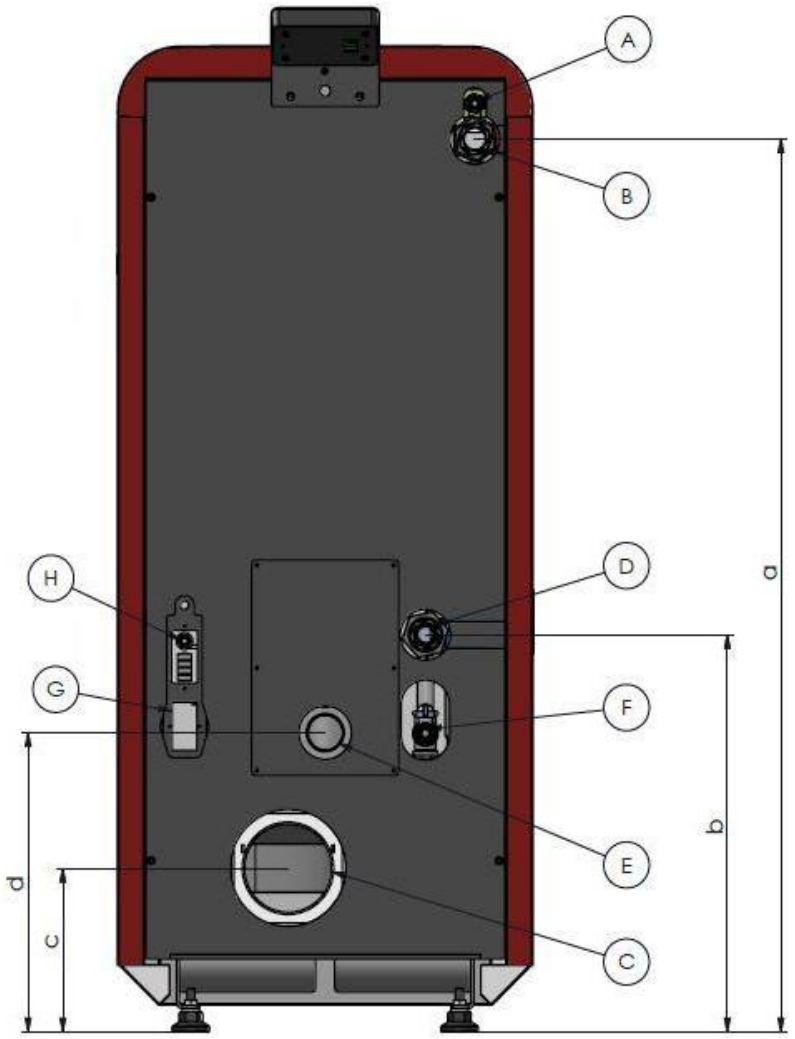
# ***Vesta*** Pellet-fired Heating Stove User Manual

## 1. Technical Characteristics

| DESCRIPTION | | | UoM | | |
|---|---|---|---|---|---|
| Heating stove capacity | | | kw | 21 | 15 |
| Water content in the heating stove | | | l | 25 | 25 |
| Draft required | | | Pa | 10 | 10 |
| Electrical power: | | | | | |
| - during ignition phase | | | W | 450 | 450 |
| - during operation phase | | | W | 150 | 150 |
| Electrical voltage | | | V | 230 | 230 |
| Frequency | | | Hz | 50 | 50 |
| Heating stove weight | | | kg | 220 | 220 |
| Maximum operating pressure | | | bar | 2.5 | 2.5 |
| Maximum operating temperature | | | °C | 85 | 85 |
| Flue pipe diameter | | | mm | 120 | 120 |
| Heating stove dimensions | | Width | mm | 539 | 539 |
| | | Height | mm | 1263 (1312) | 1263 |
| | | Depth | mm | 764 (775) | 764 |
| Heating stove connections | Flow pipe | | Inch | 1” | 1” |
| | Return pipe | | Inch | 1” | 1” |
| Pellet hopper capacity | | | kg | 40 | 40 |

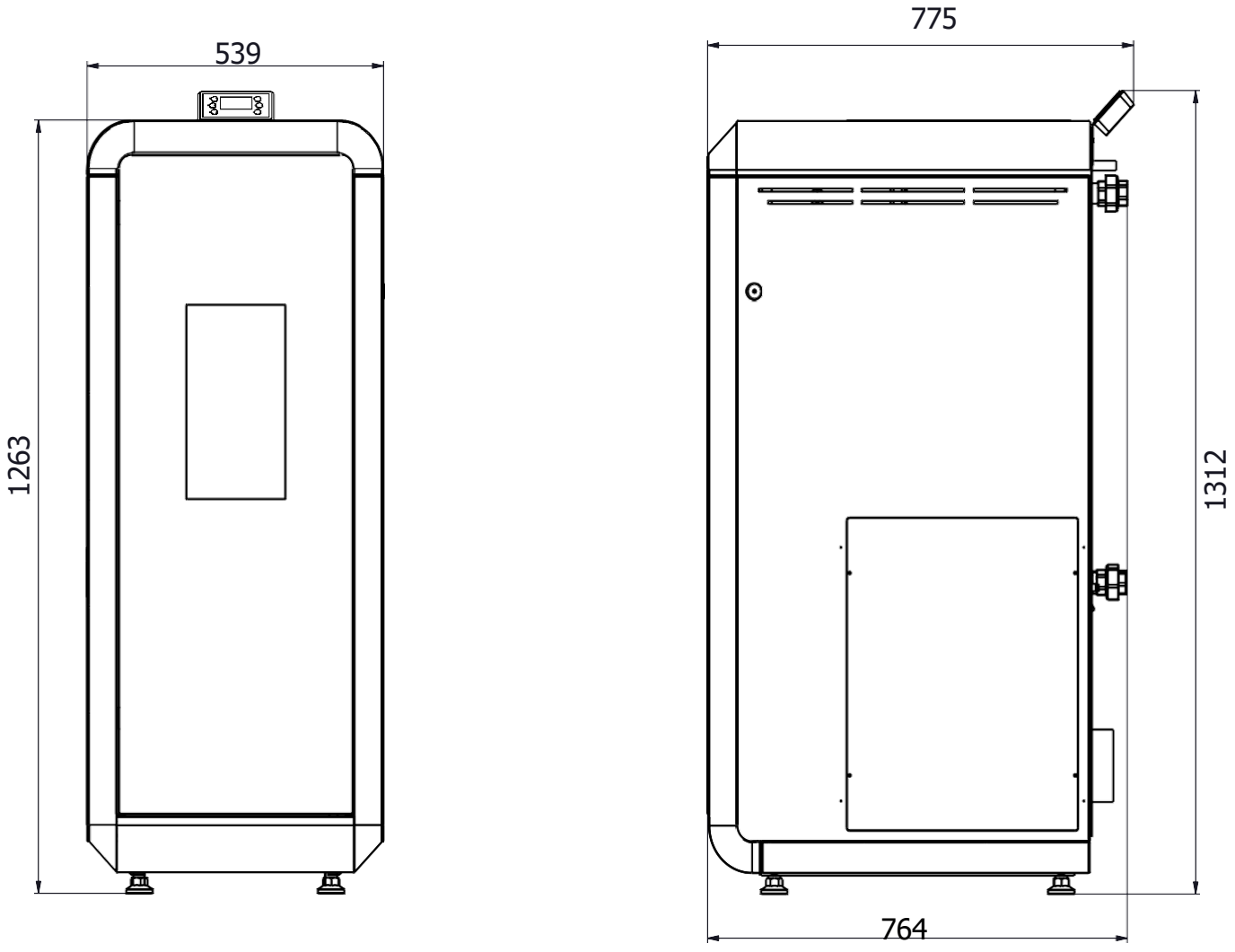


| | | |
|---|---|---|
| **A** | Safety valve | 1/2” SN 3bar |
| **B** | Flow pipe | Hot water 1” |
| **C** | Flue pipe connection | ⌀ 120mm |
| **D** | Return pipe | Cold water 1” |
| **E** | Fresh air intake connection | ⌀ 48mm |
| **F** | Filling and draining tap | |
| **G** | Main switch | |
| **H** | Safety thermostat | |

