

# CHIMNEY CONNECTION SCHEME

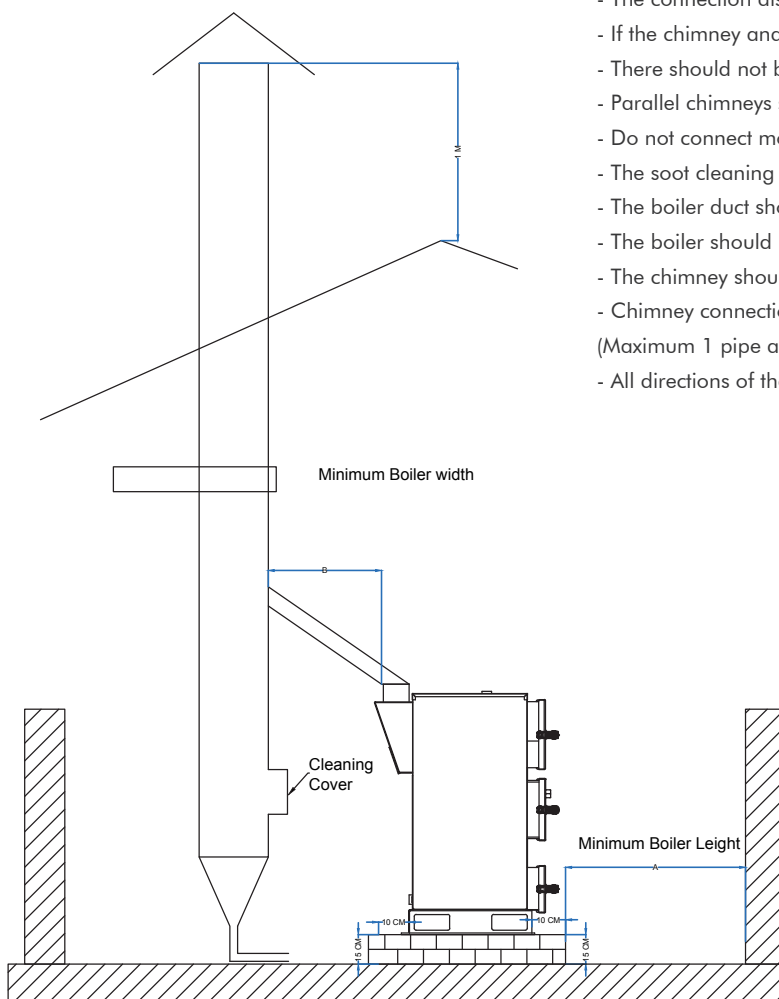
For proper chimney draught; boiler chimney must be connected to a separate chimney with at least chimney exit diameter and with enough amount of draught (Figure-4). Material to be used for the chimney must be resistant to at least 400°C temperature. Length of the steel link between boiler and chimney must be less than 60 cm and not more than 3 m height, must not exceed  $\frac{1}{4}$  of chimney height and must be connected to the chimney with 10% increasing aim.

Steel chimney connection must be manufactured and assembled in a way to disassemble from boiler and prevent gas leak. Chimney height should not be less than 6 m, and upper end of the chimney must be above the level of the building roof ridges. Protective hat must be placed on chimney exit against effects of extreme wind and precipitation. At the bottom of chimney, cleaning cover with sealing must be provided.

Figure-4

## THE FACTORS TO BE AVOIDED AT CHIMNEY CONNECTION :

- The chimney to which the boiler is connected must be separate.
- The connection distance from the boiler to the chimney must not exceed 1 meter.
- If the chimney and smoke ducts are sheet metal, they must be isolated.
- There should not be any narrowing of the cross-section of the chimney.
- Parallel chimneys should not be connected to each other.
- Do not connect more than one boiler or another device to the chimney.
- The soot cleaning cover on the front must be sealed to prevent air leakage.
- The boiler duct should not enter the chimney too much.
- The boiler should not be connected with an inverted inclination to prevent chimney draft
- The chimney should be cleaned frequently, to prevent the formation tarred sooth.
- Chimney connection of the boiler should be done with least pipe and elbow. (Maximum 1 pipe and elbow.)
- All directions of the chimney outlet at the roof should be open.



# INSTALLATION DIAGRAM

- Open expansion Tank should be never used.
- In areas with extreme cold and frost hazard, the expansion tank, starting and return pipes of the boiler must be insulated.
- The pipes going to the expansion tank must be assembled in a way that they are continuously rising towards the boiler during the process without turning down.
- In order to control the system water level, a hydrometer must be connected to the system.
- The elements such as valves, filters, check valves, etc. should never be present on the safety pipes between the boiler and the expansion tank.

