

## Etaž C20 Etaž C25.1



### *INSTRUKCIJE/ INSTRUCTION MANUAL*

*Montaža, korišćenje i održavanje kotla/ Assembly, use and maintenance of heating boiler*

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## 1. Osnovne tehni ke karakteristike

**Etaž** je šporet namenjen kako pe enju u rerni i kuvanju na plotni, tako i grejanju preko grejnih tela, koji se proizvodi u dve varijante i to kao **Etaž C20** i **Etaž C25.1**.

**Etaž C20** ima ukupan toplotni u inak 20 kW, pri emu je u snazi za grejanje u radijatorima 14-15 kW, a ostatak se preko rerne i plotne odaje u prostoriju u kojoj se nalazi, dok **Etaž C25.1** ima ukupan toplotni u inak 25 kW, pri emu je u snazi za grejanje u radijatorima 17-18 kW, a ostatak se preko rerne i plotne odaje u prostoriju u kojoj je Etaž C25.1.

Posebne karakteristike konstrukcije koje se izdvajaju su:

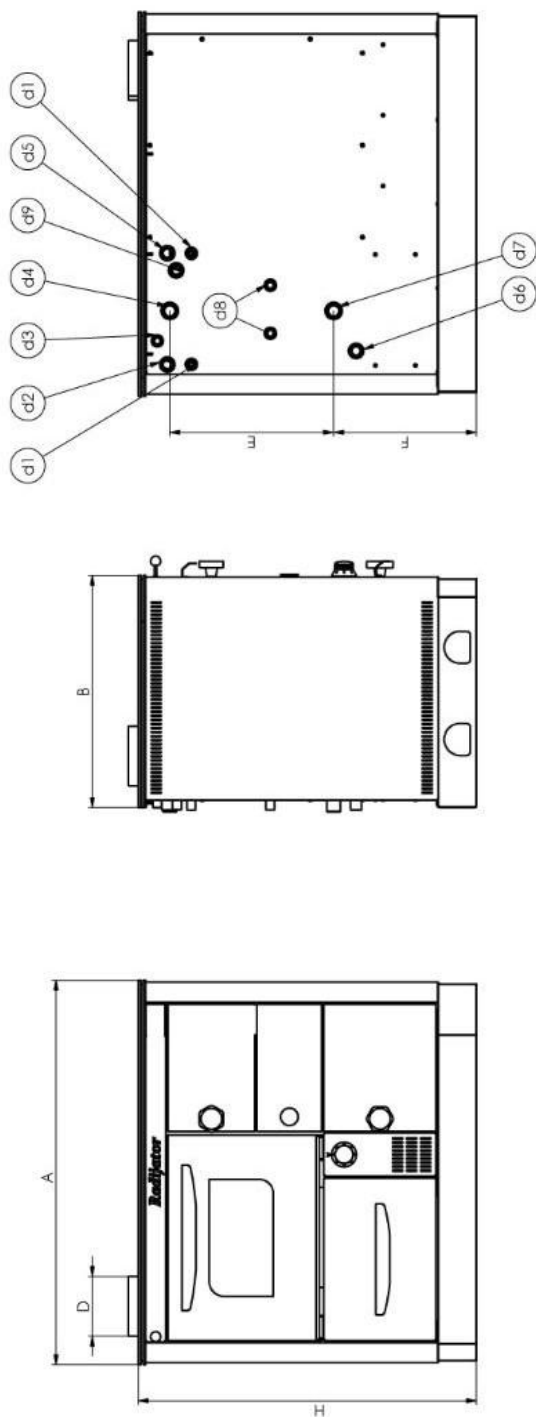
- širina plotne: 960mm (**Etaž C20**), 1100mm (**Etaž C25.1**);
- dimenzije ložišta: 250mm X 300mm X 420mm (**Etaž C20**), 320mm X 300mm X 420mm (**Etaž C25.1**);
- dimenzije svetlog otvora vrata za loženje: 205mm X 190mm (**Etaž C20**), 320mm X 200mm (**Etaž C25.1**).

Unutrašnji zidovi kotlovsog dela su od elika debljine 4mm, zapremina vode kazana je 18 litara kod **Etaža C20**, dok kod **Etaža C25.1** zapremina vode kazana je 20 litara. Sagorevanje se vrši na rostovima od sivog liva, ija je debljina 20mm kod **Etaža C20**, odnosno 25mm kod **Etaža C25.1**.

Prema položaju priklju ka za dimnjak, postoji desna i leva varijanta šporeta. Kada se stane ispred njega, ukoliko je priklju ak za dimnjak sa desne strane, radi se o desnom šporetu i obratno.

Na **Etažu** je fabri ki ugra en regulator vazduha za sagorevanje, bakarna spirala za termi ko osiguranje oticanjem, termometar za vodu u kazanu.

## 1.1 Tabela sa tehni kim podacima



Slika 1.

TIP KOTLA		<b>Etaž C20</b>	<b>Etaž C25.1</b>
Nominalna snaga	<b>kW</b>	20	25
Grejanje na vodu	<b>kW</b>	14	17
Direktno grejanje	<b>kW</b>	6	8
Masa kotla	<b>kg</b>	225	240
Maksimalni radni pritisak	<b>bar</b>	3	3
Potrebni podpritisak kotla	<b>Pa</b>	17-20	17-20
Količina vode u kotlu	<b>l</b>	18	20
Prosečna temperatura dimnih gasova	<b>°C</b>	280	280
Dimni priključak na plotni	<b>mm</b>	150	150
Priključak za vodu	<b>col</b>	1	1
<b>Dimenzije</b>			
	<b>A</b>	960	1110
	<b>B</b>	580	580
	<b>ØD</b>	149	149
	<b>E</b>	409	409
	<b>F</b>	356	356
	<b>H</b>	843	843
Priključak ventila za termičko osiguranje oticanjem VTO	<b>D1</b>	1/2"	1/2"
Priključak za sondu VTO oticanjem	<b>D2</b>	1/2"	1/2"
Odzračak	<b>D3</b>	3/8"	3/8"
Topla voda	<b>D4</b>	1"	1"
Ventil sigurnosti na pritisak	<b>D5</b>	1/2"	1/2"
Punjenje/ Praznjenje	<b>D6</b>	1/2"	1/2"
Hladna voda	<b>D7</b>	1"	1"
Priključak za sekundarni vazduh	<b>D8*</b>		/
Priključak za tercijalni vazduh	<b>D9*</b>		/

\*Kod Etaža C25.1 ovi priključci ne postoje


## 2. Montaža


Prilikom montaže uređaja važe propisi iz ove oblasti države u kojoj se uređaj montira.


**Etaž C20/ C25.1** se može montirati na zatvorene sisteme centralnog grejanja gde je radna temperatura 90°C i radni pritisak do 3 bara.