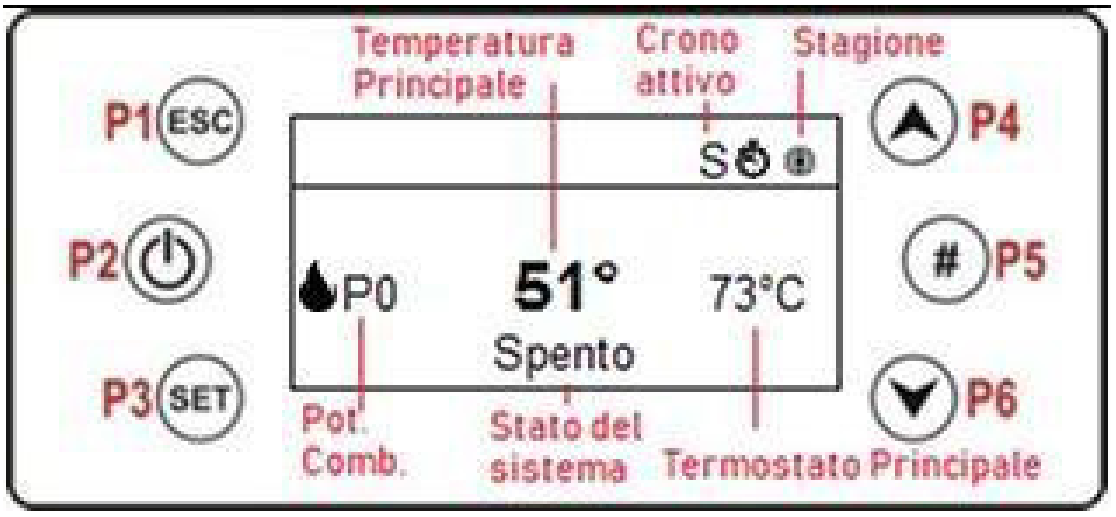
## Connection dimensions:

| | | |
|---|---|---|
| **a** | Flow pipe | 1144 mm |
| **b** | Return pipe | 509 mm |
| **c** | Flue pipe connection | 210 mm |
| **d** | Fresh air intake connection | 383 mm |

## Overall dimensions:



## 2. Display: Functions and Use




| | | | |
|---|---|---|---|
| **P1** | Exit from menu (submenu) | **P4** | Adjusting combustion power<br>**+** |
| **P2** | Ignition, shutdown, error reset (press and hold 3 sec). Activating chrono function | **P5** | Activating chrono time setting<br>Accessing info menu |
| **P3** | Access to User Menu 1 and User Menu 2 (press and hold)<br>Storing data | **P6** | Adjusting water temperature<br>**-** |
| **P3 + P5** (press and hold) | Direct access to secondary information | | |

| | | | |
|---|---|---|---|
| **D**<br>**W**<br>**WE** | Daily chrono activated<br>Weekly chrono activated<br>Weekend chrono activated | | Domestic hot water/buffer request not satisfied |
| ☼ | Summer operation mode | ❄ | Winter operation mode |
| **C** | Combined mode (not active) | | Wood-burning mode |
| | Klimatik function (not active) | | Room thermostat |

## 3. Alarms

| DESCRIPTION | STATUS | CODE |
|---|---|---|
| Safety thermostat HV1 | ***Blocked*** | **Er 01** |
| Stove door open / Safety pressure switch | ***Blocked*** | **Er 02** |
| Shutdown due to low exhaust gas temperature | ***Blocked*** | **Er 03** |
| Shutdown due to high temperature of water in the heating stove | ***Blocked*** | **Er 04** |
| Shutdown due to high exhaust gas temperature | ***Blocked*** | **Er 05** |
| Pellet thermostat open / High temperature in the pellet hopper | ***Blocked*** | **Er 06** |
| No encoder signal | ***Blocked*** | **Er 07** |
| Fan speed regulation failure | ***Blocked*** | **Er 08** |
| Low water pressure | ***Blocked*** | **Er 09** |
| High water pressure | ***Blocked*** | **Er 10** |
| Time and date not set | ***Blocked*** | **Er 11** |
| Ignition failure | ***Blocked*** | **Er 12** |
| Power supply failure | ***Blocked*** | **Er 15** |
| RS 485 communication error | ***Blocked*** | **Er 16** |
| Open probe for domestic hot water / buffer / heating stove | ***Blocked*** | **Er 23** |

## 4. Visualization

| Description | Message |
|---|---|
| Anomaly detected during probe control in “Check Up” phase | **Probe** |
| Periodic cleaning in progress | **Cleaning on** |
| System in night mode | **Night mode** |
| Display firmware not compatible with main board | **Keyboard not compatible** |

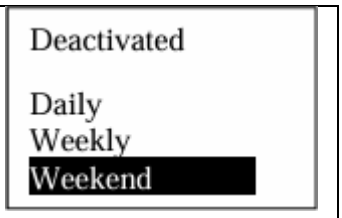
| | |
|---|---|
| **Operating Mode** | This menu allows you to change the system's operating mode — switching from wood to pellet and vice versa, or selecting a combined mode. The menu is displayed only if P11 = 2, 3, 4.<br>Switching from one operating mode to another is possible only in the following cases:<br>• when the system is OFF, any of the available modes can be selected<br>• when the system is ON and P11=2, the operating mode cannot be changed<br>• when the system is ON and P11=3, it is possible to switch from wood mode to combined mode<br>• when the system is ON and P11=4, it is possible to switch from wood/pellet mode to combined mode |
| **Power** | **PELLET**<br>This menu allows you to adjust the combustion power when the system operates in pellet mode.<br>It can be set to automatic or manual mode: in automatic mode, the system selects the combustion power; in manual mode, the user selects the desired power level.<br>The left side of the display shows the combustion mode (A=automatic, M=manual) and the system operating power.<br>Regarding burner system, automatic power cannot be adjusted.<br>The menu appears if P11 ≠ 1. |
| | **WOOD**<br>This menu allows you to adjust the combustion power when the system operates in wood mode.<br>It can be set to automatic or manual mode: in automatic mode, the system selects the combustion power; in manual mode, the user selects the power level.<br>The left side of the display shows the combustion mode (A=automatic combustion, M=manual combustion), as well as system operating power. Regarding burner system, automatic power cannot be adjusted. It appears if A36=1 and P11 ≠ 0. |
| | **HEATING**<br>By entering this menu, it is possible to adjust the heating power. It can be set to automatic or manual mode: in automatic mode, the system selects the combustion power; in manual mode, the user selects the power level.<br>If no output is configured as a heating fan or if parameter A04 = 1, this menu is not displayed. |

| | |
|---|---|
| **Thermostats** | This menu allows the modification of main thermostat values. It is not displayed for burner systems.<br>**HEATING STOVE**<br>Menu for adjusting the heating stove thermostat value. The minimum and maximum values can be programmed by adjusting thermostats Th26 and Th27. When the climate function is active, the thermostat value cannot be changed, as it is calculated automatically by the system. Displayed only if the heating stove probe is configured.<br>**DHW**<br>Menu for adjusting the domestic hot water thermostat value; displayed if the hydraulic system is configured as a hot water tank. The minimum and maximum values can be programmed by adjusting thermostats Th51 and Th52.<br>**BUFFER**<br>Menu for changing the buffer tank thermostat value; displayed if the hydraulic system which includes a buffer tank is selected. The minimum and maximum values can be |
| | programmed by adjusting thermostats Th51 and Th52.<br>When the climate function is active, its value cannot be changed, as it is calculated automatically by the system. |
| **Chrono function** | This menu allows programming system ignition and shutdown times. It consists of two submenus. |

**OPERATING MODE**

Allows you to select the desired mode or disable all programming.

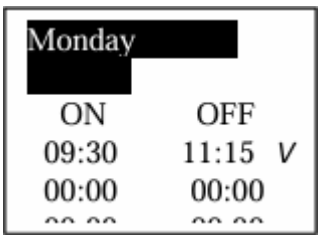
- enter edit mode using button P3
- select the desired mode (daily, weekly, or weekend).
- save the new settings using P3 button.




**PROGRAM**

The system offers three types of programming: daily, weekly, weekend After selecting the desired type of program:

- Select the time slot you wish to program using P6 or P4 buttons
- Enter edit mode (the selected time will flash) using P3 button.
- change the times using P6 or P4 buttons
- save the programs using P3 button.
- enable ("V" displayed) or disable (no "V" displayed) the selected time slot by pressing P5 button




***DAILY***

Select the day of the week you wish to program and set ignition and shutdown times.

*Programming after midnight*

Set the desired switch-on time on the previous day: for example 8:30 AM

Set switch-off time on the previous day to 11:59 PM

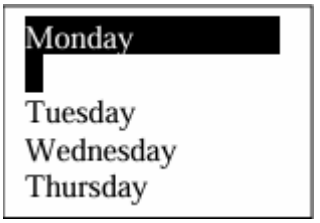
Set switch-on time on the following day to 12:00 AM

Set the desired switch-off time on the following day

to the value:

for example 6:30 AM

The system will switch on at 08:30 PM on Tuesday and switch off at 06:30 AM on Wednesday.

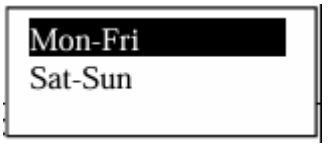



***WEEKLY***

The program is the same for all days.

***WEEKEND***

Select between Monday-Friday and Saturday-Sunday and set ignition and shutdown times accordingly.



