Distribuitor: CALOR SRL
Str. Progresului nr. 30-40, sector 5, Bucuresti
tel: 021.411.44.44, fax: 021.411.36.14
www.calorserv.ro - www.calor.ro

ECS

STEEL BODY CENTRAL HEATING HOT WATER BOILER

ECS 70 / 85 / 100 / 150 / 200 / 250 / 300 / 350 / 400

500 / 600 / 700 / 800 / 900 / 1000

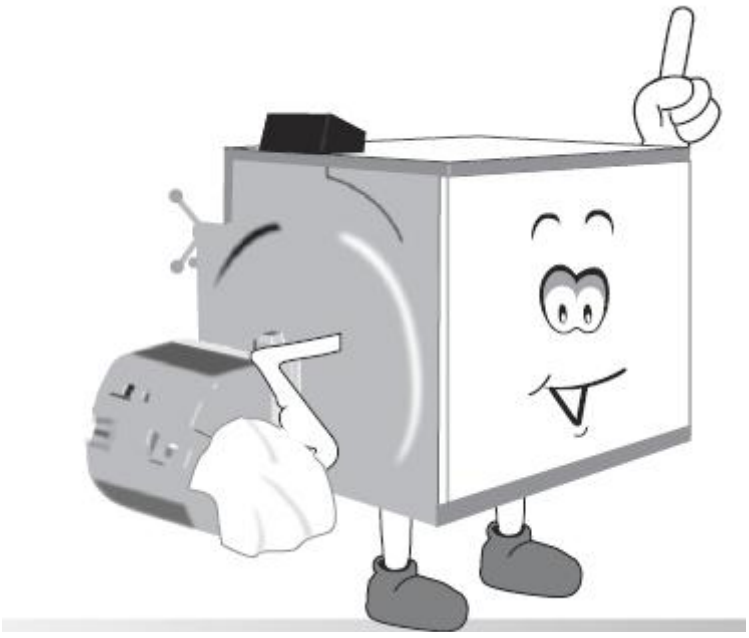
TECHNICAL SPECIFICATIONS

MODELS	**Unit**	**ECS 70**	**ECS 85**	**ECS 100**	**ECS 150**	**ECS 200**
Heat power	kcal/h	70.000	85.000	100.000	150.000	200.000
	kW	81,4	98,8	116,2	174,3	232,4
Heat input	kcal/h	76.500	92.600	109.900	164.800	219.800
	kW	88,9	107,6	127,7	191,5	255,5
Max. Operating Temperature	°C	105	105	105	105	105
Temperature control range	°C	30-90	30-90	30-90	30-90	30-90
Firing chamber pressure	mbar	0,5	0,5	0,6	1,2	1,6
Max. Operating pressure	bar	3	3	3	3	3
Test Pressure	bar	4,5	4,5	4,5	4,5	4,5
Boiler water capacity	lt	194	194	232	307	433
Shaft diameter	mm	200	200	200	200	220
Firing chamber dimensions	∅	430	430	430	430	482
	L	678	678	828	1110	1109
Input-Output Water Connections	Inch	2"	2"	2"	2"	2 1/2"
Shaft exit temperature range	°C	170-195	170-195	170-195	170-195	170-195

