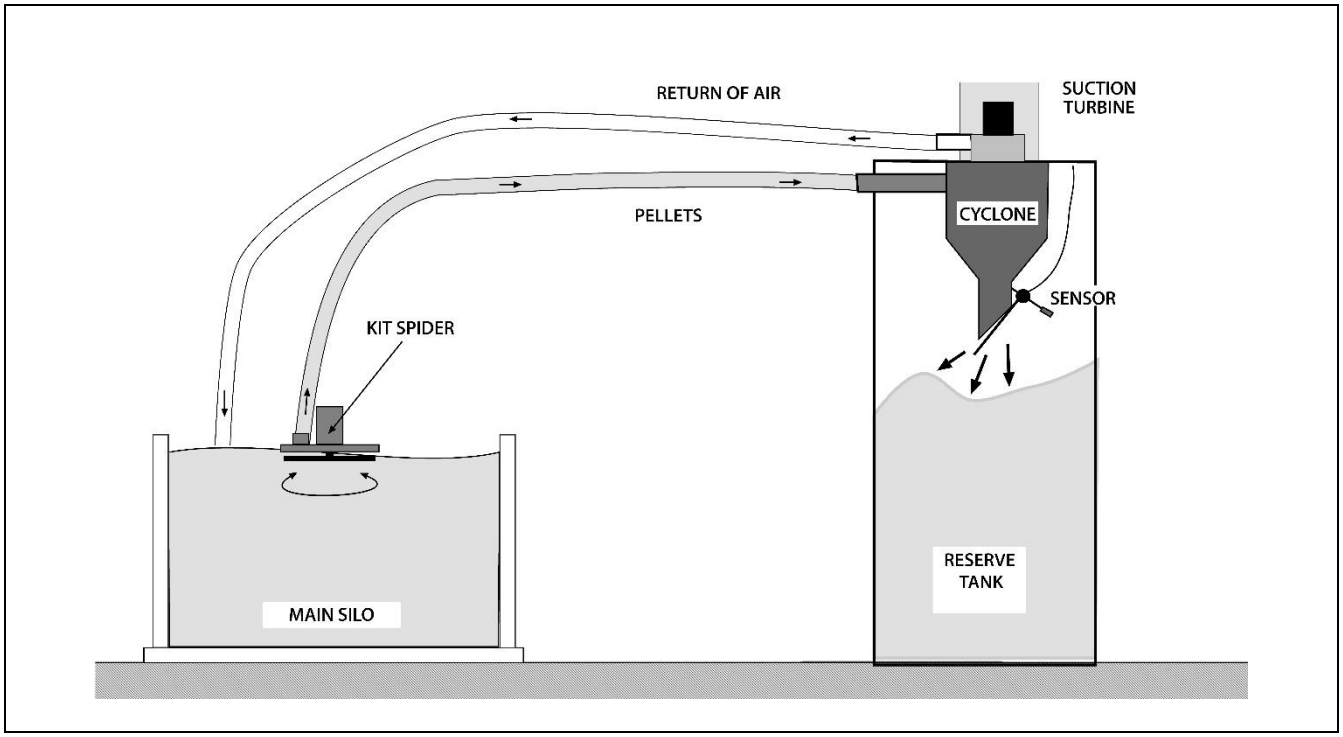
3.3 Functioning with a Kit Spider

If the installation is made in combination with the Kit Spider pellet removal system of DOMUSA TEKNIK, whenever the tank filling sensor detects that the pellet level is low, the electronic control will begin each cycle by starting up the suction unit and Kit Spider motor at the same time, turning the kit's rotary plate and sucking up pellets from the main silo. When the cycle is complete, in order to prevent excess pellets remaining in the hose installation and causing obstruction at the start of the next cycle, the control stops the Spider Kit functioning 15 seconds before suction unit operation is disabled. This means the suction unit continues taking in only the pellets that remain in the hose installation, emptying the hose and preventing obstruction when the next cycle begins.