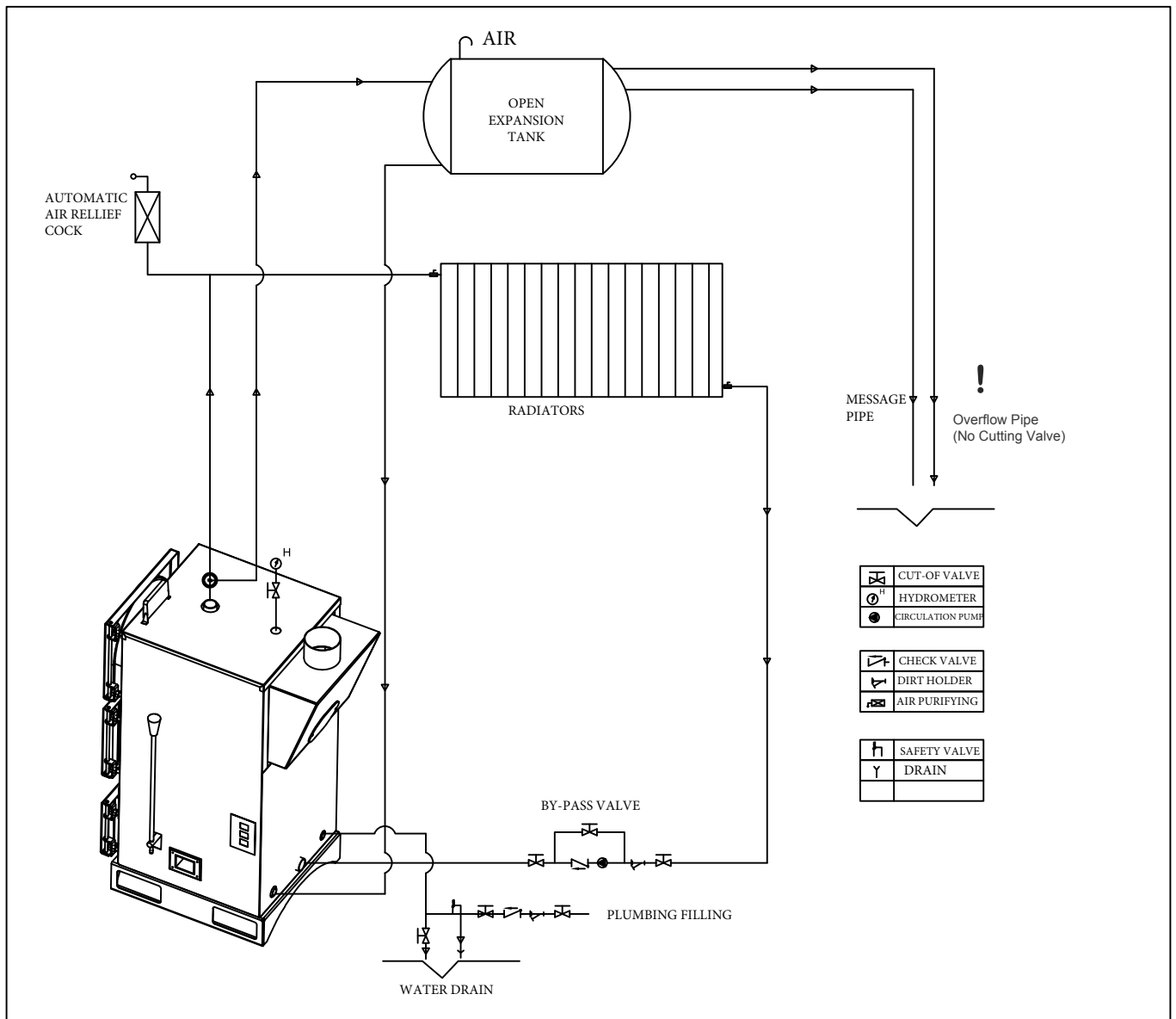


Figure-5

# ELECTRIC CONTROL SCHEME

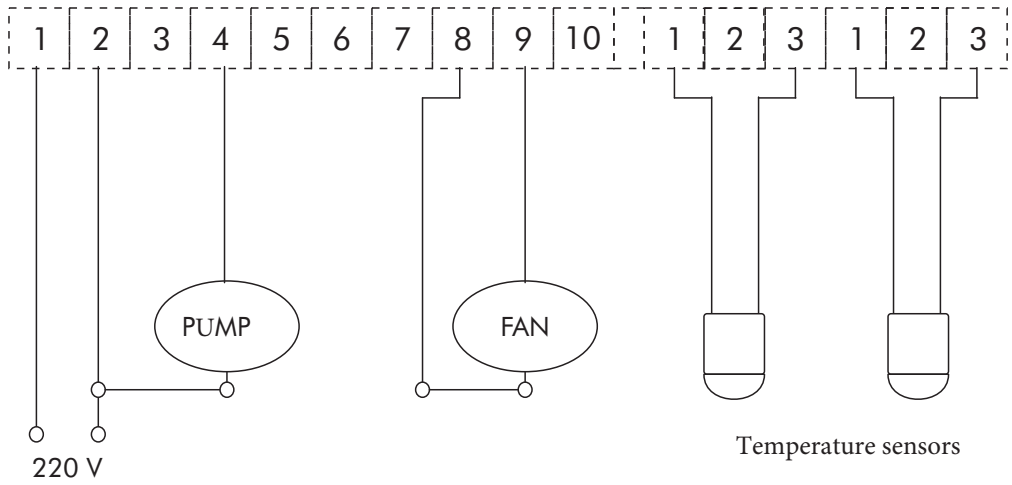


Figure-6

# CONTROL PANEL

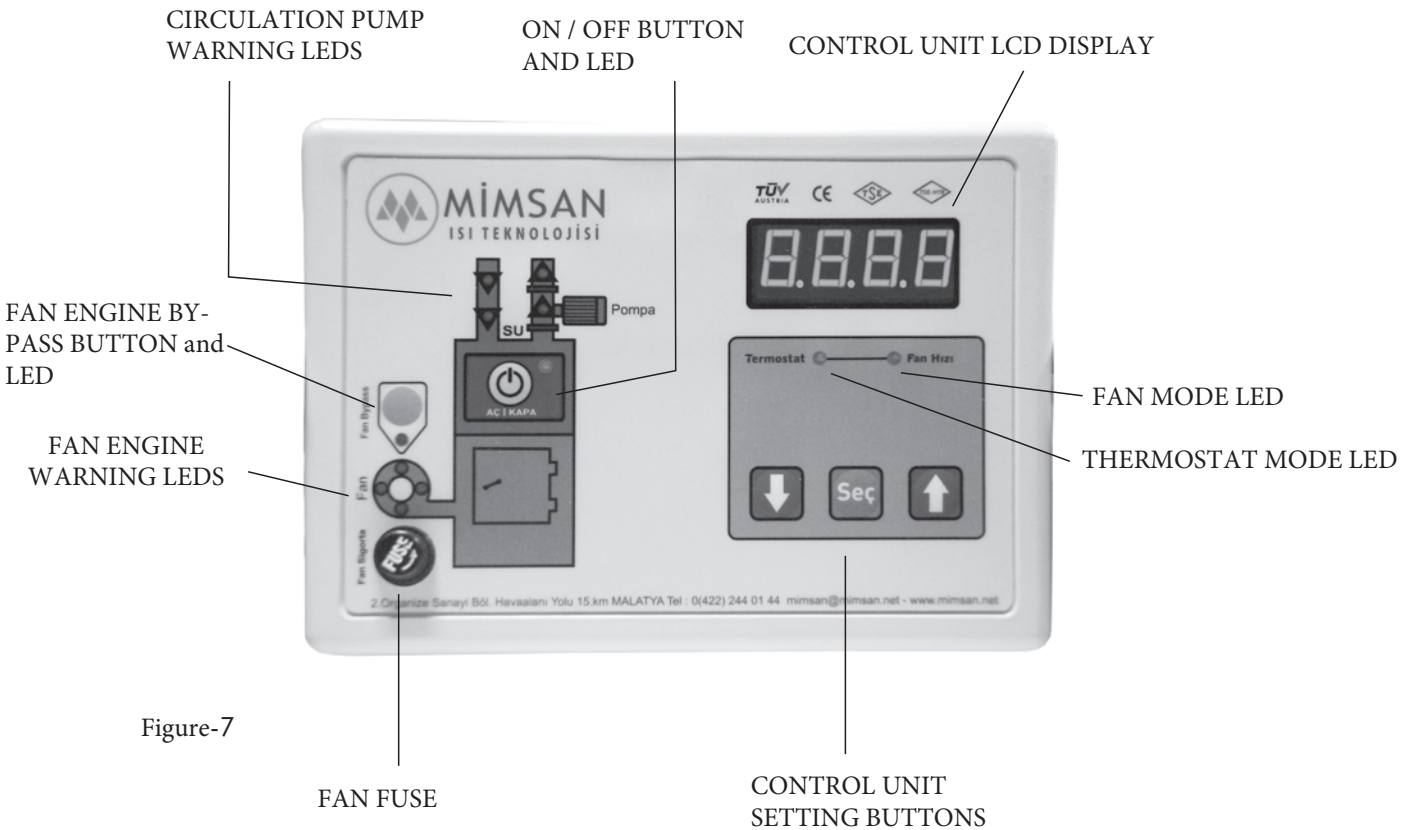


Figure-7

## CONTROL PANEL OPERATING PRINCIPLE



The boiler water starts to warm up when the fan speed indicator lights on the display (if the fuel is loaded and lit).