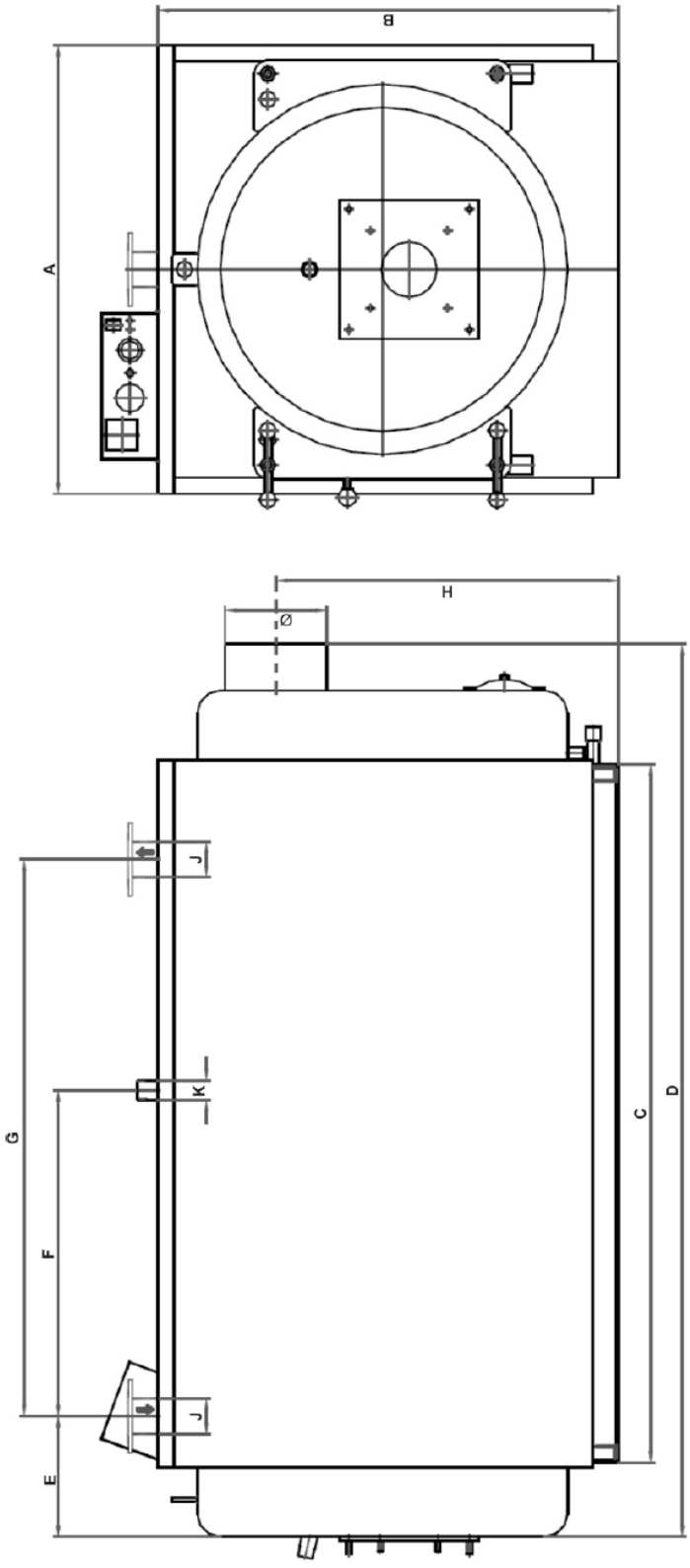
MODELS	**Unit**	**ECS 250**	**ECS 300**	**ECS 350**	**ECS400**	**ECS 500**
Heat power	kcal/h	250.000	300.000	350.000	400.000	500.000
	kW	290,6	348,7	406,8	464,9	581,1
Heat input	kcal/h	274.700	329.700	384.600	439.600	549.500
	kW	319,3	383,2	447	510,9	638,6
Max. Operating Temperature	°C	105	105	105	105	105
Temperature control range	°C	30-90	30-90	30-90	30-90	30-90
Firing chamber pressure	mbar	2,4	3,3	4,2	4,5	4,8
Max. Operating pressure	bar	3	3	3	3	3
Test Pressure	bar	4,5	4,5	4,5	4,5	4,5
Boiler water capacity	lt	454	454	510	633	791
Shaft diameter	mm	220	220	220	250	250
Firing chamber dimensions		535	535	535	688	688
	∅	1189	1189	1379	1248	1563
Input-Output Water Connections	Inch	2 1/2"	2 1/2"	2 1/2"	3"	3"
Shaft exit temperature range	°C	170-195	170-195	175-195	175-195	175-195

TECHNICAL SPECIFICATIONS

MODELS	Unit	ECS 600	ECS 700	ECS 800	ECS 900	ECS 1000
Heat power	kcal/h	600.000	700.000	800.000	900.000	1.000.000
	kW	697,3	813,6	929,8	1046	1162,2
Heat input	kcal/h	659.300	769.200	879.100	989.000	1.099.000
	kW	766,3	894	1021,7	1149,4	1277,3
Max. Operating Temperature	°C	105	105	105	105	105
Temperature control range	°C	30-90	30-90	30-90	30-90	30-90
Firing chamber pressure	mbar	5,3	5,9	6,4	7	7,5
Max. Operating pressure	bar	5	5	5	5	5
Test Pressure	bar	7,5	7,5	7,5	7,5	7,5
Boiler water capacity	lt	846	969	1232	1306	1446
Shaft diameter	mm	300	300	350	350	350
Firing chamber dimensions	∅	738	738	820	820	820
	L	1583	1853	1776	2015	2265
Input-Output Water Connections	Inch	3"	3"	4"	4"	4"
Shaft exit temperature range	°C	175-195	175-195	175-195	175-195	175-195



