

DIRECTIONS FOR USE

INSTALLATION INSTRUCTIONS

ESCAMO

300 / 400

NAME	OUTPUT	DESCRIPTION
Escamo 300	8,0 - 10,0 kW	Fitted fireplace
Escamo 400	8,0 - 10,0 kW	Fitted fireplace



EN - 13229



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ESCAMO 400

ESCAMO 300

1. INTRODUCTION

1.1. PREFACE

We would like to congratulate you on your purchase of this modern BARBAS fitted fireplace. This quality product will give you years of heating pleasure as you enjoy the play of the flames and the cosy glow of the fire.

This manual contains directions for both positioning the appliance and for its environmentally-friendly use. It also contains technical data for the appliance, parts information and directions in the event of problems. Study this manual carefully before using the stove. We recommend you keep this manual in a safe place for reference purposes.

1.2. SAFETY AND INSTALLATION INSTRUCTIONS

Safety

- Do not place flammable objects within 80 cm of the appliance. Pay special attention to furnishings and ornaments around the fire.
- When you use your fitted fire, the exterior will become hot. Always wear the glove or use the accessories supplied when filling etc. Protect yourself and others (especially children!) from burns. Do not leave children unattended when the fitted fire is burning.
- Watch your clothing. Synthetic clothing in particular can easily catch fire and burn intensely.
- Do not approach the appliance with flammable materials or liquids. Any work with solvents, adhesives etc. in the space heated by the fitted fire can be very dangerous.
- Make sure you know what state your chimney is in. Cracks in the chimney may not only lead to damp, staining of walls and leaking of smoke, they can also impair the carrying off of smoke. Make sure you get proper advice from your Barbas dealer or other specialist company.

- Avoid chimney fires! Have your chimney swept at least once per year - more often if you use your fire a lot. Prevent excessive deposits of soot inside the chimney by not burning freshly-cut wood. Instead, burn clean, dry chopped wood.
- Do not use your stove as a barbecue. This can cause (flammable) fat deposits to be left in the chimney and hastens the chimney becoming clogged. Prevent your chimney being soiled from above (birds' nests etc.) by fitting a suitable cap to the chimney pot.
- In case more than one stove is connected to a chimney, as is often the case in Germany, the stove has self-closing doors (Bauart 1).
- Follow the instructions issued by your local fire brigade.
The stove can be taken in operation if national and local regulations are satisfied. The required constructive adaptations should be satisfied as well.

Installation instructions

- Wood and wood briquettes may be stoked in the stove.
If you use wood and wood briquettes as fuel, do not initially add primary air.
- **Never** use the heater to burn rubbish.
- Please read all instructions/stickers on and around the appliance.
The information is based on practical experience.
- Please also study the directions for use before using the appliance for the first time. When you first fire up your appliance, there are a number of extra points you should take into account. See section 5.
- In transit, some parts of the appliance may have moved from their original place. Check that the door opens and closes, the brake plate is fitted correctly to the brackets at the top of the fire, the cast-iron fins are fixed to the walls and the stones on the bottom have not moved. Check that the ridling grill is in the correct position and slides properly. Check that there is nothing in the ash drawer that should not be there.



- Prevent over-firing (white glow) by charging up the fire with primary air (through the grid) over an extended period. Cast-iron components (grid, fire cladding) may become overheated and be damaged as a consequence.
Fire the stove slowly when the stove is new and new cast iron has been applied.
- The appliance may only be set up if the appliance and location meets the
 - national and local installation regulations;
 - local fire brigade regulations and required architectural provisions.

2. LOCATION

2.1. INCLUDED

Documentation	Warranty Manual
For attaching purposes	2 Tensioning nuts M8*5/16 2 Screw hooks M8*60 2 Brass load-distribution plugs M8*30 2 Taptite M4*6
Parts in box	1 Roll felt 2 Metres cord D=10 mm 2 Outlet boxes 2 White outlet grids 4 Pipe clamps
Loose	Mantle iron 2 Covers D=125 mm 1 Flexible pipe 1 Glove 1 Poker

N.B. If any part is missing, please contact your dealer.

2.2. PREPARATION FOR POSITIONING

- Before fitting, remove everything used to secure the appliance in transit and check that the sliding door is in working order. Report any defects immediately to your dealer. Barbas can provide scale drawings for fitting the appliance for each of the models it produces. Never work on the basis of other information such as folders etc.
- Remove the documentation supplied, manuals and sketches from inside the appliance.
- Fit the fan (optional).

2.3. BASIC REQUIREMENTS FOR POSITIONING FITTED FIREPLACES

General.

The appliance may only be set up in a room in which the location, architectural construction and activity is not endangered by the presence of a fire. The surface on which the appliance is to be placed must be correctly shaped and big enough to accommodate the appliance safely (in compliance with DIN 18895, part 1).

When fitting, all local and/or national safety regulations must be followed closely, particularly in rooms with walls/floors containing flammable material. If in doubt, consult the fire prevention department of your local fire brigade and/or the planning department of your local authority.

Fitted fireplaces may solely be used in:

- Rooms with at least one outer door or window that can be opened.
- A suite of rooms connected directly or indirectly with each other with a collective supply of air.

In the aforementioned cases, the capacity of the room(s) must be at least 4 m³ per kW of nominal output.

Fitted fireplaces may only be constructed or moved into rooms where at least 360 m³ combustion air per hour and per m² clear fire opening can circulate. If there are any other fire-burning appliances in the same room, at least 540 m³ combustion air per hour and per m² clear fire opening must be in circulation.

Other appliances must have at least 1.6 m³ combustion air per hour, per total nominal output in kW at a calculated pressure difference of 0.04 mbar with the ambient air.

Fitted fireplaces must not be used in:

- Staircases, except in buildings with no more than two apartments.
- Entrances providing general access.
- Rooms in which highly inflammable or explosive substances are processed or manufactured.
- Garages.
- Rooms or apartments with air conditioning or convection heating provided by fans, unless it can be guaranteed that they will not interfere with the working of the fire.

This is under the following conditions:

- the installation merely circulates air around the room.
- the installation has sufficient safety provisions preventing the possibility of spontaneous and automatic underpressure being created in the room in which the fire is situated.
- that the combustion air stream created by the fire and the volume streams of the extraction installations in the room and adjoining rooms connected by de-aeration connections do not create underpressure greater than 0.04 mbar. This must also be guaranteed if easily accessible air-conditioning equipment is moved or removed from the room.

Provision of combustion and convection air

The local chimney sweep/authorities must be consulted prior to fitting regarding the suitability and combustion air feed. DIN 18160 must be observed. DIN 18895 parts 1 and 3 also apply.

Fitted fireplaces may be fitted with an air pipe supplying air from outside (this is mandatory in Germany). It must have an opening of at least 150 cm² and be fitted with a governor valve which can be remotely controlled.