The pump is switched on when the boiler water reaches 30 degrees which is the pump activation temperature; the relevant indicator will become active in the panel.

If the fan is in the automatic position, the fan speed will be at the highest value during the first start-up. When the boiler water temperature reaches the thermostat value set by the user, the fan switches off. If the fan is not in automatic position, the fan is reactivated when there is a 3 degree difference between the boiler water temperature and the set thermostat temperature.

In automatic mode, when the temperature difference reaches 3 degrees, the fan switches on at minimum speed. If the boiler water temperature drops to 28 degrees despite the fan operation, the fan and the pump stop automatically.

## CONTROL PANEL SETTINGS 2/1

Adjustment is performed by pressing the SELECT button and the display of the value to be set is displayed on the screen using the plus and minus buttons.

Press the Select button once and have the thermostat indicator appear.

Set the thermostat temperature with the up and down buttons.



Press the Select button again to display the Fan indicator.

With the plus and minus buttons Set the fan speed to higher than 100 to automatic fan mode. The fan speed is set to 40-100 by pressing the down arrow button to exit the automatic fan mode. Lower than value 40, the fan switches to OFF.

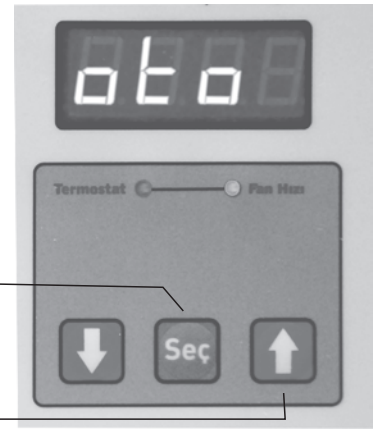


# CONTROL PANEL 2/2

## AUTOMATIC FAN MODE

Press the Select button twice to turn the Fan Speed indicator on.

Hold the up arrow button until the "auto" appears.



## EXITING THE AUTOMATIC FAN MODE

Press the down arrow button once to wait for "F100" to appear on the display.



## CLOSING THE FAN

If you want to turn off the fan, press and hold the down arrow key to display "off". Hold the key for 3 (three) seconds, the settings will be saved.

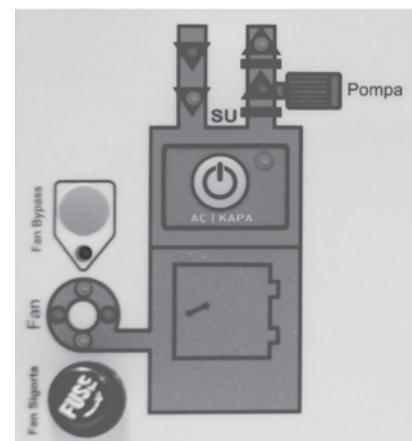


## FAN BY-PASS SWITCH

Fan bypass switch; If the triac fuse is tripped or the triac output is deactivated for some reason, it is a button which is used to resume the fan operation, The Button by-pass the triac output via the relay.

When the fan bypass switch is turned off, the triac output is bypassed and the fan operates on / off via the relay output.

The Triac output is protected by an FF type tube fuse from possible circuit conditions. If the fuse cuts the circuit, the fan automatically switches to bypass mode. To return to normal operation, the fan fuse must be replaced with equivalent.



## CONDITIONS TO BE CONSIDERED AT FIRST OPERATION AND AFTER



Check that all wiring connections of the boiler are complete and correct.

Fill the system with water. There should be no sediment, dirt and undesirable solid particles in the water content to be fed to the boiler and the piping. These deposits and impurities are extremely harmful to the circulation pump. If you suspect that the water is not clean, it is absolutely necessary to place a filter before the filling water. In addition, for water with very high lime content, a lime holder must be fitted to the filling section of the installation.

It is recommended that the boiler and installation be kept filled with water as empty boiler and installation will cause oxidation corrosion due to prolonged dehydration. In addition, the boiler and the installation should be isolated and protected against freezing during the waiting period of the boiler with water.

Check the control panel and other boiler equipment for electricity. Control the operation of digital and limit thermostats at first start-up and weekly periods.

Check the power supply cable and connections. (Must be done by an Electrical Technician with Authorization Certificate)

Check the fan rotation direction, the fan motor should turn in the direction of the arrow, otherwise it will not blow the combustion air will not blow into the boiler.

Open the coal feeding cover. Turn on the fan and check that the fan blows in.