GENERAL DIMENSIONS AND TECHNICAL SPECIFICATIONS

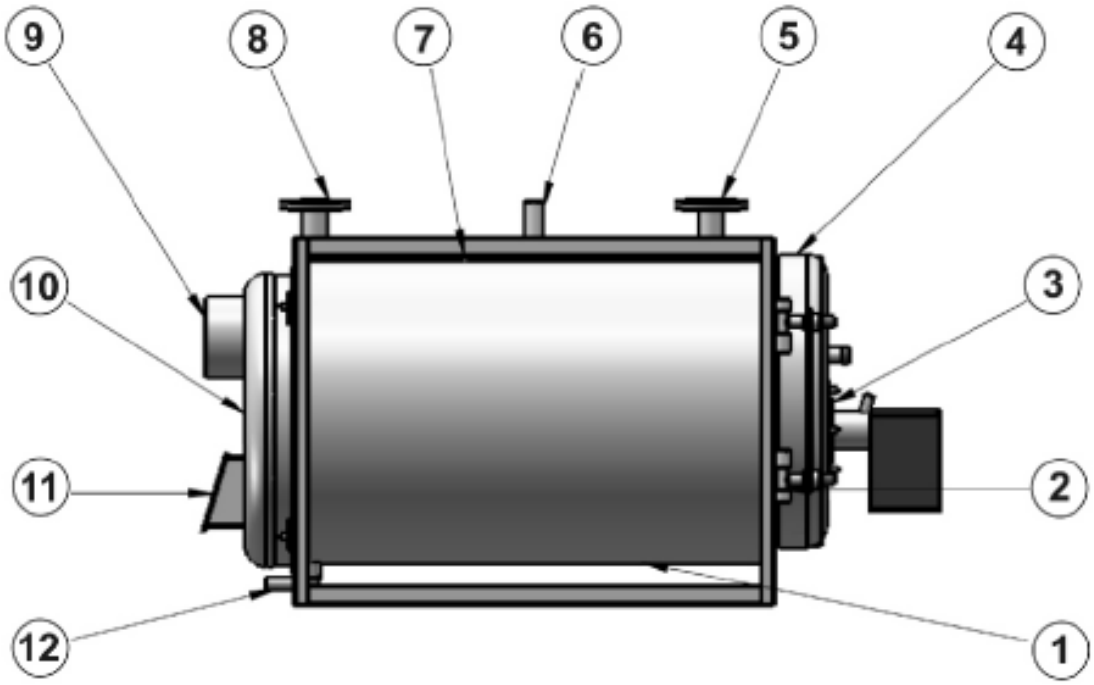


GENERAL DIMENSIONS AND TECHNICAL SPECIFICATIONS

DIMENSIONS										
Model ECS	Capacity (kcal/h)	kW	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
70	70000	82	880	920	758	1105	300	220	508	700
85	85000	99	880	920	758	1105	300	220	508	700
100	100000	117	880	920	908	1255	300	295	658	700
150	150000	175	880	920	1200	1547	300	440	880	700
200	200000	233	1010	920	1200	1627	340	440	840	793
2S0	250000	291	1010	1026	1330	1757	340	505	950	793
300	300000	349	1010	1026	1330	1757	340	505	950	793
3S0	350000	407	1010	1026	1510	1937	340	595	1130	793
400	400000	466	1254	1251	1380	1967	420	480	950	1005
500	500000	582	1254	1251	1720	2207	420	650	1290	1005
600	600000	698	1303	1278	1740	2227	420	660	1150	1005
700	700000	814	1303	1278	2010	2497	420	795	1420	1005
800	800000	931	1411	1431	1960	2447	420	770	1280	1133
900	900000	1047	1411	1431	2200	2687	420	890	1530	1133
1000	1000000	1163	1411	1431	2450	2937	420	1015	1830	1133

∅I Shaft	J Going Turning	K Expansion Going	L Filling Discharging	Operating Pressure (bar)	Test Pressure (bar)	Water Capacity (L)	Weight (kg)
200	R2"	R1 1/4"	R3/4"	5	7.5	190	420
200	R2"	R1 1/4"	R3/4"	5	7.5	194	420
200	R2"	R1 1/4"	R3/4"	5	7.5	232	460
200	R2"	R1 1/4"	R3/4"	5	7.5	307	510
220	R2 1/2"	R1/2"	R3/4"	5	7.5	433	775
220	R2 1/2"	R1/2"	R3/4"	5	7.5	454	860
220	R2 1/2"	R1/2"	R3/4"	5	7.5	454	860
220	R2 1/2"	R1/2"	R3/4"	5	7.5	510	935
250	R3"	R2"	R3/4"	5	7.5	633	1350
250	R3"	R2"	R3/4"	5	7.5	791	1485
300	R3"	R2"	R3/4"	5	7.5	846	1590
300	R3"	R2"	R3/4"	5	7.5	969	1710
350	R4"	R2 1/2"	R3/4"	5	7.5	1232	2030
350	R4"	R2 1/2"	R3/4"	5	7.5	1306	2260
350	R4"	R2 1/2"	R3/4"	5	7.5	1446	2490

