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## ARITERM IS A FINNISH MANUFACTURER OF HEATING SYSTEMS

Our main products are central heating boilers used for heat production and service water heating, bio burner equipment and bio heating system solutions. Our wide range features several modern heating solutions for private homes, larger living spaces and industrial properties.

ARITERM is actively taking part in the development of the heating industry and works in close contact with various organisations and officials in the field. We also use a certified ISO 9001 quality system to ensure that the quality of our products is verified at every stage of production. Further to this we use a certified environmental system that follows the ISO 14001 standard.

All Ariterm Oy boilers are manufactured according to the H or H1 module of the Pressure Equipment Directive (PED). To prove this all the boilers have a CE 0424 stamp which has been granted by Inspectra Tarkastus Oy.



## DOMESTIC NATURAL RENEWABLE ENERGY

**M**odern bio heating is an easy and affordable way to take care of heating. The bio heating solutions developed and manufactured by Ariterm Oy provide an efficient and reliable way of benefiting from domestic energy sources; wood chip, pellets, briquettes, peat and field biomass.

The use of domestic energy sources as heating materials increases in Finland every year. The reasons for this are simple; e.g. forest processed wood chips, wood pellet and peat are renewable, environmentally friendly, domestic and economical energy sources which decrease the amount of sulphur and greenhouse gas emissions into the atmosphere. In other words, they correspond to the demands of sustainable development set for heating energy sources of today.

Modern bio heating is easy and largely automated, minimising the effort required for the use and maintenance of the system. This development has given rise to a new type of company, the heating enterprise, in which a local entrepreneur sells bio energy produced heat to the customers.

Wood is a traditional energy source in Finland. In its different forms, it easily fills the criteria for a good energy source. As an energy source, wood is environment friendly and renewable and also produces practically pollution-free energy. Finnish forests produce more than enough wood; over 15 million square metres of wood suitable for energy production goes unused every year.

■ **Wood chip** is made by chipping wood. The raw material for chips can be whole tree, logging waste or other waste wood. The quality of the chip is crucial to the functioning of the heating systems. Forest processed wood chip has the best properties for energy use.

■ **Peat** is the slowest renewing of the widely used bio fuels. Peat also fills the previously mentioned criteria for sustainable development. It can also be used in peat pellets, making it suitable for smaller heating systems.

■ **Wood pellet** is a domestic fuel with uniform quality and a high heat value. It is produced from sawdust and cutter chips by pressing. The raw material comes mainly from mechanical wood industry enterprises. No additives are used in wood pellet production, which makes it just as environmentally friendly as wood chip.

■ **Wood briquettes** are like wood pellets in composition, but much larger in size. Due to their larger size and higher combustion temperature, wood briquettes are mostly suitable for fairly large heating plants (>500 kW).

■ **Grain** in its various forms is readily available, especially on farms. However, the burning qualities of grain are very different from those of wood fuels. The amount of ash is up to ten times greater and the melting point of the ash is low. Using grain as fuel means a significantly greater need for cleaning and maintenance. Therefore, the suitability of grain for fuel must always be considered on a case-by-case and system-by-system basis.



Wood chip



Peat



Wood pellet

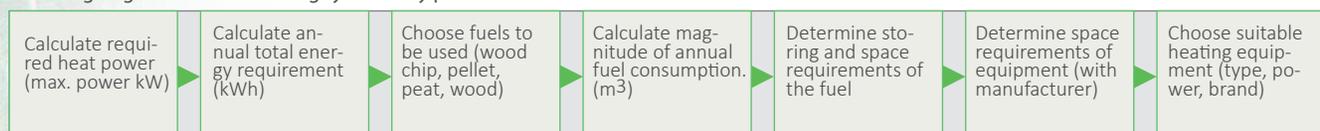


Wood briquette

## DESIGNING AND SIZING THE BIO HEATING SYSTEM

This Bio Heating Guide is intended to provide guidelines for designing and installation to customers considering and purchasing bio heating systems.

The designing of a new bio heating system may proceed as follows:



## Heat Power Requirements

The heating requirements of a property consist of the buildings' heat loss, ventilation and consumption of warm service water. The values in the enclosed chart can be used as guidelines when designing heating for a new/old residential building. The heating requirements for buildings have to be sized case-specifically because of the widely varying heat losses, depending on e.g. insulation, temperature used, ventilation, opening of large doors etc. In case no technical structure data is available, the power magnitude can be determined with the value 20 W/rm<sup>3</sup>. Warm water may momentarily require significant amounts of power. For example, one normal shower requires

30 kW of power.

Heating ducts lose very little power. In modern, well-insulated ducts the heat loss is approx. 20 W/m. It is best to confirm this with the duct manufacturer.

|   |                         |
|---|-------------------------|
| <b>New residential buildings</b>                      | 18 W/rm <sup>3</sup>    |
| <b>Old residential buildings</b>                      | 25-30 W/rm <sup>3</sup> |
| <b>Example</b>  |                         |
| Area of an old residential building in good condition |                         |
| Area  | 200 m <sup>2</sup>      |
| Room height   | x 2,60 m                |
| Building capacity                                     | = 520 m <sup>3</sup>    |
| <b>Heat power requirement 520 x 25 W</b>              | <b>13 kW</b>            |

## Calculating the Required Heat Power (Max. power)

|  |              |
|--|--------------|
| <b>Example 1. FARM</b>   |              |
| <b>Residential building</b>  |              |
| Area 200 m <sup>2</sup><br>Room height 2,60 m<br>Building capacity 200 x 2,6 = 520 m <sup>3</sup><br>Required heat power 520 x 25 W = 13 kW  | <b>13 kW</b> |
| <b>Technical building</b>  |              |
| Area 200 m <sup>2</sup><br>Inner height of hall 3 m<br>Building capacity 300 x 3 = 900 m <sup>3</sup><br>Required heat power 900 x 22 W = 19,8 kW  | <b>20 kW</b> |
| <b>Cattle house</b>  |              |
| Required extra heating during winter   | <b>25 kW</b> |
| <b>Heating ducts</b>   |              |
| Power loss approx. (50 m of heating duct, 20 W/m)  | <b>1 kW</b>  |
| <b>Domestic hot water</b>  |              |
| Two showers, power requirement 60 kW. The power requirements is momentary and thus does not need to be taken into account separately: the boiler is equipped with a sufficiently effective service water spiral instead. |              |
| <b>Maximum power requirement</b>   | <b>59 kW</b> |

|  |               |
|--|---------------|
| <b>Example 2. TERRACED HOUSE + SCHOOL</b>  |               |
| • A terraced house of 6 apartments and a school, shared heating system   |               |
| <b>Residential building (a fairly new terraced house)</b>  |               |
| Building capacity 1100 m <sup>3</sup><br>Required heat power 1100 x 20 W   | <b>22 kW</b>  |
| <b>School building</b>   |               |
| Building capacity 3000 m <sup>3</sup><br>Required heat power 3000 x 30 W   | <b>90 kW</b>  |
| <b>Heating ducts</b>   |               |
| Power loss approx. (200 m of heating duct, 20 W/m)   | <b>4 kW</b>   |
| <b>Domestic hot water</b>  |               |
| Terraced house: maximum consumption estimate 80 kW<br>School: maximum consumption estimate 75 kW   |               |
| Peak consumption is momentary (max. 155 kW), so 80 kW is reserved and the rest borrowed from the heating: the boiler is equipped with a 150 kW service water transductor.. | <b>80 kW</b>  |
| <b>Maximum power requirement</b>   | <b>196 kW</b> |

**Note!** A proper heat power calculation is the basis of a well-functioning heating system! It is absolutely vital to discuss this with an expert, as the right sizing makes extra investments unnecessary and ensures the faultless functioning of the system.

During summertime, when there are several rest periods, it is important to take care of sufficient draft. If a sufficiently good draft (30 Pa) cannot be guaranteed, it is recommended that a under pressure controlled flue gas fan is installed into the equipment. In a system equipped with a ventilator, it is possible to fit the chimney length as best suits the surroundings.

The moisture differences in the fuel (wood chip) can be utilised in seasonal heating requirement changes. It is more

economical to burn the drier fuel with more heating value in the winter, when heating is needed the most. The wood chip that is moister, on the other hand, can be burned in the summer.

The moister wood chip needs longer operating periods per heat unit produced, and thus the features of the bio burner are utilised most effectively. By shortening the rest periods, both the coefficient of performance and the reliability of function are enhanced.

## Annual Total Energy Requirements

The annual total energy consumption affects the choice of burning technique and fuel. In our examples, the annual total energy consumption is in the magnitude of the adjacent charts.

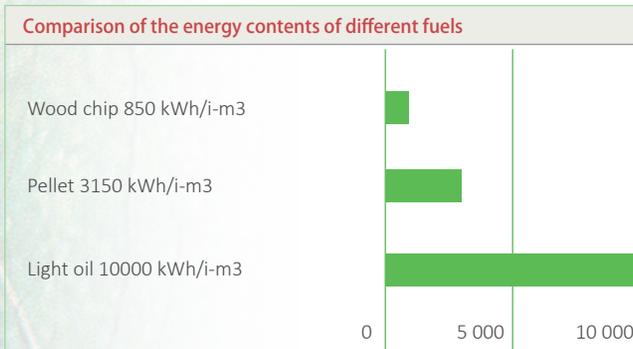
| Example 1. FARM      |                        |
|----------------------|------------------------|
| Residential building | 34 000 kWh/year        |
| Technical building   | 15 000 kWh/year        |
| Cattle house         | 25 000 kWh/year        |
| Domestic hot water   | 8 000 kWh/year         |
| <b>Total</b>         | <b>82 000 kWh/year</b> |

| Example 2. TERRACED HOUSE + SCHOOL |                              |
|------------------------------------|------------------------------|
| Residential building               | Heat losses 37 000 kWh/year  |
| Domestic hot water                 | 18 000 kWh/year              |
| School building                    | Heat losses 120 000 kWh/year |
| Domestic hot water                 | 30 000 kWh/year              |
| <b>Total</b>                       | <b>205 000 kWh/year</b>      |

## Choosing a Fuel

The most common fuels are wood chip, pellet and sawdust. The following factors affect the choice of the fuel: availability, transport, storage and drying.

If wood chip is used as fuel, the percentage of moisture and moisture differences in the fuel needs to be determined. It is recommended to aim at fuel moisture that does not exceed 40 % in bio systems with power less than 1000 kW. In using wood chip, the preservability factor must also be taken into account.



## Fuel Moisture

With modern burning techniques, even moist fuel can be burned, but as the moisture rises, so does fuel consumption and the need to soot the boiler. Moreover, moist fuel burns impurely and produces more soot and ash.

When using very moist wood chip (>40 %), it is recommended that the devices are sized larger than the required nominal power. Drying the moist wood chip during the burning process requires energy, and to reach the same desired power the system must be oversized.

In addition, the amount of combustion gases is greater and the draught resistance of the boiler rises. This causes the temperature of the combustion gases to rise and the heat energy to go to waste.

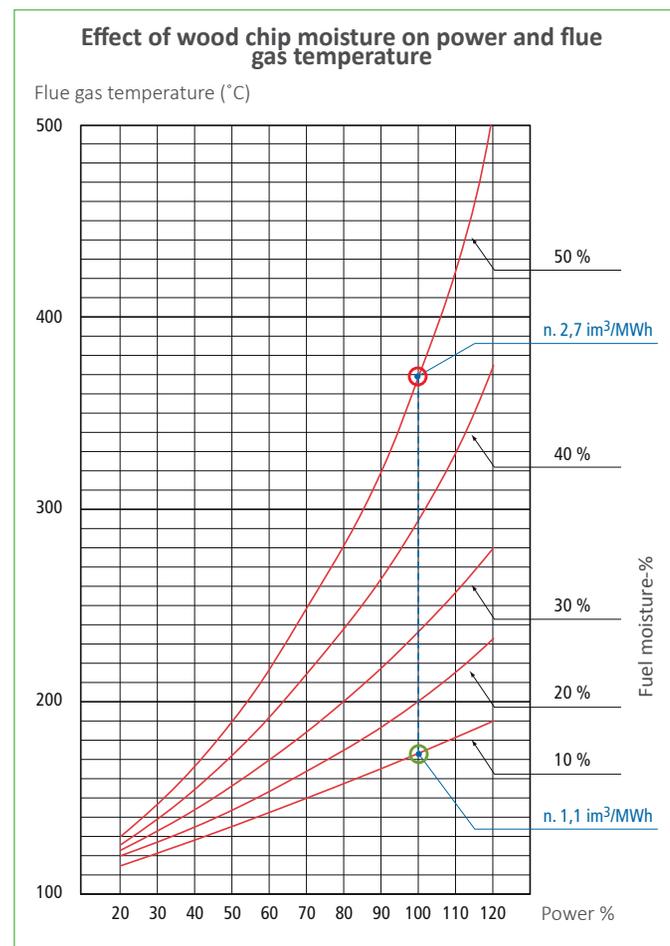
The effect of moisture on the annual consumption of wood chip in Example 2 (terraced house + school; total energy requirement 205 000 kWh):

|               |   |
|---------------|---|
| Moisture 20 % | Annual consumption 270 i-m <sup>3</sup> |
| Moisture 30 % | Annual consumption 310 i-m <sup>3</sup> |
| Moisture 50 % | Annual consumption 450 i-m <sup>3</sup> |

When the moisture of the wood chip rises from 20 % to 50 %, the fuel consumption increases by over 1,5 times!

## The effects of fuel moisture to chimney sizing and choice

The amount of combustion gases is constant when the device is run on dimensioning fuel at nominal efficiency. Moister fuel increases fuel consumption and the amount of combustion gases. This should be taken into account when sizing the chimney and possible flue gas fan.



The curve has been generated by burning wood chip. In practice, the 10 % curve corresponds to the use of wood pellets. Reading instructions: The equipment if functioning at 100 % power on 20 % fuel on the broken line, making the temperature of combustion gases approximately 180 °C.

## ■ Annual Fuel Consumption

With different fuels, the theoretical total annual consumption of our example properties amounts to the following:

| Fuel      | Farm                 | Terraced house + school |
|-----------|----------------------|-------------------------|
| Pellet    | 30 i-m <sup>3</sup>  | 70 i-m <sup>3</sup>     |
| Wood chip | 110 i-m <sup>3</sup> | 270 i-m <sup>3</sup>    |
| Oil       | 8,2 m <sup>3</sup>   | 20,5 m <sup>3</sup>     |

## ■ Seasonal Changes in Consumption

It must be noted that while the system is sized according to the required maximum power, the consumption may drop to a tenth of that, or even less, during the warmest time of the year.

## ■ Choosing the Bio Burner and the Bio Boiler

A calculated maximum energy requirement is usually the base when sizing the burner and the boiler, unless there are other heat sources in use.

In our examples, a burner and boiler combination with the nominal output of 60 kW was chosen for the farm and one with the nominal output of 200 kW for the terraced house/school. The outputs of the burners and the boilers are given as nominal values, meaning that 200 kW of output can be expected from a burner-boiler combination marked as 200 kW.

When choosing a bio boiler and burner, inform the equipment supplier of the maximum heating requirement of your facility (kW) and the principal fuels used. Also inform the supplier of the fuel moisture fluctuation range (e.g. wood chip 25-40 %).

The bio burner and the boiler form a unit and thus need to function seamlessly together. Aritem burners and boilers have been designed to fit together as a complex from the start. The power, couplings and connections fit together easily, and the most important thing: the burning result is first class.

## ■ The Features of a Good Bio Burner

- high flame temperature = pellet 1100°C, wood chip 1000°C
- low air coefficient, e.g. less than 1,4 (a high air coefficient weakens the efficiency)
- low carbon monoxide emissions (CO emissions), values less than 500 ppm (or 0.05 %)
- low emission of nitrogen oxides (NO<sub>x</sub>)
- wide range of use (e.g. 20-100%)
- sufficient burn back protection (safety)

## ■ Fuel standards

EN 14961-1:2010 Solid biofuels. Fuel quality requirements and classes. Wood chip particle sizes: 40 kW (P16B), 60 - 300 kW (P45A), 400 - 700 kW (P63).

## ■ The Features of a Good Boiler

Clean and efficient burning require the burner to be paired with a boiler which can transfer the heat produced by the burner's hot combustion gases to the boiler water as efficiently as possible.

- vertical convection structure (needs less maintenance)
- easy to clean
- low combustion gas temperature (150-180 °C at nom. power)
- sufficient fire surface (prerequisite for efficient transmission of heat into boiler water)
- sufficient pressure class (enables the use of sufficiently high temperature)
- weight of the boiler (tells of the fire surface measures, structural sturdiness and the life expectancy of the boiler)

## ■ Pressure Equipment Directive

The manufacture of heating boilers is currently controlled by the Pressure Equipment Directive (PED). The PED permits the production of boilers with different requirements.

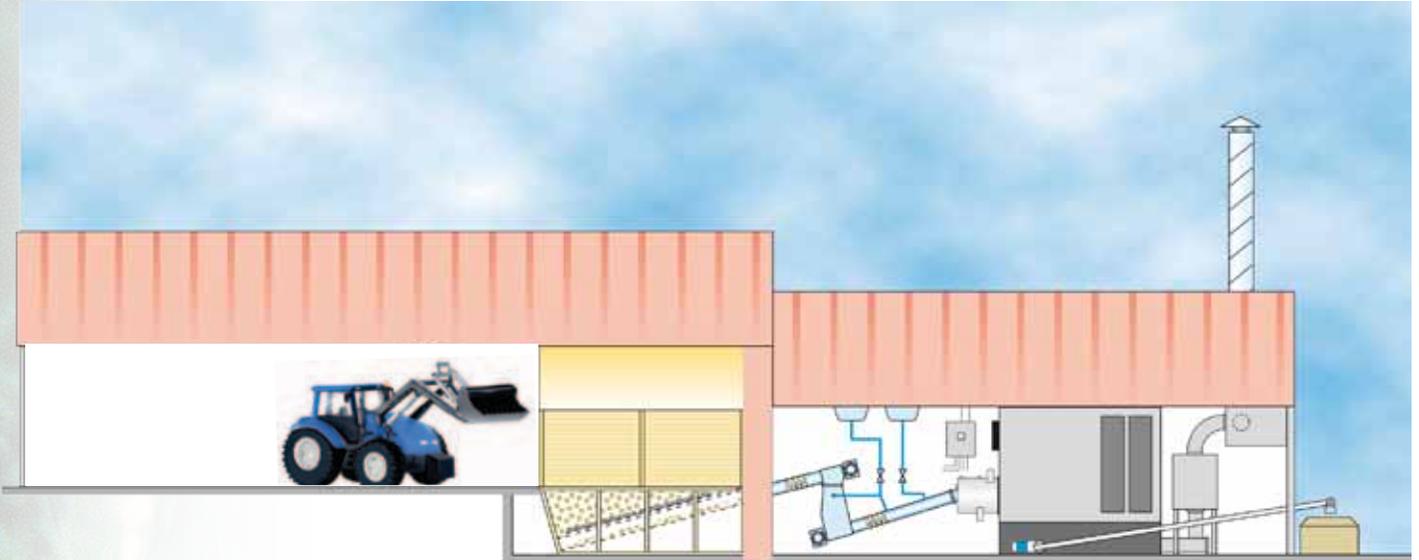
The basic level follows sound engineering practice. Manufacturing does not require outside quality control. The maximum structural temperature of these basic boilers is 110 °C, and the product must not have a CE-stamp referring to PED. The temperature is imprinted in the boiler's production plate.

The most demanding standards are those of module H and H1. The structural temperatures of the boilers manufactured according to this standard are 120 °C (1,5 bar) / 135 °C (4 bar) / 150 °C (6 bar) / 175 °C (10 bar). Production at this level requires constant quality control by an outside party and the manufacturer is granted a separate pressure equipment certificate for products in accordance with module H1.

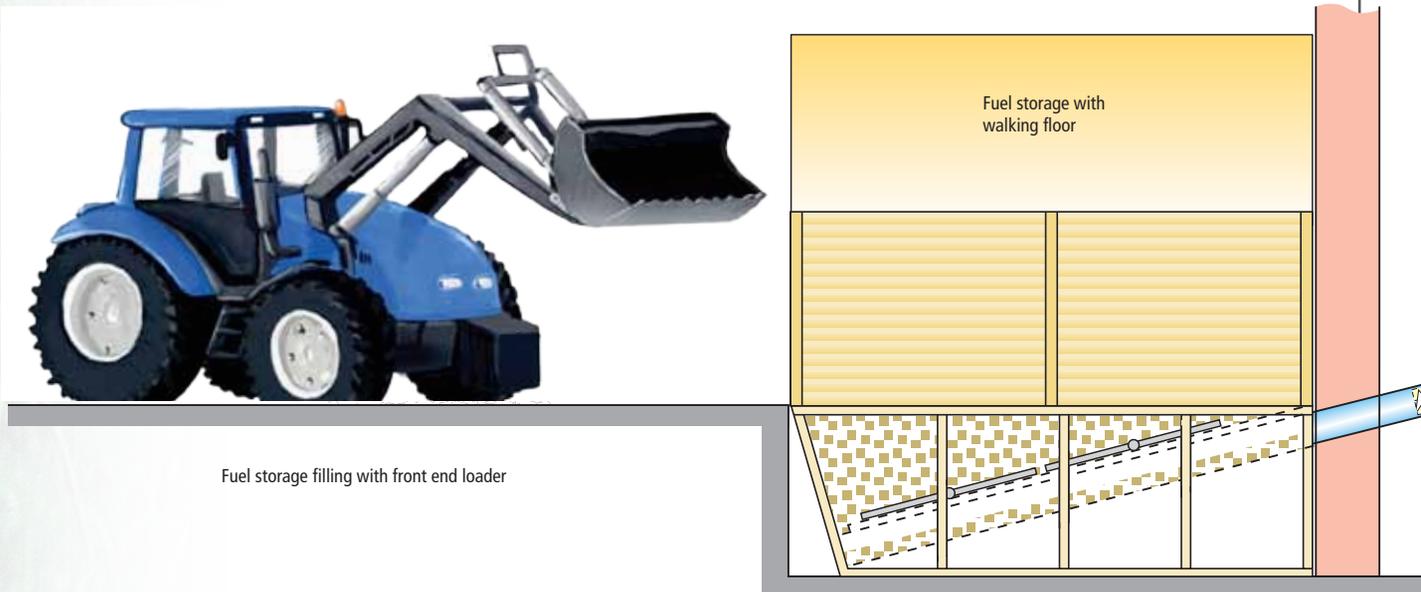
**All Aritem boilers are manufactured according to the highest level of the PED.** As proof of this, all Arimax boilers are given the CE 0424 -stamp authorised by Inspecta Tarkastus Oy .

# A WELL-DESIGNED BIO HEATING SYSTEM

■ A model of a functioning bio heating system



■ Components of the bio heating system



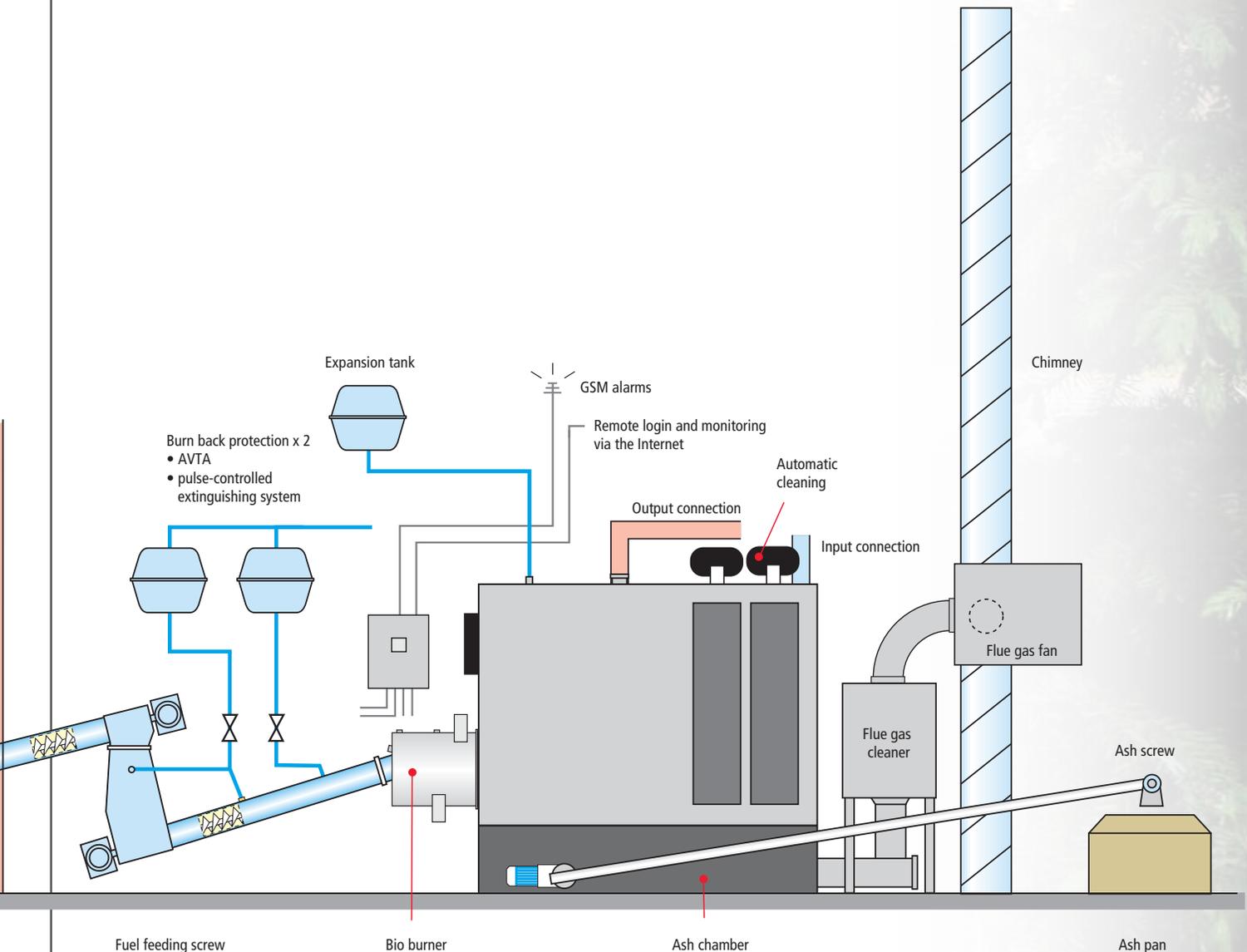
### Careful planning leads to good results

Careful planning forms the basis of a functional, economical and easily maintained bio heating system. Before starting the construction work, it is necessary to go through the power requirement measurement, choice of equipment and storage solutions based on the choice of fuel, the functionality of maintenance and upkeep, the level of automation and fire safety. It is recommended to get the assistance of a professional for the planning.