## 5.1. User Menu 2

<table>
<tr><td>Settings</td><td>Date and time<br><br>This function allows you to set the current day, month, year, and time.</td></tr>
<tr><td></td><td>Language<br><br>Menu for changing the language of the control panel/display.</td></tr>
<tr><td></td><td>Recipe<br><br>Menu for selecting the combustion recipe;<br>if P04=1, this menu is not displayed.</td></tr>
<tr><td></td><td>Summer – Winter<br><br>This menu allows adjustment of the hydraulic system’s operation according to the season.<br><br>Displayed only if the hydraulic system is selected.</td></tr>
<tr><td>Service</td><td>Counters
<table>
<tr><td>Number of ignitions</td><td>Total number of ignitions</td></tr>
<tr><td>Ignition failure</td><td>Total number of failed ignitions</td></tr>
<tr><td>Operating hours</td><td>Hours of operation in working, modulation, and safety modes</td></tr>
</table></td></tr>
<tr><td></td><td>Error log<br><br>This menu displays the last 10 errors; each line shows the error code and the date/time when it occurred.<br><br>Enter the counter reset menu to clear this list.</td></tr>
<tr><td></td><td>Secondary information<br><br>Information on configurable inputs and outputs is available only if these have been previously set.
<table>
<tr><th>Display</th><th>Description</th></tr>
<tr><td>592</td><td>NG01 Wood-Pellet Evo Code.</td></tr>
<tr><td>xyzt</td><td>Manufacturer code</td></tr>
<tr><td>Fan</td><td>Exhaust gas fan speed (V1 output)</td></tr>
<tr><td>Output (C)</td><td>Output status (ON/OFF) or reducer speed (rpm) if P81=1, 2 and the output is configured as a reducer.</td></tr>
<tr><td>Output (V2)</td><td>Output status (ON/OFF)</td></tr>
<tr><td>Output (A1)</td><td>Output status (ON/OFF)</td></tr>
<tr><td>Output (A2)</td><td>Output status (ON/OFF)</td></tr>
</table></td></tr>
</table>

| | | |
|---|---|---|
| | Output PW1 | Output status (ON/OFF) |
| | Output PW2 | Output status (ON/OFF) |
| | Airflow | Airflow: displayed if the input is configured as the primary air regulator. |
| | T of exhaust gases | Temperature of exhaust gases. |
| | T of water | Temperature of heating stove. Visible only if the system is configured as a hydraulic system. |
| | T of buffer | Buffer tank temperature: displayed if the input is configured as the<br>DHW/buffer tank probe and the hydraulic system with buffer tank is selected. |
| | T of domestic hot water | Temperature of DHW: displayed if the input is configured as a DHW tank probe and if the hydraulic system with DHW tank is selected. |
| | Input (IN2) | Input status (digital only): open->0, closed->1. |
| | Input (IN3) | Input status (digital only): open->0, closed->1. |
| | Input (IN4) | Input status (digital only): open->0, closed->1. |
| | Input (IN6) | Input status (digital only): open->0, closed->1. |
| | Input (IN7) | Input status (digital only): open->0, closed->1. |
| | Input (HV1) | Input status: open->0, closed->1. |
| | Input (HV2) | Input status: open->0, closed->1. |
| | **Reducer calibration**<br>This menu allows adjustment of the default reducer speed or switch-on time. Values can be set in the range from –7 to +7. Default value is 0. The menu is displayed only if A64=1. | |
| | **Fan calibration**<br>This menu allows adjustment of the default combustion fan speed. Values can be set in the range from – 7 to +7. Default value is 0. The menu is displayed only if A64=1. | |
| | **Automatic combustion power**<br>This menu allows adjustment of the combustion power only in automatic mode. If setting is performed, the manual power adjustment menus will no longer appear. | |

| | |
|---|---|
| | The menu is not displayed for burner systems. |
| | **Pellet loading**<br>This function manually activates pellet loading and automatically stops after 300 seconds. The system must be OFF for this operation to be performed. |
| **Display** | **Contrast**<br>Allows adjustment of the screen contrast. |
| | **Acoustic alarm**<br>Menu for enabling/disabling the sound alarm.<br>**Firmware codes**<br>This menu displays the communication address of the control board, board type, and firmware versions. Possible board types displayed are:<br>MSTR Master INP inputs KEYB keyboard OUT outputs<br>CMPS composite SENS sensors COM communication |
| | **Control board address**<br>Password-protected menu (default password is 1810) allowing configuration of the RS485 node address. Within the 485 bus, multiple nodes cannot share the same address. |
| **System menu** | **Minimum brightness**<br>Allows adjustment of the screen brightness when the controls are not used.<br>Menu for accessing data reserved for technical personnel only. Access is password-protected. |

# 6 Hydraulic system

### *6.1. Hydraulic system selection*

By adjusting parameter P26, you can select the most suitable hydraulic system configuration.

***System pump lock via room thermostat:***

• available above the thermostat activation value for the pump Th19 or Th59 (for system 4).

• in systems 0 and 2, if there is a demand for water, pump P1 is not locked and will reactivate if it was previously stopped.

*Electrical wiring:*

**S1** = stove probe P1 = pump P1

**S2** = stove/buffer probe P2 = pump P2/solenoid valve

**FL** = flow regulator

### *Configuration 0*

***When parameter P26 = 0, the configuration shown in Figures 1 and 2 is selected.***

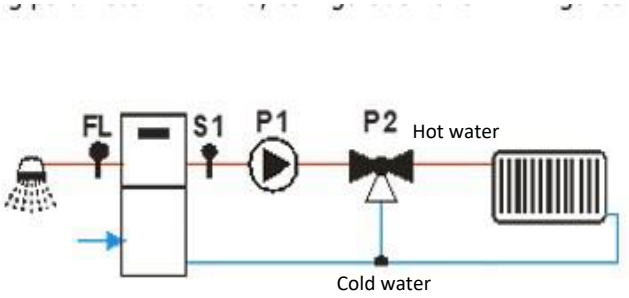



Fig. 1

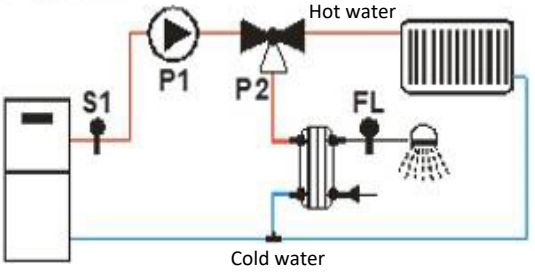



Fig. 2

### *Heating*

The pump switches on when the temperature exceeds the thermostat Th20 value; to prevent the
water from freezing, it switches on if the water temperature drops below the thermostat Th18 value. If the water temperature exceeds the thermostat Th21 value, for safety reasons, the pump remains continuously on.

### *Water recirculation*

When there is a demand for domestic water and the boiler water temperature exceeds the thermostat Th19 value, or when the boiler water temperature exceeds the thermostat Th20 value, the valve is activated.

If the water temperature exceeds the thermostat Th21 value, the valve directs the water toward the system.

***Example:*** Th18 = 5 °C, Th19 = 40 °C, Th20 = 30 °C, Th21 = 70 °C

### *Configuration 1*

***When parameter P26 = 1, the configuration shown in Figures 3 and 4 is selected***

| Temperature of water | Flow regulator | Model | Operating mode | Valve P2 | Pump P1 |
|---|---|---|---|---|---|
| T < 5°C | - | - | - | system (OFF) | **ON** |
| 5°C ≤ T< 30°C | - | - | - | system (OFF) | OFF |
| 30°C ≤ T< 40°C | - | - | - | recirculation (**ON**) | **ON** |
| 40°C ≤ T< 70°C | Open | Winter | Pellet | system (OFF) | **ON** |
| | | Summer | Pellet | recirculation (**ON**) | OFF |
| | | - | Wood | system (OFF) | **ON** |
| | **Closed** | - | - | recirculation (**ON**) | **ON** |
| T≥70°C | - | - | - | system (OFF) | **ON** |

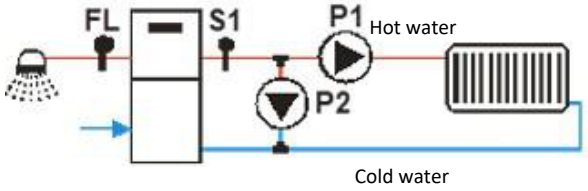



Fig. 3

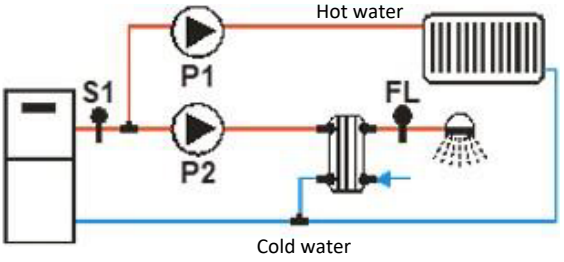



Fig. 4

## Heating

Pump P1 switches on when the temperature exceeds the pump activation thermostat Th19 value and is disabled when there is a demand for domestic water.

To prevent freezing, pump P1 switches on if the water temperature drops below the thermostat Th18 value. For safety reasons, if the water temperature exceeds the thermostat Th21 value, pump P1 remains continuously on.

### *Water recirculation*

When there is a demand for domestic water and the boiler water temperature exceeds the thermostat Th19 value, or the boiler water temperature exceeds the thermostat Th20 value, the pump P2 is activated.

If the water temperature exceeds the thermostat Th21 value, the pump P2 is deactivated.

