TANSAN

INSTRUCTION OF INSTALLATION AND MAINTENANCE

TANSAN S.E-S.S MODEL

GAS-FUEL OIL FIRED

HOT WATER BOİLER

Presentation

Dear Customer,thank you for having chosen a TANSAN Hot water boiler model S.E/S.S
This manual has been prepared to provide you with information ,warnings and suggestions on the installation,correct use and maintenance of the boiler.
Please therefore read it throughly and keep it with care for future reference.
In your interest, we suggest that you carefully observe the contents of this manual,so as to be able to get the most from this quality product.

Warranty and service

Warranty period for this boiler is 2 (two) yearsThe certificate of warranty has to be filled out by the authorized dealler or seller and the verification of installation has be filled out by a qualified service and forwarded to the seller for warranty purpose.
The warranty is only valid if the standards and the suggestions for use described in this manual are observed. Failure to observe such standards and suggestions will void the warranty.The warranty excludes all damage due to corrosion from the acidic condensate of the products of combustion or the formation of deposits caused by the use of hard or aggressive water as such are solely due to operation of the system. The service life for these boilers are ten (15) years.
If you have any questions about installation and service of boilers TANSAN,you can contact service department by phone: +90 312 2803318 or by e-mail: info@tansanisi.com.tr.
More information about usage and service of the boilers on web page: http://www.tansanisi.com.tr

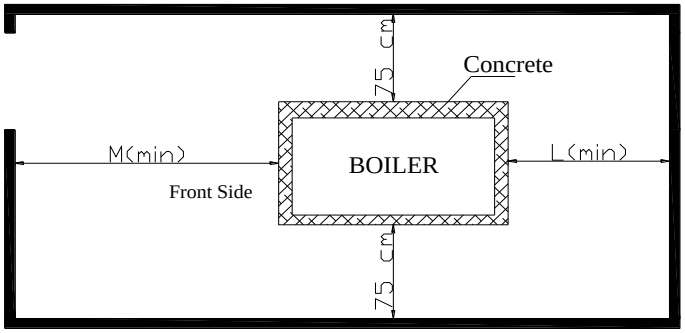
Genaral suggestions

This instruction manual is an integral part of the product and provides instructions for installation, operation and maintenance . This appliance must only be used for the purposes it has been specially designed for.This appliance is used to heat water to below-boiling point at atmospheric pressure,and must be connected to a central heating and/or domestic hot water distribution system according to its characteristics,performence and heat output.
Before the installation, check that the boiler has not been damaged due to handling and transportation. Boiler must be installed in comliance with the standards in force, by only qualified personel. Before performing any cleaning or maintenance operations,disconnect the appliance from the mains power supply.TANSAN is not responsible for any damage to persons people and/or things due to errors in installation,control,maintenance and improper use.The boiler and corresponding system must be commissioned only by authorised personel.Commissioning is performed in order to check the correct operation af all the control devices.
Qualified personel must be contacted if the appliance is not used for an extended period.
The installer must observe the local standards in force as regards :the choice of the site of installation of the boiler,the compliance with the required ventilation conditions;the tightness of the connection to the chimney;the connections of the fuel lines,electrical systems and any other relevant safety standards.

Boilers must be fired only by gas or oil fuels specified in this manual and boiler plate.
TANSAN applies conform to the requirements specified in the applicable European directives:
Gas directive (90/36 EEC)
Efficiency directive (92/42 EEC)
Low voltage directive (73/23 EEC) (amended by 93/68)
Electromagnetic compatibility directive 89/336 (amended by 93/68)

The boiler should be installed in rooms exclusively used for this purpose, in accordance with the technical standards and legalisation in force and featuring adequately sized ventilation openings. The ventilation openings must be permanent,directly communicating with outside and located in both a high and low position,in compliance with the standards in force.

The location of the ventilation openings ,the fuel supply,power nad light,ng circuits must comply with the legalislation in force in relation to the type of fuel used.To asist the cleaning of the flue gas circuit,free space must be left of the front boiler body and no less than the length of the boiler body and, in any case never less than 75 cm,cheking that with the door open 90 degree the distance.The boiler support surface must be perfectly horizontal.A flat cement base should be used is able to supoprt the overall weight of the boiler plus the water content.As shown on the Diagram below:



Model	L (min)	M (min)	Model	L (min)	M (min)	Model	L (min)	M (min)
S.E 100	900	1420	**S.E 850**	900	2710	**S.E 1800**	900	2930
S.E 150	900	1560	**S.E 900**	900	2710	**S.E 1900**	900	3060
S.E 200	900	1560	**S.E 950**	900	2610	**S.E 2000**	900	2510
S.E 250	900	1585	**S.E 1000**	900	2710	**S.E 2200**	900	2640
S.E 300	900	1825	**S.E 1100**	900	2710	**S.E 2400**	900	2850
S.E 350	900	1845	**S.E 1150**	900	2800	**S.E 2600**	900	3040
S.E 400	900	2185	**S.E 1200**	900	2808	**S.E 2800**	900	3260
S.E 450	900	2185	**S.E 1250**	900	2710	**S.E 3000**	900	3550
S.E 500	900	2185	**S.E 1300**	900	2808	**S.E 3500**	900	3815
S.E 550	900	2210	**S.E 1350**	900	2808	**S.E 4000**	900	4285
S.E 600	900	2210	**S.E 1400**	900	2366	**S.E 4500**	900	4435
S.E 650	900	2210	**S.E 1450**	900	2426	**S.E 5000**	900	4865
S.E 700	900	2210	**S.E 1500**	900	2710	**S.E 5500**	900	5375
S.E 750	900	2210	**S.E 1600**	900	2636	**S.E 6000**	900	5915
S.E 800	900	2210	**S.E 1700**		2808			