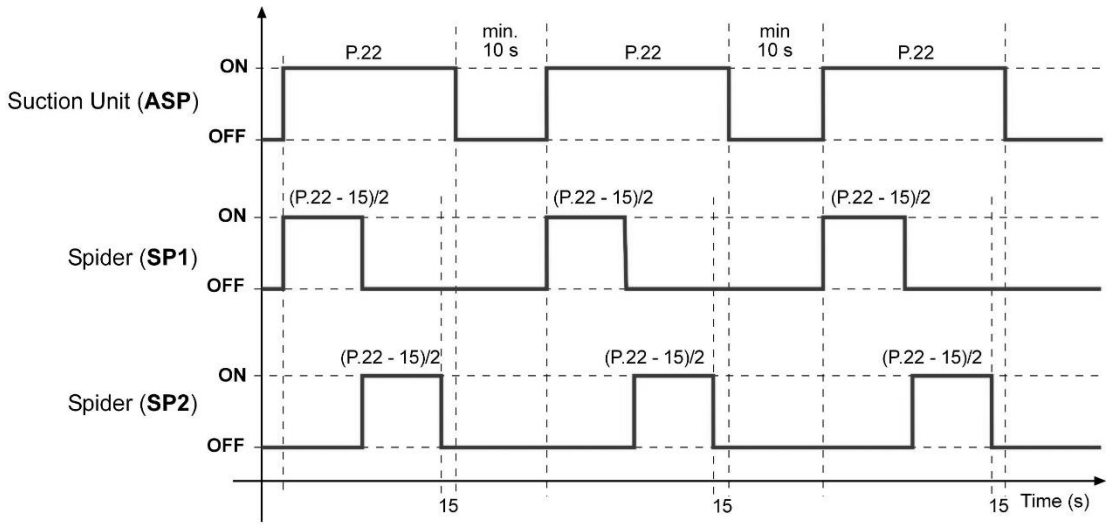
If the filling sensor doesn't detect pellets after 9 consecutive cycles, the electronic control stops the system functioning and the alarm E-27 is activated (Fuel suction system lock out), in the display of the boiler. To unlock it, press reset and 9 consecutive cycles will start again unless the sensor detects pellets.

In general, we recommend adjusting the cycle time to its maximum setting (195 seconds), by turning the adjustment screw clockwise as far as it will go. If the installation settings are causing the boiler reserve tank cyclone to fill up some time before the end of each cycle, we recommend reducing the cycle time for closer adjustment, so that it coincides with each filling of the cyclone. It should also be observed that the amount of pellets taken in on each cycle may vary considerably depending on suction unit filter maintenance, pellet quality and the main silo emptying level at any given time, and it is therefore preferable to set long cycle times.

The figure below shows a functional diagram of the Kit Spider installed in combination with a **Fuel Suction System**:



The rotary plate of the **Kit Spider** moves in circular fashion in symmetrical rotation cycles, alternating between clockwise and counter-clockwise movement to prevent the hose from winding onto the kit. These rotation cycles are governed by the boilers electronic control system. The diagram below shows the functioning cycles controlled by the boiler:



P.22: Cycle time. Range 35-195 seconds.

NOTE: **If the suction system becomes blocked, this could mean there are insufficient pellets in the main silo or that the pneumatic hose installation has become blocked or is defective.**

4 MAINTENANCE

To keep the Fuel suction system in perfect working order the maintenance operations described in this section must be carried out at regular intervals.

Also, to ensure correct functioning of the boiler we recommend inspection of the whole pellet loading system once a year by the DOMUSA TEKNIK Authorised Technical Service, at the same time as the annual service.

Maintenance of the **Fuel suction system** mainly consists of emptying the dust accumulated in the protective grille below the suction turbine.

4.1 Safety Warnings

To prevent any damage or injury to people and property, the following safety indications must be taken into account during the maintenance operations described in the following sections:

- Unplug the **Fuel Suction System** from the mains power before any servicing.
- Wear a protective mask (standard mask) on cleaning the suction unit, for protection from airborne dust.
- Keep children away from the installation on carrying out the Fuel suction system maintenance operations.