As for fire safety, it is worthwhile to contact the local fire authorities as soon as possible. This way an official approval of the fire safety measures is obtained already at the design stage. Heating devices are often installed in an existing building, but a separate boiler house or a ready-made heating container solution is worth considering.

### Some of the key factors in designing are:

- plant output sizing, maximum and reserve power production
- ease of maintenance (access to soot hatch, etc.)
- placement of doors and burner for left or right-handed access
- size and filling method of the storage
- types and measurements of the storage discharger and the fuel conveyors
- level of burn back protection
- level of automation and possibility of remote control and monitoring
- automatic ash removal
- flue gas fan and/or cleaner

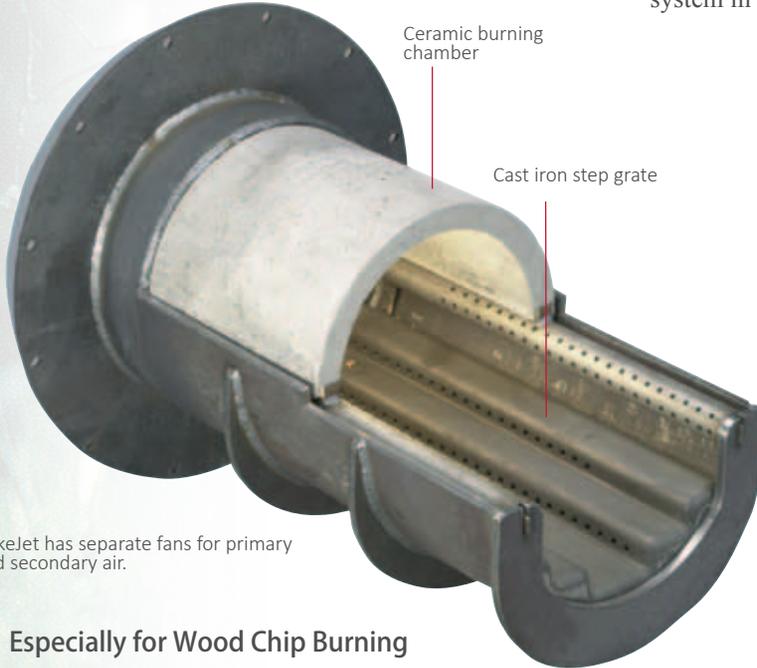


# HAKEJET BIO BURNER | 40 - 400 KW

HakeJet is designed primarily for burning wood chip. Its open, half-circle burning head is constructed from cast iron, which makes the fire grate very durable and long-lasting. Due to the ceramic burning chamber, the temperature of the flame can be raised sufficiently high and the burning will be clean.

The burner can be equipped with a hot-air blower operated automatic ignition.

The HakeJet burner is inserted almost all the way into the fire chamber of the boiler, which saves space in the boiler room. This may be essential when renewing the heating system in existing buildings.



HakeJet has separate fans for primary and secondary air.

## Especially for Wood Chip Burning

HakeJet is excellent for farms, woodland estates and other places with good wood chip availability. The use of wood chip is significantly helpful in efficient forestry. Also, wood chip is an environment friendly and renewable energy source. It can be obtained either from wood chip producers in the vicinity or by chipping one's own wood reserves.

HakeJet is compatible with Arimax bio boilers and feeding systems. Recommended maximum moisture level for wood chip is 40 %.



HakeJet 40 burning head with one combustion air fan

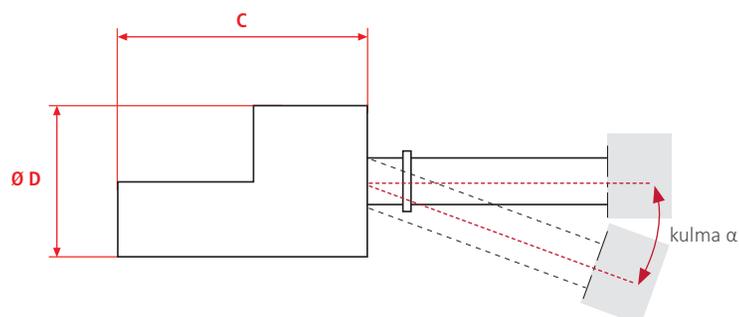


HakeJet from behind

### Main measurements of the HakeJet burner

| HakeJet           | 40 kW | 60 kW | 80 kW | 120 kW | 150 kW | 200 kW | 250 kW | 300 kW | 400 kW |
|-------------------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| mitta C (mm)      | 358   | 515   | 605   | 705    | 825    | 905    | 980    | 1080   | 1225   |
| halkaisija D (mm) | 220   | 330   | 370   | 410    | 450    | 500    | 550    | 600    | 690    |
| paino (kg)        | 25    | 67    | 88    | 103    | 125    | 169    | 208    | 260    | 300    |

HakeJet bio burners are compatible with Arimax bio boilers. Adapter flanges for rectangular burner openings are available from the factory.



| Model    | Angle $\alpha$ |
|----------|----------------|
| 60 - 400 | 0...15 °       |

In developing the water-cooled burning head of the BioJet burner, Aritem has utilised the best information and practical knowledge available from researchers and users. BioJet is meant primarily for wood pellet, but briquette and wood chip are also suitable.

BioJet has been tested at VTT (Technical Research Centre of Finland) and it is below the strictest current emission limits (EN303-5): Coefficient of efficiency 90 %, CO (carbon monoxide) 150 mg/Nm<sup>3</sup>, particles 30 mg/Nm<sup>3</sup>, hydrocarbon compounds OGC 1 mg/Nm<sup>3</sup>.



## ■ Features for the BioJet

The cast iron grate of the BioJet is durable and long-lasting. The water-cooling in the casing keeps the temperature constant between heating and rest periods. The ceramic fire chamber raises the burning temperature of the flame up to 1100 degrees. Separate fans for primary and secondary air enable an optimally accurate air distribution, which in turn makes the air coefficient low (less than 1,4) and causes all combustion gases to burn up cleanly with minimal emissions.

A new, segmented cast iron grate system can handle changes in temperature even better than before, thus lengthening the life expectancy of the burner / grate.

The equipment will also function well with a partial load. The usable power range is 20 - 100 %. For example, with an Arimax Bio 300 kW boiler, fuelled with pellets, the coefficient of efficiency was 90 % at nominal power and 85 % at partial power.

Only the BioJet 700, 1000 and 1500 meant for pellet use are equipped with three combustion air fans.

The burner can be equipped with an automatic ignition.



BioJet in use

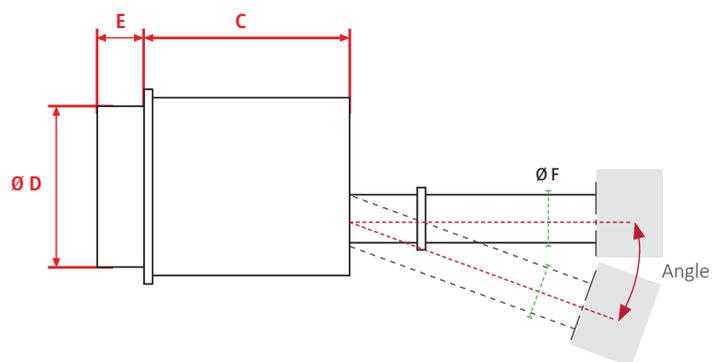
Main measurements of the BioJet Burner (4 bar)

| BioJet                  | 60 kW | 80 kW | 120 kW | 150 kW | 200 kW | 250 kW | 300 kW | 400 kW | 500 kW | 700 kW | 1000 kW  | 1500 kW (6 bar) |
|-------------------------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-----------------|
| Measure C (mm)          | 330   | 410   | 520    | 630    | 710    | 790    | 885    | 1035   | 1265   | 1265   | 1535     | 1570            |
| Measure E (mm)          | 175   | 175   | 190    | 190    | 190    | 190    | 190    | 190    | 190    | 185    | 185      | 185             |
| Diameter D (mm)         | 335   | 375   | 415    | 460    | 510    | 560    | 630    | 710    | 710    | 852    | 852      | 1005            |
| Weight (kg)             | 84    | 106   | 143    | 201    | 280    | 330    | 420    | 519    | 605    | 780    | 920      | 1400            |
| Ø F <sub>max</sub> (mm) | 159   | 159   | 159    | 159    | 159    | 159    | 159    | 194    | 194    | 194    | 114(194) | 114(194)        |
| Angle °                 | 15    | 15    | 15     | 20     | 20     | 20     | 20     | 20     | 20     | 20     | 0(20)    | 0(20)           |

BioJet-biopolttimet ovat yhteensopivia Arimax-biokattiloiden kanssa. Tehtaalta on saatavissa sovittelappoja suorakaiteen muotoisiin poltinaukkoihin.

Main measurements of the BioJet Burner (10/20 bar)

| BioJet                  | 1 000 kW<br>(10/20 bar) | 1 500 kW<br>(10/20 bar) |
|-------------------------|-------------------------|-------------------------|
| Measure C (mm)          | 1635                    | 1670                    |
| Measure E (mm)          | 185                     | 185                     |
| Diameter D (mm)         | 852                     | 1005                    |
| Weight (kg)             | 1180/1400               | 1600/1900               |
| Ø F <sub>max</sub> (mm) | 194                     | 194                     |
| Angle °                 | 20                      | 20                      |



### ■ Dual burner solutions

Burner power can be doubled by installing two burners in the same boiler. This also enables to halve burner power in, for example, summer use. These solutions enable pellet heating with BioJet up to 2x1,5 MW.



Dual burner solution with BioJet burners.

■ Flexible fuel use

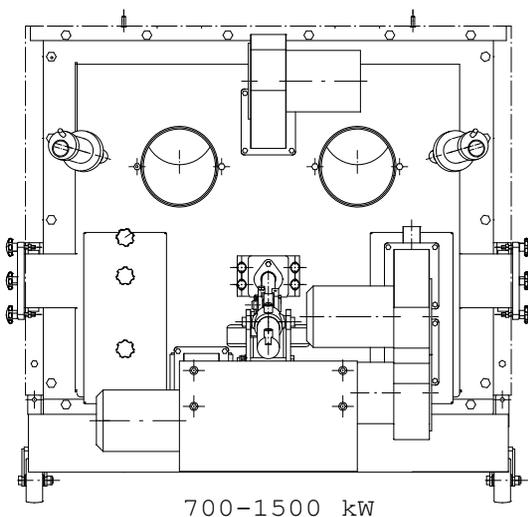
Ariterm's MultiJet bio burner is designed to utilise several different kinds of bio fuels. **The burner is able to use wood chip of varying quality, wood and various field fuels.**

The grate of the MultiJet is fully mobile and this enables the fuel to mix efficiently on its surface. The grate's mobility improves moving the ash from the burning head to the ash compartment. This is useful especially when using fuel that produces a lot of ash. The grate runs by durable spindle motor or, in the case of larger burners (500-1500 kW), hydraulics. The fuel is fed using a two-screwed feeding system that is essential to the structural fire safety of the equipment.

The burner is equipped with two (<200 kW) or four combustion air fans. The fans are directed from the control centre which ensures that the mixing ratio of air and fuel remains optimal at all power levels. The burners with higher power capacities (200-1500 kW) it is possible to direct different combustion air levels for the front and back of the grate depending on the power it is run at. This results in a clean burn and high efficiency at all times.

It also means that the boiler will remain cleaner. The structure and materials of the burner have been designed to take into account the demanding conditions the bio burner faces at all times.

MultiJet 40-500 kW is equipped with one burner screw. The bigger MJ700-1500 is equipped with two parallel burner screws which enables more even fuel distribution onto the broad grate. Burners with two burner screws require, depending on the fuel and location of the fuel storage, a separate dividing screw for fuel transfer from the silo/ storage screw to both burner screws.



700-1500 kW

The burner is controlled using the Arimatic control centre (p. 19-20)

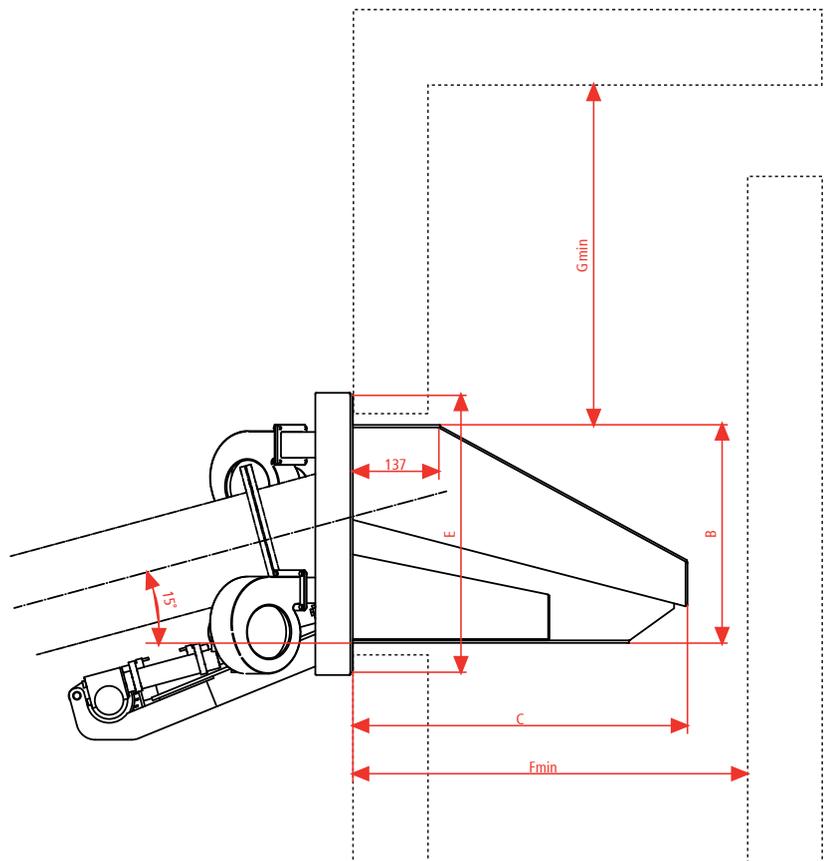
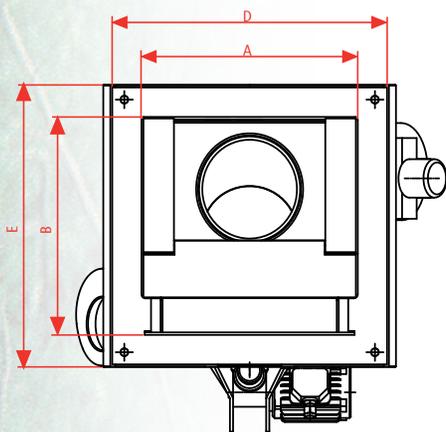
MultiJet 40 - 150 kW = AM151

MultiJet 200 - 500 kW = AM500/AM1001

MultiJet 700 - 1500 kW = AM1001, more information available from the factory!

■ Main measurements of the MultiJet burner

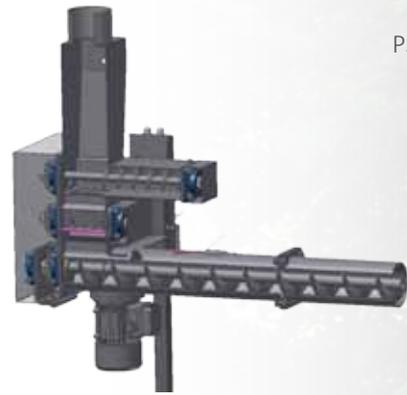
| Main measurements of the MultiJet burner |      |      |      |      |      |       |       |           |
|--|------|------|------|------|------|-------|-------|-----------|
| Poltin kW                                | A    | B    | C    | D    | E    | F min | G min | Weight kg |
| 40                                       | 240  | 240  | 441  | 322  | 322  | 465   | 350   | 54        |
| 60                                       | 340  | 340  | 526  | 432  | 432  | 555   | 400   | 84        |
| 80                                       | 380  | 380  | 623  | 482  | 482  | 650   | 500   | 110       |
| 120                                      | 420  | 380  | 623  | 522  | 522  | 650   | 600   | 120       |
| 150                                      | 440  | 440  | 738  | 562  | 562  | 770   | 650   | 140       |
| 200                                      | 500  | 640  | 1034 | 592  | 732  | 1050  | 750   | 390       |
| 250                                      | 570  | 640  | 1034 | 662  | 732  | 1050  | 850   | 440       |
| 300                                      | 640  | 640  | 1034 | 732  | 732  | 1050  | 950   | 490       |
| 400                                      | 710  | 685  | 1226 | 802  | 777  | 1240  | 1050  | 650       |
| 500                                      | 850  | 685  | 1226 | 942  | 777  | 1240  | 1200  | 800       |
| 700 H                                    | 920  | 768  | 1412 | 1012 | 860  | 1430  | 1400  | 1130      |
| 1000 H                                   | 1110 | 925  | 1737 | 1266 | 1085 | 1750  | 1700  | 1430      |
| 1500 H                                   | 1410 | 1094 | 2032 | 1566 | 1255 | 2060  | 2000  | 1720      |



## ■ Pellet feeder PS10 (40 - 400 kW)

In pellet use the pellet screw can be replaced with a PS10-pellet feeder. PS10 is composed of a feeding screw, a cell feeder and a burner screw which are chain steered by one motor. The system allows for more even fuel feeding and also provides one extra back fire protection. PS10 is also equipped with a powder extinguishing system.

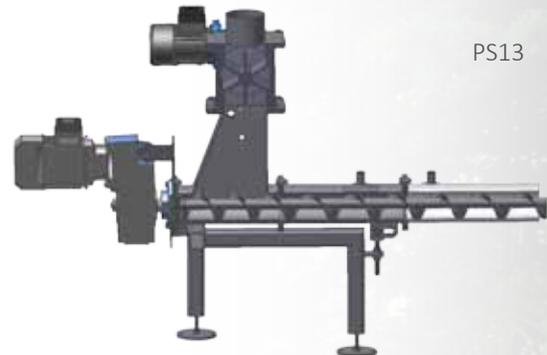
PS10 can be combined with BioJet-, HakeJet- and Multi-Jet-burners in power range of 40-400 kW. In Arimatic 500 pellet steering centres the PS10 is operated by a frequency controller.



PS10

## ■ Pellet feeder PS13 (500 - 1500 kW)

PS13 is composed of a separate cell feeder and a burner screw which are steered by separate motors. PS13 can be combined with BioJet- and MultiJet-burners in power range of 500-1500 kW. In Arimatic 500/AM1001 pellet steering centres the PS13 is operated by frequency controllers.



PS13

## ■ Sizing the Feeding Screws

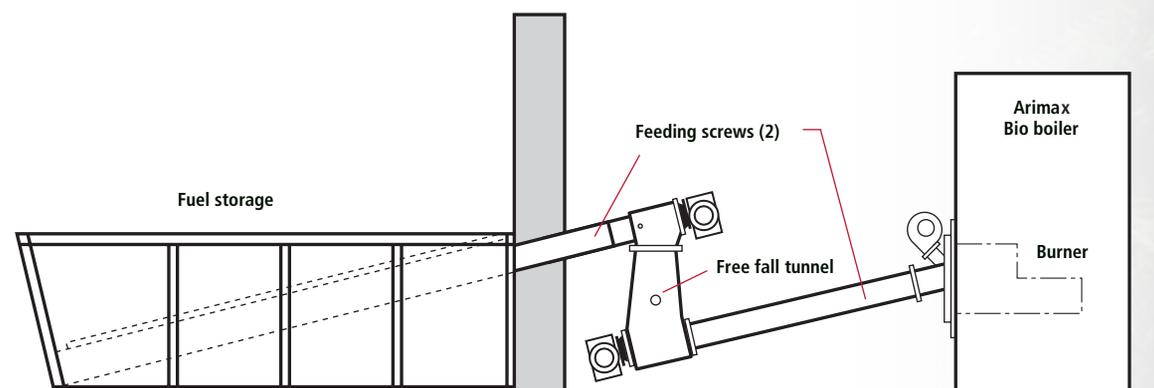
The feeding screws in Aritem bio burning systems are made of steel. They are tough and designed to take the strain caused by different fuels. The right choice of screws is essential for the faultless functioning of the bio feeding system.

In a two-screw system there is more leeway in positioning the boiler and the storage in relation to each other. The free fall funnel can also be ordered with special measurements, enabling the designing of the device positions to fit the existing assembly space.

## ■ Two-screw Feeding System

The two-screw system is recommended because of its better burn back protection. The free fall funnel between the screws forms a flame-retarding fuel-free space between the storage and the burner. The funnel, along with the rising burner screw, enables the formation of a water seal in a burn back situation.

The transmission of the feeding screws is dimensioned according to the size of the screws and the chosen fuel. The motors and gears are maintenance-free worm gears and conical cylinder gears.



The recommended maximum length of the screws is 5 m. The minimum lengths of different systems can be found in the reference drawings in the brochure (p. 34–45).

Measurements of the feeding screws for 40 - 3000 kW bio burners (wood chip)

| Bio burner type                                 | Diameter of screw pipe x wall thickness mm | Screw diameter mm | Margin mm |
|---|--|-------------------|-----------|
| Burners 40 kW                                   | 139 x 4,5                                  | 115               | 2 x 7,5   |
| Burners 60-300 kW                               | 159 x 5                                    | 135               | 2 x 7,5   |
| Burners 400-500 kW                              | 193,7 x 5                                  | 165               | 2 x 7,5   |
| Burners MJ700 and step grate 700 kW             | 2 x 159 x 5                                | 135               | 2 x 7,5   |
| Burners MJ1000-1500 and step grate 1000-3000 kW | 2 x 193,7 x 5                              | 165               | 2 x 7,5   |

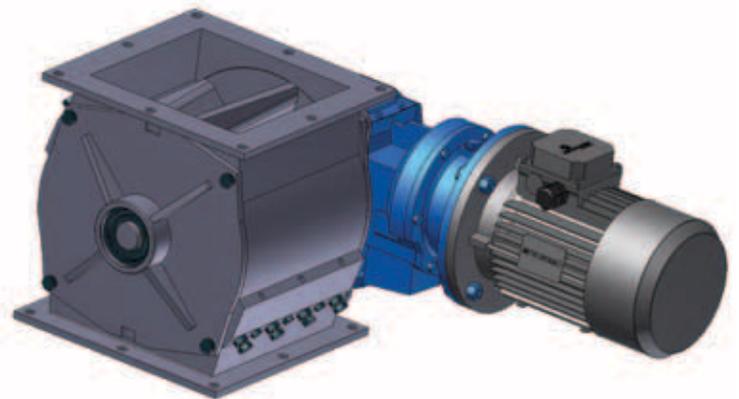
Note! In large sites, sizing should be done on a case-by-case basis. Ash screws have been sized according to the boiler type (see p. 32). The burner portion of the ash screws is made from special fire-proof steel.

### ■ Cell feeder

It is possible to install a cell feeder above the dropping funnel between the storage screw and the burner screw, the use of which is justified when:

1. the fuel used is extremely dry
2. the installation space restricts the feeding screw length considered to be too short
3. the fuel used has sticks or the particle size is big

Ariterm manufactures two types of cell feeders: the SSP-model for pellet use and the SSH- model for more challenging fuels such as the wood chip.



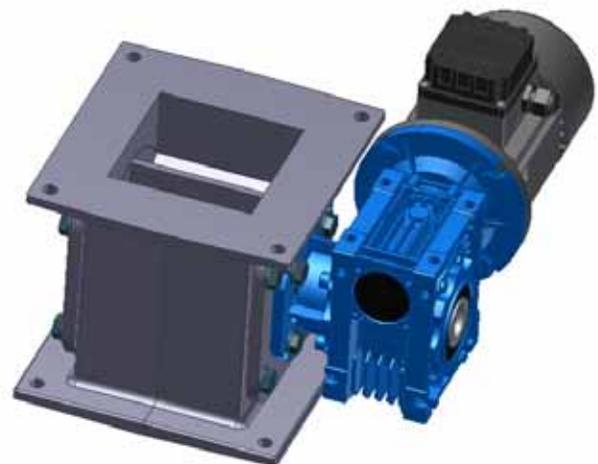
SSH cell feeder (motor 2,2 kW)

### ■ SSH

The cell feeder consists of a cast iron frame, a rotor made of steel and a gear motor. The cutting blades of the rotor and the powerful motor ensure that the equipment is suitable also for challenging fuel. The gap between the rotor blades and the frame is small which makes the equipment airtight.

### ■ SSP

The primary function of the cell feeder Ariterm manufactures for pellet use is to increase the back fire safety of the system when the installation space is limited.