Model	L (min)	M (min)	Model	L (min)	M (min)	Model	L (min)	M (min)
S.S 100	900	1460	**S.S 850**	900	2745	**S.S 1700**	900	3365
S.S 150	900	1526	**S.S 900**	900	2870	**S.S 1800**	900	3625
S.S 200	00	1720	**S.S 950**	900	2985	**S.S 1900**	900	3660
S.S 250	900	1810	**S.S 1000**	900	3110	**S.S 2000**	900	3270
S.S 300	900	2055	**S.S 1050**	900	3225	**S.S 2200**	900	3520
S.S 350	900	2345	**S.S 1100**	900	3345	**S.S 2400**	900	3760
S.S 400	900	2595	**S.S1150**	900	3465	**S.S 2600**	900	4010
S.S 450	900	2285	**S.S 1200**	900	3505	**S.S 2800**	900	3630
S.S 500	900	2545	**S.S 1250**	900	3615	**S.S 3000**	900	3835
S.S 550	900	2745	**S.S 1300**	900	3730	**S.S 3500**	900	4025
S.S 600	900	2550	**S.S 1350**	900	3480	**S.S 4000**	900	4490
S.S 650	900	2715	**S.S 1400**	900	3585	**S.S 4500**	900	4110
S.S 700	900	2565	**S.S 1450**	900	3262	**S.S 5000**	900	4490

S.S 750	900	2705	**S.S 1500**	900	3565	**S.S 5500**	900	4815
S.S 800	900	2627	**S.S 1600**	900	3750	**S.S 6000**		5170

The flue gases must be connected to an adequate draught chimney ,**without** any flue gas leakage to the boiler room.
It is essential that an appropriate pump is fitted in the circulation system ,which must be kept in automatic operation at all the times when the boiler in use. The filling and make up water must be according to specifications given in this manual.Long term water treatment is essential for the economic operation and life of the boiler.
Boilers must not be installed in areas where inflammable vapors and materials are likely to present. To avoid damage to the boilers contamination of the combustion air by high levels of dust or halogenated hydrocarbons.
The gas or fuel-oil burners are equipped with an ignition device which automatically lights the pivot , and some more additional automated safely controls.**Do not try to light the burner or operate the system manually.** All the control devices must be functional and operating with in the limits specified at all time. If any of them is not working properly do no operate the boiler and call a qualified service.
If the boiler is heated above 90 C,do not supply cold water to the system for rapid cool down. It can cause an explosion. Wait the boiler cool down naturally up to 40 C before adding make up water.
Do not start the boiler if there are any water leak and if any parts under water.In this case call the authorised service.
An emergency shut down switch must be placed in proper place outside the boiler room. Switch have to cut the fuel line and must be identified by a name plate.
Model S.E/S.S are suitable for operation with forced water circulation,both with open and closed expansion vessels. In closed expansion vessels gas pressure must be controlled regulary by a authorised service.If the pre-charge gas pressure is less then specified;the system pressure will rise rapidly and can cause an explosion.

Genaral specification

Tansan S.E./S.S model boilers are low NOx,3-pass hot water liquid or gas fired steel boilers.Model S.E has the eleptical type with a cylindrical combustion chamber.Model S.S has cylindrical shell type with a cylindrical combustion chamber.
Boiler are produced and tested in accordance with TSE EN 303-1,by an ISO 9001:2000 registered company and GOST-r and GOSTEKHNADOR of Russian Federation.
Models S.S and S.E have more than 40 different capacities between 116 KW-7000 KW
Standart working pressure for the boilers is 3 (three) bar.By request it is possible to produce the boilers with a higher pressure.
The boilers have been specially designed and produced to peform efficient combustion with both gas and fuel-oil.Perfect insulation of the boiler makes minimum heat loss.No addition intermediate flow pieces required.
All necesary connections are already on the boiler.Boiler has low combustion chamber loadging for clean combustion with low nitrogen oxide emissions.
Standart working temperature for boilers is 90 C..By request it is possible to produce the boilers with a higher working temperature.

Technical and construction characteristics of the boiler

Main boiler body: Cylindrical (S.S) or eliptical (S.E).

Boiler insulation: The body of the boiler is insulated by a special isoaltion material ,which is covered by a low wear material.Outside boiler is insulated by a steamless steel ,that is painted by a special thermo dye.

Combustion chamber:Specially designed for working on gas-fuel oil.

Combustion pipes: according to DIN 17177.three-pass combustion pipes

Combustion chamber door:Fireproof and waterproof insulated.İt is easy to open the door cause of conic system and special hinge.

Boiler cleaning door :Let make the cleaning of the boiler fast and easy.

Flue gases draught control door:Let to regulate the flue gases draught.All the regulation of the flue gases draught must be done only by a authorised personel.

Burner connection place: standart,fits most of the burner.

Sensor of the outgoing gases: Thermometre shows what is the temperature in the chimney

Boiler Mounting

The boiler can be installed only by authorised TANSAN suittably qualified personel.

The installer must observe the local standards in force as regards:choice of the site of installation of the boiler,the compliance with the requirements,apply to the EEC directives and EN norms.Installation must be done according to the required ventilation conditions;tightness of connection to the chimney;the connections of the fuel lines,electrical connections and any other relevant standards.
TANSAN is not responsible for any damage due to errors in installation.

The boiler should be installed in rooms exclusively used for this purpose, in accordance with the technical standards and legalisation in force and featuring adequately sized ventilation openings.The ventilation openings must be permanent,directly communicating with outside and located in both a high and low position,in compliance with the standards in force.

Boilers must be fired only by gas or oil fuels specified in this manual and boiler plate.
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Electromagnetic compatibility directive 89/336 (amended by 93/68)

Heating system must be equipped with automatic or manuel control devices according to EN 12828 standards.

It is strongly recomended to fit the systems with at least one shunt pump in order to keep the return line temperature above the condensation values(shunt-anti condens pump)

If the system is running on a heavy fuel(for example LPG) and the boiler room is under the ground level,then the firing systems must have a flame control device and the possible leakage from fuel lines must be ventilated to a safe place ex-proof mechanical means.If there fuel,gas or water leaks in the system,stop the burner and call the responsible authority.

The electrical system must be installed im compliance with the relevant standards by qualified personel.

All the electrical equipment and all the electric connections must be done according to EEC.
Standart for the elected connections and curcuit is 220V-50Hz.

Boiler is not designed to operate outside and does not feature automatic frost protection systems.

