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User manual for universal burners (od 27kW do 90kW)



1. The purpose of usage

Universal and retort burners are designed to burn solid fuels up to 30 mm grain size. Burners are designed except ordinary materials like brown coal and wood pellets, also for burning alternative materials such as: agro pellets, wood chips (fraction up to 3cm), plant materials and lightweight materials, such as sawdust (shavings), but must be avoided arching of the material in the tank.

The burners are designed for installation into existing cast-iron and sheet metal boilers for solid fuels. With this adjustment you can gain combined boiler with possibility to heat the boiler either in automatic regime or standard manual regime. With automatic operation is possible to obtain comfortable use of the boilers up to 150 kW

After mounting of the universal burners to existing boiler, the boiler achieves higher efficiency!

2. Burner construction

The burner combustion chamber is made from cast iron, on which is mounted air mixing chamber and together these two parts forms the complete furnace of the burner for combusting.

Each furnace has on the bottom the cleaning hatch for cleaning the air mixing chamber where can be sedimented the ash which occasionally falls through the air holes in the combustion chamber.

The furnace is connected with the tube which guides the screw and this tube is fixed by two screws (tube must be always fitted up to red line on the tube). In the tube is loosely inserted steel solid screw made from 6 mm thick steel. On the other side of the tube is inserted brass washer which is used against abrasion between flange of the tube and flange of the gearbox and also spacing pad. The gearbox is attached to the pipe by 4 screws. The torque between the worm and gear is converted by pin with a diameter of 6.3 mm

3. Description

Screw feeder is driven by electromotor and transmission. Fuel is fed into the combustion chamber by screw conveyor, where thanks to the support of air from the fan is a perfect combustion.

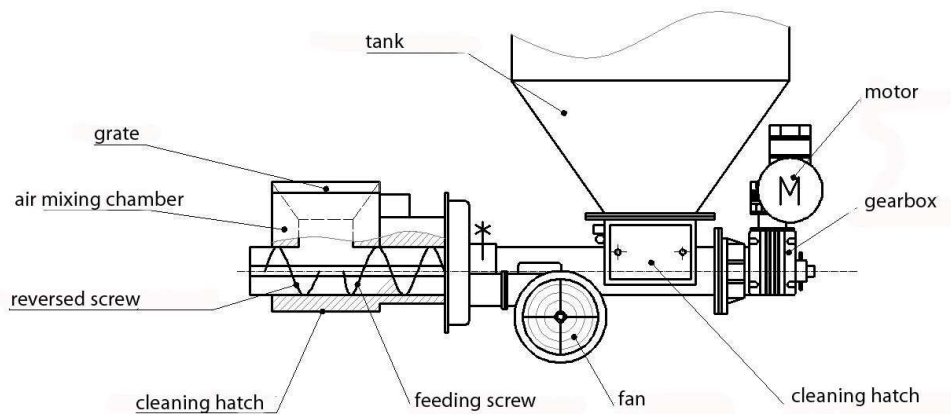
Fuel is supplied to the combustion chamber in cycles that can be set according the materials. You can continuously adjust the amount of air in combustion chamber. These parameters are being set in the control unit.

Burners with bottom fuel stoking works like the blacksmith forge. Everything is fully automatic thanks to the control unit, which monitors the entire system according the heating temperature and after reaching the setted temperature, system switches to supervisory regime, where the whole system is off.

4. Construction

- sophisticated technology of the universal burners square type (picture No. 2) is designed the way that, feeding screw is prolonged to the end of the furnace, where is freely attached. The power auger ends at the beginning of the combustion chamber and from the other side the screw is reversed. Screws have opposite thread which allows pushing the material against each other and this system expel the material up to the incinerating area. Main advantage of this furnace is input of the air from 4 sides, which ensures the perfect combustion. The ash falls over the edges to the ashtray. This type of the burner is designed for any type of material such as coal, wood or agro pellets, wood chips, plant materials and possibly sawdust or shavings. Thanks to the screw feeder construction, this system can easily push out the sinter which can occur during the combusting of some of these materials.

These types of burners are used for boilers up to 90 kW and are usually mounted under the boiler to a steel base.



