Radijator INŽENJERING

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Kotao na BIOMASU
Heating boiler BIOMASS operated

BIO lux UNI 20

INSTRUKCIJE / INSTRUCTION MANUAL

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

SADRŽAJ:

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1. Važna upozorenja

OPŠTA UPOZORENJA

- Nakon uklonjenog pakovanja uveriti se u kompletnost isporuke, i u slučaju nedostataka, obratiti se prodavcu koji je prodao kotao.
- Kotao mora biti upotrebljen isključivo za namenu koju je predvideo proizvođač. Isključuje se bilo kakva odgovornost od strane proizvođača za štetu uzrokovanu osobama, životinjama ili stvarima, u slučaju grešaka pri montaži, regulaciji, održavanju ili nepravilnom korišćenju.
- U slučaju curenje vode isključiti uređaj sa električnog napajanja, zatvoriti napajanje vodom i obavestiti ovlašćeni servis ili ovlašćenog montera.
- Ovo uputstvo je sastavni deo uređaja i mora se čuvati sa pažnjom i mora ***UVEK*** pratiti uređaj i u slučaju promene vlasnika ili korisnika ili u slučaju priključenja na drugu instalaciju. U slučaju oštećenja ili nestanka tražiti novi primerak od ovlašćenog prodavca.

VAŽNA UPOZORENJA

Podsećamo da korišćenje uređaja na biomasu koji imaju kontakt sa električnom energijom i vodom zahtevaju poštovanje sigurnosnih mera i to:

- Zabranjeno je korišćenje kotla od strane dece i osoba sa ograničenim mogućnostima bez pratnje.
- Zabranjeno je korišćenje kotla na instalacijama sa radnim pritiskom većim od **3 bara** i radnom temperaturom većom od **110˚C**.
- Zabranjeno je korišćenje lako zapaljivh goriva (alkohol, nafta).
- Zabranjeno je odlaganje lako zapaljivih materijala u blizini kotla i u blizini vrata za loženje. Pepeo se mora odlagati u zatvorene i nezapaljive spremnike.
- Zabranjeno je spaljivanje otpada i materijala čije sagorevanje prouzrokuje plamen ili opasnost od eksplozije (npr. plastične kese, piljevinu, ugljenu prašinu, blato itd.)
- Zabranjena je bilo kakva intervencija tehničkog lica (naročito se to odnosi na zamenu grejača ili proveru ispravnosti nekog drugog el. uređaja...) ili čišćenja, pre nego se kotao isključi sa električnog napajanja i to izvlačenjem utičnice iz glavnog mrežnog napajanja.
- Zabranjena je izmena sigurnosnih elemenata.
- Zabranjeno je zatvaranje ventilacionih otvora na prostoriji u kojoj se nalazi kotao. Ventilacioni otvori su neophodni za pravilno sagorevanje.
- Zabranjeno je izlaganje kotla atmosferskim neprilikama.Ovaj uređaj nije predviđen za spoljnu montažu.
- Zabranjeno je isključivanje uređaja ukoliko spoljna temperatura može da padne ispod nule po Celzijusu (opasnost od smrzavanja).

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- Zabranjeno je stavljanje prstiju i drugih predmeta kroz otvore na spoljnim delovima oplate uređaja.Unutar oplate su elektro komponente i provodnici pod naponom kao i uređaji koji se mehanički pokreću (motor reduktor i ventilator).Kontakt sa njima može da dovede do strujnog udara i mehaničkih povreda.
- U slučaju intervencije na bilo kom elektro uređaju kotla, ceo uređaj isključiti sa elektro instalacije i to tako što se izvadi utičnica iz mrežnog napajanja.
- Rad sa uređajem kotla zabranjen je ljudima sa posebnim potrebama (uključujući i decu) kako fizičkim tako i mentalnim, osim uz nadzor staratelja i ljudi koji su odgovorni za njihova ponašanja.
- Deca moraju biti pod nadzorom staratelja kako se ne bi igrala sa uređajem kotla.
- Ako je oštećena strujna zaštita, mora biti zamenjena u samoj fabrici i servisirana od strane ovlašćenog servisera ili kvalifikovanih ljudi da bi se izbegao rizik od strujnog udara.

1.1 Minimalna udaljenost od zapaljivih materijala

- Obezbedite odgovarajuću udaljenost od zapaljivih materijala, ako je potrebno obezbediti zaštitu istih.
- Minimalna udaljenost od zapaljivih materijala je propisana zakonom- molimo da se o tome raspitate kod stručnih lica, koja se bave grejanjem, i dimničara.
- Minimalna udaljenost kotla i cevi za odvod dimnih gasova od slabo i prosečno gorivih materijala treba da bude najmanje 100mm.
- Minimalno rastojanje od lako zapaljivih materijala je 200mm, a isto važi i za materijale čija zapaljivost nije poznata.

Opasnost od požara!

- Skladištenje zapaljivih materijala i tečnosti u blizini kotla je zabranjeno.

- Obavezno upozorite korisnike o potrebnoj minimalnoj udaljenosti zapaljivih materijala od kotla.

Zapaljivost građevinskih materijala	
A ... nezapaljivi	azbest, kamen, građevinski kamen, keramičke zidne pločice, terakota, malter, cementna glazura (bez organskih dodataka)
B ... koji nisu lako zapaljivi	gipsane kartonske ploče, staklena vlakna, ploče od AKUMINA, IZOMINA, RAJOLITA, LIGNOSA, VELOKSA i HERAKLITA
C1 ... slabo gorivi	bukovo i hrastovo drvo, kompozitno drvo, filc, ploče od HOBREKSA, VERZALITA, UMAKARTA
C2 ... prosečno gorivi	drvo bora, tise i jele, kompozitni materijali
C3 ... lako zapaljivi	Asfalt, karton, celulozni materijali, iverica, pluta, poliuretan, polistiren, polipropilen, polietilen, podna vlakna

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2.Opis kotla

BIOlux **UNI 20** namenjen je sagorevanju drvenog peleta. Drveni peleti su dobijeni od 100% celuloze. Ostaci drveta pod visokim pritiskom su sabijeni u pelet prečnika 6mm i dužine 2-3cm. Pelet treba pravilno skladištiti i to na suvom mestu da bi se obezbedilo efikasno sagorevanje. Kotao ***BIOlux*** **UNI 20** koristi pelet prečnika 6mm, dužine 5-30mm i vlažnosti do 10% izrađen po standardu **EN 14962-2**. Ukoliko pelet nije po navedenom standardu ili je tokom skladištenja ili transporta došlo do pogoršanja njegovog kvaliteta, Radijator Inženjering kao proizvođač ne može da preuzme odgovornost za loš rad. U takvim situacijama dolazi do grešaka u paljenju, nagomilavanja peleta i ispadanja iz prostora za sagorevanje, nedovoljne snage itd.

BIOlux **UNI 20** se instalira u kotlarnici ili u drugim prostojima,s tim što ima prednost u situacijama gde su potrebne što kompaktnije dimenzije.

Montira se na klasični dimnjak minimalnog prečnika 120mm. Dimnjak mora da zadovoljava i sve ostale standarde kao kod klasičnih kotlova o čemu je više rečeno u poglavlju montaža.

Nominalna snaga ***BIOlux*** **UNI 20** prema standardu **EN 303-5:2012** je **19,75 kW**.

U okviru kotla instalirani su i odgovarajuća cirkulaciona pumpa i ekspanziona posuda od 10 litara. Kotao se isporučuje i sa mehaničkim sigurnosnim i odzračnim ventilom.

Sagorevanje peleta se vrši po principu nasipnog ložišta. Ceo proces je vođen automatikom koja dozvoljava odabir jedne od 3 nivoa snaga. Moguće je priključiti sobni termostat i isprogramirati periode starta rada i cikluse mirovanja za 7 dana.

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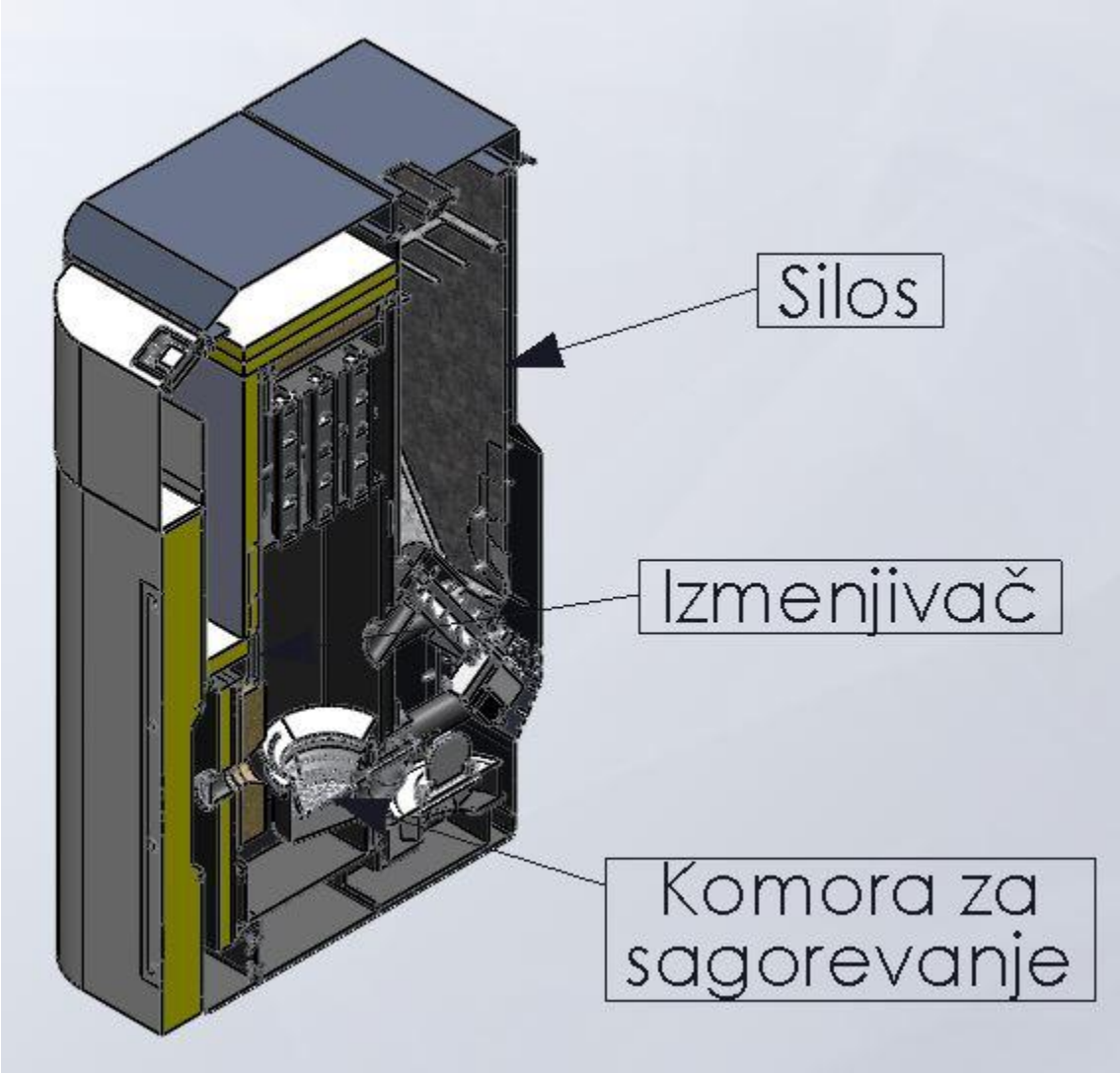

Slika1. Presek tela kotla

KONSTRUKCIJA

Kotlovski izmenjivač je cevni dvopromajni i izgrađen je od materijala koji po debljinama i kvalitetu materijala odgovaraju standardu EN 303-5:2012.Već fabričkim dimenzijama ***BIOlux*** **UNI 20** je prilagođen manipulaciji u malim prostorima.

Silos je zapremine 50 kg peleta.Komora za sagorevanje je napravljena od vatrootpornih materijala. Presek kotla i pomenute delove videti na **slici 1**.

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3. Montaža

3.1 Opšta upozorenja

Kotao mora biti pravilno postavljen zbog pravilnog rada!

 **Maksimalni radni pritisak kotla je 3 bar-a, minimalni 1 bar, a maksimalna radna temperatura kotla je 110° C.**

 **Kotao je sa ventilatorom, automatikom, elektro grejačem i svi ovi uređaji koriste napajanje 230V,tako da nepravilno instaliranje i neoprezno rukovanje mogu da ugroze ljudski život strujnim udarom.**

 **Kotao na čvrsto gorivo i prinudnom promajom treba instalirati prema važećim normama i zakonskim propisima.Svaka izmena ili na mehaničkoj konstrukciji ili na električnoj instalaciji smatraće se narušavanjem garancijiskih uslova i dovešće do njenog narušavanja.**

 **Prilikom montaže na hidrauličku instalaciju kotao mora biti obezbeđen na propisan način od prekoračenja maksimalne radne temperature i pritiska.**

 **Za propisnu montažu odgovoran je instalater centralnog grejanja koji priključuje kotao na hidraulički sistem.**

 **Radijator Inženjering , kao proizvođač kotla, ne preuzima nikakvu odgovornost za štete prouzrokovane lošim instaliranjem kotla.**

 **Prilikom bilo kakve intervencije na elektro uređajima kotla *BIOlux* UNI 20, ceo sistem isključiti sa glavnog mrežnog napajanja.**

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3.2 Mere i uređaji bezbednosti kod *BIOlux* UNI 20 kotla

Za bezbedan rad ***BIOlux*** **UNI 20** kotla ugrađeni su sledeći elementi i potrebno ih je održavati ispravnim:

- **Ventil sigurnosti na pritisak, odzračni ventili i manometar;**
- **Elektro-mehanički presostat za vodu;**
- **Presostat dimnih gasova;**
- **Termostati u automatici koja reguliše rad kotla.**

Ventil sigurnosti na pritisak (slika 2), odzračni ventili (slika 3) i manometar (slika 4):

Slika 2. Sigurnosni ventil

Slika 3. Odzračni ventil

Slika 4. Manometar

- Ventil sigurnosti na pritisak je već fabrički namontiran na kotla i nazivnog je prečnika 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 prekoračenja i temperature i pritiska, kao i određen sadržaj glikola u tečnosti za grejanje.
  Ovaj sigurnosni element mora da podleže i periodičnim ponovnim baždarenjima o čemu investitor tj. korisnik kotla mora da poseduje validnu dokumentaciju.
- Preporučuje se i ugradnja manometra (**slika 4**) na hidrauličkoj instalaciji.
- 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 predviđen priključak. Strogo je zabranjeno bilo kakvo reduciranje prečnika ovog priključka prilikom servisiranja i postavljenje novog ventila sigurnosti.
- Ispusni tj. izduvni deo ventila sigurnosti (ukoliko korisnik želi da je namontira) mora da bude od cevi čiji je prečnik najmanje jednak nazivnom prečniku ispusnog dela ventila.Takođe dozvoljeno je za njegovu izradu koristiti najviše jedan luk radijusa r > 3d.
- Sigurnosni ventil mora posedovati nazivnu pločicu i na njoj 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.

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- 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.
- Zajedno sa ventilom sigurnosti na pritisak u istu sigurnosnu grupu spada i odzračni ventil.Na uređaju postoje dva takva ventila.Jedan je na najvišoj tački kotla, a drugi na najvišoj tački sabirnika gde se račvaju vod tople vode i ekspanziona posuda.

Elektro-mehanički presostat za vodu (slika 5):

Slika 5. Elektro-mehanički presostat za vodu

- Ovaj sigurnosni element konstantno meri pritisak u kotlovskom izmenjivaču pelet kamina i tu informaciju prosleđuje automatici.Ukoliko je pritisak ispod ili iznad vrednosti od 0,5 do 2,7 bara dolazi do prekida rada celog uređaja.Granične vrednosti minimalnog i maksimalnog pritiska određene su programom rada automatike.

Presostat dimnih gasova (slika 6):

Slika 6. Presostat dimnih gasova

- Zadatak ovog sigurnosnog dela je da konstantno meri podpritisak dimnih gasova u delu dimnog kanala gde je priključen i da ovu informaciju prosleđuje automatici.Ukoliko je vrednost podpritiska ispod ili iznad vrednosti koja je unapred definisana u programu automatike,dolazi do prestanka rada celog uređaja, a na displeju automatike stoji upozorenje da je došlo do greške u radu.

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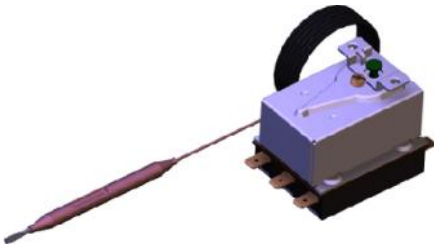
UPOZORENJE Do poremećaja podpritiska dimnih gasova može da dođe zbog zapušenosti dimnjaka,veoma velike zaprljanosti dimnih kanala kotla, lošeg zaptivanja vrata, poklopaca otvora dimnih kanala itd.

- Ovakvi uslovi mogu da dovedu do lošeg odvođenja produkata sagorevanja,naročito ugljenik monoksida što može u ekstremnim situacijama da dovede do narušavanja zdravlja čak i zagušenja korisnika.

Termostati u automatici koja reguliše rad pelet kotla (slika 7):



Slika 7. Termostat na automatici

U samoj automatici koja vodi proces sagorevanja i utiče na rad dva kruga grejanja postoje dva termostata.Oba su slične konstrukcije kao termostat prikazan na **slici 7.** i imaju i sigurnosne funkcije kao limitatori temp. vode u kotlu.Zbog sigurnosne uloge u funkcionisanju kotla oba termostata imaju nezavisne sonde za merenje temperature vode.

Prvi termostat je tzv. radni i on služi da ograniči temperaturu do nivoa koji želi korisnik. Drugi termostat je sigurnosni jer prekida rad ventilatora koji pospešuje plamen,odnosno dodaje novu energiju.Sigurnosna temperatura je ograničena na 95 stepeni Celzijusa.Ovaj termostat je fizički namontiran pored displeja automatike, ali je strujno vezan sa njom.

Pumpa za grejanje ima veoma važnu bezbednosnu funkciju i fabrički je povezana sa elektro napajanjem preko automatike i iz sigurnosnih razloga.Kada temp. vode u kotlu dostigne kritičnu vrednost od 95 stepeni Celzijusa ventilator staje sa radom, ali pumpa se obavezno uključuje kako bi razmenila toplotu vode kroz radijatore.

Montaža slavine za punjenje i pražnjenje se vrši u najnižoj tački sistema. Pošto na samom kotlu ne postoji priključak za punjenje i pražnjenje, slavinu priključiti u najnižoj tački povratnog voda. Instalaciju puniti polako kako bi se sistem dobro ozračio. Tokom punjenja instalacije proveriti da nema curenja u sistemu centralnog grejanja.

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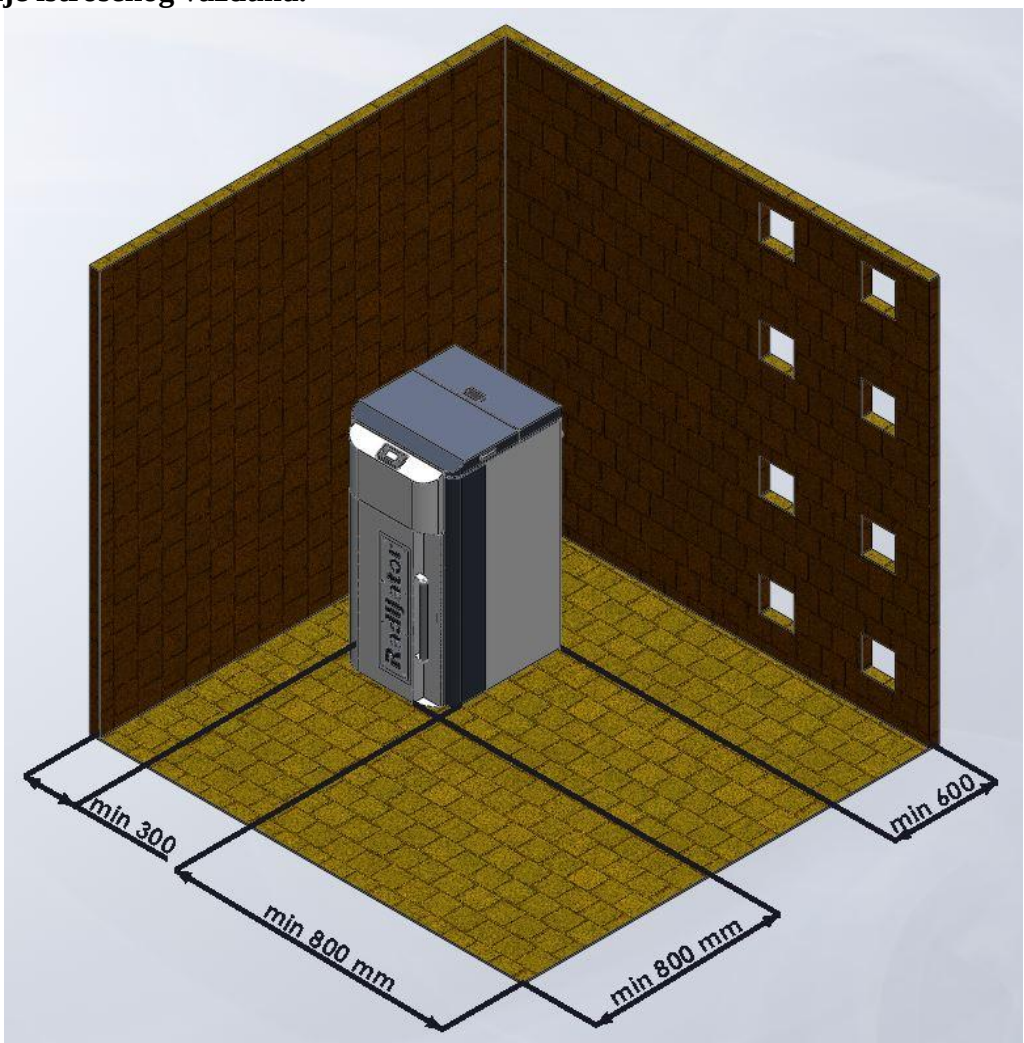
3.3.1 Pozicioniranje kotla *BIOlux* UNI 20 u kotlarnici

Kotlarnica mora biti obezbeđena od smrzavanja.

Podloga za kotao u kotlarnici mora biti od nezapaljivog materijala.Preporučene vrednosti udaljenosti sve četri strane kotla u odnosu na zidove kotlarnice ili neka druga kruta tela (akumulacioni bojler, itd.)prikazane su na ***slici 8.1***.Ove vrednosti udaljenosti omogućavaju siguran pristup prilikom loženja,dovoljan prostor za čišćenje i nesmetan pristup ventilatoru i ventilu za punjenje i pražnjenje. Kotao sa svoje leve strane treba da bude udaljen od zida 300mm. Prostor sa desne strane kotla, koji se preporučuje da bude barem 800mm, bitan je iz razloga kako bi korisnik prišao zadnjem delu kotla. Prostor iza kotla bitan je zbog montaže na hidraulički sistem ali i zbog eventualne demontaže sistema za elektro potpalu. Takođe ovaj prostor je potreban i za eventualno vađenje mehanizma za pelet radi periodičnog održavanja. **Kotlarnica mora da poseduje dovoljne otvore za ventilaciju kako za svež vazduh tako i za odvođenje istrošenog vazduha.**



Slika 8.1 Pozicioniranje kotla u kotlarnici

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Ukupna površina ovih otvora je minimalno 150cm² za snage do 50kW, a za snagu preko 50kW površina mora biti veća za jos 2cm² po kilovatu.

A=150cm²+ $\frac{2cm^2}{kW}\times(\sum Q_n - 50kW)$ $\sum Q_n$ = moguće snage preko 50kW.

Nedostatak dovoljne ventilacije u kotlarnici može da uzrokuje više problema u radu kotla.Glavni problem je nemogućnost postizanja visoke temperature izlazne vode tj.ne postizanje maksimalne snage što dovodi do kondezovanja u kotlu.

- Uzeti u obzir neophodan minimalni prostor koji je potreban za prilaz sigurnosnim elementima i za izvršenje operacija čišćenja i redovnog remonta.
- Utvrditi da li je stepen električne zaštite u skladu sa karakteristikama prostorije u kojoj ce kotao biti smešten.
- Zabranjeno je izlaganje kotla atmosferskim neprilikama.Sam kotao nije predviđen za spoljnu montažu i ne sadrži sistem protiv smrzavanja.
- Zabranjeno je zatvaranje ventilacionih otvora na prostoriji u kojoj se nalazi kotao.Ventilacioni otvori su neophodni za pravilno sagorevanje.

3.3.2 Pozicioniranje kotla u *BIOlux* UNI 20 u prostorijama u kući

Prilikom određivanja mesta na kome će se pozicionirati kotao treba voditi računa o sledećim detaljima:

- Kotao ***BIOlux*** **UNI 20** mora da bude što bliži dimnjaku, takođe dovod svežeg vazduha za sagorevanje treba da bude što bliže.
- Uređaj nikad ne sme biti instaliran u spavaćoj sobi niti u prostoriji koju je nemoguće vratima odvojiti od spavaće sobe.
- U prostoriji u kojoj se montira kotao ***BIOlux*** **UNI 20** ne sme biti korišćena još neka peć ili kamin na čvrsto gorivo i pelet. Potrebna cirkulacija vazduha kroz jedan od ovih uređaja najverovatnije će da smeta dotoku vazduha u drugi uređaj.
- Prostorija u kojoj je kotao mora da ima mogućnost provetravanja i mogućnosti povezivanja sa svežim vazduhom ili sa prostorijom koja je povezana sa spoljnim svežim vazduhom.Ovo povezivanje se ostvaruje sa čeličnim nezapaljivim cevima.
- Za rad uređaja potrebno je mrežno napajanje 230V i 50 Hz. Pozicionirati kotao što bliže priključku i tom prilikom izbegavati produžne kablove.
- U slučaju postavljanja kotla na zapaljivim podlogama (parketi,laminati,itisoni,tepisi itd.) obavezno izolovati kotao od takve podloge sa pločom od nezapaljivih materijala (čelik,keramika,izolacioni materijali od keramičkih vlakana, itd.) Takve ploče treba da su gabarita većih od osnove kotla (**videti sliku 8.2**).