SAFETY REQUIREMENTS

Heating system shall be equipped with minimum safety requirements to protect the system against exceeding of the maximum operation pressure and temperature.Safely arrangements must be fit the type of heating system,using fuel type and the way that the heat supply is provided to the heating system.Minimum required safety equipment is under the responsibility of the authorised installer and has to be with accordance to local rules and codes or EN 12828

TANSAN boilers are suitable for operation with forced water circulation,both with open and closed expansions vessels.An expansion vessel is always required,to allow for the increase in water volume due to heating.

Minimum safety equipment required for system with closed expansions vessels(s).

The capacity of the closed expansion vessel must be calculated considering:
The total volume of water contained in the system
The maximum operating pressure of the system
The maximum oparating presssure of the expansion vessel
The initial pre-charge pressure of the expansion vesel
The maximum operating temperature of the boiler(the maximum temperature of the thermostat fitted on the control pabnel is 90 C;when performing this calculation use the value 100 C)

The expansion vessels pipe must not be fitted with on-off valves.No type of the shut off devices may be installed between the boiler and the expansion vessel,and between the boiler and the safety valves,while the valves should calibrated for action at values no higher than the maximum admissible operation pressure.
Expansion vessels must confirm to EN 12828

Protection against overheating

Boiler must be equipped by a safety manual reset thermostat including a specific sensor and the boiler temperature shall not increased not more then 10 C. After switching off the heating or fuel supply line.The manual reset thermostat must confirm current EN 60730-2-9 nad have CE mark. This item is presented on all kind of the control panel TANSAN.
Mounting of control panel must be done only by authorised personel.

Protection against exceeding the max. operation pressure,

Boiler must be equipped by at least one safety valve in order to protect the system against exceeding the maximum operation pressure.The safety valve is not a standart supply with complect of the boiler,it must be fitted by the installer on the flow line of the boiler without any isolation valve or similar equipment and the safety valve must be due to EN 1268-1 with a minimum size of 15 DN.They must open at a pressure not exceeding the maximum construction pressure of the system and must be designed to prevent the maximum operation pressure from being exceeded by more than 10 %.Safety valves must be installed so that the pressure drop of the discharge pipe will not exceed 10 % of the safety valve set pressure.
Safety valves must discharge safely and boiler which capacity more than 300 Kw capacity output have special requirements, please refer to EN 12828.
Boiler with capacity more than 300 kw must be equipped with a pressure limiter.This is not a standart supply with the boiler,it must be fitted by the intaller on the flow line of the boiler without any isolation valve or similar items.If the working pressure of the heating system exceed the set pressure limit,the pressure limit shall cut-off the heating or fuel supply and interlock it against automatic restoring.Pressure limiter shall be set so that it responds before the safety valve operate.

Protection against the low water level/low pressure of a boiler
The systems with closed expansion vessel must be protected against low pressure/low water level. Working with low water level can cause the steam appear and overheating the boiler that consequnntly will damage the heating system. Use the cock of the low pressure, switch of the water flow, regulator of water level. This item is not presented with a complect of a boilers TANSAN.
Selection and Mounting must be done only by authorised personel.

All devices below shall be installed for the safety and economic oparation of the heating system with closed expansions vessel.

Boiler thermostat;

For the control and regulation of the water temperature,the control panel must be equipped on boiler
The possible regulating temperature must not be more then operating temperature of the boiler.
Operating temperature for the S.E /S.S models is 90 C.

The manual reset thermostat must confirm current EN 60730-2-9 nad have CE mark. This item is presented on all kind of the control panel TANSAN.
Mounting of control panel must be done only by authorised personel.

Thermometr;

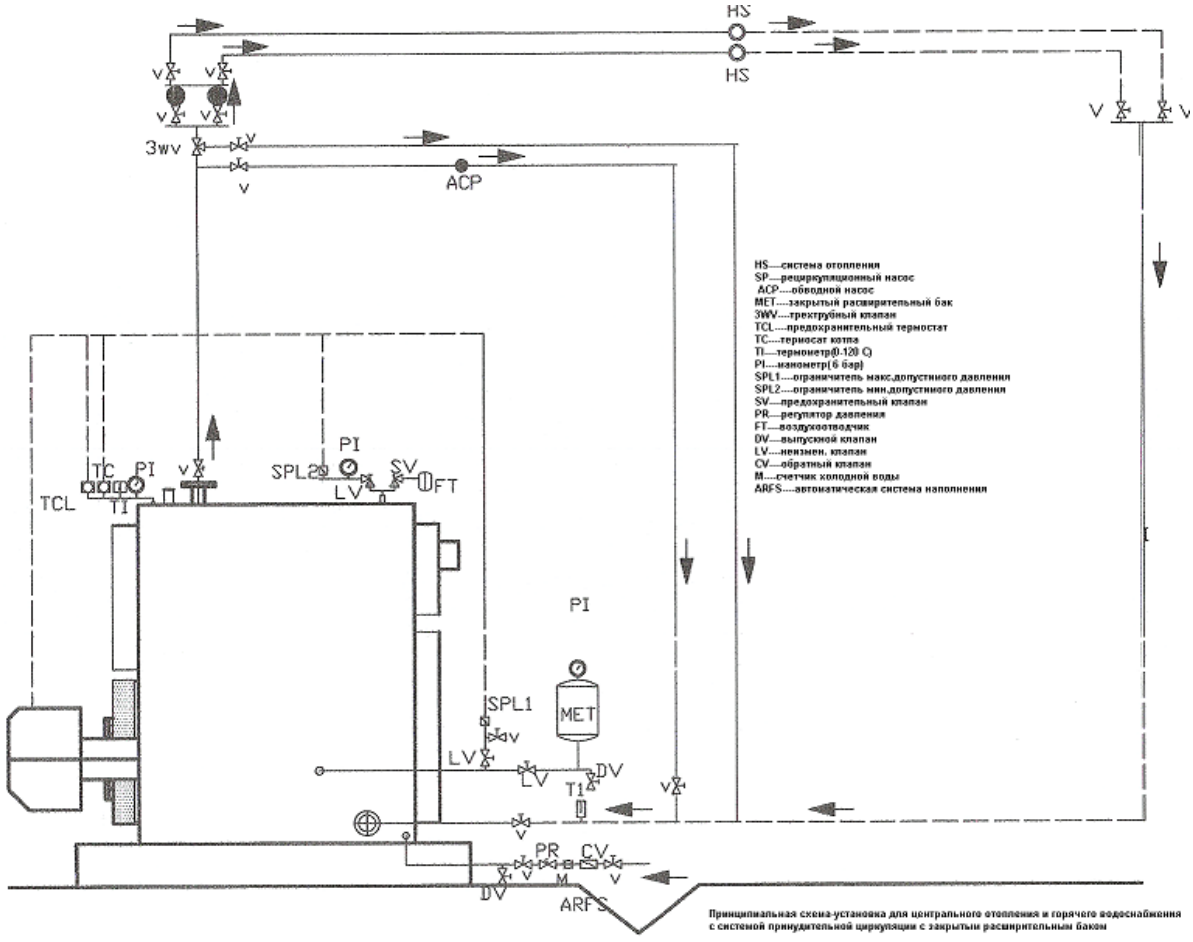
The maximum possible parametre of the showing temperature by the thermometr must be not more then 20% of maximum possible operating temperature.
Thermometres must be installed on inlet and outlet valves. Optionally boiler can be equipped with thermometres**.** Mounting of thermometr must be done only by authorised personel