- Montiranje se vrši na dimnjak preko nika unutrašnje cevi 180mm ili u služajevima kad je visina preko 8m i preko nika 160mm. Svakako se mora bezbediti potpritisak dimnjaka u toku rada od 18 do 20 Pa.
- Dimovodne cevi moraju biti preko nika 150mm i izrađene od elika ili vatrootpornog Inox elika. Horizontalni deo je maksimalne dužine 1m i treba ga montirati u blagom uzgonu ka dimnjaku od 5 procenata. Maksimalni broj kolena je 2. Svi spojevi dimovoda moraju biti vrsti i nepropusni.
- Uređaj se postavlja pre svega u kuhinjskom delu prostorija za stanovanje, gde postoji mogućnost pravilnog provetranja.
- Postavljanje u prostoriji koja se koristi za spavanje ili koja je u direktnoj vezi sa njom je strogo zabranjeno.
- U prostoriji u kojoj je šporet treba obezbediti stalan dotok svežeg vazduha, a ukoliko se koristi još neki uređaj koji troši kiseonik ili stvara veštački potpritisak, kao aspirator npr., onda treba posebno dovesti vazduh spolja, samo za **Etaž C20/ C25.1**.
- Šporet se postavlja u prostoru gde nema opasnosti od eksplozije i požara.
- **Etaž C20/ C25.1** postaviti tako da se do dimovodnih kanala i dimnog priključka može pristupiti nesmetano (radičiščenja), ali i do radne i bezbednosne armature na zadnjoj strani (radi održavanja).
- Prilikom montaže mora se voditi računa o bezbednosnoj udaljenosti šporeta od zapaljivih materijala, ali i o prostoru koji je potreban za održavanje. Sa prednje strane je ova udaljenost 800mm, sa strane rerne odnosno dimnjaka 150mm, sa zadnje strane 200mm i sa bočne strane gde je kotao treba ostaviti mesta da može da se prihvati hidrauličnokoj armaturi, a taj je prostor 400mm. Pod zapaljivim materijalima podrazumevamo: drvo, ivericu, plutu itd. Ako su materijali još lakše zapaljivi kao PVC, poliuretan, drvene niti itd, navedene udaljenosti treba udvostručiti.
- Ako se uređaj montira na podlozi koja je od lako zapaljivih materijala onda se preko nje mora postaviti izolacija. Dimenzije izolacije se dobijaju tako što se na dimenzije šporeta doda sa prednje strane 800mm i sa svih ostalih strana minimalno 150mm.

## 2.1 Montaža na hidrauli ki sistem

 Prilikom montaže na hidrauli ku instalaciju kotao mora biti obezbe en na propisan na in od prekora enja maksimalne radne temperature i pritiska.

 Za propisnu montažu odgovoran je instalater centralnog grejanja koji priklju uje kotao na hidrauli ki sistem.

 Radijator Inženjering, kao proizvo a kotla, ne preuzima nikakvu odgovornost za štete prouzrokovane lošim instaliranjem kotla.

## 2.2 Mere i ure aji bezbednosti

Za bezbedan rad kotla potrebno je ugraditi i održavati ih ispravnim slede e elemente:

- Ventil sigurnosti na pritisak (slika 2)
- Ventil termi kog osiguranja oticanjem (slika 4)



Slika 2.



Slika 3.

- Ventil sigurnosti na pritisak mora biti nazivnog pre nika 1/2 cola baždaren na maksimalno 3 bara. Ovaj sigurnosni element koji spada u grupu limitatora pritiska mora da bude takve konstrukcije da izdrži i kratkotrajna prekora enja i temperature i pritiska kao i odre en sadržaj glikola u te nosti za grejanje. Obi no na istom mestu se priklju uje još i manometar tako da ova dva elementa zajedno sa odzrakom (slika3) sa injavaju sigurnosnu grupu i montiraju se preko „T “ priklju ka.Odzraka se montira na posebno zavarenom priklju ku

Ovaj sigurnosni element mora da podleže i periodičnim ponovnim baždarenjima o čemu investitor tj. korisnik kotla mora da poseduje validnu dokumentaciju.

- Ventil sigurnosti mora biti montiran na najvišoj tački kotla i direktno na kotlu bez bilo kakvog cevovoda ili bilo kojih drugih elemenata između. Za ovu svrhu postoji i posebno predviđena priključna (videti sliku). Strogo je zabranjeno bilo kakvo reduciranje prenika ovog priključnika.
- Ispusni izduvni deo ventila sigurnosti mora da bude od cevi čiji je prenik najmanje jednak nazivnom preniku ispusnog dela ventila. Takođe je dozvoljeno je za njegovu izradu koristiti najviše jedan luk radijusa  $r > 3d$ .
- Sigurnosni ventil mora posedovati nazivnu pločicu na kojoj sledeće podatke:
  - naziv proizvođača
  - oznaka tipa sigurnosnog ventila/godina ispitivanja
  - nazivni protok
  - podatak za koji toplotni učinak je sigurnosni ventil podešen
  - najviši pritisak otvaranja tj. 3 bara
- Obavezna je provera ispravnosti rada u određenim vremenskim periodima kao i ponovna baždarenja od strane sertifikovanih firmi. Ove obaveze se sprovode u skladu sa zakonom svake zemlje u kojoj je kotao namontiran. Obavezno čuvati pisani dokument o podacima zadnjeg baždarenja sigurnosnog ventila.
- Na povratnom vodu montirati barem još jedan ventil sigurnosti na pritisak.

#### - Ventil termičkog osiguranja oticanjem (slika 4)



**Slika 4.**

Ovaj sigurnosni element ima takođe ulogu ograničavanja temperature. U daljem tekstu biće označen sa skraćenicom VTO.

- U nekim ekstremno opasnim situacijama prelaz vode u vodenu paru je takav da ventili sigurnosti za pritisak nisu dovoljni da obezbede sigurnost hidrauličkog sistema. Iz ovog razloga je obavezna ugradnja VTO. U zavisnosti od zakonskih regulativa zemalja u kojima se kotao montira, VTO je potrebno ugraditi samo za snage veće od određenih ili za svaku snagu kotla obavezno ugraditi VTO. Mesto ugradnje Etaža C20/ C25.1 je životni prostor tako da je ugradnja VTO obavezna.
- Mesto ugradnje prikazano je na šemi montaže kotla na instalaciju i na slici 5.



U kotlu se isporučuje bakarna spirala tako da je potrebno koristiti VTO sa izmenjivačem kao na slici 3. Do VTO-a se dovodi hladna sanitarna voda. Kada sonda VTO-a ima informaciju da je temp. preko 95 stepeni VTO se otvara i voda prolazi kroz bakarnu spiralu. Posle izvesnog vremena temp. vode u kotlu se vraća na normalnu.