APPLIANCE CHART



1	*Boiler frame*	7	*Bearer Supports*
2	*Hinge*	8	*Central System Going Water Connection*
3	*Boiler Flange*	9	*Shaft Pipe*
4	*Front Lid*	10	*Back Lid*
5	*Central System Turning Water Connection*	11	*Bursting Lid*
6	*Safety Line*	12	*Filling – Discharging*

GENERAL INFORMATION

This product, running on liquid or gas fuels, is a three-pass steel central heating boiler which generates water at maximum 90°C for heating purposes. Thanks to its three-pass design, the heat generated as a result of burning the fuel is transferred to heat transfer fluid and the heat loader decreases thanks to heat transfer surface and the life span of the boiler increases. Since the amount of NOX found in the smoke reaching to the shaft under lower temperatures decreases in parallel with the decrease in temperature, the burning efficiency increases and the harm given to the environment is minimized.

The life span of the appliance is 10 years.

GENERAL WARNINGS

- Please read the instructions and warnings in this manual before installation of the boiler and operation of the appliance. The use of appliance not recommended by the manufacturing company and not specified in this manual may cause fire, electric shock and injuries.
- Spare parts and accessories not certified and not purchased from authorized services can damage your boiler.

ELECTRIC SHOCK RISK

Please do not try to open the electronic control unit or fix it. Otherwise, this may pose a threat in terms of life safety and result in the invalidity of the warranty of your appliance.

- The exterior surface sheets of the boiler are hot during operation. In order to prevent burning risks, please avoid direct contact to hot surfaces and use gloves.
- Please contact only AUTHORIZED SERVICES OF TERMODİNAMİK for the control, technical service, electrical and mechanical maintenance of your appliance.
- There are arcing and sparking parts in the boiler and burner. Please do not store blasting and flammable liquids and gasses in the boiler room.

Make sure to operate your appliance using only a grounding plug.

- If the power cable or other electric connections are damaged, do not operate the boiler.
- Improper installation and not performing the routine maintenances may result in injuries and even fatalities and damages on the appliance. The manufacturing company cannot be held liable for the damages due to improper use of the appliance if this manual is not followed.
- In case smoke is coming out of the boiler, stop the operation of the appliance, cut off its power and immediately contact AUTHORIZED SERVICES OF TERMODİNAMİK.
- The front lid of the boiler should be properly closed before operating the appliance.
- Please do not let the persons, who do not know how the appliance operates, handle the appliance.
- If this appliance shall be sold to another party, the operating manual should be delivered to the new user along with the appliance.
- Please do not use any heating liquid other than hot water.

- Please do not use the boiler for the purposes not intended. This appliance has been designed to generate water at maximum 90°C for the heating system.
- The boiler room should be in compliance with the specifications and regulations related to the discharge of waste gas.
- For the operation of the ECS boilers in compliance with gas-burning appliances and efficiency directives, please use EN 676 (gas fuel) or EN 267 (liquid fuel) certified boilers.
- Make sure the boiler room is properly ventilated for efficient burning and safe use.
- Install the boiler at a distance of 20 cm from the floor and on a durable and fireproof surface which can bear the weight of the boiler.
- Please do not operate the boiler if any of its part is in water. Please contact the authorized technical service for evaluation and replacement of the relevant parts.
- It is recommended to install an emergency power switch outside the boiler room which stops the operation of the boiler and cuts off the gas feeding.
- If the system shall be operated using a type of fuel heavier than air (e.g. LPG), make sure to take additional precautions. In case of any fuel leakage, please use systems that allow for the discharge of such fuel from the boiler room and automatically cuts the fuel feeding.