SSP cell feeder (motor 0,37 kW)

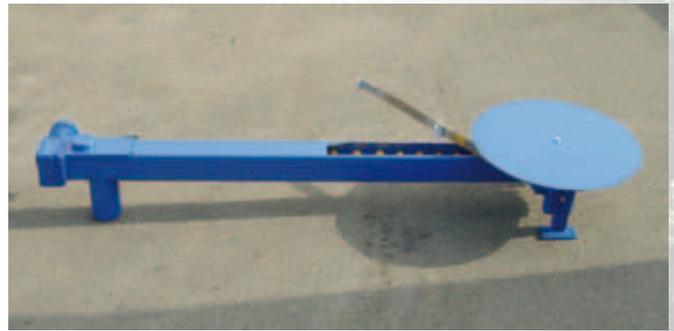
## ■ Spring Feeder J2-301 (Ø 1,5-3,0 m) and J4-501 (Ø 3,3- 5,7 m)

A spring feeder is a flexible storage solution for smaller wood chip heating equipment. A bevelled surface can be built for the feeder or it can be installed directly on the floor.

The feeder is suited for quality wood chip or pellets. The maximum moisture-% for wood chip is 30 % and the maximum particle size is 30 mm. The spring that rotate with the plate move the fuel to the storage screw. Fitting the spring feeder is easy as the length of the spring can be chosen according to the installation space. The storage screw and the plate have a shared actuator. The maximum incline for the screw is 17°, with pellet 5°.

| Model J2-301 | Diameter of the storage | Max. filling height of the storage (<250 kg/m <sup>3</sup> ) |
|--------------|-------------------------|--|
| F3           | 1,5-3,0 m               | 3,0 m  |
| F4           | <4,0 m                  | 3,0 m  |

| Model J4-501 | Diameter of the storage | Max. filling height of the storage (<250 kg/m <sup>3</sup> / <400 kg/m <sup>3</sup> ) |
|--------------|-------------------------|---|
| GA3          | 3,3 m                   | 7,0 m / 3,5 m   |
| GA4          | 4,1 m                   | 7,0 m / 3,5 m   |
| GA5          | 5,1 m                   | 7,0 m / 3,5 m   |
| GA6          | 5,7 m                   | 7,0 m / 3,5 m   |



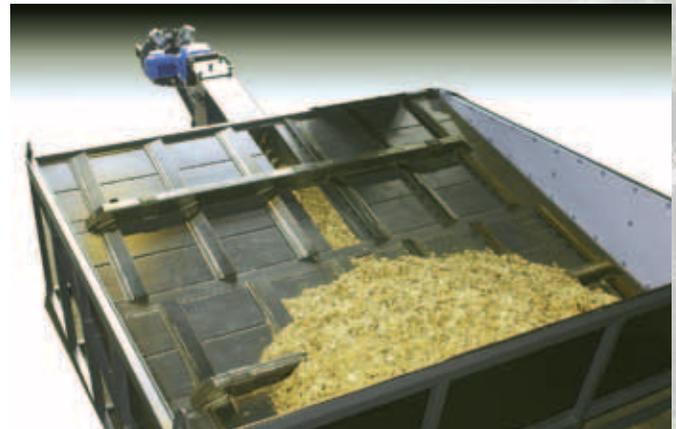
J2-301



J4-501

### J2-301 and J4-501 STANDARD EQUIPMENT

- storage screw
- storage screw motor and transmission
- top part of the free fall funnel



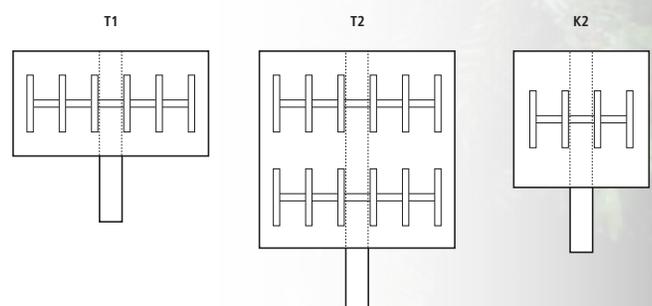
### T1, T2 JA K2 STANDARD EQUIPMENT

- storage screw
- storage screw motor and transmission
- walking floor hydraulic unit
- top part of the free fall funnel
- AVTA extinguishing valve

## ■ Walking Floor unit T1 (1,5x3 m), T2 (3x3 m), K2 (2x2 m)

The Walking Floor Unit bottom T2 includes two rakes moving back and forth, controlled by automatics, that transfer the fuel to the storage screw in the centre of the Walking Floor Unit. The rakes function electro-hydraulically, separate from the storage screw, which has its own actuator. The Walking Floor Unit rakes only move as needed, so as not to pack the fuel on the storage screw. The capacity of the T2 Walking Floor Unit bottom is approximately 3 m<sup>3</sup> and a fuel storage of the desired size can easily be built on top of it. The maximum size of the silo is 50 m<sup>3</sup>.

The Walking Floor Unit T1 and K2 are equipped with one rake and their bottom sizes are T1=1,5x3 m and K2=2x2 m. Maximum storage size is approximately 20 m<sup>3</sup>.



## TPYM Walking floor systems

The floor discharger is based on the same technology as the Walking Floor Units, but it is delivered in loose parts. The dischargers must be assembled together with the casting work. The number and length of the rakes is variable, making the floor discharger ideal for different storage solutions. The base area of the floor discharger storages can vary between 7,5 – 40 m<sup>2</sup>. The capacity of the storage can be up to 200 m<sup>3</sup>.

Contents of delivery:

- Base bars 2-4 pcs D
- Side bar (length according to number of rakes) C
- Discharger rake bars with cylinders (2-4 pcs) and guiding tunnels required for their attachment B
- Partition wall (length according to number of rakes) G
- Storage screw with gear motor F
- Hydraulic unit H
- Opposing rakes (1-3 pcs/bar space), Accessory

NOTE! Scope of delivery can vary case by case.

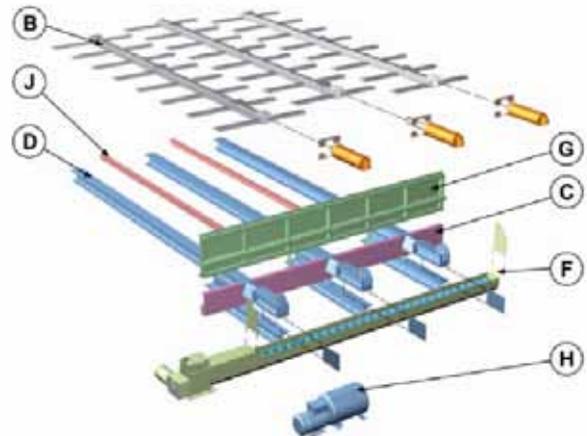
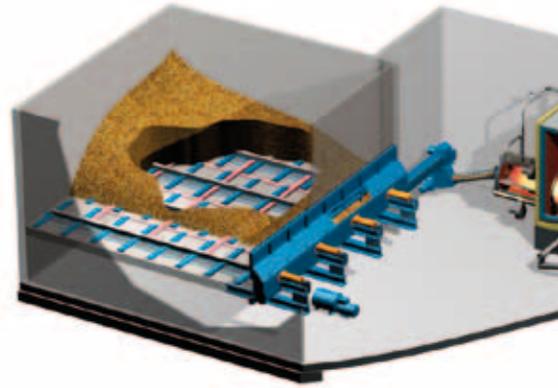
## Walking Floor Unit K4

The Walking Floor Unit bottom K4 has a module structure, where the base module is 2x4 m in size. With additional modules the discharger size can be extended to 4x4 m or 6x4 m. This will allow longer refilling periods even in larger bio heating plants. The maximum filling height is determined by the moisture of fuel: 20 % fuel moisture sets maximum filling height to 6 m and 45 % to 4 m.

Modules are easily transportable in the normal freight transport. The modules are combined and the rakes and storage screw mounted at the destination.

Contents of delivery:

- A robust steel structure
- Hydraulic cylinders for the Walking Floor Unit rakes (2 pcs)
- Hydraulic unit 1,5 kW
- Storage screw d135 mm + drive motor 1,5 kW
- Storage screw tray width 194 mm, Walking Floor Unit rakes according to the number of chosen modules (2 pcs)
- Inspection hatch limit switch
- AVTA-valve



### TPYM

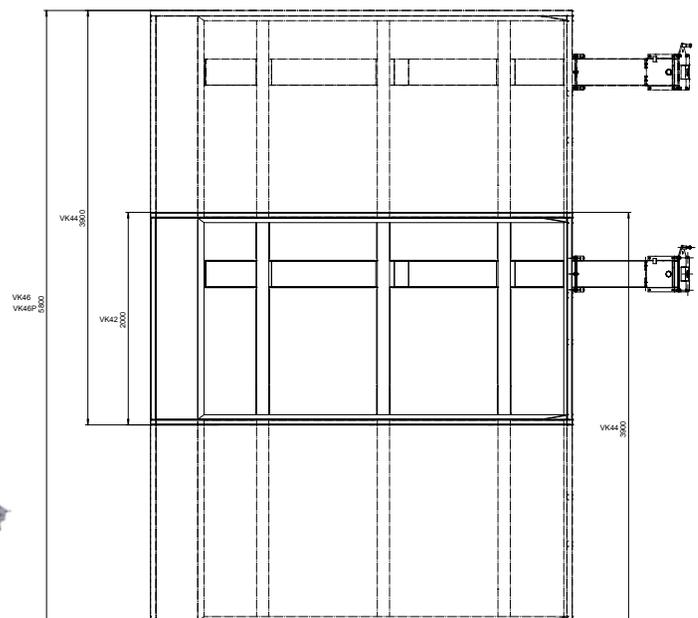
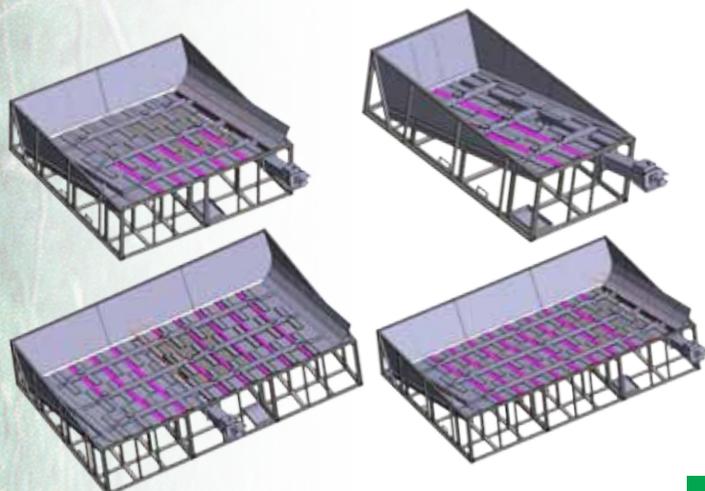
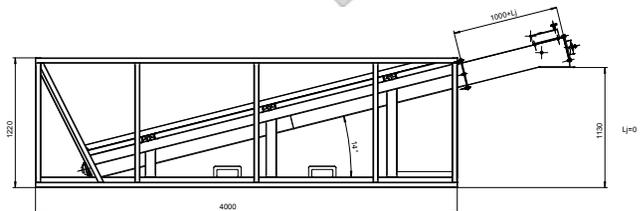
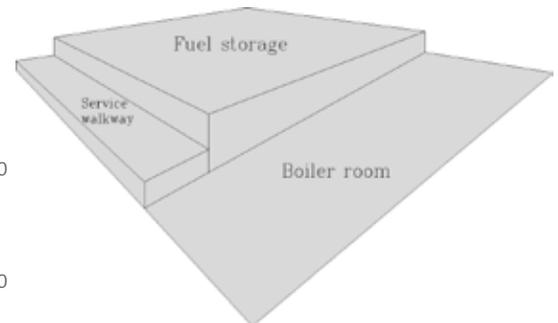
\*) Floor concreting heights mm

#### Before assembly

- fuel storage +720
- service walkway +360
- boiler room +- 0

#### Final levels

- fuel storage +880
- service walkway +520
- boiler room +- 0



## ■ Pellet silos

The choice of technically working and correctly dimensioned pellet silo plays a very important part in designing the heating centre. The silos Ariterm supplies for are a result of a long term development work. We can offer a silo suitable for your needs from several volume choices and accessory options.

The silos are delivered to the installation site factory-made. The silo is lifted onto the foundation and the legs welded to the precast supports. Silo is ready to use after this.

The angle of the base cone in the blow filled cylindrical vertical silo is 60 degrees. The sufficient angle prevents the vaulting of the pellets. There is a dust separation cone on the top of the silo which will return the collected wood dust back to the silo helping to keep the environment around the silo tidy. Light coloured surface finishing keeps the pellet cool and the silo good looking.

The inspection glasses on the side of the silo help to estimate the amount of the fuel in the silo. The Ariterm automation will send an alarm to the person on call when the fuel level falls below the low level guard installed in the silo.

For more accurate fuel amount measurement, which will help to control especially the fuel logistics, the silos can be equipped with a weighing system. This connected to the remote use of the control automation will considerably ease the heating centre use operations and follow up. Taulukossa on tarjolla olevat siilomallit. Järjestelmä varustetaan usein kahdella siilolla, josta on seuraavia etuja:



Pellet silos at the heating area of Halesa Oy in Nokia



Pellet silos at the heating area of Savon Voima in Sorsakoski

The silos we offer are presented in the table. The system is generally equipped with two silos offering the following benefits:

1. Better operational reliability
2. Enables use of fuel mixes
3. Eases timing of pellet logistics
4. Two silos will generally merge better into the environment than the same volume implemented as a single silo

### ■ Determining the capacity of the fuel storage

Decide on a suitable refill interval - in other words, how often you want to take care of the fuel refill. Choose the capacity of the storage according to the desired fuel storage refill interval and the calculated daily consumption (calculated by power requirement and fuel, see the adjacent chart).

$$S_{\text{storage capacity}} = \text{refill interval} \times \text{daily consumption}$$

The chart emphasises the maximum daily fuel consumption (consumption on the highest continuous power). In other words, the storage capacity calculated by this value is sufficient for the desired refill interval in the coldest period in the winter. At other times, the storage refill interval will be longer.

| Ø 2,3 m       |     |     |      |      |      |      |      |
|---------------|-----|-----|------|------|------|------|------|
| Capacity (m3) | 9   | 14  | 19   | 24   | 29   | 32   | 34   |
| Tonnage (tn)  | 5,8 | 9,1 | 12,3 | 15,6 | 18,8 | 20,5 | 22,1 |
| Height (m)    | 4,8 | 6   | 7,3  | 8,5  | 9,8  | 10,4 | 11   |

| Ø 2,85 m      |      |      |      |      |      |      |
|---------------|------|------|------|------|------|------|
| Capacity (m3) | 30   | 38   | 46   | 54   | 62   | 70   |
| Tonnage (tn)  | 19,5 | 24,7 | 29,9 | 35,1 | 40,3 | 45,5 |
| Height (m)    | 7,8  | 9    | 10,2 | 11,5 | 12,8 | 14   |

| Ø 3,3 m       |       |      |       |      |
|---------------|-------|------|-------|------|
| Capacity (m3) | 74    | 84,5 | 95    | 106  |
| Tonnage (tn)  | 48    | 55   | 62    | 69   |
| Height (m)    | 11,85 | 13,1 | 14,35 | 15,6 |

Measurements of Triotec silos

| Power kW | Daily consumption pellet i-m <sup>3</sup> | Daily consumption wood chip i-m <sup>3</sup> |
|----------|---|--|
| 40       | 0,3                                       | 1,1  |
| 60       | 0,5                                       | 1,6  |
| 80       | 0,6                                       | 2,1  |
| 120      | 1,0                                       | 3,2  |
| 150      | 1,2                                       | 3,6  |
| 200      | 1,6                                       | 4,8  |
| 250      | 2,0                                       | 6,0  |
| 300      | 2,4                                       | 8,0  |
| 400      | 3,2                                       | 10,7   |
| 500      | 4,0                                       | 13,3   |
| 700      | 5,6                                       | 18,7   |
| 1000     | 8,0                                       | 26,6   |

|  | Example 1. FARM            | Example 2. TERRACED HOUSE + SCHOOL |
|--|----------------------------|------------------------------------|
| Maximum power                                  | 60 kW                      | 200 kW                             |
| Fuel   | wood chip                  | pellet                             |
| Suitable burner                                | HakeJet                    | BioJet                             |
| Daily consumption at max. power m <sup>3</sup> | 1,6                        | 1,6                                |
| Desired refill interval                        | 4 days                     | 1 week                             |
| Silo capacity                                  | 4x1,6 = 6,4 m <sup>3</sup> | 7x1,6 = 11 m <sup>3</sup>          |



Pellet silos in Laukaa

Ariterm bio heating systems are controlled by versatile automation that can be complemented with multiple accessories according to the needs of the user.

### ■ Arimatic 151

Arimatic 151-steering centre is suitable for 40-150 kW bio heating systems with HakeJet-, BioJet and MultiJet-burners. The steering is carried out with programmable Siemens logic and the user interface is easy to use 4,3" colour touch screen display. Burner power is controlled continuously according to heating requirements.

The standard steering functions included in the centre are feeding screw, storage screw, primary and secondary fans (EC-fans), flue gas fan, and BioComp boiler convection cleaning motor and heat exchanger pump.

Accessory steering functions available are bar discharger, pulse extinguishing system, cell feeder, boiler mixing pump, automatic ignition, ash screws (1-2 pcs), MultiJet-burner, cooling pump for BioJet-burner, heating circuit control and accumulator use. The centre can also be equipped with USP battery back-up, GSM-text message alarm system, residual oxygen measuring, flue gas temperature measurement, container kit and silo low level guard.

**Cabinet size: H840 x W600 x D200 mm (Note! UPS battery back-up is housed in a separate cabinet).**

### ■ Arimatic 500 Wood chip/Pellet

Arimatic 500-steering centre is suitable for 200-500 kW bio heating systems with HakeJet-, BioJet and MultiJet-burners. The steering is carried out with programmable Siemens logic and the user interface is easy to use 4,3" colour touch screen display. Burner power is controlled continuously according to heating requirements.

The standard steering functions included in the Arimatic 500 Pellet-steering centre are feeding screw (frequency converter controlled), storage screw, EC- combustion air fans (4 pcs), ash screws (2 pcs), as well as cooling pump for BioJet-burner and boiler mixing pump. The UPS battery back-up is also included as standard.

The standard steering functions included in the Arimatic 500 Wood chip-steering centre are feeding screw, storage screw, bar discharger, pulse controlled extinguishing system, combustion air fans (4 pcs), ash screws (2 pcs) and boiler mixing pump. The UPS battery back-up is also included as standard.

Accessory steering functions available are flue gas fan, second storage screw, cell feeder, boiler mixing pump, automatic ignition, additional ash screws (max.4 pcs), MultiJet-burner, pneumatic cleaning (max. 7 valves), heating network pump, heating circuit control and accumulator use. The centre can also be equipped with USP battery back-up, GSM-text message alarm system, residual oxygen measuring, flue gas temperature measurement, container kit and silo low level guard. The centre can also be equipped with 7" touch screen display, GSM-text message alarm system, residual oxygen measuring, flue gas temperature measurement, container kit, reserve outputs, energy metering (Kamstrup Multical 801-connection) and silo low level guard.

**Cabinet size: H1120 x W1050 x D300 mm.**

### ■ Arimatic 550 XDA

Arimatic 550- steering centre is suitable for 200-500 kW grain drying systems with HakeJet- and MultiJet-burners. Heating request coming from the grain dryer steers the burner to power mode. When the request comes to an end the burner either goes to the up keeping mode or through the shutdown sequence to wait for another heating request. The steering is carried out with programmable Siemens logic and the user interface is easy to use 4,3" colour touch screen display. Burner power is controlled continuously according to heating requirements.

The standard steering functions included in the Arimatic 550 steering centre are feeding screw, storage screw, bar discharger, EC- combustion air fans (4 pcs), ash screws (2 pcs) and flue gas fan (max 2.2 kW). The UPS battery back-up, cabinet heating and storage screw level control to ensure fast filling of the storage screw are also included as standard.

Accessory steering functions available are MultiJet-burner, cell feeder, second storage screw, pulse operated extinguishing system and automatic ignition. The centre can also be equipped with 7" touch screen display, GSM-text message alarm system, container kit and flue gas temperature measurement.

**Cabinet size: H1120 x W1050 x D300 mm.**

### ■ Arimatic 1001

Arimatic 1001 is versatile steering automation for bio heating systems that can be tailored to meet the requirements of each delivery. The steering centre is suitable for 1-bur-

ner systems from 200 kW to 1500 kW (HakeJet, BioJet and MultiJet). The steering is carried out with Siemens programmable logic and programmable safety relay from Pilz . The fans are controlled by bus-controlled frequency converters. System interface is an easy to use 7” touch screen display.

AM1001 can be equipped with AM500 features but also e.g. with oil burner input and Modbus connection.

**Cabinet size: H1900 x W1200 x D400 mm (if required W1600 mm).**

### ■ Arimatic 2002

Arimatic 1002 is versatile steering automation for bio heating systems that can be tailored to meet the requirements of each delivery. The steering centre is suitable for 2-burner systems from 200 kW to 3000 kW. The steering is carried out with Siemens programmable logic and programmable safety relay from Pilz . The fans are controlled by bus-controlled frequency converters. System interface is an easy to use 7” touch screen display.

| Heating system                       | AM151 | AM500 | AM550XDA | AM1001 | AM2002 |
|--------------------------------------|-------|-------|----------|--------|--------|
| HakeJet, BioJet, MultiJet 40-150 kW  | x     |       |          |        |        |
| HakeJet, BioJet, MultiJet 200-500 kW |       | x     | x        | x      |        |
| BioJet, MultiJet 700-1500 kW         |       |       |          | x      |        |
| Dual burner solutions                |       |       |          |        | x      |

**Cabinet size: K1900 x L1200 x S400 mm (if required L1600 mm).**

### ■ Arimatic Easy Remote

Ariterm Arimatic Easy Remote –remote control system enables easy and effortless controlling of the bio heating system anytime and from anywhere you are.

The remote control system can be fitted with video controlling which gives you real-time monitoring of the system – like you were there.

A secured remote connection to the system over the internet is formed either from a computer or an Android mobile device. The connection is made with 3 G, WLAN or LAN – network connection.

Arimatic Easy Remote is available for systems manufactured from year 2009 onwards (if the display has a network connection) and as an option for new Aritermin manufactured heating centres.

|                                       | AM151 | AM500P             | AM550H             | AM1001  | AM2002  |
|---------------------------------------|-------|--------------------|--------------------|---------|---------|
| Screen size                           | 4.3"  | 4.3 / 7"           | 4.3/7"             | 7 / 10" | 7 / 10" |
| Control of walking floor unit         | L     | L                  | V                  | L       | L       |
| Storage 2                             | -     | L                  | L                  | L       | L       |
| Automatic ignition                    | L     | L                  | L                  | L       | L       |
| Automatic cleaning                    | V     | L (max 7)          | L (max 7)          | L       | L       |
| MultiJet 40-150 kW control            | L     | -                  | -                  | -       | -       |
| MultiJet 200-500 kW control           | -     | L                  | L                  | L       | L       |
| MultiJet 700-1500 kW control          | -     | -                  | -                  | L       | L       |
| BioJet cooling pump control           | L     | V                  | L                  | L       | L       |
| Water network pump control            | -     | L                  | L                  | L       | L       |
| Boiler water mixing pump control      | L     | V                  | V                  | L       | L       |
| BioComp boiler control                | V     | L                  | L                  | L       | -       |
| UPS battery backup                    | L     | L                  | L                  | L       | L       |
| GSM modem                             | L     | L                  | L                  | L       | L       |
| Modbus connection                     | -     | -                  | -                  | L       | L       |
| Arimatic Easy Remote                  | L     | L                  | L                  | L       | L       |
| Energy measurement (MC801 connection) | -     | L                  | L                  | L       | L       |
| Consumption meter for electricity     | -     | -                  | -                  | L       | L       |
| Measurement for residual oxygen       | L     | L                  | L                  | L       | L       |
| Lower limit watch of silo             | L     | L                  | L                  | L       | L       |
| Temperature of flue gas               | L     | L                  | L                  | L       | L       |
| Pump control                          | L     | L                  | V                  | L       | L       |
| Flue gas fan control                  | V     | L max 3.0 kW       | L max 3.0 kW       | L       | L       |
| Ash removal screw control             | L (2) | V (2)<br>L (max 4) | V (2)<br>L (max 4) | L       | L       |
| Cell feeder control                   | L     | L                  | L                  | L       | L       |
| Heating circuit control               | L     | L (2)              | L (2)              | L       | L       |
| Water charger control                 | L     | L                  | L                  | L       | L       |
| Container equipments                  | L     | L                  | L                  | L       | L       |
| Oil burner control                    | -     | -                  | -                  | L       | L       |



Fire is an essential part of any bio heating system. When working with fire, it is always necessary to take great care and remember that the system is as safe as its weakest link. Nevertheless, a well designed, built and maintained bio heating system is safe to use. In screw-conveyed solid fuel devices the danger is caused when the fire in the burning head starts to crawl backwards to the direction of the fuel storage. The Ariterm bio burning systems have been designed with burn back protection in mind, and the extinguishing systems will extinguish a possible back fire as it starts.

The right measuring of the chimney is very important for burn back prevention. Make sure the seam between the boiler and chimney is airtight. The user must make sure that there is a low pressure in the boiler's fire chamber at all times (draft from the boiler to the chimney). If this is not the case, the risk of burn back will increase significantly. Low pressure can be induced by a sufficiently long chimney with a correctly measured inner diameter. The surest way to take care of a sufficient low pressure in all circumstances is to equip the boiler with a flue gas fan. A low pressure gauge, installed in the fire chamber of the boiler, is a good accessory for ensuring the functioning and adjustments of the system. It controls the flue gas fan keeping the fire chamber pressure constant.