***Example:*** Th18 = 5 °C, Th19 = 40 °C, Th20 = 30 °C, Th21 = 70 °C

| Temperature of water | Flow regulator | Model | Operating mode | Pump P2 | Pump P1 |
|---|---|---|---|---|---|
| T < 5°C | - | - | - | OFF | **ON** |
| 5°C ≤ T< 30°C | - | - | - | OFF | OFF |
| 30°C ≤ T< 40°C | - | - | - | **ON** | OFF |
| 40°C ≤ T< 70°C | Open | Winter | Pellet | OFF | **ON** |
| | | Summer | Pellet | OFF | OFF |
| | | - | Wood | OFF | **ON** |
| | **Closed** | - | - | **ON** | OFF |
| T≥70°C | - | - | - | OFF | **ON** |

## *Configuration 2*

***When parameter P26=2, the configuration shown in Figure 5 is selected:***

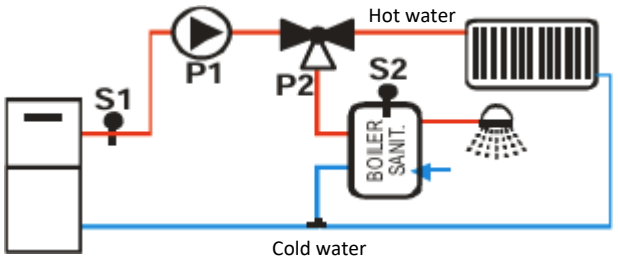



Fig. 5

### Heating

Pump P1 switches on if the water temperature in the heating stove exceeds the thermostat Th20 value and the difference between the temperatures detected by probes S1 and S2 is greater than the thermostat Th57 value.

The pump also switches on if the water temperature in the heating stove exceeds the thermostat Th19 value. To prevent water freezing, the pump switches on if the water temperature drops below the thermostat Th18 value. For safety reasons, if the water temperature exceeds the thermostat Th21 value, the pump remains continuously on.

### Domestic Hot Water

The valve directs the flow toward the DHW tank if the water temperature does not exceed the DHW/buffer tank thermostat value and if the water temperature in the heating stove exceeds the thermostat Th20 value.

For safety reasons, if the water temperature in the heating stove exceeds the thermostat Th21 value, the valve directs the flow toward the system.

***Example:*** Th18 = 5 °C, Th19 = 65 °C, Th20 = 50 °C, Th21 = 70 °C, Th57 = 5 °C, DHW/Buffer tank thermostat = 55 °C

### *Configuration 3*

***When parameter P26=3, the configuration shown in Figure 6 is selected.***

| Probe S1 T. | Probe S2 T. | Model | Operating mode | Difference | Valve P2 | Pump P1 |
|---|---|---|---|---|---|---|
| T < 5°C | - | - | - | - | system (OFF) | **ON** |
| 5°C ≤ T< 50°C | T > 55°C | Winter | - | - | system (OFF) | OFF |
| | T < 55°C | Winter | - | - | recirculation (**ON**) | OFF |
| | | Summer | - | - | recirculation (**ON**) | OFF |
| 50°C ≤ T< 65°C | T < 55°C | - | - | < 5°C | recirculation (**ON**) | OFF |
| | | - | - | ≥ 5°C | recirculation (**ON**) | **ON** |
| | T > 55°C | Winter | - | - | system (OFF) | OFF |
| | | Summer | - | < 5°C | recirculation (**ON**) | OFF |
| | | Summer | - | ≥ 5°C | recirculation (**ON**) | **ON** |
| S65°C ≤ T< 70°C | T < 55°C | - | - | < 5°C | recirculation (**ON**) | OFF |
| | | - | - | ≥ 5°C | recirculation (**ON**) | **ON** |
| | T > 55°C | Winter | Wood | - | system (OFF) | **ON** |
| | | Summer | Wood | - | recirculation (**ON**) | **ON** |
| | | Winter | Pellet | - | system (OFF) | **ON** |
| | | Summer | Pellet | < 5°C | recirculation (**ON**) | OFF |
| | | Summer | Pellet | ≥ 5°C | recirculation (**ON**) | **ON** |
| T≥70°C | - | - | - | - | system (OFF) | **ON** |

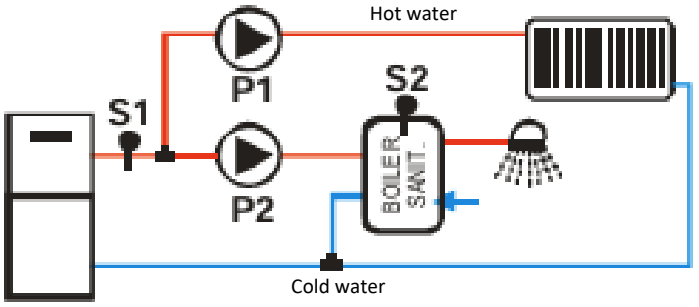



Fig. 6

### Heating

Pump P1 switches on when the temperature exceeds the thermostat Th19 value, provided that the difference between the temperatures detected by probes S1 and S2 is lower than the thermostat Th57 value. To prevent water freezing, the pump switches on if the water temperature drops below the thermostat Th18 value or rises above the thermostat Th21 value.

## Domestic Hot Water

Pump P2 is responsible for heating the water in the DHW tank. It operates only if the water temperature in the heating stove exceeds the thermostat Th20 value and if the difference between the temperatures detected by probes S1 and S2 is greater than the thermostat Th57 value.

For safety reasons, if the water temperature in the heating stove exceeds the thermostat Th21 value, pump P2 switches off.

***Example:*** Th18 = 5 °C, Th19 = 65 °C, Th20 = 50 °C, Th21 = 70 °C, Th57 = 5 °C, DHW/buffer tank thermostat = 55 °C

| Probe S1 T. | Probe S2 T. | Model | Operating mode | Difference | Pump P2 | Pump P1 |
|---|---|---|---|---|---|---|
| T < 5°C | - | - | - | - | OFF | **ON** |
| 5°C ≤ T< 50°C | - | - | - | - | OFF | OFF |
| 50°C ≤ T< 65°C | T < 55°C | - | - | < 5°C | OFF | OFF |
| | | - | - | ≥ 5°C | | OFF |
| | T > 55°C | - | - | < 5°C | OFF | OFF |
| | | Winter | - | ≥ 5°C | OFF | OFF |
| | | Summer | - | ≥ 5°C | **ON** | OFF |
| 65°C ≤ T< 70°C | T < 55°C | - | - | < 5°C | OFF | OFF |
| | | - | - | ≥ 5°C | **ON** | OFF |
| | T > 55°C | - | Wood | - | OFF | **ON** |
| | | Winter | Pellet | - | OFF | **ON** |
| | | Summer | Pellet | < 5°C | OFF | OFF |
| | | Summer | Pellet | ≥ 5°C | **ON** | OFF |
| T≥70°C | - | - | - | - | OFF | **ON** |

## *Configuration 4*

***When parameter P26=4, the configuration shown in Figure 7 is selected:***

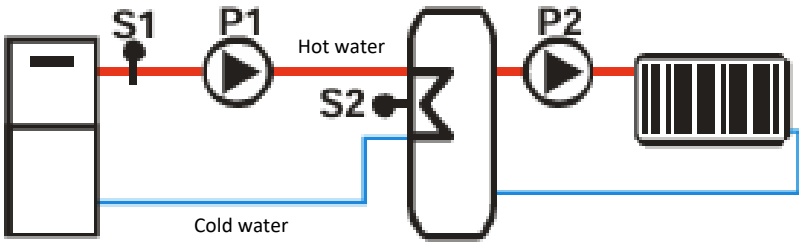



Fig. 7

## Buffer Tank Loading

If the temperature in the heating stove is higher than the pump activation thermostat Th19 value, the system heats the water in the buffer tank when there is a difference between the two probes (temperature in the heating stove less temperature in the buffer tank greater than the differential thermostat Th57 value). For safety reasons, if the water temperature in the heating stove exceeds the thermostat Th21 value, pump P1 switches on. Pump P2 switches on when the temperature exceeds the thermostat Th59 value.

***Example:*** Th18 = 5 °C, Th19 = 40 °C, Th21 = 70 °C, Th57 = 5 °C, Th59 = 50 °C

| **Probe S1 T.** | **Difference** | | **Pump P2** |
|---|---|---|---|
| T < 5°C | - | | **ON** |
| T < 40°C | - | | OFF |
| T ≥ 40°C | < 5°C | | OFF |
| | ≥ 5°C | | **ON** |
| T ≥ 70°C | - | | **ON** |
| **Probe S2 T.** | **Model** | **Operating mode** | **Pump P1** |
| T < 50°C | - | - | OFF |
| T ≥ 50°C | Winter | - | **ON** |
| | Summer | Wood | **ON** |
| | Summer | Pellet | OFF |

### *Configuration 5*

***When parameter P26=5, the configuration shown in Figure 8 is selected:***

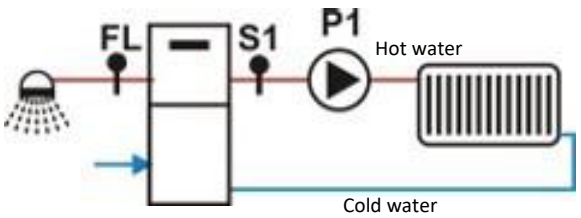



Fig. 8

## Heating

The pump switches on when the temperature exceeds the pump activation thermostat Th19 value. To prevent water freezing, the pump also switches on if the water temperature drops below the thermostat Th18 value. For safety reasons, if the water temperature exceeds the thermostat Th21 value, the pump remains continuously on.