Obr. č. 2 – Description of universal burner

5. Technical parameters

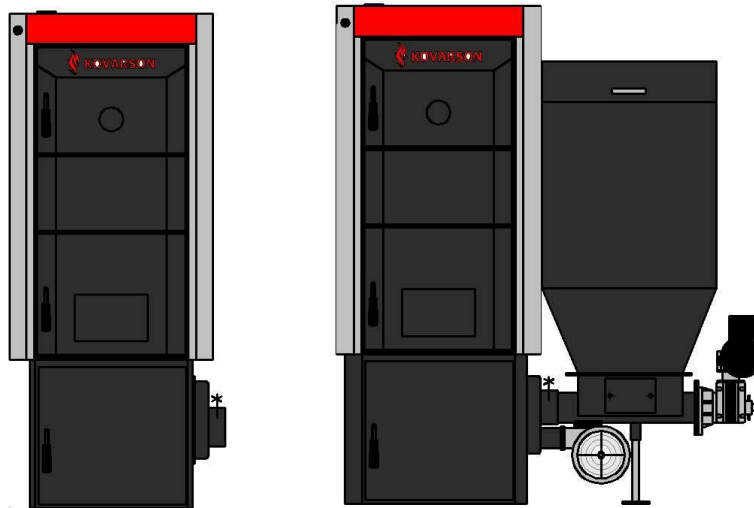
Universal burners:

	27 kW	35 kW	60 kW	90 kW
Output power [kW]	5 - 27	5 - 35	8 - 60	10 - 90
Weight	60	68	80	110
Voltage	230 V / 50Hz	230 V / 50Hz	230 V / 50Hz	230 V / 50Hz
Max. electric input	170 W	170 W	255 W	335 W
Protection	IP20	IP20	IP20	IP20

For proper function of the burner the fuel must be stored in dry place and moisture of the material should be within 20%. Fuel may not be placed on the top of the boiler or kept closer than one meter from the boiler!

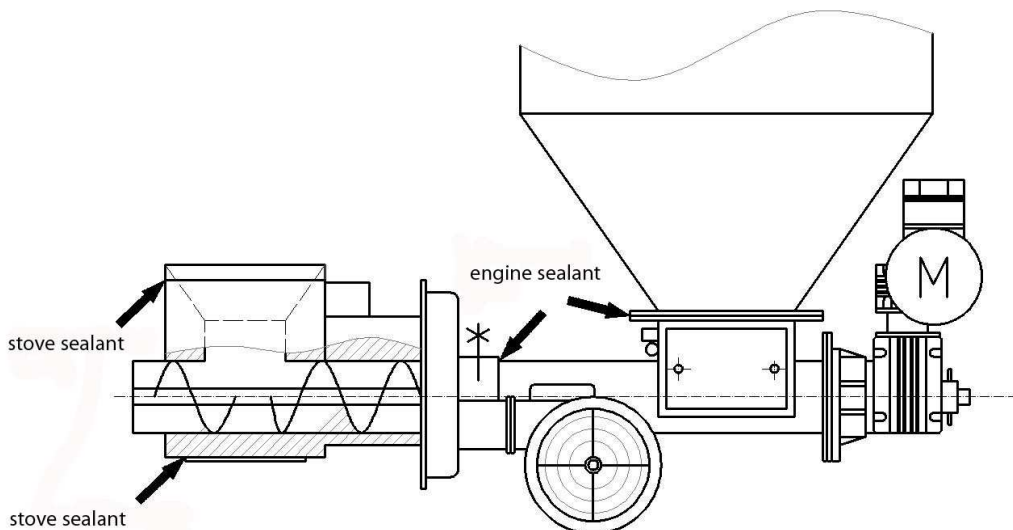
6. Mounting and sealing of the feeder

Boilers can be reconstructed in two ways. Most popular and most efficient way is when you place the burner to a steel base under the boiler (picture No. 4), which also makes enough space for the ash. This type of reconstruction is highly recommended due to its comfortable operation of your boiler and mainly that the boiler will be more efficient. Second way is mounting the burner on the doors of your boiler. This is possible only if the dimensions allows. The burner itself must be supported by a construction which will support the burner in the place (picture No. 5).



Picture No. 4 – mounting under boiler

ATENCION - All connections must be properly sealed during the assembly. Connections on the furnace must be sealed by sealant which resists temperatures up to 1200 °C and sealant up to 300°C should be used for the connection between tube and furnace and also on the flange where is the tank attached to the tube!



Picture No.7 – sealing of the universal burners 27-90kW

7. System start up

When assembly takes place, it is necessary to properly seal the cast-iron collar of the furnace to air mixing chamber with the sealant resisting temps up to 1200 °C (see picture No. 6 – 8.)

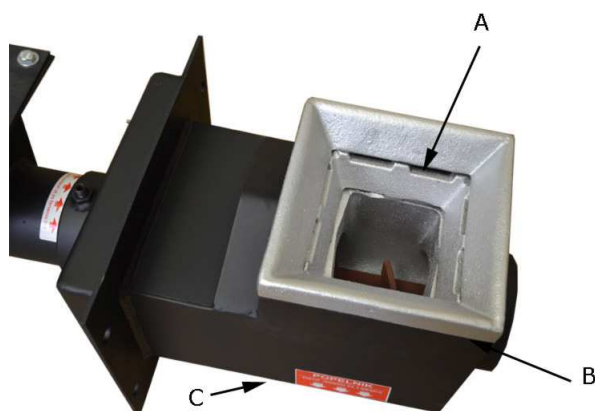
The person or company which is mounting this device is responsible for sealing of all the connections and is also responsible for setting the parameters in the control unit. Regarding the settings of control unit you can also contact company KOVARSON s.r.o., which is listed on the front page of this document.