The air fed in thus refreshes air in the room and is also used in the combustion process. As this air runs through the convection system, it is also referred to as 'pre-warmed combustion air'.

The covering

- The covering must not be in direct contact with the fitted fireplace, but must be free-standing (supported by mantle irons). The covering in the area must be of non-flammable materials of flame-retardant material class A1. This includes bricks, cladding, ceramic tiles, metal or plasterwork, Promatec and Nobrandia.
- The average opening for incoming and outgoing air from the covering must be at least 900 cm². At least 200 cm² from the opening for incoming and outgoing air must not be closable.
- When fitting, all connection adapters for hot air must be connected to the convection coating. If separate connection adapters are connected, the manufacturer cannot guarantee the evenness of the temperature of the air and air speed.
- The convection air pipes must be made of non-flammable material which cannot be distorted.
- Within a range of 30 cm either side and 50 cm above the escape opening, there must be no flammable materials (e.g. wooden ceiling, fitted furniture).
- The convection coating of the fitted fireplace must be covered all around with a 10-cm thick layer of insulation (use of ceramic wool is permitted).

2.4 CONSTRUCTION REQUIREMENTS

Fitted fires must be constructed such that the adapter from the chimney and convection pipes can easily be cleaned.

There must be no electrical cables or gas pipes in the walls surrounding the area of the fitted fireplace.

In accordance with construction regulations (in Germany), combustion air pipes in buildings with more than two inhabited floors containing piping and cabling running through fire walls must be fitted in such a way that fire and smoke cannot escape to other floors or rooms.

2.5. HEAT-INSULATING MATERIALS

The heat-insulating materials to be used must meet specific quality standards. Manufacturers of insulating materials quote an insulation number on the packaging consisting of 10 numbers in accordance with the stipulations of AGI-Q132. Only those insulating materials listed in table 1 or alternatives approved (in Germany) by DIBT may be used.

Insulation material		Delevired in ...		Heat conductivity		Max. user temperature		Density	
Co de	Sort	Co de	Form	Co de	Can be delivered ...	Co de	°C	Co de	kg/m ³
10	Mineral fibre	01	Strips	01	Mats (1)	20	200	02	20
11	Glass fibre	02	Individual fibres	02	Mats (2)	25	250	03	30
12	Stone fibre	03	Granular fibres			30	300	04	40
13	Cinder/slag fibre	04	Felt			35	350	05	50
		05	Fins - mats			40	400	06	60
		06	Mats			45	450	07	70
		07	Plates			50	500	08	80
		08	Bowls			55	550	09	90
		09	Segments			60	600	10	100
		10	Twisted	10	Bowls (1)	65	650	11	110
				11	Bowls (2)	70	700	12	120
						75	750	13	130
						80	800	14	140
						85	850	15	150
				20	Plates (1)	90	900	16	160
				21	Plates (2)			17	170
								18	180
								19	190
								20	200
		99	Other	99	Tailor-made	99	Different approval standard	99	Different approval standard

* Table 1: data on heat-insulating materials (permitted heat-insulating materials are those in grey).

Summary of insulation properties:

- Temperature resistance > 700°C
- Density > 80 kg/m³
- Insulation figure as per AGI-Q 132
- Must not end with 99 (see table)

2.6. CHIMNEY

Every fire needs its own chimney. Several connections to one master chimney, such as encountered in Germany, is permissible solely bij gesloten bedrijf. The fitted fireplace must then be self-closing (in compliance with Bauart 1). Ensure that any existing chimney is completely air-tight and in good condition. It must be suitable to accommodate the appliance in question. Make sure your chimney has a proper cap to prevent rain getting in and birds nesting on it.

The draught in your chimney determines how your fire will burn. The recommended minimal draught is 15 Pa (0.15 mbar). Your chimney should be at least 4 metres tall from the point at which the chimney connects to the fire. Chimneys which are well-insulated measuring in excess of 8 metres can develop a significant draught if the fire is raging. We therefore advise you fit a check valve or draught breaker between the fire and the chimney.

ENGLISH

2.6.1. Chimneys and Escamo fires

Ensure that any existing chimney is completely air-tight and in good condition. The diameter of the entire chimney, including the chimney pot on the roof must be at least 150 mm or 200 mm dependent on the diameter of the smoke outlet of the stove.

Make sure your chimney has a proper cap to prevent rain getting in and birds nesting on it.

If there is no suitable chimney immediately available, we advise you to use double-walled insulated stainless steel sections. A chimney must be compliant with the prevailing planning conditions. Have a specialist carry out the building. When purchasing such sections, we advise you to find out whether some form of casing of the chimney is required.

A few points for your attention:

- Chimneys must be free-standing, i.e. they must not rest on the appliance itself.
- All connections between the appliance and the chimney must be properly insulated.
- Flammable material must be kept clear (outside the casing/insulation zone) of all through-feeds in the floor or wall (remember the roof decking).

Do not make any horizontal connections. Deposits and soot will collect here (unless it is a short horizontal connection directly behind the fitted fireplace).

The chimney calculation, as in Germany, is made according to DIN 4705 parts 1 and 2 with each of the following measured values:

- mass flow of the flue gasses;
- temperature of the smoke outlet on the stove;
- chimney draught;
- nominal power output.

3. INSTALLATION INSTRUCTIONS

3.1 REQUIREMENTS RELATING TO THE USE OF EXISTING CHIMNEYS

The adapter material for the connection with the chimney must be made of at least 2 mm thick sheet steel and must be insulated with a heat-resistant material 3 cm in thickness. Connect the pipes to the existing chimney using a sliding sleeve in the ceiling (niche pipe). Check all connections for air-tightness (use for example smoke tubes). If the smoke outlet leads through parts containing flammable material, such as walls, the adapter must be encased in at least 20 cm of a mineral substance (such as aerated concrete). Follow exactly the local regulations.

Protection of the basic surface (surface)

When fitting a fitted fireplace on a surface containing flammable material, the surface must be fitted with a covering layer of a non-flammable material such as concrete with a thickness of 6 cm. The concrete plate must be of sufficient dimensions to act as a bearing surface. The concrete plate must then be covered with at least 3 cm of heat insulation. Consult an architectural advisor.

Fire free area of the surface of the fitted fireplace

The surface of the fitted fireplace must be made of non-flammable material. The minimum distance of these non-flammable surfaces must be as follows.

- At the front, the dimensions are determined by the height of the heating area measured from the floor plate (h) plus 30 cm (h+30 cm), however no less than 50 cm.
- At the sides, the dimensions are determined by the height of the heating area measured from the floor plate (h) plus 20 cm (h+20 cm), however no less than 30 cm.

Construction parts containing flammable substances or material and fitted furniture within the radiation area of the fitted fireplace

Any flammable materials should be kept outside an imaginary circle with an 80 cm radius centred on the fitted fire.