### Domestic Hot Water

When there is a demand for domestic water, the system blocks the pump.

**Example:** Th18 = 5 °C, Th19 = 40 °C, Th21 = 70 °C

| Water temperature | Model | Flow regulator | Pump |
|---|---|---|---|
| T < 5°C | - | - | **ON** |
| 5°C < T< 40°C | - | - | OFF |
| 40°C < T< 70°C | Summer | - | OFF |
| | Winter | **Closed** | OFF |
| | Winter | Open | **ON** |
| T>70°C | - | - | **ON** |

### Configuration 6

**When parameter P26=6, the configuration shown in Figure 9 is selected**

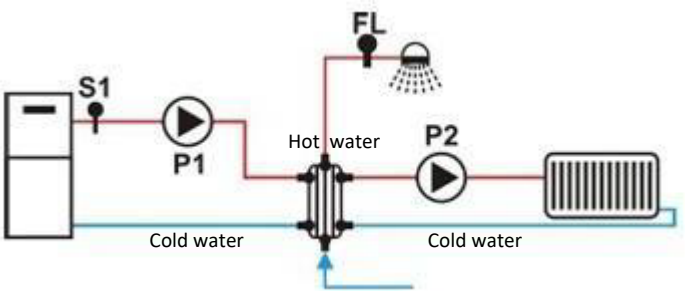



Fig. 9

### Heating

Pump P2 switches on when the temperature exceeds the thermostat Th19 value, provided there is no demand for domestic water. To prevent water freezing, pump P2 switches on if the water temperature drops below the thermostat Th18 value or rises above the thermostat Th21 value.

### Domestic Hot Water

Pump P1 switches on when the temperature exceeds the thermostat Th20 value. To prevent water freezing, pump P2 switches on if the water temperature drops below the thermostat Th18 value.

**Example:** Th18 = 5 °C, Th19 = 40 °C, Th20 = 30 °C, Th21 = 70 °C

| Probe S1 T. | Flow regulator | Model | Operating mode | Pump P2 | Pump P1 |
|---|---|---|---|---|---|
| T < 5°C | - | - | - | **ON** | **ON** |
| 5°C ≤ T< 30°C | - | - | - | OFF | OFF |
| 30°C ≤ T< 40°C | - | - | - | **ON** | OFF |
| 40°C ≤ T< 70°C | **Closed** | - | - | **ON** | OFF |
| | Open | Winter | - | **ON** | **ON** |
| | | Summer | Wood | **ON** | OFF |
| | | Summer | Pellet | **ON** | OFF |
| T ≥ 70°C | - | - | - | **ON** | **ON** |

## 6.2. Domestic Hot Water Function

*In hydraulic systems with a flow regulator or a DHW buffer tank, when there is a demand for domestic water, the DHW function switches on, and the heating stove thermostat value becomes equal to the value of thermostat Th21-Ih21. When the demand ceases, the function ends after the time period T68 has elapsed.*

## 7. Operating States (Functions)

### 7.1 Blocked

*To exit the blocked state, press the unblock button (P2) and hold it for 3 seconds; if the blocking conditions no longer exist, the system will switch off.*

| *Parameters* | *Status control* | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|
| | t. of exhaust flue gases > Th01 | **V11** | **OFF** | **OFF** |
| | t. of exhaust flue gases < Th01 | **OFF** | **OFF** | **OFF** |

### 7.2 Off Mode

| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|---|
| | t. of exhaust flue gases > Th01 | → switches to shutdown mode if the system was previously in the pellet mode | **OFF** | **OFF** | **OFF** |
| | Temperature of water > Th25 | → switches to Blocked | | | |

## 7.3 Check up

| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|---|
| **T01** | t. of exhaust gas > Th09 and system was previously in pellet mode | → switches to run mode | Maximum speed | **OFF** | **OFF** |
| | t. of exhaust gases > T01 and T11 and the system was previously in the wood mode or combined mode | → switches to recovery ignition | | | |
| | Check up upon expiration of T01 | → switches to ignition | | | |

## 7.4 Ignition

### * *Preheating*

| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|---|
| **T02** | t. of exhaust gases > Th09 | → switches to run mode | **V24** | OFF | **ON** |

### * *Preloading*

| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|---|
| **T03** | t. of exhaust gases > Th09 | → switches to run mode | **V01** | **ON** | **ON** |
| **T29** | | | | OFF | |

### * *Fixed ignition phase*

| During the entire phase, the minimum temperature of exhaust gases is maintained. | | | | | |
|---|---|---|---|---|---|
| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
| **T04** | t. of exhaust gases > Th09 | → switches to run mode | **V01** | **C01** | **ON** |

### * *Variable ignition phase*

| During the entire phase, the minimum temperature of exhaust gases is maintained. | | | | | |
|---|---|---|---|---|---|
| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
| **T05** | t. of exhaust gases > Th09 | → switches to **run mode** | I ignition:**V01**<br>II ignition:**V10** | I ignition: **C01**<br>II ignition: **C10** | **ON** |
| | t. of exhaust flue gases > Th06 and the t. of exhaust flue gases > than minimum stored value +D41 | → switches to **stabilization** | | | |
| Check up upon expiration of T05 | t of exhaust flue gases < Th06 or t of exhaust flue gases < than minimum stored value +D41 | → switches to **re-ignition** from variable phase | | | |
| | | → switches **to shutdown** with error Er12 if the | | | |

| | | | | | |
|---|---|---|---|---|---|
| | | allowed number of attempts has been reached | | | |

** Stabilization*

| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|---|
| **T06** | t. of exhaust gases > Th09 | → switches **to run mode** | **V02** | **C02** | ON if the temperature of exhaust gases < Th02, otherwise OFF |
| | t. of exhaust flue gases <Th06 | → switches to **re-ignition** from variable phase | | | |
| | | → switches **to shutdown** with error Er12 if the allowed number of attempts has been reached | | | |
| Check up upon expiration of **T06** | t. of exhaust gases > Th06+D01 | → switches **to run mode** | | | |
| | | → switches to **re-ignition** from variable phase | | | |
| | t. of exhaust flue gases < Th06+D01 | → switches **to shutdown** with error Er12 if the allowed number of attempts has been reached | | | |

** Recovery ignition*

*If the system switches to re-ignition from control for an exhaust gas temperature greater than Th11, the reference thermostat for re-ignition phases is no longer Th01 but Th11.*

| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|---|
| **T13** | t. of exhaust flue gases > Th01 | → timer T13 is started | **V09** | **OFF** | **OFF** |
| Check up upon expiration of **T13** | t. of exhaust flue gases > Th01 | → waiting | | | |

** Cleaning burner*

| *Parameters* | *Status control* | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|
| | This phase, performed at the end of the waiting phase, is performed only if the output is set to motor cleaning and ends when the motor stops. | **OFF** | **OFF** | **OFF** |

** Final cleaning*

| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|---|
| **T16** | t. of exhaust flue gases < Th01 | → Timer for final cleaning T16 is started | Maximum speed | **OFF** | **OFF** |
| Check up upon expiration of **T16** | t. of exhaust flue gases < Th01 | → switches to check-up | | | |

## 7.5 Run mode

| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|---|
| **T14** | t. of exhaust flue gases **< Th03** or t. of exhaust flue gases **< Shutdown thermostat** for used power | → timer **T14** before waiting for shutdown is started | **Consumer power** | **Consumer power** | **OFF** |
| Check up upon expiration of **T14** | → switches to shutdown with error Er03 | → switches to ***modulation*** | | | |
| | t. of exhaust flue gases **> Th07** | | | | |
| | **t. of water > Thermostat of hot water storage tank** | | | | |
| **A01=1,** and not Air system | Room temperature **> Room thermostat *** | | | | |
| **A01=2 or 4 and not Air system** | Room temperature **> Room thermostat *** | → switches to ***standby*** | | | |
| **P26**=2, 3 | DHW temperature > **Thermostat/DHW buffer tank** and summer mode | | | | |
| **P26**=4 | t. of buffer tank > **Thermostat/DHW buffer tank** | | | | |
| **P26**=0 **A45**=1 | In summer mode, if there is no need for hot water | | | | |
| | T of water **> Th25** | → switches to ***safety*** | | | |

**In a hydraulic system, this condition applies if there is no need for hot water or if a hydraulic system with a buffer tank is selected.*

*If the system has just finished ignition, the shutdown thermostats and the thermostat **Th03** are measured at the end of **T14+T00.***

## 7.6 Modulation

| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|---|
| **T14** | t. of exhaust flue gases **< Th03** or t. of exhaust flue gases **< Shutdown thermostat** for used power | → timer **T14** Waiting before shutdown is started | | | |
| Check up upon expiration of **T14** | → switches to shutdown with error **Er03** | | | | |
| **A01**=2 or 4 | room temperature **> Room thermostat *** | | | | |
| **A13**=1 | If during time **T43** and t of water > Thermostat of heating stove **+D23** | | **V11** | **C11** | **OFF** |
| **A13**=2 | If during time **T43** and summer mode and t of water > Thermostat of heating stove **+D23** | → switches to standby status Standby | | | |
| **P26**=2, 3 | DHW temperature > **Thermostat DHW/Buffer** and summer mode | | | | |
| **P26**=4 | t. of buffer tank > **Thermostat DHW/Buffer tank** | | | | |
| **P26**=0 **A45**=1 | In summer mode, if there is no need for hot water | | | | |
| | t. of exhaust gases **> Th08** | → switches to **Safety** | | | |
| | temperature of water **> Th25** | | | | |
| | | | | | |

**In a hydraulic system, this condition applies if there is no need for hot water or if a hydraulic system with a buffer tank is selected. If the system has just finished ignition, the shutdown thermostat and the thermostat Th03 are measured at the end of T14+T00.*

## 7.7 Standby

When the conditions that brought the system to standby are no longer met, timer T11 is started. After its expiration, the system switches to the check up mode. If the exhaust gas temperature > Thermostat Th08 (only if the system allows the use of thermocouples in pellet mode), the water temperature > Thermostat Th25 or the air temperature > Thermostat Th25, system switches to Safety mode. Depending on the value of parameter A27, the burner can be maintained or switched off and cleaned.