Failure to comply with these conditions may result in uneven burning of the coal. For example the fuel may burn only locally in the furnace and is not possible to incinerate whole area. Call-out visit of our technician is considered in this case unfounded and customer is charged for this visit.

- Mounting can be done only by contractual partner of KOVARSON s.r.o.
- Burner can be mounted only by authorized company and everything must be done according applicable regulations.
- Due to the need of the air for combustion, there must be ensured sufficient supply of air in the room.
- The electricity socket must be in reach of the cable supplied with the control unit.
- The boiler location and its connection to the heating system must be done according applicable regulations and instruction manual of the boiler.

8. Maintenance and cleaning

Regular maintenance and cleaning of the burner should be done once a year if there is used recommended fuel. Cleaning should be preferably done before the heating season or if there occurs faulty activity of the burner. If there are burnt alternative fuels, burner must be cleaned more often as these materials pollutes the furnace of the burner and prevent smooth running.



A – clean the air holes

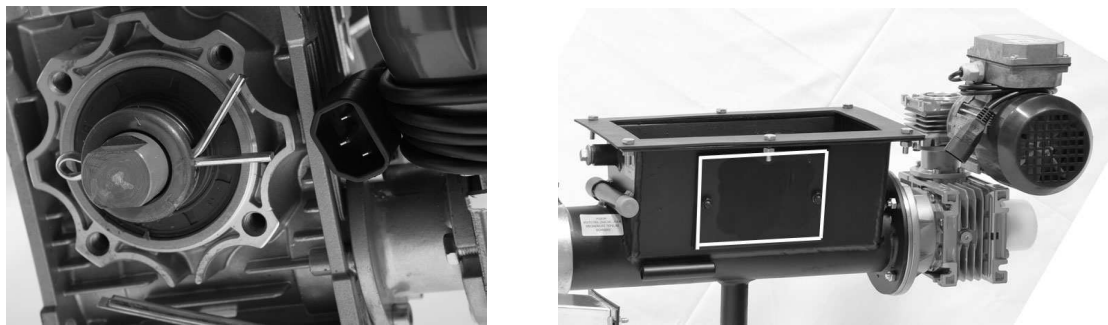
B – check the sealing joints (In case of leaks remove old sealant and seal again with the sealant resisting temperatures up to 1200 °C)

C – open the bottom hatch and clean the air mixing chamber from ash and seal with the sealant (up to temp. 1200 °C)

8. Replacement of the shear pin

In case of ingress of a larger piece to the screw feeder and when the gear crush power can not feed such peace, the shear pin will sever. Also the engine is protected against damage by thermal fuse.

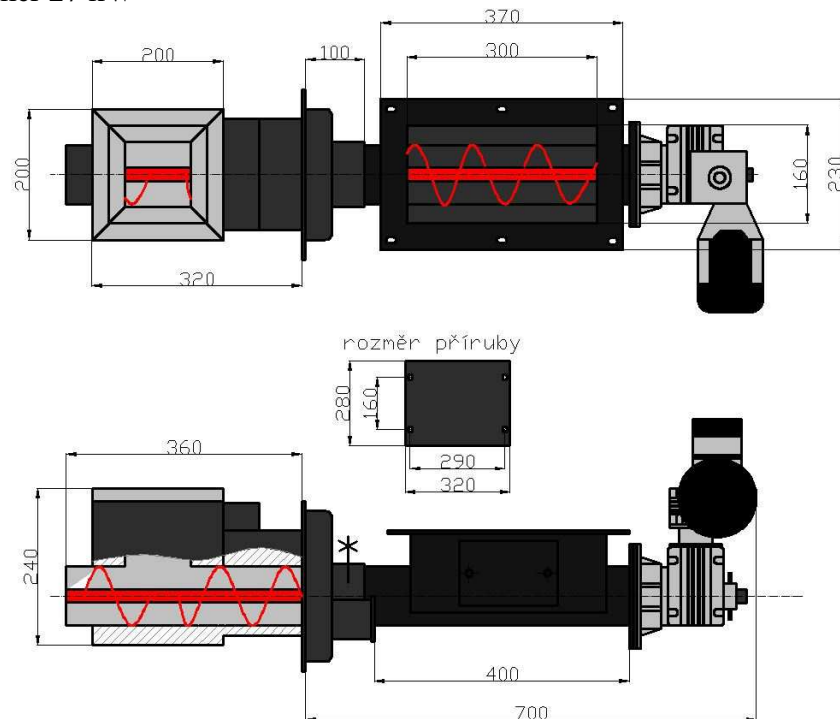
If the shear pin will sever it must be replaced for new one. The protective plastic cover must be unmounted and pin tapped out which will free the blocked screw. Screw is adjusted at the end for the wrench No. 19 in order to rotate the screw manually. Under the tank flange is located cleaning hatch (it is on both sides of the tube), which must be opened and when done so all fuel from the tank will be emptied. Screw feeder must be cleaned and also there must be pulled out the piece which caused the problem. Then the hatch should be closed and screw feeder tested manually if it rotates freely. If everything is OK new shear pin must be inserted, tank filled by fuel and you can continue with the comfortable heating.