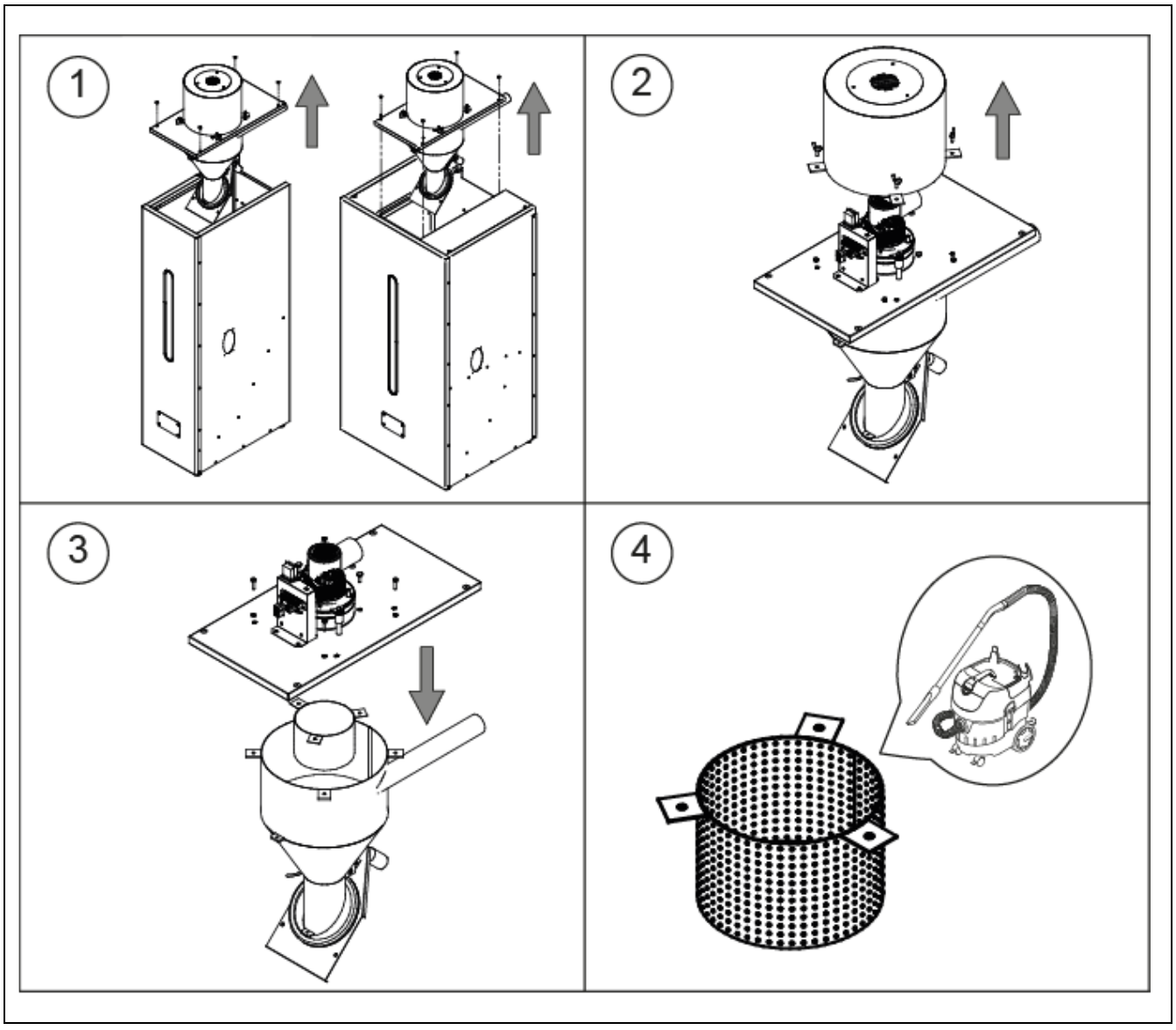
4.2 Cleaning the protective grill

Before cleaning the protective grille of the cyclone be sure to **disconnect the Fuel suction system from the mains**.