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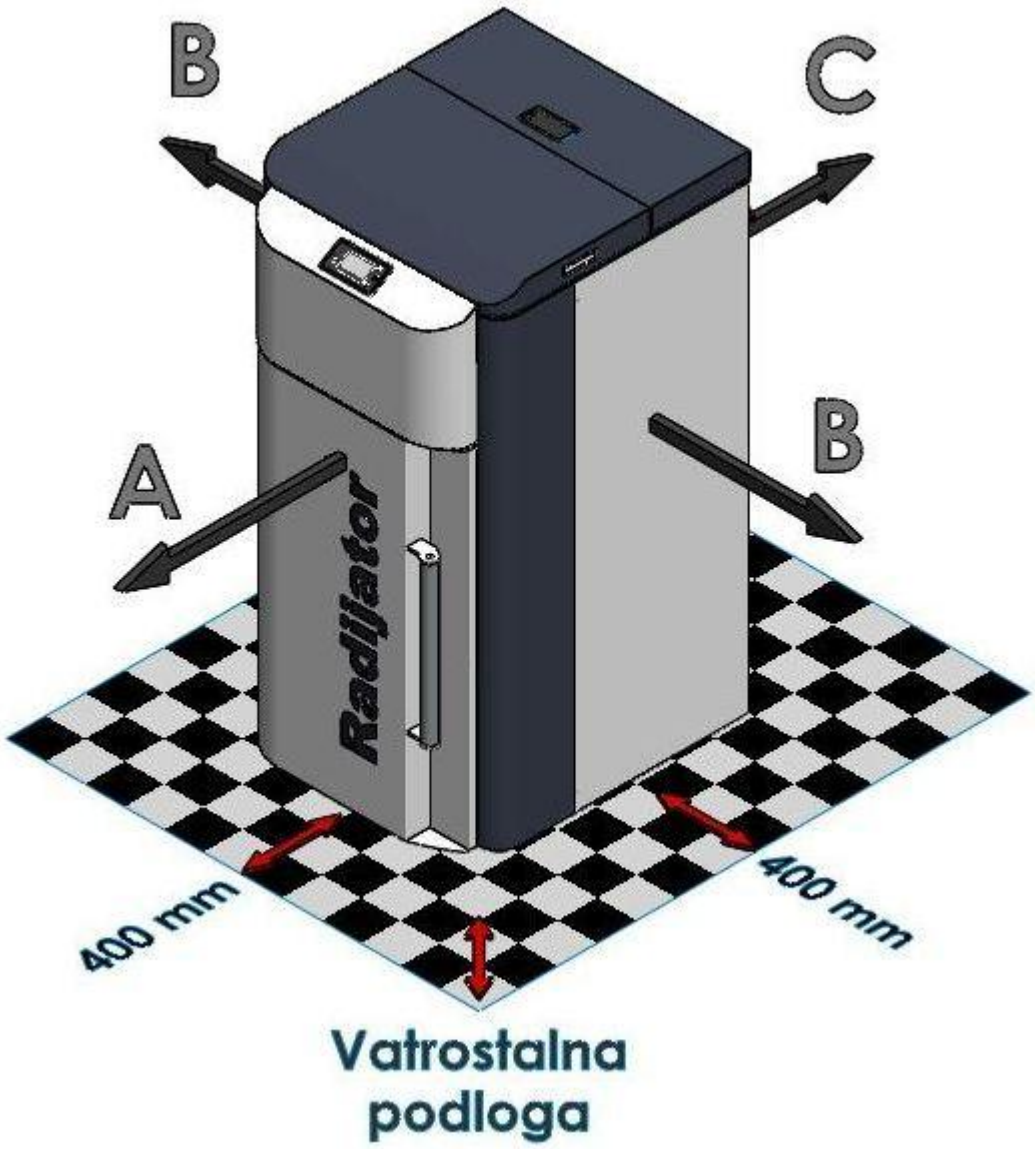
- Kotao mora biti bezbedno udaljen od lako zapaljivih materijala kao što su drveni i tekstilni delovi nameštaja,zavese,delovi od plastike itd. Udaljenost mora biti barem jedan metar od takvih materijala.
- **Udaljenost kotla od čvrstih nepokretnih objekata (zidovi,stubovi, itd.) (slika 8.2) mora sa bočnih strana biti minimalno 40 cm (slika 8.2 mera B), sa zadnje strane 40 cm (slika 8.2 mera C) i sa prednje strane 100 cm (slika 8.2 mera A).Ova udaljenja su potrebna zbog prilaza otvorima za čišćenje, kao i zbog pristupa prilikom servisnih intervencija.**



Slika 8.2 Pozicioniranje kotla u prostoriji

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3.4 Priključenje na dimnjak

Prilikom montaže dimnjaka razlikujemo dve situacije:

- **Situacija 1:** Kotao se priključuje na standardni dimnjak (zidani ili metalni) koji ima svoj temelj i pun presek od temeljne ploče do vrha.
- **Situacija 2:**Kotao se priključuje na montažni metalni dimnjak pričvršćen na fasadu.

Situacija 1:

- Kao dimnjak koristiti keramičke ili metalne cevi kružnog poprečnog preseka minimalnog prečnika 130mm. Dimna cev obavezno mora biti izolovana.
- Ukoliko dimnjak već postoji i kvadratnog je poprečnog preseka,onda su minimalne dimenzije tog preseka 130x130mm.
- Nije dozvoljeno koristiti dimnjak za priključenje više uređaja.
- Nije dozvoljeno koristiti ventilacione otvore kao dimnjak.
- Vrh dimnjaka zaštititi dimnjačkom kapom zbog uticaja kiše i vetrova.Rastojanje od kape do dimnjaka 200mm.
- Dimnjak treba da izađe u odnosu na krov prema preporukama sa slike. **(slika 9.4)** Ukoliko su blizu dimnjaka neki viši objekti uzeti i ovo u obzir i dodatno povećati visinu.
- Dimnjak mora da ima i priključak za izdvajanje kondenza, kao i reviziona vrata.Vrata treba uvek tokom rada dobro da dihtuju.

Situacija 2:

- U ovoj situaciji dimovodna cev mora da ide minimalno 1,5 metara vertikalno uvis u samoj prostoriji u kojoj je kotao,a zatim da prodre kroz zid i da se priključi na dimnjak.
- Dimovodna cev mora da ima T kondenzacioni komad na samom izlasku iz kotla kao i mogućnost demontaže zbog čišćenja.

UPOZORENJE: Nepridržavanje pravila tokom izvođenja dimovodnih kanala i dimnjaka može da dovede do nepravilnog rada kotla, ali i do ugrožavanja zdravlja ljudi pa i njihovih života.Najveća opasnost je od otrovnih gasova koji su produkti sagorevanja.U ovakvim situacijama gde nisu dimovod i dimnjak, kao i dovod vazduha za sagorevanje odrađeni na način kako je u uputstvu navedeno, Radijator Inženjering ne može da preuzme odgovornost za neželjene posledice.

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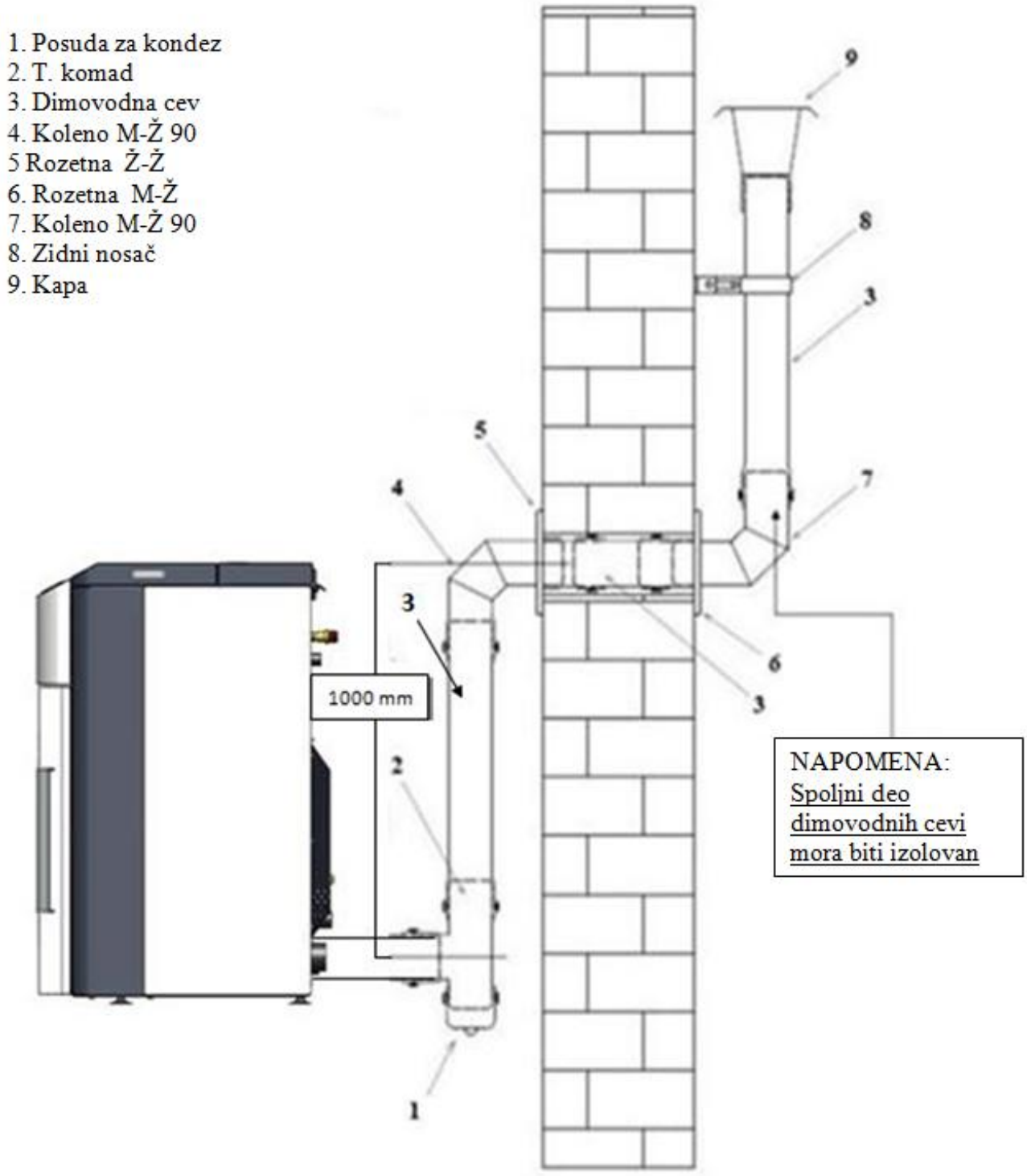

Slika 9.1. Prikaz montaže dimovodnih kanala

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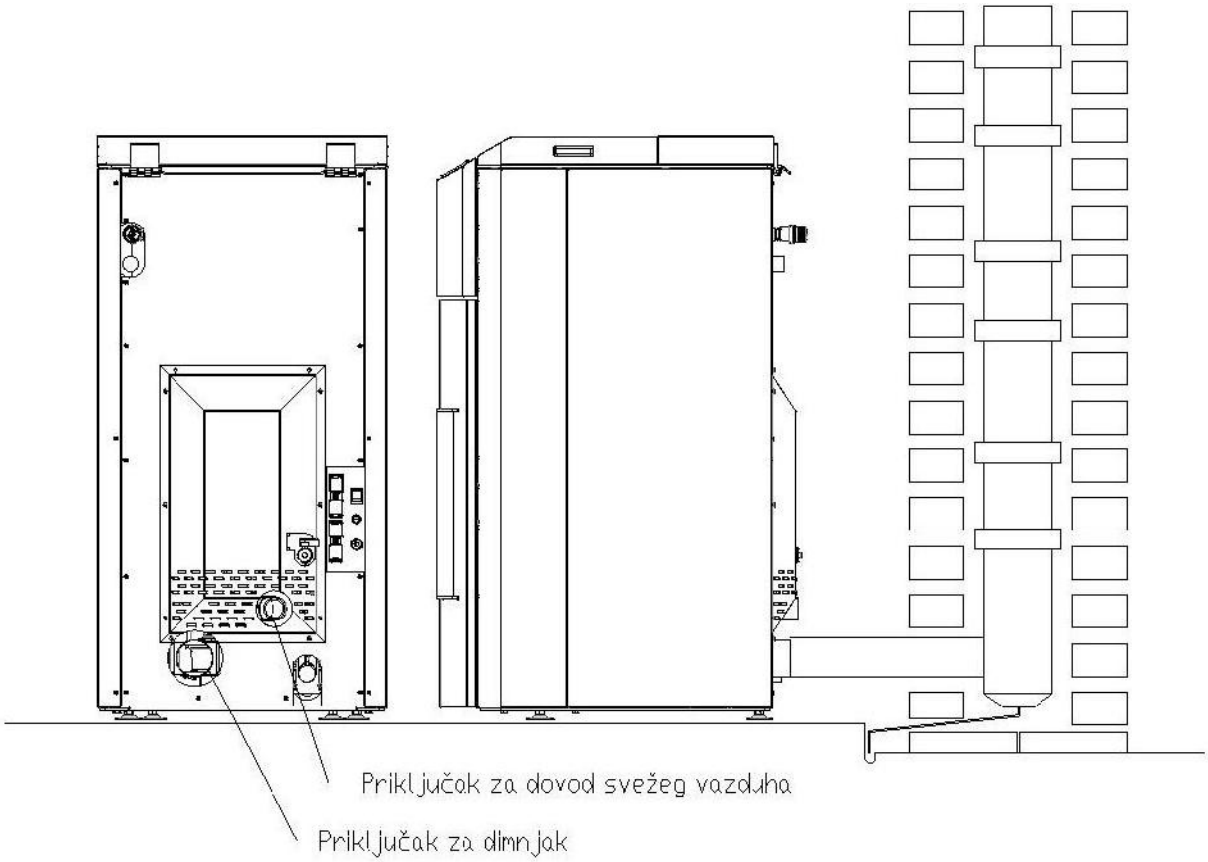

Slika 9.2. Prikaz priključenja na dimnjak

Kotao ***BIOluxe*** **UNI 20** radi sa prinudnom promajom i to jednog ventilatora, ali ipak treba ispoštovati pravila za odabir dimnjaka kao da se radi o kotlu sa blagim potpritiskom u ložištu na neko drugo gorivo, kao na lož ulje na primer**.** Poprečni presek dimnjaka treba da bude 130mm. U suprotnom može doći do problema u radu.

Preporuka je da prečnik dimnjaka bude veći od prečnika dimnjače kotla.

Treba izbegavati ako je moguće lukove,a ako nije onda je maksimalni broj lukova(2).Dimni kanal od kotla do dimnjaka poželjno je izolovati,posebno ako ima lukova i dužih deonica.

U kućištu ventilatora izduvnih gasova fabrički je ugrađena sonda dimnih gasova.Pre puštanja u rad proveriti da li je posle transporta još uvek na svom mestu, jer bez pravilno postavljene sonde nema ni rada kotla. ***Potrebna promaja dimnjaka je 12Pa.***

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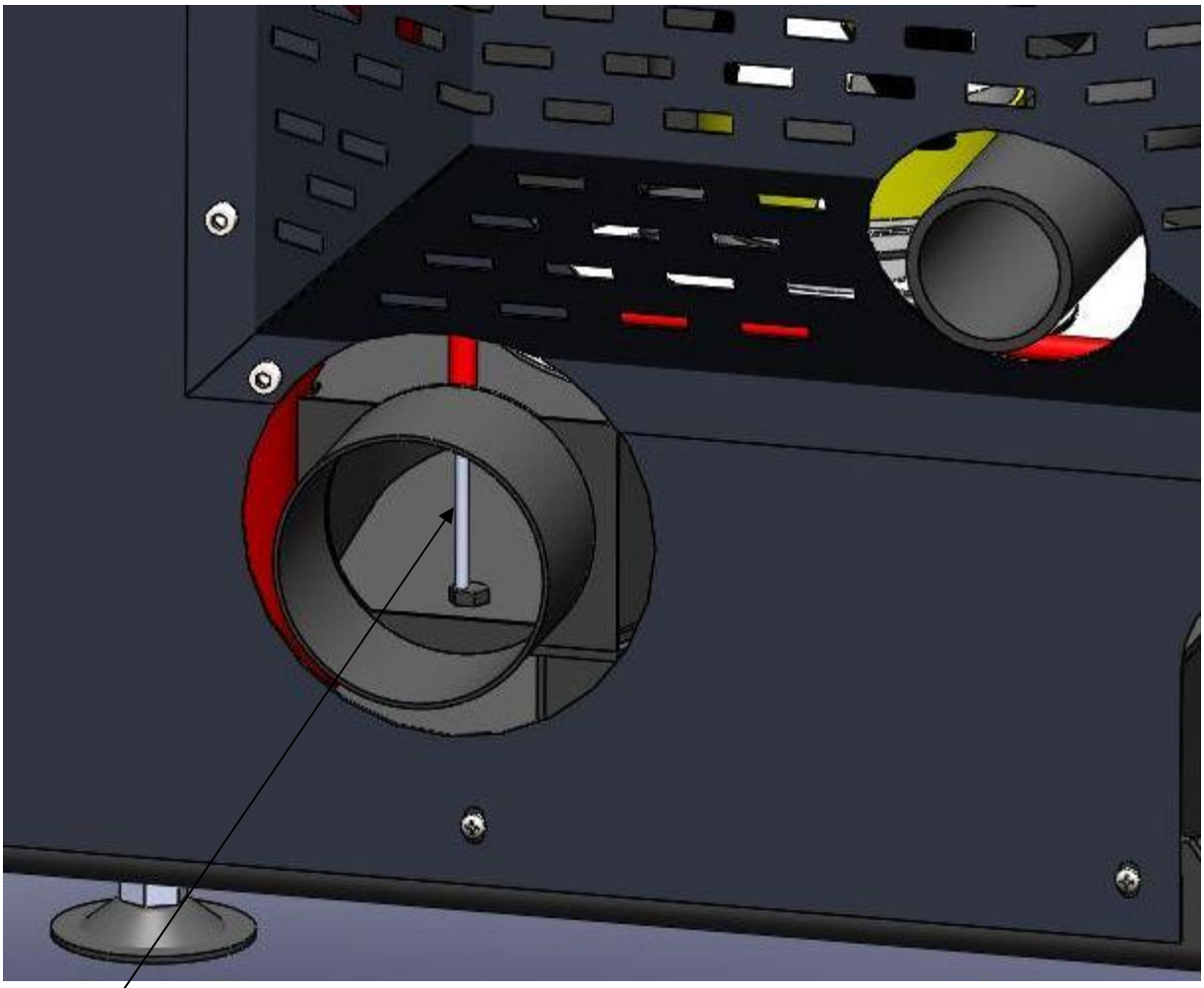

Slika 9.3 Mesto gde je fabrički postavljena sonda dimovodnih gasova

Sam dimnjak treba da je napravljen od keramičkih cevi,oko njih treba da je izolacija debljine 3-5cm i zadnji spoljni sloj je cigla ili specijalni dimnjački elementi.Ako dimnjak ipak nije od keramike već od cigle, površina svetlog preseka takvog dimnjaka mora da bude 30% veća nego ovakva površina keramičkog dimnjaka.
Dimnjak mora da ima i vratanca za čišćenje i ona moraju dobro da dihtuju.Izlaz dimnjaka na krovu mora da bude po određenim propisima.Razlikuju se dva slučaja:ako je ugao krova manji od 12° i ako je ugao krova veci od 12°.Za ugao manji od 12° visine dimnjaka iznad krova je 1m, a za ugao veci od 12° treba pogledati skicu.Dimnjak treba redovno da se čist ili barem jedanput godišnje.

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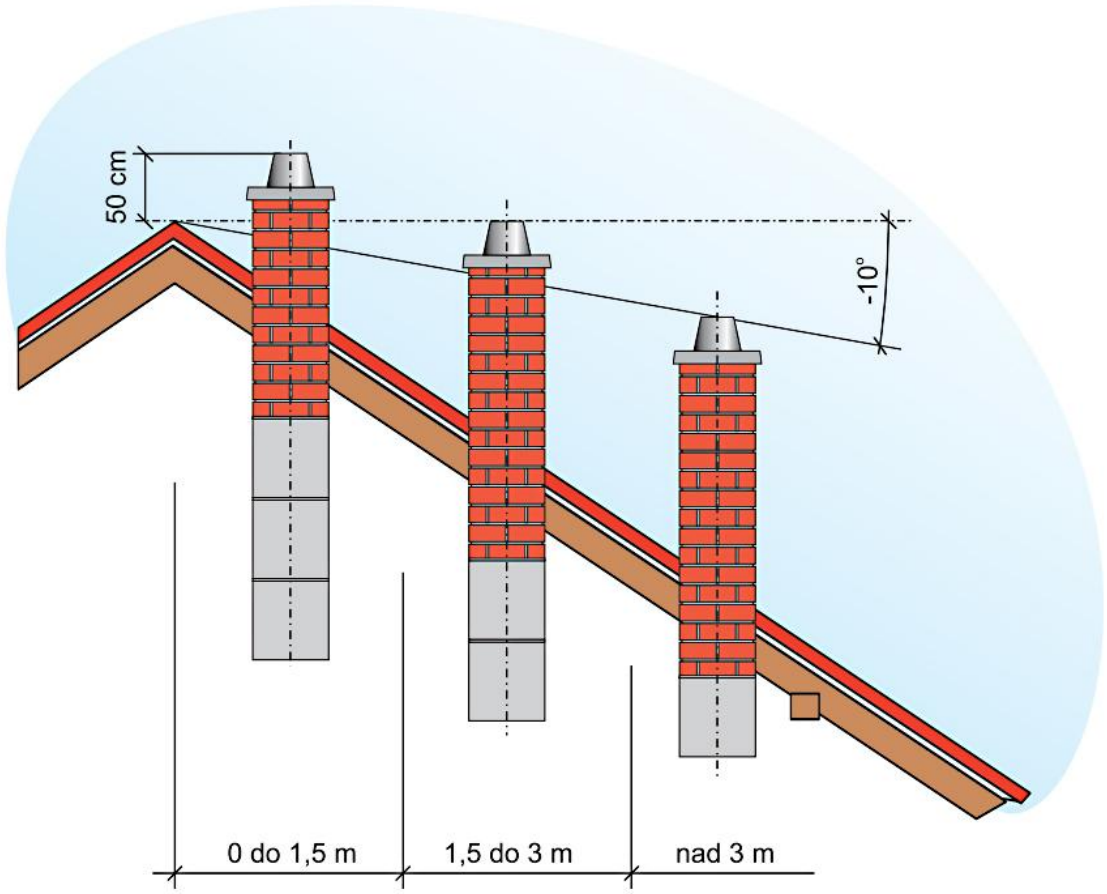

Slika 9.4

Ukoliko dimnjak nije propisne visine,poprečnog preseka ili ako se ne čisti moguće su komplikacije u radu kotla.Pre svega nije moguć visokotemperaturni rezim rada,tj.nema maksimalne radne snage,a posledice toga je pojava kondezacije što utiče na radni vek kotla.

Slab dimnjak je glavni razlog da u toku potpale kotla ili u toku rada imamo pojavu dima na gornjim ili donjim vratima,naročito pri većim brojevima obrtaja ventilatora.

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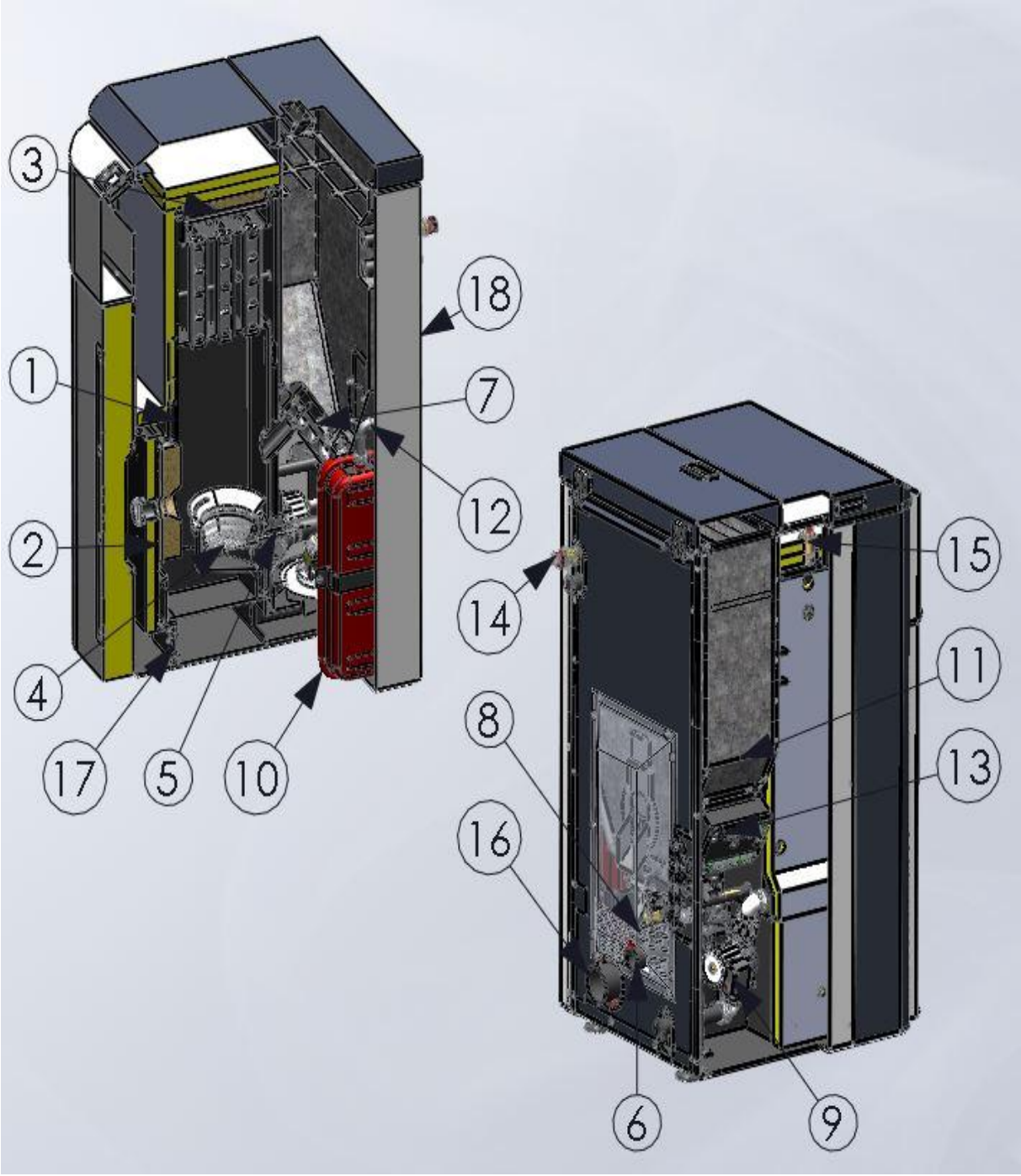
4. Presek kotla BIOlux-UNI 20 sa opisom elemenata



Slika 10. Presek sa opisom elemenata

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Opis (slika 10):

1. Izmenjivač kotla (telo kotla);
2. Unutrašnja vrata (za čišćenje šolje za sagorevanje i donjeg dela izmenjivača kotla);
3. Poklopac izmenjivača (za čišćenje gornjeg dela cevnog izmenjivača kotla);
4. Šolja za sagorevanje;
5. Elektro grejač;
6. Cev za dovod svežeg vazduha za sagorevanje;
7. Dozator;
8. Motor;
9. Cirkulaciona pumpa;
10. Ekspanzina posuda 10L;
11. Silos;
12. Fleksibilno crevo ekspanzione posude;
13. Automatika;
14. Sigurnosni ventil;
15. Odzračni ventil;
16. Dimnjača;
17. Poklopac dimovodne kutije;
18. Oplata kotla.