Manometr;
The maximum possible parametre of the showing pressure by the manometr must be not more then 50% of maximum possible operating pressure.
Mounting of manometr must be done only by authorised persone

System of regulation the level of pressure and water level;

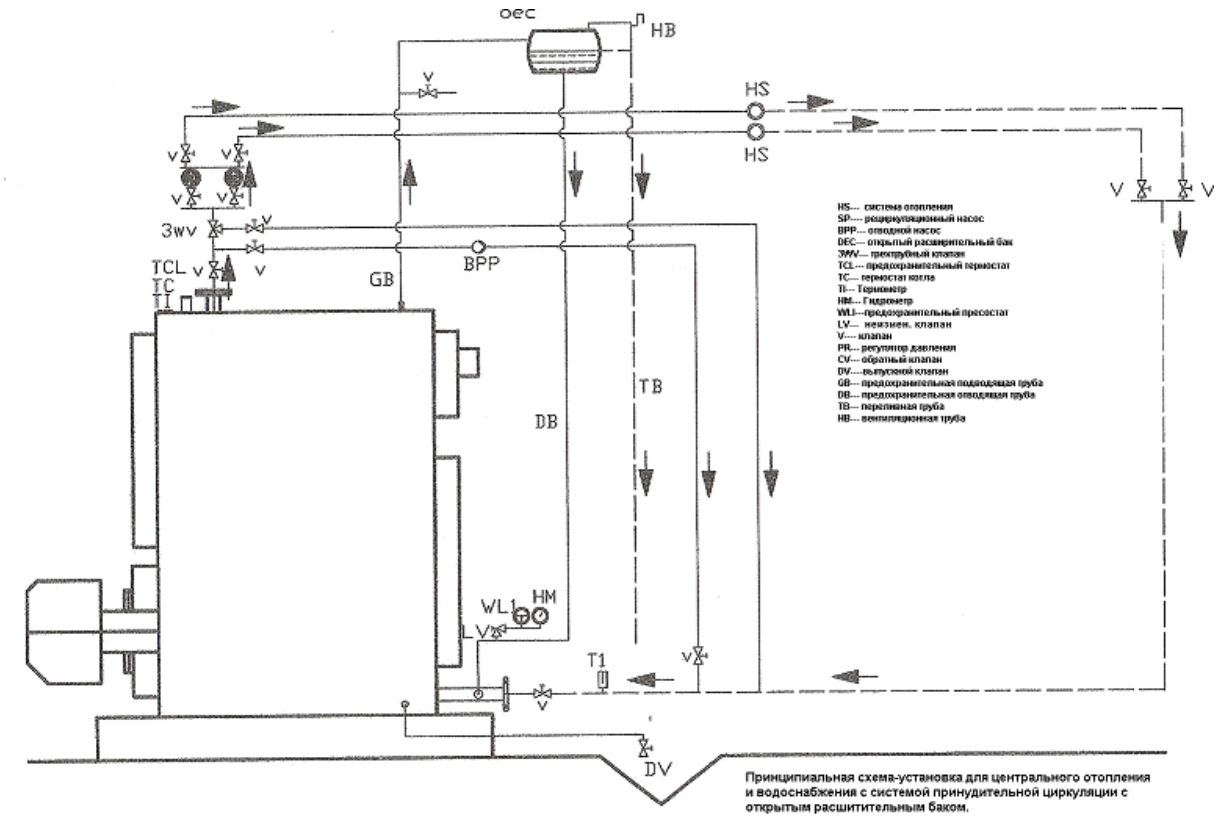
To keep the normal water level and pressure in the boiler it is recommended to install the system of regulation.The installation of pressure reducer,filtre,check valve,water counter nad two ball valves is enough.

All the regulation and control sytems must fit **EN 806-2.**



Minimum safety equipment required for system with open expansions vessels(s).

The height of the hydrostatic column must be at least 3 metres above the boiler casing and must have sufficient capacity to contain,between the surface of the water in the vessel and the overlow pipe,the increase in volume of all the water in system.
High and narrow vessels are better,as they ensure minimum contact between the water surface and and the air,thus reducing evaporation.
The expansion vessel must be opened to the atmosphere.



Принципиальная схема-установка для центрального отопления и водоснабжения с системой принудительной циркуляции с открытым расшитительным баком.

Boilers in an open expansion vessels shall be connected to an expantion cistern, Cistern must be dimesioned so that changes in water volume due to heating up and cooling down can be accommodated.Open vented vessels must be provided with cistern vent and overflow pipe that cannot be blocked.The overflow pipe must be dimensioned so that it can safely darin off the max. mass flow rate entering the system,that can be achieved by selecting the overflow pipet o be one DN-size larger than the filling pipe.
Expansion tank,safety pipes,open vent and overflow pipes must be arranged to be protected against freezing.
The minimum internal diametr of the open vent safety pipe and feed and exansion pipe must be:
Safety pipe: dG= 15+1.4 □ □ мм (but not less than 9 мм internl diametr)
Feed and expansion pipe: dD= 15+1.0 4 □ □ мм :
Where □ is the nominal heat output of the boiler.
All devices below shall be installed for the safety and economic oparation of the heating system with open expansions vessel.