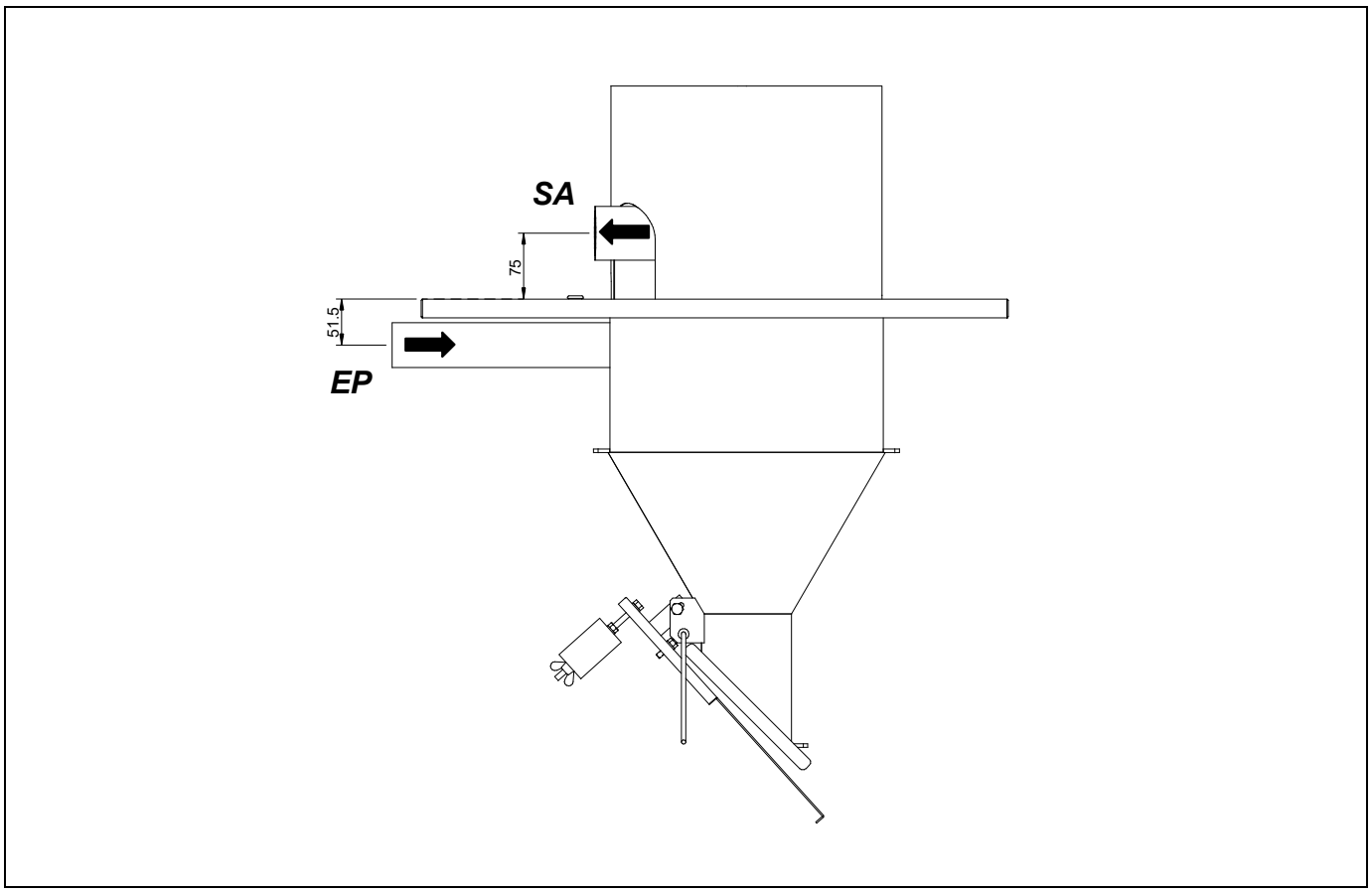
At least once a year (depending on the amount of dust that the pellets contain), unscrew the cyclone cover and vacuum the dust from the protection grid located below the suction turbine.

If the pellet suction turbine creates a lot of noise or sends off sparks, this could be due to dirt on the fan blades. You must remove the suction turbine and clean it using a compressed air or vacuum cleaner.

The motor of the suction turbine has carbon brushes. Replace the brushes when the consumption reaches approximately 55 tones of pellet.



5 MEASUREMENTS



SA: Air suction, Ø50 mm.