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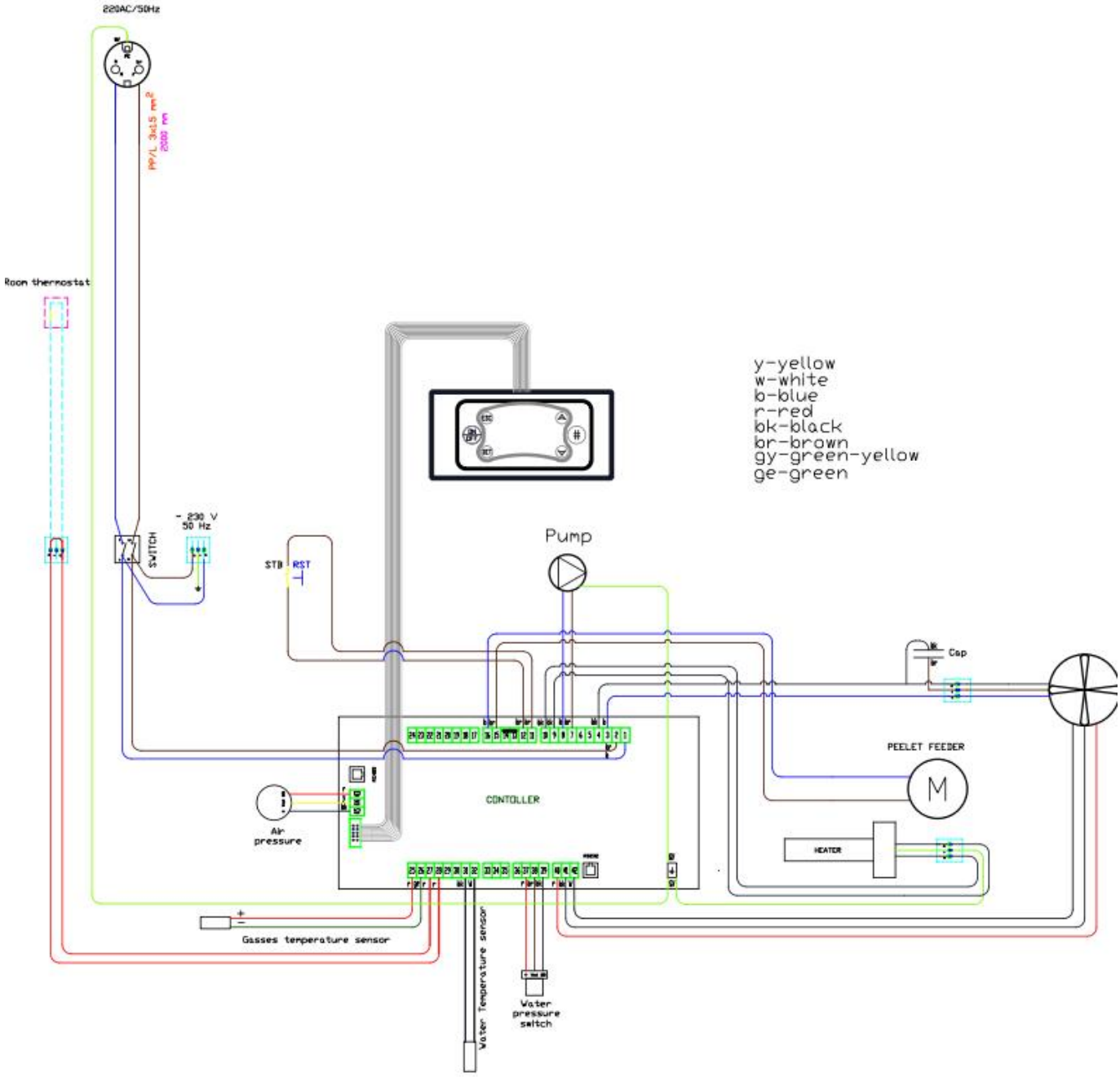
5. Šema vezivanja automatike



Slika 11. Šema povezivanja automatike

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Sve linije koje su prikazane isprekidano na šemi spoljnih priključenja su provodnici koje je potrebno da instalira tehničko lice prilikom priključenja spoljnih uređaja na automatiku kotla. Sva priključenja dodatnih uređaja tehničko lice obavlja preko tropolnog konektora koji se nalazi na zadnjem delu kotla. Tropolni konektor je za priključenje sobnog termostata što je prikazano na nalepnici samog konektora.

Sedmopolni konektor je za priključeni mrežni kabal, dok je preko drugog tropolnog konektora (pored sedmopolnog) priključena cirkulaciona pumpa.

Za sobne termostate bitno je da budu sa baterijskim napajanjem tj. da nemaju na sebi bilo kakav dovod napona 220 V.Na samom termostatu za povezivanje se koristi NC (normalno zatvoreni kontakt).

U slučaju oštećenja napojnog kabla, radi izbegavanja opasnosti, oštećeni napojni kabl mora zameniti proizvođač ili njegov ovlašćeni serviser ili neko kvalifikovano lice za to.

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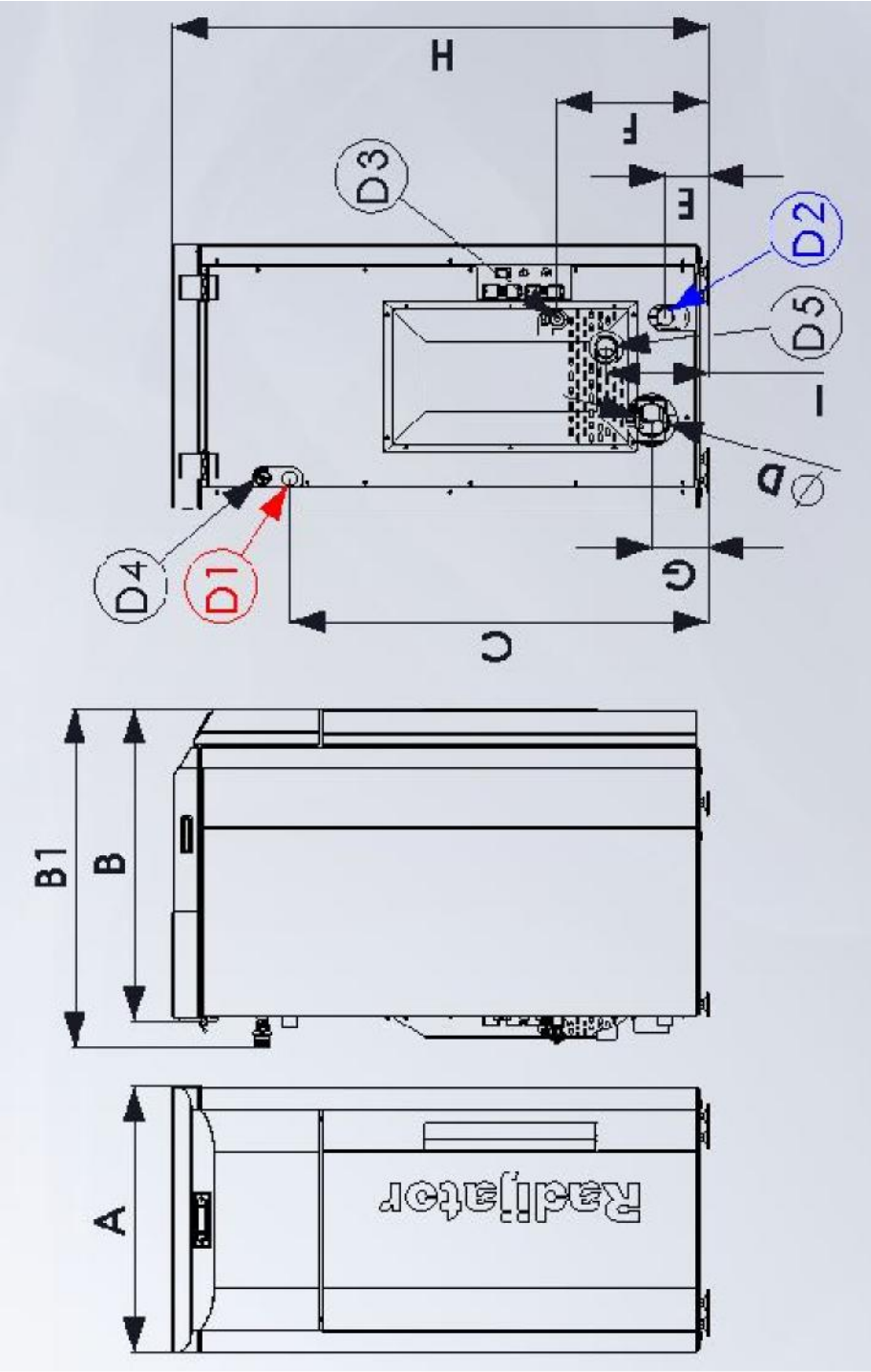
6. Tabela sa tehničkim podacima



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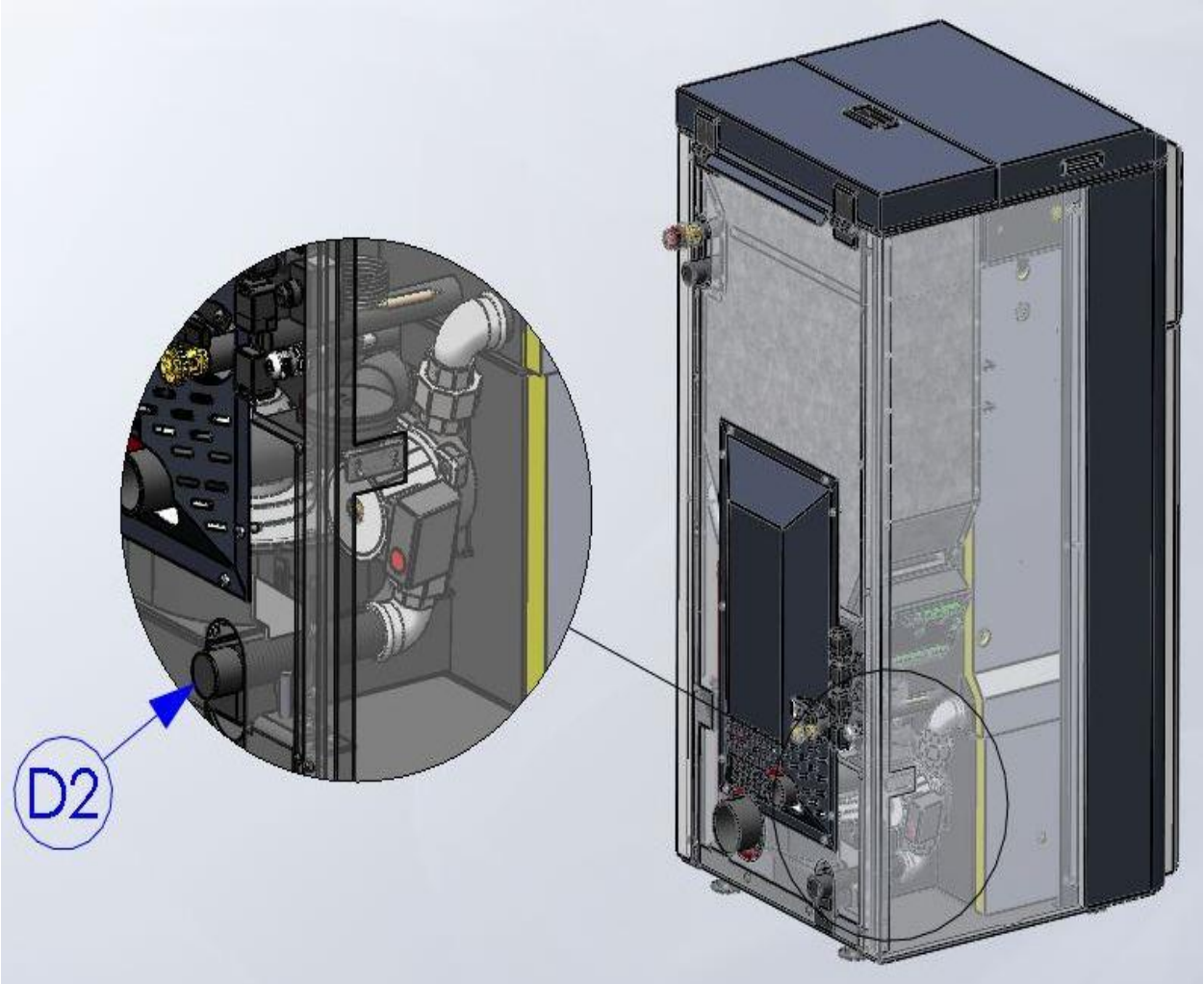

- **D1- priključak za toplu vodu iz kotla,**
- **D2- priključak za hladnu vodu iz kotla,**
- **D3- priključak za punjenje i pražnjenje,**
- **D4- priključak za sigurnosni ventil,**
- **D5- priključak za dovod svežeg vazduha,**

Napomena: Pumpa, ekspanziona posuda, ventil za punjenje i pražnjenje(D3) i sigurnosni ventil (D4) već su postavljeni na kotlu.

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TIP KOTLA		*BIOlux* UNI 20
CE oznaka		CE
Klasa kotla po EN 303-5:2012		5
Radni pritisak	**bar**	3
Probni pritisak	**bar**	4,5
Zapremina vode u kotlu	**L**	40
Težina	**kg**	267
Minimalni poprečni presek dimnjaka	**mm**	130
Potrebna promaja dimnjaka	**mbar/Pa**	0,12/12
Temperatura kotla (min / max)	**°C**	60-90
Minimalna temperatura povratnog voda	**°C**	60
Stepen iskorišćenja pri nominalnoj/minimalnoj toplotnoj snazi	**%**	90,24/91,22
Nominalna snaga	**kW**	19,75
Minimalna/ Maksimalna snaga kotla	**kW**	5,85/19,75
Emisija ugljen monoksida (Co) pri minimalnoj toplotnoj snazi (10%O2)	**mg/m3**	89,19
Emisija ugljen monoksida (Co) pri nominalnoj topl.snazi (10%O2)	**mg/m3**	158,51
Emisija prašine pri nominalnoj/minimalnoj toplotnoj snazi (10%O2)	**mg/Nm3**	17,60/19,58
Dimenzije		
	A	628
	B	738
	B1	799
	C	986
	ØD	80
	E	100
	F	356
	G	134
	H	1264
	I	241
Priključak za toplu vodu iz kotla	**D1**	1"
Priključak za hladnu vodu kotla	**D2**	1"
Priključak za punjenje i pražnjenje	**D3**	1/2"
Priključak za ventil sigurnosti	**D4**	1/2"
Priključak za dovod svežeg vazduha	**D5**	6/4"

***zadržavamo pravo izmene**

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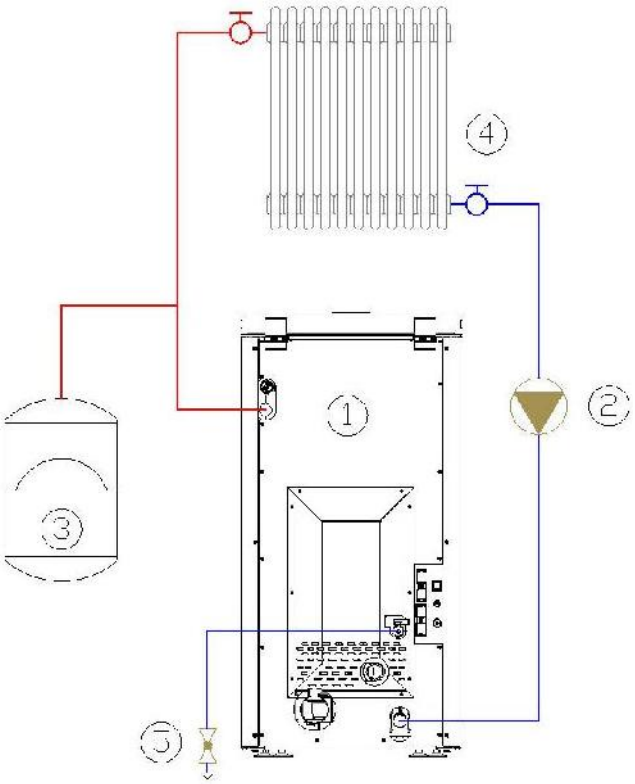
7. Hidraulička šema



Slika 12. Hidraulička šema

Opis (slika 12):

1. Kotao BIOlux UNI 20;
2. Cirkulaciona pumpa;
3. Ekspanzina posuda 10L;
4. Izmenjivač – radijator;
5. Ventil za punjenje i pražnjenje;

NAPOMENA: U sklopu kotla **BIOlux UNI 20** ulazi i pumpa i ekspanzivna posuda od 10l.

Prilikom montaže na hidrauličku instalaciju kotao mora biti obezbeđen na propisan način od prekoračenja maksimalne radne temperature i pritiska.

Za propisnu montažu odgovoran je instalater centralnog grejanja koji priključuje kotao na hidraulički sistem.

Radijator inženjering ,kao proizvođač kotla, ne preuzima nikakvu odgovornost za štete prouzrokovane lošim instaliranjem kotla.

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8. Start rada kotla *BIOlux* UNI 20 i održavanje

Prvo puštanje kotla u rad obavlja tehničko lice koje ima sertifikat izdat od strane Radijator Inženjeringa. Obavezna je obuka korisnika kotla.

Na taj način to lice je ovlašćeno da prijavi servisnoj službi u samoj fabrici vreme kada je kotao počeo da radi i u kakvom je stanju kotao bio prilikom prvog paljenja, dok kopiju izveštaja o puštanju kotla u rad zadržava. Garancija i upustvo za upotrebu se daje kupcu. Jedan primerak garancije se šalje proizvođaču.
Ako garancija nije ispunjena, ona nije važeća.

Samo kotlovi koji su pušteni u rad od strane ovlašćenog tehničkog lica podležu uslovima kompletne garancije od dve godine.
Naredni tekst je namenjen samom korisniku kotla,kao jedna vrsta podsetnika,da ako ugasi kotao (npr. zbog čišćenja) bude u stanju da samostalno pokrene kotao.

Parametri vezani za rad kotla, a koji su dostupni korisniku su na samom displeju.Ostale parametre koji su u tzv. skrivenom meniju ne treba menjati bez saglasnosti tehničkog lica koje je pustilo kotao u rad ili same fabrike.

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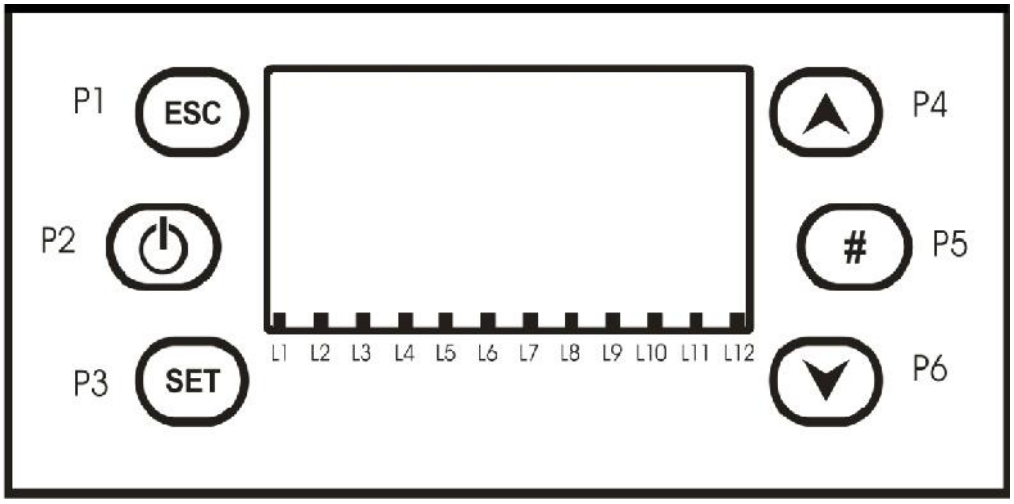
8.1 Displej automatike



Slika 13. Slika i šematski prikaz displeja automatike

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Tasteri:

Funkcije	Opis	Taster
Uključi/ Isključi	Funkcija paljenja, gašenja pritiskom na dugme 3 sekunde do zvučnog signala.	
Odblokirati	Funkcija odblokiranja, kada je sistem u blokadi pritiskom na dugme 3 sekunde do zvučnog signala uklanjate blokadu.	**P2**
Izmena vrednosti menija i podmenija	U sistemu izmene promeniti vrednosti u meniju ili podmeniju.	**P4**
Ulazak u meni ili podmeni	U meniju startovanje podmenija i menija.	**P6**
Vizuelizacije	Ulazak i startovanje vizuelnog menija.	
Esc	Funkcija izlaska pritiskom na taster.	**P1**
Meni	Funkcija ulaska u meni ili podmeni.	
Izmena	Ulazak u sistem izmene u meniju.	**P3**
Potvrditi	Sačuvati podatke u meniju.	
Resetovanje sistema održavanja 2 funkcije	Resetovanje tajmera **T67**.	**P5**

Diode:

Funkcije	Opis	Svetleća dioda
Grejač	Dioda uključena: Grejač u funkciji.	**L1**
Dozator	Dioda uključena: Dozator u funkciji.	**L2**
Pumpa	Dioda uključena: Pumpa u funkciji.	**L3**
Mešni ventil	Dioda uključena: Mešni ventil u funkciji.	**L4**
Izlaz V2 konfigurisan kao sigurnosni ventil peleta ili motor za dopunu peleta ili motor za čišćenje	Dioda uključena: Izlaz V2 u funkciji.	**L5**
Ventilator za sagorevanje	Dioda uključena: Ventilator za sagorevanje u funkciji.	**L6**
Izlaz Aux2 konfigurisan kao sigurnosni ventil peleta ili motor za dopunu peleta ili motor za čišćenje	Dioda uključena: Izlaz Aux2 u funkciji.	**L7**
Nivo peleta	Dioda uključena: Nedostatak peleta.	**L10**
Spoljni termostat	Dioda uključena: Spoljni termostat u funkciji.	**L11**
Senzor protoka*	Dioda uključena: Zahtev za sanitarnu vodu.	**L12**

* Samo za vodovodne instalacije sa senzorom za merenje protoka

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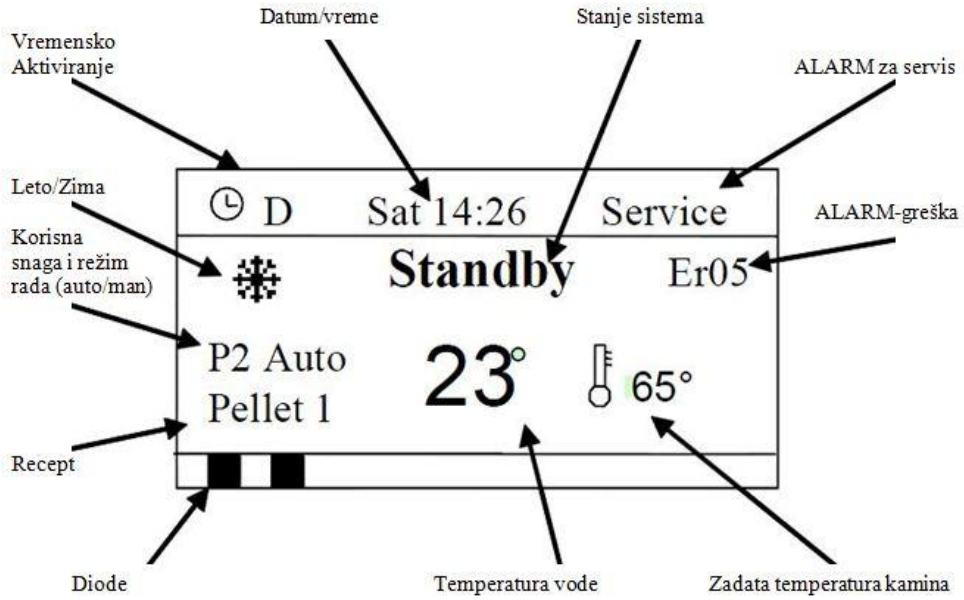
NAPOMENA: Diode L4, L5, L6, L7, L10 i L12 nisu u funkciji kod kotla *BIOlux* UNI 20.

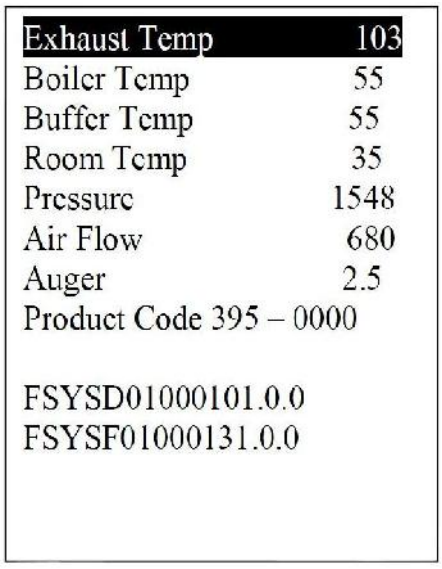
8.2 Kratko uputstvo za korisnika automatike.



Slika 14. Prikaz LCD ekrana na displeju

- **<u>Očitavanje trenutnog stanja kotla.</u>**
  Postupak:

  Pritisnuti taster **P6**  , nakon toga na ekranu se pojavljuju informacije (**slika 15**).



Slika 15. Prikaz stanja kamina na displeju

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NAPOMENA:Kod kotla *BIOlux* UNI 20 ne pojavljuju se informacije obeležene zvezdicom(*).

- **<u>Ulazak u MENI automatike i objašnjenje funkcija.</u>**
  Postupak:

  Pritisnuti taster **P3** 

, nakon toga na ekranu se pojavljuje padajuća lista (**slika 16**).

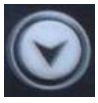
Meni		Opis
Chombustion Power		Meni koji omogućava da izaberete podešenu smagu kotla.
Boiler Thermostat		Meni koji omogućava da promenite zadatu temperaturu kotla.
Chrono	**Modality**	Meni za izbor programa: Dnevni, Nedeljni, Vikend, Onemogućiti.
	Program	Meni koji dozvoljava podešavanja tri navedena programa: Dnevni, Nedeljni, Vikend.
Recipe		Meni za izbor recepta.
Time and Date		Meni za podešavanje vremena i datuma.
Remote Control		Meni za omogućavanje daljinskog upravljača SYTX.
Calibration		Meni za podešavanje radnog vremena dozatora i brzine ventilatora.
Load		Meni koji omogućava rad dozirnog sistema (prvo i ponovno punjenje prilikom početka rada kotla), ako je sistem u OFF režimu.
Summer-Winter		Meni za odabir zimskog ili letnjeg režima.
Language		Meni za odabir jezika na LCD panelu.
Keyboard Menu		Meni za podešavanje kontrasta i svetla na LCD panelu.
System Menu		Meni za ulaz u sistemski meni.

Slika 16. Prikaz i objašnjenje MENI automatike

- **<u>Promeniti podešenu snagu kotla.</u>**
  Postupak:

  Pritisnuti taster **P3** 

, nakon toga na ekranu se pojavljuje padajuća lista, gde je i odmah markirana prva opcija **Chombustion Power**. Ponovo potvrditi tasterom **P3** 

, nakon toga pojavljuje se prikaz na displeju (**slika 17**). Tasterima **P4 ili P6**   zadajete podešenu snagu i na kraju ponovo potvrdite tasterom **P3** 

.

  Vratite se na osnovni prikaz displeja (**slika 16**), pritiskom na taster **P1** 

.

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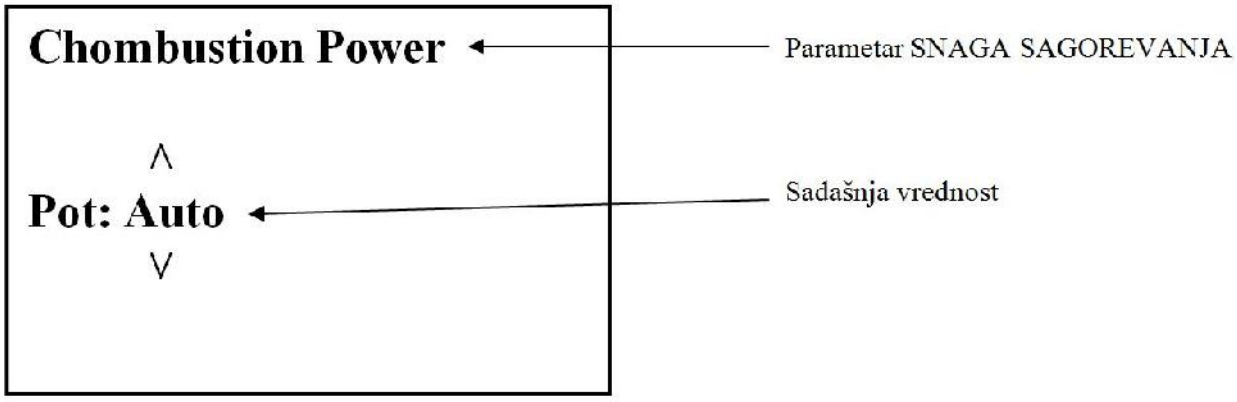

Slika 17. Prikaz i objašnjenje dislpeja u opciji Chombustion Power

NAPOMENA: Kod kotla *BIO Max* UNI 20 maksimalna podešena snaga je 3.