Start the circulation pump and check the direction of rotation .

The part where the ash is unloaded should be cleaned frequently. Because, if there is not enough air from the part filled with ash, a good combustion does not occur and efficient fuel consumption is only possible with a good air passage.

Smoke pipes and the rear smoke box should be cleaned once a week. This will ensure that the boiler burns more efficiently.

If the boiler is hot and the pump is stopped, open the by-pass valve immediately. Firmly close the boiler flaps and the fan flap, and if the temperature continues to rise, take out the cinder in the boiler.

Never open the covers without stopping the fan.

Clean slag and ashes before making a new combustion. Never load on on slag or ash.

Perform daily, weekly, monthly periodic care.

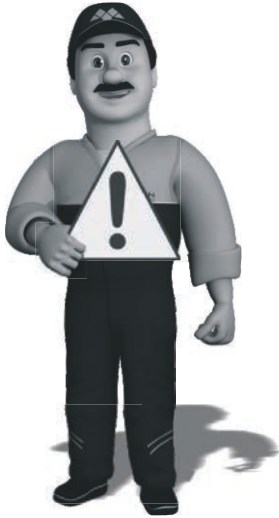
Clean the burning area, the furnace firebox of the boiler keep the smoke pipes clean and the accumulated ash inside.

When cleaning pipes, always remove the turbulators and clean the pipes with a steel brush. Be sure to put the turbulators back on, otherwise, you can consume more fuel and experiencing heat losses in your boiler.

At the backside, remove ash and soot from the cleaning cover and clean it.

Check the chimney temperature continuously. Make sure that the chimney temperature is between 160-250 ° C. If the chimney temperature drops below 160 ° C, the moisture in the chimney will cause the boiler to corrode and decay.

## POINTS WHICH SHOULD BE CONSIDERED AT THE FIRST OPERATION AND AFTER



If the chimney temperature exceeds 250 ° C, the boiler efficiency will decrease. Air clap adjustment should be done properly. The fan and reducer must be stopped prior to this procedure.

Clean the interior once a day by using the Ash Cleaning Cover at the bottom of the boiler front cover. The fan must be stopped before doing this.

If the boiler temperature drops (<30 ° C), the pump will stop automatically. In case of continuous water supply to the boiler due to water leakage, leakage must be prevented as soon as possible, otherwise it will cause cracks and perforations in the mirror and pipes due to the lime layer and the boiler and will not be covered by the warranty.

Continually check the seals (Wick and Silicone) of the rear smoke chamber and the front large and small cover of the boiler .

The circulation pump should be functioning if there is fuel in the boiler and the night when the fan and loading are stopped.

In normal operation, the circulation pump must be in working condition as long as the combustion continues in the boiler.

Do not insert your hand and your head while the boiler is active. Do not touch areas with high temperatures. Use protective equipment.

Never fully close the chimney flaps. Periodically clean the chimney.

## BOILER WATER SPECIFICATIONS

According to TS EN 12953-10 Boilers: Feeding and Boiler Water Quality standard, boiler water and feeding water specifications should be as follows.

With a view to prevent damages that might occur due to rusting in heating installation, heating water in drinking water quality should be used, chemical additives and/or aggressive waters in terms of corrosion should not be used. Within water content to be filled in boiler and installation, there should not be residue, wastes and unwanted solid particles. This sediment and dirt are extremely harmful to the circulating pump. If you suspect that water is not clear, make sure to install a filter before filling water.

Hardness of water to be used installation and boiler must be between (0-5) French hardness.

Limy water used in the system forms a layer of lime and mud in time on tube plate of boiler. This lime and mud layer prevents water circulation and heat transfer, and deforms the boiler. In this case, your device shall be out of warranty.

## FIRST FIRING

Check the water level of the system by looking at the hydrometer before the first firing operation is carried out. If there is no water in the system, or if it is missing, continue filling the water until the water comes out from the open expansion tank messenger pipe. You can control the water level in the system with the hydrometer located on the water flow line.

Check that all the valves are open (except the reserve circulation pump and bypass valve). Take out the air from the air vents and purgers in the installation.

The coal is filled on the grate of the solid fuel boilers with manual load at equal level 10-15 cm height. (Figure-12) Equally wooden pieces are placed. (Figure-13).

Keep newspaper, cardboard pieces or gauze and wooden pieces placed on the coal and ignited away from the boiler feeding cover. (Figure-14) (Do not use any flammable substances like gasoline, thinner etc. they are suddenly flashing. during the ignition.)

Wait until the pieces of wood are ignited while cool feeding cover is open, this will make the wood catch fire while the boiler is taking in the air. Once you are sure the wooden parts are on fire, close the feeding door.