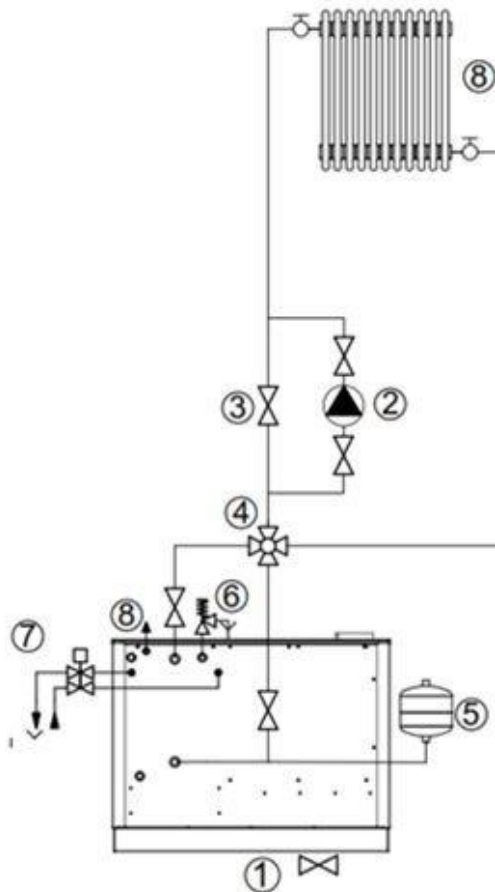
- Jedan priključak spirale koristimo za VTO a drugi za ispuštanje vode koja je prošla kroz spiralu. Koji je priključak spirale za VTO a koji je ispuštanje je nebitno. Obavezno je pridržavati se uputstava ugradnje koje je dao proizvođač VTO
- Obavezno u određenim vremenskim periodima proveravati funkciju VTO.

Kao što je već rečeno jedan kraj VTO je za montažu na izmenjivač kotla a do drugog se dovodi hladna voda pod pritiskom. Naravno je bitno da protok te vode bude neometan i pri nestanku el. energije.



**Ukoliko je nemoguće obezbediti dotok hladne sanitarne vode i pri nestanku el.energije, obavezno kotao priključiti na otvoren sistem.**

### 2.3 Šema priključenja Etaža C20/C25.1



- 1.ETAŽ
- 2.CIRKULACIONA PUMPA
- 3.KUGLA VENTIL
- 4.ČETVOROKRAKI MEŠNI VENTIL
- 5.ZATVORENA EKSPANZIONA POSUDA
- 6.SIGUNOSNI VENTIL
- 7.TERMIČKO OSIGURANJE
- 8.GREJNA TELA
- 9.ODZRAKA

Slika 5. Hidrauli ka šema

### 3. Upustvo za rukovanje

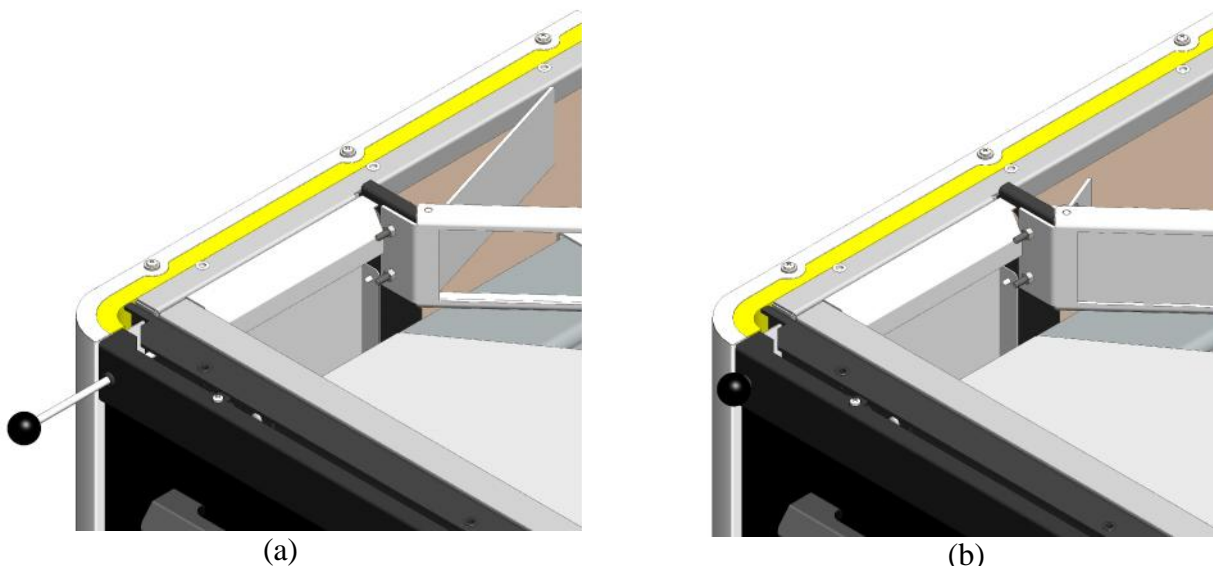
Kod prvog loženja obratiti pažnju na sledeće:

- dimnjak i njegov odvod moraju biti isti i u dobrom stanju,
- ručica klapne za radni položaj rernerne kao i regulator vazduha za sagorevanje moraju biti u odgovarajućim položajima. Klapna rernerne ima funkciju usmeravanja vrelih dimnih gasova u dva moguća smera. Ukoliko je ručica klapne izvučena iz šporeta (položaj otvoreno), dakle u smeru ložaljca, tada dimni gasovi iz ložišta idu direktno u dimnjak. suprotno, ako je ručica klapne rernerne gurnuta ka šporetu (položaj zatvoreno) dimni gasovi prave skretanja oko rernerne pa tek onda idu u dimnjak.
- Prilikom potpale, da bi omogućili ili najlakši put dimnih gasova, ručica klapne mora biti u položaju otvoreno. Takođe, regulator vazduha mora biti maksimalno otvoren, odnosno na poziciji 8.
- Za vreme prvih radnih sati treba otkloniti obgorevanje (sušenje) vatrostalnih boja (naročito plotne) i premaza unutar šporeta. Ovaj efekat isparavanja je neprijatan, ali posle 3-4 sata dobre vatre prestaje i više se ne pojavljuje u celavom radnom veku šporeta.
- Za loženje **etaža** koristiti suvo drvo koje se sušilo barem tri meseca u adekvatnim uslovima ili drveni briket.
- Strogo je zabranjeno loženje otpadnim materijalom, naročito plastikom
- Potpaljivanje se vrši papirom i manjom količinom sitno cepkanog, suvog drveta i to samo kroz donja vrata kotla. Gornja vrata tom prilikom moraju biti zatvorena.
- Strogo voditi računa da su delovi šporeta, naročito plotna, okvir plotne, vrata rernerne, ručice vrata kotla, dimni priključak i dimovod na povišenim temperaturama koje kod čoveka i životinja mogu izazvati ozbiljne opekotine. Zbog toga sa šporetom mogu da se služe samo odrasle i zdravstveno sposobne osobe. Koristiti zaštitnu rukavicu.
- Nominalna snaga je određena količinom ogreva koji sagoreva kao i količinom vazduha. Nivo ogreva ne treba da pređe donji ram vrata za loženje a regulator vazduha mora biti otvoren na 8.
- Nominalna snaga se održava tako što se u vatru, na svakih pola sata doda po 3-4 veća komada drveta.
- Prilikom loženja u toku rada, obavezno ručica klapne ide u položaj otvoreno, vrata za loženje se otvore 1-2cm, sačekaj se oko 1 minut a zatim se vrata maksimalno otvore. Na ovaj način sprečava se pojava dima van šporeta.
- U situacijama kad je nivo ogreva viši od navedenog za nominalnu snagu, odnosno kad je veoma blizu plotne, može doći do nekontrolisanog dimljenja. Tada otvoriti ručicu klapne i određeno vreme ne dodavati drva.