- Please consider that waters with high hardness levels will cause calcification. Malfunctions and decreased performance due to calcification,
- Problems resulting from the use of appliance in different areas not suitable for technical properties (industrial use, etc.),
- Problems caused by using water other than tap water (artesian water, waste water, etc.),

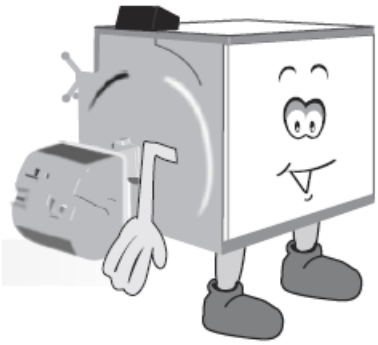
are not covered by Warranty.

If you smell gas;

- Turn off all natural gas appliances and valves. Ventilate the area by means of opening all doors and windows.
- Turn off the main valve. Do not smoke, flick lighters or light matches.
- Do not touch electric switches. Do not turn on or off equipments. Do not plug out your devices.
- Do not use or allow for the use of the door bell. Please do not use your telephone since it can spark.
- Immediately evacuate the area where the gas is leaked.
- Please do to try to repair the breakdown yourself.

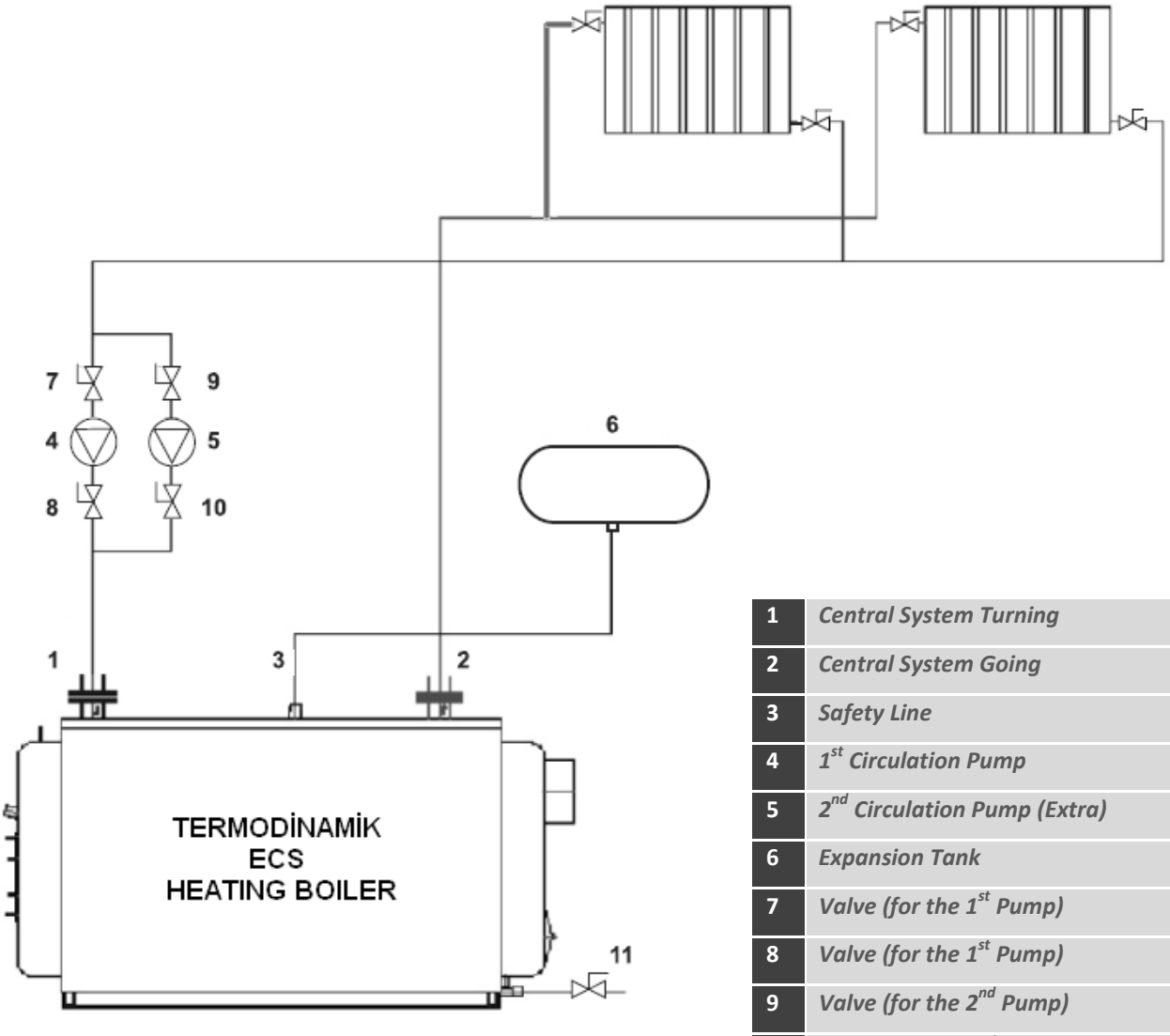
Symptoms of CO (carbon monoxide) poisoning:

Headache, perceptual disorder, loss of muscular control, fatigue, visual impairment, dizziness, nausea, loss of consciousness.