Ceiling above the fitted fireplace

If the hollow space above the fireplace reaches as high as the ceiling, it must be protected if it contains any flammable material and/or if it is a bearing structure. Such protection should be in the form of a 10-cm thick heat-insulating layer (see table 1).

Construction parts containing flammable substances or material and fitted furniture outside the radiation area of the fitted fireplace

Construction parts containing flammable substances or material such as fitted furniture must be kept at least 5 cm from the outer edges of the housing of the fitted fireplace.

Expansion seams

Between the fire and its casing, an expansion seam must be factored in to calculations. This may be filled in with ceramic or fibre-glass sealing tape.

The casing must also be covered with a layer of insulation material. It is not necessary to insulate the casing if the fitted fireplace is designed so that the free surfaces thereof cannot get hotter than 85°C.

4 FITTING THE FIREPLACE

4.1 PREPARATION / INSPECTION OF FUNCTION

- Remove all transportation screws.
- Check the function of the lifting door.
- Check that the door hinges (side) are in order.
- Check that the air slides are in working order.
- Check the position of the retardant plate.
- Check that the fan, once fitted, is in working order (if available).

Positioning of the fireplace

The fire must be positioned on a concrete surface. If such a surface is not immediately available, a pedestal must be built from the creeping space. Consult an architectural engineer.

Positioning the Escamo **without** a fan

Leave a gap/hollow in the masonry under the fireplace measuring approx. 40x30x30 cm. This gap will run to the front of the chimney breast where a grid can be fitted (clear opening at least 450 cm²).

If the opening is too small, the casing will become too hot. Attend for efficient outlet provisions (grids) of the heated air.

Positioning the Escamo **with** a fan

The fan system is connected underneath the fire without using flexible pipes. Make a space/gap under the fire as described above. The fan must be accessible for service purposes at all times. By means of the hollow area and the openings at the front or on both sides of the chimney breast, the fan system will extract sufficient air from the room to be heated for the convection box in the fire. The built-in box with rev controller can be built into the masonry of the chimney breast. The electrical connection must be made by an electrician.

The system can easily be expanded by feeding in fresh air from outside for a healthier ambient climate. Connect this pipe to a flexible pipe which is connected with the ambient air. The pipe can then be placed under the fire where it can be remotely controlled so that the flap can be opened and closed from within the room. Check that it is in working order.

BARBAS-GRIDS

COLOUR	DIAMETER (cm)	CLEAR OPENING (cm ²)
Brass or white (incl. box)	13,5*13,5	75
Brass or white (incl. box)	27,0*13,5	150
Perma Air (white)	43,0*22,0	550

Example of a fireplace to be fitted

If there is any masonry, it must be parallel at the sides as far as the horizontal section of the fire above the doors. Between the masonry and the fire, there must be a gap of approx. 5 mm for the fire to expand if the heat becomes excessive. This gap will be hidden by both vertical sides of the frame of the fire.

Now the mantle iron can be fitted. Between the horizontal part of the fire and the bottom of the mantle iron, the supplied heat-resistant sealing cord must be laid, so that the fire can also expand upwards. The mantle iron can be levelled using both tension rods which are anchored in the wall behind (expanded models only). The ceramic felt supplied should then be placed on top of the mantle iron, on top of which building can start immediately to prevent cracks forming in the chimney breast. Never fasten the mantle iron to the fire.

N.B. a wooden beam may never be placed directly on top of the mantle iron due to the excessive temperatures involved. If a wooden beam is used, a thin layer of insulation must first be placed on the mantle iron with a soldier course on top of that. The beam can be placed on this. If no soldier course is used, an air gap of at least 1 cm must be left under the beam with a layer of insulation underneath. Make sure that the beam cannot be heated up by the fire under any circumstances. This would constitute a fire risk.

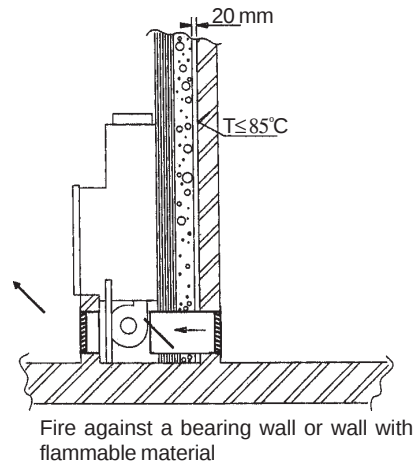
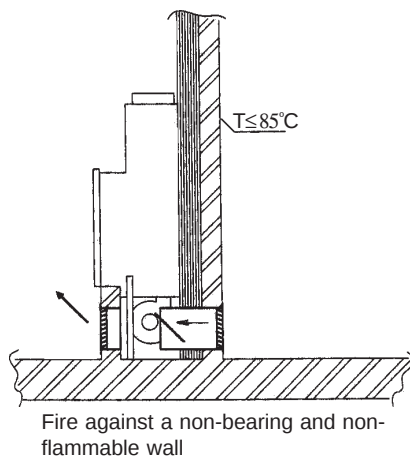
After the mantle iron has been put in place, the flexible pipes must be connected to the four convection openings at the top of the fire and on the metal housing of the air grids to be fitted (do not forget the pipe clamps). Insulate the convection casing with high-temperature glass wool coating. The hot-air pipes must also be adequately insulated.

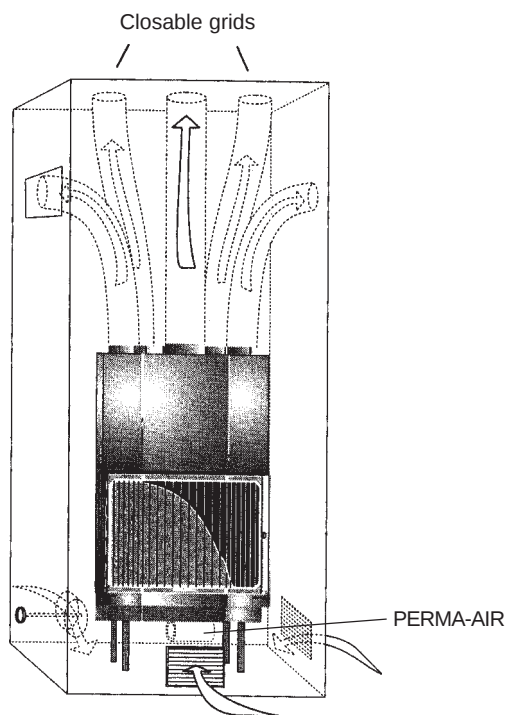
The blow-out grids (min. 450 cm²) cannot be fitted until a few days later, once the masonry has been pointed and allowed to dry. If one or more channels are connected leading to other rooms, these rooms must be fitted with closable grids. These are available from your dealer, as well as the extra flexible pipes and clamps required.