## 7.8 Safety

| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|---|
| **T15** | t of exhaust gases **< Th08** and t of water **< Th25** and t of air **< Th25** | → switches to previous status | **V12** if previously it was in standby status, **V11** if it was in modulation | **OFF** | **OFF** |
| Check up upon expiration of **T15** | → switches to shutdown with error **Er05** or **Er04** | | | | |

## 7.9 Shutdown

| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|---|
| **T13** | t. of exhaust flue gases **> Th01** | → timer **T13** is started | **V09** | **OFF** | **OFF** |
| Check up upon expiration of **T13** | t. of exhaust flue gases **> Th01** | → waiting | | | |

## 8. Final cleaning

| *Parameters* | *Status control* | | *Fan* | *Reducer* | *Heater* |
|---|---|---|---|---|---|
| **T16** | t. of exhaust flue gases **< Th01** | → timer **T16** is started | **Maximum speed** | **OFF** | **OFF** |
| Check up upon expiration of **T16** | → switches to **OFF** without error, otherwise switches to **Blocked** | | **OFF** | | |

## 8.1 Selecting combustion power

*Automatic mode*

When adjusting the operating power, the user can set the automatic [A] or manual [M] mode; if automatic mode is selected, the power will be automatically selected according to the main temperature and the set value of the main thermostat.

If:
* main temperature ≤ main thermostat **–D08** → system runs at maximum power
* main thermostat**–D08** < main temperature < main thermostat → combustion power is selected proportionally
(the greater the difference between the water temperature and the thermostat value, the greater the selected power)
* main temperature ≥ main thermostat → system operates at power setting 1 or, if enabled, at modulation power

| Example: System=Hydro, Mode=[A], **Heating stove thermostat**=60°C, **D08**=20 °C, **P03**=5 | | | | | | |
|---|---|---|---|---|---|---|
| Water temperature °C | ≤ 40 | 40 ÷ 45 | 46 ÷ 50 | 51 ÷ 55 | 56 ÷ 60 | ≥ 60 |
| Combustion power | 5 | 4 | 3 | 2 | 1 | 1 or Mod. |

### 8.2 Reducer calibration

The user changes the switch-on time/pellet feeding speed in increments of –7 ÷ +7. **P15** is a percentage value of one increment and applies to the default values of operating power. The calculated values are set to be within the set range of **P27÷ P05.**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Example* | **P15**=10% | C03=2.0 | C04=3.0 | C05=4.0 | C06=5.0 | C07=6.0 | C11=1.0 |
| | Increment = -1 | C03=1.8 | C04=2.7 | C05=3.6 | C06=4.5 | C07=5.4 | C11=0.9 |

### 8.3 Fan calibration

The user changes the combustion fan speed in increments of –7 ÷ +7. P16 is a percentage value of one increment applied to the default values of operating speeds. The calculated values are set to be within the set range P14÷P30.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Example* | **P16**=5% | V03=1000 | V04=1200 | V05=1400 | V06=1600 | C07=6.0 | V11=900 |
| | Increment= +3 | V03=1150 | V04=1380 | V05=1610 | V06=1840 | C07=5.4 | V11=1035 |

### 9. Room thermostat

*Depending on the value of parameter A01, the following happens:*

* **A01=0**

open contact: the system switches to shutdown mode.

closed contact: the system switches to ignition.

* **A01=1**

closed contact: the system switches to run mode.

open contact: the system switches to modulation mode.

* **A01=2**

closed contact: the system switches to run mode.

open contact: the system switches to standby status.

* **A01=3**

closed contact: the system starts the pump.

open contact: if the water temperature exceeds the value of the thermostat which activates the system pump (Th19 ili Th59), the system blocks the system pump until the value of the thermostat Th21 or Th78 is reached (if P26=4).

***A01=4**

closed contact: the system restarts the pump and switches to run mode.

open contact: the system switches to standby status i blocks the system pump as in case 3.

### 10. Domestic hot water/buffer tank probe

*Enable one of the configurable inputs as a hot water/buffer tank probe if the hydraulic system which includes that input is selected (P26=2, 3, 4).*

### 11. Electromagnetic valve / Pump P2

*The output controls a two-wire valve or a non-high-efficiency pump if a triac output is selected. In the case of using a 2-3-way module that switches the output from the triac to a relay, it is possible to connect a three-way electromagnetic valve or a high-efficiency pump. The operation of the connected device depends on the selected hydraulic system.*

### 11.1 Pump P1

*The output controls a non-high-efficiency pump if a triac output is selected. In the case of using a 2-3-way module that switches the output from the triac to a switching relay, it is possible to connect a high-efficiency pump. The operation of the connected device depends on the selected hydraulic system.*

### 12.0 Shutdown During Ignition Phase

*When the system has already went through the pre-ignition phase and it is turned off by an external device (such as an internal or external chrono/timer), it completes ignition and stabilization and once fully operational, it switches to shutdown. The display shows the message "Ignition Blocked."*

*If error occurs, the system immediately enters shutdown with error mode. Pressing the ignition button allows for immediate shutdown or recovery ignition.*

## 13.0 Power Failure

*In the event of a power outage, the system retains the most important operational data. When power supply is restored, the system evaluates the stored data and, if data recovery is successful, based on parameter A53, the following occurs:*

** Recovery mode of status 0 (A53=0)*

- If the power outage lasted less than T88, the system returns to its previous state.

- If the system was on and the power outage occurred between T88 and T89, the system switches to recovery ignition.

- If the power outage lasted longer than T89, the system enters a block mode with error Er15.

## 14.0 User Manual

The ***Vesta 21*** pellet heating stove is designed for burning wood pellets. The product is manufactured using state-of-the-art technology with high-quality certified materials, welded using modern robotic technology, and tested according to EN 14785:2006 standard to meet all requirements for connecting to central heating systems and European norms regarding efficiency and emissions.

* During installation, all national, European, and local regulations must be observed.
* Only original spare parts obtained from an authorized dealer, service shop, or directly from the factory may be used.

* The stove must not be used in flammable or explosive atmospheres. The product must not be used by children, persons with reduced physical or mental abilities, or persons lacking knowledge or experience, unless supervised or trained by a responsible person. Children must be supervised near the appliance.

## 14.1 Connecting the Stove to the Chimney

A properly sized and constructed chimney is essential for safe stove operation and heating efficiency. The chimney must be well insulated. Cleaning doors must be installed at the lower part of the chimney. The chimney must be resistant to flue gas condensation.

**WARNING:** 

* Horizontal flue pipe sections must have a minimum slope of 3%.

* The horizontal flue pipes length should be minimal but in any case no longer than 3 m.

* The number of direction changes in the flue pipes, including “T” elements, must not exceed 3.

## 14.2 Fuel

Pellets used should comply with the following standards: EN Plus, DIN Plus, ONorm-M-7135 or DIN 51731.