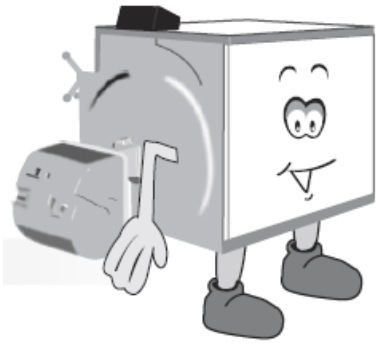


EXEMPLARY INSTALLATION CHART

Closed Expansion Tank and Detailed Pipe Installation

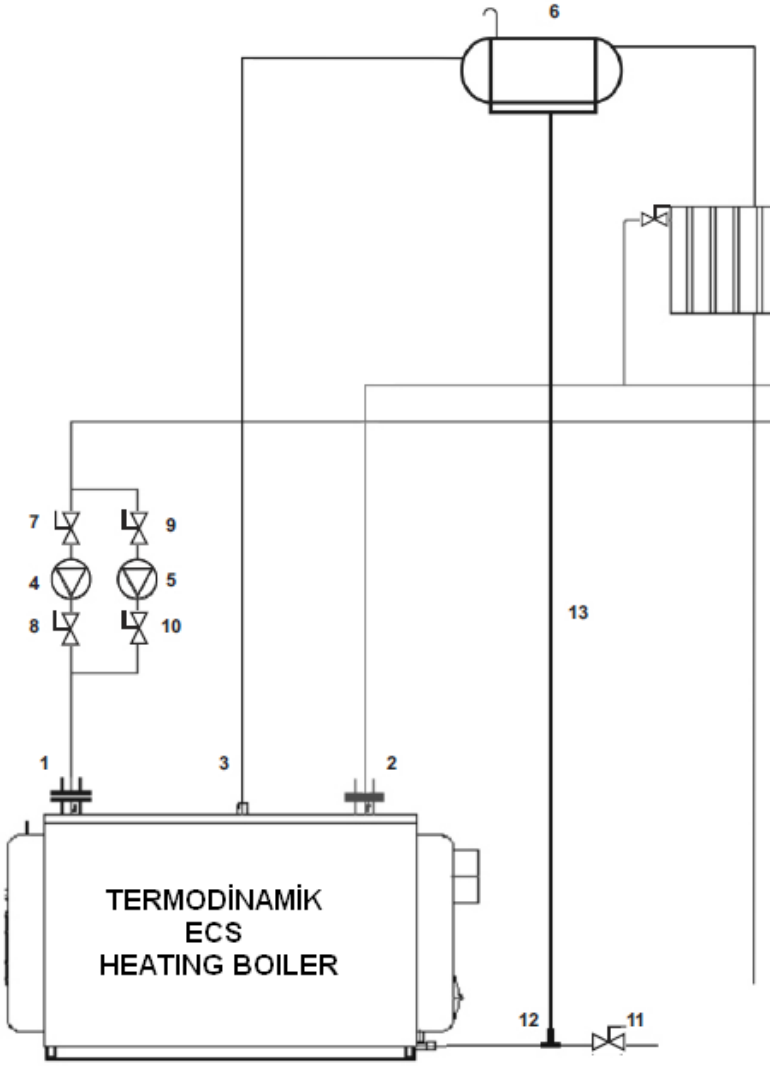


1	*Central System Turning*
2	*Central System Going*
3	*Safety Line*
4	*1st Circulation Pump*
5	*2nd Circulation Pump (Extra)*
6	*Expansion Tank*
7	*Valve (for the 1st Pump)*
8	*Valve (for the 1st Pump)*
9	*Valve (for the 2nd Pump)*
10	*Valve (for the 2nd Pump)*
11	*Filling Valve*