Equipment delivered by Ariterm has been manufactured to meet the instructions of the Federation of Finnish Insurance Companies (2006) concerning fire protection/burn back protection safety of solid fuels.

## ■ The burn back protection of a wood chip heating system

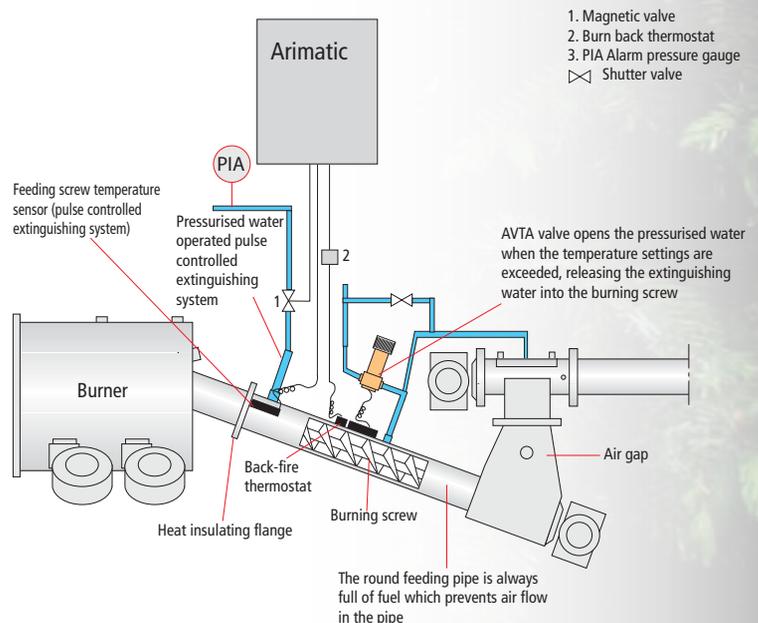
1. Directed by the temperature sensor, the pulse controlled extinguishing system sprays water into the feeding screw to increase fuel moisture and lower the temperature. This takes away the conditions the fire needs to spread. The system does not turn the machinery off or make an alarm.
2. Directed by the temperature sensor, the automatic turns the screw for a set time to drive the seat of fire out of it. The system turns the machinery off and makes an alarm.
3. Directed by the temperature sensor, the AVTA valve sprays water into the feeding system, thus extinguishing the fire.

The abovementioned active fire safety systems, combined with structural fire safety solutions, guarantee a safe and functional bio heating system. For the best possible result, we recommend contacting the local fire authorities already in the designing phase.

In pellet devices the water extinguishing system should be replaced by a powder extinguishing system.

## ■ The following solutions tell of the thorough fire safety planning of the Ariterm burners:

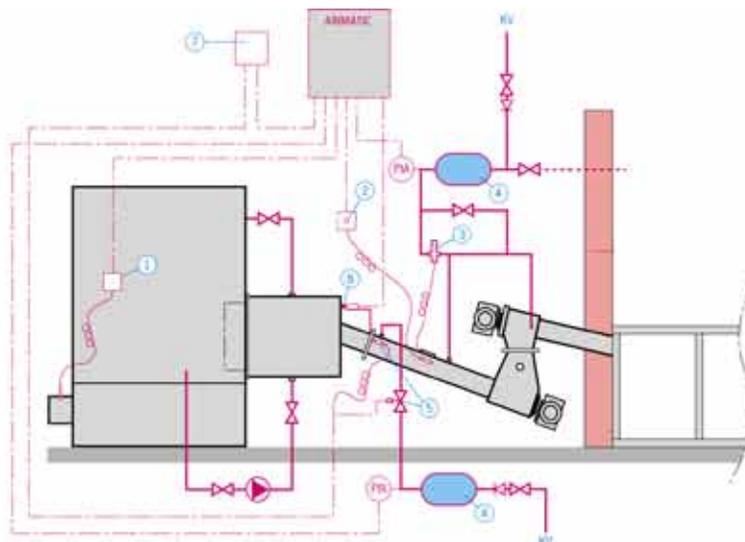
- a round screw in a round feeding pipe: the pipe is always full of fuel
- two-screw feeding system: air gap between the screws and a rising burning screw
- a flange between the burning head and the fuel feeding pipe hinders the transmission of heat
- AVTA valve, a thermostatic extinguishing system functioning by pressurised water, backed up by an expansion tank in case of network pressure loss. Nozzles for the burning screw and the free fall funnel. The AVTA valve is self-powered and needs no electricity etc. to function. (AVTA is an optional equipment in T1, T2, K2 and K4)
- automatics, thermostat-controlled burn back protection (if the temperature in the feeding screw rises over the set value, the blowers will stop and the automatic system will drive the screw for a set time to empty it of the overheated fuel)
- limit switches in the burner and the lid of the silo
- automatic dry powder extinguishing system for pellet
- alarm connection to a GSM phone



# BURN BACK PROTECTION CONNECTIONS

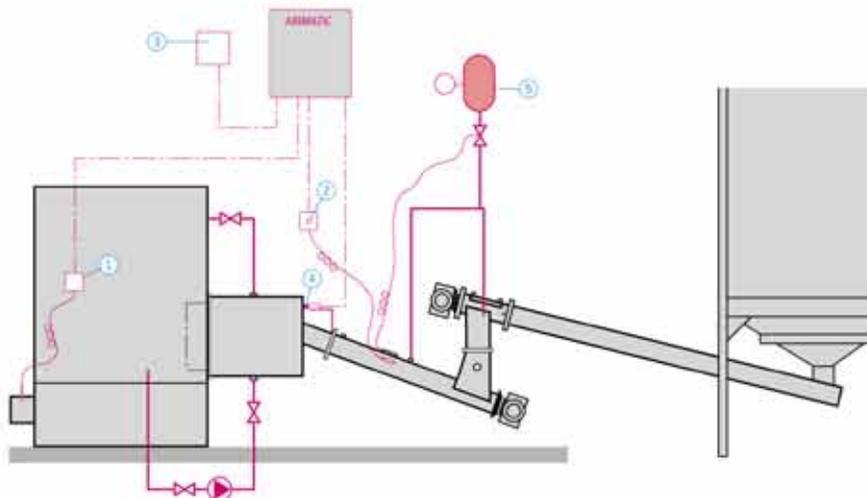
## Wood chip systems

1. Flame control thermostat
  2. Burn back thermostat
  3. AVTA valve, self-operated DN 25
  4. Expansion tank 35-50 l, prepressured 100 kPa
  5. Pulse controlled burn back protection: temperature control for magnetic valve and feeding screw
  6. UPS device
  7. Dislocation limit switch for burner head
- PIA Alarm pressure gauge, 0-600 kPa
- ✕ Shutter valve
- ◀ Non-return valve
- KV Cold water



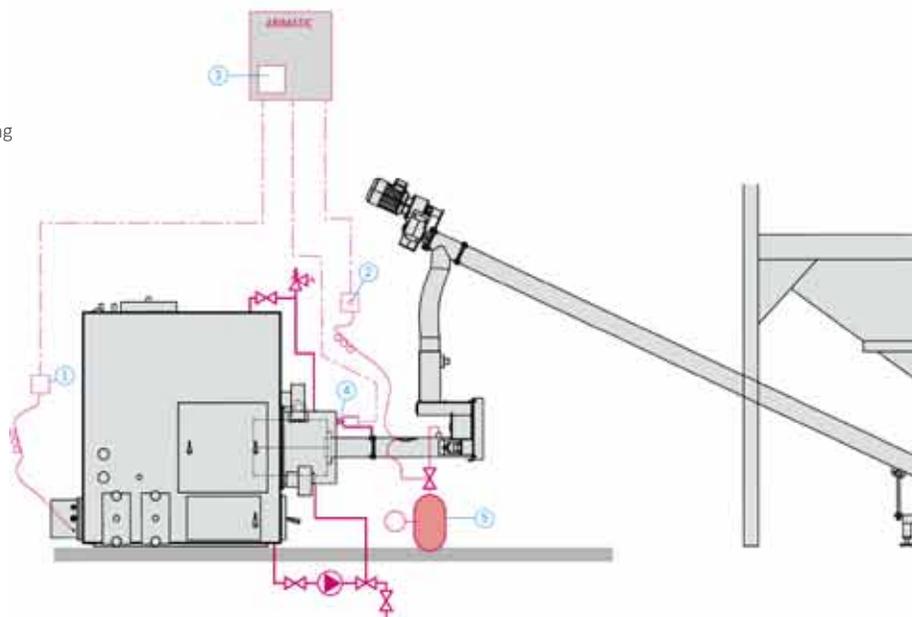
## Pellet systems

1. Flame control thermostat
  2. Burn back thermostat
  3. UPS device
  4. Dislocation limit switch for burner head
  5. Powder extinguishing system with two hoses and alarming pressure gauge
- ✕ Shutter valve



## Pellet systems PS-10/PS-13

1. Flame control thermostat
  2. Burn back thermostat
  3. UPS device
  4. Dislocation limit switch for burner head
  5. Powder extinguishing system and alarming pressure gauge
- ✕ Shutter valve



## Powerful 1.5 bar Bio Boilers 40 - 80 kW

The bio boilers in the Arimax 300 series are efficient and easy to use. All boilers are available as right/left models, with burner openings always in the front and on either side. An ash chamber comes with all boilers as a standard feature.

The boiler is compatible with e.g. HakeJet, BioJet and MultiJet burners. The square burner opening enables the use of other burner solutions as well. The boilers are easy to clean through the large maintenance and cleaning hatches.

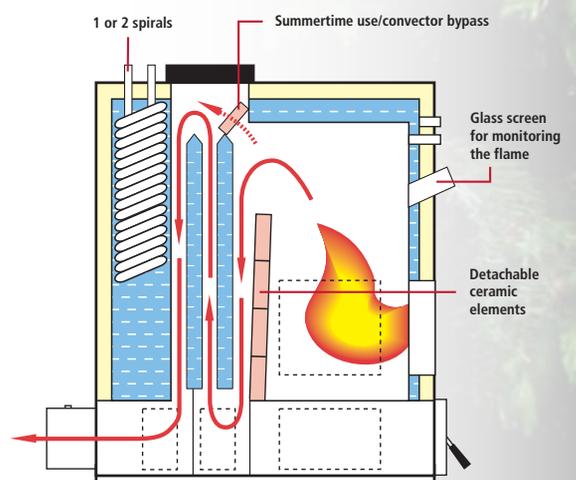
The chimney duct can be installed from behind or on either side. The ceramic back wall of the fire chamber adds efficiency and maintains clean burning, especially with



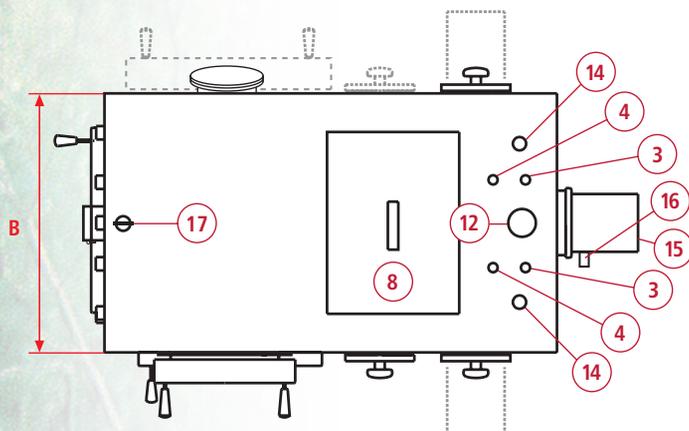
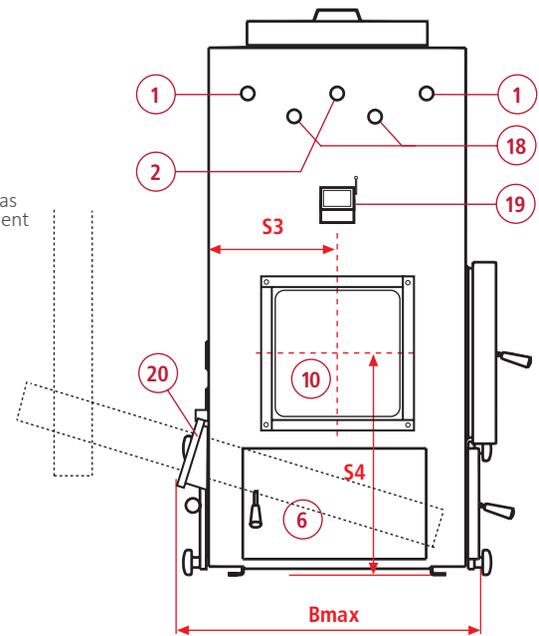
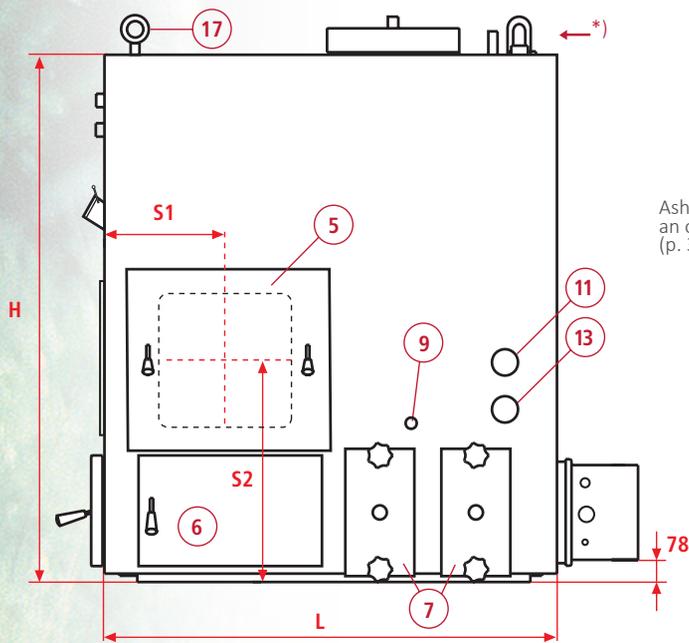
| Boiler                                 | 340       | 360       | 380       |
|--|-----------|-----------|-----------|
| Power kW                               | 40        | 60        | 80        |
| Weight kg                              | 522       | 670       | 830       |
| Capacity l                             | 210       | 280       | 370       |
| Max. operating pressure bar            | 1,5       | 1,5       | 1,5       |
| Max. operating temperature °C          | 120       | 120       | 120       |
| <b>Fire chamber measurements</b>       |           |           |           |
| Fire chamber height mm                 | 780       | 920       | 1080      |
| Fire chamber width mm                  | 400       | 480       | 550       |
| Fire chamber depth mm                  | 400       | 480       | 550       |
| Fire chamber capacity m <sup>3</sup>   | 0,125     | 0,212     | 0,327     |
| Fire surface m <sup>2</sup>            | 3,7       | 5,5       | 7,4       |
| Fire surface loading kW/m <sup>2</sup> | 10,8      | 10,8      | 10,8      |
| Burner opening size mm x mm            | 250 x 250 | 360 x 360 | 400 x 400 |
| <b>Other measurements</b>              |           |           |           |
| Chimney duct size mm                   | 138 x 226 | 138 x 226 | 138 x 226 |
| Chimney duct, min. ø mm                | 150       | 180       | 200       |
| Chimney duct length min. m             | 4         | 6         | 8         |
| Flow/return connection DN              | 50        | 50        | 50        |
| Expansion connection DN                | 25        | 25        | 25        |
| Thermostat connection DN               | 20        | 20        | 20        |
| Warm water spiral 56 kW                | on        | on        | on        |
| Additional spiral possibility 56+56 kW | ei        | on        | on        |

The bio boilers in the Arimax 300 series use authentic vertical convection, which extends the period between cleanings significantly. The large fire chamber in the boiler has been designed specifically for bio fuels. Versatile hatches and connections enable several different assembly options.

It is also possible to install several electric resistances into the boiler as emergency heat sources. The boiler convector is equipped with a detachable ceramic bypass plate. During summertime, when heat requirements are very small, the bypass plate can be removed. This makes the burner more steady and safe. The spacious ash chamber, included as a standard feature, is insulated from the outside.



| Boiler  | 340       | 360       | 380       |
|---|-----------|-----------|-----------|
| Boiler height H mm                              | 1285      | 1425      | 1585      |
| Boiler width B mm                               | 620       | 700       | 770       |
| Boiler depth L mm                               | 1090      | 1192      | 1300      |
| Maintenance/burner hatch measurements mm        | 250 x 250 | 360 x 360 | 400 x 400 |
| Min. transportation width B max. mm             | 740       | 820       | 890       |
| <b>Locations of the midpoint of the hatches</b> |           |           |           |
| Side hatch, from front S1 mm                    | 290       | 350       | 364       |
| Side hatch, from floor S2 mm                    | 555       | 616       | 650       |
| Front hatch, from side S3 mm                    | 310       | 350       | 385       |
| Front hatch, from floor S4 mm                   | 555       | 616       | 650       |



#### STANDARD EQUIPMENT:

- cleaning tools
- pressure gauge/thermometer
- combustion gas thermometer
- warm water spiral

#### OPTIONAL EQUIPMENT:

- additional spiral (for warm service water, not for Arimax 340 Bio)
- underpressure controlled flue gas fan
- ash screw kit
- safety valve
- electric resistance with a thermostat 6 kW
- oil burner equipment (hatch set)
- pellet burning equipment
- \*) lifting eye (detachable)

1. Damper/thermostat connection DN20
2. Thermometer connection DN 20
3. Cold water  $\varnothing$  22
4. Warm water  $\varnothing$  22
5. Maintenance/oil burner hatch
6. Ash hatch
7. Cleaning hatch
8. Sooting hatch
9. Drain connection DN 15
10. Burner opening, can also be on the side of the boiler

11. Electric resistance connection DN 50
12. Output to network DN 20
13. Return from network DN 50
14. Expansion/safety valve DN 25
15. Chimney duct, also sides 138x226 mm
16. Combustion gas measurements
17. Lifting eye
18. Measuring connection for the fire chamber (2) DN 20
19. Viewing screen
20. Ash screw connection

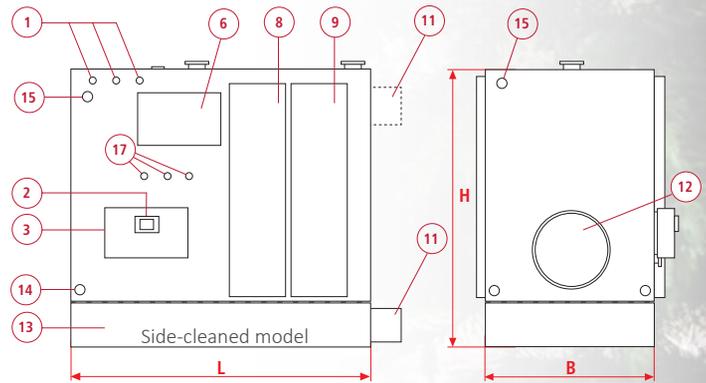
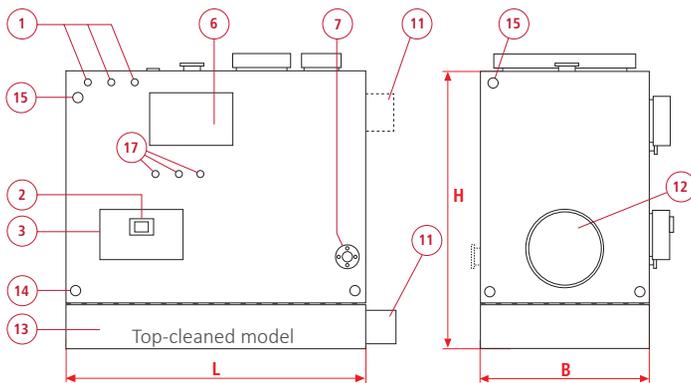
- nominal output 120...3000 kW
- compatible with Ariterm's bio burners
- max. working pressure 4-10 bar
- can be equipped with a domestic hot water heat exchanger
- the boiler has the necessary hatches for cleaning and fire maintenance. Depending on the model, the convection part is cleaned from the top or from the side of the boiler. The position of the fire chamber hatches can be determined separately while ordering.
- the structure is open at the bottom: insulated ash chamber and screw system for ash removal available as optional equipment

### Accessories:

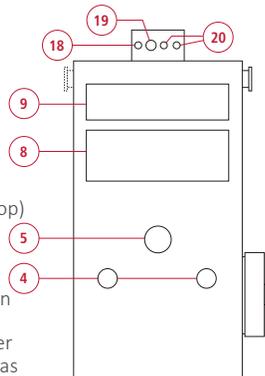
- Insulated steel ash chamber
- Ash screws
- Compressed air operated automatic convector cleaning
- Vacuum-controlled flue gas fan
- Flue gas cleaner
- Oil burner hatch
- Additional connections are available at 500 kW models or above



Pictured here is a side-cleaned model with the back convector cleaning hatch opened. The ash chamber seen on the bottom of the boiler is an accessory.

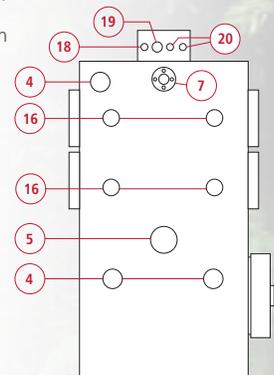


1. Thermostat connections (both sides)
2. Flame monitoring screen
3. Burning head/fire chamber maintenance (back or side)
4. Expansion/relief valve connection
5. Flow connection
6. Maintenance hatch
7. Return connection
8. Front convector cleaning
9. Back convector cleaning
10. Damper plate
11. Chimney duct (in 120-150 kW models on top)
12. Burner hatch (front or side)
13. Ash chamber (accessory)
14. Connection to water-space (lower corners)
15. Burning head cooling circulation connection
16. Automatic cleaning connections
17. Measuring connections for the fire chamber
18. Heat/analysis connection for combustion gas
19. Connection for lambda sensor
20. Combustion gas measuring connections (2)



### Side-cleaned models:

- 120- 1000 kW, cleaning from the side chosen by customer
- Accessory: 120- 1000 kW, cleaning from both sides
- Recommendation: 500- 1000 kW boilers, cleaning from both sides



5-draught bio boilers

| Power kW                             | 120                 | 150                 | 200  | 250  | 300  | 400  | 500  | 700  | 1000  | 1500  | 2000  | 2500  | 3000  |
|--------------------------------------|---------------------|---------------------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| Width B mm                           | 980                 | 980                 | 980  | 1030 | 1080 | 1180 | 1285 | 1485 | 1685  | 1885  | 1985  | 1985  | 1985  |
| SP-model extra width +mm             | +340                | +340                | +340 | +340 | +340 | +340 | +340 | +340 | +340  | +340  | +340  | +340  | +340  |
| Depth L mm                           | 1690                | 1790                | 1990 | 2090 | 2270 | 2370 | 2615 | 2915 | 3315  | 3615  | 4360  | 4960  | 5560  |
| Height H mm                          | 1540                | 1740                | 1540 | 1590 | 1640 | 1840 | 1845 | 2145 | 2345  | 2645  | 2745  | 3045  | 3295  |
| Weight kg                            | 1250                | 1450                | 1650 | 1800 | 2200 | 2700 | 2920 | 3850 | 6100  | 8650  | 11300 | 12700 | 13960 |
| Capacity dm <sup>3</sup>             | 500                 | 600                 | 710  | 800  | 860  | 1100 | 1750 | 2410 | 2850  | 4250  | 5400  | 6390  | 7330  |
| Max. working pressure bar            | 4                   | 4                   | 4    | 4    | 4    | 4    | 4    | 4    | 4     | 4     | 4     | 4     | 4     |
| Max. working temperature °C          | 120                 | 120                 | 120  | 120  | 120  | 120  | 135  | 135  | 135   | 135   | 135   | 135   | 135   |
| Fire chamber width mm                | 700                 | 700                 | 700  | 750  | 800  | 900  | 1000 | 1200 | 1400  | 1600  | 1700  | 1700  | 1700  |
| Fire chamber depth mm                | 800                 | 900                 | 900  | 1000 | 1100 | 1200 | 1300 | 1600 | 1700  | 2000  | 2300  | 2900  | 3500  |
| Fire chamber height mm               | 1400                | 1600                | 1400 | 1450 | 1500 | 1700 | 1700 | 2000 | 2200  | 2500  | 2600  | 2900  | 3150  |
| Fire chamber capacity m <sup>3</sup> | 0,7                 | 1,0                 | 0,8  | 1,1  | 1,3  | 1,8  | 2,2  | 3,8  | 5,5   | 8,1   | 10,2  | 14,3  | 18,7  |
| Fire surface m <sup>2</sup>          | 19,0                | 22,0                | 25,9 | 30,8 | 33,7 | 43,9 | 54,3 | 75,2 | 105,2 | 161,2 | 212,7 | 268,8 | 315,8 |
| Fire surface load kW/m <sup>2</sup>  | 6,3                 | 6,8                 | 7,7  | 8,1  | 8,9  | 9,1  | 9,2  | 9,3  | 9,5   | 9,3   | 9,4   | 9,3   | 9,5   |
| Chimney duct location D mm           | 1230 <sup>(1)</sup> | 1430 <sup>(1)</sup> | 50   | 50   | 50   | 50   | -    | -    | -     | -     | -     | -     | -     |
| Chimney duct height E mm             | 250                 | 250                 | 250  | 250  | 250  | 250  | -    | -    | -     | -     | -     | -     | -     |
| Chimney duct width F mm              | 300                 | 300                 | 400  | 400  | 500  | 500  | -    | -    | -     | -     | -     | -     | -     |
| Flow/return connection DN            | 50                  | 50                  | 65   | 65   | 65   | 80   | 80   | 100  | 100   | 125   | 150   | 200   | 200   |
| Expansion connection DN              | 50                  | 50                  | 50   | 50   | 50   | 50   | 50   | 50   | 50    | 65    | 80    | 80    | 100   |
| Thermostat connections DN            | 20                  | 20                  | 20   | 20   | 20   | 20   | 20   | 20   | 20    | 20    | 20    | 20    | 20    |

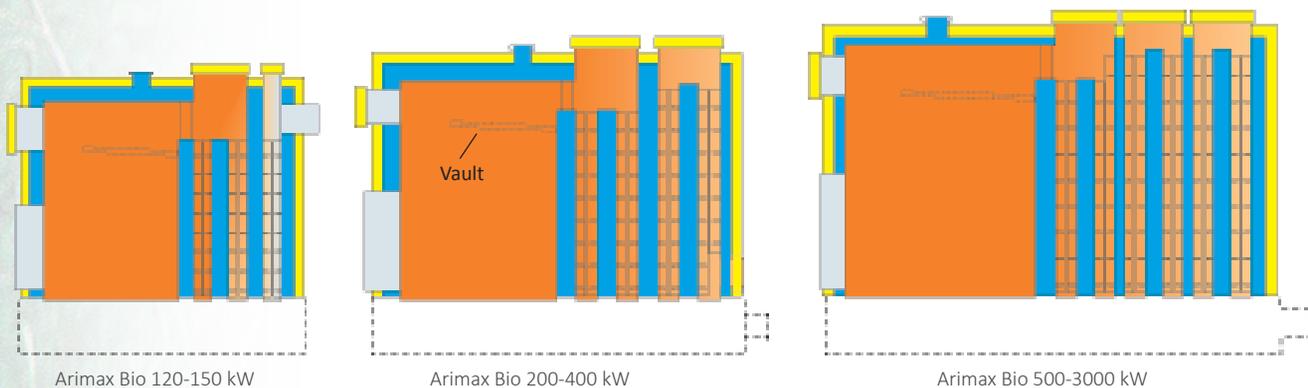
<sup>(1)</sup>Measurement for the top-cleaned model: the side-cleaned model is 100 mm shorter.