### 3.1 Koriš enje rerne

- Kada se vatra dobro razgori, klapnu staviti u položaj zatvoreno.
- Otvoriti regulator vazduha na 8.
- Sa ekati da temperatura u rerni bude 170 do 190 stepeni Celzijusa. Tek tada staviti hranu da se pe e. Radi kontrolisane temperature u rerni dodavati po jedno, dva drveta i to povremeno.
- Da bi se, naro ito testo, peklo ravnomerno, pleh treba okrenuti povremeno za 180 stepeni na suprotnu stranu.

**UPOZORENJE:** *Ukoliko je temperatura vode u kotlu 60 stepeni i više a korisnik želi izrazito jak rad rerne, potrebno je omogu iti rashla ivanje vode za grejanje kroz potroša e (naro ito kroz izmenjiva za sanitarnu vodu) da bi se regulator vazduha ponovo otvorio i omogu io jaku vatru za pe enje u rerni.*



Slika 6. Otvorena (a) i zatvorena (b) klapna

## 4. Pažnja!

Preniska temperatura polazne i povratne vode utiče na pojavu kondenzacije, što dodatno utiče na vek trajanja **Etaža**. U ekstremnim slučajevima može doći do stvaranja kondenzata koji se može meriti litrama, pa kad kondenz iscuri posumnja se da **Etaž C20/C25.1** curi. Kondenzat u sebi ima i sumpornu kiselinu koja se stvara tako što se sumpor izdvoji iz produkata sagorevanja. Sumporna kiselina proizvodi koroziju lima. Ta korozija zavisi od vrste goriva, atmosferskog pritiska i vlažnosti vazduha i kreće se u intervalu od 45°C-50°C. Zbog toga moramo paziti da kod rada povratna voda nikada ne padne ispod 55°C. **Etaž C20/C25.1** nije konstruisan za niskotemperaturni rad. Posebno treba obratiti pažnju da nije ugrađen na sistem neodgovarajuće kapaciteta, jer će doći do podhlavlivanja i kondenzata. Ako je **Etaž** obložen katranom i ako je slab je prenos toplote pa će, takođe, doći do podhlavlivanja i kondenzata.

Kondenzaciju u kotlu moguće je izbjeći:

1. propisno izabranim dimnjakom,
2. propisanim načinom loženja i propisanom vrstom goriva,
3. pravilnim održavanjem kotla i dimnjaka, a naročito,
4. upotrebom četvorokrakog mešajućeg ventila.

Naročito bitan, za ukupan rad šporeta je dimnjak. Preporučeni dimnjak je prenikun unutrašnosti cevi Ø180mm i minimalne visine 8m. Ukoliko nema nekih otežavajućih okolnosti za njegov rad (suženje na vrhu, visoki objekti u blizini, previše dimnih krivina, nataložen katran, itd.). Ovakav dimnjak garantuje najoptimalnije izvršavanje sve tri funkcije: grejanje, kuvanje i pečenje.

## 5. Garancija

### 1. Radijator inženjering pokriva različite garancijske periode za različite delove (što je navedeno u daljem tekstu) samo ako su ispunjeni sledeći uslovi garancije:

- 1.1. Kotao mora biti priključen po navedenim hidrauličkim šemama iz tehničkog uputstva, naročito obratiti pažnju na sigurnosne ventile, termičko osiguranje oticanjem, mešaju i ventil za zaštitu hladnog kraja kotla odnosno protiv kondenzacije, opseg radnog pritiska kotla, opseg radne temperature kotla, uslove u prostoriji itd.
- 1.2. Kotao mora biti priključen na dimnjak propisanog poprečnog preseka, karakteristika izolacije i visine.
- 1.3. Dimovod od kotla do dimnjaka mora biti izveden po tehničkom uputstvu.
- 1.4. Korisnik mora da se pridržava navedenih uputstava o korišćenju i održavanju.

### 2. Garancijska izjava

Izjavljujemo:

- da proizvod ima propisana i deklarirana kvalitetna svojstva.  
Obavezujemo se, da ćemo na zahtev kupca ako pravovremeno u garancijskom roku podnese zahtev za popravku, o svakom trošku izvršiti sve popravke kvarova, tako da će proizvod raditi u skladu sa deklariranim svojstvima,
- da će proizvod u garancijskom roku raditi besprekorno ako se budu poštovala uputstva za upotrebu, rad i montažu,
- da ćemo u garancijskom roku biti spremni da otklonimo sve kvarove na proizvodu i držati na zalihama sve potrebne rezervne delove,
- **garancijski rok počinje od DANA KUPOVINE I TRAJE 60 MESECI ILI 72MESECA OD DATUMA PROIZVODNJE (datum proizvodnje nalazi se na nalepnici sa zadnje strane kotla),**
- **garancija važi ako je garantni list overen od strane prodavca i ako je upisan datum kupovine i priložen račun.**

**3. Garancijski period od godinu dana važi za sledeće delove:**

- rešetke u ložištu,
- rešetkasta vratanca na donjim vratima,
- izolacijske materijale na vratima i otvorima za išćenje.

**4. Garancijski period od dve godine važi za sledeće delove:**

- regulator promaje,
- delovi plotne,
- prohromska rena.