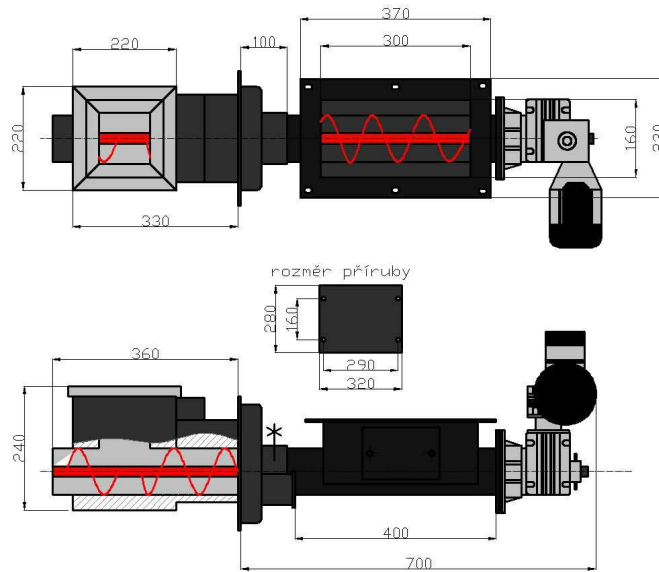
Picture No. 9 – shear pin and cleaning hatch

9. Dimension burners

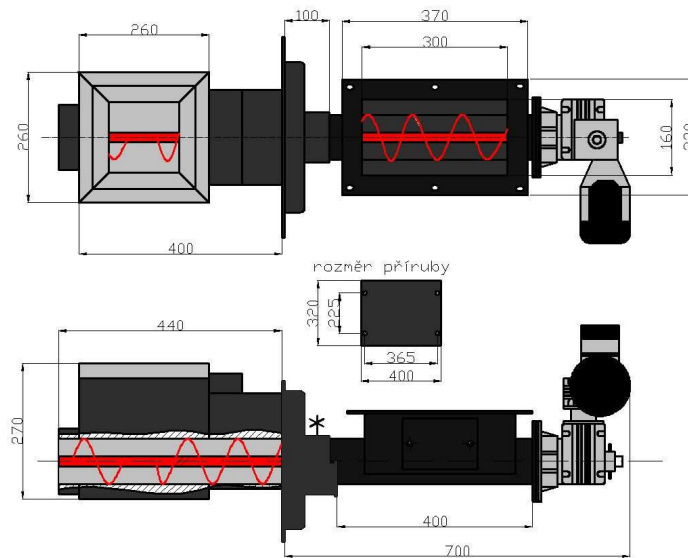
Univerzal burner 27 kW



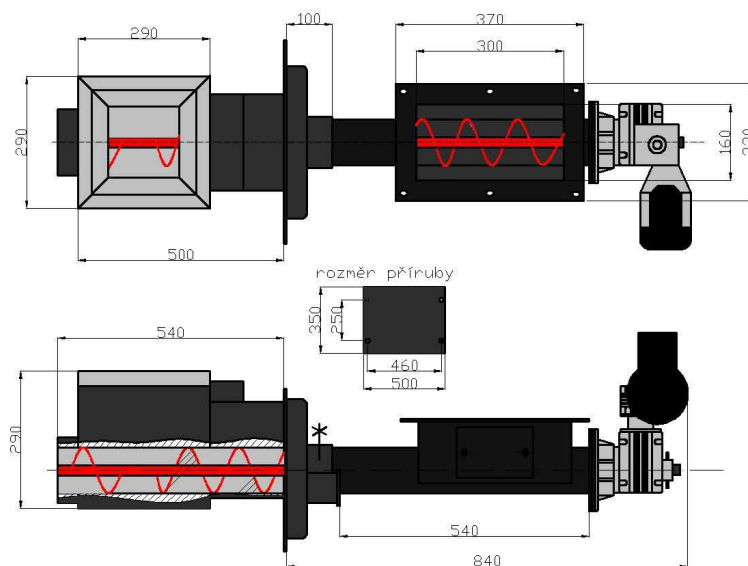
Univerzal burner 35 kW



Univerzal burner 60 kW



Univerzal burner 90 kW



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