Switch on the combustion fan by pressing the on-off button. Set the air fan of the combustion fan according to the desired fan speed. You can increase or decrease fan speed according to the size of combustion.

When the boiler temperature reaches 30 ° C, the circulation pump is automatically activated.

Turn on the combustion fan by turning the ignition switch to position (I).

Adjust the air adjustment of the combustion fan according to the speed of the combustion by playing with the fan setting flap. You can increase or decrease the fan flap according to the size of the combustion.

Operate the circulation pump when the boiler temperature reaches 30 ° C.

The desired amount of temperature is set digitally via the control panel. Fuel loading may be required for the boiler temperature to reach the set temperature.

The combustion fan should be switched off to add fuel. The coal that has become the glowing should be to the back of the grate with the help of a fire rake. make free space on the front. (Figure-15) (Do not open the inlet cover before turning off the combustion fan, the circulation pump must be left open even if the fan is turned off.)

Coal is loaded to the opened free space in the front of the grate and the fan is restarted. (Figure-16) (It is ensured that the gases coming out from raw coal are burned out of the chimney.)

When too much coal is loaded, the combustion air will be not sufficient enough and the gases will not burn completely.

The boiler should be kept under observation until the water temperature reaches the set temperature.

As long as the coal is burned, the boiler water temperature will rise, and when the coal flame starts to decrease, the water temperature will start to fall. In this case, feed the boiler again with coal as described above.

Adjust the thermostat temperature according to the climatic conditions (Table 24, Table-2)



Figure-12: Load until the fuel height is 10-15 cm on the grate.





Figure 13: place wood pieces on fuel.



Figure 14: Ignite the wood pieces.  
Run the fan in a low cycle when the wood chips are well ignited.

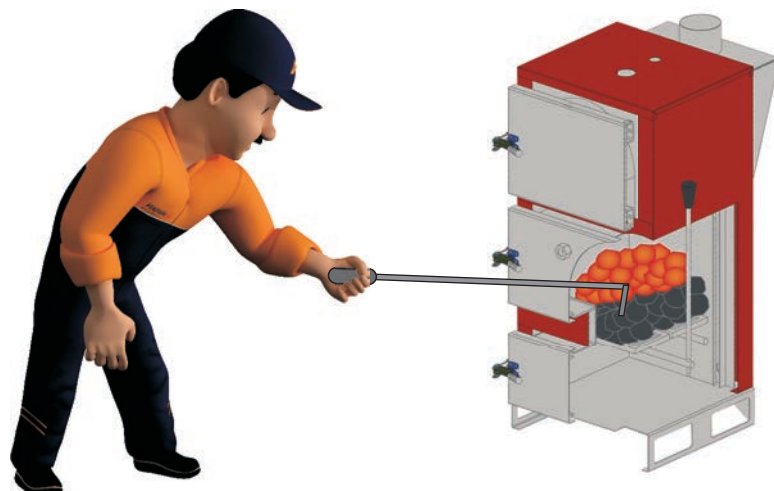


Figure 15: Once the fuel becomes candent, push it backward with fire rake and make room for new coal loading at the front.



Figure-16: Load sufficient enough crude coal to the empty place on the front of the grate.



Figure-17: Observe the water temperature, level according to the information given in your boiler pressure manual.

## THE ISSUES TO BE CONSIDERED DURING THE BOILER SLEEPING PROCESS

If you want to bring the boiler to the sleeping mode or shut-down turn off the combustion fan by pressing the on / off button.

Close the fan clip so that it does not bleed.

Check that the main cover, fuel feeding, and ash covers are tightly closed.

Leave the circulation pump open.

In addition, the fire situation in the boiler must be considered before the circulation is stopped. It should be checked that there is no coal in the boiler at this temperature, which can raise the heat in the boiler.

To fire the boiler again; press the manual loading button to load the fuel until the ash in the pot is poured. Stoke the ash and slag on the top of the fuel to get glowing coal. If the glow is too small, increase the amount of glow by adding some wood.

## MAINTENANCE

Weekly, monthly and annual care of the Boiler must be performed.

### WEEKLY MAINTENANCE

Smoke Tube cleaning; Open the cover in front of the boiler. Clean the accumulated soot inside the tubes with a suitable tube wire brush. When doing this, be sure that the boiler is not running and wait for the boiler temperature to drop so low that it will not harm you. Then clean the ash in the rear smoke box. Otherwise, the waste poured into the rear smoke box may cause clogging. Repeat this process frequently at the beginning by checking the amount of soot accumulation and later depending on the type of coal you are burning. It is recommended to do it once a week.

Fan Cleaning; If the fan blades are excessively dirty, they should be cleaned. Dust causes the fan's balance to fail.