Ask the factory for an alternative order form.

■ 6 and 10 bar boilers 500 - 3000 kW

| Power kW  | 500  | 700  | 1000 | 1500  | 2000  | 2500  | 3000  |
|---|------|------|------|-------|-------|-------|-------|
| Working pressure 6 bar, max. working temperature 150 °C, Weight kg  | 3050 | 3990 | 6320 | 8960  | 11650 | 13170 | 14400 |
| Working pressure 10 bar, max. working temperature 175 °C, Weight kg | 3450 | 4550 | 7270 | 10100 | 13200 | 14950 | 16950 |

■ Draft of boiler cross sections

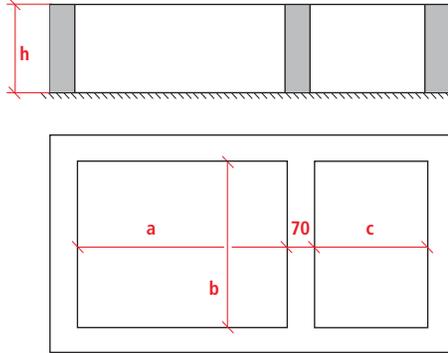


For top-cleaned models, the boiler room height needs to be 2 x the height of the boiler. The arch is standard only in those 200- 400 kW boilers equipped with an Ariterm burner.

### ■ Bricked ash chamber measuring guide

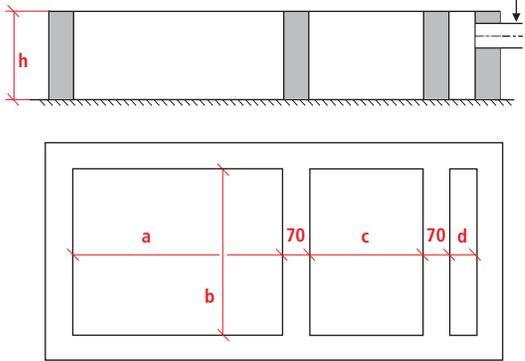
The ash chamber can be made from bricks by scale on the spot. Boilers equipped with steel bases are also available. The measurements are in millimetres. Measurement **h** is the minimum height.

Power range 120 - 150 kW



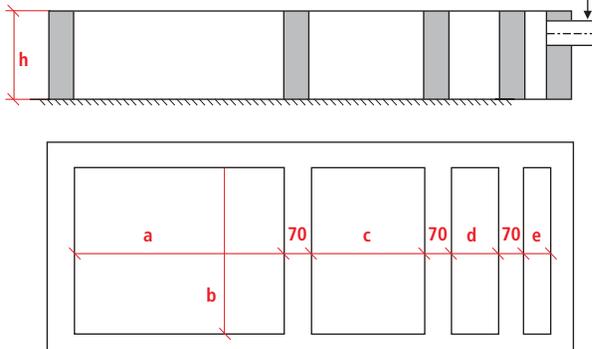
Power range 200 - 400 kW

Chimney pipe in the base



Power range 500 - 3 000 kW

Chimney pipe in the base



### ■ Arimax Bio 120-3000 kW chimney recommendations

In five-draught boilers with power exceeding 500 kW, the diameter of the pipe is determined by the used flue gas fan (booster/flow rate – pressure loss).

Chimney pipe minimum diameters (flow rate 16 m/s)

| Boiler power kW | 120 | 150 | 200 | 250 | 300 | 400 | 500 | 700 | 1000 | 1500 | 2000 | 2500 | 3000 |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| Chimney Ø mm    | 150 | 150 | 175 | 175 | 175 | 200 | 200 | 250 | 300  | 350  | 400  | 450  | 500  |

The height of the chimney is chosen according to the demands of the buildings and other surroundings.

| Power | a    | b    | c    | d   | e   | h    | Ash chamber weight (kg) |
|-------|------|------|------|-----|-----|------|-------------------------|
| 120   | 825  | 730  | 540  | -   | -   | 350  | 252                     |
| 150   | 925  | 730  | 540  | -   | -   | 350  | 265                     |
| 200   | 925  | 730  | 536  | 135 | -   | 350  | 296                     |
| 250   | 1025 | 780  | 536  | 135 | -   | 350  | 325                     |
| 300   | 1125 | 830  | 596  | 155 | -   | 500  | 452                     |
| 400   | 1225 | 930  | 596  | 155 | -   | 500  | 495                     |
| 500   | 1325 | 1030 | 354  | 334 | 135 | 500  | 580                     |
| 700   | 1625 | 1230 | 354  | 334 | 135 | 800  | 875                     |
| 1000  | 1725 | 1430 | 596  | 374 | 155 | 800  | 1234                    |
| 1500  | 2025 | 1630 | 596  | 374 | 155 | 800  | -                       |
| 2000  | 2325 | 1730 | 1040 | 374 | 155 | 1000 | -                       |
| 2500  | 2925 | 1730 | 1040 | 374 | 155 | 1000 | -                       |
| 3000  | 3525 | 1730 | 1040 | 374 | 155 | 1000 | -                       |

When using the flue gas fan the flue duct connection from the chamber must be made according to table (see bottom of the page).

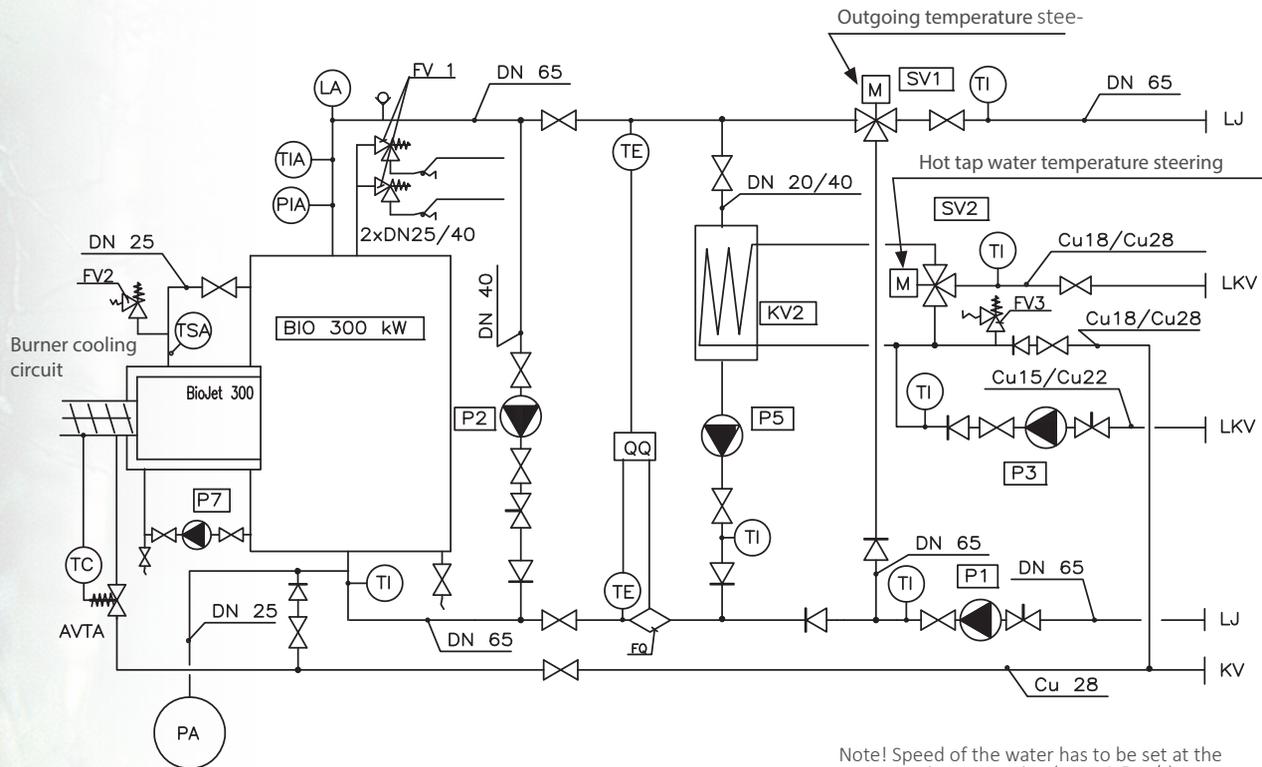
### ■ Hot water

The need for domestic hot water varies by building. That is why the Arimax Bio 120-3000 kW boilers can be equipped with domestic hot water heat exchanger most suitable for the customer's property. It is advisable to have the dimensioning of the exchanger carried out by HVAC designer. The advantage of the heat exchanger over the traditional hot water spiral is its significantly better heat transmission capacity and the possibility to assemble it afterwards. It is easier to determine the right heat exchanger power if the following things are known of the hot water consumption:

- maximum consumption (litre per second or litre per minute)
- duration of maximum consumption (e.g. 15 minutes)
- max temperature of water (e.g. +65 °C )

If accurate information is not available, the magnitude of the measurements can be determined if it is known how many warm water taps there are for the boiler (e.g. 2 showers, 2 kitchen taps and 3 wash basin taps). A little oversizing of the domestic hot water heat exchanger does no harm.

■ Arimax bio boiler standard connecting pattern with water-cooled BioJet burner



Note! Speed of the water has to be set at the warm service water pipe (max. 0,5 m/s)

| Code  | Device  |
|-------|---|
| P1    | HOT WATER SUPPLY PUMP, GRUNDFOS UPE 50-120 F      |
| P2    | HOT WATER SUPPLY PUMP, GRUNDFOS UPS 25-80         |
| P3    | HOT WATER SUPPLY PUMP, GRUNDFOS UP 20-45 N        |
| P5    | HOT WATER SUPPLY PUMP, GRUNDFOS UPS 32-80         |
| P7    | HOT WATER SUPPLY PUMP, GRUNDFOS UPS 25-60         |
| SV1   | 3-WAY VALVE, 3.0 L/S 10KPA (kv 35)                |
| SV2   | 3-WAY VALVE, kv2,5 HONEYWELL V5823A 2052          |
| FV1   | SAFETY VALVE, DN 25/40/400 KPA 510 KG/H           |
| FV2   | SAFETY VALVE, DN 15 / 400 KPA                     |
| FV3   | SAFETY VALVE, DN 20 / 1.0 MPA                     |
| PA    | EXPANSION TANK 300 L, PRE-CHARGE 100 KPA          |
| LA    | DRY-BOILING PROTECTION, LABKO SET61+SET/J1        |
| TIA   | ALARM THERMOMETER 0...+130 °C                     |
| TI    | THERMOMETER, 0...+130 °C                          |
| PIA   | ALARM MANOMETER, 0... 600 KPA                     |
| AVTA  | SELF-OPERATED CONTROL VALVE DN 25                 |
| TSA   | OVERHEAT PROTECTION 90...+120 °C, TRAFAG MST15015 |
| QQ/FQ | ENERGY METER, KAMSTRUP MC/UF 15 DN 50/270         |
| KV2   | DOMESTIC WATER HEAT EXCHANGER LPM HL 1-32         |
|       | SHUT-OFF VALVE                                    |
|       | THROTTLING VALVE                                  |
|       | ONE-WAY VALVE                                     |
|       | AUTOMATIC DEAERATOR                               |

The connectin pattern includes the cooling circulation of the burning head, mixing circulation of the boiler, energy gauge, shunt control and warm service water heat exchanger.

Boiler circulation ensures that the water returning to the boiler is not too cold (min. 70 °C). If the returning water is too cold, it affects the burning negatively and causes corrosion.

The heat distribution pump (P1), expansion tank and mixing valve must be sized according to intended use.

## ■ A new generation bio boiler

BioComp -boiler is a new generation automatic bio heating boiler. The fire chamber of the BioComp -boiler has a new round structure which improves heat recovery. Excellent efficiency\* of the boiler together with its flexible structure enable the use of different burner types. Due to its high equipment level the boiler is suitable for almost all solid biofuels and heating oil.

## ■ Standard equipment:

- Nominal output 40, 60, 80, 120 and 150 kW
- Automatic convection cleaning - easy to use - small demand for cleaning and maintenance
- Plate heat exchanger for domestic hot water - primary circuit pump also functions as a boiler mixing pump
- Flue gas fan - maintains constant fire chamber pressure and ensures even burning
- Ceramic-insulated, large ash compartment - reduces radiation loss and extends discharge interval
- Burner hatch on either left or right hand side, maintenance hatch in front - flexible installations

## Accessories:

- Ash screws below the fire chamber and convection part, secondary ash screw, ash chamber
- Electric resistance - max 2 x 9 kW (40-60 kW: 1 x 9 kW)
- Oil burner kit
- Burner kit according to chosen burner



Arterm boilers and pressure vessels are manufactured according to the highest class of pressure equipment directive (PED).

- High max. operating pressure: 3 bar
- High max. operating temperature: 130 °C

\*Equipped with BioJet 60 pellet burner and AM200 automation the BioComp boiler has an excellent, 93 %, efficiency, and low NOx and CO emissions (measured according to EN 303-5 -standard).

## ■ Technical data

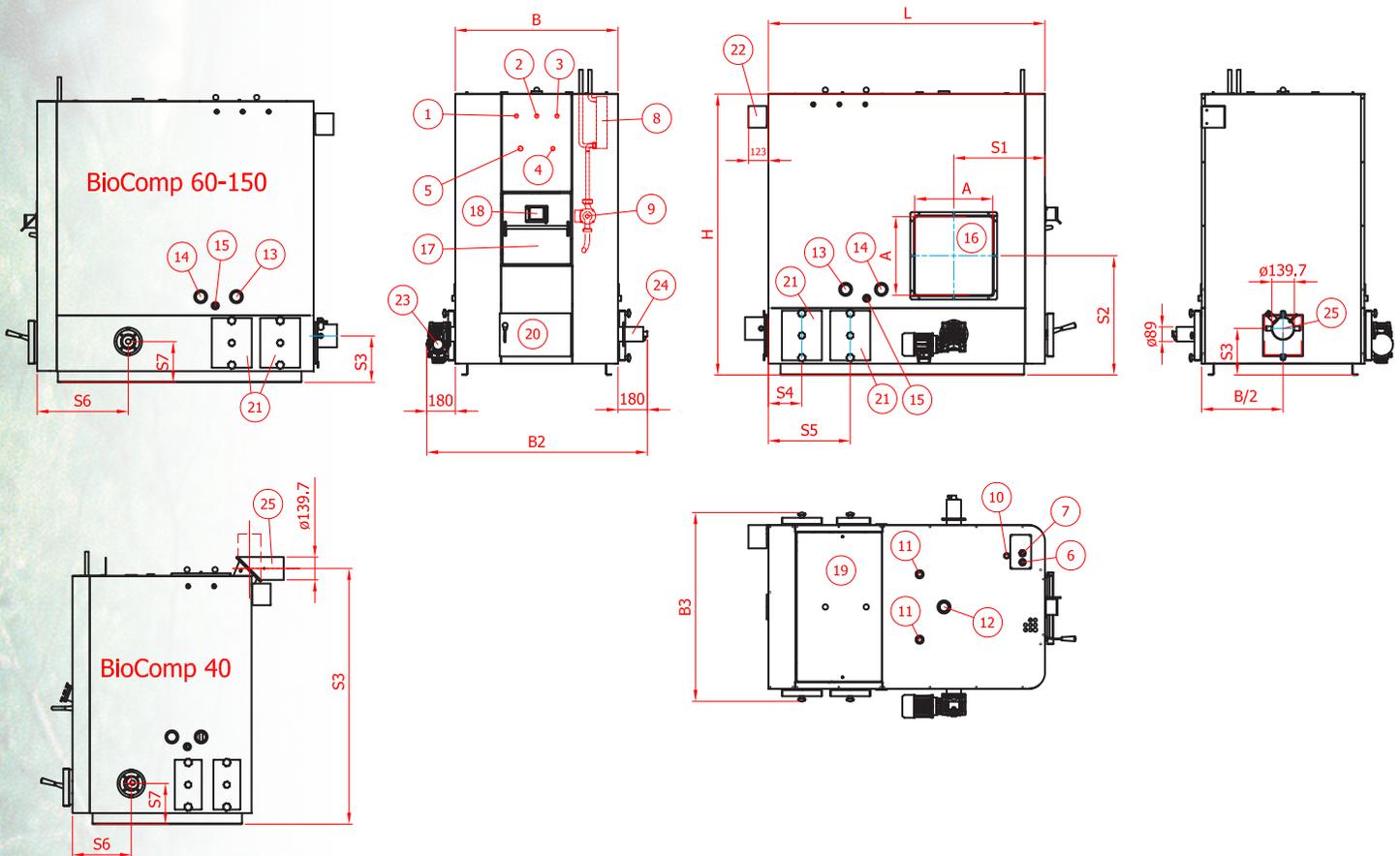
| Boiler                       | BioComp 40 | BioComp 60 | BioComp 80 | BioComp 120 | BioComp 150 | BioComp 200 | BioComp 250 | BioComp 300 |
|------------------------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|
| Power, kW                    | 40         | 60         | 80         | 120         | 150         | 200         | 250         | 300         |
| Weight, kg                   | 495        | 640        | 786        | 1035        | 1193        | 1550        | 1950        | 2400        |
| Capacity, l                  | 175        | 280        | 330        | 448         | 567         | 980         | 1160        | 1340        |
| Max. working pressure, bar   | 3,0        | 3,0        | 3,0        | 3,0         | 3,0         | 3,0         | 3,0         | 3,0         |
| Max. working temperature, °C | 130        | 130        | 130        | 130         | 130         | 130         | 130         | 130         |
| Chimney ø, mm                | 150        | 150        | 150        | 200         | 200         | 250         | 250         | 250         |

### Measurements

| kW | 40   | 60   | 80   | 120  | 150  | 200  | 250  | 300  |
|----|------|------|------|------|------|------|------|------|
| A  | 250  | 360  | 400  | 440  | 480  | 518  | 588  | 658  |
| B  | 610  | 680  | 820  | 900  | 1000 | 1282 | 1282 | 1282 |
| B2 | 970  | 1040 | 1180 | 1260 | 1360 | 1642 | 1642 | 1642 |
| B3 | 760  | 830  | 970  | 1050 | 1150 | 1432 | 1432 | 1432 |
| H  | 1520 | 1520 | 1520 | 1720 | 1720 | 1866 | 2108 | 2354 |
| L  | 1100 | 1260 | 1420 | 1530 | 1700 | 1989 | 1989 | 1989 |
| S1 | 360  | 380  | 455  | 510  | 560  | 665  | 665  | 665  |
| S2 | 610  | 670  | 690  | 710  | 730  | 837  | 837  | 837  |
| S3 | 1563 | 284  | 284  | 284  | 284  | 284  | 284  | 284  |
| S4 | 152  | 147  | 155  | 205  | 205  | 205  | 205  | 205  |
| S5 | 390  | 425  | 435  | 505  | 505  | 505  | 505  | 505  |
| S6 | 360  | 380  | 455  | 510  | 560  | 665  | 665  | 665  |
| S7 | 250  | 250  | 250  | 250  | 250  | 250  | 250  | 250  |



Draft of BioComp 300 cross section

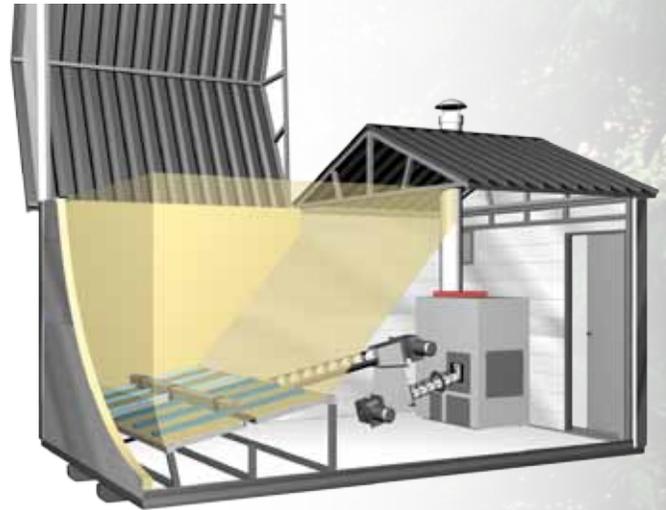


- |   |  |
|---|--|
| 1. Boiler water overheating protection DN 15    | 14. Electric resistance connection DN 50 |
| 2. Boiler water temperature sensor DN 15        | 15. Drain connection DN 20               |
| 3. Spare DN 15                                  | 16. Burner opening, right or left side   |
| 4. Fire chamber overpressure switch DN 15       | 17. Maintenance hatch                    |
| 5. Fire chamber under/overpressure sensor DN 15 | 18. Viewing screen                       |
| 6. Cold water Ø 22 Cu                           | 19. Convector cleaning hatch             |
| 7. Warm water Ø 22 Cu                           | 20. Ash hatch                            |
| 8. Plate heat exchanger                         | 21. Cleaning hatch                       |
| 9. Heat exchanger pump                          | 22. Convector cleaner motor              |
| 10. Bleeding screw for the water network        | 23. Ash screw motor                      |
| 11. Expansion / relief valve DN 25              |  |
| 12. Flow to network DN 50                       |  |
| 13. Return from network DN 50                   |  |

## ■ Farm containers for wood chip and pellet 40-150 kW

Ariterm farm containers for wood chip are strong factory-built heating centres. They come preinstalled with all the necessary equipment for a functioning heating centre. Their large fuel storage is filled through a hydraulic roof, making the degree of filling as high as possible. Ariterm farm containers for pellet can be equipped with an internal silo or a large external vertical silo. The container's standard equipment can be further enhanced with, for example, ash screws, a network pump, lambda control, a GSM modem and Internet remote control.

BKF40-150: 5100 (5250) x 3260 (3430) x 3430 mm  
 NOTICE! Wall dimensions (transport/eaves dimensions)

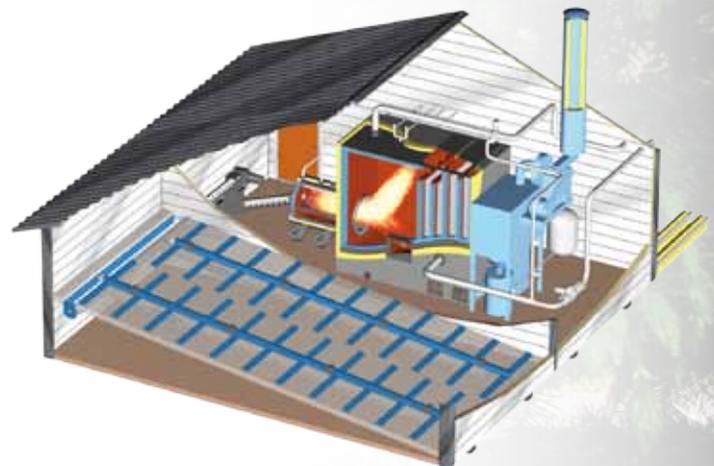


The farm container for wood chip is equipped with a hydraulic roof.

## ■ Wood chip containers 200-700 kW

Ariterm wood chip containers are strong factory-built heating centres for wood chip use. They come preinstalled with all the necessary equipment for a functioning heating centre. The wood chip containers of the BK300 series feature a large 22 m<sup>3</sup> fuel storage with a hydraulic bar discharger. In the BK500 series the fuel storage can be up to 50m<sup>3</sup>. The hydraulic storage roof opens, making filling with a front loader easy or, in hillside structures, the storage can be filled straight from a lorry. 4 bar Arimax boilers are equipped with a water-cooled BioJet burner. The container's standard equipment can be further enhanced with, for example, ash screws, a network pump, lambda control, a shunt control, a GSM modem and Internet remote control.