- **<u>Promeniti zadatu temperaturu vode u kotlu.</u>**
  Postupak:
  Pritisnuti taster **P3** 

, nakon toga na ekranu se pojavljuje padajuća lista, gde je i odmah markirana prva opcija **Chombustion Power**. Tasterima **P4 ili P6**  , dolazite do opcije **Boiler Thermostat**. Ponovo potvrditi tasterom **P3** 

, zatim tasterima **P4 ili P6**  zadajete temperaturu i na kraju ponovo potvrdite tasterom **P3** 

. Vratite se na osnovni prikaz displeja (**slika 14**), pritiskom na taster **P1** 

.

- **<u>Promeniti tačno vreme i datum.</u>**
  Postupak:
  Pritisnuti taster **P3** 

, nakon toga na ekranu se pojavljuje padajuća lista, gde je i odmah markirana prva opcija **Chombustion Power**. Tasterima **P4 ili P6**  , dolazite do opcije **Time and Date**.

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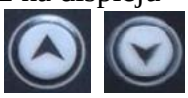
Ponovo potvrditi tasterom **P3** 

nakon čega se pojavljuje prikaz na displeju **podešavanje vremena i tačnog datuma** gde preko tastera **P4 ili P6**  prelazite sa opcije na opciju, a preko tastera **P3** 

potvrđujete komandu i menjate joj vrednosti opet preko tastera **P4 ili P6**  . Kada se izabere željena vrednost potvrđuje se tasterom **P3** 

. Za izlazak i vraćanje korak unazad koristite taster **P1** 

.

- **<u>Postaviti vremensko programiranje paljenja i gašenja kotla.</u>**
  <u>(ovu opciju koristite SAMO AKO STE PRETHODNO POSTAVILI TAČNO VREME I DATUM)</u>

  Što se vremenskog programiranja tiče, u samoj opciji postoje dve podopcije, a to su: **Modality** i opcija **Program.**

  <u>Modality</u> opcija služi za odabir načina programiranja, dakle da li ćete programiranje koristiti na dnevnom nivou,svaki dan posebno (**Daily**) (npr.Ponedeljak,Utorak,Sreda... Nedelja), na nedeljnom nivou (**Weekly**) (od Ponedeljka do Nedelje), i na vikend nivou (**Week-end**) (od Ponedeljka do Petka-posebno i od Subote do nedelje-posebno). Takođe, možete totalno isključiti opciju Chrono (**Disible**).

  <u>Program</u> opcija služi za programiranje gore navedenih opcija **Daily**,**Weekly** i **Week-end**, odn.podešavanje tačnog vremena startovanja i prekida rada kotla.

  Postupak:
  Najpre, treba odlučiti kako želite programirati vreme puštanje i gašenja, da li će to biti dnevna, nedeljna ili vikend opcija. Ukoliko se odlučite za jednu od navedenih odabir ćete uraditi na sledeći način.

  Pritisnuti taster **P3** 

, nakon toga na ekranu se pojavljuje padajuća lista, gde je i odmah markirana prva opcija **Chombustion Power**. Tasterima **P4 ili P6**  , dolazite do opcije **Chrono**. Ponovo potvrditi tasterom **P3** 

(pojavljuju se dve

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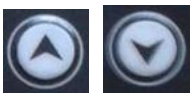
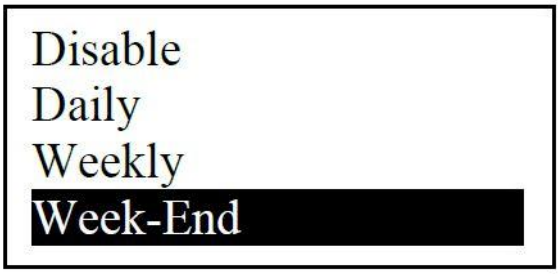
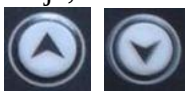
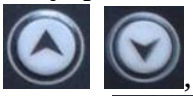
opcije **Modality** i **Program**), zatim tasterima **P4 ili P6**  dolazite do željene opcije **Modality** i potvrđujete je tasterom **P3**  . Nakon toga, u podmeniju nailazite na opcije **Daily**, **Weekly**, **Week-end** i **Disable** (**prikazano na slici 18**). Tasterima **P4 ili P6**  odaberite jednu od njih i potvrdite tasterom **P3**  .

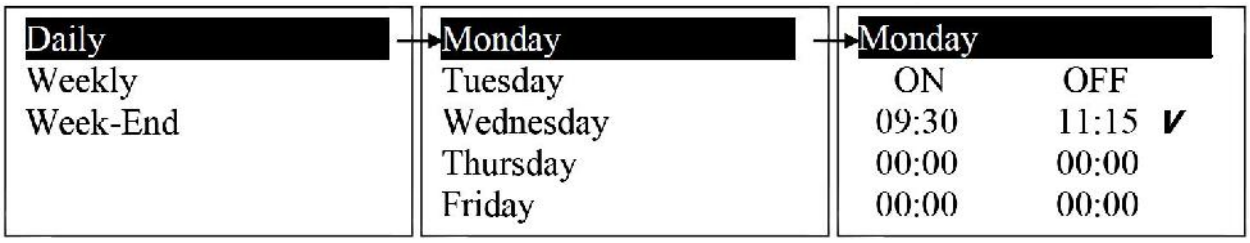


Slika 18. Prikaz displeja nakon odabira opcije MODALITY

Kada ste izabrali način programiranja, automatski se vraćate na prikaz displeja **Modality** i **Program**. Tasterima **P4 ili P6**  prelazite na opciju **Program** i potvrđujete tasterom **P3**  .

U ovoj opciji programirate tačno vreme paljenja i gašenja kotla koje ste prethodno odabrali u opciji **Modality**. Primeri programiranja prikazani su na **slikama 19,20 i 21**.

I dalje za prelazak koristite tastere **P4 ili P6**  , za potvrdu taster **P3**  , za potvrdu odabrane vrednosti potvrditi tasterom **P5**  , i za vraćanje korak unazad taster **P1**  .



Slika 19. Prikaz displeja nakon odabira opcije Daily

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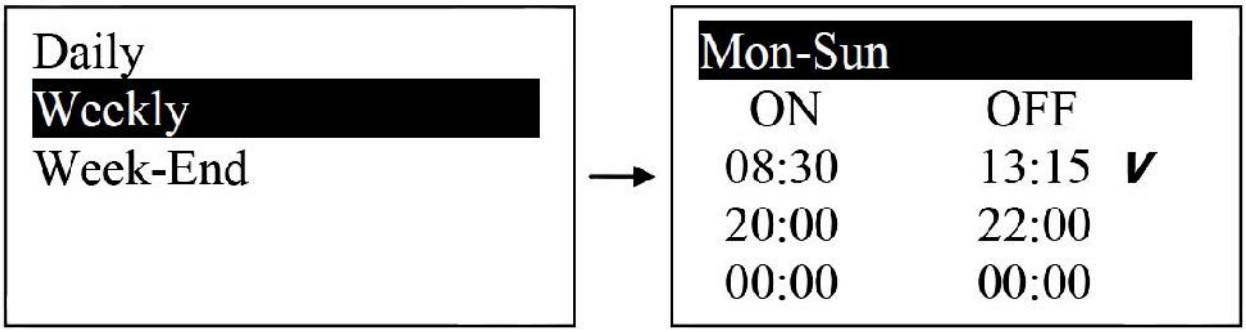
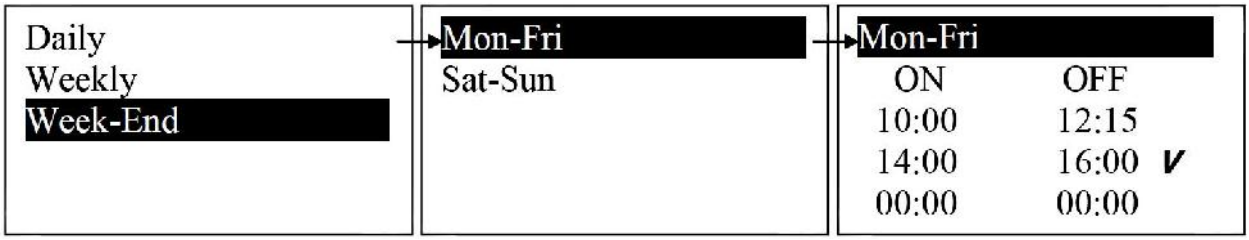


Slika 20. Prikaz displeja nakon odabira opcije Weekly



Slika 21. Prikaz displeja nakon odabira opcije Week-end

8.3 Start rada kotla *BIOflux* UNI 20

- ***KORAK 1:*** Kotao ***BIOflux*** **UNI 20** priključen na hidraulički sistem.
- ***KORAK 2:*** Sipati pelet u silos.
- ***KORAK 3:*** Uključiti kotao.
- ***KORAK 4:*** Pokrenuti dozirni sistem kako bi prva zrna peleta upala u šolju za sagorevanje. ***(Ovaj postupak može se primeniti samo dok je automatika u OFF režimu(slika 14 – stanje režima))***
  Postupak:
  Pritisnuti taster **P3** 

, zatim tasterima **P4 ili P6**  u podmeniju dolazite do funkcije **LOAD**, potvrdite tasterom **P3** 

, tasterom **P4 ili P6**   preći sa **OFF** na **ON**, potvrditi sa tasterom **P3** 

. Potvrdom na taster pokreće se dozer, sve dok prva zrna peleta ne počnu da upadaju u šolju za sagorevanje. Nakon toga, takođe tasterom **P4 ili P6**  prelazite sa **ON** na **OFF**, potvrditi sa tasterom **P3** 

. Dozator tada staje sa radom. Tasterom **P1** 

izađite iz podmenija.

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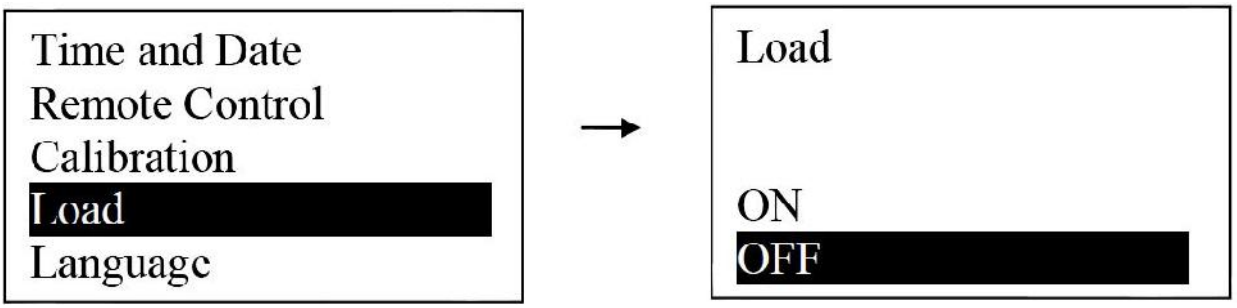

Slika 22. Prikaz displeja prilikom odabira funkcije LOAD

- ***KORAK 5:*** Startovati kotao ***BIO*** **UNI 20**.
  Postupak:

  Pritisnite taster **P2** 

, zadržite 2-3 sekunde do zvučnog signala. Tada na displeju piše „**Ignition**" (**slika 14-stanje sistema**). Kotao je krenuo u rad.

  U uslovima kada je pelet prema standardima i kada su ispunjeni svi ostali uslovi dimnjaka i protoka vazduha, proces sagorevanje počinje za 7 do 10min.

  Prilikom prve potpale treba očekivati nešto pojačanu pojavu dima i oštrih mirisa sve dok fabrički premazi protiv korozije ne završe sa finalnim sušenjem odn. dogorevanjem.

  Isti postupak koristimo za gašenje kotla, dakle dužim pritiskom tastera **P2** 

 do zvučnog signala prelazimo u gašenje kotla.

- Na automatiku može biti povezan sobni termostat. U ovom slučaju, važno je podesiti temperaturu prostorije koja je glavni parametar za rad kotla i temperaturu vode u kotlu (70˚C). Kada je aktiviran rad sobnog termostata, kotao najpre ima zahtev za postizanjem temperature sobe, stim da je ograničen zadatom temperaturom vode u njemu. Postoji mogućnost da kotao prestane sa radom pre zadate temperature sobnog termostata, u ovom slučaju treba podići zadatu temperaturu vode u kotlu npr.70˚C.

Upozorenje: Obavezno izvršiti analizu dimnih gasova nakon završetka instalacije kotla. Izmeriti procenat kiseonika (O_2).

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8.4 Greške prilikom startovanja i u toku rada kotla *BIOlux* UNI 20.

Sve moguće greške u početnoj fazi rada tj. prilikom potpale mogu pa i u samom radu automatika prijavljuje na displeju. (**slika 14**-ALARM greška).

Oznake grešaka i objašnjenja prikazane su u sledećoj tabeli.

Er01	**Greška -** pažljivo visoki napon 1. Takodje i sa isključenim sistemom
Er02	**Greška -** pažljivo visoki napon 2. Samo ako je ventilator uključen
Er03	**Greška -** Gašenje kada je temperature dimovodnih gasova ispod predviđene.
Er04	**Greška -** Gašenje kada je temperature vode iznad zadate.
Er05	**Greška -** Gašenje kada je temperature dimovodnih gasova preko predviđene.
Er07	**Greška -** kodera.Ova greška se javlja zbog nedostatka signala kodera
Er08	**Greška -** kodera. Ova greška se javlja u slučaju prilagodjavanja problema na brojaču
Er09	**Greška -** Slab pritisak vode
Er10	**Greška -** Visok pritisak vode
Er11	**Greška -** pravog vremena na satu
Er12	**Greška -** Gašenjene nije uspelo zbog potpale
Er15	**Greška -** Nedostatak napona
Er17	**Greška -** na regulatoru protoka vazduha
Er18	**Greška -** Nedostatak peleta
Er39	**Greška -** Pokvaren senzor regulatora protoka vazduha
Er41	**Greška –** Nije postignut minimalni protok vazduha
Er42	**Greška -** Maksimalni protok vazduha iznad predviđenog.

Svi mogući problemi i zastoji u radu ovog uređaja mogu se podeliti u dve velike grupe.

- **Grupa I.** Zastoj u radu prilikom prve potpale i to prve potpale uopšte posle kupovine kotla ili prvog kretanja u rad u toku dana.
- **Grupa II.** Zastoj koji se javlja kad je kotao već bio u radnom procesu, na displeju je postojalo obaveštenje (Run Mode), ali posle dostizanja zadate temperature i mirovanja gubi kontinuitet sagorevanja.

Grupa I

Najčešća signalizacija na displeju vezana za ovu vrstu grešaka je **Er12**.

Prilikom prve potpale po ugradnji kotla na hidro instalaciju treba slediti uputstva iz odeljka "**Start rada kotla *BIOlux* UNI 20** ".
Naročito obratiti pažnju na dimovod (prečnik, broj lukova, dihtovanje, …), kao i na dimnjak (prečnik, visina, izolovanost, dihtovanje revizionih otvora, zaprljanost dimnjaka, itd.).

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Ako posle prvog pokušaja paljenja nema značajne pojave plamena i ozbiljnijeg porasta temperature dimnih gasova, na displeju se javlja signal da je grejač potpale aktiviran, a ipak kotao ide u fazu gašenja (Extingushing). U ovom slučaju treba proveriti sledeće uzroke:

Moguć **uzrok 1.**

- **PROBLEM 1.** Loš kvalitet peleta. Pelet male snage, povećane vlažnosti.
- Postupak za rešavanje **PROBLEMA 1.** Uzeti pelet proverenog kvaliteta i probati.

Moguć **uzrok 2.**

- **PROBLEM 2.** Temperatura vazduha (koji je doveden kotlu za sagorevanje i potpalu) je izuzetno niska (ispod nule).
- Postupak za rešavanje **PROBLEMA 2.** Podizanje vremena predgrevanja grejača za potpalu, t02, na vrednost 30 – 40 sekundi.

Moguć **uzrok 3.**

- **PROBLEM 3.** Mrežni napon na koji je priključen kotao je znatno manji od 220-230V, tako da je i snaga grejača manja.
- Postupak za rešavanje **PROBLEMA 3.** Podizanje vremena predgrevanja grejača za potpalu, t02, na vrednost 30 – 40 sekundi. Ako ova mera ne daje rezultate onda priključiti mrežni ispravljač napona.

Moguć **uzrok 4.**

PROBLEM 4. Količina peleta u komori za sagorevanje je nedovoljna za kretanje kotla u rad.

- Postupak za rešavanje **PROBLEMA 4.** Mogući su mehanički problemi sa pelet transporterom. Proveriti ispravnost dozatora.

Moguć **uzrok 5.**

- **PROBLEM 5.** Postoje situacije u kojima dođe do plamena, ali proverom dimnih gasova jasno se vidi da nema dovoljno peleta da kotao pređe iz faze stabilizacije (Stabilization) u radni režim (Run mode). Do ovakve pojave dolazi jer je struktura peleta (dužina, lepljivost, količina prašine, itd.) takva da vreme fiksnog nalaganja t03 nije dovoljno.
- Postupak za rešavanje **PROBLEMA 5.** Ovaj problem se otklanja produžavanjem vremena fiksnog nalaganja, t03. Preporuka da se ovo vreme produžava oprezno,prvo za desetak, petnaest sekundi, pa ako i to nije dovoljno onda za još pet itd. Posle toga rešavanje problema kombinovati sa postupkom iz sledeće tačke.

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Moguć **uzrok 6**.

- **PROBLEM 6.** Posle faze fiksnog nalaganja (t03) dođe do uspostavljanja plamena, ali u ovoj fazi t04, za vreme trajanja ovog perioda nije moguće preći u stabilizaciju (Stabililation), pa plamen postaje sve slabiji tako da dođe do pada temperature dimnih gasova i gašenja (Extinguishing). Do ovog problema dolazi zbog različitog kvaliteta peleta.
- Postupak za rešavanje **PROBLEMA 6.** Smanjiti vreme t04. Preporuka je da to radite oprezno. Moguće je ovaj postupak kombinovati sa rešenjem iz prethodne tačke.

Moguć **uzrok 7.**

- **PROBLEM 7.** Kotao je povezan sa sobnim termostatom. Povećanjem zadate temperature na sobnom termostatu ne dolazi do kretanja kotla u fazu potpale (Ignition) i ne dolazi do aktiviranja grejača za potpalu.
- Postupak za rešavanje **PROBLEMA 7.** Proveriti da li je temperatura u sobi zaista manja od zadate. Takođe proveriti vremensko programiranje sobnog termostata i na kraju proveriti ispravnost sobnog termostata.

Grupa II

Najčešća signalizacija na displeju vezana za ovu vrstu grešaka je **Er03**.

Moguć **uzrok 1.**

- **PROBLEM 1.** Kotao je potpalio, bio u radnom režimu (Run mode), ali je došlo do zastoja kad je stao pa ponovo dobio zahtev za radom ili od kotlovskog termostata ili sobnog termostata. Komora za sagorevanje je u takvim situacijama puna nesagorelog peleta.
- Postupak za rešavanje **PROBLEMA 1.** Proveriti vrednosti parametara A26,Th28 i Th06. Možda je došlo do menjanja njihovih vrednosti slučajno. Parametar A26 treba da bude 1, parametar Th06 od 60 do 65, dok parameter Th 28 u svakom slučaju barem za dva stepena manji od Th06. U ovakvim slučajevima treba promeniti parametre, isprazniti komoru (šolju za sagorevanje) i startovati ponovo kotao.

Moguć **uzrok 2.**

- **PROBLEM 2**. Kotao je potpalio, ušao u radni režim (Run mode), ali vremenom dolazi do sve većeg nagomilavanja peleta po dnu komore za sagorevanje.Vremenom nesagoreli pelet popunjava komoru za sagorevanje i dolazi do smanjenja plamena i odlaska kotla u gašenje (Extingushing).

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- Postupak za rešavanje **PROBLEMA 2.** Povećati snagu ventilatora.Najbolje je povećati snage ventilatora u svim režimima i to preko funkcije kalibracije (Calibration- Exhaust fan).

Moguć **uzrok 3**.

- **PROBLEM 3**. Kotao radi,ali u toku rada dolazi do zastoja i signalizacije na displeju Modulation, a zatim i sigurnosnog gašenja (Extingishing). Na kraju displej signalizira grešku Er05.
- Postupak za rešavanje **PROBLEMA 3.** Do ovoga dolazi jer su dimni gasovi prevelikih temperatura. Najčešći razlozi su zaprljanost kotla, prejak dimnjak, prejaki ventilatori u radnom režimu, preveliko nalaganje peleta, karakteristike peleta, itd. Zastoj je moguće otkloniti prilagođavanjem nekog od parametara ili povećanjem parametara za odlazak kotla u modulaciju i sigurnosno gašenje zbog dimnih gasova, a to su parametri Th07,Th08.

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8.5 Održavanje i čišćenje kotla *BIOlux* UNI 20.

Kotao ***BIOlux*** **UNI 20** zahteva svakodnevno i periodično čišćenje.

- Svakodnevno čišćenje se odnosi i na prostor samog ložišta odn. šolje za sagorevanje gde stalnim izbacivanjem pepela omogućavamo bolji rad elektro grejača za potpalu i bolje sagorevanje tj.veću količinu vazduha kroz proreze na šolji. Takođe pepeo već u toku dana počinje da se taloži na podu,prostoru oko samog ložišta. Pri prosečnim parametrima sagorevanja 100kg peleta proizvede 1kg pepela.

- Na svakih 3 do 4 dana potrebno je očistiti samu šolju za sagorevanje **(slika 23)**. Takođe potrebno je očistiti naslage na zidovima samog ložišta. Ovim dobijamo bolji stepen prenosa jer jedan milimetar naslaga katrana i čađi smanjuje provodnost za 5%.

- Jednom u dve nedelje potrebno je otvoriti i gornji poklopac za čišćenje,izvaditi turbulatore i sa celog tada dostupnog dela kotla skinuti katran i čađ **(slika 23)**. Sve što se tada skine pokupi se kroz samo ložište. Takođe u tom periodu treba skinuti i dimnjaču sa zadnje strane kotla sa koje treba očistiti pepeo i garež (**NAPOMENA: Obratiti pažnju na sondu dimovodnih gasova prilikom skidanja dimnjače**).

Ukoliko se u kotlu,tokom korišćenja javi kondenzacija,potrebno je pokupiti kondenz, a ceo kotao iznutra premazati baznim sredstvima za čišćenje ili barem vodenim rastvorom građevinskog kreča. Na taj način se vrši neutralizacija kiselina usled kondenzacije.

Pri održavanju i servisiranju kotla, kotao isključiti sa napajanja.

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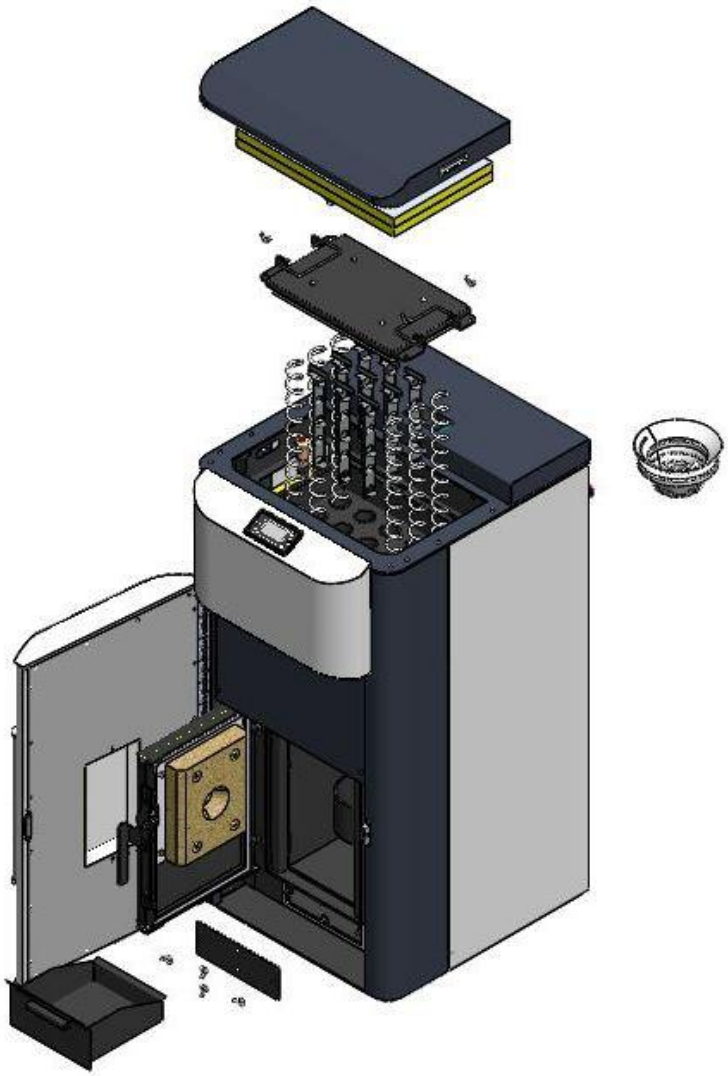

Slika 23. Prikaz elemenata koji se rasklapaju prilikom čišćenja

Na ovaj način obavezno konzervirati kotao na kraju grejne sezone. U toj situaciji zatvoriti i sve otvore na kotlu da ne dodje do cirkulacije vazduha kroz kotao jer i tako može doći do pojave vlage u kotlu.

Održavanje kotla je jedan od najbitnih faktora za duži radni vek kotla. Naročito je bitno da u vansezoni kotao bude očišćen i da se izvrši neutralizacija kiselina na već opisan način.

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8.6 Natpisna pločica

Natpisna pločica je nalepljena na dobro vidljivo mesto na kotlu i sadrži sledeće (videti sliku u tački NALEPNICE):

1.Tehnički podaci sa nalepnice:

- Proizvođač (Radijator Inženjering)
- Serijski broj kotla (primer: N°:171115001)
- Godina proizvodnje (primer: 2015)
- Tip kotla (***BIO lux*** **UNI 20**)
- Nazivna toplotna snaga kotla (19,75kW)
- Područije upotrebe toplotne snage (5,85 – 19,75 kW)
- Potrebna promaja dimnjaka (12Pa)
- Električni napon (230V)
- Frekvencija (50Hz)
- Jačina struje (3,04A)
- Nazivna el. snaga (500W)
- Maksimalna dodatna el. snaga (200W)
- Ukupna el.snaga (700W)
- Masa kotla (267 kg)
- Količina vode u kotlu (40 L)
- Peta klasa kotla po EN 303-5(5)
- Gorivo (C1)
- Maksimalni pritisak (3bar)
- Maksimalna temperatura (90˚C)

2. Nalepnica uvoznika
3. OEEO
4. Ostale oznake na kotlu

CE

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8.7 Izjave

Radijator INŽENJERING

IZJAVA O USAGLAŠENOSTI

U skladu sa direktivom 2006/42/EC o mašinama
Prilog II, deo 1, odeljak A

U ime: ''RADIJATOR Inženjering-a'' d.o.o. /Živojina Lazića Solunca 6, 36000 Kraljevo, Srbija

IZJAVLJUJE

S potpunom odgovornošću da:

Grejni kotlovi na pelet serije BIO*lux* nominalne toplotne snage: **BIO*lux* UNI 20** - 19,75kW.

ispunjavaju zahteve: Direktive 2006/42/EC o mašinama (stupila na snagu 29/06/2006),

i zahteve sledećih direktiva i propisa:
1. Direktive 2004/108/EC Evropskog Parlamenta i Saveta od 5. Decembra 2004 o približavanju zakonodavstava država članica u vezi elektromagnetne kompatibilnosti (tekst značanjan za EEP) i stavljanja van snage Direktive 89/336/EEC;
2. Direktive 2006/95/EC Evropskog Parlamenta i Saveta od 12. Decembra 2006 o usklađivanju zakonodavstava država članica u vezi električne opreme namenjene za upotrebu u okviru određenih granica napona (kodifikovana verzija) (tekst značajan za EEP) i stavljanja van snage direktive 73/23/EEC

Uređaj je usaglašen sa sledećim EU standardom:
EN 303-5:2012,

i sledećim EN i tehničkim zahtevima: EN 60730-1.