Chimney Cleaning; When the boiler is cleaned, check the main chimney if there is not enough chimney draw (min.0,25 mbar).

Waste Gas Leakage Control; Boiler Coal and ash door wickets and sight glass should function properly. If any of these parts are damaged, replace them.

### MONTHLY MAINTENANCE

In addition to the weekly maintenance requirements, Check boiler ash and front smoke box asbestos wickets. If it is damaged, replace it with the new one.

- Clean the smoke pipes.
- Check the chimney.
- Open the cleaning cover behind the fume hood and clean the soot inside.
- If there is a strainer in the assembly, clean it by removing the filter.
- Check the reducer lubricant level.
- Check the helix shaft. Replace it with a backup if there is any deformity or distortion .

### ANNUAL MAINTENANCE

Every year after the winter season use of your heating boiler, Absolutely request MIMSAN Authorized Service Centers for periodic annual maintenance .

Periodic maintenances will prevent problems that may occur during use of boiler.

Annual maintenance will eliminate the risk of failure during the next season, and allow your boiler to work more efficiently and with energy saving for a longer-lasting usage life.

While entering the winter season, please do not forget MIMSAN Authorized Services work in intensive pace and have your annual maintenance done in summer.

Since annual and other periodic maintenances are not within the scope of warranty, these are carried out by MIMSAN Authorized Services by fee.

## ADJUSTING BOILER WATER TEMPERATURE AS PER EXTERIOR TEMPERATURE

Heating system in your building should carry out combustion process when external temperature is +12 °C and lower. When external air temperature is between +12+15 °C, heating system should be operated in limited mode. If external air temperature is +15 °C and higher, heater should not be operated. This information is a reference. In using heating boilers, local regulations apply.

Table 2

External Air temperature(°C)	12	1	10																
Boiler Water Temperature(°C)	45																		

Internal ambient temperatures in houses; should be 22 °C in sitting rooms and halls, 15 °C in stairs, kitchen and toilets, 20°C in bedrooms. It should be 15-20 °C in Factories and Business locations.

## WHAT TO DO IN THE EVENT OF POWER FAILURE



The circulation pump will not operate in the power failures and there will be some heat rise in the boiler water. In boilers with very good chimney draw, there may be a heat up to the boiling point in the boiler water. For this reason, the work to be carried out in the power failure is ;;

- Set the closure in front of the fan to the closed position to prevent air flow between the fan blades.
- Open the By-Pass valve on your system.
- Close all of the covers of the boiler.
- Don't empty the boiler water.
- Remember to set the settings back to the original position after power is back.
- After the boiler cools down, absolutely complete the water in the installation.

## WHAT TO DO IN CASE OF AN EMERGENCY



If the water pressure drops below 0,5 bar or exceeds 1,5 times the operating pressure limit, emergency operation must be applied immediately to stop the boiler, all air cover, lids, fan cover and chimney cover must be closed, Be sure that the burning has stopped and the boiler should be allowed to cool itself.

The Boiler must not be fed with water, the boiler house gate must be opened, and people inside the boiler house must leave the room and the authorized service must be called immediately.

Do not feed cold water to the boiler under any conditions and situations. This situation may cause serious damage and life-threatening outcomes.

## EXPANSION TANK AND SAFETY PIPES



EXPANSION REASON: In hot water heating systems, when the water is heated to 90 °C from 10 °C, the volume increases by 3.55%. Expansion tanks are used to obtain this expansion depending on the temperature of the water. The expansion storage also fulfills the safety of the system, that is, the pressure does not rise, and the necessary water support functions in the system.

Open expansion tanks provide safety for the boiler and plumbing in building heating systems, completing losses due to evaporation of water in the installation, various leaks, repair, and maintenance. The excess of warming and expanding water in the boiler is collected in this depot and when the water in the installation is cooled and the level drops, the water is completed from this tank.

## EXPANSION TANK AND SAFETY PIPES

*In solid fuel systems, it is necessary to be used for safety reasons.*

In open expansion hot water heating system; it is essential that the water has direct contact with air and its temperature does not exceed 100 ° C. Contact o Air with water must be provided. To ensure that this connection is not accidentally or negligently interrupted, it is necessary to have flow and return safety pipes installed between each boiler and the expansion vessel in such a way as not to be interrupted by any valve. The safety tubes should be installed without narrowing and as rising and allways towards the expansion tanks. The stream safety tube can enter the expansion tank from below or above. However, it is necessary to connect the return safety pipe at the bottom. safety tubes cannot be used never less than 1 ".