The masonry can now be extended to the ceiling. The metal housing of the individual blow-out grids should be worked into the masonry in such a way that the front of them is flush with the face of the masonry.

Needless to say, the pipe connections must be air-tight as is the case for the chimney, which must also be properly insulated. If in doubt, ask a specialist to avoid disappointment at a later date. After four weeks, your fire will be ready for use.

Example of fitting an Escamo fire against a wall with flammable material





Walls and pedestal

The fireplace assembly must be built on a concrete pedestal. If this is not immediately available, a pedestal should be built on the creeping space. Parquet or wooden flooring must not extend to within the chimney breast.

Positioning the fire against a bearing wall or a wall with flammable material.

Bearing in mind the air gap that must be left, a false wall of at least 10 cm thickness must be built at least 20 mm from a bearing wall or one with flammable material. It must be built using the same masonry as the chimney breast or aerated concrete.

Positioning the fire against a non-bearing wall or a wall without flammable material.

When positioning the fire against a non-bearing wall or one without flammable material, a false wall is not mandatory (though it is recommended). Between the fire and the wall behind it, as well as above and around the fire, insulation must be fitted which is at least 10 cm thick. The material must be A1 according to DIN 4102 (see table 1).

At the sides, the fire must be packed with insulation of at least 6 cm.

4.2 FITTING A FIRE IN GERMANY AND SWITZERLAND

Fitting fires against a wall in a casing

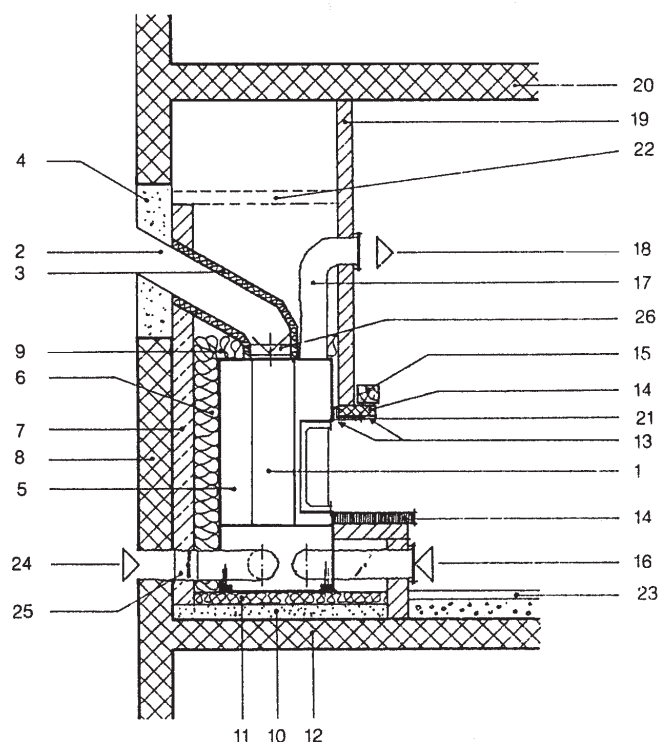
False wall mandatory

- A false wall is mandatory in the case of protective walls/walls with flammable material. The recommended thickness of the false wall is at least 10 cm.
- The false wall must be of mineral construction, e.g. aerated concrete.
- The false wall must in turn be covered with 12 cm of insulation (see table 1).
- The false wall must at least be built up to the place at which the chimney leaves the convection area.

False wall **not** mandatory

- If the existing wall is at least 10 cm thick.
- If the existing wall does not contain flammable material.
- If the existing wall is not a bearing concrete or reinforced concrete wall and is at least 10 cm thick. In that case, a 12 cm thick layer of insulation must be used and the insulation must be closed tightly, not overlapping at the sides.

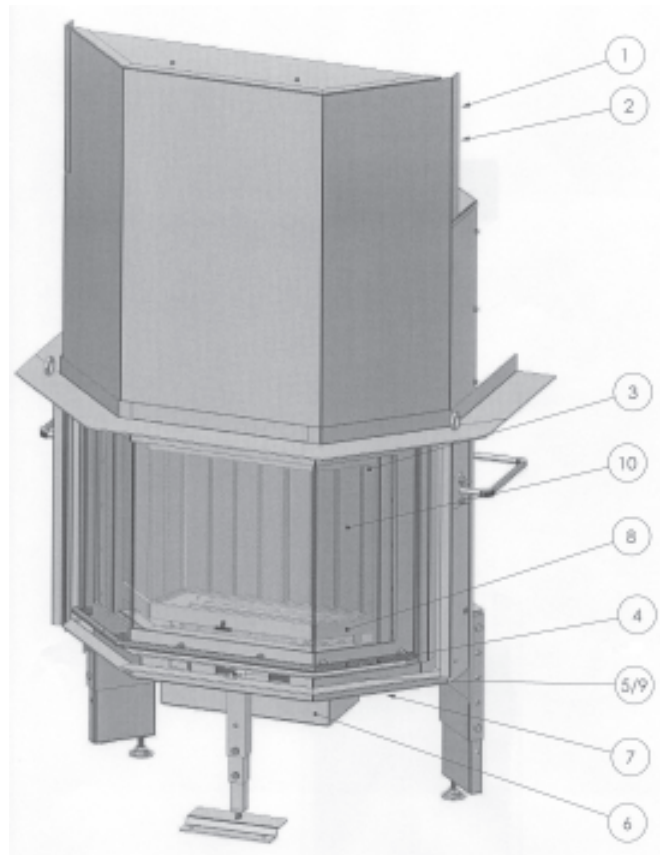
Fitting a fitted fireplace against a wall with flammable material in Germany



- | | |
|--|--|
| 1 Fire | 14 Covering |
| 2 Adapter | 15 Decorative frame |
| 3 Insulation material for adapter | 16 Stream into convection air area |
| 4 Mineral masonry | 17 Hot-air pipe |
| 5 Convection area | 18 Hot-air escape grid |
| 6 Low-temperature insulation material | 19 Mantelpiece |
| 7 False wall* | 20 Ceiling |
| 8 Wall to be protected | 21 Mantle iron |
| 9 Low-temperature insulation material | 22 Low-temperature insulation material |
| 10 Concrete plate | 23 Floor in front of the fire |
| 11 Low-temperature insulation material | 24 Stream of ambient air |
| 12 Pedestal | 25 Air-admission valve |
| 13 Expansion seam | 26 Smoke flap |

* In the case of walls with flammable material only

5. OPERATION OF THE FITTED FIREPLACE



ENGLISH

Figure 1: Operation

- | | |
|---------------------------------|--|
| 1 Smoke outlet | 7 Convection air-supply slide and fan connection |
| 2 Convection air escape opening | 8 Wood rack |
| 3 Ceramic heat-resistant glass | 9 Primary air-supply slide |
| 4 Handle | 10 Cast-iron fins/inner lining |
| 5 Secondary air-supply slide | |
| 6 Ashtray | |

6. STOKING UP FOR THE FIRST TIME

If you have had your chimney breast modified or newly built, first allow your home to dry properly. Walls which have not been allowed to dry properly are a magnet for dust such as any smoke particles created when stoking up the fitted fire or suddenly opening the door. Even scorched dust can easily be retained by damp walls. Think also of dust on the outside of the appliance or on hot radiators etc.