**5. Garancijski rok ne važi:**

- kod kvarova koje je na inicijalno kupac zbog nestručnog rukovanja proizvodom,
- kod mehaničkih kvarova nastalih prilikom transporta i prilikom korišćenja (vrsti predmeti),
- ako je proizvod instaliran nestručno, suprotno važećim propisima iz tog područja,
- ako je kupac koristio proizvod iznad deklariranih svojstava i u normalnim okolnostima,
- ukoliko se utvrdi da hidraulička šema nije uređena po preporukama firme „Radijator inženjering”,
- ukoliko se utvrdi da kotao u toku korišćenja nije redovno održavan i išćen,
- na staklo vrata rerne,

**6. Garancijski rok prestaje da važi:**

- ako se ustanovi da je kvarove otklanjala neovlašćena osoba ili neovlašćeni servis,
- ako kod popravke nisu bili upotrebljeni i ugrađeni originalni delovi,
- kad ističe garancijski rok.

**7. Kod prijave kvarova obavezno je dati sledeće podatke:**

- naziv i tip proizvoda,
- datum kupovine,
- fabrički ili radionički broj kamina,
- kratak opis kvara, odnosno nedostatka,
- tačnu adresu i kontakt telefon, mejl.

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*3.1 Use of the oven*

*4. Attention!*

*5. GUARANTEE*



## 1. Basic technical characteristics

**Etaž** is a stove designed to be used for baking in the oven, cooking on the top plate and heating through the heating appliance, that we produce in two variants: **Etaž C20** and **Etaž C25.1**.

The total heat efficiency of **Etaž C20** is 20 kW of which 14-15 kW is the power used for heating in the radiator, whereas the remaining is used for radiation of heat through the oven and top plate into the room in which **Etaž C20** is located. The total heat efficiency of **Etaž C25.1** is 25 kW of which 17-18 kW is the power used for heating in the radiator, whereas the remaining is used for radiation of heat through the oven and top plate into the room in which **Etaž C25.1** is located.

Special structural characteristics are as follows:

- width of the top plate: 960mm (**Etaž C20**), 1110mm (**Etaž C25.1**);
- dimension of the burning unit: 250mm X 300mm X 420mm (**Etaž C20**), 320mm X 300mm X 420mm (**Etaž C25.1**);
- dimension of the stoking door: 205mm X 190mm (**Etaž C20**), 320mm X 200mm (**Etaž C25.1**).

The internal walls of the boiler are made of 4mm thick steel and the volume of the boiler in **Etaž C20** is 18 litres and the volume of the boiler in **Etaž C25.1** is 20 litres. Combustion takes place on the grills made of 18mm thick grey cast iron in **Etaž C20** and 25mm in **Etaž C25.1**.

According to the position of the flue connection, there is a left and right version of the stove. When standing in front of the stove, if the flue connection is on the right side, it is a right-oriented stove and vice versa.

**Etaž** comes with a preinstalled air regulator for combustion, copper spiral for thermal safety drain valve, water thermometer in the boiler.

## 1.1 Table with technical characteristics

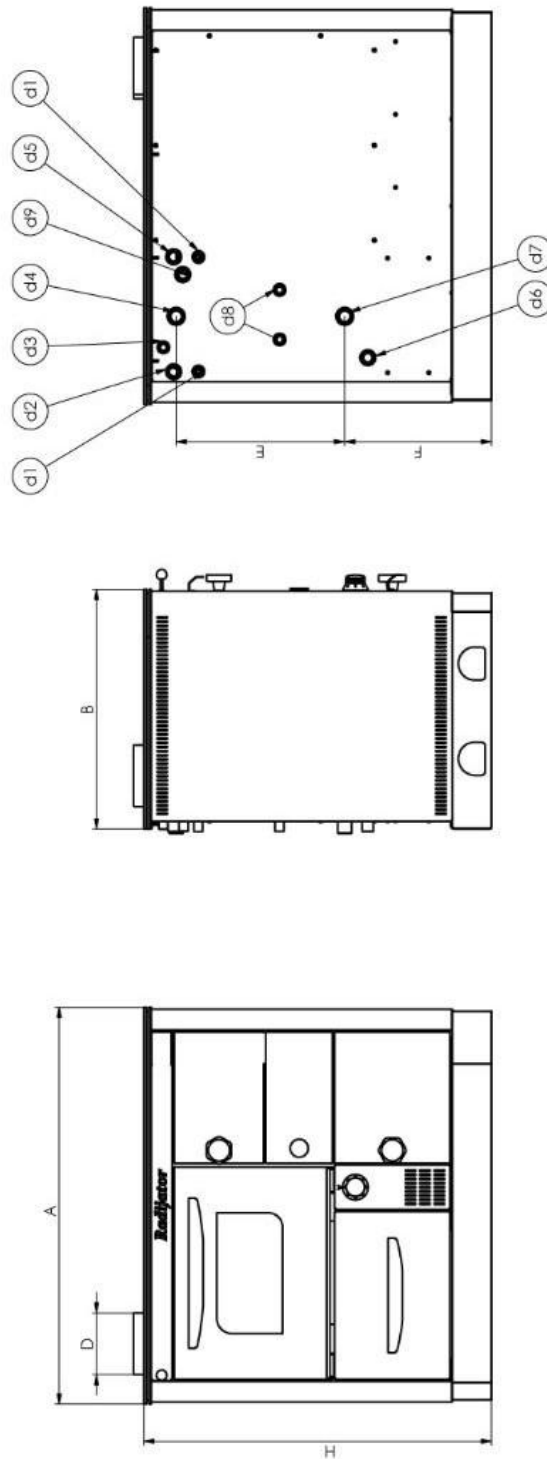


Figure 1.

Type of boiler		<b>Etaž C20</b>	<b>Etaž C25.1</b>
<b>Nominal power</b>	<b>kW</b>	20	25
<b>Water heating</b>	<b>kW</b>	14	17
<b>Direct heating</b>	<b>kW</b>	6	8
<b>Boiler mass</b>	<b>kg</b>	225	240
<b>Maximum operating pressure</b>	<b>bar</b>	3	3
<b>Required boiler subpressure</b>	<b>Pa</b>	17-20	17-20
<b>Volume of water in the boiler</b>	<b>l</b>	18	20
<b>Average flue gas temperature</b>	<b>°C</b>	280	280
<b>Flue connection on the top plate</b>	<b>mm</b>	150	150
<b>Water connections</b>	<b>col</b>	1	1
<b>Dimensions</b>			
	<b>A</b>	960	1110
	<b>B</b>	580	580
	<b>ØD</b>	149	149
	<b>E</b>	409	409
	<b>F</b>	356	356
	<b>H</b>	843	843
<b>Connections for thermal safety drain valve VTO</b>	<b>D1</b>	1/2"	1/2"
<b>Connection for thermal safety drain probe</b>	<b>D2</b>	1/2"	1/2"
<b>Deaeration</b>	<b>D3</b>	3/8"	3/8"
<b>Hot water</b>	<b>D4</b>	1"	1"
<b>Safety pressure relief valve</b>	<b>D5</b>	1/2"	1/2"
<b>Filling / emptying</b>	<b>D6</b>	1/2"	1/2"
<b>Cold water</b>	<b>D7</b>	1"	1"
<b>Connection for secondary air</b>	<b>D8*</b>		/
<b>Connection for tertiary air</b>	<b>D9*</b>		/

\* These connections are not available on Etaž C25.1

## 2. Assembly

Regulations regulating this field in the country of installation apply during the installation of the device.