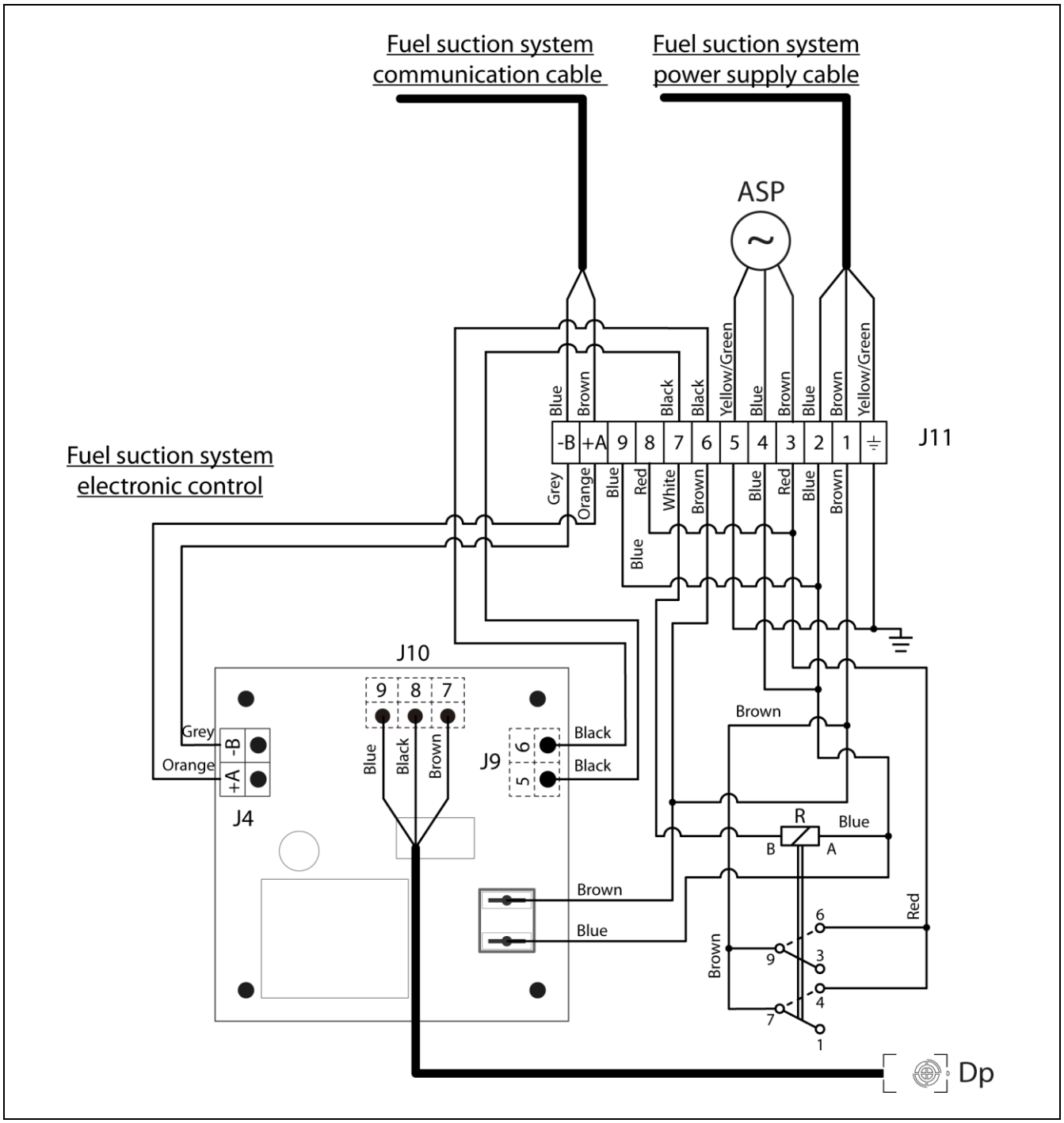
EP: Pellet inlet, Ø50 mm.

6 TECHNICAL DATA

TECHNICAL CHARACTERISTICS		VALUE
Maximum suction length	m	25
Maximum suction height	m	6
Suction hose diameter	mm	50
Connection voltage	-	230 V ~ 50 Hz
Maximum electrical consumption	A	7,4
Maximum electric power	W	1700