Check that all packaging, stickers etc. and/or all dust and waste has been cleaned up after the installation work (to avoid it getting scorched/causing a bad smell).

Check again that all moving parts are in order and that loose parts such as the brake plate, fins, ridling grill etc. are in the correct position. They may have moved during installation.

The fitted fire has a heat-proof finish. It only hardens at high temperatures. When unpacked, it is therefore not fully hardened. It can easily be damaged at this time. Therefore begin stoking up the fitted fire with a low flame (see section 7). Increase the heat gradually for approx. 2 hours until you reach the correct output. Keep it at this level for another 2 - 3 hours. The finish will now be properly hardened and can be touched without damaging. The hardening process creates a nasty, though harmless, smell/vapour.

Adequate ventilation is of the utmost importance.

7. USE

7.1. VENTILATION

Air is a vital component of the combustion process. Ensure that there is a sufficient supply of fresh air. For each kilo of wood that you put on the fire (door closed), 10 - 15 m³ of extra air is needed. That means 50 m³ per hour! As you can see, a plentiful supply of air is essential.

7.2. GETTING THE FIRE GOING (Figure 1)

When you start the fire, the chimney is still cold and there is little draught. This means that the chimney's capacity to draw in air is limited. Consequently the air supply has to be helped by opening the door and slides. Use dry, fine wood and some scrunched-up paper or firelighters to start the fire.

For ignition of the fire, use paper balls, kindling wood and impregnated ignition blocks. For the first 10 minutes, open the slide at about 6 cm. Open the primary and secondary air by moving the regulator to the right side. When ignition material burns entirely, put two wood blocks of one kg each into the combustion chamber. Leave the slide door open (~6 cm) for another three minutes. When the fire burns well, close the slide door. Close the primary air and open the secondary air by moving the regulator to the left side. Adjust the air regulator in the middle position of the range. It is recommended to burn the wood on a thick ash layer.

Prevent white glow and over-firing.

7.3. INSTRUCTIONS WHILE STOKING

After approx. 10 minutes, the fire will be burning fiercely. You can now top it up with a few larger blocks of wood. Close the door(s) when the new wood catches fire.

We recommend that you maintain a substantial layer of ash (2 - 3 cm). This not only forms a protective layer for the base of the appliance but also significantly reduces consumption of fuel and allows new wood to catch light easier.



When loading the stove with fuel, two blocks measuring 32 cm long and 32 cm in diameter is sufficient. Do not add more fuel until the previous fuel has burned down to the charcoal stage. Do not leave the door open longer than necessary.

Weather conditions

In order to reduce pollution and any other inconvenience, we advise not firing up the stove when there is no wind, or in foggy/misty conditions.

Smoke development

Your stove has been designed to be used with the load/observation door closed. Should you use it with the door open, under certain circumstances (presence of mechanical ventilation, draught, differences in barometric pressure) smoke may enter the room in which stove is situated.

Use of the stove

Your stove is suitable for continuous use. Stoves in which soap stone is used to give off heat will only do so (by radiation/convection) once the stones have accumulated sufficient heat. It is therefore inefficient to use such a stove for a short period of time.

The stove may only be positioned in a place where the location, construction and activity in the room can accommodate it without danger.

Ventilation

When using the stove, ensure a good supply of fresh air, particularly if the combustion air is drawn from the room itself. If your dwelling has mechanical ventilation, switch it off while the stove is in use.

Spare parts

Any replacement parts must be new, original parts. Use of non-original/reconditioned parts will invalidate your warranty.

Modification

Do not make modifications to your stove. Any alteration to your stove, of whatever nature, will also invalidate your warranty.

7.4 HEATING ECONOMICALLY

The most environmentally-friendly and economic way of heating with wood is to have your fire hot but calm. The ash should appear to glow a soft red-orange and should not glow like a blacksmith's fire. Fires like that burn quickly and intensely, leaving little time for complete combustion.

Your fire is at its most economical when:

- Burning with the door closed. This makes the fire hotter and improves combustion.
- Using dry and clean wood (as described further in section 8).
- Combustion is regular. When burning, shut the ridling grill and primary air supply.
- The bed of the fire should be composed of one material, though the fire must have easy access to air. Position the blocks of wood (loosely and evenly) horizontally on the bed of ash, so that they are separate and several centimetres away from the walls.

8. GENERAL HINTS

8.1. TIPS

- Burn dry wood only. Damp wood not only burns poorly, it causes more pollution in the appliance (window), the chimney, your room (when opening the door of the appliance, for instance) and the environment. Wood can only be classified as dry if it has been stored under a Dutch barn for at least two years (not covered with plastic). Never use painted or impregnated wood. The gases emitted when burning painted or impregnated wood are aggressive and will affect the appliance, the environment and your health.
- Ensure that your fire burns well. The smoke generated should be translucent or white and the windows of the fire will remain clean. We recommend that you do not 'pinch off' your fire (by closing all air openings). Doing so will hinder combustion which, apart from polluting the atmosphere, will lead to deposits of soot and tar in your chimney (which, unchecked, will increase the risk of chimney fire).
- Keep the door(s) shut when the fire is burning. Doing so improves the performance of your fire 8 - 10 times, benefiting the environment and the heat in your home (less topping up, see section 8.2). You will also prevent fire damage from any particles the fire 'spits' out (this is a particular problem with softwood from conifers). If your floor contains flammable material, an extra floor plate is required.
- Avoid lighting a fire in misty or still conditions. If the wind is still, there is hardly any draught in the cold chimney. As smoke is heavier than air, there is a chance that smoke will enter the room. If there is mist in the air, smoke coming out of your chimney will cool quickly and fall, causing problems in your area.
- Do not extinguish your fire with water - let it burn out. The part of the inner lining that is in direct contact with the fire is clad with cast iron sections or fire-resistant material. Sudden changes in temperature may lead to it deforming or cracks appearing.

8.2. OUTPUT

In practice, combustion is all about loss. This entails:

- Loss through excess heat leaving the chimney, rather than going into the room.
- Loss through insufficient combustion, such as CO (carbon monoxide) and soot particles.
- Loss through excessive unburnt fuel in the ash.

The rate at which fuel can burn completely is called the output. A well-stoked fitted fire achieves output of 75% and thus falls into the category of high-output/low emissions fitted fires. This means that you benefit directly by using less wood to achieve the same level of heat. The environment benefits as well: a well-stoked, high-output appliance means less pollution and fewer odours.