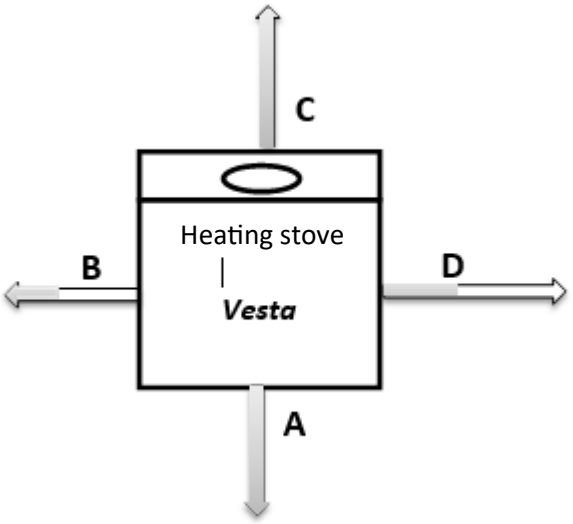
* Pellets

characteristics:

Moisture ---- 6 – 8%
Diameter ---- 6mm
Length -------10 – 30 mm
Ash residue ---------- 1%

## 14.3 Stove Installation

### 8.1 Safety Distances from Walls and Other Objects




***A = 800 mm***

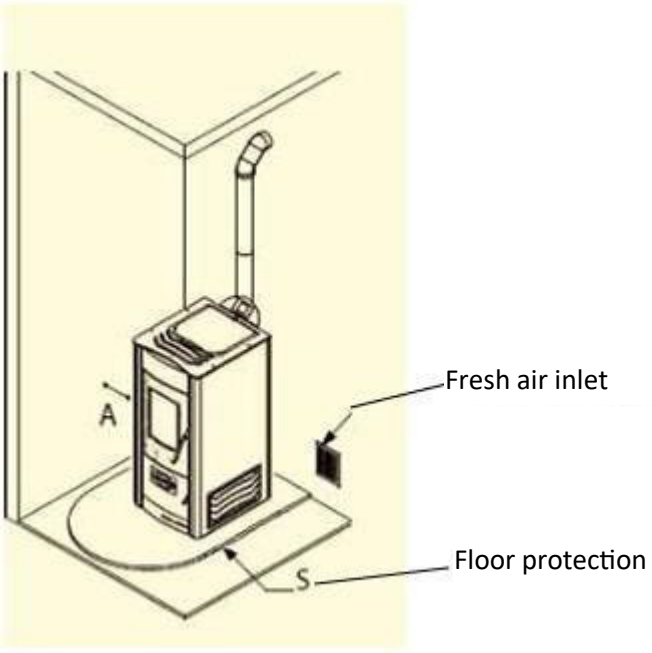
***B = 150mm***

***C = 300mm***

***D = 500mm***

***Fresh air inlet:***

The room where the heating stove is installed must have a fresh air inlet sized according to the heating stove's power. The inlet must be protected with a safety mesh or grille. All installation work must comply with applicable national and European standards. The stove must not be used in flammable or explosive environments.



## 14.4 First Stove Ignition

* The *Vesta* pellet stove comes factory-equipped with a circulation pump, expansion vessel, safety valve, and automatic air vent. Connection to the central heating system is performed via the supply and return pipes.

* *The control panel is set to Hydraulic **System 5.** If the hydraulic system is changed, follow this manual to configure the selected system (DHW/buffer probe, pumps P1 and P2, electromagnetic valve…)*

*** Before first ignition, check the following:**

- Remove accessories from the stove (manual, power cable)
- Connect the stove to the piping and fill it with water
- Unscrew the air vent cover located under the stove cover
- Connect the flue outlet to the chimney
- Check that the doors are properly closed and the ash box is in place
- Verify that the flame guide* is in position
- Verify that the flue gas deflector* is in position
- Fill the pellet hopper
- Connect the power cable to mains (220V) and switch on using the main switch at the back of the stove
- Fill the auger with pellets as follows (the hopper must contain pellets):

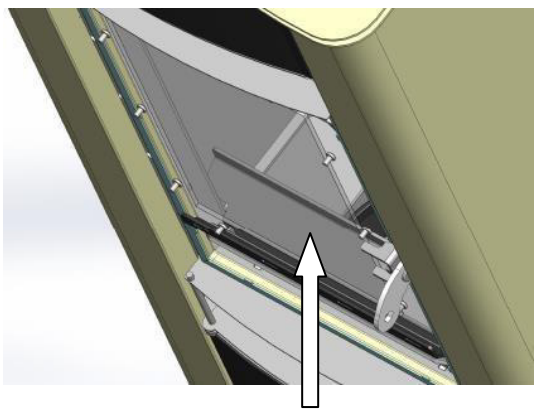
1. Press the “SET” button
2. Select the “LOAD” option (loading)
3. Confirm using the “SET” button
4. Select “ON” and confirm using the “SET” button
5. Monitor pellet entry into the burner through the firebox door and wait until the burner is filled, then switch the function to “OFF.”

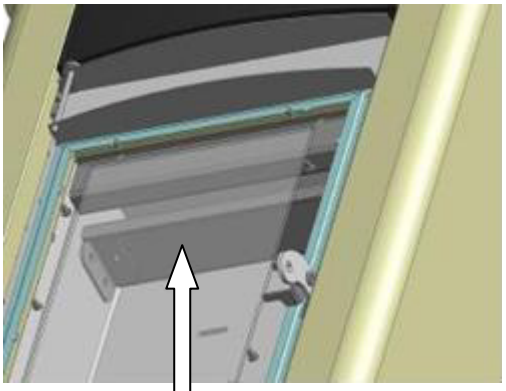
6. Ensure any pellets in the burner are emptied before starting the stove, making sure the burner is correctly positioned.

NOTE:

This function is used only during the first startup or when the hopper is completely empty (no pellets in the auger).

7. Start the stove by pressing and holding the P2 button for 5–6 seconds.





Flame guide*

Flue gas deflector*

## 15.0 Stove Cleaning and Maintenance

***General Information**

**The stove must be turned off and completely cooled before any cleaning or maintenance.**

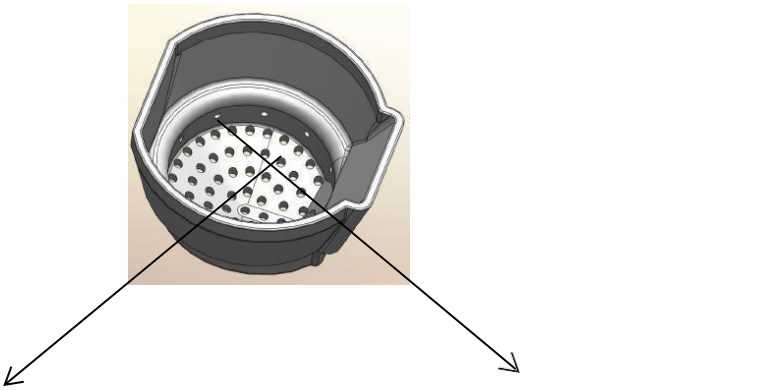
Cleaning intervals depend primarily on pellet quality. Wet pellets contain high ash, dust, and unburned residues, which double cleaning and maintenance frequency. We, hereby, want to stress out that only certified pellets should be used.

The stove comes with a removable handle for opening the firebox door. After closing, store the handle beside the stove to prevent accidental door opening during operation.

Cleaning categories: **Daily, weekly, and monthly**

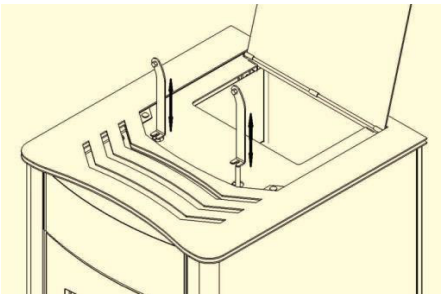
***Daily cleaning**

Depending on pellet quality, clean the burner daily. All burner openings must be unobstructed to ensure proper stove operation.




Empty the ash box daily or less frequently depending on stove operation intensity.

To ensure proper heat transfer to water, cleaning must be done at least once daily. Move the turbulator levers using the removable handle which is also used as a heat exchanger turbulator cleaning (pulling) tool. Turbulator levers should be pulled up and down several times (3–4).



*** Weekly cleaning**

- Clean the firebox and burner housing from ash

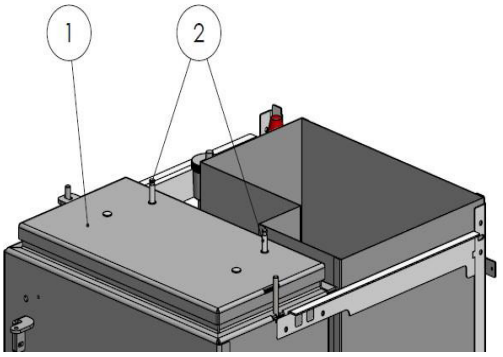
- Pull the flame guide* upward and toward yourself

- It is recommended to vacuum dust and ash at least once weekly using a suitable vacuum cleaner

*** Monthly cleaning**

- Remove and clean the flue gas deflector* located at the top of the firebox at least once monthly. Disassembly is very simple - the deflector should be pulled upward and then downward.

- Cleaning the tubes with turbulators must be performed at least once a month, depending on pellet consumption. Under the stove cover, unscrew the two screws and lift the metal plate beneath which the turbulator mechanism is located. Vacuum all remaining ash deposits, as well as residues on the turbulators (spiral elements). After replacing the cover to its position following cleaning, ensure that the screws are properly tightened to prevent the intake of false air.




1. Cover
2. Turbulator levers

**NOTE:** 

Clean the stove only when completely cooled

- Clean the flue duct every two months or at the end of the heating season, depending on stove operation mode and pellet quality.

## Cleaning Access Cover

- vacuum ash residues from the left and right chambers

- reinstall the cleaning access cover and tighten all four screws

To ensure safe and reliable operation of the heating stove, the following maintenance operations must be carried out at the end of each heating season or more frequently if required:

- the gaskets ensure proper operation of the stove only when they are undamaged and correctly installed
- gaskets must be periodically inspected. If worn out or damaged, they must be replaced immediately

- the flue pipes must be vacuumed and cleaned once during the season, or more frequently if necessary. If there are horizontal pipe sections, ash residues must be removed before they block the flue gas passage and cause a malfunction of the stove.