Water level indicator;
The heating system must be equipped with hydrometr, scales in hydrometr must be in metres.

Thermometr;

The maximum possible parametre of the showing temperature by the thermometr must be not more then 20% of maximum possible operating temperature.

Thermometres must be installed on inlet and outlet valves. Optionally boiler can be equipped with thermometres**.** Mounting of thermometr must be done only by authorised personel

Manometr;
The maximum possible parametre of the showing pressure by the manometr must be not more then 50% of maximum possible operating pressure.
Mounting of manometr must be done only by authorised personel

Thermostat
For the control and regulation of the water temperature ,the control panel must be equipped on boiler
The possible regulating temperature must not be more then operating temperature of the boiler.
Operating temperature for the S.E /S.S models is 90 C.
The manual reset thermostat must confirm current EN 60730-2-9 nad have CE mark. This item is presented on all kind of the control panel TANSAN.
Mounting of control panel must be done only by authorised personel.

Burner selection

Boilers must be equipped with a compatibale burner certified due to EN 676(gas firing),EN 267 (oil firing) to comply with the boiler efficiency requirement (92/42 EEC) directives and appliances burning gaseous fuels (90/396 EEC) directives.
The burner must be suitable for the respective rated output and the resistance on the flue gas side of the boiler.The material of the burner must be suitable for operating temparatures of at least 500 C.
TANSAN S.E/S.S boiler's combustion chamber dimensions and flue gas resistances are according to the current regulations.

Assembly of burner

The burner must be assembled according to the instruction manual provided by the burner manufacturer.
The assembly of the burner to the door of the boiler must ensure perfect tightness to the products of combustion.Once having installed the burner on the boiler the space between the burner draught tube and the refractory material on the door must be filled with the layer of ceramic fibre supplied.This prevents the door from overheating and consequently from being irreversibly deformed.The fuel connections to the burner must be located so as to allow the complete opening of the boiler door with the burner installed.
Boiler shall be adjusted according to the boiler output. In two stages or modulating burners low fire output adjustment be sure tht the flue gas temperature is not lower then the condensation point of the flue.
When using two-stage or modulation type burner the regulation of the first stage must be not less than 60 % of total capacity of the burner.
All the weight of the burner should not only be based on the door of the burner,if necesary put the holder fo the burner.

Using fuel types

Models S.E / S.S working only on gas,fuel-oil and gaseous types of fuel

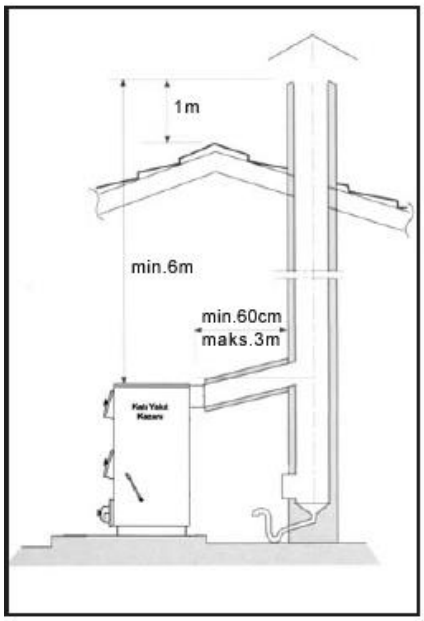
Fuel-oil:(light,medium,heavy,diesel fuel.) The burner must be assembled according to the instruction manual provided by the burner manufacturer.

Gas fuel: Natural gas, LPG,and other gases accroding to TS 11395, EN 437.The burner must be assembled according to the instruction manual provided by the burner manufacturer.

Discharge of the products of combustion

The flue and the flue fitting must be made in compliance with the standards and legaslation in force,using rigid pipes thet are resistant to high temperatures,condensate and mechanical stress,and are airtight.
The flue must ensure the minimum negative pressure specified by the standards in force ,considering 0,20 mbar pressure at the fitting to the flue.Unsuitable or incorrectly sized flues may increase the

noise produced due to combustion,generate problems involving condensation and negatively affect the combustion parameters.**Non-insulated flues are source of potential danger.**The joint seals should be made using materials that can resist temperatures of at least 250 C.Suitable points for measuring the flue gas temperature and analysing the products of combustion must be prepared in the connection between the boiler and the flue.As regard the cross-section and the height of chimney,refer to the national and local standards in force.



Effective chimney heights is the height difference between boiler flue gas exit and chimney end.
Flue gas ducts between boiler and chimney shall not be longer then ¼ of the effective height but anyhow it shall not be longer than 3 m and shall not be shorter then 60 cm.there can be max. To 90° elbow.

Flue gas ducts shall not have any downward slope. It is advised to have 10° slope upwards and enter the chimney with an angle of 45°

Water supply

According to TS EN 12953-10 (requirements for feed water and boşler water quality)

Parametre	Unit	Make up boiler water	Boiler water
Appearance	-	Clear,free from suspended solids,no stable foam	
Direct conductivity at 25ºC	µS/cm	<1500	
PH value at 25 ºC	-	>7,0	9,0 до 11,5³
Total hardness(Ca+Mg)	Mmol/l	<0,05	
Iron concentration	Mg/l	<0,2	
Composite alkanity	Mmol/l	-	<5
Oil/Grease concentraion	Mg/l	<1	-
Organic substances (as TOC)	-	See footnote	

The water used in the central heating system must be treated in following cases:Very large system,very hard water,frequent introduction of water to top the system.If ,in these cases,the system needs to be partially or completely emptied,it must be refilled with treated water.To control the volume of water automatically refilled,an hour counter should be installed.The most common phenomena that occurs in heating systems are:LIME SCALE DEPOSITS.Lıme scale tends to concentrate at the points where the temperature of the wall is higher.Due to their low heat conductivity,lime scale deposits cause a reduction in heat exchange to the exent that even when just a few millimeters thick,the heat Exchange between the flue gas and the water is limited,bringing an increase in the temperatutre of the parts exposed to the flame and consequently breakage on the tube plate.