Adverse effects on the output are:

- Burning the fire with the door open. A warm chimney works in the same way as an extractor. When the door is open, the chimney draws in much more air than is necessary for combustion. This relatively cool air cools down the fire.
- Excessive chimney draught. The combustion air does not reach the fuel, but leaves the appliance via the chimney. The fire cools and the combustion quality decreases.
- Using too much wood. This is a problem if your fitted fireplace is too small. In that case, it becomes overloaded and burns more wood than heat emitted. In this case too the fuel cannot burn completely. More to the point, there is not enough air to mix with the flames. This has an extra impact on the environment.
- Admitting too much air under the fuel (primary air slides). Combustion is raised to high intensity (like a blacksmith's fire). Combustion really needs time. If combustion is too intense, there is insufficient time for the fitted fire to radiate all the heat. The chimney will become excessively hot and the same will be true of the escaping smoke. This heat is thus lost.

9. FUELS

9.1. WOOD

Suitable fuels are:

- All sorts of clean wood (forested). The wood must have been dried for at least two years. Well-dried wood has a humidity percentage between 10 and 20%. Recommended dimensions: length = 30 cm; outline 30 cm.
- Compressed wood blocks without binder (see wood dimensions).
- Hard woods burn slowly and easily form charcoal; for example hornbeam, oak, ash, beech, elm and birch. Softwood burns with more flame, but forms less charcoal and radiates less heat. Examples are spruce, pine, poplar and linden.

Unsuitable fuels are:

- Painted, bonded (chipboard, MDF etc.) or impregnated wood, plastic and other flammable waste. Stoking a fire with this is completely forbidden. To re-iterate: the combustion gases released by these materials are aggressive and will attack your fitted fireplace and the environment.
- Paraffin-containing open fire lighters are not suitable for a closed fire. A closed stove generates more heat than an open fire, thus the paraffin will melt out of the blocks prematurely.
- Damp wood burns poorly, is unsuitable and produces too much smoke (including in the room when you are topping up the wood), dirties the glass, leaves deposits in the chimney and delivers about half the heat output of dried wood.

The Escamo is not suitable for coal firing.

10. AMOUNT OF FUEL

10.1. AMOUNT OF FUEL

Each appliance is constructed for a certain maximum amount of fuel. Remember that the more fuel you put into your fire, the hotter it will become and overheating may even occur. If this happens, there is a risk of fire. It may also damage your appliance and chimney. BARBAS will not assume liability for damage caused by overheating.

If you have chosen the right appliance for your room, it will provide sufficient heat with a single layer of wood blocks (a wood block is approx. 30 cm long and 30 cm around the edges).

Burning one layer of wood can lead to varying outputs. When used correctly, one load will burn in around one hour. Putting in too much wood at once can lead to the appliance being overloaded.

You can best vary the capacity of your appliance with the amount of fuel.

Example:

The fire has an output of 10 kW and an efficiency of 75%:

Wood: 3 blocks, each around 1 kg
Briquettes: 5 briquettes, each around 0.5 kg

Your fire has an output of 6 kW:

Wood: 2 blocks, each around 1 kg
Briquettes: 3 briquettes, each around 0.5 kg

10.2. HEAT RADIATION

The table below shows the temperatures which can theoretically be achieved by burning wood.

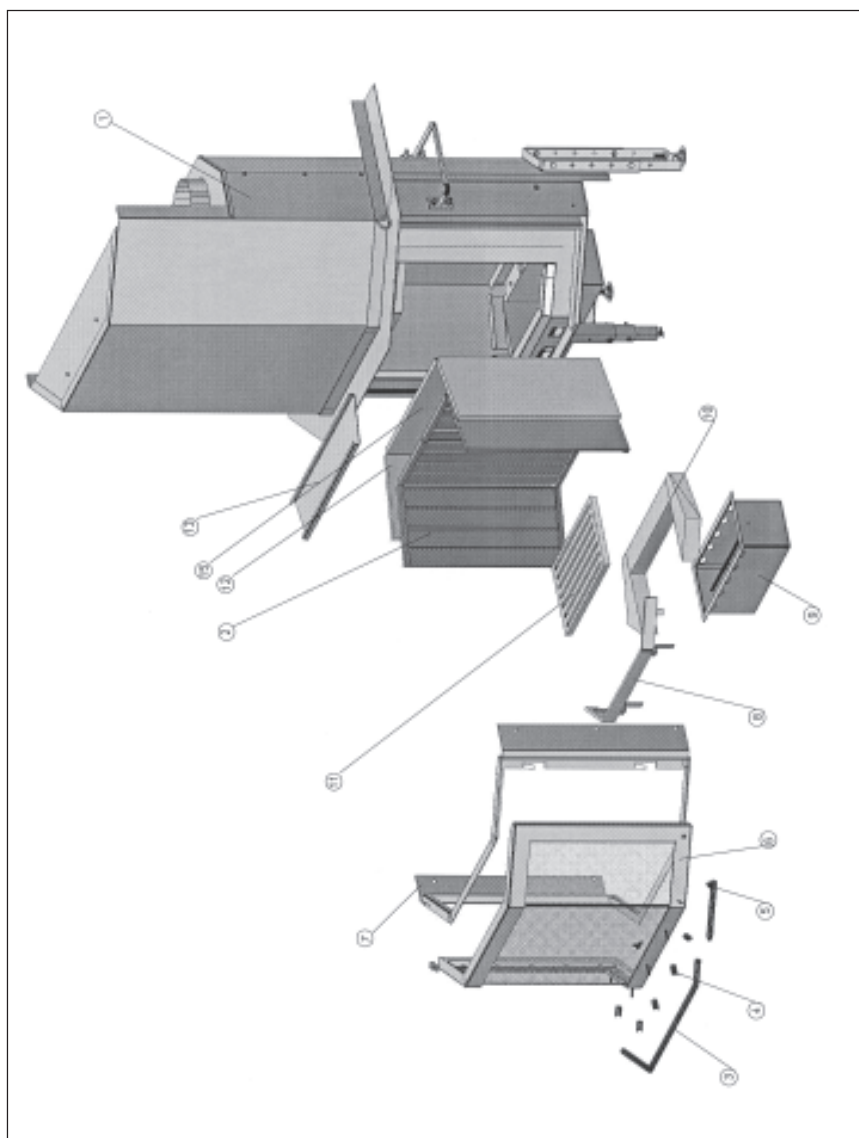
Heat radiation	
Sort of fuel	kWh/kg
Dry wood (average)	4,3

The heating value of wood (18.7 MJ/kg at 0% humidity) is not affected by the sort of wood. What does make a difference is the relative humidity of the wood (15.6 MJ/kg at 15% humidity).