**Etaž C20/C25.1** may be mounted on the closed central heating systems where the working temperature is 90°C and the working pressure is up to 3 bar.

- It should be connected to the chimney with internal pipe diameter of 180 mm or in case when the height exceeds 8m - the diameter of the pipe should be 160mm. Subpressure in the chimney has to be ensured during work in the range of 18 to 20 Pa.
- Flue pipes have to have the diameter of 150mm and have to be made of steel or fire-proof stainless steel. The horizontal part has the maximal length of 1m and has to be mounted in slightly upward direction with 5 percent slope. Maximal number of bends is 2. All connection points in the flue pipe have to be firm and hermetically sealed.
- The device is primarily installed in the kitchen with good venting capacity.
- Installation in the bedroom or any other room connected to the bedroom is strictly forbidden.
- A constant flow of fresh air has to be ensured in the room in which the stove is installed, whereas in the event that another oxygen consuming device is installed in the same room or a device that creates subpressure, e.g. an aspirator, a special pipe has to be installed which would bring fresh air from the outside to the **Etaž C20/C25.1**.
- The stove should be installed in a room where there is no danger of explosion and fire.
- **Etaž C20/C25.1** should be installed so that there is unhindered access to the flue pipes and flue connections (for cleaning purposes), but also to the work and safety reinforcements on the back side (for maintenance purposes).
- During installation, special attention should be paid to a safe distance between the stove and flammable materials, but also to the spare required for maintenance purposes. On the front side, this distance is 800mm, on the side of the oven, i.e. flue connection it is 150mm, on the back side 200mm and on the side where the boiler is located, enough space should be left for adequate access to the hydraulic reinforcements, i.e. 400mm. Flammable materials include wood, chipboard, cork, etc. In case of even more flammable materials, such as PVC, polyurethane, wooden threads, etc. the specified distances have to be doubled.
- If the device is mounted on a surface made of very flammable materials, a layer of insulation has to be placed over such flammable materials. The dimension of the insulation may be calculated by adding 800mm on the front side and at least 150mm on other sides of the stove.

## 2.1 Installation on the hydraulic system



*During the connecting to the hydraulic installations, the boiler has to be adequately secured so that the maximal temperature and pressure is not exceeded.*



*Central heating fitter is responsible for adequate installation and connecting of the boiler to the hydraulic system.*



*Radijator Inženjering, as the manufacturer of the boiler, does not take any responsibility for the damage caused by inadequate installation of the boiler.*

## 2.2 Measures and safety devices

For safe operation of boiler it is necessary to assemble and maintain the following elements in working condition:

- **Pressure Safety valve (figure 2),**
- **The valve of thermal safety by swelling (Figure 4).**



Figure 2.



Figure 3.

- Pressure safety valve must be of nominal diameter of 1/2 inch calibrated to a maximum of 3 bars.

This security element which belongs to the group of pressure limiters must be of such construction to withstand short-term overdrafts and temperatures and pressure as well as the content in the liquid glycol for heating.

Usually in the same place the vent (Figure 3) and the pressure gauge are connected so that these three elements together constitute a security group and can be mounted over T" connector.

This safety element must be subjected to periodic re-calibration, of which the investor, i.e. the user of the boiler must have valid documentation.

- Safety valve must be mounted on the highest point directly to the boiler and the boiler without any pipeline or any other elements in between. For this purpose there is a specially designed connector (see picture). Any reduction in diameter of the connector is prohibited.
- Drain or exhaust of the safety valves must be of pipes with a diameter at least equal to the nominal diameter of the outlet part of the valve. You are allowed to use up its production of an arc of radius  $r > 3d$ .
- The safety valve must have a nameplate and the following information on it
  - Name of manufacture;
  - Designation of type of safety valve / year of testing;
  - Nominal flow rate;
  - Data for which thermal effect the safety valve is set;
  - The highest opening pressure 3 bars.
- It is obligatory to check the correct functioning at regular intervals as well as the re-calibration by certified companies. These responsibilities are carried out in accordance with the law of every country in which the boiler is assembled. Always keep the written documentation of the last calibration data for the safety valve.
- On the return line assemble at least another pressure safety valve.

#### - The valve of thermal safety by swelling (Figure 4)



*Figure 4.*

This safety element also has a role of a limiter of temperature. Below it will be marked with the abbreviation VTO.

- In some extremely dangerous situations in the transformation of water into vapor is such that the pressure safety valves are not sufficient to ensure the safety of the hydraulic system. For this reason, the installation of VTO is mandatory. Depending on the regulations of the countries in which the boiler is assembled, it is necessary to install the VTO only for the determined higher powers or for each power of a boiler it is the obligatory to instal the VTO.
- Place the installation is shown in the Assembly diagram of boiler onto the installation in Figure 5. The boiler is supplied with a copper coil so it is necessary to use the VTO with trhe exchanger, as shown in Figure 5. Cold sanitary water is brought to the VTO. When the VTO-probe has the information that the temperature is over 95 degrees the VTO is opened and water flows through copper coil. After some time the temperature of water in boiler returns to its normal state.

- One connection of coil is used for VTO and the other for draining of water that has passed through the coil. The choice of either connection; for VTO or for the discharge is irrelevant. It is necessary to follow the installation instructions provided by the manufacturer of the VTO.
- Be sure to check up, in certain periods of time, the functioning of the VTO.

As stated above one end of the VTO is for the mounting on the exchanger of the boiler, and the other is supplied with cold water under pressure. It is particularly important that the water flow is unobstructed even when the electricity is switched off.