Mesto: Kraljevo
Datum: 2015-11-05

Potpis:
Milan Janić, generalni direktor

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8.8 Nalepnica

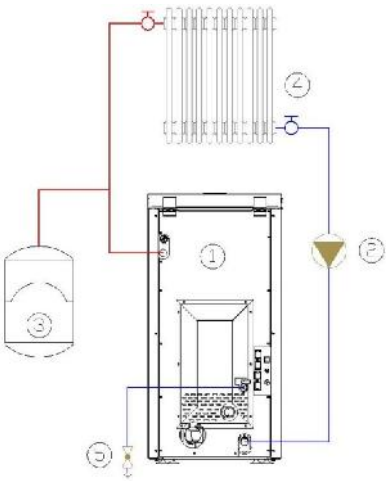
Na kotlu ***BIOlux*** **UNI 20** nalaze se nalepnice za označavanje priključaka kao i nalepnice za opasnost od strujnog udara, nalepnice za šemu povezivanja i dr.

<u>Nalepnice koje označavaju priključke za povezivanje instalacije:</u>

1. Nalepnica (Potisni vod) 32mm x 74mm

2. Nalepnica (Povratni vod) 32mm x 74mm

3. Nalepnica (Šema povezivanja) 148mm x 210mm



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Nalepnice koje označavaju prisistvo struje,visokog napona i opasnosti:

1. Nalepnica (Ulaz za sniženim naponom 12V) 60mm x 80mm

2. Nalepnica (Napon opasan po život - VEĆA) 100mm x 150mm

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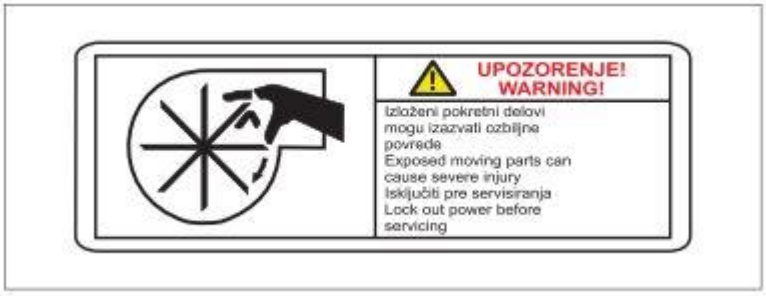
3. Nalepnica (Uzemljenje) 20mm x 30mm

4. Nalepnica (Prisustvo napona)

<u>Nalepnice koje označavaju upozorenje:</u>

1. Nalepnica (Izloženi pokretni delovi mogu izazvati povrede) 30mm x 80mm



2. Nalepnica (Obavezno poštanje u rad od strane ovlašćenog servisa) 65mm x 247mm

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3. Nalepnica (Pažnja)

4. Nalepnica (Otpad)

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Nalepnice sa tehničkim podacima:

8.9 Proizvođač

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Živojina Lazića Solunca br.6
36000 Kraljevo, Srbija

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9. **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 montažu kotla na dimnjak i njegovo pozicioniranje**. (videti tačku 3.)**
   1.2. Kotao mora biti priključen na dimnjak propisanog poprečnog preseka,karakteristika izolacije i visine. **(videti tačku 3.4)**
   1.3. Dimovod od kotla do dimnjaka mora mora biti izveden po tehničkom uputstvu.
   1.4. Kod kotla moraju biti izvršena i navedena elektro priključenja iz tehničkog uputstva, naročito se misli na karakteristike sobnog termostata,karakteristike mrežnog napona koji mora biti u određenim granicama.
   1.5. Korisnik mora da se pridržava navedenih uputstava o korišćenju i održavanju. **(videti tačku 8.)**

2. **Garancijska izjava**

Izjavljujemo:

- da proizvod ima propisana i deklarisana 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 deklarisanim 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 OD 60 MESECI VAŽI SAMO AKO SE KOTAO REDOVNO SERVISIRA OD STRANE CENTRALNOG SERIVISA RADIJATOR INŽINJERINGA u periodu naznačenom za isti (dalje u tekstu),**
- **garancija važi ako je garantni list overen od strane prodavca i ako je upisan datum kupovine i priložen račun. TAKOĐE BITNO JE IMATI I NALOG ZA PUŠTANJE U RAD. (overen od strane ovlašćenog servisa)**

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3. **Garancijski period od jedne godine važi za sledeće delove:**
    - za ležajeve,
    - elektro grejač za potpalu.

4. **Garancijski period od dve godine važi za sledeće delove:**
    - ventilator,
    - automatiku kotla sa sigurnosnim termostatom i ostalim elektro delovima (presostat vode i presostat vazduha),
    - sondu dimovodnih gasova,
    - sondu temperature kotlovske vode,
    - motor reduktor,
    - pužne spirale,
    - šolja za sagorevanje od INOX-a,
    - elektro konektore,
    - izolacijske materijale na vratima i otvorima za čišćenje,
    - turbulatore.

5. **Garancijski rok ne važi:**

    - ukoliko se posle svake grejne sezone ne odradi redovan servis,
    - za zamenu delova kod redovnog godišnjeg održavanja u skladu sa uputstvima,
    - kod kvarova koje je načinio kupac zbog nestručnog rukovanja proizvodom,
    - kod mehaničkih kvarova načinjenih prilikom transporta i prilikom korišćenja(čvrsti predmeti),
    - ako je proizvod instaliran nestručno, suprotno važećim propisima iz tog područija,
    - ako je kupac koristio proizvod iznad deklarisanih svojstava i u normalnim okolnostima,
    - na staklo na vratima kamina;
    - na ručicu za vrata kamina.

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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8. Redovan godišnji servis

Redovan servis se odrađuje na kraju svake grejne sezone u period od 15.4. do 31.8. i naplaćuje se utvrđenim cenovnikom firme “Radijator Inženjering”. Servisni postupak tehhničkih lica koja obavljaju redovne godišnje servise, a koja su od strane proizvođača ovlašćena za to,obuhvataju sledeće operacije:

NAPOMENA: Serviser je dužan da pregleda sve navedene delove (sa liste) dozatora i izmenjivača, i ukoliko dođe do zamene bilo kojih delova na iste korisnik dobija gore navedenu garanciju kao i garanciju na još 12 meseci na telo kotla (izmenjivač). Garancija se može produžiti do 5 god. od datuma puštanja u rad. Servis i produženje servisa može da obavlja lice koje šalje centralni servis “Radijator inženjering”-a. Na nezamenjene delove posle odrađenog servisa garancija ne važi.

- Demontaža pelet transportera, provera ispravnosti istog i provera ispravnosti ležaja i podmazivanje;
- Ležaj ne sme da ima otežano okretanje. U suprotnom ležaj se menja.Ukoliko se utvrdi da je do oštećenja ležaja došlo zbog upadanja čvrstog predmeta u pelet transporter (zbog greške korisnika ili proizvođača peleta),Radijator inženjering naplaćuje vrednost ležaja.
- Demontaža šolje za sagorevanje od ložišta i čišćenje prostora ložišta ispod šolje. Provera stanja šolje;
- Izvaditi sondu dimnih gasova i očistiti je od naslaga;
- Provera ventilator;
- Provera dihtovanja vrata;
- Provera održavanja kotlovskog izmenjivača.
- Čišćenje dimovodnih kanala.

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1. Important warnings

GENERAL WARNINGS

- After the removing of the package check for the completeness of the delivery, in the case of defects, please contact the dealer who sold the boiler.
- The boiler must be used solely for the purpose envisaged by the manufacturer. Any liability of the manufacturer is excluded for damages to persons, animals or things, in case of errors during installation, regulation, maintenance or improper use.
- In case of leakage of water the device should be switched from the mains supply, close the water supply and inform the authorized service and authorized installers.
- This manual is an integral part of the device and must be kept with care and must always follow the device even in case of change of owner or user, or in case of connection to another installation. In case of damage or failure look for a new copy of an authorized dealer.

IMPORTANT WARNINGS

We emphasize that the use of the device working on bio-mass and solid fuel, having contact with electricity and water, demands respect and security measures such as:

- The use of the boiler by the children and people with limited capabilities without accompaniment is not allowed.
- It is forbidden to use boiler installations operating at temperatures higher then 110 ˚ C, and pressure greater than 3 bar.
- It is not allowed to use easily inflammable fuels (alcohol, oil).
- It is forbidden to store easily flammable materials near the boiler and close the door for firing. The ashes must be disposed off in closed and non-flammable containers.
- It is prohibited to incinerate waste materials which cause combustion flame or explosion hazard (eg. plastic bags, sawdust, coal dust, mud, etc.).
- It is prohibited to any person or technical intervention or cleaning the boiler before it is switched off the main power supply switch, the setting on the device (0) "off".
- It is prohibited to change the safety elements.
- It is forbidden to close the vents in the room where the boiler is located. Air vents are needed for proper combustion.
- No exposure to atmospheric turbulents. The boiler is not designed for outdoor use and contains no anti-freeze system.
- It is forbidden to turn off the boiler when the outside temperature can drop below zero (to prevent freezing).
- It is forbidden to put fingers or other objects through the openings in the outer parts of the shell of the unit. Inside the shell there are electrical components and wires under voltage and devices that are mechanically driven (engine gearbox and fan). Contact with them may result in electric shock and mechanical injuries.
- In the case of intervention on any electrical device of boiler, switch off all the electrical wiring and so it is removed from the mains socket.

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- Work with of boiler unit is forbidden for people with special needs (including children) to physical and mental health, except under the supervision of a guardian, and the people who are responsible for their behavior.
- Children must be supervised by a guardian as they do not play with the appliance boiler.
- If the damaged power protection, must be replaced in the factory and serviced by an authorized dealer or qualified people to avoid the risk of electric shock.

1.1 Minimum distance from flammable materials

- Provide adequate distance from flammable materials, if necessary to ensure the protection of the same.

- Minimum distance from flammable materials is required by law - please inquire of professionals who deal with heating and Emission effluents.
- The minimum distance of the boiler and flue pipe gas from the low and averagely combustible materials should be at least 100mm.
- Minimum distance from flammable materials is 200mm, and the same goes for materials whose flammability is not known.

Risk of fire!

- Storage of flammable materials and liquids in the vicinity of the boiler is prohibited.

- Be sure to warn users about the required minimum distance of combustible material from the boiler.

Combustibility of Construction materials	
A ... Noncombu-stible	asbestos, stone, building stone, ceramic wall tiles. terracotta, plaster, screed (without organic additives)
B... Non easily flammable	Gypsum cardboard slab, glass fiber slab of ACUMINE, ISOMINE, ROYALITE, LIGNOS, VELOX, HERACLITE
C1.. **Low combustible**	beech and oak wood, composite wood, file, slab of HOBREX, Versalite, umakart
C2 ... Averagely combustible	wood of pine, yew and pine, composite materials
C3... **Easily combustible**	Asphalt, paperboard, cellulose materials, chipboard, cork, polyurethane, polystyrene, polypropylene, polyethylene fiber floor

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2.Description of boiler *BIOlux* UNI 20

BIOlux **UNI 20** is designed for burning wood pellets. Wood pellets are produced from 100 % cellulose. Wood residues under high pressure are compressed into pellets of 6 mm in diameter and in length of 2- 3cm. Pellets should be stored correctly in a dry place to ensure efficient combustion. Boilers ***BIOlux*** **UNI 20** use pellet of 6mm diameter, of 5 -30mm length and humidity up to 10 % manufactured in accordance with **EN 14962-2.** If the pellet is not specified by the standard or during storage or transport there is the deterioration of its quality, company "RADIJATOR INŽENJERING" as the manufacturer can not take the responsibility for the poor performance. In such situations, errors occur in the ignition, pellet accumulation and falling out from the combustion space, insufficient power etc.

BIOlux **UNI 20** is installed in the boiler room or other rooms, but it has an advantage in the situations where more compacted dimensions are needed.

It is mounted on the classical minimum diameter chimney of 120 mm. The chimney must meet all other standards as used in traditional boilers, which is more discussed in the Installation Chapter.

Nominal power of ***BIOlux*** **UNI 20** according to **EN303 -5** is 19,75 kW.

Within the boiler the corresponding circulation pump and expansion vessel of 10 liters are installed. The boiler is supplied with a mechanical safety and relief valves.

Burning of pellets is performed on the principle of filling the combustion chamber. The whole process is carried out by automation system that allows selection of one of three levels of power. It is possible to connect the room thermostat and program the periods of start of work and standby cycles for 7 days.

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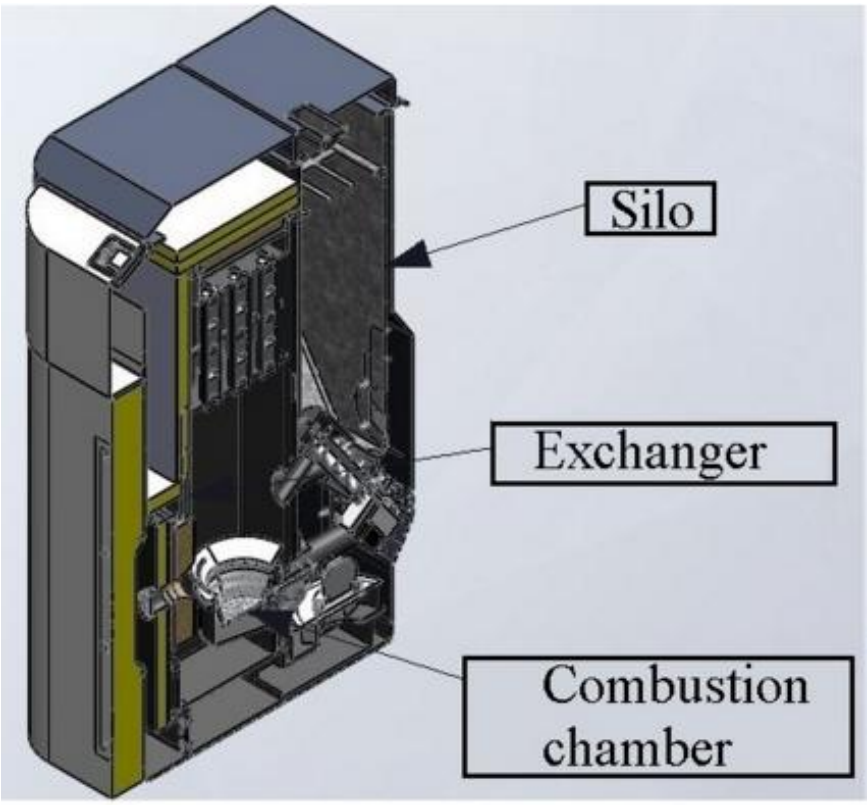

Figure 1. Cross-section of the body of the boiler

CONSTRUCTION

Boiler heat exchanger is the tube two draft heat exchanger and it is constructed in the materials which, according to thickness and quality of the materials, conform to the Standard EN 303 - 5. Only by the dimensions factory ***BIOlux*** **UNI 20** unit is adjusted to manipulation in small spaces.

Silo has the capacity of 50 kg of pellet. Combustion chamber is made of fireproof material. Cross section of the boiler and the aforementioned parts can be seen in **figure 1**.

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3. Assembly

3.1 General warnings

The boiler must be set correctly for proper operation!

 **Maximum operating pressure of the boiler is 3 bar, 1 bar the minimum and maximum operating temperature of the boiler is 110 C.**

 **Boiler with one fan, automation, electric ignition and pump and all of these devices use 230V power, so that incorrect installation and careless handling may endanger human life electrocution.**

 **Solid fuel boiler and forced draft should be installed according to valid standards and legal regulations. Any mechanical or electrical change in the design or installation shall be deemed a violation of guarantee conditions and will lead to its distortion.**

 **In an assembly the boiler should be properly protected against the excessive overpressure and overheating.**

 **When installing the hydraulic installation of the boiler must be provided in a prescribed way of overdraft maximum operating temperature and pressure.**

 **For the proper installation the plumber/installer is responsible.**

 **The manufacturer (Radijator Inženjering d.o.o) does not take any responsibility coming from the incorrect installation of the boiler.**

 **When any intervention on the electrical devices *BIOlux* UNI 20, the whole system off the main power supply.**

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3.2 Measures and safety devices for *BIOlux* UNI 20 Boiler Heating Stove

For safe operation of ***BIOlux*** **UNI 20** Boiler Heating Stove it is necessary to assemble and maintain the following elements in working condition:

- **Pressure safety valve, air vent and gauge vent;**
- **Electro mechanical pressure switch for water;**
- **Pressure switch for flue gases;**
- **Thermostats in the automation of the boiler.**

Pressure safety valve (figure 2), air vent (figure 3) and gauge vent (figure 4):

Figure 2. Pressure safety valve

Figure 3. Air vent

Figure 4. Gauge vent

- Pressure safety valve factory is maunted and 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.
  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.
- Recommend and install a pressure gauge (**Figure 4**) the hydraulic installation.
- 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 the diameter of the connector during servicing and assembly of a new safety valve is strictly forbidden.
- 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;

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- 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.
- Along with the pressure safety valve, the same security group includes vent valve. On this unit there are two such valves. One is on the highest point of the boiler and the other at the highest point of the collector at the point of branching pipe hot water and expansion vessel.

Electro mechanical pressure switch for water (figure 5):

Figure 5. Electro mechanical pressure switch for water

- This security element continuously measures the pressure in the boiler heat exchanger of the pellet Boiler and that information is transmitted to automation system. If the pressure is above or below the value of 0.5 to 2.7 bar then it leads to shutting down of the whole unit. Limit values of the minimum and maximum pressure values are determined by the operation program of automation.

Pressure switch for flue gases (figure 6):

Figure 6. Pressure switch for flue gases

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- The purpose of this safety section is to continuously measure the underpressure of the flue gases in the flue channel area where it is connected, and to transmit this information to to automation system. If the value of the underpressure is above or below the value that is predefined in automation, there is the termination in operation of the entire unit on the automation display there is a warning that a mistake occurred in the operation.

WARNING: The disturbances in under pressure of flue gases can occur due to clogging of the chimney, a large dirt of flue channels in the pellet Boiler, poor sealing of doors or glass-ceramic, the lids of the openings for flue channels etc.

- These conditions may lead to poor drainage of the combustion products, especially of carbon monoxide, which can, in extreme cases, lead to serious health problems and even choking of users.

Thermostats in the automation of the boiler (figure 7):

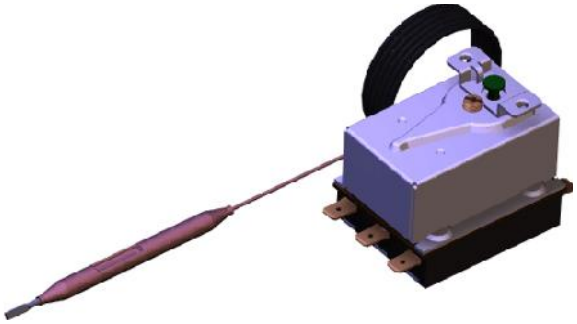

Figure 7. Thermostats in the automation of the boiler

Within the automation itself that leads the combustion process and influences the work of two cycles of heating, there are two termostatats. Both are of similar construction as the thermostat shown in **figure 7** and they have safety functions as limiters of the temperature of water in the boiler. Because of the safety role in the functioning of the boiler, both thermostats have the independent probes for measuring of water temperature.

The first thermostat is the so-called „working thermostat" work and it serves to limit the temperature to a level the user wants. Another thermostat is the „safety thermostat" because it stops the opration of the fan which favors the flame, and adds a new energy. Safety temperature is limited to 95 degrees Celsius.

It is very important to connect the pump for heating through automation for safety reasons. When the temperature of water in the boiler reaches the critical value of 95 degrees the fan stops working, but the pump is necessarily switched on to exchange the heat of water through radiators.

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 **The tap for filling and empting should be installed at the lowest point of the system. Since there is no connection for filling and emptying on the stove itself, the tap should be connected to the lowest point of the return line. The installation should be filled slowly so as to remove air from the system. After the filling is complete, check for leaks on the central heating system.**

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3.3. Boiler room

Boiler room must be secured against freezing.

The support surface of the boiler in the boiler room must be of non-combustible material. Recommended distance of all four sides of the boiler in relation to the boiler walls or other solid body (water heater, etc.) are shown in **Figure 8.1**. These values allow a safe distance access when firing, sufficient space for cleaning and easy access to fan and valve for filling and emptying. Boiler at its left hand side should be away from the wall 300 mm. The space on the right side of the boiler, which is recommended to be at least 800mm. The space on the back is important for installation on hydraulic system, for cleaning, etc. **Boiler room must have sufficient ventilation holes for fresh air as well as for the outlet of the exhaust air!**

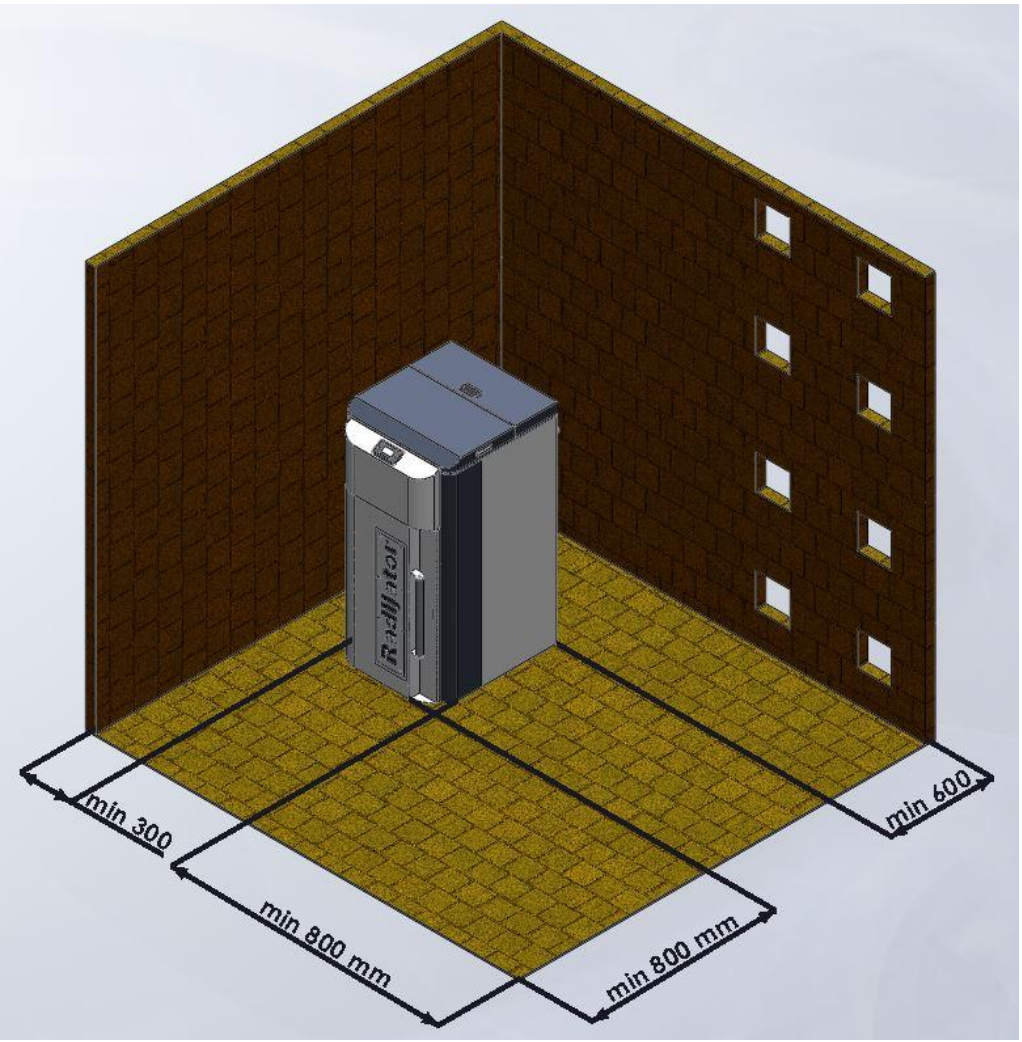

Figure 8.1 Positioning of boiler in the Boiler room

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Total space of this openings is minimum 150cm² fro the boilers of the power of 50kW and for the power over 50kW the space must be larger for another 2cm² per 1kW.

$A=150cm^2+\frac{2cm^2}{kW}\times(\sum Q_n - 50kW)$ $\sum Q_n$ = possible power of over 50kW.

The lack of sufficient ventilation in the boiler room can cause more problems in the work of boiler. Main problem is the inability to achieve high output water temperature i.e. the lack of maximum power which leads to condensation in the boiler.

- Take into account the required minimum space required for access and security elements to carry out cleaning operations.
- Determine whether the degree of electrical protection is in accordance with the characteristics of the room where the boiler will be located.
- No exposure to atmospheric influences. The boiler itself is not anticipated for outdoor use and contains no anti-freeze system.
- It is forbidden to close the vents in the boiler room in which the openings are necessary for proper combustion.

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3.3.2 Working space and positioning of *BIOlux* UNI 20

When determining where to place boiler pay attention to the following details:

- Boiler must be as close to the chimney as possible, also supply of fresh air for combustion should be close.
- The unit must never be installed in a bedroom or a room that is impossible to separate from bedroom by the door
- The room in which ***BIOlux*** **UNI 20** is installed another heating unit can not be used, such as a stove ora fireplace, solid fuel and pelet heating units. Necessary circulation of air through one of these devices is likely to be oppressed by the air supply to the other unit.
- The room in which the boiler is positioned must be able to let the ventilation and connectivity with fresh air or with a room that is connected to external fresh air. This connection is made with non-combustible steel pipes.
- For the operation of the unit the power supply of 230 V and 50 Hz is needed. Place the boiler as close to the connection socket as possible and on this occasion avoid extension cords.
- In case of setting the boiler on the combustible surfaces (floors, laminates, rugs, carpets, etc.). It is necessary to insulate the unit from such substrates with a plate of uncombustible materials (steel, ceramics, insulation materials, ceramic fiber, etc.). Such plates should be sized as to be larger from the base of the boiler (**see Figure 8.2**).
- Boiler must be at a safe distance from flammable materials such as wood and textile, pieces of furniture, curtains, plastic parts etc. The distance must be at least one meter from such materials.
- **Distance of the boiler from the solid immovable objects (walls, columns, etc.) (Figure 8.2) laterally must be at least 40 cm (Figure 8.2 measures B), at the back of 40 cm (Figure 8.2 measures C) and at the front of 100 cm (Fig. 8.2 A measures). This gap distances are necessary because of approaching to hole for cleaning as well as for access during service interventions.**

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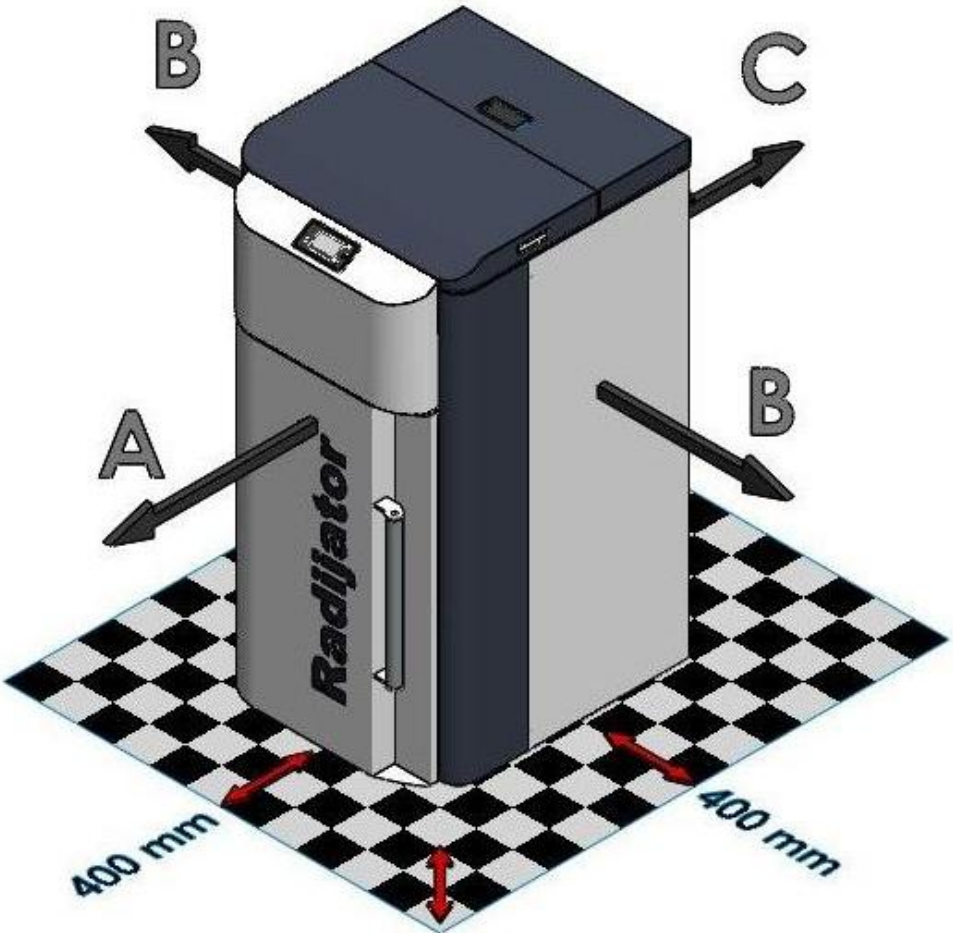

Figure 8.2 Display of Distance of Pellet Boiler from fixed objects

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3.4 Assembly of *BIOlux* UNI 20 onto Chimney

When installing the chimney we distinguish two situations:

- **Situation 1:** Boiler is connected onto a standard chimney (masonry or metal) that has a foundation and a full cross-section of the base plate to the top.
- **Situation 2:** Boiler is connected onto prefabricated metal chimney attached to the facade.