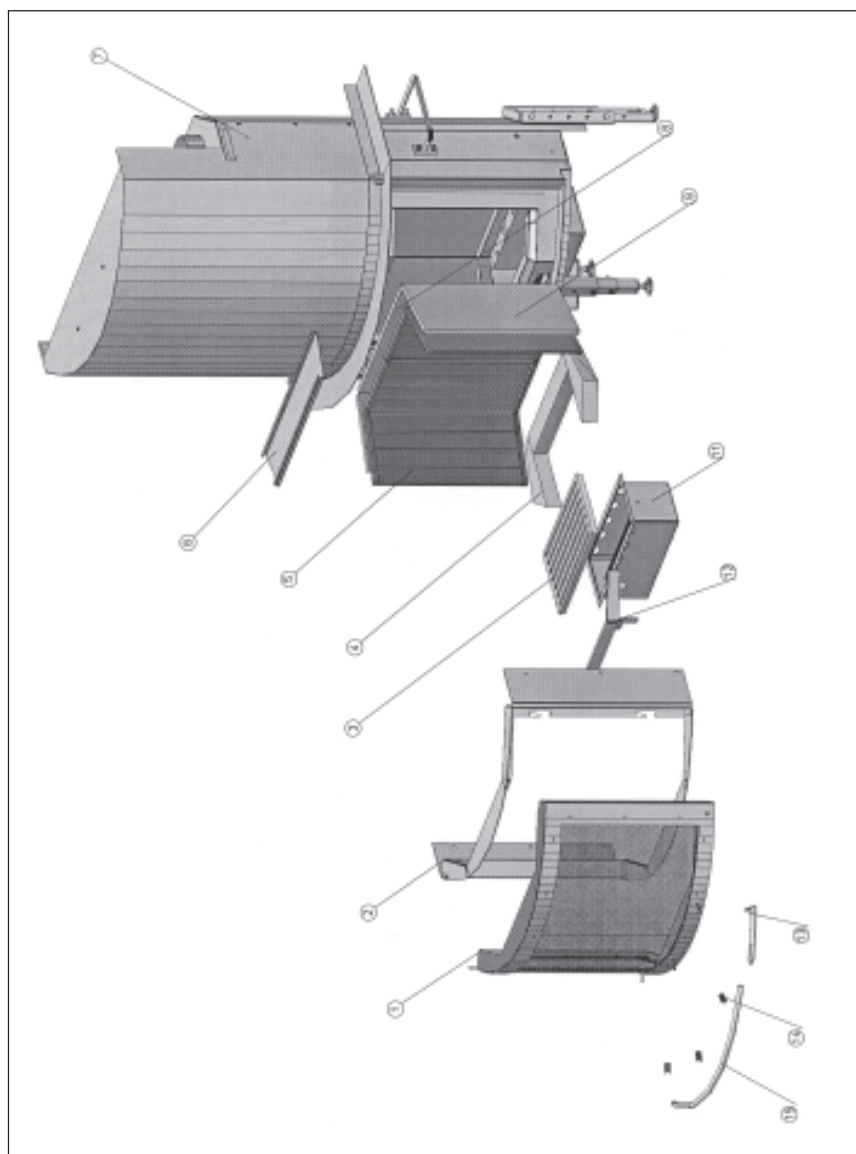
11. REGULAR MAINTENANCE

- Emptying the ash tray/container : Weekly, 48 hours after last heating
- Cleaning the glass : As required
- Door/ashtray seals : Check annually before heating is resumed. Replace as necessary
- Sweep and inspect chimney : Annually before heating is resumed
- Fins/Skamolex plates : Check annually
 - *Clean fins as necessary with wire brush
 - *Replace plates as necessary
- Ridling grill : Check annually for cracks/breakage
- Slides/flaps : Check function annually
- Convection channels : Clean annually
- Paint : Annually, if necessary touch up with BARBAS heat-resistant paint (do not use with open fires)
- Parts : Individual parts for replacement/ accessories are available from your BARBAS dealer
Use only original parts
- Modifications : Introduced modifications to the appliance are not permitted

12. REPLACEMENT PARTS



ESCAMO 300 Replacement parts		
Item no.	Description	Number
1	Body	1
2	Cast-iron fins	3
3	Handle (long)	1
4	Handle connecting spindle	5
5	Handle (hinged)	1
6	Door	1
7	Sliding frame	1
8	Wood rack	1
9	Ashtray	1
10	Base stones	3
11	Stoking grill	1
12	Insulation plate (left/right)	2
13	Stainless-steel brake plate	1
15	Insulation plate (rear)	1
	Perma-air set (optional)	1
	Fibre-glass section strip	1
	Cord-glass strip	1
	Door-glass strip	1
When ordering, please give the serial number. (knob to the left in the guide rail)		



ESCAMO 400 Replacement parts		
Item no.	Description	Number
1	Door	1
2	Sliding frame	1
3	Stoking grill	1
4	Base stones	3
5	Cast-iron fins	3
6	Stainless-steel brake plate	1
7	Body	1
8	Insulation plate (rear)	1
9	Insulation plate (left/right)	2
11	Ashtray	1
12	Wood rack	1
13	Handle (hinged)	1
14	Handle connecting spindle	3
15	Handle (long)	1
	Perma-air set (optional)	1
	Fibre-glass section strip	1
	Cord-glass strip	1
	Door-glass strip	1
When ordering, please give the serial number. (knob to the left in the guide rail)		

13. TECHNICAL DATA

Type:	ESCAMO 300
Dimensions (hxbxd)	1.52 x 0.77 x 0.42 m
Weight	206 kg
Combustion:	
Nominal output	8.0 - 10.0 kW Measured in compliance with DIN 18895 / EN - 13229
Smoke output	8.9 g/s (for chimney calculation) Measured at a smoke temperature of 330°C and at a draught setting of 12 mbar
Inside:	
Dimensions	Surface area 0.15 m ² Clear fire opening 396 x 365 + 2 (173 x 396) mm
Fins	Cast iron / Skamolex
Base stones	Fire-proof concrete
Floor plate	Steel (removable)
Inner lining	Steel (heat-resistant and rust-proof)
Retardant plate (brake plate)	Stainless steel sheet
Outside:	
Construction	Sheet-steel casing Top plate with Ø150 mm smoke connection and 2 convection holes (Ø125 mm) Heating connections (Ø125 mm)
Doors	Sliding door Door opens outwards to facilitate cleaning of the glass
Operation:	Central handle for controlling the primary and secondary air
Ash collection:	Ash container with heating grill
Options:	230 V / 88 W fan for transport of heating air Rev control by built-in dimmer switch

Type:	ESCAMO 400
Dimensions (hxbxd)	1.52 x 0.77 x 0.42 m
Weight	220 kg
Combustion:	
Nominal output	8.0 - 10.0 kW Measured in compliance with DIN 18895 / EN - 13229
Smoke output	8.9 g/s (for chimney calculation) Measured at a smoke temperature of 330°C and at a draught setting of 12 mbar
Inside:	
Dimensions	Surface area 0.15 m ² Clear fire opening 396 x 610 mm
Fins	Cast iron / Skamolex
Base stones	Fire-proof concrete
Floor plate	Steel (removable)
Inner lining	Steel (heat-resistant and rust-proof)
Retardant plate (brake plate)	Stainless steel sheet
Outside:	
Construction	Sheet-steel casing Top plate with Ø150 mm smoke connection and 2 convection holes (Ø125 mm) Heating connections (Ø125 mm)
Doors	Sliding door Door opens outwards to facilitate cleaning of the glass
Operation:	Central handle for controlling the primary and secondary air
Ash collection:	Ash container with heating grill
Options:	230 V / 88 W fan for transport of heating air Rev control by built-in dimmer switch

14. FREQUENTLY ASKED QUESTIONS

How often should I have my chimney swept?