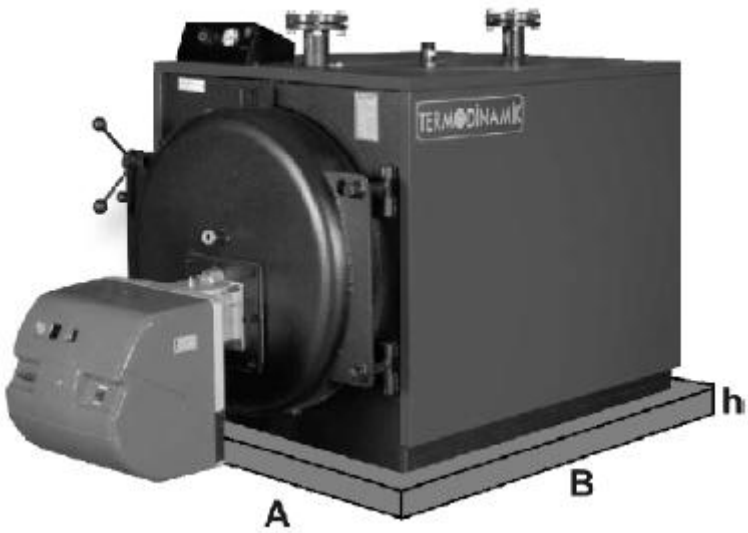
EXEMPLARY INSTALLATION CHART

Open Expansion Tank and Detailed Pipe Installation



1	*Central System Turning*
2	*Central System Going*
3	*Safety Going*
4	*1st Circulation Pump*
5	*2nd Circulation Pump (Extra)*
6	*Expansion Tank*
7	*Valve (for the 1st Pump)*
8	*Valve (for the 1st Pump)*
9	*Valve (for the 2nd Pump)*
10	*Valve (for the 2nd Pump)*
11	*Filling Valve*
12	*Fittings*
13	*Safety Turning*
14	*Messenger Pipe*

INSTALLATION OF THE APPLIANCE



MODEL	*Minimum Ground Sizes*
ECS 70	*1080 X 960 X 200 mm*
ECS 85	*1080 X 960 X 200 mm*
ECS 100	*1080 X 1110 X 200 mm*
ECS 150	*1080 X 1400 X 200 mm*
ECS 200	*1210 X 1400 X 200 mm*
ECS 250	*1210 X 1530 X 200 mm*
ECS 300	*1210 X 1530 X 200 mm*
ECS 350	*1210 X 1710 X 200 mm*
ECS 400	*1460 X 1580 X 200 mm*
ECS 500	*1460 X 1920 X 200 mm*
ECS 600	*1510 X 1940 X 200 mm*
ECS 700	*1510 X 2110 X 200 mm*
ECS 800	*1610 X 2160 X 200 mm*
ECS 900	*1610 X 2400 X 200 mm*
ECS 1000	*1610 X 2560 X 200 mm*

- Keep the boiler in its package and on the pallet until the place it will be installed is defined.
- Leave the boiler to the place of installation defined before.
- Open the package of the boiler on the pallet.
- Remove the boiler from the pallet as in the order described below:
  - Lift the left side of the boiler and place its left foot.
  - Lift the other side of the boiler and place its right foot.
  - Slide the boiler to the back and place it securely.

  Make sure you do not hit the ground or pallet with the boiler and do not drop the boiler.
- Check the foot levels of the boiler.
  - If necessary, adjust the levels of the feet.
  - Do not replace the feet completely.