BK200-300: 7200 (7330) x 3260 (3460) x 3200 mm  
 BK400-700: 7200 (7840) x 7200 (7850) x 4070 mm



Wood chip container BK500

## ■ Pellet containers 60-1000 kW

Ariterm pellet containers are strong factory-built heating centres for pellet use. They come preinstalled with all the necessary equipment for a functioning heating centre. A separate pellet silo will be selected and installed to meet the customer's needs.

BKFP60-150: 5100 (5250) x 3260 (3430) x 3200 mm  
 BKP200-500: 7200 (7330) x 3260 (3480) x 3230 mm  
 BKP700-1000: 8990 (9300) x 3990 (4510) x 4380 mm

## ■ POK containers

Some of Ariterm's containers can be equipped with a spare and peak oil boiler. These include the pellet containers 500+800 kW or 1000+1000 kW. More information available from the factory.

POK 200-500: 7200 (7330) x 3260 (3480) x 3230 mm  
 POK 700-1500: 8990 (9300) x 3990 (4510) x 4380 mm

See Ariterm's container brochure for more information about the bio heating containers!



Pellet container BKP700 with an 88 m<sup>3</sup> silo

## ACCESSORIES

### ■ 57 kW heat exchanger set

Smaller service water needs can be met with a heat transmission set which includes a 57 kW heat exchanger, pump and valves in an easy to install, compact package.

Case dimensions: 415 x 480 x 175 mm

Boiler connections (primary): DN20

Domestic water connections (secondary): d22 mm Cu

#### Heat Exchanger:

Primary side flow resistance: 13 kPa/0,45l/s

Secondary side flow resistance: 19 kPa/0,45l/s

Operating temperature: 20-120 °C

Max. pressure primary side: 1,5 bar

Max. pressure domestic water side (secondary): 10 bar

Performance data when primary side is supplied with 80 °C water:

- Power 57 kW
- Domestic water production 0,4 l/s, 40 °C, when flow water is 5 °C

LVI number 5012923

### ■ Ash removal accessories

There is a constantly growing demand for a greater degree of automation in bio heating systems. One of the automated areas is the optional equipment for ash removal. You can choose either a time relay controlled ash screw or an ash extractor for Aritem bio heating systems.

The ash extractor is not necessarily a fixed device; it can be moved from one heating plant to another in a heating entrepreneur's (ESCo's) vehicle or other suitable transport. The ash extractor keeps the boiler room clean and tidy.

With ash screws, the ashes can be removed from both inside the fire chamber and under the convector part. The system can include one or more screws. Every screw has its own power transmission. Plan your own ash screw solution while you ask for an offer!

### ■ Ash containers

Automatic ash removal in boiler and attached ash processing are essential components in ensuring long life cycle at heating system.

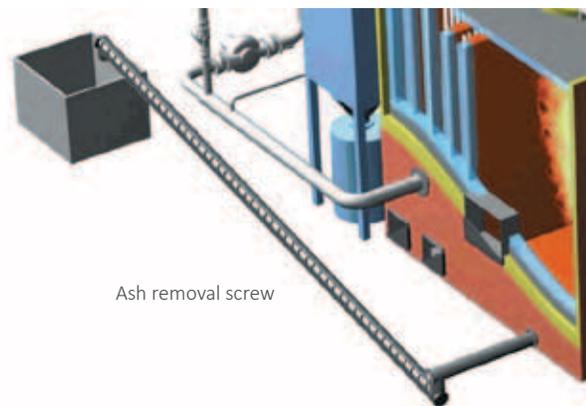
Our catalog has three different sized ash containers: 1 m<sup>3</sup>, 2 m<sup>3</sup> and 5 m<sup>3</sup>. Suitable capacity is chosen by wanted interval of emptying and chosen fuel. On request, bigger containers can be made. Two smallest containers are so-called dumping containers and biggest container is movable with hook or wire system equipped truck.



Heat exchanger set



Ash extractor



Ash removal screw

| Boiler                   | Diameter of ash removal screw |
|--------------------------|-------------------------------|
| Arimax 300 boiler series | Ø 88,9 mm                     |
| Arimax Bio 120-3000      | Ø 114,3 mm                    |
| BioComp 40 - 300         | Ø 88,9 mm                     |

### ■ Flue gas fans and cleaners

A flue gas fan is used to create an even low pressure in the fire chamber of the boiler. The low pressure is essential for the functioning of the boiler and the bio burner. It also enhances burn back safety. In bigger boilers (500 kW and up), it is always necessary to use a flue gas fan due to their greater draught resistance.

Flue gas cleaners are used to decrease flue gas emissions. Boiler plants of over 1 MW have statutory emission limits. The use of a cleaner is justifiable in smaller plants as well, due to the proximity of residential areas or for other reasons.

### ■ Automatic cleaning

Arimax bio fuel boilers can be equipped with a compressed air automatic sooting unit. Automatic sooting diminishes cleaning and keeps the efficiency as constant and as high as in a newly cleaned boiler. It can also be installed afterwards. Flue gas cleaner is a recommended equipment to be used with automatic sooting.

### ■ Oil burner hatch

The bio fuel burner can be equipped with an oil burner hatch which enables the heating plant to switch to reserve fuel in case of a malfunction or any other disturbance. The choice between a maintenance burner and a full-power burner depends on the chosen burner solution.

### ■ Spare and peak power boilers

The efficient but small Arimax E gas/oil boiler 75-1000 kW can be installed as a spare or peak power boiler of a bio heating system. In dual boiler systems this can further secure heat distribution, but primarily it enables sizing and optimising efficiency.



The Arimax E 800 kW boiler works as an excellent spare boiler for bio heating systems.



An insulated flue gas cleaner



Automatic cleaning



Oil burner hatch



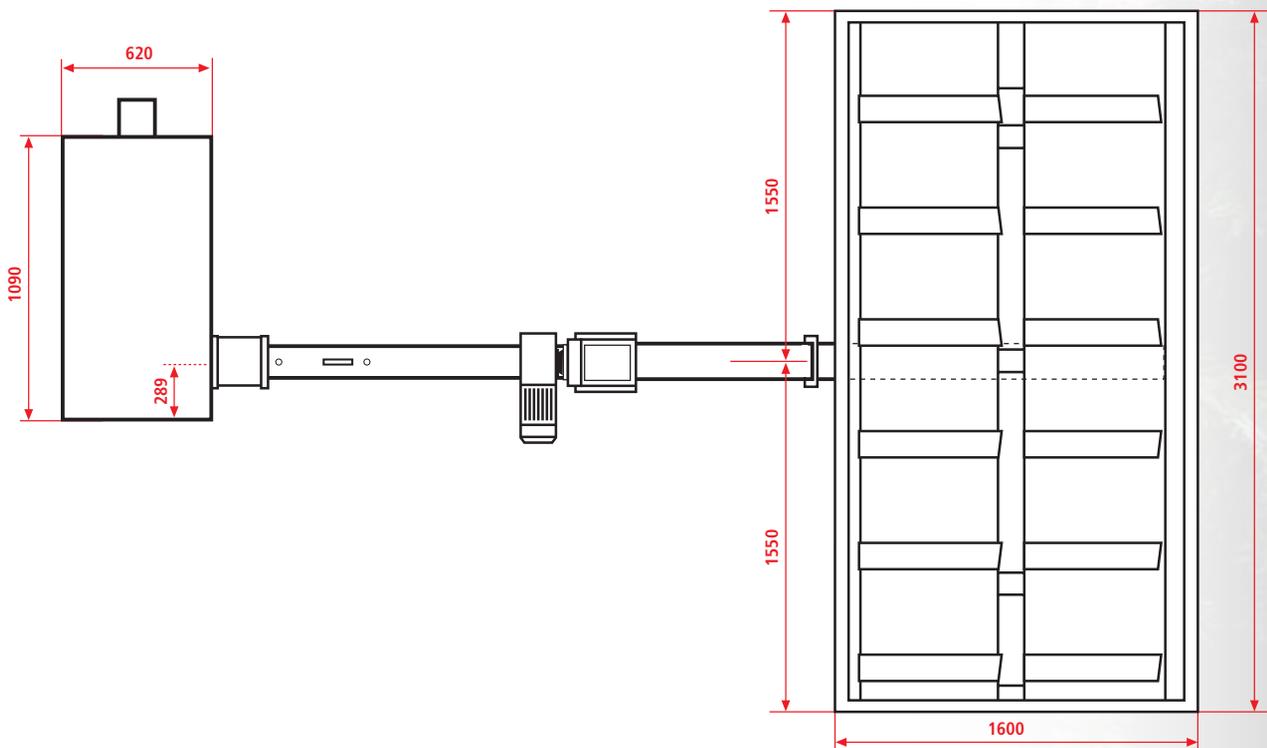
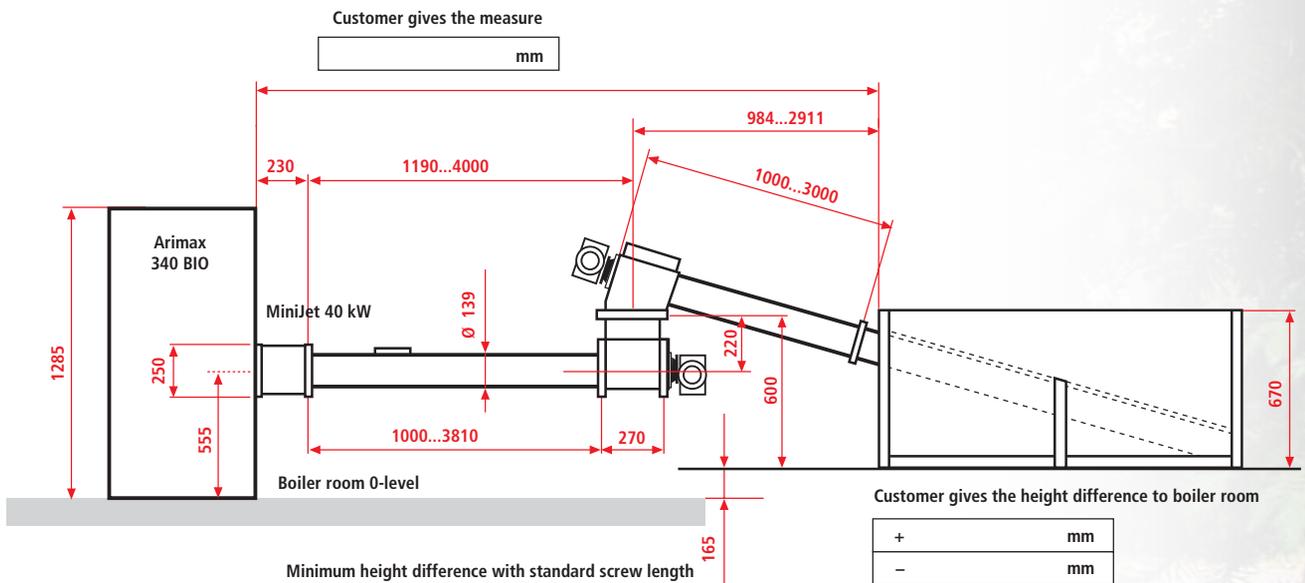
BIO HEATING SYSTEMS  
SYSTEM DESCRIPTIONS



**Example order 40 kW 1,5 bar Wood chip**

|         |  |      |
|---------|--|------|
| 5010206 | Arimax 340 Bio, 40 kW/1,5 bar boiler, burner opening to the right  | 1 pc |
| 7938    | MiniJet bio burner 40 kW   | 1 pc |
| 7933    | Burner screw Ø 139 mm  | 1 m  |
| 7911    | Burner screw extension   | 1 m  |
| 6029    | Burner screw motor 1,1 kW  | 1 pc |
| 7965    | Free fall funnel Ø 139 mm  | 1 pc |
| 8003    | Walkin floor unit T1<br>- storage screw<br>- storage screw moto with actuators<br>- hydraulics unit<br>- extinguishing valve for pressurised water | 1 pc |

|         |  |      |
|---------|--|------|
| AMK151  | Automatics Arimatic 151<br>- burn back and flame control thermostat<br>- boiler sensor and overheating guard | 1 pc |
| AM15101 | Control unit for walking floor unit  | 1 pc |
| AM15102 | Pump control   | 1 pc |
| AM15109 | Boiler mixing pump control   | 1 pc |
| AM15106 | GSM modem  | 1 pc |
| AM15108 | UPS battery backup for the automatics  | 1 pc |
| 14957   | Residual oxygen control  | 1 pc |
| 5517    | Pressure gauge with alarm  | 1 pc |



# HAKEJET | T1 H60 - 300

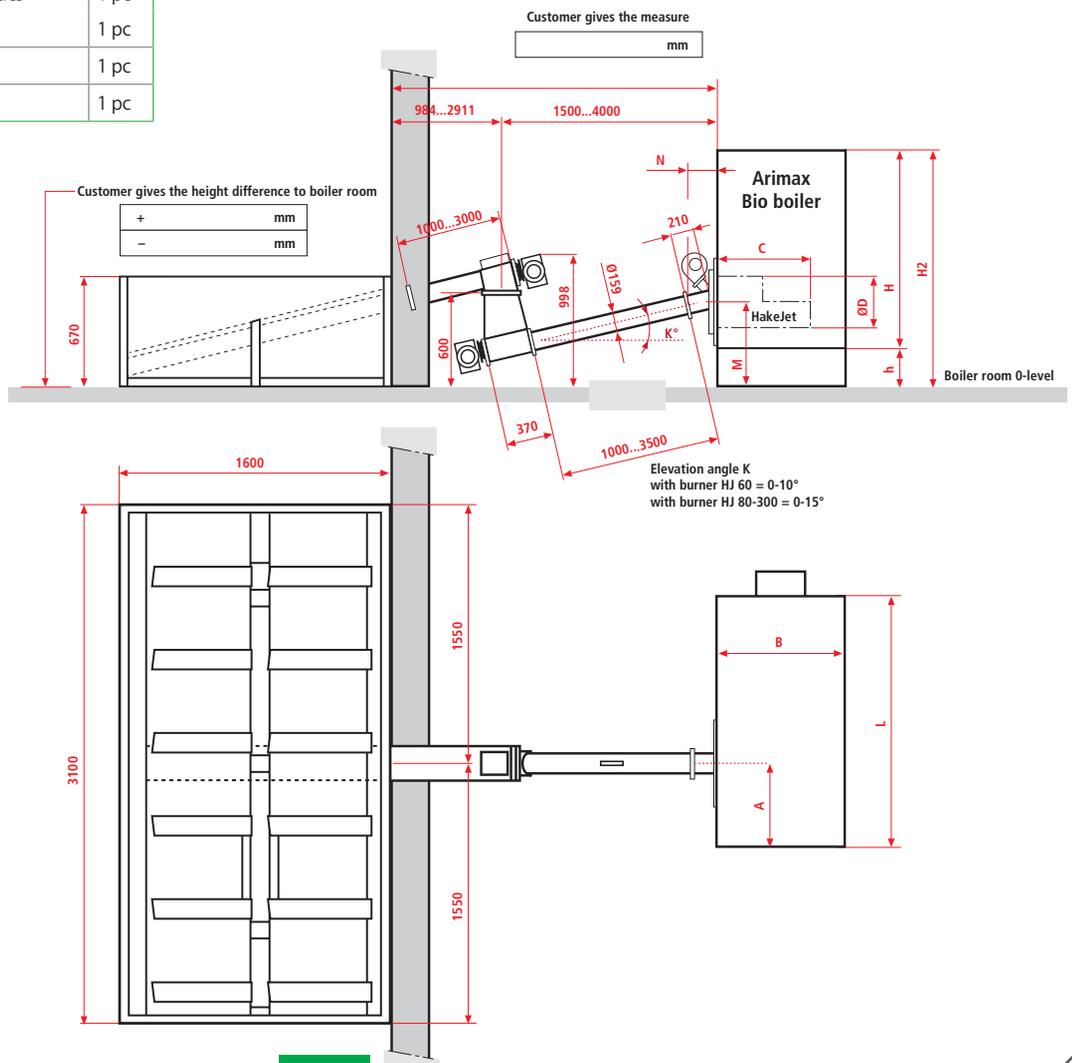
Walking floor unit T1, 2-screw feed, BioComp 120/150 = 3 bar, Arimax 360 / 380 Bio = 1,5 bar or Arimax Bio 120-300 kW bio burner = 4 bar

## Order example 120 kW 1,5 bar Wood chip

|         |  |      |
|---------|--|------|
| 5033586 | BioComp 120, Bio 120 kW/1,5 bar boiler, burner opening to the left   | 1 pc |
| 7944    | HakeJet bio burner 120 kW  | 1 pc |
| 7934    | Burner screw Ø 159 mm  | 1 m  |
| 7912    | Extension for burner screw   | 1 m  |
| 6029    | Burner screw motor 1,5 kW  | 1 pc |
| 20031   | Free fall funnel Ø 159 mm  | 1 pc |
| 8003    | Walking floor unit T1<br>- storage screw L-1050 mm<br>- storage screw actuator<br>- hydraulics unit<br>- extinguishing valve for pressurised water   | 1 pc |
| AMK151  | Automatics Arimatic 151<br>- burn back and flame control thermostat<br>- boiler sensor and overheating guard<br>- storage screw level monitor (photocell)<br><br><b>Optional automatics:</b> | 1 pc |
| AM15101 | Control unit for walking floor unit  | 1 pc |
| AM15102 | Pump control   | 1 pc |
| AM15109 | Boiler mixing pump control   | 1 pc |
| AM15106 | GSM modem  | 1 pc |
| AM15108 | UPS battery backup for the automatics  | 1 pc |
| 14957   | Residual oxygen control  | 1 pc |
| 13733   | Acid-proof expansion tank 50 l   | 1 pc |
| 5517    | Pressure gauge with alarm  | 1 pc |

| Measure | Burner HJ 60         | Burner HJ 80         | Burner HJ120               | Burner HJ120       | Burner HJ150               | Burner HJ150       | Burner HJ200       | Burner HJ250       | Burner HJ300       |
|---------|----------------------|----------------------|----------------------------|--------------------|----------------------------|--------------------|--------------------|--------------------|--------------------|
|         | Boiler 60 kW 1,5 bar | Boiler 80 kW 1,5 bar | Boiler BioComp 120kW 3 bar | Boiler 120kW 4 bar | Boiler BioComp 150kW 3 bar | Boiler 150kW 4 bar | Boiler 200kW 4 bar | Boiler 250kW 4 bar | Boiler 300kW 4 bar |
| A       | 350                  | 364                  | 510                        | 530                | 560                        | 530                | 580                | 630                | 680                |
| B       | 700                  | 770                  | 900                        | 980                | 1000                       | 980                | 980                | 1030               | 1080               |
| C       | 515                  | 605                  |                            | 705                |                            | 825                | 905                | 980                | 1080               |
| D       | 330                  | 370                  |                            | 410                |                            | 450                | 500                | 550                | 600                |
| h       |                      |                      |                            | 350                |                            | 350                | 350                | 350                | 500                |
| H       |                      |                      |                            | 1540               |                            | 1740               | 1540               | 1590               | 1640               |
| H2      | 1425                 | 1585                 | 1720                       | 1890               | 1720                       | 2090               | 1890               | 1940               | 2140               |
| L       | 1192                 | 1300                 | 1530                       | 1690               | 1700                       | 1790               | 1990               | 2090               | 2270               |
| M       | 616                  | 650                  | 710                        | 660                | 730                        | 680                | 705                | 730                | 915                |
| N       | 270                  | 270                  | 270                        | 270                | 270                        | 270                | 270                | 270                | 270                |

1,5 bar boilers have a fixed ash chamber; in 4 bar boilers it is separate.

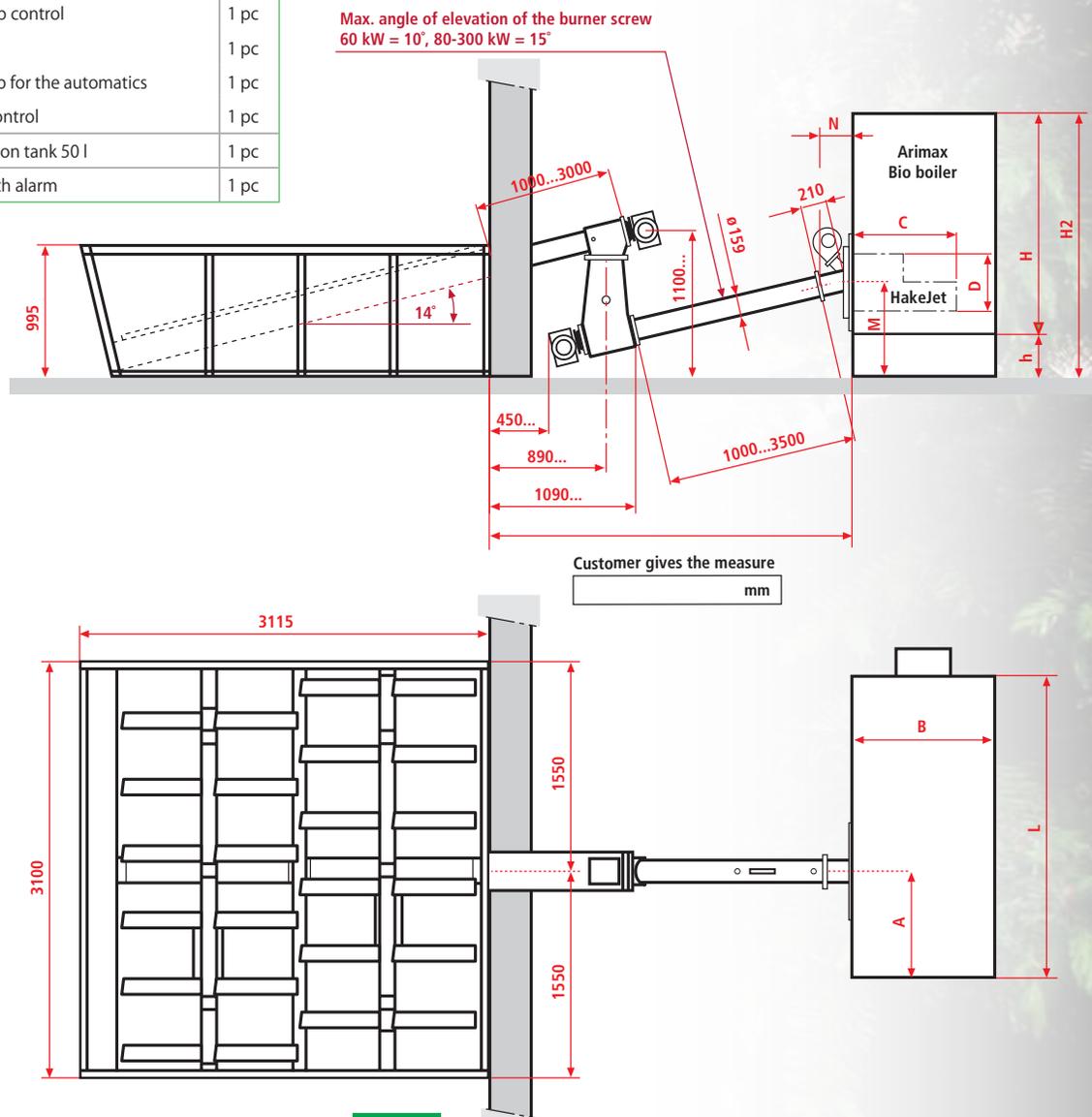


Walking floor unit T2, 2-screw feed, BioComp 120/150 = 3 bar, Arimax 360 / 380 Bio = 1,5 bar or Arimax Bio 120-300 kW bio boiler= 4 bar

| Order example 120 kW 4 bar Wood chip |   |      |
|--------------------------------------|---|------|
| 5033525                              | Arimax Bio 120 kW 4 bar boiler, burner opening to the left  | 1 pc |
| 66662                                | Ash chamber h = 350 mm  | 1 pc |
| 7944                                 | HakeJet bio burner 120 kW   | 1 pc |
| 7934                                 | Burner screw Ø 159 mm   | 1 m  |
| 7912                                 | Expansion for burner screw  | 1 m  |
| 6029                                 | Burner screw motor 1,5 kW   | 1 pc |
| 20031                                | Free fall funnel Ø 159 mm   | 1 pc |
| 8002                                 | Walking floor unit T2<br>- storage screw L-1050 mm<br>- storage screw actuator<br>- hydraulics unit<br>- extinguishing  | 1 pc |
| AMK151                               | Automatics Arimatic 151<br>- burn back and flame control thermostat<br>- boiler sensor and overheating guard<br>- storage screw level monitor (photocell)<br><br>Optional automatics: | 1 pc |
| AM15101                              | Control unit for walking floor unit   | 1 pc |
| AM15102                              | Pump control  | 1 pc |
| AM15109                              | Boiler mixing pump control  | 1 pc |
| AM15106                              | GSM modem   | 1 pc |
| AM15108                              | UPS battery backup for the automatics   | 1 pc |
| 14957                                | Residual oxygen control   | 1 pc |
| 13733                                | Acid-proof expansion tank 50 l  | 1 pc |
| 5517                                 | Pressure gauge with alarm   | 1 pc |

| Measure | Burner HJ 60         | Burner HJ 80         | Burner HJ120               | Burner HJ 120       | Burner HJ150               | Burner HJ 150       | Burner HJ 200       | Burner HJ 250       | Burner HJ 300       |
|---------|----------------------|----------------------|----------------------------|---------------------|----------------------------|---------------------|---------------------|---------------------|---------------------|
|         | Boiler 60 kW 1,5 bar | Boiler 80 kW 1,5 bar | Boiler BioComp 120kW 3 bar | Boiler 120 kW 4 bar | Boiler BioComp 150kW 3 bar | Boiler 150 kW 4 bar | Boiler 200 kW 4 bar | Boiler 250 kW 4 bar | Boiler 300 kW 4 bar |
| A       | 350                  | 364                  | 510                        | 530                 | 560                        | 530                 | 580                 | 630                 | 680                 |
| B       | 700                  | 770                  | 900                        | 980                 | 1000                       | 980                 | 980                 | 1030                | 1080                |
| C       | 515                  | 605                  |                            | 705                 |                            | 825                 | 905                 | 980                 | 1080                |
| D       | 330                  | 370                  |                            | 410                 |                            | 450                 | 500                 | 550                 | 600                 |
| h       |                      |                      |                            | 350                 |                            | 350                 | 350                 | 350                 | 500                 |
| H       |                      |                      |                            | 1540                |                            | 1740                | 1540                | 1590                | 1640                |
| H2      | 1425                 | 1585                 | 1720                       | 1890                | 1720                       | 2090                | 1890                | 1940                | 2140                |
| L       | 1192                 | 1300                 | 1530                       | 1690                | 1700                       | 1790                | 1990                | 2090                | 2270                |
| M       | 616                  | 650                  | 710                        | 660                 | 730                        | 680                 | 705                 | 730                 | 915                 |
| N       | 270                  | 270                  | 270                        | 270                 | 270                        | 270                 | 270                 | 270                 | 270                 |