**If it is impossible to provide the inflow of cold sanitary water at the time of electricity switch off , the boiler must be connected onto the open system.**

### 2.3 Connection diagram for Etaž C20/C25.1

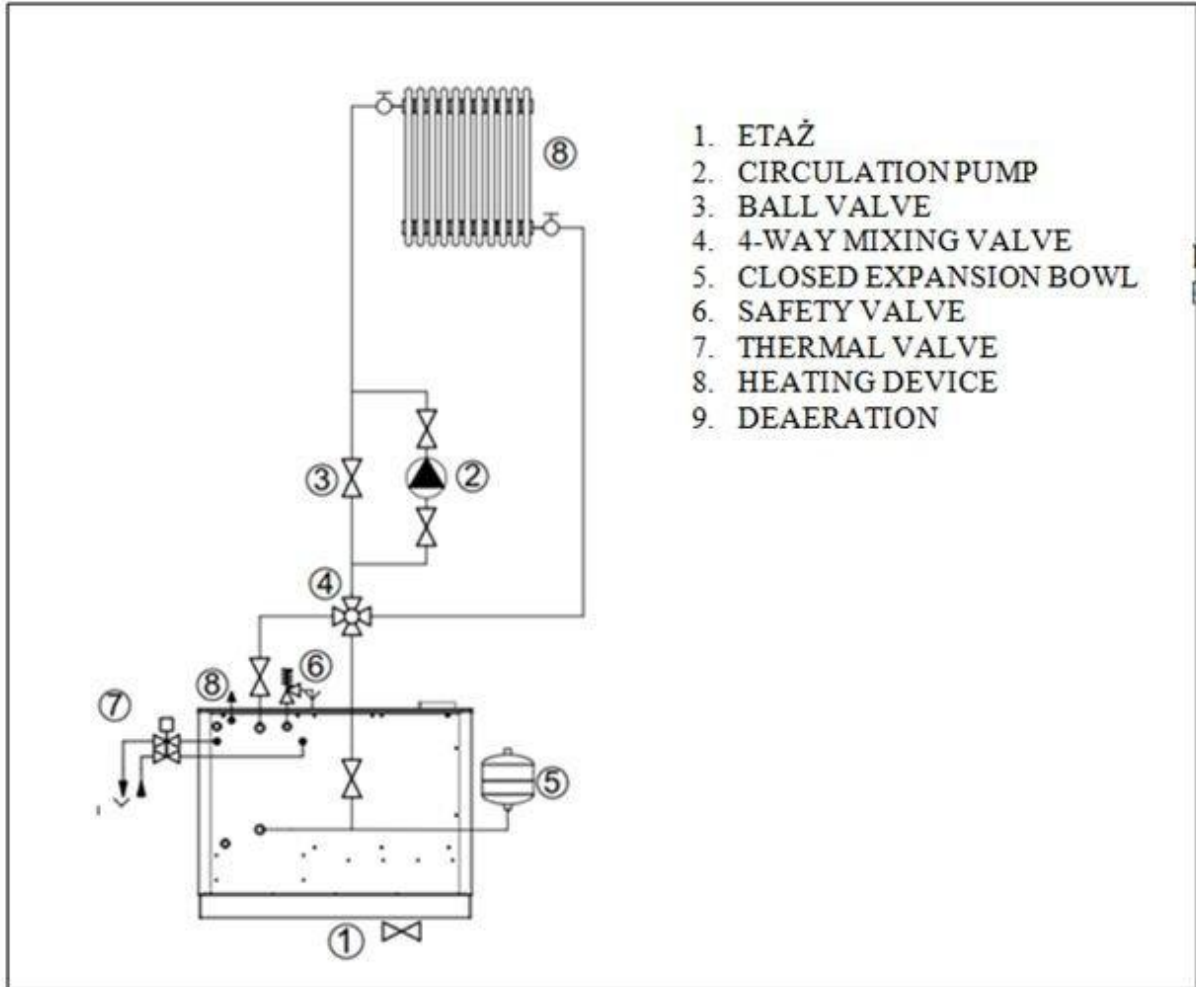


Figure 5. Hydraulic scheme



### 3. Operating instructions

During the first stoking, pay special attention to the following:

- the chimney and its exhaust have to be clean and in good condition,
- the flap handle for working position of the oven and the air regulator for combustion have to be in adequate positions. The flap on the oven is used to direct the hot flue gases into two possible directions. If the flap handle is extracted from the stove (open position), i.e. in the direction of the operator, the flue gases do from the burning unit directly to the chimney. To the contrary, when the flap handle is pushed towards the stove (closed position), the flue gases go around the oven and then into the chimney.
- During the starting of the fire, in order to ensure the easiest route for flue gases, the flap handle has to be in the open position. Also, the air regulator has to be maximally open, i.e. in position 8.
- During the first several hours of work, the coats inside the stove and fire-proof paint would burn (dry), especially on the top plate. These vapours are unpleasant, however they disappear after 3-4 hours of strong fire and never reappear during the entire useful life of the stove.
- Use dry wood that has been drying for at least three months in adequate conditions or wood briquette for stoking **Etaž**.
- The use of waste materials, in particular plastics, for stoking is strictly forbidden.
- Start the fire by using paper and small amount of chopped, dry wood inserted through the lower door of the boiler. The upper door has to be closed during starting of fire.
- Bear in mind that parts of the stove, in particular the top plate, top plate frame, oven door, boiler door handle, flue connection and flue pipe reach very high temperatures which may cause serious burns on humans and animals. Therefore, the stove should be used only by adults and healthy individuals. Use protective gloves.
- The nominal power is determined by the quantity of fuel being burnt, as well as by the amount of air. The fuel level should not exceed the lower frame of the stoking door, while the air regulator should be open in the position 8.
- The nominal power should be maintained by adding 3-4 larger chunks of wood into the fire every half hour.
- If the stove is being stoked during work, the flap handle should be in the open position, the stoking door should be 1-2 cm open for 1 minute and then opened as much as possible. This prevents the occurrence of smoke outside the stove.
- In the situation when the fuel level is higher than the one specified for nominal power, i.e. when the fuel level is very close to the top plate, the uncontrolled smoke may occur. In such a case, you should open the flap handle and stop adding wood for a while.

### 3.1 Use of the oven

- When the fire develops, place the flap in the closed position.
- Open the air regulator to position 8.
- Wait for the temperature in the oven to reach 170 to 190 degrees Celsius. Only then the oven is ready for baking. In order to maintain the temperature in the oven, add one or two chunks of wood from time to time.
- For even baking, especially for dough, the pan should be occasionally turned for 180 degrees.

**WARNING:** *If the water temperature in the boiler is 60 or more degrees, and the user wants the oven to reach high temperatures, it is necessary to ensure cooling of heating water through the consumers (in particular through the exchanger for grey water) for the air regulator to reopen and enable high fire for baking.*