Corrosions of the metal surface on the water side of the boiler is due to the dissolution of iron into ions.The presence of dissolved gases,in particular oxygen and carbonic dioxide,play and important part in this process.Softened and/or demineralised water provides protection against lime scale and other deposits,however does not protect against corrosion.The water therefore must be treated with corrosion inhibitors.

Start up

First start up of the boiler must be done by only authorised professionally trained personel

The boiler is designed only for producing hot water with temparature not more than 95 C and must be used only on proper use.All other usages of the boiler except for the producing hot water is potentially dangerous.

Once having completed the water, electrical and fuel connections to the boiler,before starting check that the expansion vessels and safety valve(if required)are connected correctly and cannot be shut-off.
Check the bulbs of the thermostats and the thermometer are secured inside the corresponding shealts.
Check that the turbulators are positioned in all the flues.
Check if the system is filled with water completely vented of air.
Check that the pump or the pumps are working properly.
Check the water,electical,safety device an fuel connections have benn performed in compliance with the national and local legislation in force.
Check the burner is installed according to the instructions contained in the manual provided by the manufacturer.
Before oparating check the boiler room for the gas leakage.
WHAT TO DO IF YOU SMELL GAS OR INSPECT FUEL LEAKAGE:
Do not light any appliance
Do not touch any electrical equipment
Do not smoke
Cut the fuel valve from main inlet to the building
Do not use any phone in your building
Immediatelly call authorised service and local authority from outside building phone
Check the system water level and pressure
Check the ventilation opening are free from obstacles
Check any leakage point on fuel or water lines
Check the valve positions and sure that all the water circulation valves are open.
Check the presence of any kind of inflammable substance in boiler room

The mains voltage and frequency are compatible with the rating of the burner and the boiler’s electrical equipment.
Check that the system is able to absorb the quantity of heat that will be produced.
Check that the flue gas exhaust system is correctly fitted and sized.
In starting a new installation all the fuel and water pipes ,boiler and all the other heating system equipment must be flushed free from deposits.
Open all necessary valves for filling.
Check that the heating systems is able to get all all heat produced by the boiler.Recirculations pump(s) must be correctly installed.
In open vented systems fill the systems up expansion tank proper level.
The certified specialist has to give consultation about the min. Water and pressure level.
In sealed systems fill the system up to predefined pressure.

Ther certified specialist has to give consultation about the min. And max. Water and pressure level Analyze the flue gas and be sure that emissions levels of CO,NOx,soot,CO2 or O2 are according to current regulation.

FOR REFERENCE

Fuel type	Eraption coeficient (Ringelmann)	% loose of the heat with flu gases	% CO2	CO (mg/kWh)	NOx (mg/kWh)
Gas	(1)	(9)	> 10	< 100 (1070)	< 1170 (260)
LPG	(1)	(9)	> 10	< 100 (1070)	< 230 (260)
Oil	(1)	(11)	> 10	< 110 (110)	< 250 (250)

When the system is filled with water with temperature(10-25°C) system will contain air.To blowdown the air boiler must reach 85-90°C.
TANSAN is not responsible for any damage to persons people and/or things due to errors in installation ,control,maintance and improrer use.
.
ATTENTION! All changes made in the construction of the boiler void the warranty agreement.
After the positive outcome of the chekcs described in the previous paragraph,the burner can be ignited for the first time;this operation must be performed by a technician who has been authorised by TANSAN company.The technician has full responsibility as regards the field of calibration,within the declared and approved output range of the boiler.After having opened the fuel on-off cocs and checked that there are no leaks in the supply line the boiler is ready for the first start up.Fisrt start up can be started by the control panel of the boiler: There are two diffrent types of control panel,detailed first up by the control panel is explained in the next paragraph.

First run

CONTROL PANEL

A- Standart control panel:

Thermometr. Thermostat. ON/OFF switch

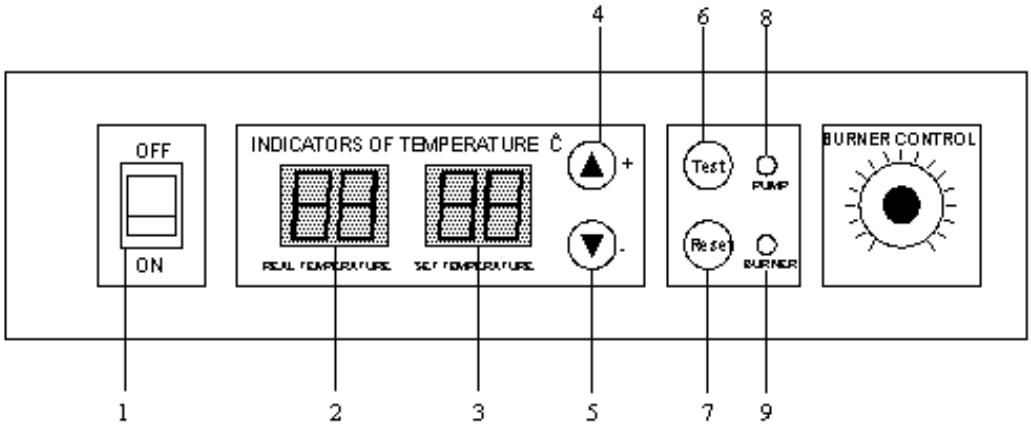
1. Thermometr: Show the water temperature of the boiler.