7 ELECTRICAL DIAGRAMS

7.1 Electrical diagram



J4: Communication connector

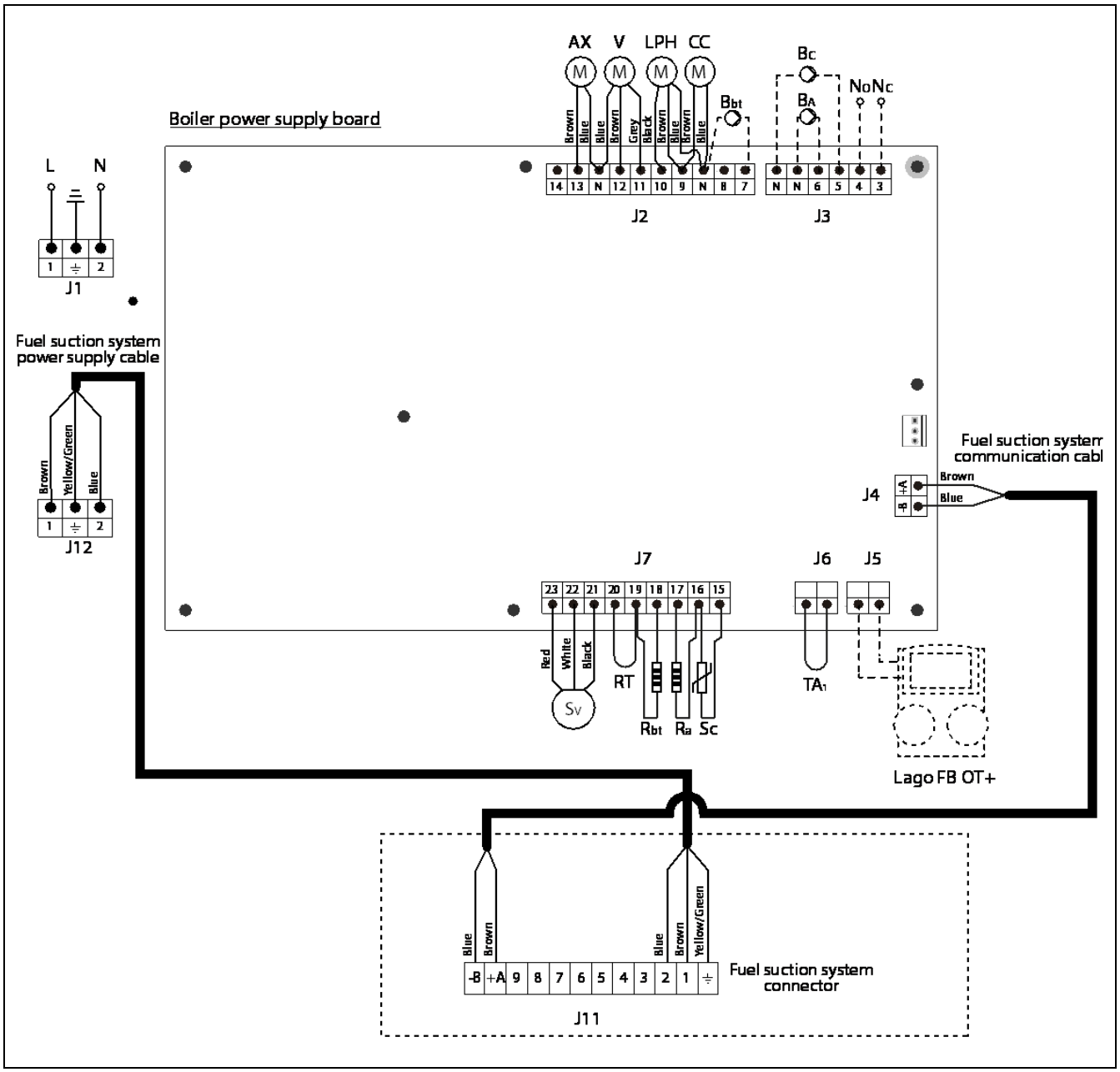
J10: Filling sensor connection.

J11: Fuel suction system connector.