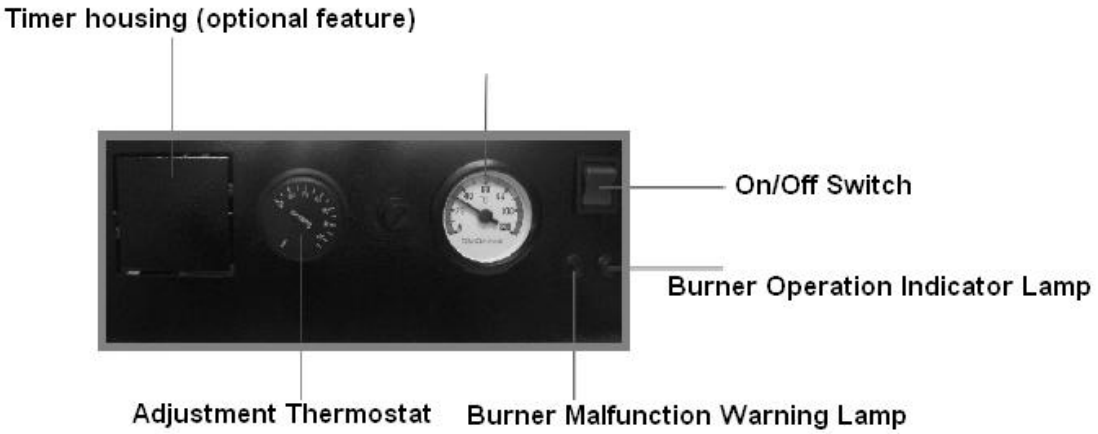
Assembly Precautions

- The assembly of the system and putting it into use should be performed in accordance with the current regulation, standard and this manual.
- A proper installation circuit should be installed in order to protect the boiler against flue gas condensation.
- Power connections should be installed in accordance with the current standards and regulations. Water and fuel pipes should never be used as ground connection.
- Shaft connections should be installed in accordance with standards and regulations. The distance between the boiler and the shaft as well as the number of the ells used should be kept at a minimum. The shaft should be isolated against condensation.
- The entire system (shaft, electric, water, fuel) should be checked against leaks following the assembly.
- The entire weight of the big and heavy burners should be lifted by well adjusted supports instead of the boiler's front lid.

- Check for gas leaks before turning on the boiler, if you suspect there might be a leak, do not turn on the boiler before resolving the problem.
- Only for propane burning boilers – A certain smell has been put into your propane feeder so any gas leaks can be noticed.

  - Propane gas accumulates at spots close to the ground, therefore should you notice smell at such spots, do not fire up the burner.
  - Assign an expert to operate the propane fueled burners.
  - Check your boiler and pipes which the gas goes through for leaks at least once a year.

CONTROL PANEL



CLEANING AND MAINTENANCE

- Annual periodic maintenance must be performed by AUTHORIZED SERVICES OF TERMODİNAMİK to ensure the boiler and all components operate efficiently and safely.

When Cleaning:

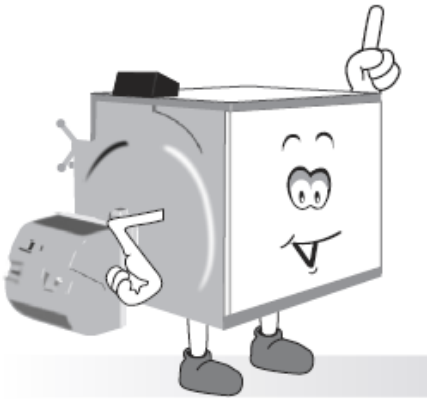
- The main power supply should be turned off.
- The power of the circulation pump should be cut off.
- Turn off the gas valve (fuel line).
- Make sure that the boiler surfaces are not hot.
- Open the front lid of the boiler. Take out the turbulators and clean them.
- Clean the burning chamber and the pipes' inner surfaces with the pipe brush.
- Check the front and rear sealing components.
- Place the turbulators back in after cleaning.
- Turn on the fuel line.
- Turn on the main power supply.

When the Burner Indicates Malfunctioning, Before Calling the Authorized Service, Ensure:

- The system is able to receive power,
- Minimum gas pressure is available,
- Fuel valves are on,
- The system's water level and the pressure are at normal levels.

If the system operates using liquid fuel, the boiler heat transfer surfaces should be cleaned at least once a month. This duration may be shorterand the cleaning frequency may increase depending on the factors like the quality of the fuel used, accuracy of the burning adjustment done and shaft draft.

Have the AUTHORIZED SERVICES OF TERMODINAMIK perform the controls specified in the maintenance instructions on the next page. This is critical to ensure both a safe and efficient operation of the boiler and your life safety.



BOILER MAINTENANCE PLAN

PIPING	
Piping on the boiler	Check if there is any leakage in the piping system on the boiler and system. Make sure there are pipe bearing supports are located where needed.
Ventilation	Check all ventilation pipes and their connections.
Gas	Check if there is any gas leakage in all as pipes. Check if the pipes are outworn. Make sure all pipes are supported with bearing hangers.
SYSTEM	
Visual	Check the complete system for visual abnormalities.
Functional	Test all functions of the system (heating, safety, hot water (if available)).
ELECTRICAL	
Connections	Check the electrical connection cables. Make sure the connections are secured.
Safety fuse	Make sure a proper safety fuse connection is established. Test the operation of the fuse.
On-off switches and Plugs	Check the compatibility of on-off switches and plugs and if they are functional.
Smoke and CO Detector	Make sure this appliance is installed and properly functions. If necessary, replace its batteries.
BURNING CHAMBER AND BOILER	
Burning Chamber	Clean the burning room if necessary (Vacuum cleaner,etc.)
Boiler Burning Chamber	Check the boiler barrel and perform the maintenance of boiler burning chamber as specified in the manual.