2. Thermostat: By this touch you can adjust the temperature of the boiler from 65 - up to 90 ºC.

3. ON/OFF switch. Starts or stops work of the boiler

B- Digital control panel

Front view of digital control panel:



1)On/Off switch
2)Thermometr
3)Indicator of the entered temperature
4)Boiler temperature increase touch
5)Boiler temperature decrease touch
6)Test button
7)Reset button
8)Circulation pump lamp (Led)
9)Burner lamp(Led))

1. On/Off switch
By this button you can start or stop working digital control panel.When starts signs to be seen.
2. Thermometr
This indicator shows the temperature of the boiler at that moment
3. Indicator of the entered temperature
This indicator shows what is entered temperature of the boiler.
4. Boiler temperature increase touch
By this touch you can increase the temperature of the boiler. Min scale is 1 C.You can increase temperature up to 90 C.
5. Boiler temperature decrease touch By this touch you can decrease the temperature of the boiler. Min scale is 1 C.You can decrease temperature till to 20 C.
6. Test button
By keeping this buton for a few seconds it will start the circulation pump. In this case circulation pump lamp starts to sign.
7. Reset button
By pressing this buton for a three second it will reset the system. System adjusting will be returned to a first work.
8. Circulation pump lamp (Led)
The circulation pump lamp is starting to sign in red colour when the circulation pum(s) is/are working
9. Burner lamp(LED)
The burner lamp is starting to sign in green colour when the burner is working
Starting up by the digital control panel.
To start the operation switch ON/OFF switch in ON position.(1)Testing number will start to light(from o-to 9) it will continue about 3 second.After that the control panel will show the real temperature(red light) and set temperature(gren light)

By the first start up the recirculation pump(s) will start to work just when the temperature will rech 40°C,and it is not important what is the set temparature entered.

If the holder of burner is set to automatic the burner will work till the temperature of the water will reach the set temperature.

Recirculation pump starts the work when the temperature of the boiler reaches 40°C
Burner stop to work when the boiler reaches the set temperature.

When the temperature decrease to 5 °C burner automatically starts to work.Consequntly the temperature will rise.

When the temperature decrease to less then 5 °C recurcilation pump starts operating and prevents the freezing.

Fault signs:

H-01 Starts to light when the sendor of thermostat is not properly connected.
In this case check all the connection of the control panel. Lightings will stop when the connections are properly connected.

H-02 Lights when the thermometr or the sensor of the thermometr of the boiler is not operating properly. To fix check the connetion of the sensor with thermostat or change the sensor.

If by pressing the ON button boiler is not starting to operate check all electic connections.If everythning is connected correctly and the boiler stil does not start check the fuse connections,if needed change the fuses(s).Never use the fuse more then 3 amper.

Connections of the control panel

Back view of the control panel

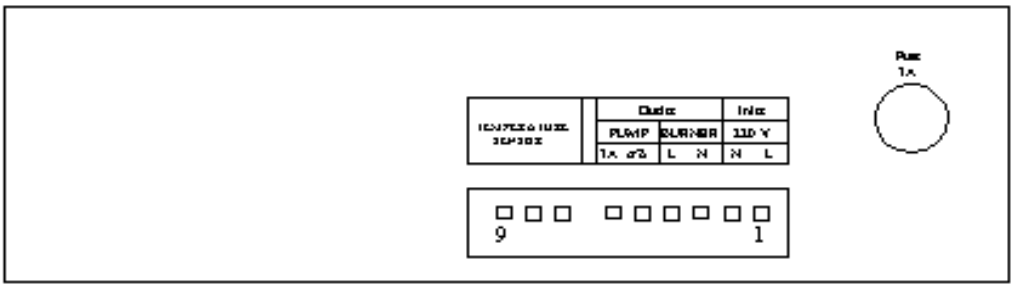
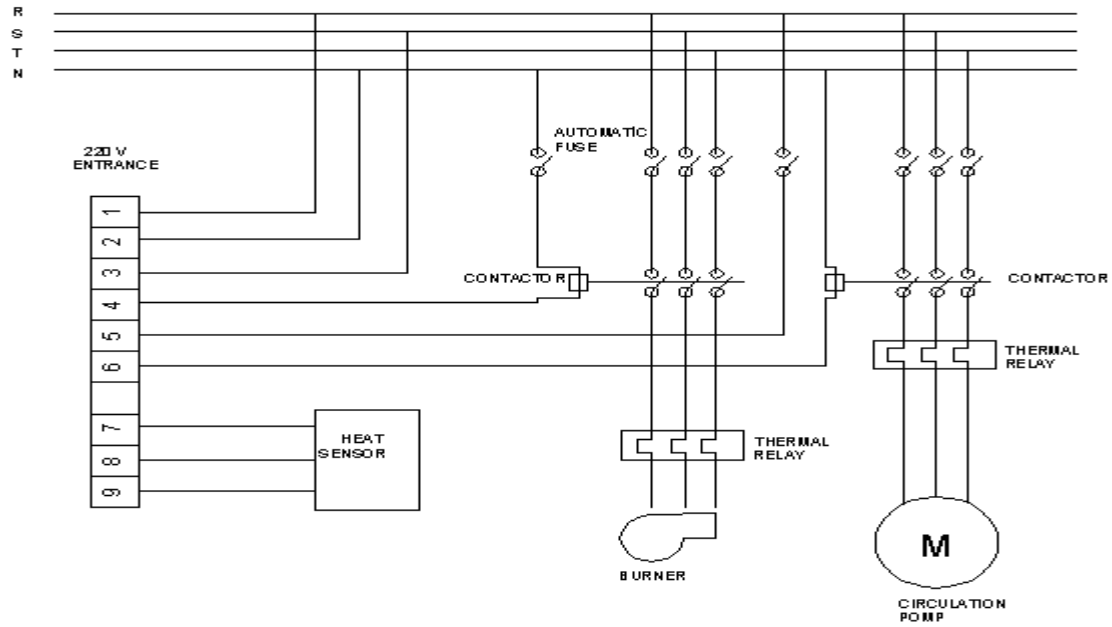


Diagram of the electical connections



NOTE: These conections are subject to change

Current must be not more than 3 amper on a fifth and sixth connections.
The fuse must be placed as shown on the picture
The connections of thermometer sensor are 7,8,9. They must be connected properly otherwise it wil damage the sensor.