***Cleaning the pellet hopper**

Do not refill pellets before vacuuming out any residues remaining from the previous batch of pellets (dust, fine pellet residues, etc.).

## 16.0 Operation Interruptions and Troubleshooting

| Malfunction | Possible cause | Troubleshooting |
|---|---|---|
| ***Pellets do not fall into the burner Err 03; Err12*** | – No pellets in the hopper<br>– Auger blocked<br>– Gear motor malfunction | – Refill the pellet hopper<br>– Empty the hopper and unblock the auger<br>– Replace the gear motor |
| ***The fire gradually weakens until it goes out Err 03; Err02*** | – Hopper empty<br>– Firebox door not closed<br>– Poor pellet quality<br>– Burner not cleaned<br>– Flue pipes clogged<br>– Pressure switch malfunction<br>– Fan malfunction | – Refill the pellet hopper<br>– Close the door or replace gaskets<br>– Use certified pellets<br>– Ensure burner holes are unobstructed<br>– Clean flue pipes<br>– Replace pressure switch<br>– Check fan and condenser and replace if necessary |
| ***Pellet accumulation in burner. Weak flame intensity. Door glass dirty. Err 03*** | – Lack of combustion air<br>– Moist pellets<br>– Fan malfunction | – Clean burner ensuring all holes are passable<br>Check air intake pipe.<br>– Use certified pellets<br>– Check fan and replace if necessary |
| ***Failed ignition Err 12; Err 02*** | – Power outage<br>– Pressure switch failure (Error 02)<br>– Fan housing or flue duct clogged<br>– Igniter burned out | – Check if main switch is in position “I”<br>– Replace pressure switch<br>– Clean fan housing and flue ducts<br>– Check and replace igniter if necessary |

### * Stove disposal and disassembly information

Disassembly and disposal of used heating stoves are the sole responsibility of the stove owner. The owner must comply with all national regulations regarding safety and environmental protection. Disassembly and disposal may be carried out by a third party only if it is an authorized company for the collection and disposal of such materials.

**PAŽNJA:**

*Disposing of the stove in public places represents a serious hazard to people and animals. In such cases, the owner is always held responsible for any injuries to people or animals.*

## 17. Appendix

CE izjava o usaglašenosti:


Manufacturer: „**ABCPROIZVOD**“doo

2, Miloša Obrenovića St., 31000

Užice/ Serbia

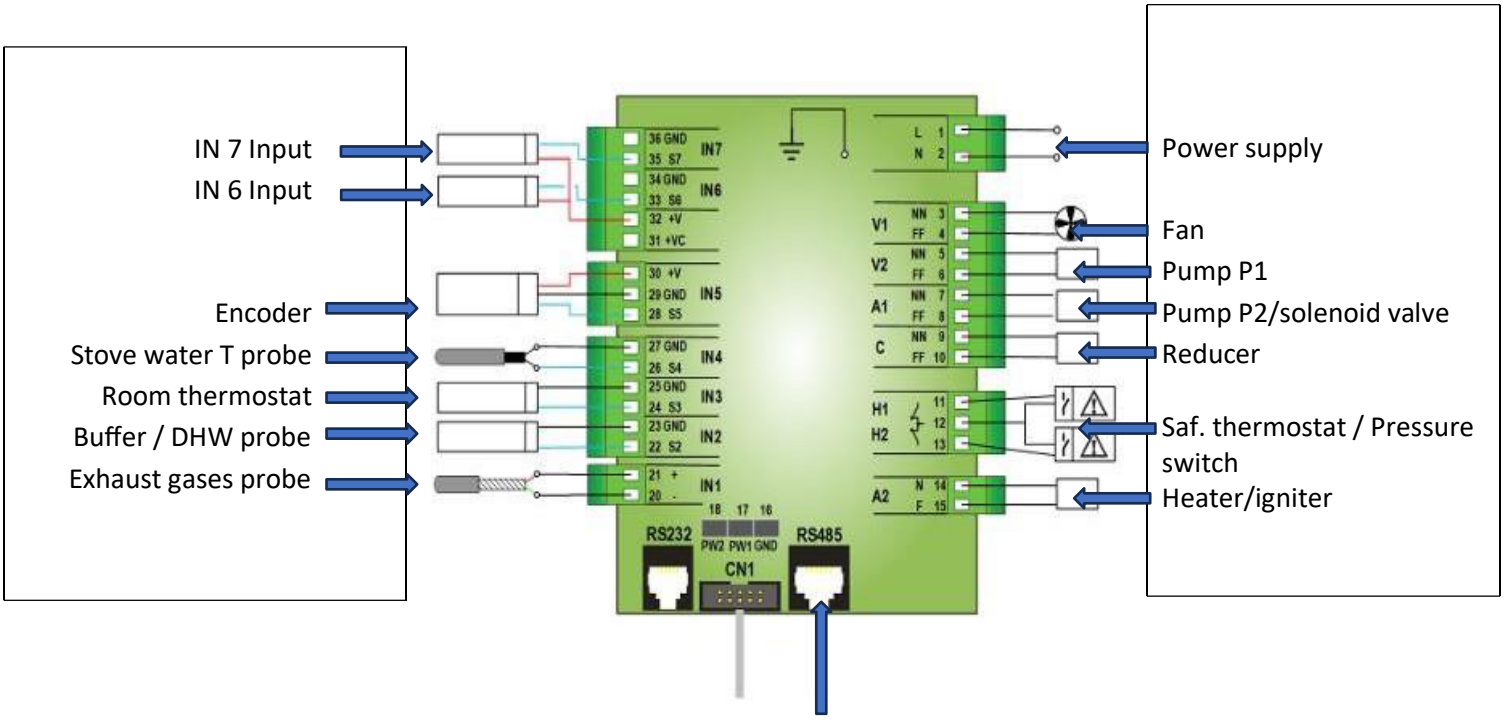
Hereby declares that the pellet-fired room-heating stove, with commercial name:

***Vesta***, complies with the requirements and provisions of **CE** (Construction Products Directive) EU (305/2011) and conforms to the following harmonized standard:

**EN**
**14785:2006**

The company “ABC PROIZVOD” doo, Užice, implemented a quality management system: **SRPS ISO 9001/2015**, in 2007, which is continuously maintained and improved.

## 18. *Electrical Wiring Scheme NG01*




Display K500M

| Pin | | Function | Technical specification |
|---|---|---|---|
| **1** | **L** | Main power supply | 230 Vac ± 10% 50/60 Hz |
| **2** | **N** | | |
| **3** | **NN** | Fan | Triac regulation 0.9A max |
| **4** | **FF** | | |
| **5** | **NN** | Configurable output V2 (configuration parameter: P44) – Pump P1 | Triac regulation 0.9A max |
| **6** | **FF** | | |
| **7** | **NN** | Configurable output A1 (configuration parameter: P52) – Pump P2/sol. valve | Triac regulation 1.6A max |
| **8** | **FF** | | |
| **9** | **NN** | C configurable output (configuration parameter: P28) - Reducer | Triac regulation 0.9A max |
| **10** | **FF** | | |
| **11** | | Input safety thermostat AT1 | ON/OFF contact normally closed jumper if not used |
| **12** | | | |
| **12** | | Input AT2 safety pressure switch | ON/OFF contact normally closed jumper if not used |
| **13** | | | |
| **14** | **N** | Configurable output A2 (configuration parameter: P47) - Igniter | Relay 3 A max |
| **15** | **F** | | |
| **16*** | **GND** | Configurable output PWM1/DAC1 (configuration parameters: P140 and P142) | Signal 0-10 V, 10 mA, frequency 1 KHz |
| **17*** | **PW1** | | |
| **16*** | **GND** | Configurable output PWM2/DAC2 (configuration parameters: P141 and P143) | Signal 0-10 V, 10 mA, frequency 1 KHz |
| **18*** | **PW2** | | |
| **20** | **Green-** | Exhaust gas probe | Thermocouple K: 500 or 1200 °C Max |
| **21** | **Red+** | | |
| **22** | **SEG** | Configurable input IN2 (configuration parameter: P77) | Analog (NTC 10K probe) / digital input |
| **23** | **GND** | | |

| | | | |
|---|---|---|---|
| **24** | **SEG** | Configurable input IN3 (configuration parameter: P75) | Analog (NTC 10K probe) / digital input |
| ***25*** | **GND** | | |
| **26** | | IN4 configurable input (configuration parameter: P85) | Analog/digital input |
| **27** | | | |
| **28** | **SEG** | Fan encoder sensor | TTL 0 / 5 V Signal |
| **29** | **GND** | | |
| **30** | **+V** | | |
| **31** | **+Vc** | +10÷14 volts | - |
| **32** | **+V** | +5 volts | - |
| **33** | **SEG** | Configurable input IN6 (configuration parameter: P78) | Analog/digital input |
| **34** | **GND** | | |
| **35** | **SEG** | Configurable input IN7 (configuration parameter: P82) | Analog/digital input |
| **36** | **GND** | | |
| **RS232** | | RS232 connector | Program control board, KeyPro, modem and connection with computer |
| **RS485** | | RS485 connector | K series control board and 4Heat connection |
| **CN1** | | Flat cable | CP series control board connector |

## *19. TABLE OF CONTENTS*