## NECESSARY OPERATING PRESSURE OF BOILER AS PER FLOOR HEIGHT

*Boiler selection in terms of operating pressure must be done as follows.*

FLOOR HEIGHT	PRESSURE
1	1,5
2 - 5	2

## COAL CALCULATION

*The required amount of coal is calculated by the following formula.*

*B :The amount of coal to be loaded kg / h.*

*Qk :Boiler Capacity Kcal / h.*

*Hu :Fuel lower heat value Kcal / kg*

*η :Boiler efficiency (0,80) T S 4040*

*When too much coal is loaded, the combustion air will be not sufficient enough and the occurring gases cannot be combusted.*

$$\text{Formula } B = \frac{Qk}{HU} \div \eta$$

## FUEL SELECTION

Designed to burn 10-25 mm size economic fuels such as ; coal, apricot kernel, hazelnut shell, prina.

When purchasing coal, inform yourself about the calorie of the coal. By purchasing coal with Calorie 7000 kcal/kg. You can reduce your coal consumption by half. Low-calorie coal is expensive coal. If you purchase 3500 kcal./kg coal, then you will use 2 times more coal than coal with 7000 kcal/kg.

Do not keep your coal in the open, in rain and sun, keep it in a cool and clean place under the porch or in a closed area, with a height of max. 1 m

# DETERMINATION AND REMOVAL OF ERRORS / FAILURES.

ERROR NAME	ERROR DESCRIPTION	CORRECTION ACTIONS
If SEN message appears on the screen	Overcurrent, Over voltage, Low voltage.	Digital thermostat, temperature sensor connection incorrect, sensor connection may be disconnected or cable may be broken.
If EN message appears on the screen	Electrical failure Cable connection error	Digital thermostat, temperature sensor connection incorrect, sensor connection may be disconnected or cable may be broken.
If there is no combustion in the Boiler.	Air circulation or fuel problem.	Maybe no chimney drought. Maybe front the fan have been ash. Boiler pipes may be clogged. Flap may be stuck. Fan flap may be completely closed. The calorific value of the fuel may be low.
If the boiler pipes are clogging too often	Air circulation or fuel problem.	Make the burning from the top. Coal quality may be bad, change. Maybe no chimney drought, check.
If the temperature is suddenly rising	Mechanical / Electrical Error.	Pump may be not running. There may be no water in the plumbing. There may be air in the installation. Check your fan setting. Bypass valve may be open. Inoperative spare pump valve may be open.
If the fan is not running	Mechanical / Electrical error.	The thermostat may be faulty, please check. Limit thermostat may not start, reset. Ash or coal may have accumulated in front of the fan, Flap maybe not opening, The fan may be stuck, Check if the switch is switched on.
Hot water coming from expansion tank	Mechanical error.	Expansion tank may be wrong connected. Safety valve may be installed low or not set
If there is flicker and sound in the boiler.	Mechanical error.	The boiler may be dehydrated. There is air in the boiler instead of water. The pump may not be switched on. The motors may be out of balance.
Digital display does not show the temperature.	Electrical error.	Maybe no energy. The digital display may be defective. Cable connections may be faulty.
If the fan doesn't work after the electricity went away If the circulation pump is not running	Electrical error.	Check that the boiler temperature has risen and the limit thermostat is blown which is the safety thermostat.
If smoke is coming out from the device or from the Bunker.	Air circulation problem	Chimney drought may be week. The air holes in the fuel tank may be clogged.
If there is a smoke leak.	The gasket is may be outworn.	Close using heat-resistant silicone gasket.
If smoke comes out from the covers.	The cover sealing wicks are worn-out or the cover is not fully seated.	Replace with heat resistant wick.
If the radiator panels are not warming up	Mechanical / Electrical error.	Check your installation and panels. Check your Pump Have your depot checked by the person or organization that installed it
If there is water leak in the Boiler If water comes from the lower and upper hinges of the boiler main cover.	Mechanical error. Mechanical error.	Please apply for a service Please apply for a service
If the system is energized (Htcs) and error code appears.	Glass fuse blown or Failure of the the pwn unit which enables the fan to run.	Replace the 3A glass fuse that feeds the fan.
Htsn gives error code while flashing.	Sensor error.	There are two sensors S1 and S2 on the device, one of these sensors fails or gives the error code when the cables are disconnected from the terminal. The device works by detecting the sensor which is intact and will not work if both are faulty. Check the sensor connection inputs on the back of the device. If not corrected, contact your nearest service center.
Htsn is giving error code.	No fuel warning	When the system is turned on with the On-Off button, the device collects sampling temperatures for its calculations. After 7 minutes, if the instantaneous temperature of the water did not exceed 3 °C above the sampling temperature and the water temperature was below 27 °C, the system will conclude that the fuel is empty and the system will shut down.
If two continuous values are flashing on the display, if the fan is not working.	High temperature warning above 90 °C.	Allow the boiler temperature to fall below 90 °C.