Shutting down

Set the temperature controller to the minimum.
Disconnect power from the burner and close the fuel supply.
Let the pumps operate until they are stopped by the temperature regulator.
Disconnect power from the electrical panel

Maintenance

The interval between cleaning operations must be established by the user based on the experience accuired on each individual system,consequently the maintenance intervals cannot be established in advance.
In any case , the following minimum intervals are recommended,according to the fuel used:
-Gas:once year
-Oil:twice a year
-Fuel oil.every 300 hours of operation
In any case, any local maintanance standards in force should be observed.During the routine maintanace operations,if the turbulators are installed remove it and and brush the tube bundle and the furnace.Remove the deposits accumulated in the smokebox by opening the door.
Check that the condensate darin is not blocked. Ensure that control and measurement devices serving the boiler are working correctly. Measure the amount of tıp-up water added,and after having analysed the water,add descaler.The calcium and magnesium salts dissolved in the water will,after repeated refills,cause deposits in the boiler and the overheating of the metal plate,with possible danage that is not attributable to materials or workmanship,and consequently not covered by the warranty.After having completed the maintanance and cleaning operations and start the boiler again,check the tightness of the door and the smokebox,and in the event of gas leaks,replace the corresponding gakets.

Special maintenace to be performed at the end of the season or for extended shutdowns.All the operations described in the previous pragraph must be completed,plus the following additional operations:
Check the condition of the turbulators (if installed) for weak.

After cleaning the flue gas circuit, wipe all the surface with a rag dipped in oil.
Hydroscopic substances(quicklime silica gel in small container) should be placed inside the furnace, which must then be closed hermetically so that air cannot enter.
Do not empty empty the systems and the boiler.
Protect the screws, nuts and pins on the door with grphite grease.

To clean the boiler,proceed as follows:
Open the front door ,if turbulators are installed remove it.
Clean the inside surface of the combustion chamber and the flue gas path using a brush or other suitable implements.
For more intense cleaning, remove the smoke box cover and replace the gasket before reassembling.
Periodically check that the condensate drain is not blocked.

Before starting and running the functional tests on the boiler make sure that the cocks in the water is circuit and the fuel lines are open.
Check if the fuel is available. Check that the expansions vessels is suitably filled.
The pressure of the water circuit,when cold is more than 1 bar and less than the maximum limit allowed fort he boiler.The water circuits must be vented.The electrical connections to the mains power and the components(burner,pump,control panel thermostats etc.) have benn completed.
After having performed the operations described above,the following operations are necesary to start the boiler:
If the system is fitted with a temperature controller or timer-limit,check that these are ON.Set the room timer-thermostat or the temperature controller to the desired temperature.
Set the boiler thermostat located on the control panel.
Move the main switch to ON position.
Move the main switch on the control panel to ON and check that the control panel indicators started to light.
The boiler will run the ignition phase will remain on until the set temperature has been reached.
When the boiler has started, check that it stops and starts again:
Adjust the setting of the boiler thermostat. Move the main switch on control panel.Set the room thermostat,the timer or the temperature regulator.Check that the pumps are not blocked and rotate in the correct direction.Check the total shutdown of the boiler using yhe main swtitch.If all conditions are correct,restart the appliance,check the combustion(flue gas analyasis), the fuel rate and the tightness of the gaskets on the door and the smokebox.
Checking the operation of the burner must be done refer to the burner instruction manual.
System water level must be checked minimum once a months. At the first installation it needs regular check cause of air discharge from the system.
Chimney must be cleaned periodically according to national regulations.

Follow all the local legaslation in force on maintanance.

If the boiler has not been using for a long time be sure that the water inside the boiler is not freezed as a boiler is not equipped with a anti-freeze. To avoid the freezing discharge all the water of the boiler.
ONCE YEAR CALL YOUR AUTHORISED SERVICE FOR THE CONTROL THE COMBUSTION PARAMETERS; SAFETY AND OPERATİONAL EQUIPMENT.

The following is a list with information on the main faults or problems that may ocur during the operation of the boiler,showing the possible causes and corresponding solutions.

FAULT			
The boiler dirties quite easily			
Cause:	Burner poorly adjusted	***Solution****:*	Check the burner adjustment(flue gas analysis)
	Flue blocked		Clean the flue gas path and flue
	Burner air intake dirty		Clean the burner air intake
The boiler does not reach the set temperature			
Cause:	Boiler body dirty	***Solution****:*	Clean the flue path
	Boiler/burner combination		Check the data and adjustments
	Burner flow-rate insufficient		Check the burner adjustments
	Control thermostat		Check correct operation
			Check the set temperature
Boiler thermal safety shutdown with indicator sign on the control panel			
Cause:	Control thermostat	***Solution:***	Check correct operation
			Check the set temperature
			Check the wiring
			Check the probe bulbs
	No water		Check the circuit pressure
	Air present		Check the vent valve
The boiler reaches the set temperature but central heating system is cold			
Cause:	Air in the system	***Solution:***	Vent the system
	Pump fault		Reset the pump
	Minimum thermostat (if featured)		Check the set temperature
Odour of unburned substances			
Cause:	Flue gas leaking into the ventilation	***Solution:***	Check and if necessary clean the boiler body
			Check and if necessary clean the flue
			Cheak the tightness of the boiler and the

			flue
Frequent activation of the safety valve			
Cause:	System circuit pressure	***Solution:***	Check the fill pressure
			Check the system circuit
			Check the calibration
			Check the set temperature
	System expansion vessel		Check the expansion working of the expansion tank
Odour of gas			
Cause:	Dirty boiler	***Solution:***	Check and if necessary clean the flues
	Low draught in chimney		Check the draught in chimney and if necessary clean chimney
	Low air recovery		Check the ventilation in boiler room
	Low flame		Check gas consumpion and the and check supply gas

Please contact service department of TANSAN if you have any questions or suggestions about the boilers.

Unit description:

BRAND:TANSAN
MODEL:
FİRE-SMOKE TUBE 3 BOİLER
ORDER NO:
FABRİC NUMBER:
MANUFACTURE DATE:
OPERATION PRESSURE :
DESIGN PRESSURE :
TEST PRESSURE :
EFFİECENCY:
CAPACİTY:
FUEL TYPE:
LOWER HEATİNG VALUE:
BOİLER STEEL MATERIAL:
BOILER TUBES:SPEACİAL WELDED TUBES

DİMENSIONS
LENGTH : mm
DIAMETR: : mm
HEIGHT : mm

WEİGHT : KG

Commisioning date.
Commisioned by.

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