Situation 1:

- The chimney uses ceramic or metal pipes of circular cross-section of 130mm diameter. Flue pipe must be insulated.
- If the chimney, already exists and is of square cross-section, then the minimum dimension of the intersection is 130x130mm.
- It is not allowed to use a chimney for connecting multiple heating units.
- It is not allowed to use the air vents like a chimney.
- Top of the chimney to be protected with the chimney cap due for the impact of rain and winds. Distance of chimney to cap is 200mm.
- Chimney should come out above the roof according to the recommendations of the showed in image. (Figure 9.4)
  If some other objects are near the chimney, take this into account, and then increase the height of chimney.
- The chimney must have a connection to extract condensation and an inspection door. The door should always be sealed well during the operation.

Situation 2:

- In this situation flue pipe must go at least 1.5 meters vertically upwards in the very room where the boiler is placed, and then penetrate through the wall and be connected onto the chimney.
- Flue pipe must have a T piece for condensation at the outlet from the boiler and the possibility of dismantling for cleaning.

WARNING: Failure to follow the rules during the execution of flue and chimney can lead to malfunction of the boiler and endangering to human health and even to endangering of their lives. The biggest danger is from the toxic gases which are the products combustion process. In these situations where no flue, chimney and combustion air have not been constructed the way it was proposed in the instructions, Co. Radijator Engineering can not take responsibility for unintended consequences.

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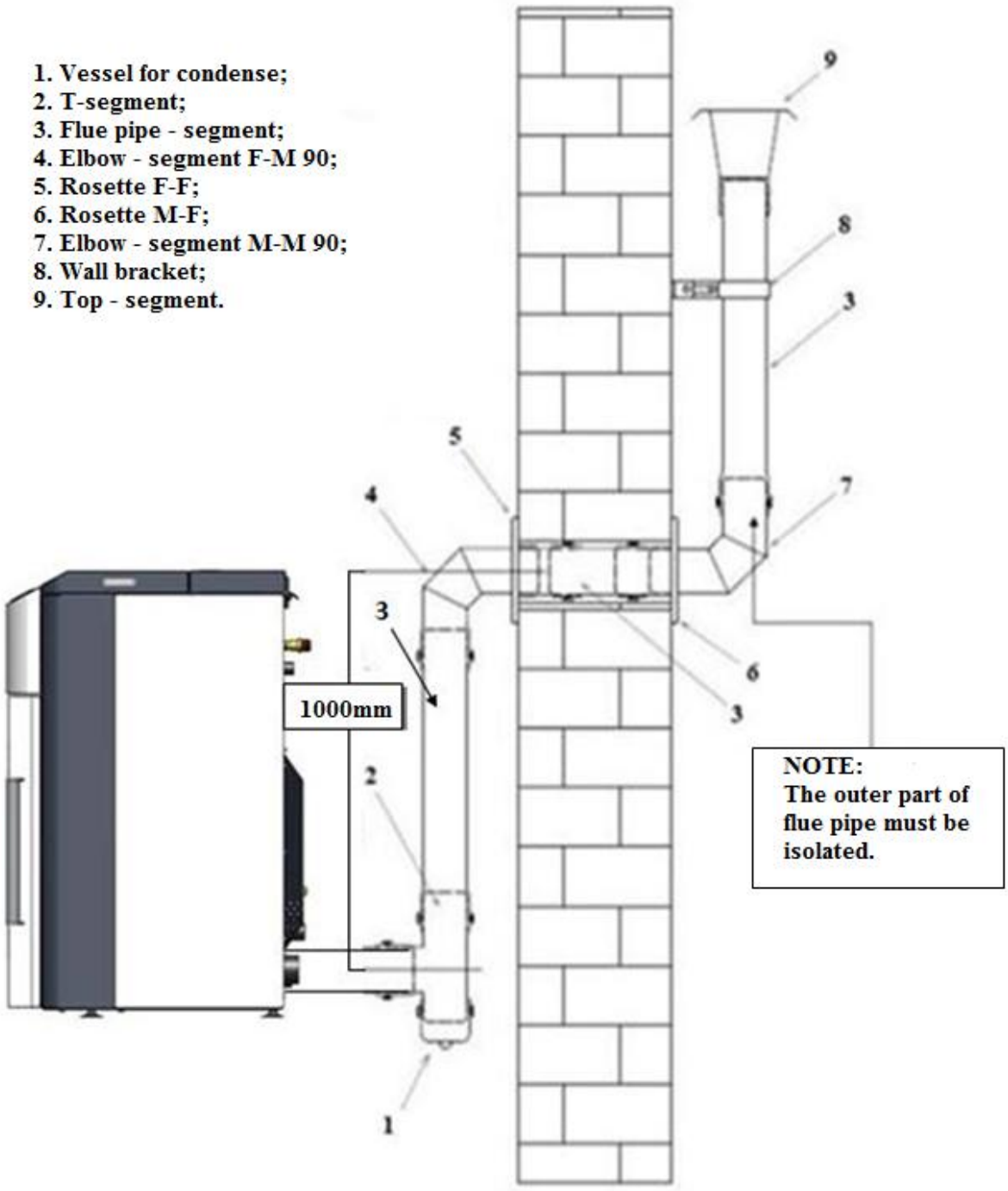

Figure 9.1 Installation of flue gas channels

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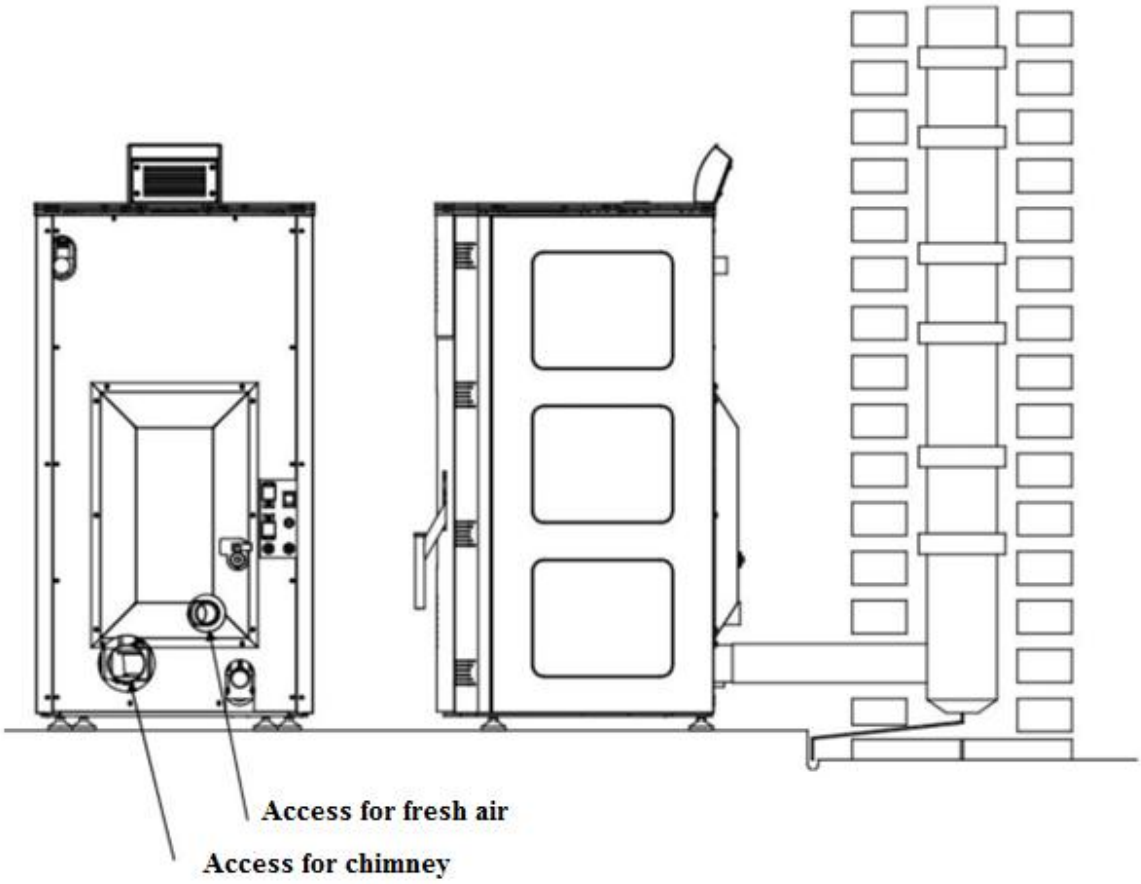

Figure 9.2 Installation of flue gas channels and fresh air inlet for combustion

The ***BIO*lux UNI 20** boiler operates under forced draft conditions with one fan, but the rules for the selection of a chimney should be respected as if it was intended for the boiler with a mild sub-pressure in the firebox working on another fuel type, such as fuel oil**.** The chimney cross section should be 130mm, otherwise it may cause problems in the process of operation.

It is recommended for the chimney diameter to be larger than the diameter of a flue outlet.

Arches should be avoided if possible; if not, the maximum number of arches should be 2. It is desirable to isolate the flue gas channel running from a boiler to a chimney, particularly if there are arches and long sections.

The flue gas probe was factory installed in the box of the exhaust gas fan. Before starting, it is necessary to check whether all elements are in place after transport, because the boiler will not operate without the probe being properly installed. ***The required chimney draft is 12Pa.***

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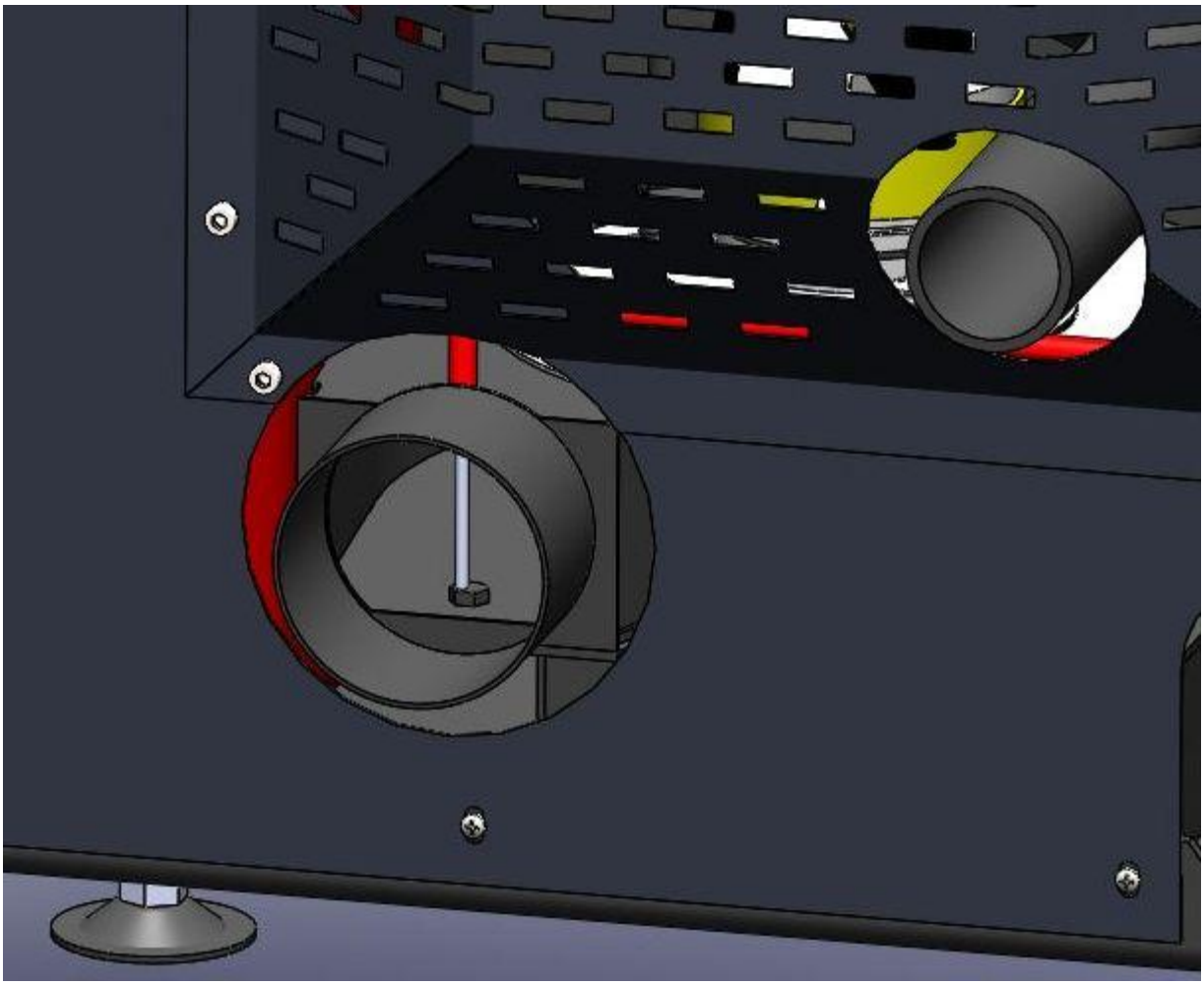

Figure 9.3 Place where is set flue gas probe

The chimney itself should be made of ceramic pipes, and around them there should be the insulation of 3- 5cm thickness and the outer layer is of the bricks or special elements. If the chimney is not from ceramic pipes but of bricks, the light opening area of such chimney shall be 30 % higher than the surface of this ceramic pipes chimeny.

The chimney must have a door for cleaning and it must be well sealed. Chimney outlet on the roof must be according to certain regulations. There are two cases: if the angle of the roof is less than 12° and if the roof angle is bigger than 12 °. For angle less than 12 ° the height of the chimney above the roof is 1 m and for the larger than 12 ° , then look at the sketch.

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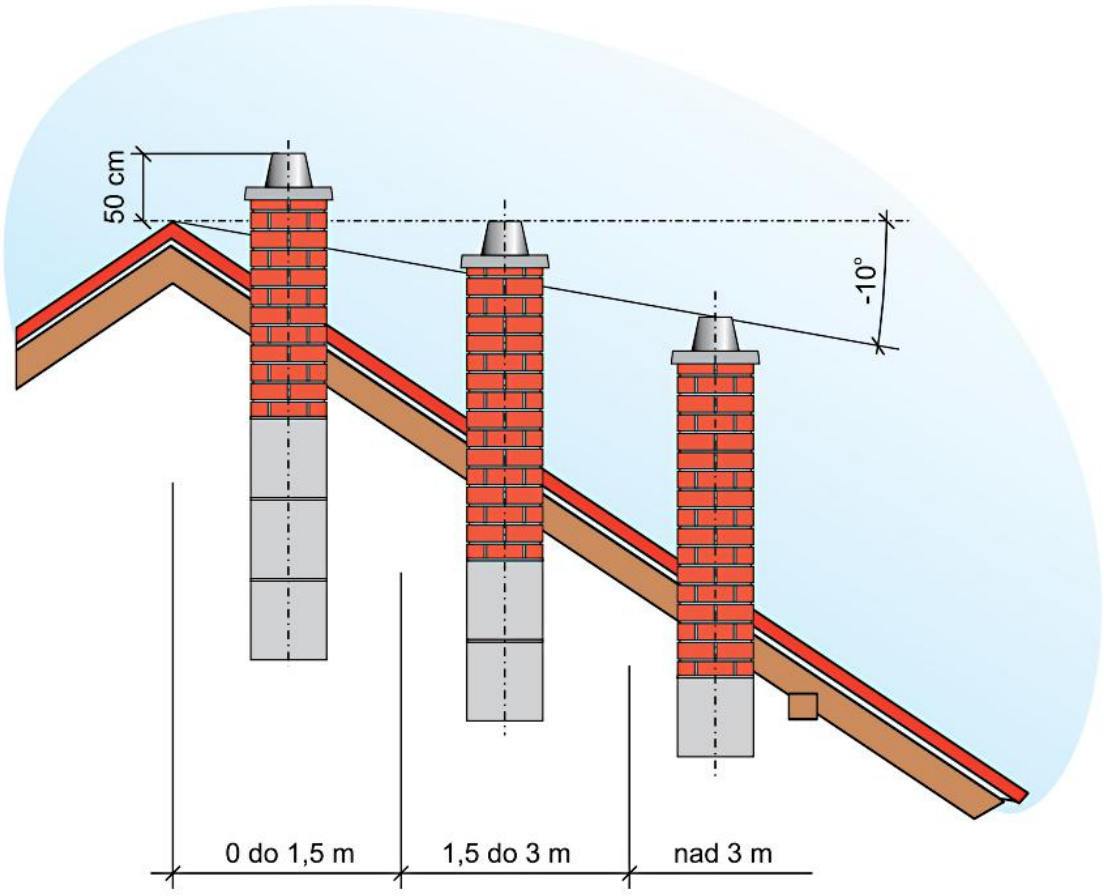

Figure 9.4

If the chimney is not of proper height, cross section, or if it is not enough clean as possible, then the complications in the work of boiler are possible. First, of all it is not possible to achieve the high teperature regime of work, i.e. there is not the maximum operation power, and the consequence of that is the occyrrence of condensation which affects the life of the boiler.

Weak/poor chimney is the main reason when during the ignition of the boiler or during the operation there is the appearance of smoke on the upper or lower door, especially at higher fan speeds.

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4. Cross-section of *BIOlux* UNI 20 boiler with a description of the boiler elements

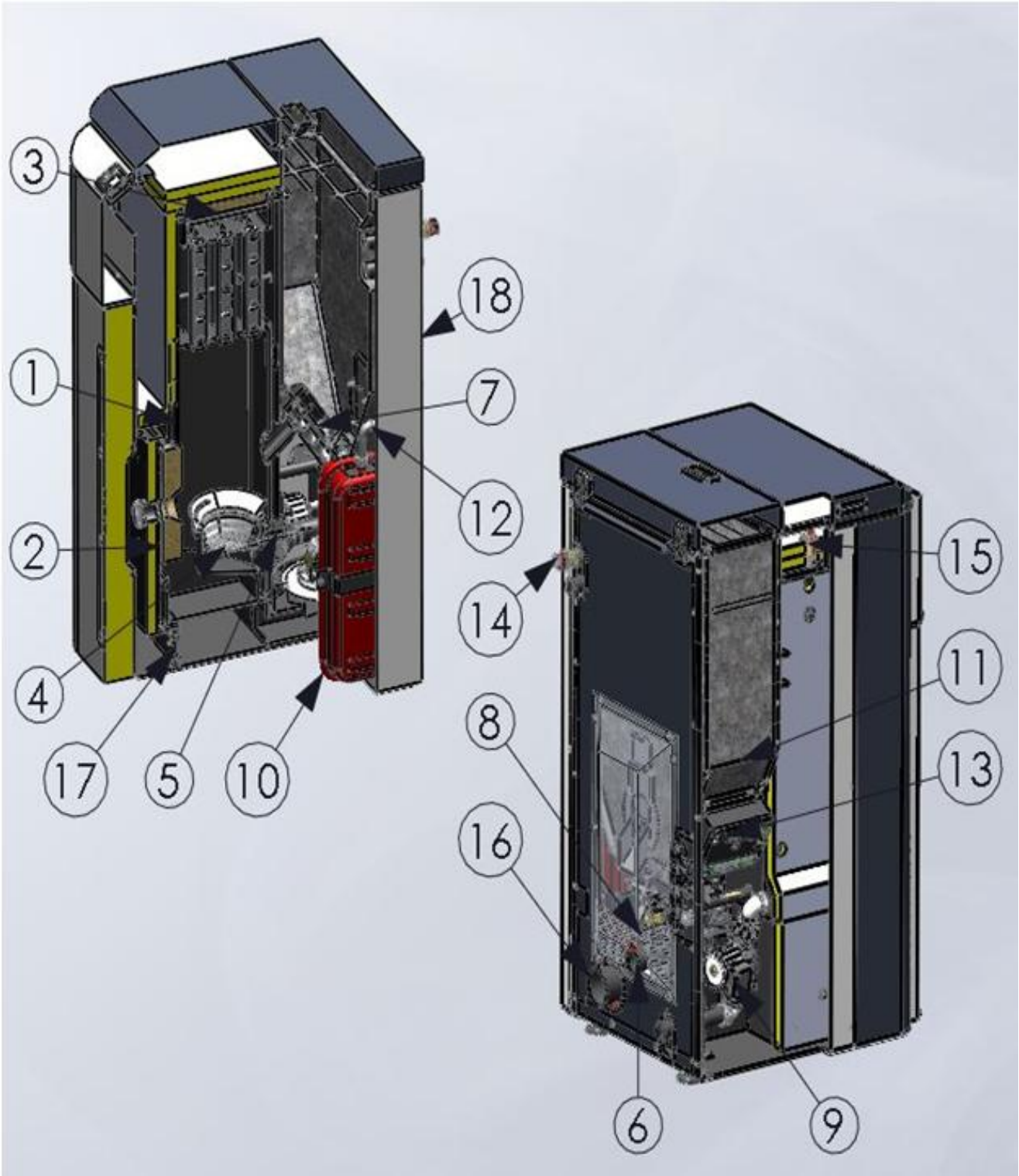

Figure 10. Cross-section of boiler with discription of the boiler elements

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Description (figure 10):

1. Body of boiler (Exchanger);
2. Inside door (for the cleaning of a combustion cup and the lower part of a boiler exchanger);
3. Exchanger cover (for the cleaning of the upper part of a boiler's pipe exchanger);
4. Cup of combustion chamber;
5. Electric heater;
6. Pipe for a fresh air intake for the combustion;
7. Feeding system;
8. Motor for feeding system;
9. Circulation pump;
10. Expansion vessel of 10l;
11. Silo;
12. Flexible connection;
13. Automation;
14. Safety valve;
15. Air-vent valve;
16. Flue outlet;
17. Cover of a gas flue box;
18. Boiler shell.

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5. Schematic connection of automation

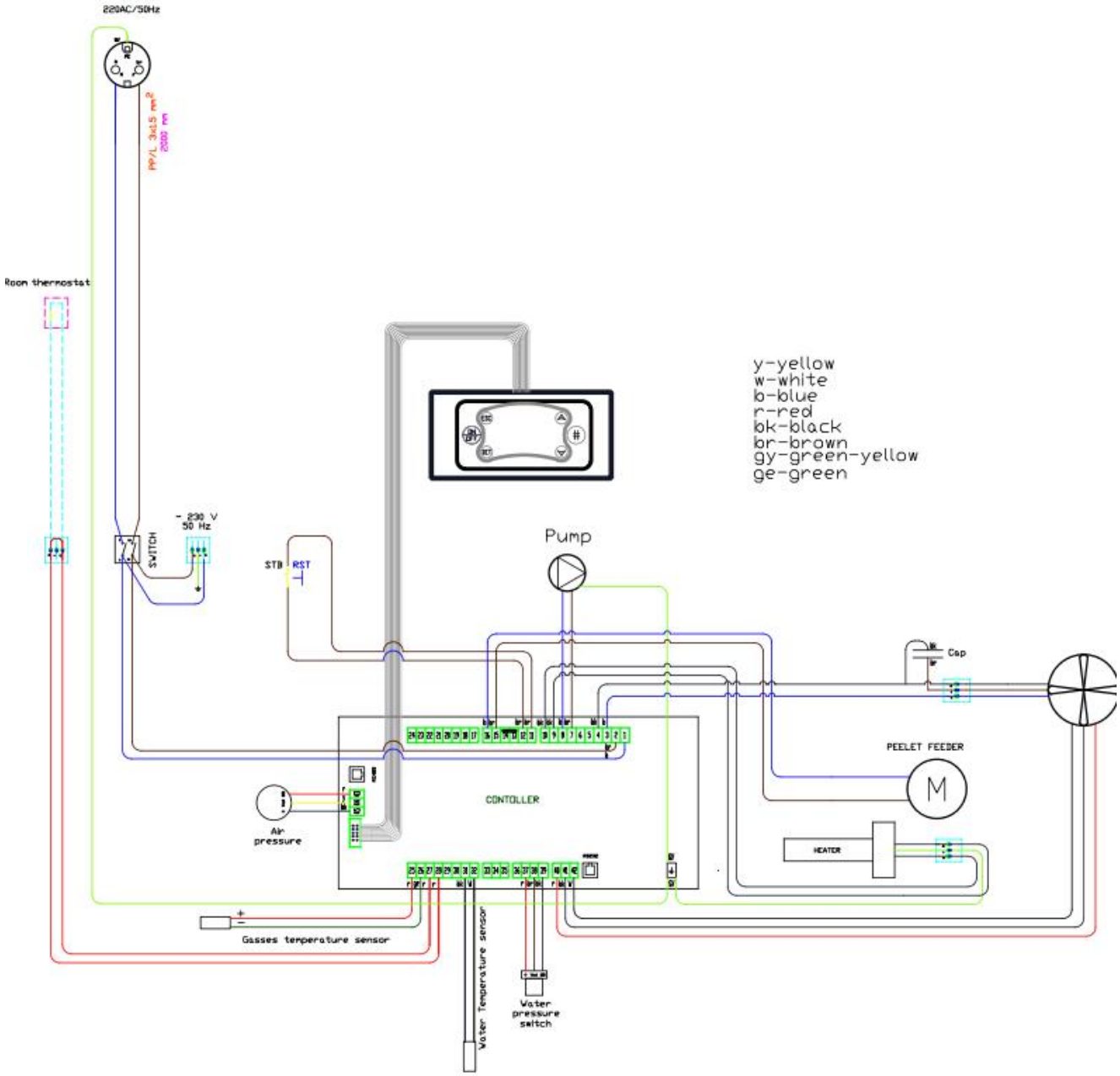

Figure 11. Schematic connection of automation

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All lines that are displayed in the intermittent form in the diagram of external connections are the conductors which should be installed by the technician when connecting the external devices onto the automation system of the boiler. All the connections of the additional devices are performed by the technician through connectors located at the rear of the boiler. One three-pole connector serves for the connection of the room thermostat as shown on the label the connector itself.