1,5 bar boilers have a fixed ash chamber; in 4 bar boilers it is separate



# HAKEJET | K2 H60 - 300

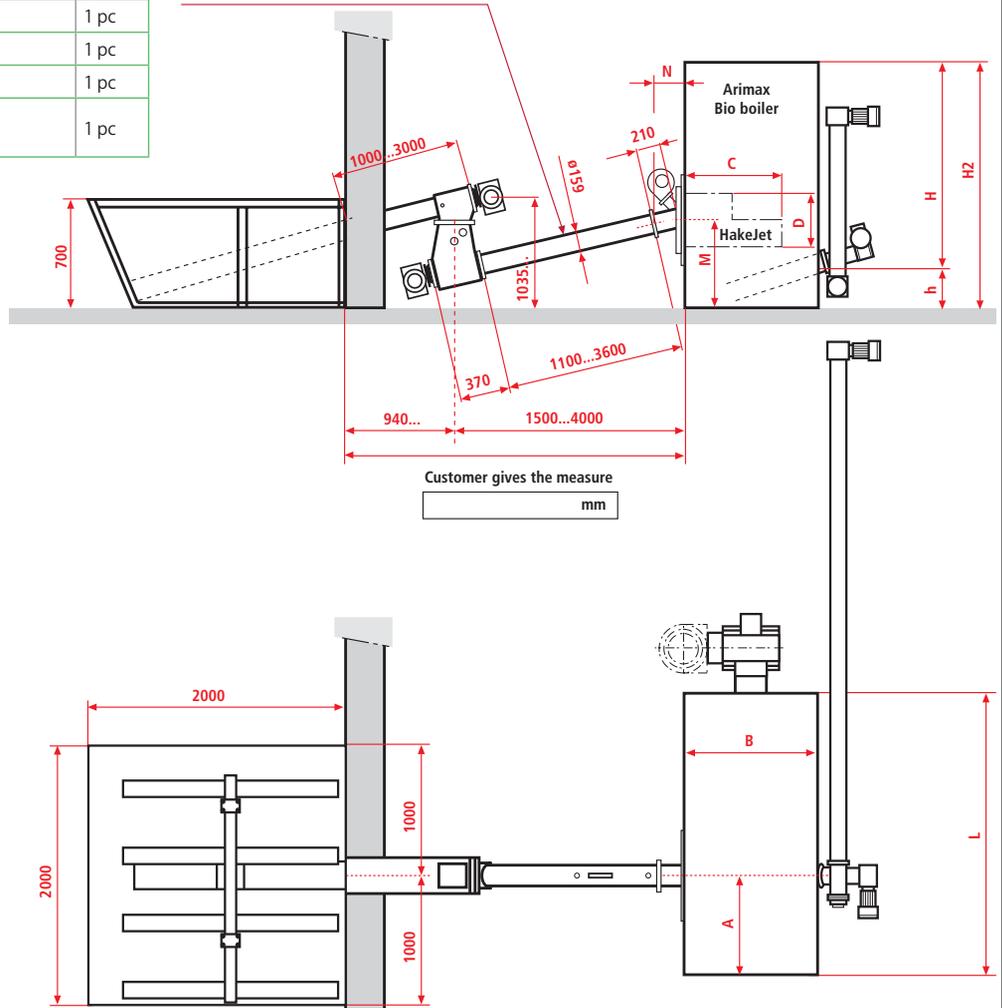
Walking floor unit K2, 2-screw feed, BioComp 120/150 = 3 bar, Arimax 360 / 380 Bio = 1,5 bar or Arimax Bio 120-300 kW bio boiler = 4 bar

| Order example 80 kW 1,5 bar Wood chip |  |      |
|---------------------------------------|--|------|
| 5010217                               | Arimax 380 bio boiler 80 kW, burner opening to the left  | 1 pc |
| 7942                                  | HakeJet bio burner 80 kW   | 1 pc |
| 7934                                  | Burner screw Ø 159 mm  | 1 m  |
| 7912                                  | Expansion for burner screw   | 1 m  |
| 6029                                  | Burner screw motor 1,5 kW  | 1 pc |
| 20031                                 | Free fall funnel Ø 159 mm  | 1 pc |
| 7941                                  | Walking floor unit K2<br>- storage screw L-1050 mm<br>- storage screw actuator<br>- discharger transmission<br>- extinguishing valve for pressurised water                               | 1 pc |
| AMK151                                | Automatics Arimatic 151<br>- burn back and flame control thermostat<br>- boiler sensor and overheating guard<br>- storage screw level monitor (photocell)<br><b>Optional automatics:</b> | 1 pc |
| AM15101                               | Control unit for walking floor unit  | 1 pc |
| AM15102                               | <b>Pump control</b>  | 1 pc |
| AM15109                               | Boiler mixing pump control   | 1 pc |
| AM15106                               | GSM modem  | 1 pc |
| AM15108                               | UPS battery backup for the automatics  | 1 pc |
| 14957                                 | Residual oxygen control  | 1 pc |
| 14876                                 | TH3 flue gas fan   | 1 pc |
| 13733                                 | Acid-proof expansion tank 50 l   | 1 pc |
| 5517                                  | Pressure gauge with alarm  | 1 pc |
| Z20075                                | TH3 flue gas fan set   | 1 pc |
| 30040                                 | Ash screw set, 2 screws + motors (1+3 m)   | 1 pc |
| 5210                                  | Electric resistor 6 kW installed (l/r)<br>Control thermostat for electric resistor   | 1 pc |

|         | Burner HJ 60         | Burner HJ 80         | Burner HJ120          | Burner HJ120        | Burner HJ150          | Burner HJ150        | Burner HJ200        | Burner HJ250        | Burner HJ300        |
|---------|----------------------|----------------------|-----------------------|---------------------|-----------------------|---------------------|---------------------|---------------------|---------------------|
| Measure | Boiler 60 kW 1,5 bar | Boiler 80 kW 1,5 bar | Boiler 120 kW 1,5 bar | Boiler 120 kW 4 bar | Boiler 150 kW 1,5 bar | Boiler 150 kW 4 bar | Boiler 200 kW 4 bar | Boiler 250 kW 4 bar | Boiler 300 kW 4 bar |
| A       | 350                  | 364                  | 415                   | 530                 | 483                   | 530                 | 580                 | 630                 | 680                 |
| B       | 700                  | 770                  | 870                   | 980                 | 970                   | 980                 | 980                 | 1030                | 1080                |
| C       | 515                  | 605                  | 705                   | 705                 | 825                   | 825                 | 905                 | 980                 | 1080                |
| D       | 330                  | 370                  | 410                   | 410                 | 450                   | 450                 | 500                 | 550                 | 600                 |
| h       |                      |                      |                       | 350                 |                       | 350                 | 350                 | 350                 | 500                 |
| H       |                      |                      |                       | 1540                |                       | 1740                | 1540                | 1590                | 1640                |
| H2      | 1425                 | 1585                 | 1655                  | 1890                | 1705                  | 2090                | 1890                | 1940                | 2140                |
| L       | 1192                 | 1300                 | 1440                  | 1690                | 1590                  | 1790                | 1990                | 2090                | 2270                |
| M       | 616                  | 650                  | 650                   | 660                 | 660                   | 680                 | 705                 | 730                 | 915                 |
| N       | 270                  | 270                  | 270                   | 270                 | 270                   | 270                 | 270                 | 270                 | 270                 |

1,5 bar boilers have a fixed ash chamber; in 4 bar boilers it is separate.

Max. angle of elevation of the burner screw  
60 kW = 20°, 80-300 kW = 15°

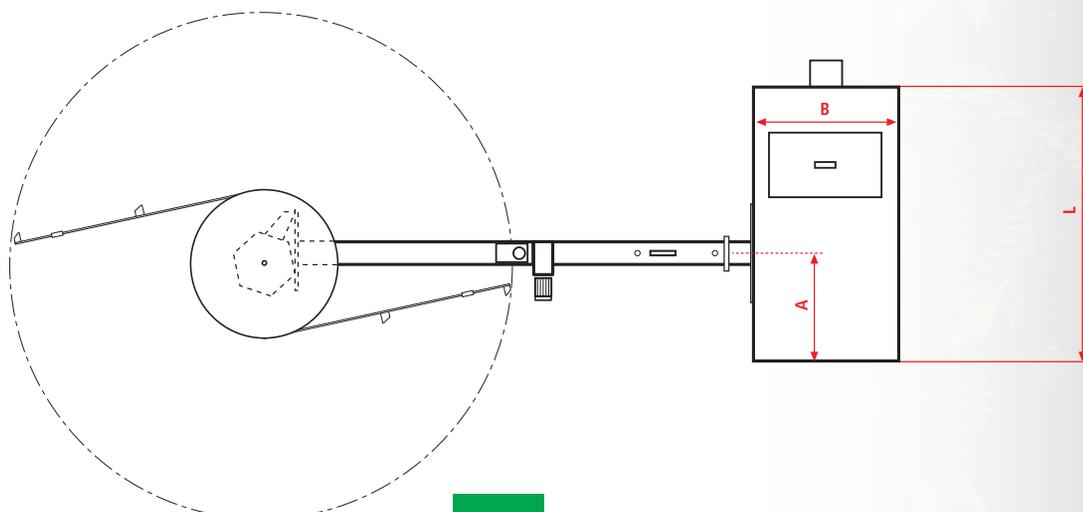
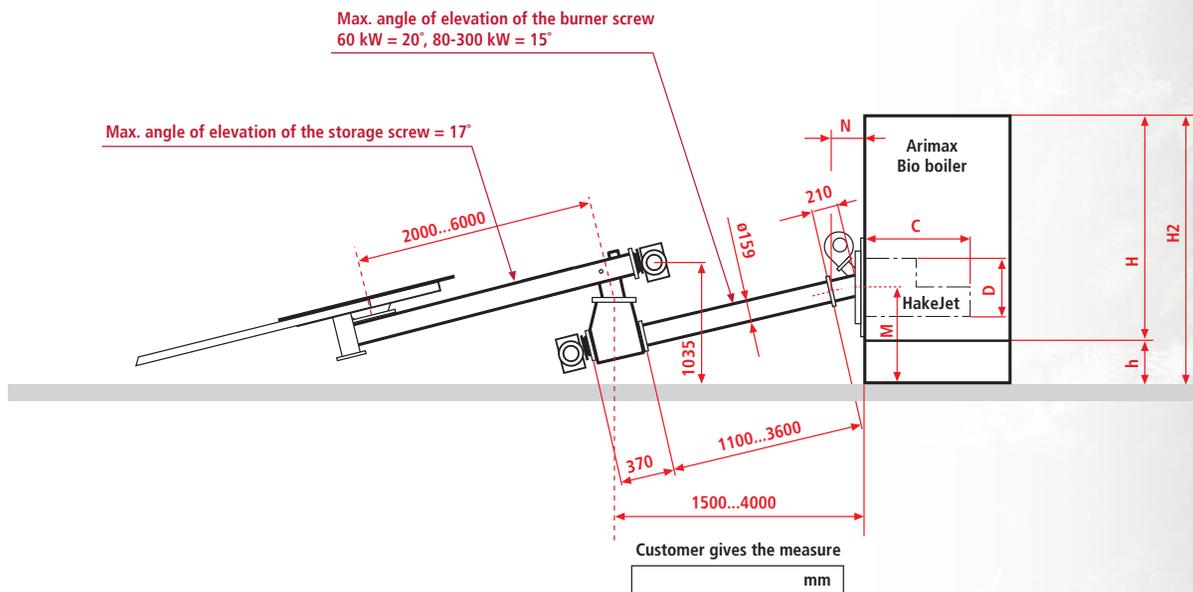


Spring discharger J2, 2-screw feed, BioComp 120/150 = 3 bar, Arimax 360 / 380 Bio = 1,5 bar ja Bio 120 / 150 kW = 4 bar

| Order example 80 kW 1,5 bar wood chip |   |      |
|---------------------------------------|---|------|
| 5010217                               | Arimax 380 bio boiler 80 kW, burner opening to the left   | 1 pc |
| 7942                                  | HakeJet bio burner 80 kW  | 1 pc |
| 7934                                  | Burner screw Ø 159 mm   | 1 m  |
| 7912                                  | Extension for burner screw  | 1 m  |
| 6029                                  | Burner screw motor 1,5 kW   | 1 pc |
| 20031                                 | Free fall funnel Ø 159 mm   | 1 pc |
| 13987                                 | Walking floor unit J2 for wood chip<br>- diameter 1500 - 3000 mm<br>- storage screw L-1000 mm (outside the diameter)<br>- storage screw motor and actuator<br>- extinguishing valve for pressurised water | 1 pc |
| AMK151                                | Automatics Arimatic 151<br>- burn back and flame control thermostat<br>- boiler sensor and overheating guard<br>- storage screw level monitor (photocell)<br><br><b>Optional automatics:</b>              | 1 pc |
| AM15102                               | Pump control  | 1 pc |
| AM15109                               | Boiler mixing pump control  | 1 pc |
| AM15106                               | GSM modem   | 1 pc |
| AM15108                               | UPS battery backup for the automatics   | 1 pc |
| 13733                                 | Acid-proof expansion tank 50 l  | 1 pc |
| 5517                                  | Pressure gauge with alarm   | 1 pc |

| Measure | Burner HJ 60         | Burner HJ 80         | Burner HJ120               | Burner HJ 120       | Burner HJ150               | Burner HJ 150       |
|---------|----------------------|----------------------|----------------------------|---------------------|----------------------------|---------------------|
|         | Boiler 60 kW 1,5 bar | Boiler 80 kW 1,5 bar | Boiler BioComp 120kW 3 bar | Boiler 120 kW 4 bar | Boiler BioComp 150kW 3 bar | Boiler 150 kW 4 bar |
| A       | 350                  | 364                  | 510                        | 530                 | 560                        | 530                 |
| B       | 700                  | 770                  | 900                        | 980                 | 1000                       | 980                 |
| C       | 515                  | 605                  |                            | 705                 |                            | 825                 |
| D       | 330                  | 370                  |                            | 410                 |                            | 450                 |
| h       |                      |                      |                            | 350                 |                            | 350                 |
| H       |                      |                      |                            | 1540                |                            | 1740                |
| H2      | 1425                 | 1585                 | 1720                       | 1890                | 1720                       | 2090                |
| L       | 1192                 | 1300                 | 1530                       | 1690                | 1700                       | 1790                |
| M       | 616                  | 650                  | 710                        | 660                 | 730                        | 680                 |

1,5 bar boilers have a fixed ash chamber; in 4 bar boilers it is separate.



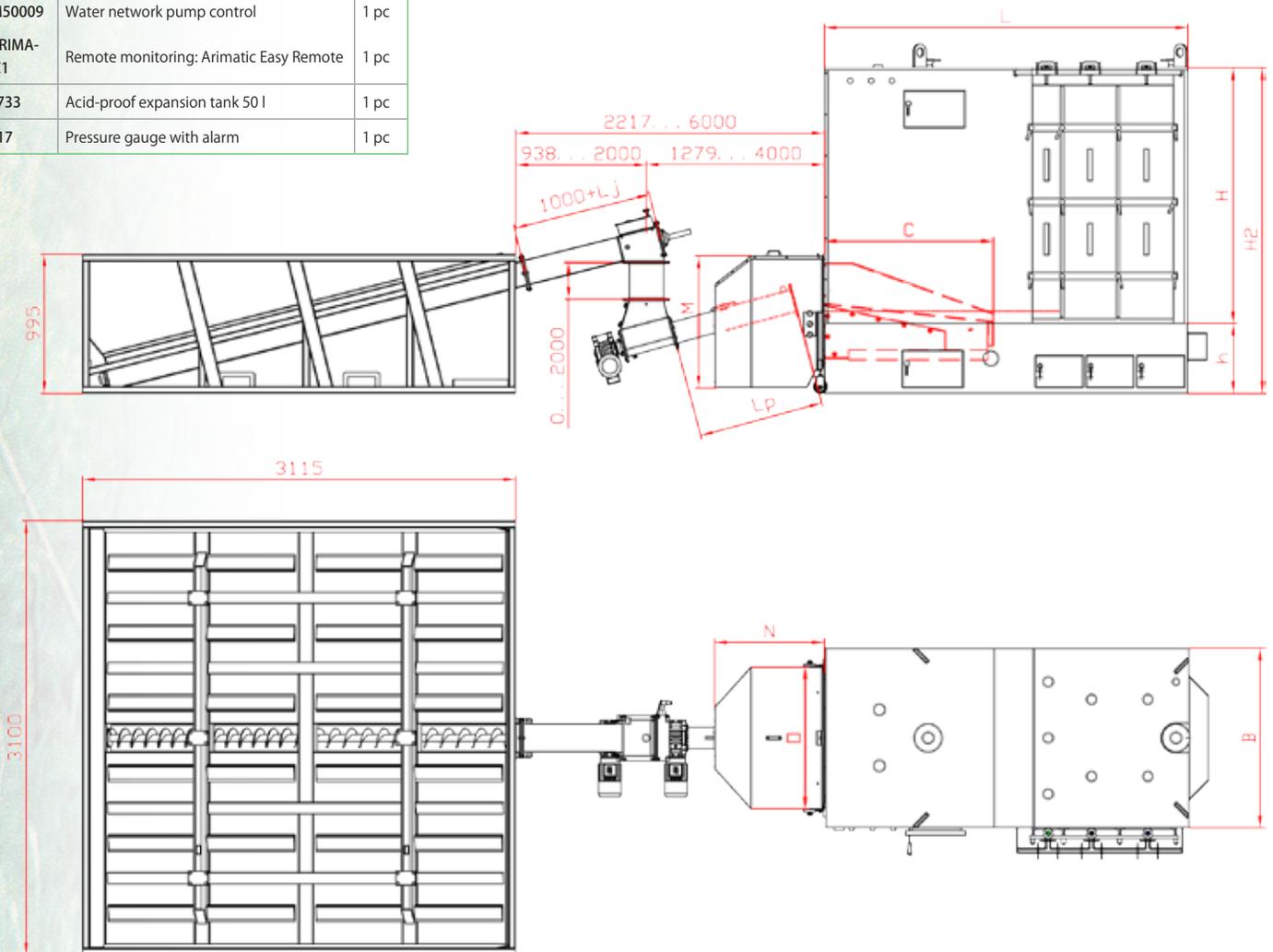
# MULTIJET | T2 MJ40-500

Walking floor unit T2, 2-screw feed, BioComp 120/150 = 3 bar, Arimax 360 / 380 Bio = 1.5 bar or Arimax Bio 120-500 kW bio boiler = 4 bar

| Order example 500 kW T2 with walking floor unit |   |      |
|---|---|------|
| 5033445   | Arimax Bio SP 500 kW boiler, cleaning hatch on the side   | 1 pc |
| 66674   | Ash chamber, h=500 mm, 500 kW   | 1 pc |
| 30508   | MultiJet bio burner 500 kW (K)  | 1 pc |
| 7939  | Burner screw Ø 193 mm   | 1 m  |
| 6029  | Burner screw motor 1,5 kW   | 1 pc |
| 20033   | Free fall funnel Ø 194 mm   | 1 pc |
| 8002  | Walking floor unit T2<br>- storage screw L-1050 mm<br>- storage screw actuator<br>- hydraulics unit<br>- extinguishing valve for pressurised water  | 1 pc |
| AMK500H   | Automatics Arimatic 500 (wood chip)<br><br>- burn back and flame control thermostat<br>- boiler sensor and overheating guard<br>- storage screw level monitor (photocell)<br><br>Optional automatics: | 1 pc |
| AM50002   | GSM modem   | 1 pc |
| AM50005   | Flue gas fan control 3.0 kW   | 1 pc |
| AM50006   | Moving grate control MJ 500   | 1 pc |
| AM50009   | Water network pump control  | 1 pc |
| VARIMATIC1                                      | Remote monitoring: Arimatic Easy Remote   | 1 pc |
| 13733   | Acid-proof expansion tank 50 l  | 1 pc |
| 5517  | Pressure gauge with alarm   | 1 pc |

| Measure | Burner MJ 60         | Burner MJ 80         | Burner MJ 120               | Burner MJ 120       | Burner MJ 150               | Burner MJ 150       | Burner MJ 200       | Burner MJ 250       | Burner MJ 300       | Burner MJ 400       | Burner MJ 500       |
|---------|----------------------|----------------------|-----------------------------|---------------------|-----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|         | Boiler 60 kW 1,5 bar | Boiler 80 kW 1,5 bar | Boiler BioComp 120 kW 3 bar | Boiler 120 kW 4 bar | Boiler BioComp 150 kW 3 bar | Boiler 150 kW 4 bar | Boiler 200 kW 4 bar | Boiler 250 kW 4 bar | Boiler 300 kW 4 bar | Boiler 400 kW 4 bar | Boiler 500 kW 4 bar |
| B       | 700                  | 770                  | 510                         | 980                 | 560                         | 980                 | 980                 | 1030                | 1080                | 1180                | 1285                |
| C       | 526                  | 623                  | 900                         | 623                 | 1000                        | 738                 | 1024                | 1024                | 1024                | 1216                | 1216                |
| h       |                      |                      |                             | 350                 |                             | 350                 | 350                 | 350                 | 500                 | 500                 | 500                 |
| H       |                      |                      |                             | 1540                |                             | 1740                | 1540                | 1590                | 1640                | 1840                | 1845                |
| H2      | 1425                 | 1585                 | 1720                        | 1890                | 1720                        | 2090                | 1890                | 1940                | 2140                | 2340                | 2345                |
| L       | 1192                 | 1300                 | 1530                        | 1690                | 1700                        | 1790                | 1990                | 2090                | 2270                | 2370                | 2615                |
| M       | 570                  | 609                  | 710                         | 629                 | 730                         | 675                 | 895                 | 889                 | 912                 | 942                 | 944                 |
| N       | 521                  | 521                  | 521                         | 521                 | 521                         | 521                 | 801                 | 811                 | 806                 | 866                 | 771                 |
| O       | 458                  | 508                  |                             | 548                 |                             | 588                 | 666                 | 736                 | 806                 | 876                 | 1015                |

1,5 bar boilers have a fixed ash chamber; in 4 bar boilers it is separate.