ASP: Suction turbine

Dp: Filling sensor

7.2 Electrical connection for installation with a DOMUSA TEKNIK Textile Silo

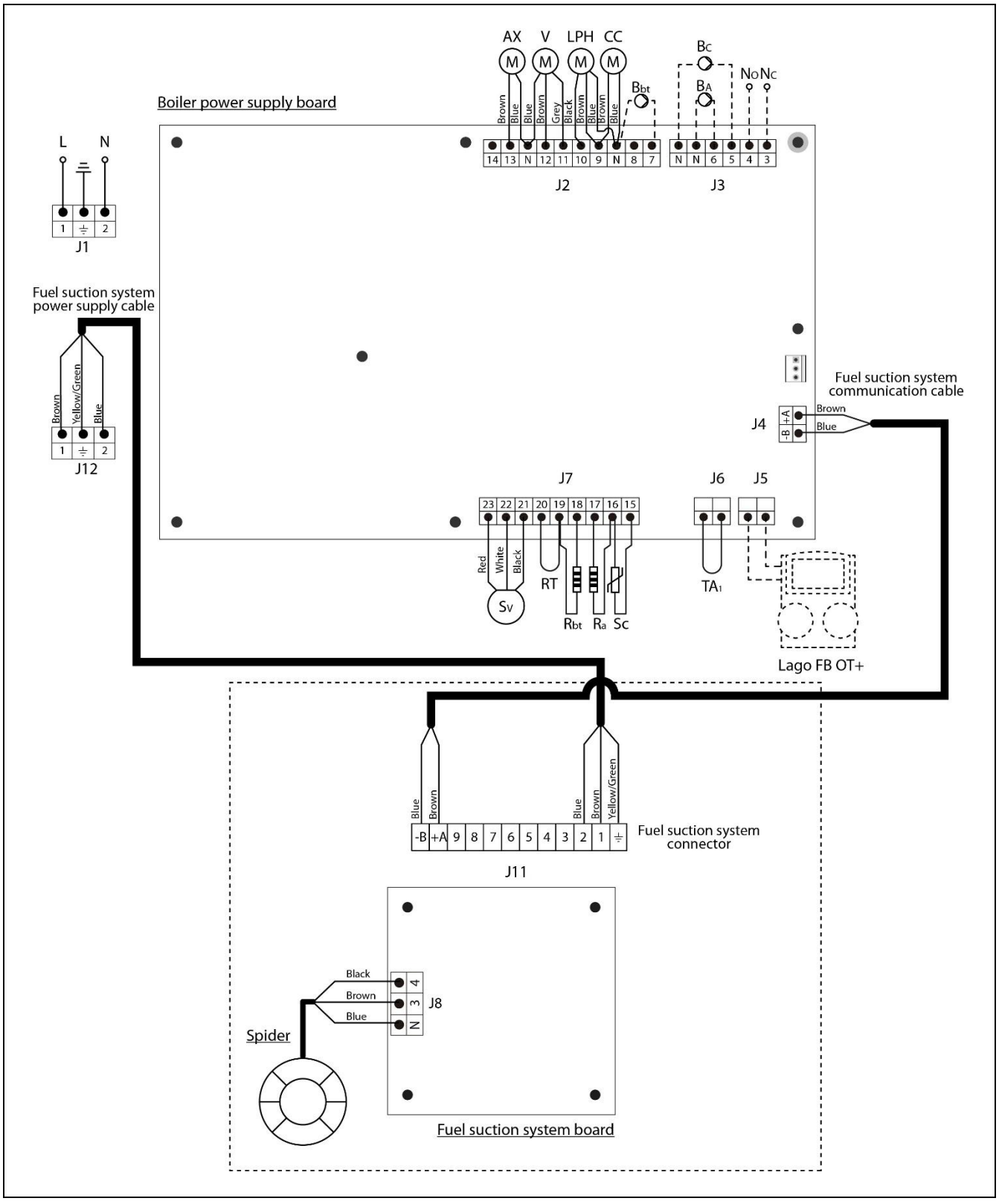


J4: Communication connector.

J11: Fuel suction system connector.

J12: Fuel suction system power connector.

7.3 Electrical connection for installation with a DOMUSA TEKNIK Kit Spider



J4: Communication connector.

J8: Kit Spider connector

J10: Filling sensor connection.

J11: Fuel suction system connector.

8 COMPRESSOR ASH DRAWER OPERATION

The boiler is equipped, as standard, with a compressor ash drawer capable of compacting the ashes which are produced from cleaning the burner and the fumes heat exchanger.

This drawer must be regularly cleaned to prevent ash from accumulating and obstructing heat exchanger, what would cause the boiler to block out. It is recommended to check regularly the drawer and remove the ash that is accumulated (see *"Ashtray empty warning function")*.

The boiler disposes a warning function that the ashtray must be emptied (enabled by default). "*Empty the ashtray*" warning appears, **E-43,** in order to inform when the ashtray is full. Follow carefully the instructions of this manual to check and change the settings of *"Ashtray status"* and *"Empty the ashtray"*.

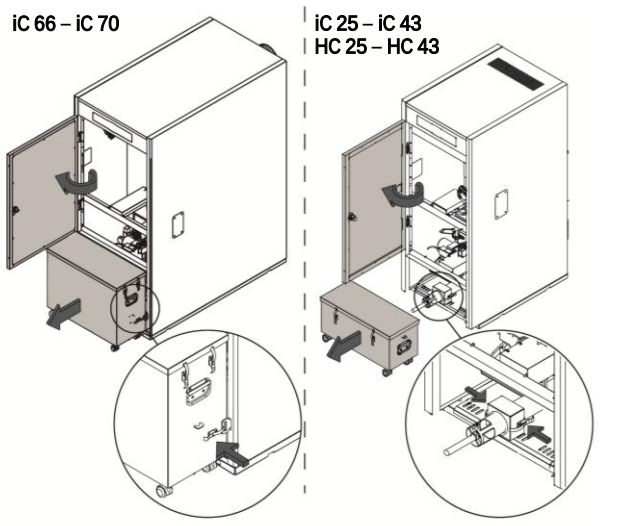
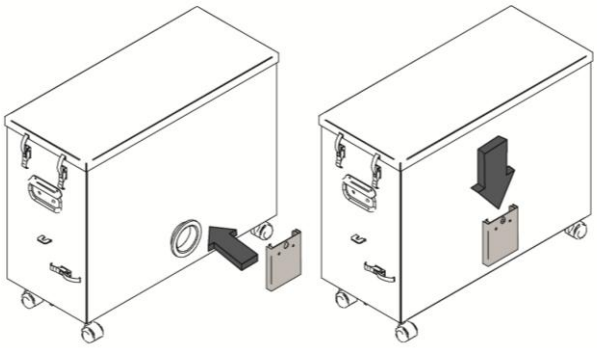
By default, the ash box reminder function is supplied activated and is set to indicative fuel consumption values which, depending on the quality and type of fuel, will have to be adjusted for each system. Below shows the default number of kilograms at which the boiler notifies you to empty the ash drawer:

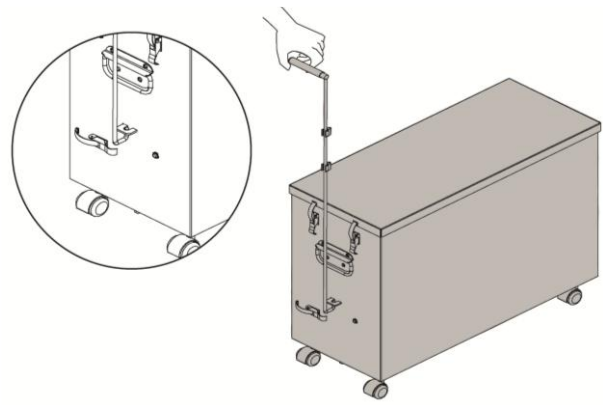
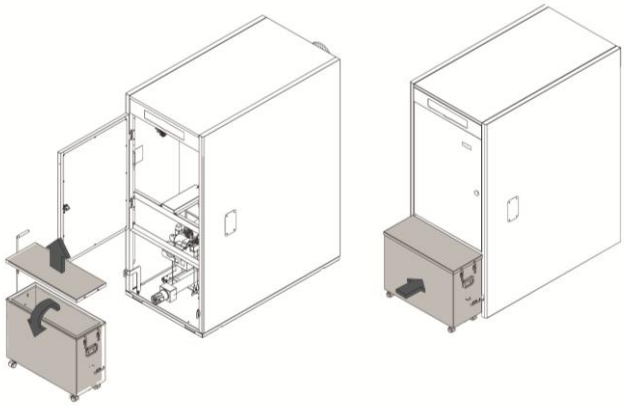
Modelo	kg
BioClass iC 66	6000 kg

IMPORTANT: **To ensure the boiler burner functions correctly, the ash drawer lid and the coupling between the lid and the inner compressor drawer must be hermetically sealed. You should regularly check the state of the seals for this purpose and replace them with new ones if they are worn.**

8.1 Emptying and cleaning the ash drawer

To empty the ash drawer, proceed as follows:

<table>
<tr>
<td>
</td>
<td></td>
</tr>
<tr>
<td>Open the door from the boiler and release the latches.</td>
<td>Place the cover over the filling hole as shown in the figure.</td>
</tr>
</table>

	
Use the transportation handle to carry the ash drawer.	Remove the lid using the latches and empty the ash. Replace the ash drawer, ensuring it is hermetically sealed.

8.2 Safety warnings

For **safe handling** of the ash drawer, you should take the necessary safety precautions and wear suitable clothing to protect against possible injury. Pay special attention to the following recommendations:

- **Switch off the boiler or ensure it is on pause** before taking out the ash drawer. If you take out the ash drawer with the boiler on pause, make sure you replace it before switching on the boiler again. It is recommended to take out the ash drawer when no flame is detected in the burner.
- It is recommended to wear insulating **thermal gloves** to protect your hands from any burns from hot parts of the drawer.
- It is recommended you wear a **protective mask** to avoid breathing in any ash particles, particularly in the case of people with allergies or any type of respiratory problems, who should always wear a mask when carrying out ash removal.
- As the ash to be removed from the drawer may be burning or glowing, special precautions should be taken with regard to the type of container it is emptied into. A **metal** container is recommended, or the **ash should be totally extinguished** on handling, using water or another extinguishing agent.
- The ash drawer must be emptied with the boiler switched off. **Never touch the screwas** it could trap your hand.

DOMUSA TEKNIK shall not be liable for any injury or damage caused to people, animals or property as a result of incorrect handling of the ash drawer or the ash itself.

IMPORTANT: The ash drawer must only be cleaned when the boiler is switched off or on pause.

NOTES:

DOMUSA
TEKNIK

POSTAL ADDRESS
Apartado 95
20730 AZPEITIA
Telf: (+34) 943 813 899

HEADQUARTERS & FACTORY
Bº San Esteban s/n
20737 ERREZIL (Gipuzkoa)
Fax: (+34) 943 815 666

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www.domusateknik.com

DOMUSA TEKNIK reserves the right to make modifications of any kind to its product characteristics without prior notice.