Seven-pole connector is connected to the power cable, while through another three-pole connector (next to seven-pole) the circulation pump is connected.

For the room thermostats it is important to be battery-powered on, i.e. they should not have any supply of the voltage of 220 V. On the thermostat for the connection NC is used (normally closed contact).

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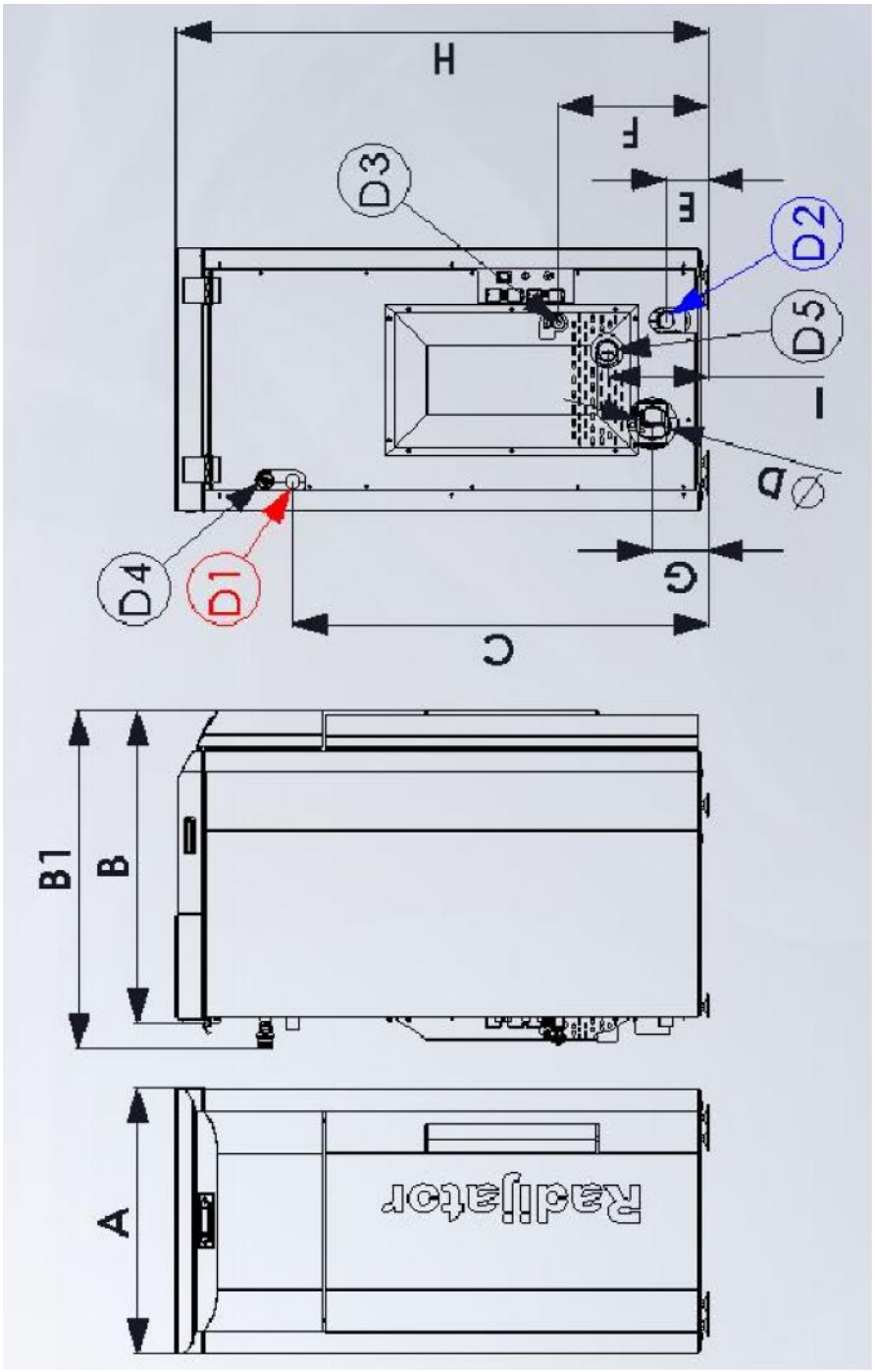
6. Table of technical data



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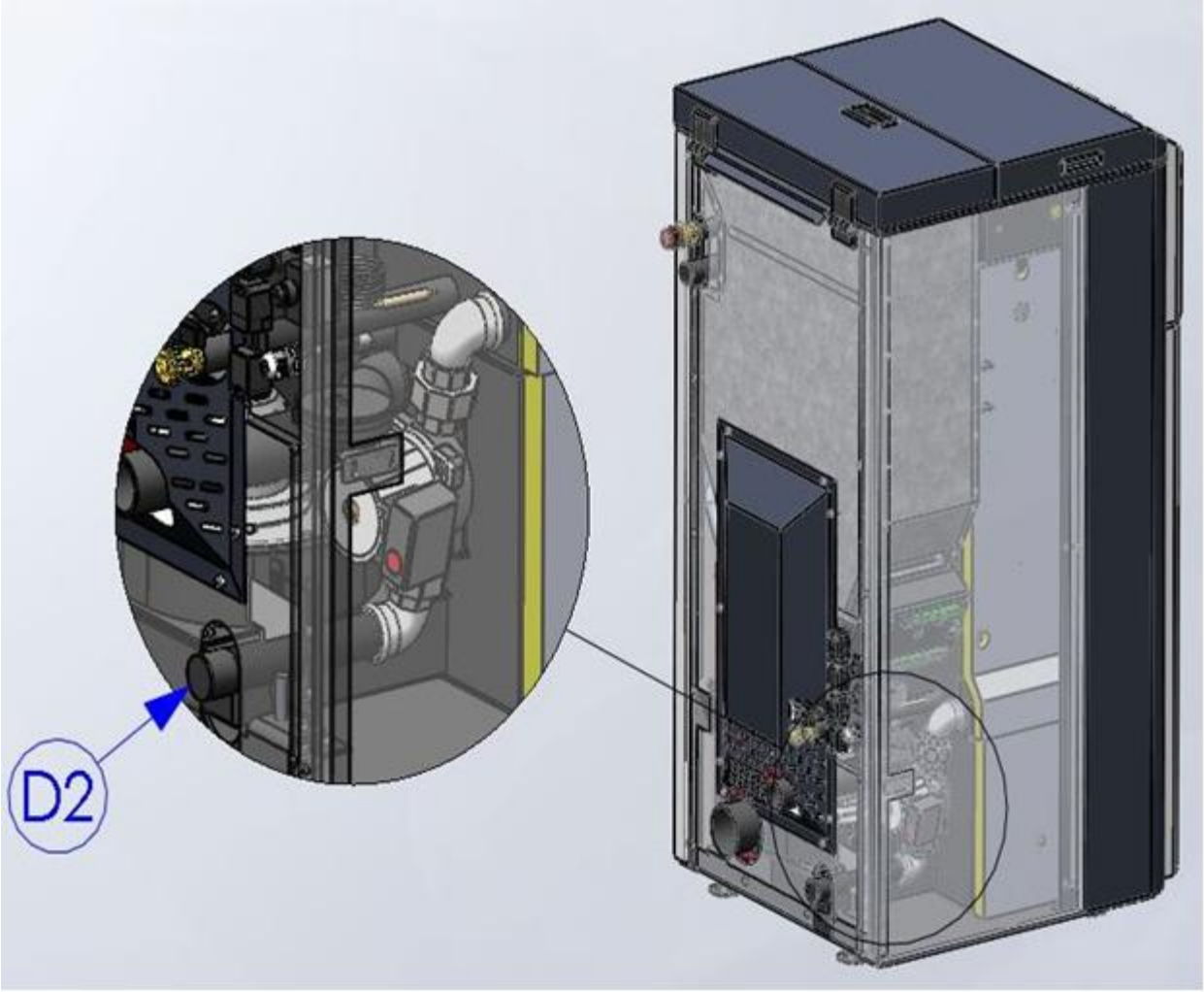

- **D1- connection for hot water from boiler,**
- **D2- connection for cold water from boiler,**
- **D3- connection for filling and emptying boiler,**
- **D4- connection for safety group,**
- **D5- air duct.**

NOTE: Pump, expansion vessel, valve for filling and emptying boiler (D3) and safety valve (D4) are on boiler.

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Type of boiler		*BIOlux* UNI 20
CE designation		CE
Class of Boiler according to EN 303-5:2012		5
Working Pressure	**bar**	3
Test Pressure	**bar**	4,5
Volume of water in the boiler	**L**	40
Weight	**kg**	267
Minimal cross section of chimney	**mm**	130
Necessary chimney draft	**mbar/Pa**	0,12/12
Boiler temperature (min / max)	**°C**	60-90
Minimum return temperature	**°C**	60
Efficiency degree at nominal/minimal thermal power	**%**	90,24/91,22
Nominal Power	**kW**	19,75
Minimum / Maximum Power of Boiler	**kW**	5,85/19,75
Carbon monoxide (CO) at a nominal heat power (10%O2)	**mg/m3**	89,19
Carbon monoxide (CO) at a minimalheat power (10%O2)	**mg/m3**	158,51
Dust at nominal/minimal heat power (10%O2)	**mg/Nm3**	17,60/19,58
Dimensions		
	A	628
	B	738
	B1	799
	C	986
	ØD	80
	E	100
	F	356
	G	134
	H	1264
	I	241
Connections for hot water boiler from boiler	**D1**	1"
Connections for cold water from boiler	**D2**	1"
Connections for filling and emptying boiler	**D3**	1/2"
Connections for the safety valve	**D4**	1/2"
Air duct	**D5**	6/4"

***we reserve the right to change**

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7. Hydraulic scheme

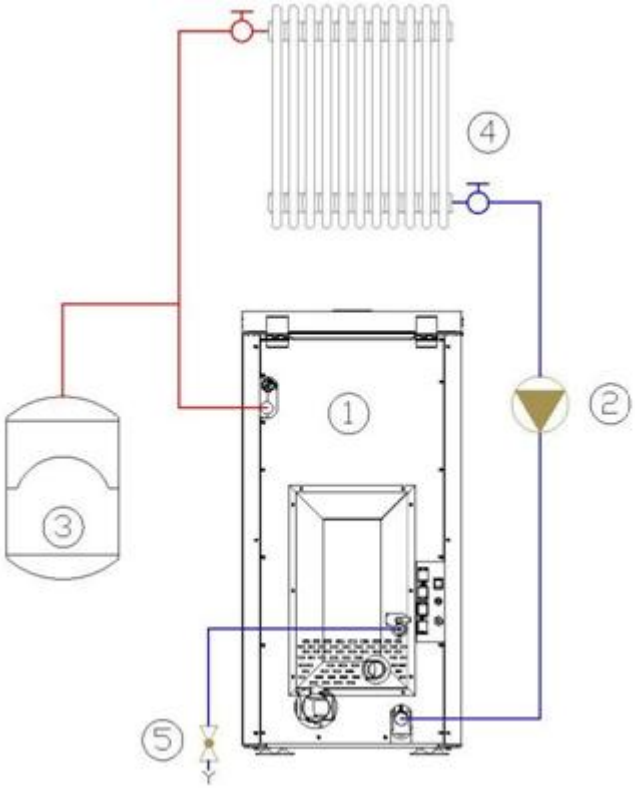

Figure 12. Hydraulic scheme

Discription (figure 12):

1. Boiler ***BIOlux*** **UNI 20**;
2. Pump;
3. Expansion vessel 10L;
4. Exchanger ;
5. Valve for filling and emptying boiler;

NOTE: In assembly of boiler includes pump and ekpansion vessel 10l.

In an assembly the boiler should be properly protected against the excessive overpressure and overheating.

For the proper installation the plumber/installer is responsible.

The manufacturer (Radijator Inzenjering) does not take any responsibility coming from the incorrect installation of the boiler.

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8. Start of boiler operation and cleaning

First Commissioning of the boiler is performed by a Technician who has a Certificate issued by the "Radiator engineering" Co. Training of boiler users is mandatory.

In this way, the person is authorized to notify the customer service in the factory, time when the boiler started its operation in the condition of the boiler at its first firing, while a copy of the commissioning of the boiler in operation is retained. Guarantee and instruction manual are given to the customer. One copy of Guarantee is sent to the manufacturer.
If the guarantee is not filled in, it is not valid.

Only boilers that are operated only by authorized persons subject to technical conditions of complete guarantee of two years.
The following text is intended for the user of the boiler, as a kind of reminder, that if you turn off the boiler (eg for cleaning) will be able to independently run the boiler.

The parameters related to the operation of the boiler and which are available to the user on the display. Other parameters that are called hidden menu should not be changed without the approval of the technical person who has put the boiler into operation or the factory.

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8.1 Control panel

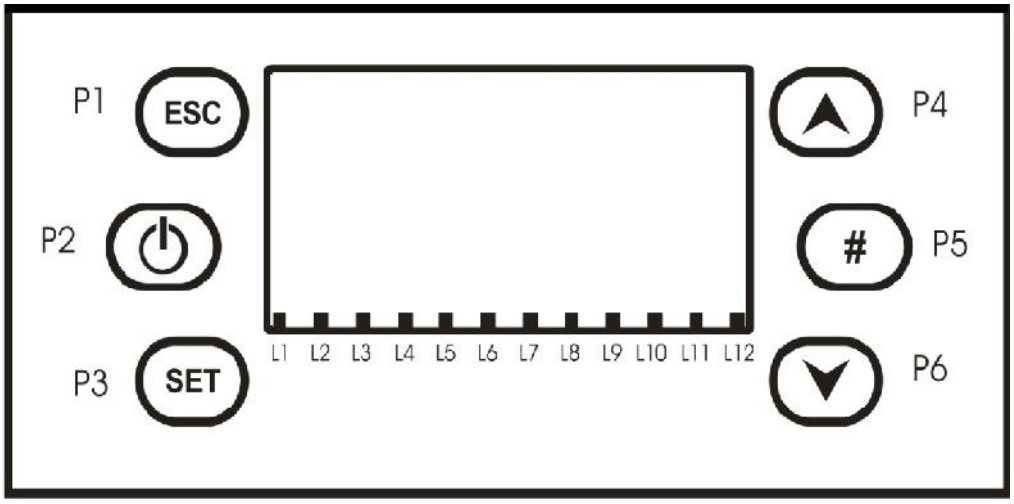

Figure 13. Figure and diagram of Automation display

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Buttons:

Function	Description	Button
On/Off	Function Ignition, Extinguishing pushing the button for 3 seconds until the acoustic signal	**P2**
Unblock	Function unblocked when the system is in Block pushing the button for 3 seconds until the acoustic signal	
Modify Menu and Submenu Values	In modify mode change Menus and Submenus values	**P4**
Run On Menu and Submenu	In Menu run on Submenu and Menu	**P6**
Visualizations	Enter and run in Visualization Menu	
Esc	Function Exit managed pushing the button	**P1**
Menu	Function Enter in Menu or in a Submenu	**P3**
Modify	Enter in modify mode into a Menu	
Set	Save data in a Menu	
Reset System Maintenance 2 Function	Reset **T67** timer	**P5**

Led:

Function	Description	Led
Heating Resistance	Led On: Resistance ON	**L1**
Auger	Led On: Auger in the On interval	**L2**
Pump	Led On: Pump ON	**L3**
Valve	Led On: Valve ON	**L4**
Output V2 configured as Pellet Safety Valve or Load Pellet Engine or Cleaning Pipe Engine	Led On: Output V2 ON	**L5**
Heating Fan	Led On: Heating Fan ON	**L6**
Output Aux2 configured as Pellet Safety Valve or Load Pellet Engine or Cleaning Pipe Engine	Led On: Output Aux2 ON	**L7**
Pellet Level	Led On: lack of pellet	**L10**
External Thermostat	Led On: contact open	**L11**
Flowswitch *	Led On: Sanitary Water demand	**L12**

* Only for plumbing with Flow Switch

NOTE: Diodes L4, L5, L6, L7, L10 and L12 are not in operation in boiler *BIOlux* UNI 20.

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8.2 Short manual for automatic control.

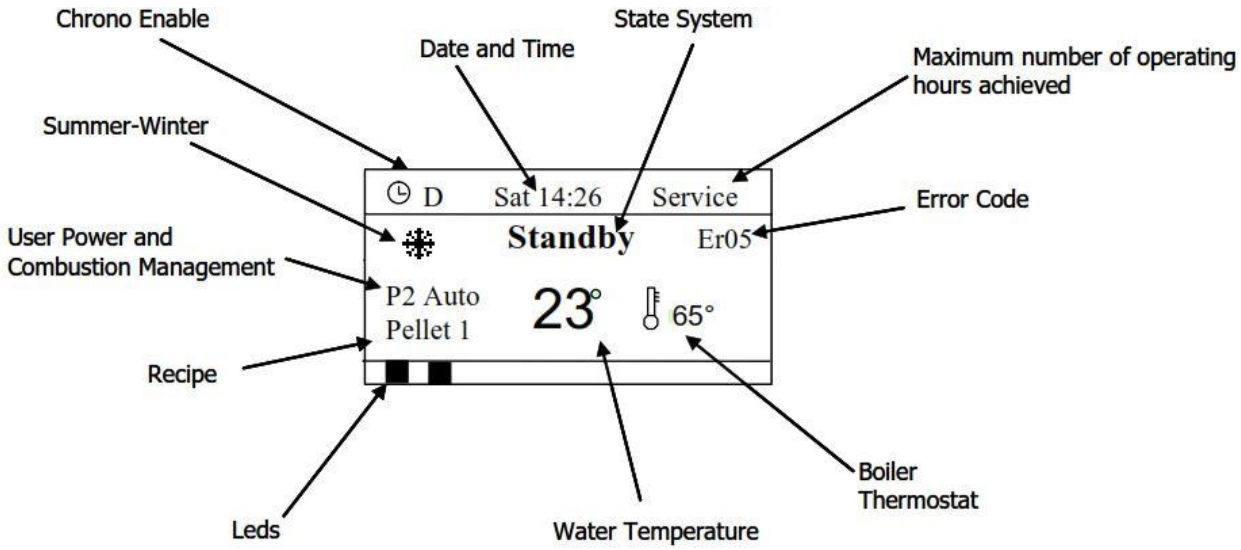

Figure 14. View of LCD screen on display

- **Reading of the current situation.**
  Procedure:

  Press the key **P6**  , after that on the display the Information are shown (**Figure 15**).

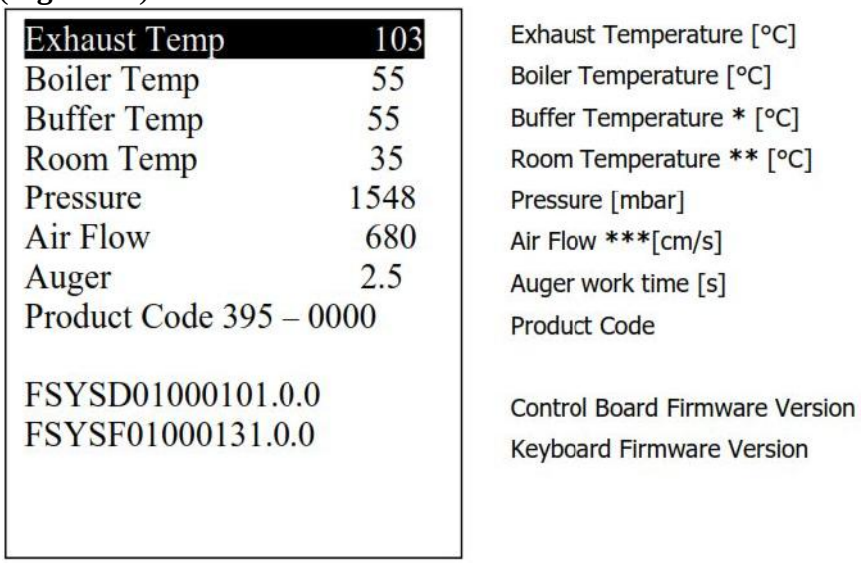

Figure 15. View of status display on pellet stove

NOTE:In the boiler *BIOlux* UNI 20 the information marked with an asterisk(*) are not shown.

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- **Enter the MENU of automation and an explanation of the function.**
  Procedure:

  Press the key **P3** 

, after that on the display there is the falling list (**Figure 16**).

MENU		DESCRIPTION
Combustion Power		Menu which allows to modify the combustion power.
Heating Power		Menu to modify the heating power. It is visible only if **P06**=3 and **P44**=6.
Boiler Thermostat		Menu which allows to modify the Boiler Thermostat value.
Buffer Thermostat		Menu which allows to modify the Buffer Thermostat value. It appears only if **P26**=2, 3, 4.
Room Thermostat		Menu which allows to modify the Room Thermostat value (if a probe is used). It appears only if **A19**=1.
Remote Keyboard		Menu which allows to enable the Room Thermostat of the Remote Keyboard. It appears only if **A52**>0.
Chrono	**Modality**	Menu to select the Chrono's program modality: Daily, Weekly, Week-End or disabled.
	Program	Menu which allows to program 3 period of time to switch on and switch off the system for each program modality.
Recipe		Menu to select the Combustion Recipes. It is visible only if **P04** is different to 1.
Time and Date		Menu to set time and date.
Remote Control		Menu to enable the Remote Control SYTX.
Calibration		Menu to modify the Auger's work time or the Combustion Fan speed.
Load		Menu to load the stove's brazier if the system is in Off State.
Summer-Winter		Menu to select the Winter or Summer modality.
Language		Menu to change the languages of the LCD panel.
Keyboard Menu		Menu to set the contrast and light of LCD panel.
System Menu		Menu to enter in the System Menu.

Figure 16. View and explanation of the MENU of automation system

- **Change the adjusted power of boiler *BIOlux* UNI 20.**
  Procedure:

  Press the key **P3** 

, after that the falling list is shown on the screen, where the first option is marked **Combustion Power**. Again push the key **P3** 

, after that there is the view on display (**Figure 17**). With keys **P4 or P6**   you assign the

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adjusted power and finally confirm again with key **P3** 

. Go back to the basic view of the display (**Figure 16**), by pressing the key **P1** 

.

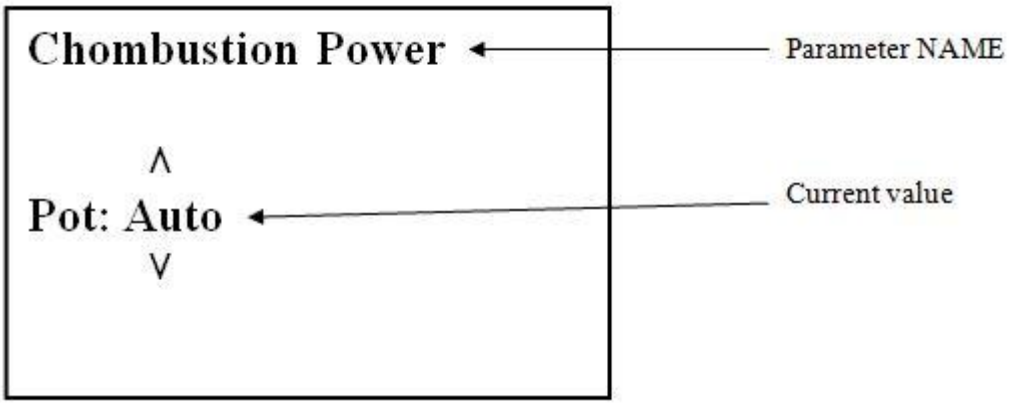

Figure 17. View and explanation of display in option Combustion Power

NOTE: In the boiler *BIOlux* UNI 20 maximum adjusted power is 3. (Manufacturer's recommendation is to use AUTO mode of Power)

- **<u>Change the assigned temperature of water in boiler *BIOlux* UNI 20</u>**
  Procedure:
  Press the key **P3** 

, after that the falling list is shown on the display , where the first option is automatically marked **Combustion Power**. With Keys **P4 or P6**   , you come to the option **Boiler Thermostat**. Confirm again with key **P3** 

(appears to view a similar view like on **figure 17**), then with keys **P4 or P6**   assign the temperature and at the end confirm again with key **P3** 

.
  Go back to the basic view on the display (**Figure 14**), by pressing the key **P1** 

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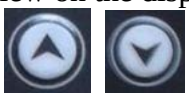
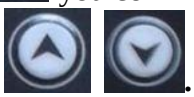
- **<u>Change the precise time and date.</u>**
  Procedure:

  Press the key **P3** 

, after that on the display there is the falling list, where the first option is automatically marked **Combustion Power**. With keys **P4 or P6**  , you come to the option **Time and Date**.

  Confirm again with key **P3** 

and there is the view on the display Adjusting of time and precise date and through the keys **P4 or P6**  **you pass from option to option through the key P3** 

you confirm the command and you change its value again through the keys **P4 or P6**  **. When you choose the wished value it is confirmed with key P3** 

. To enter or return for a step backwards use the key **P1** 

.

- **Set programming time for Ignition and Extinguishing of boiler *BIOlux* UNI 20. <u>(USE THIS OPTION IF YOU HAVE PREVIOUSLY SET THE CORRECT TIME AND DATE)</u>**

  As for the time programming, in the option itself there are two sub-options such as: **Modality** and option **Program.**

  <u>Modality</u> option serves to select the manner of programming, so, whether you will use the programming on a daily basis, every day separately (**Daily**) (Example: Monday, Tuesday, Wednesday ... Thursday), on a weekly basis (**Weekly**) (Monday to Saturday) , and on weekend basis (**week-end**) (Monday through Friday-and especially from Saturday to Sunday-special). You can totally switch off the option Chrono (**Disible**).

  <u>Program</u> option serves for programming of the above options **Daily**, **Weekly** and **Week-End**, ie. adjusting the exact start time and break of operation of the boiler ***BIOlux*** **UNI 20**.

  Procedure:
  First, you should decide how you wish to program the start time and extinguishing, whether it be daily, weekly or weekend options. If you choose one of the quoted the selection will be done in the following way.

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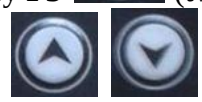
Press the key **P3** 

, after that the falling list is shown on the screen , where the first option is marked at once **Chombustion Power**.With keys **P4 or P6**  , you come to the option **Chrono**. Confirm again with key **P3** 

(two options are shown **Modality and Program**), then with keys **P4 or P6**  **you come to the wished option Modality** and you confirm it with key **P3** 

. After that, in the sub-menu you come across to the option **Daily**, **Weekly**, **Week-end** and **Disable** (**shown in Figure 18**). With keys **P4 or P6**  **choose one of them and confirm with key P3** 

.

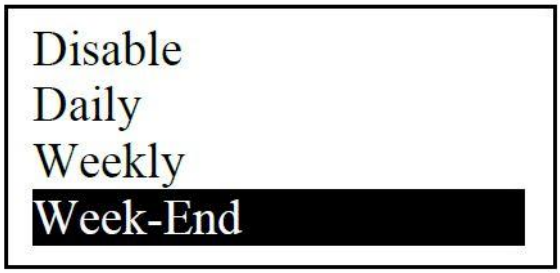
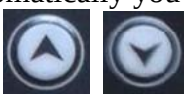


Figure 18. View of display after the selection of the option MODALITY

When you have chosen the manner of programming, automatically you return to the view on display **Modality** and **Program**. With keys **P4 or P6**  **you pass to the option Program** and you confirm with key **P3** 

.

In this option, you program the correct time of ignition and extinguishing of boiler ***BIOlux*** **UNI 20** that you previously selected in the option Modality. Examples of programming are shown in **Figures 19, 20 and 21**.

For further passing use the keys **P4 or P6**  ,for confirming the key **P3** 

, to confirm the selected values confirm with keys P5 

, and for one step backwards the key **P1** 

.