# MULTIJET + FLOOR DISCHARGER (TPYM)

Walking floor unit TPYM, 2-screw feed, Arimax Bio 40-700 kW bio boiler

## Order example 300 kW with three-rake floor discharger

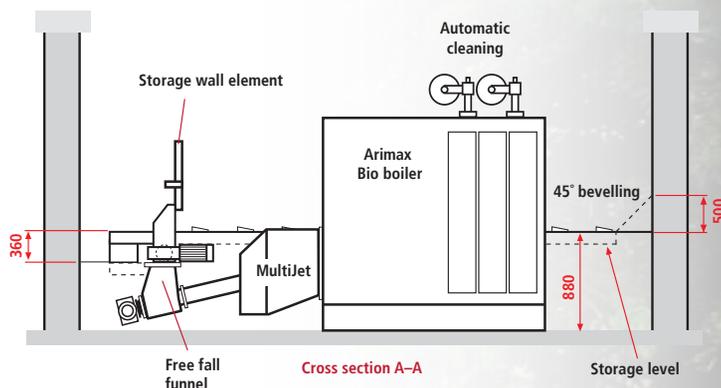
|            |  |      |
|------------|--|------|
| 5033435    | Arimax Bio SP 300 kW boiler, cleaning hatch on the side  | 1 pc |
| 66670      | Ash chamber, h=500 mm  | 1 pc |
| 30509      | Multijet bio burner 300 kW   | 1 pc |
| 7934       | Burner screw Ø 159 mm  | 1 m  |
| 6029       | Burner screw motor 1,5 kW  | 1 pc |
| 20031      | Free fall funnel Ø 159 mm  | 1 pc |
| 20023      | Walking floor unit rake 6, L-5650 mm (10 blades)   | 3 pc |
| 20056      | Bottom beam 6, L-6470 mm   | 3 pc |
| 20029      | Storage wall element for three-rake L-3600 mm  | 1 pc |
| 20025      | Storage screw, incl. motor, L-4300 mm  | 1 pc |
| 20027      | Extension for burner screw ____ m  | 1 pc |
| 10191      | Hydraulics unit 6100   | 1 pc |
| AMK500H    | Automatics Arimatic 500 (wood chip)<br>- burn back and flame control thermostat<br>- boiler sensor and overheating guard<br>- storage screw level monitor (photocell)<br><b>Optional automatics:</b> | 1 pc |
| AM50002    | GSM modem  | 1 pc |
| AM50005    | Flue gas fan control 3.0 kW  | 1 pc |
| AM50006    | Moving grate control MJ 500  | 1 pc |
| AM50009    | Water network pump control   | 1 pc |
| AM50013    | Air sweeping control   | 1 pc |
| VARIMATIC1 | Remote monitoring: Arimatic Easy Remote  | 1 pc |
| 13733      | Acid-proof expansion tank 50 l   | 1 pc |
| 5517       | Pressure gauge with alarm  | 1 pc |

## Sizing instructions for the fuel storage, measurements in mm

|                            |      |      |      |      |      |      |      |       |
|----------------------------|------|------|------|------|------|------|------|-------|
| Walking floor unit length  | 2650 | 3250 | 3850 | 4450 | 5050 | 5650 | 6850 | 8050  |
| Bottom beam length         | 3740 | 4340 | 4940 | 5540 | 6140 | 6740 | 7940 | 9140  |
| Storage minimum length     | 4240 | 4840 | 5440 | 6040 | 6640 | 7240 | 8440 | 9640  |
| Storage recommended length | 4740 | 5340 | 5940 | 6540 | 7140 | 7740 | 8940 | 10140 |

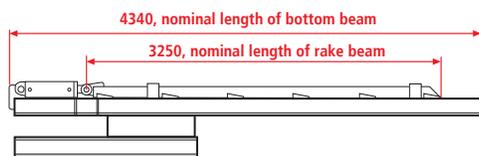
## Fuel storage with, measurements in mm

|                       |      |      |      |
|-----------------------|------|------|------|
| Number of rakes       | 2    | 3    | 4    |
| Storage minimum width | 2500 | 3700 | 4900 |



## Accessories

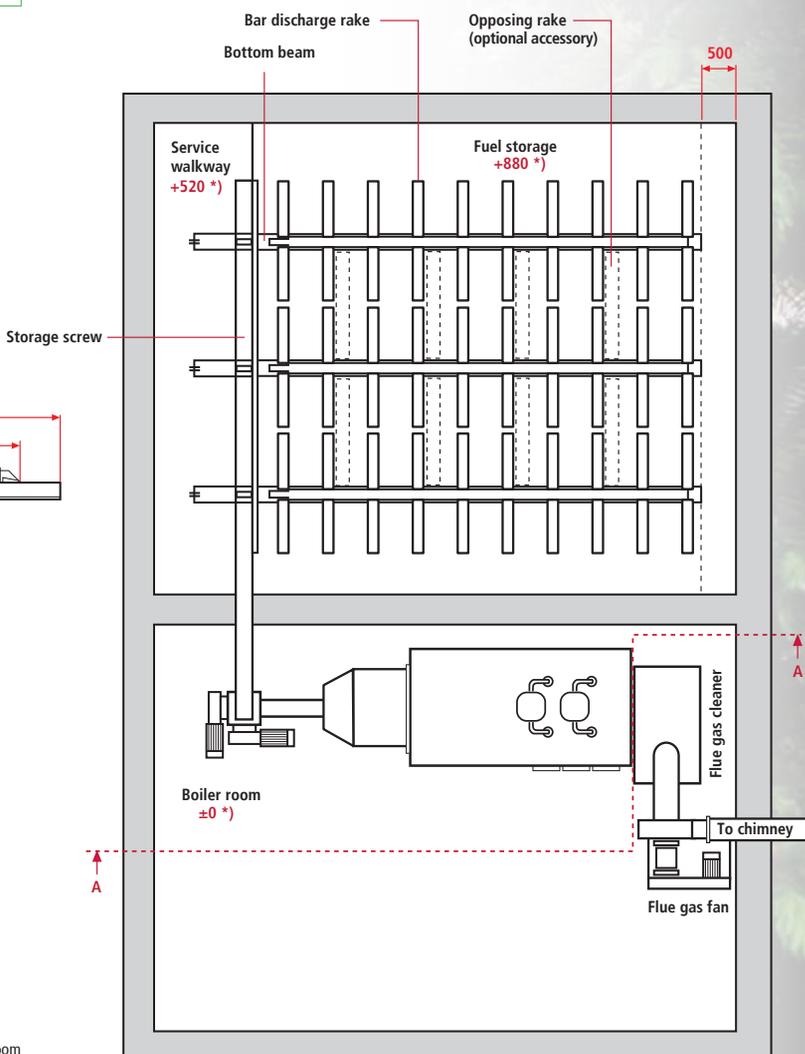
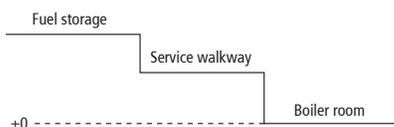
|       |   |      |
|-------|---|------|
| 30006 | Ash screw, primary Ø 114 mm, incl. motor              | 1 pc |
| 30038 | Ash screw, secondary Ø 114 mm, L-1000 mm, incl. motor | 1 pc |
| 30044 | Ash screw, extension                                  | 3 m  |
| 10327 | Flue gas fan  | 1 pc |
| 10321 | Flue gas cleaner                                      | 1 pc |
| 30091 | Smoke duct between boiler and cyclone cleaner         | 1 pc |
| 13159 | Automatic cleaning equipment                          | 1 pc |



\*) Floor concreting heights mm

Before assembly  
- fuel storage +720  
- service walkway +360  
- boiler room ±0

Final levels  
- fuel storage +880  
- service walkway +520  
- boiler room ±0



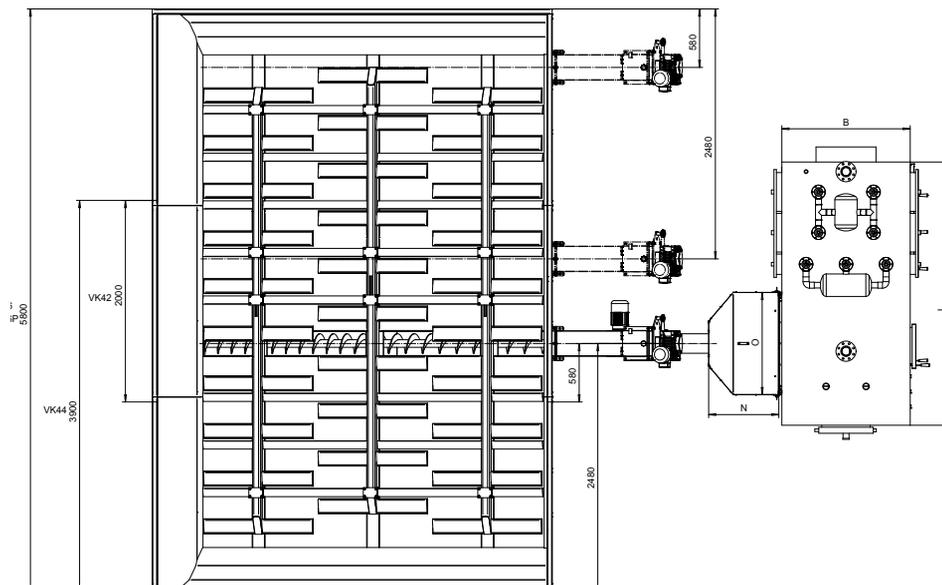
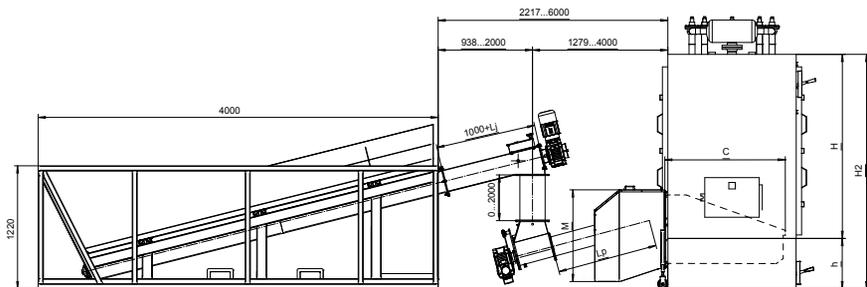
# MULTIJET | K4 MJ40-700

Walking floor unit K4, 2-screw feed, BioComp 120/150 = 3 bar, Arimax 360 / 380 Bio = 1.5 bar or Arimax Bio 120-700 kW bio boiler

| Order example 500 kW with K4 (4x6m) walking floor unit |  |      | Measure | Burner MJ 60         | Burner MJ 80         | Burner MJ 120               | Burner MJ 120       | Burner MJ 150               | Burner MJ 150       | Burner MJ 200       | Burner MJ 250       | Burner MJ 300       | Burner MJ 400       | Burner MJ 500       | Burner MJ 700       |
|--|--|------|---------|----------------------|----------------------|-----------------------------|---------------------|-----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|  |  |      |         | Boiler 60 kW 1,5 bar | Boiler 80 kW 1,5 bar | Boiler BioComp 120 kW 3 bar | Boiler 120 kW 4 bar | Boiler BioComp 150 kW 3 bar | Boiler 150 kW 4 bar | Boiler 200 kW 4 bar | Boiler 250 kW 4 bar | Boiler 300 kW 4 bar | Boiler 400 kW 4 bar | Boiler 500 kW 4 bar | Boiler 700 kW 4 bar |
| 5033445  | Arimax Bio SP 500 kW boiler, cleaning hatch on the side  | 1 pc |         |                      |                      |                             |                     |                             |                     |                     |                     |                     |                     |                     |                     |
| 66674  | Ash chamber, h=500 mm, 500 kW  | 1 pc |         |                      |                      |                             |                     |                             |                     |                     |                     |                     |                     |                     |                     |
| 30508  | MultiJet bio burner 500 kW (K)   | 1 pc |         |                      |                      |                             |                     |                             |                     |                     |                     |                     |                     |                     |                     |
| 7939   | Burner screw Ø 193 mm  | 1 m  | B       | 700                  | 770                  | 510                         | 980                 | 560                         | 980                 | 980                 | 1030                | 1080                | 1180                | 1285                | 1485                |
| 6029   | Burner screw motor 1,5 kW  | 1 pc | C       | 526                  | 623                  | 900                         | 623                 | 1000                        | 738                 | 1024                | 1024                | 1024                | 1216                | 1216                | 1402                |
| 20033  | Free fall funnel Ø 194 mm  | 1 pc | h       |                      |                      |                             | 350                 |                             | 350                 | 350                 | 350                 | 500                 | 500                 | 500                 | 800                 |
| 30061  | Walking floor unit K4 module discharge bottom 2x4 m<br>- storage screw L-1050 mm<br>- storage screw actuator<br>- hydraulics unit<br>- inspection hatch limit switch | 1 pc | H       |                      |                      |                             | 1540                |                             | 1740                | 1540                | 1590                | 1640                | 1840                | 1845                | 2145                |
|  |  |      | H2      | 1425                 | 1585                 | 1720                        | 1890                | 1720                        | 2090                | 1890                | 1940                | 2140                | 2340                | 2345                | 2945                |
|  |  |      | L       | 1192                 | 1300                 | 1530                        | 1690                | 1700                        | 1790                | 1990                | 2090                | 2270                | 2370                | 2615                | 2915                |
|  |  |      | M       | 570                  | 609                  | 710                         | 629                 | 730                         | 675                 | 895                 | 889                 | 912                 | 942                 | 944                 | 1000                |
|  |  |      | N       | 521                  | 521                  | 521                         | 521                 | 521                         | 521                 | 801                 | 811                 | 806                 | 866                 | 771                 | 791                 |
|  |  |      | O       | 458                  | 508                  |                             | 548                 |                             | 588                 | 666                 | 736                 | 806                 | 876                 | 1015                | 1085                |

1,5 bar boilers have a fixed ash chamber; in 4 bar boilers it is separate.

|            |  |      |
|------------|--|------|
| 30062      | K4 additional module 2x4 m   | 2 pc |
| 30076      | K4 rake bar 6 m, l/r   | 2 pc |
| AMK500H    | Automatics Arimatic 500 (wood chip)<br>- burn back and flame control thermostat<br>- boiler sensor and overheating guard<br>- storage screw level monitor (photo cell)<br><br>Optional automatics: | 1 pc |
| AM50002    | GSM modem  | 1 pc |
| AM50005    | Flue gas fan control 3.0 kW  | 1 pc |
| AM50006    | Moving grate control MJ 500  | 1 pc |
| AM50009    | Water network pump control   | 1 pc |
| VARIMATIC1 | Remote monitoring: Arimatic Easy Remote  | 1 pc |
| 13733      | Acid-proof expansion tank 50 l   | 1 pc |
| 5517       | Pressure gauge with alarm  | 1 pc |



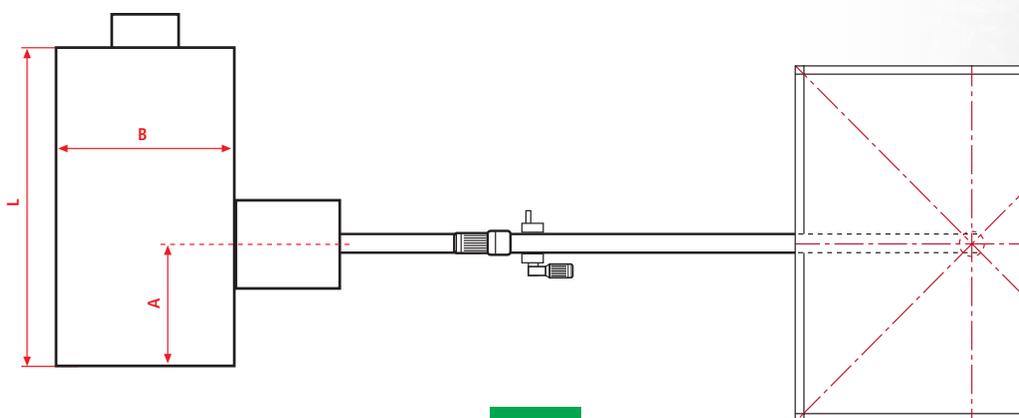
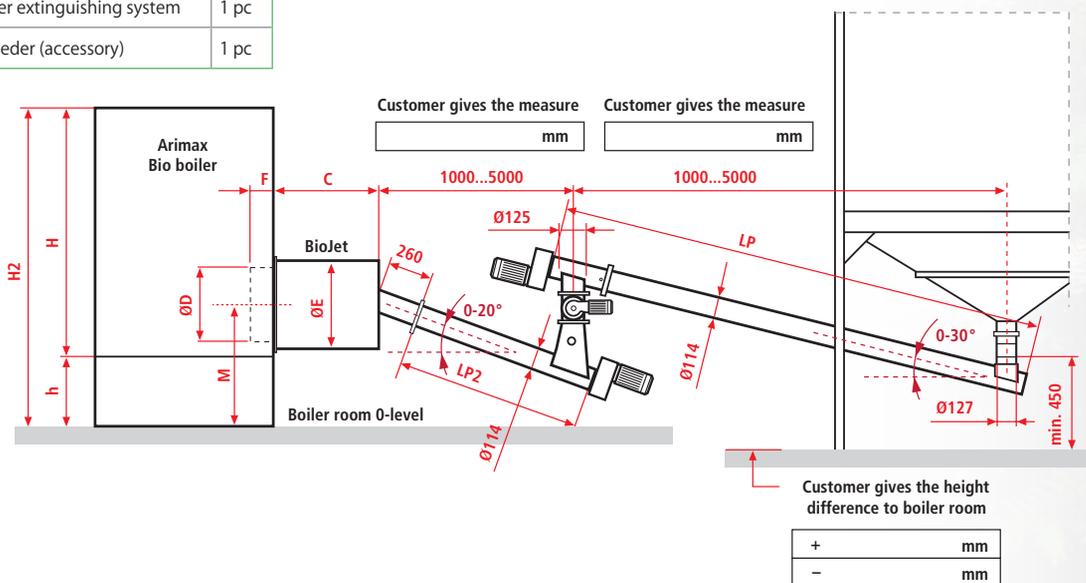
# BIOJET FOR PELLET, P2 B60 - 500

Pelleti silo, 2-screw feed, BioComp 120/150 = 3 bar, Arimax 360 / 380 Bio = 1,5 bar or Arimax Bio 120-500 kW bio boiler = 4 bar

| Order example 200 kW 4 bar Pellet |   |      |
|-----------------------------------|---|------|
| 5033425                           | Arimax Bio 200 SP bio burner  | 1 pc |
| 66666                             | Ash chamber, h = 350 mm   | 1 pc |
| 30054                             | BioJet bio burner 200 P   | 1 pc |
| 7943                              | Burner screw Ø 114 mm   | 1 m  |
| 30048                             | Burner screw extension  | 1 m  |
| 7947                              | Storage screw Ø 114 mm  | 1 m  |
| 30048                             | Storage screw extension   | 2 m  |
| 10536                             | Burner screw motor 0,55 kW  | 1 pc |
| 10536                             | Storage screw motor 0,55 kW   | 1 pc |
| AMK500P                           | Arimatic 500 Pellet<br>- burn back and flame control thermostat<br>- boiler sensor and overheating guard<br>- storage screw level monitor (capacitive sensor)<br><br>Optional automatics: | 1 pc |
| AM50009                           | Pump control  | 1 pc |
| AM500P03                          | Cell feeder control   | 1 pc |
| 10661                             | Pellet silo minimum level monitor   | 1 pc |
| 1334                              | Powder extinguishing system   | 1 pc |
| 13195                             | Cell feeder (accessory)   | 1 pc |

| Measure | Burner BJ60 P        | Burner BJ80 P        | Burner BJ120P              | Burner BJ120 P      | Burner BJ150P              | Burner BJ200 P      | Burner BJ250 P      | Burner BJ300 P      | Burner BJ400 P      | Burner BJ500 P      |
|---------|----------------------|----------------------|----------------------------|---------------------|----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|         | Boiler 60 kW 1,5 bar | Boiler 80 kW 1,5 bar | Boiler BioComp 120kW 3 bar | Boiler 120 kW 4 bar | Boiler BioComp 150kW 3 bar | Boiler 200 kW 4 bar | Boiler 250 kW 4 bar | Boiler 300 kW 4 bar | Boiler 400 kW 4 bar | Boiler 500 kW 4 bar |
| A       | 350                  | 364                  | 510                        | 530                 | 560                        | 580                 | 630                 | 680                 | 730                 | 780                 |
| B       | 700                  | 770                  | 900                        | 980                 | 1000                       | 980                 | 1030                | 1080                | 1180                | 1285                |
| C       | 330                  | 420                  |                            | 520                 |                            | 710                 | 790                 | 880                 | 1030                | 1260                |
| D       | 335                  | 375                  |                            | 415                 |                            | 510                 | 560                 | 630                 | 710                 | 710                 |
| E       | 435                  | 475                  |                            | 515                 |                            | 610                 | 660                 | 730                 | 810                 | 810                 |
| F       | 174                  | 174                  |                            | 170                 |                            | 190                 | 190                 | 190                 | 190                 | 185                 |
| h       |                      |                      | 1720                       | 350                 | 1720                       | 350                 | 350                 | 500                 | 500                 | 500                 |
| H       |                      |                      | 1530                       | 1540                | 1700                       | 1540                | 1590                | 1640                | 1840                | 1845                |
| H2      | 1425                 | 1585                 | 710                        | 1890                | 730                        | 1890                | 1940                | 2140                | 2340                | 2345                |
| L       | 1192                 | 1300                 | 270                        | 1690                | 270                        | 1990                | 2090                | 2270                | 2370                | 2615                |
| M       | 616                  | 650                  | 650                        | 660                 | 680                        | 705                 | 730                 | 915                 | 955                 | 955                 |

1,5 bar boilers have a fixed ash chamber; in 4 bar boilers it is separate.



# BIOJET FOR PELLET, PS-10 B60 - 1000

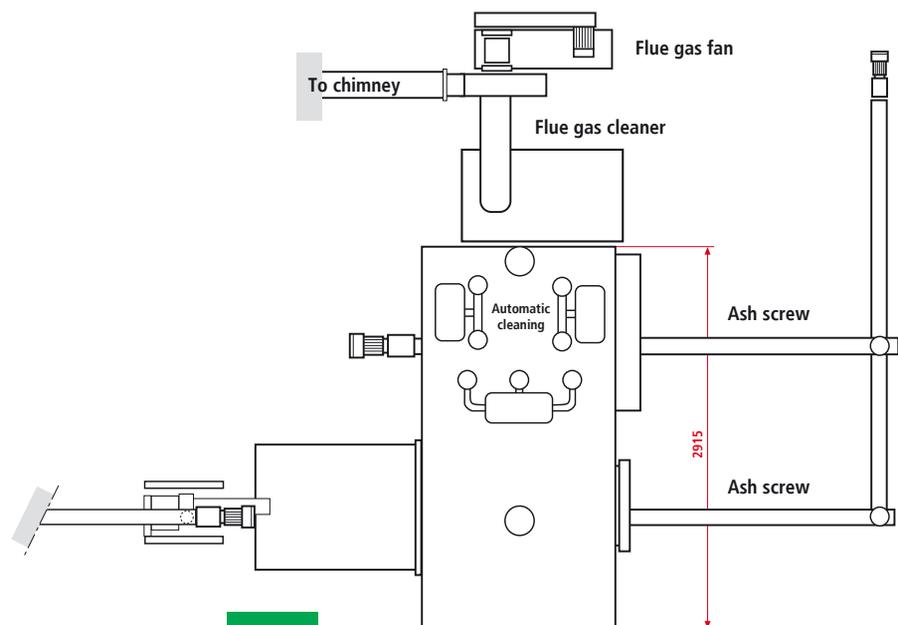
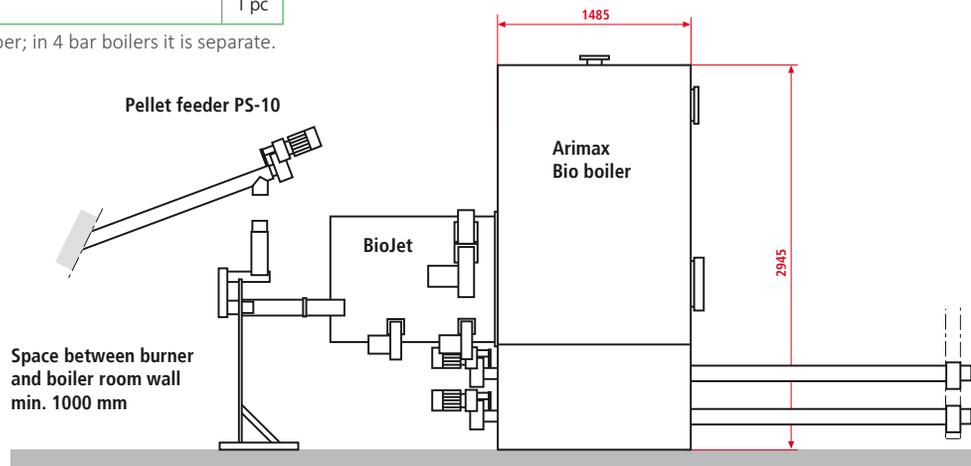
Pellet silo, 2-screw feed, BioComp 120/150 = 3 bar, Arimax 360 / 380 Bio = 1,5 bar or Arimax Bio 120-1000 kW bio boiler = 4 bar

## Order example 400 kW 4 bar Pellet

|         |  |      |
|---------|--|------|
| 5033440 | Arimax Bio 400 SP bio boiler   | 1 pc |
| 66676   | Ash chamber, h = 800 mm  | 1 pc |
| 30059   | BioJet bio burner 700 P  | 1 pc |
| 5662    | Burner cooling pump  | 1 pc |
| 5151402 | Pellet feeder PS-10 40 - 400 kW<br>- powder<br>- burn back thermostat<br>- cell feeder | 1 pc |
| 7947    | Storage screw Ø 114 mm   | 1 m  |
| 30048   | Storage screw extension  | 3 m  |
| 10536   | Burner screw motor 0,55 kW   | 1 pc |
| 7915    | Storage screw motor 0,55 kW  | 1 pc |
| 30009   | Ash screw, primary Ø 114 mm, incl. motor   | 2 pc |
| 30038   | Ash screw, secondary Ø 114 mm, L-1000 mm, incl. motor                                  | 1 pc |
| 30044   | Ash screw extension  | 2 m  |
| 30044   | Ash screw extension  | 3 m  |
| 10321   | Combustion gas cleaner   | 1 pc |
| 13735   | Flue gas fan   | 1 pc |
| 13152   | Automatic cleaning   | 1 pc |

|            |  |      |
|------------|--|------|
| 13425      | Air compressor   | 1 pc |
| 10377      | Energy meter   | 1 pc |
| AMK500P    | Arimatic 500 Pellet<br>- flame control thermostat<br>- boiler sensor and overheating guard<br>- storage screw level monitor (capacitive sensor)<br>- flue gas fan<br><br><b>Optional automatics:</b> | 1 pc |
| AM50004    | Flue gas fan control (max 1.5kW)   | 1 pc |
| AM50007    | Ash screw control 3 pcs  | 1 pc |
| AM50009    | Network pump control (1-vaiheinen)   | 1 pc |
| AM50013    | Automatic cleaning control   | 1 pc |
| AM50017    | Energy measurement (MC801 connection)  | 1 pc |
| AM500P02   | Ash screw 2 control  | 1 pc |
| AM500P03   | Cell feeder control  | 1 pc |
| 10661      | Lower limit watch of silo  | 1 pc |
| VARIMATIC1 | Arimatic Easy Remote   | 1 pc |

1,5 bar boilers have a fixed ash chamber; in 4 bar boilers it is separate.





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