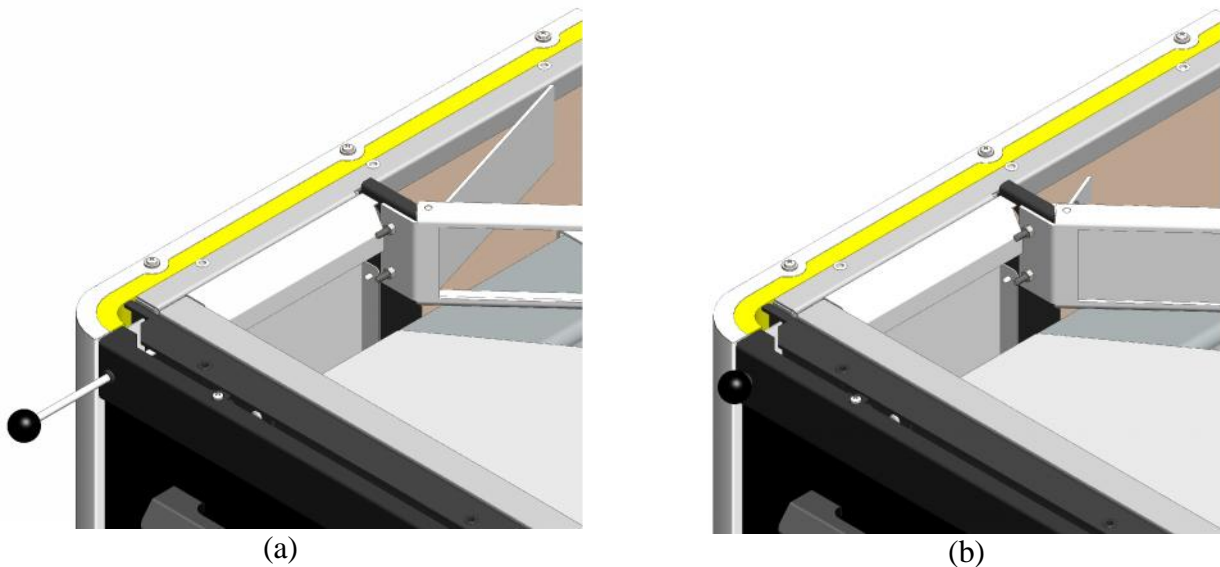


Figure 6. Flap open (a) and closed (b)

## 4. Attention!

Too low incoming and outgoing water temperature results in forming of condensation, which additionally affects the useful life of **Etaž**. In extreme circumstances, condensate measured in litres may form and when it starts leaking, the first thought is that **Etaž C20/C25.1** is leaking. The condensate also contains sulphuric acid which is formed by separation of sulphur from the products of burning. Sulphuric acid causes corrosion of sheets. The dew point depends on the type of fuel, the atmospheric pressure and air humidity and it ranges from 45°C to 50°C. For this reason, we have to pay special attention not to let the temperature of the return water fall below 55°C. **Etaž C20/C25.1** is not built for work at low temperatures. In particular, it should be checked whether it is installed in a system with adequate capacity, since inadequate capacity may lead to temperature drop and forming of condensate. If **Etaž** is lined with tar and soot, the heat transfer is weak which also leads to temperature drop and forming of condensate.

Condensation in the boiler may be avoided by:

1. adequately selected chimney,
2. prescribed manner of stoking and prescribed type of fuel,
3. adequate maintenance of the boiler and chimney, and in particular
4. by the use of 4-way mixing valve.

Chimney is very important for the overall work of the stove. The recommended chimney has the internal pipe diameter of 180mm and the minimal height of 8m. Provided that there are no aggravating circumstances (narrowing at the top, high buildings nearby, too many curves in the chimney, tar deposits, etc.) Such chimney ensures optimal performance of all three functions: heating, cooking and baking.

## Guarantee

### 1. Radijator Inženjering d.o.o covers different warranty period for different parts only if following warranty conditions are fulfilled:

- 1.1. The boiler must be connected according to the technical diagrams given in technical instructions; special attention should be paid to safety valves, thermal insurance by draining, mixing valve for protection of cold end of the boiler, i.e. for protection against condensation, boiler operating pressure range, boiler operating temperature range, conditions in the boiler room etc.
- 1.2. The boiler must be connected to the chimney with prescribed cross-section, particulars of insulation and height.
- 1.3. The uptake from boiler to the chimney must be done according to the technical instructions.
- 1.4. The owner must follow stated instructions about use and maintenance.

### 2. Warranty declaration

We declare:

- that the product has prescribed and declared quality characteristics.  
We are obliged, at the request of the buyer if such request for repair is submitted in due time and in the warranty period, at our expense, to carry out all repairs of damages, in such way that the product will operate in accordance with declared characteristics,
- that the product will operate without fault during the warranty period if all the instructions for use, operation and installation are followed,
- that in the warranty period we will be ready to eliminate all damages on the product and keep in stock all necessary spare parts,
- **the warranty period starts from the DAY OF PURCHASE AND LASTS 60 MONTHS OR 72 MONTHS FROM THE DATE OF MANUFACTURE (date of manufacture is specified on the label on the back side of the boiler)**
- **the warranty is valid if the warranty sheet is stamped by the seller and if date of purchase is written on it and the bill is enclosed.**

**3. Warranty period of one year is valid for the following parts:**

- grills in the burning unit,
- small grid door on the lower doors,
- insulation material on the doors and cleaning openings.

**4. Warranty period of two years is valid for the following parts:**

- Draught control device,
- parts of the top plate,
- stainless steel oven.

**5. Warranty period is not valid:**

- for damages caused by the buyer due to poor handling of the product,
- for mechanical damages made during transport and in use (solid objects),
- if the product is unprofessionally installed, contrary to the valid regulations in that area,
- if the buyer has used the product above the declared characteristics and in normal conditions,
- if it is determined that the technical diagram was not done according to the recommendations of the company “Radijator Inženjering d.o.o”,
- if it is determined that the boiler was not regularly maintained and cleaned during the use,
- on glass of boiler.

**5. Warranty period becomes invalid:**

- if it is determined that damage has been repaired by unauthorized person or unauthorized service shop,
- if original parts were not used and installed during the repair,
- if warranty period expires.

**6. When reporting damages, the following details must be provided:**

- name and type of the product,
- date of purchase,
- factory or workshop number of the boiler,
- brief description of malfunction, i.e. the shortcoming,
- exact address and contact phone number, e-mail.

# GARANTNI LIST / GUARANTEE LIST

Tip kotla / Boiler type

Fabri ki broj / Factory No.

Garantni rok / Guarantee period

**60 MESECI/ 60 MONTHS**

Datum proizvodnje /  
Date of manufacture

Potpis ovlaš enog lica /  
Signature of Authorized person

pe at / stamp

Prodato u firmi / Company of Sale

Adresa / Address

Telefon / Phone

Datum prodaje / Date of Sale

Potpis / Signature

pe at / stamp

\*Potroša ima sva prava na osnovu Zakona o zaštiti potroša a ("Sl.glasnik RS", br. erbia62/2014). Garancija ne isklju uje niti uti e na prava potroša a koja proizilaze iz zakonske odgovornosti prodavca za nesaobzirnost robe u ugovoru./ The consumer shall exercise all rights under the Consumer Protection Law ("OJ of RS" No 62/2014). The guarantee does not exclude nor affect the consumer's rights derived from the legal liability of the seller for any lack of conformity of the goods under a Contract.

\*Gore navedeno važi za kupce na prostoru Republike Srbije./ The aforementioned applies to purchasers of the Republic of Serbia.