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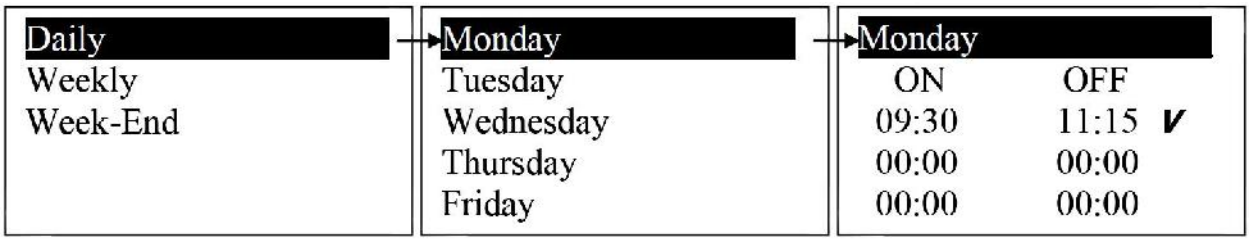

Figure 19. View of display after selection of the option Daily

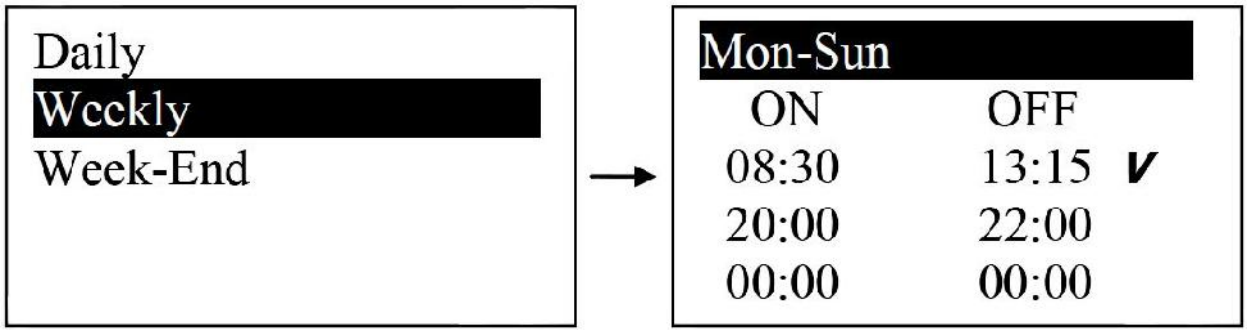

Figure 20. View of display after selection of the option Weekly

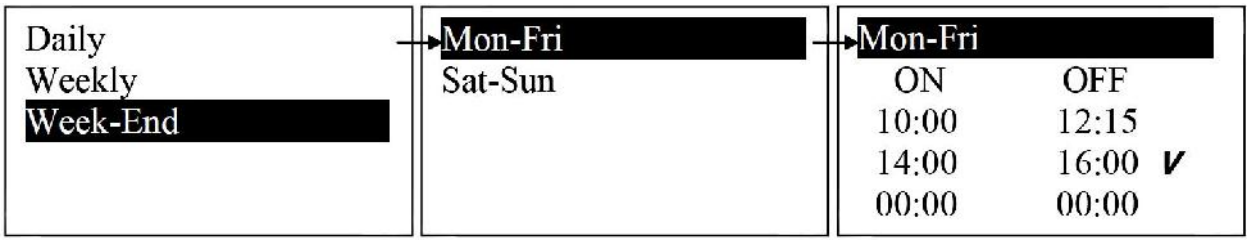

Figure 21. View of display after selection of the option Week-end

8.3 Start of work of *BIOlux* UNI 20

- ***STEP 1:*** Boiler ***BIOlux*** **UNI 20** connected on hydraulic system.
- ***STEP 2:*** Infuse a small amount of pellets in the silos and close it.
- ***STEP 3:*** Switch on the boiler.
- ***STEP 4:*** Initiate feeding system as the first grains of the pellet might fall into the combustion cup / space. **(*This procedure can be applied only when the Automation system is in OFF mode (Figure 14 : state of regime))***
  Procedure:
  Press the key **P3** 

, then with keys **P4 or P6**  **in sub-menu** you come to the function **LOAD**, confirm with key **P3** 

, with keys **P4 or P6**   **you pass from OFF** to **ON**, confirm with key **P3** 

. By confirming with key the feeder is started, until the first grains of pellet start falling into combustion cup/space.

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After that, also, with keys **P4 or P6**  **you pass from ON** to **OFF**, confirm with key **P3**  . The feeder stops working. With key **P1**  exit the sub-menu.

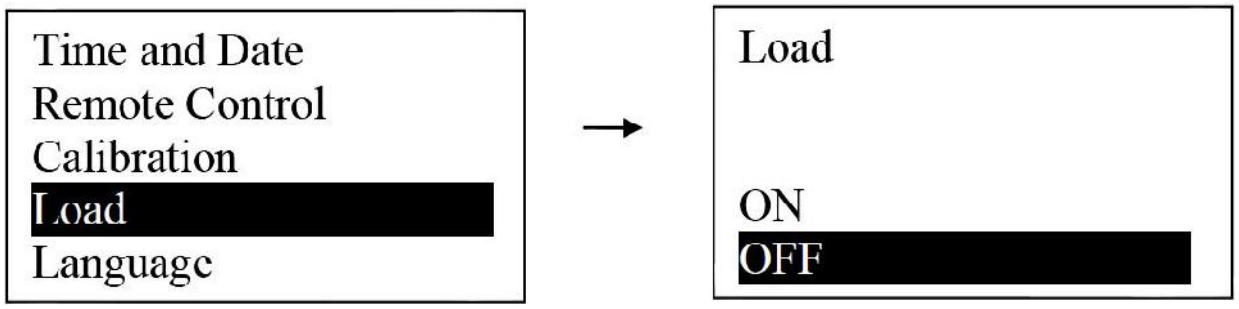

Figure 22. View of display when selecting the function LOAD

- ***STEP 5:*** Start up of boiler ***BIOlux*** **UNI 20**.
  Procedure:

  Press the key **P2**  , hold pressed for 2-3 seconds until the beep signal. Then on the display there is the text **IGNITION** (**Figure 14**-State of system). The Boiler Stove started working.

  In the conditions when the pellet is according to the standards and when all other requirements are met for chimney and air flow, the combustion process begins in 5 to 10 min.

  During the first firing some increased presence of smoke and the sharp smell should be expected until the factory coatings against corrosion end or until the final drying or stove being heated.
  The same procedure is used for extinguishing the boiler ***BIOlux*** **UNI 20**, so by a prolonged pressing of the key **P2**  until the beep sound is heard, then on the display is the text **Extinguish.** (**Figure 16**-State of system), we pass to extiguishing of the boiler ***BIOlux*** **UNI 20**.

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NOTE : These are the values measured during certification.

- The room thermocouple (thermostat) can be connected to automation system. In this case, it is important to adjust the room temperature, which is the main parameter for the operation of the boiler ***BIOlux*** **UNI 20** and water temperature in boiler (70˚C). When the room thermostat is activated, the boiler has the first need to reach the room temperature, under the condition that it is limited by adjusted degree of water temperature in it. There is a possibility that the boiler stops working before the adjusted temperature of the room thermostat, in this case the set temperature of the water in the boiler should be raised, Example to: 70˚C.

Warning: Be sure to make the analysis of the flue gases after the finish of installation of the boiler. Measure the percentage of oxygen (O2).

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8.4 Mistakes during ignition and start of boiler *BIOlux* UNI 20

All possible errors in the initial stage of operation, ie. during firing and can, even during the operation, are shown in the display of the automation system. (**Figure 14**- ALARM error).

Errors and explanations are shown in the table.

Er01	Error Safety High Voltage 1. Also with the system Off
Er02	Error Safety High Voltage 2. Only if the Combustion Fan is On.
Er03	Extinguishing for exhaust under temperature
Er04	Extinguishing for water over temperature
Er05	Extinguishing for exhaust over temperature
Er07	Encoder Error. This error can occurs for lack of Encoder signal
Er08	Encoder Error. This error can occurs in case of adjustment problems of rounds number
Er09	Water pressure low
Er10	Water pressure high
Er11	Real time clock error
Er12	Extinguishing for Ignition failed
Er15	Lack of voltage
Er17	Air Flow Regulator Error
Er18	Run out of pellet
Er39	Air Flow Regulator Sensor broken
Er41	Minimum air flow in Check Up not reached
Er42	Maximum air flow Up reached (**F40**)

All possible problems and stoppage in the operation of this device can be divided into two major groups.

- **Group I.** Stoppage during the first firing and the first firing after purchase of the boiler or the first putting the boiler into operation during the day.
- **Group II.** The delay that occurs when the boiler has already been in operation process , the display is there is a notification on the display (Run Mode) , but after reaching the set temperature and rest mode it loses the continuity of combustion .

Group I

The most common indication on the display related to this type of error is Er12.

During the first firing after the installation of the boiler, for the hydro installation there should follow the instructions from the Section **"Start of Operation of the boiler *BIOlux* UNI 20"**. Especially, pay attention to the flue outlet (diameter, number of arcs, sealing, ...) as well as to the chimney (diameter , height , insulation , sealing revision openings, dirt in chimney , etc.).
If, after the first attempt of firing there is no significant occurrence of flame and serious increase in flue gas temperature,there is a signal on the display that the ignition heater is activated, and yet the boiler goes into extinction phase (Extinguishing). In this case you should check out the following causes:

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Possible **cause 1.**

- **Problem 1.** Poor quality of pellets. Pellets are of low power, and increased humidity
- The procedure for troubleshooting of **Problem 1**. Provide the pellet of proved quality and test it.

Possible **cause 2.**

- **Problem 2.** Air temperature (which was brought to the fireplace for firing and burning) is extremely low (below zero).
- The process of resolving the **Problem 2**. Prolonging the time for preheating of heaters for firing t02 to the range of 30 - 40 seconds.

Possible **cause 3.**

- **Problem 3.** Mains voltage that is connected onto the boiler is considerably lower than 220- 230V, so the power of the heater is lower.
- The process of resolving the **Problem 3**. Raising the time for preheating heater for firing, t02, to the range of 30 - 40 seconds. If this measure does not work then connect the AC Voltage adapter.

Possible **cause 4.**

- **Problem 4.** The amount of pellets in the combustion chamber is insufficient to put the boiler into operation.
- The process of resolving the **Problem 4**. Possible mechanical problems with pellet conveyor. Check the accuracy of dozer.

Possible **cause 5.**

- **Problem 5.** There are situations in which there is a flame , but by checking the exhaust gases it can clearly be seen that there is not enough pellets for the boiler to pass from the stage of stabilization (Stabilization) into operating mode (Run mode). This occurs because the pellet structure (length, stickiness, the amount of dust, etc.) is such that the time t03 of fixed feeding is not sufficient.
- The process of resolving the **Problem 5**. This problem is eliminated by extending the time of fixed feeding, t03. Recommendation is that this time is extended cautiously, first for ten or fifteen seconds, and if that is not enough then for another five seconds and so on. After that, resolving the troubleshooting should be combined with the procedure from the following item.

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Possible **cause 6.**

- **Problem 6.** After the fixed phase of feeding (t03) there the flame occurs, but at this stage of t04, during this period it is not possible to pass into the stabilization (Stabilization) , and the flame is becoming weaker so there is a decrease of the temperature of flue gases and shutting down (extinguishing). This problem occurs because of the varying quality of pellets.
- The process of resolving the **Problem 6**. Reduce the time t04. It is recommended that you do it carefully. It is possible to combine this procedure with the solution contained in the previous item.

Possible **cause 7.**

- **Problem 6.** The boiler is connected to the room thermostat. By increasing the set temperature on the room thermostat the boiler does not enter the firing phase (Ignition) and there is not activation of the firing heater.
- The process of resolving the **Problem 7**. Check whether the temperature in the room is really lower than the set temperature. Also check time programming for the room thermostat and finally check the correct functioning of the room thermostat.

Group II

The most common indication on the display related to this type of errors is **Er03**.

Possible **cause 1.**

- **Problem 1.** The boiler ***BIOlux*** **UNI 20** was fired and in was in the operating mode (Run mode), but it came to the stoppage; and when it stopped again and got the command from for work either from the boiler thermostat or room thermostat. The combustion chamber is, in such situations, full of unburned pellets.
- The process of resolving the **Problem 1**. Check the values of the parameters A26, Th28 and Th06. Maybe there was an accidental changing of their values. Parameter A26 needs to be 1 , the parameter Th06 between 60 and 65, while the parameter Th 28 in any case should for at least two degrees lower than Th06. In such cases parameters should be changed, empty chamber (burning bowl) and then restart the boiler.

Possible **cause 2.**

- **Problem 2.** The boiler ***BIOlux*** **UNI 20** was ignited, and entered the operating mode (Run mode), but as time goes on there comes to an increasing accumulation of pellets at the bottom of the combustion chamber. As the time goes on the unburned pellet fills the

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combustion chamber and a reduction in the flame and the boiler is extinguished. (Extinguishing).

- The process of resolving the **Problem 1**. Increase the fan power. It is best to increase the fan power in all modes through the function of calibration (Calibration-exhaust fan).

Possible **cause 3.**

- **Problem 2.** Boiler ***BIO lux* UNI 20** works, but in the course of work there comes to a stoppage and a sign is displayed-Modulation, and then to the Safety shutdown (Extinguishing). At the end the display indicates the error Er05.
- The process of resolving the **Problem 3**. This occurs because the flue gas temperature is too high. The most common causes are contamination of the boiler, the chimney is too strong, too strong fans in operating mode, excessive loading of pellets, pellet characteristics, and so on. The delay can be eliminated by adjusting some of the parameters or by increasing parameters for passing the boilers into modulation and safety shutdown, due to flue gases, which are parameters Th07, Th08.

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8.5 Maintenance of boiler *BIOlux* UNI 20.

Boiler ***BIOlux*** **UNI 20** requires daily and periodic cleaning.

- Daily cleaning also refers to the area of the combustion chamber ie. Combustion cup where by the constant ejection of ash allows a better working of electric heaters for firing and a better combustion ie. A bigger amount of air through the slits in the cup. Also, the ash, even in the course of a day begins to accumulate on the bottom, the space around the combustion space. At the average parameters of combustion of 100 kg of pellets 1 kg of ash produced.

- In every 3 to 4 days it is necessary to clean the space of combustian chamber **(figure 23)**. Also it is necessary to clean the deposits on the walls of the firebox. By this we provide a better transfer as one millimeter layer of tar and soot decreases the conductivity by 5%.

- Once in every two weeks it is necessary to open the top cover for cleaning, remove the turbulators and from the whole available part of the boiler remove tar and soot (Figure 23). All that is removed can be picked off through the combustion chamber. Also, at that time, flue gas pipe should be removed from the rear of the boiler as to be cleaned from ashes and soot **(NOTE: Pay attention to the probe for the flue gases when removing the chimney).**

If, during the cleaning in the boiler there appears the condensation it is necessary to collect the condensed matter and the whole boiler inside should be coated by base means for cleaning or else by means of water solution of constyruction lime. In this way the neutralization of acids is carried out due to condensation.

While maintaining and servicing the boiler, the boiler is to be switched off the power supply.

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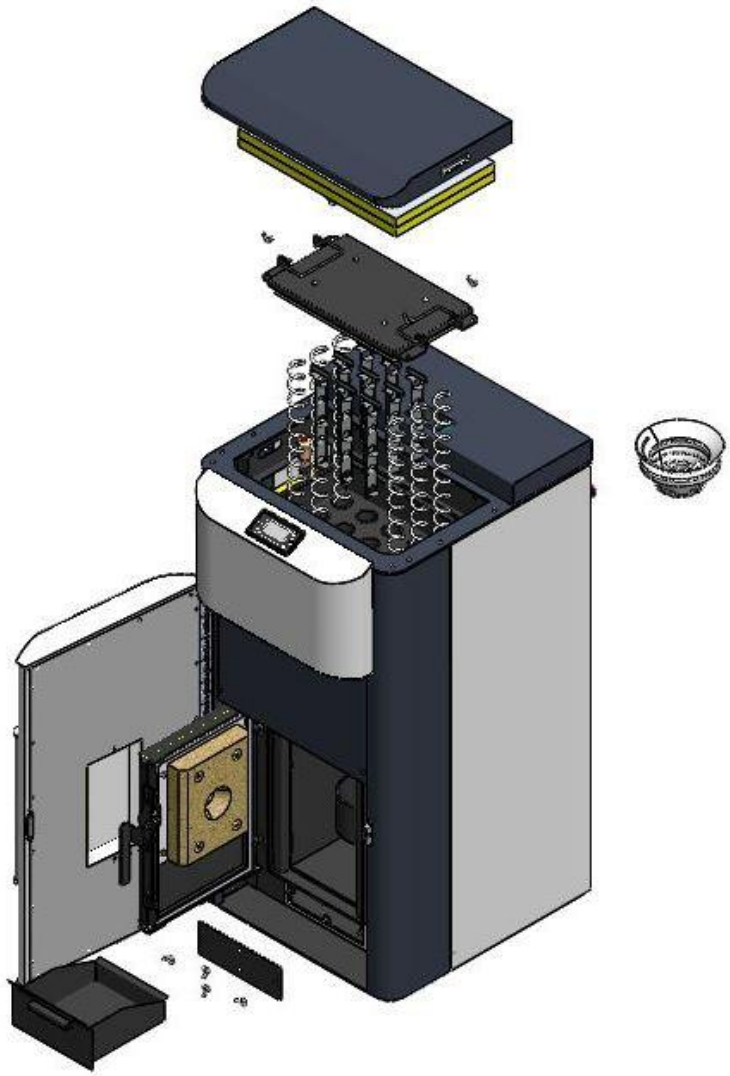

Figure 23. View of elements that are dismantled during the cleaning

In this way the boiler is conserved at the end of the heating season. In this situation, close all openings of the boiler to prevent the circulation of air through the boiler as the moisture can occur in the boiler as well.

Maintenance of the boiler is one of the most essential factors for the length of working life of the boiler. It is particularly important that the boiler be cleaned when out of operation season and neutralization of acids be done as already described.

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8.6 Name plate.

The nameplate is stuck on a well visible place on the boiler and includes the following (see the image in the item: STICKERS):

1.Tehnical data on sticker:

- Manufacturer (Radijator inženjering)
- Serial number of boiler (example: N°:171115001)
- Year of product (example: 2015)
- Type of boiler (***BIOlux*** **UNI 20**)
- Nominal power of boiler (19,75kW)
- Heat output range (5,85– 19,75kW)
- Necessary chimey draft (12Pa)
- Electric voltage (230V)
- Frequency (50Hz)
- Current (3,04A)
- Nominal electrical power (500W)
- Max.extended el.power (200W)
- All.el.power (700W)
- Weight boiler (267kg)
- Quantity of water in boiler (40L)
- Class boiler according to EN 303-5
- Class fuel - pellets (C1)
- Max. pressure (3 bar)
- Max. temperature (90°C)

2. Sticker of importer
3. OEEO
4. Other markings on the boiler

CE

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8.7 Declaration

Radijator

DECLARATION OF CONFORMITY

UNDER THE DIRECTIVE 2006/42/EC ON MACHINERY
ANNEX II, PART 1, SECTION A.

On behalf of **"RADIJATOR Inženjering" d.o.o/ Živojina Lazića Solunca 6; 36000 Kraljevo; Serbia**

DECLARES

Own responsibility: **Heating boiler burning pellet production series *BIO*~ with rated heating output: *BIO*~ UNI 20 - 19,75kW.**

meet the requirements of: **DIRECTIVE 2006/42/EC ON MACHINERY (EFFECTIVE 29/06/2006),**

and the requirements of the following directives and regulations:
1. **Directive 2004/108/EC** of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility (Text with EEA relevance) and repealing **Directive 89/336/EEC**;
2. **Directive 2006/95/EC** of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (codified version) (Text with EEA relevance) and repealed **Directive 73/23/EEC**.

The machine complies with the following EU introduced harmonized standarts:
EN 303-5:2012,

and the following EN and technical requirements:**EN 60730-1.**

Location: Kraljevo
Date: 2015-11-05

Signature: .....
/ Milan Janić, general manager /

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8.8 Sticker.

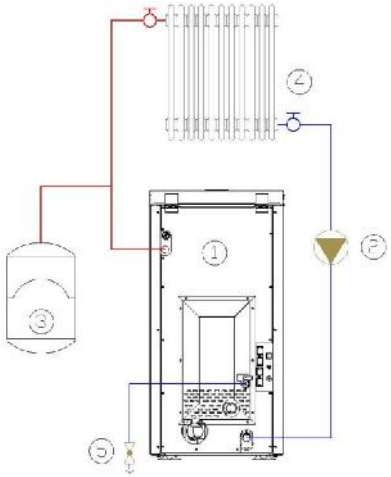
On boiler ***BIOlux*** **UNI 20** there are stickers identifying the connections as well as labels against the risk of electric shock, stickers for scheme of connections etc.

<u>Labels that indicate connection to the installation:</u>

1. Sticker (Hot water) 32mm x 74mm

2. Sticker (Cold water) 32mm x 74mm

3. Sticker (Hydraulic scheme) 148mm x 210mm



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Labels that indicate the presence of electricity high voltage and danger:

1. Sticker (Input with low voltage 12V) 60mm x 80mm

2. Sticker (Hayardous voltage - BIGGER) 100mm x 150mm

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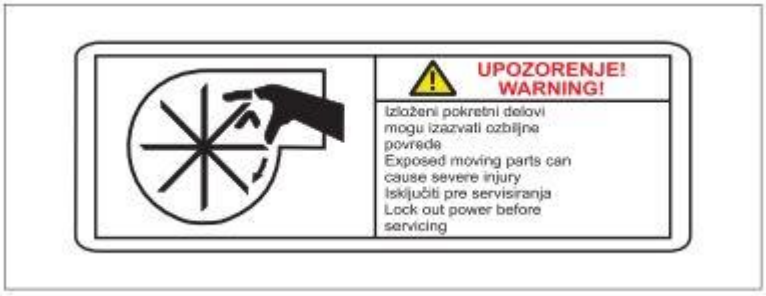
3. Sticker (Safety electrical connection) 20mm x 30mm

4. Sticker (Presence of voltage)

Labels that indicate warning:

1. Sticker (Exposed Exposed moving parts can couse seveire injury) 30mm x 80mm



2. Sticker (Only an approved installer is authorized to start boiler) 65mm x 247mm

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3. Sticker (Warning)

4. Sticker (Waste)

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Labels with technical data:

8.9 Manufactured

RADIJATOR Inženjering D.O.O.
Živojina Lazića Solunca br.6
36000 Kraljevo, Srbija

9. 9. Warranty

1. **Co.”Radiator Engineering” covers different warranty periods for different parts (as specified further on) only if the following conditions of guarantee are fulfilled:**

   1.1. Boiler must be connected to the aforementioned hydraulic schemes of technical instruction , especially pay attention to the safety valves, thermal fuse swelling, mixing valve for protection of the cold portion of boiler or against condensation, the range of work pressure of boiler,r operating temperature of the boiler, the conditions in the boiler room, etc.**(see item 3)**

   1.2. Boiler must be connected to the chimney of prescribed cross-section, characteristics of insulation and height. **(see item 3.4)**

   1.3. Flue gas outlet from boiler to the chimney must be constructed according to the technical instructions.

   1.4. The said electrical connections must be done on the boiler according to the technical instructions, particularly this refers to the characteristics of the room thermostat, the characteristics of the power supply, which must be within certain limits.

   1.5. The user must follow the following instructions on how to use and maintain the boiler. **(see item 8)**

2. **Warranty statement**

We herewith declare:

- the product has the prescribed and declared quality properties . We are committed, we will, on the request of the buyer, if he timely submits the Request for the repair within the warranty period, do at any expense all repairs, so that the product will operate in accordance with the declared properties,
- that the product is will operate flawlessly within the warranty period if the instructions for the use, installation and operation are respected,
- that in the warranty period will be ready to remove all product failures and keep in stock all the necessary spare parts,
- **warranty period starts from the DATED OF PURCHASE AND LASTS FOR 60 or 72 MONTHS, from the date of manufacture (the date of manufacture is located on the label on the back of the boiler),**
- **60 MONTHS WARRANTY VALID ONLY IF THE BOILER service regularly by the central service “RADIJATOR INŽINJERING”, within the period specified for the same (in text below),**
- **warranty is valid if the warranty card is stamped by the Seller, with the registered date of purchase and the attached Sale Invoice/Bill. IT IS ALSO IMPORTANT TO HAVE THE ORDER FOR COMMISSIONING (certified by the Service).**

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3. **Warranty period of one year applies to the following parts:**
   - all bearings,
   - electric heaters firing.

4. **Warranty period of two years applies to the following parts:**
   - fan,
   - boiler automation system with safety thermostat and other elektic parts (pressure switch for water and pressure switch for flue gases),
   - probes for flue gases,
   - the probe for temperature of boiler water,
   - motor gearbox,
   - spirale in feeding system,
   - combustion chamber (combustion cap),
   - electrical connectors,
   - insulating materials on doors and openings for cleaning,
   - turbulators.

5. **Warranty period does not apply:**
   - if after each heating season the regular servicing is not performed,
   - the replacement of parts in the regular annual maintenance in accordance with the instructions,
   - when failures are made by the purchaser due to improper handling of the product,
   - with mechanical failures made during transport and during use (solid objects),
   - if the product is installed improperly, contrary to the regulations in force in that area,
   - if the customer was using the product over the declared properties in normal circumstances.
   - on the glass door,
   - on the handle door.

6. **Warranty period expires:**
   - if it is determined that the defects were removed by the unauthorized persons or unauthorized service,
   - if at repair the original parts were not built in,
   - when the warranty period expires.

7. **When Reporting failures it is necessary to give the following information:**
   - name and type of product,
   - the date of purchase,
   - factory or workshop of the fireplace,
   - A brief description of the fault, or lack of,
   - full address of owner and contact telephone number, e-mail.

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8. Regular annual service

Regular service is performed at the end of the heating season in the period from 15.4. to 31.8 and charged by the established price list of the Co. " Radiator Engineering". Service procedure by the technical persons performing regular annual service, which are authorized by the manufacturer for this, including the following operations:

NOTE: The Service Provider is in obligation to inspect all of the following parts (from the list) feeder and exchanger, and if it comes to replacing of any parts of the same, the user receives the above-mentioned warranty and guarantee for another 12 months placed on the body of the boiler (exchanger). The warranty can be extended up to 5 years from the date of commissioning. Service and extension of service can be performed by a person sent by the Central Service of the Co. "Radiator engineering ". For not changed parts, after the servicing work, the service guarantee is not valid.

- dismantling of pellet conveyor from the boiler, checking conveyor and checking bearings and lubricating;
- Bearing must not have difficulty in turning or cracks in the in the housing. Contrarily the bearing is replaced. If it is determined that the damage to the bearing is due to intrusion of solid objects into the pellet carrier (due to user's mistake or the manufacturer of pellet mistake), Co. "Radiator Engineering" shall charge value of the bearing. If the damage to the bearing is due to the withdrawal of the flame into the pellet transporter itself for reasons of poorly set parameters when using the boiler, Co. "Radiator Engineering" shall charge the value of the bearing.
- dismantling of combustion cup on combustion chamber and cleaning the space below combustion cap. Checking condition of combustion cap;
- checking and cleaning probe of flue gases;
- checking and cleaning fan;
- checking the sealing of door;
- check the maintenance of the boiler heat exchanger.
- Cleaning flue duct.

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GARANTNI LIST / GUARANTEE LIST

Tip kotla / Boiler type

Fabrički broj / Factory No.

Garantni rok / Guarantee period **60 MESECI/ 60 MONTHS**

Datum proizvodnje /
Date of manufacture

Potpis ovlašćenog lica /
Signature of Authorized person

pečat / stamp

Prodato u firmi / Company of Sale

Adresa / Address **Telefon / Phone**

Datum prodaje / Date of Sale

Potpis / Signature

pečat / stamp

**Potrosač ima sva prava na osnovu Zakona o zaštiti potrošača ("Sl.glasnik RS", br. erbia62/2014). Garancija ne isključuje niti utiče na prava potrošača 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.*

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