At least once a year. If you use your fire more than three times a week on average, have your chimney swept more often. Have the chimney swept by a recognised company. Your fire insurance policy may make this a condition and ask for proof.

In terms of stoking up the fire, what is the difference between a stone and cast-iron lining?

Both linings serve to protect the wall of the stove against flames. The advantage of a cast-iron lining is that it is much stronger than a stone lining. It will not break after a few years; cast iron will not be damaged if you push in the wood into the stove any harder than usual. Cast iron radiates more heat out to the room than stone. This improves the output.

Does a fitted fire have better output than an open fire?

Yes, a fitted fire has between 7 and 8 times the efficiency of an open fire. (See also sections 7.2 and 7.3).

What is the difference between net capacity, gross capacity and efficiency?

Net capacity represents the net amount of heat that the appliance generates.

The total heat content of the fuel is the so called gross capacity.

Efficiency is the percentage of fuel converted into useful heat. It is the ratio of net capacity and gross capacity.

How can I keep the glass clean?

By making a point of using dry, clean wood in the stove. Wood that is too damp immediately gives off lots of ash.

Make sure the seals are in good working order. Any air seeping out around the glass part of the door will cool the air, resulting in the fire not burning cleanly.

How much wood will I use?

That depends entirely on how you heat your room, what sort of appliance you have and the size of the room you are heating. As a general rule, a fire used in accordance with our guidelines (no air under the fuel, topped up once an hour) produces an output of about 3 kW.

In an averagely-insulated house, the general rule is that in a room of 80 m³, you need a fire with an output of around 7 kW. For each subsequent 10 m³, add on 0.6 kW.

In a relatively well-insulated house, the general rule is that in a room of 80 m³, an appliance of 5.5 kW is adequate, and for each subsequent 10 m³, you need to add a further 0.4 kW.

Can a wood-burning stove/fitted fire be connected to a central heating installation?

The Barbas range does not have any stoves/fires that can be connected to central heating installations. We do not advise attempting it!!

At what temperature does/do the convection fan(s) cut in?

Wood-burning stoves are not fitted with convection fans.

Fitted fires with a fan controlled by a built-in dimmer have no automatic temperature control. The on/off switch is part of the dimmer.

If your fitted fire is equipped with a transformer plug and dimmer, it will also have an automatic temperature control. If the two fans are about to overheat, they will cut in when the area to the left and right of the ash drawer becomes warm. This is at approx. 45°C.

How do I know if I'm heating correctly?

Follow the instructions in this manual.

The flames should play softly across the wood and the wood should burn evenly.

Once the fire has been burning for a short time, the smoke from the chimney should be almost translucent.

What is wrong with a smoking chimney?

A seriously smoking chimney means that combustion is less than optimum. There may be a number of reasons for this. If the fire has only just caught on, or has recently been topped up, some smoke is normal. By opening the door(s) for a short period, the wood will catch fire quicker and the smoky period will be shorter.

If you leave the fire door open, and especially if you burn damp wood, the result will be a lot of smoke. In both cases, the combustion temperature is too low. This leaves numerous dangerous compounds intact, which means more deposits in your chimney and more waste into the environment.

What is the influence of soap stone on a stove?

Soap stone functions as a heat buffer. Its combination of chalky composition and sedimentary structure means that soap stone heats up more quickly than other sorts of stone and emits heat more gradually than other stone. This evens out the irregularities associated with burning wood (heat radiated is initially double; later half the average). However, this means that a soap stone fire has a longer warm-up period. However, it will continue to give off heat for longer.

The soap stones are not like the ones in the brochure. Is this right?

Soap stone is a type of stone that is found in mountain walls (it is sawn out). Depending on the place in the mountain, the structure may vary. It may be more or less porous, its structure may be wild or calm. This means that the colour and finish may also vary. Stone quarried in the past will thus look different to stone quarried today.

What should I do if the wood does not catch fire?

This probably means that the wood is damp. Remove the wood and replace it with dry wood. If necessary, make a fire with wood briquettes. They are always dry (they have a moisture content of <10%).

The wood burns up too quickly. What should I do?

Ensure that air cannot get in underneath the fuel. Close the primary air slides, ash drawer and ridling grill. Under these conditions, the layer of ash should no longer burn bright orange/white but red.

If there is a draught (due to strong wind), air intended as secondary air for above the fuel may enter through the openings above the door and flow straight down beneath the wood. If this happens, close the secondary air slides slightly.

There may be too much of a draught in your chimney, particularly if it is very high (in excess of 8 m). Ask your supplier to fit a check valve or damper. This may not be possible in all cases.

Can I leave my fire unattended?

Only when it is burning peacefully with little wood and if the doors are closed as well as the primary air slides. Do not leave children unattended while the fire is burning.

Do I have to take any extra measures if the room I am heating has an extractor fan?

Select a closed fire, i.e. a fire with completely separate combustion air inlet. The combustion air will then be drawn in from outside the appliance.

What is creosote?

Creosote is a tar-like deposit which is left in the chimney. It is formed in poor combustion conditions when burning wood (damp wood, pinching off the air supply to the fire or burning impregnated or painted wood for example). Creosote ignites at approx. 500°C. This temperature can easily be reached if the fire is raging. This means that deposits of creosote in your chimney could cause a chimney fire.

What happens when wood is burnt?

The combustion process.

The combustion of wood involves the following steps.

Drying

The first step is that the fuel (wood) dries out. Even at low temperatures (<100°C), any moisture still in the wood will evaporate. This drying procedure implies a significant loss of energy if wood which is 'too' damp is burnt. The right degree of moisture is achieved after 1.5 - 2 years of drying. The moisture content is then 15 - 17%.

Decomposition

At moderate - high temperatures (150°C - 350°C), the decomposition process can be discerned. This is when the chemical structure of the fuel breaks down. This process involves the creation of volatile compounds such as carbon monoxide (CO), water vapour (H₂O) and methane (CH₄). In addition, substances which are volatile at decomposition temperature but condense at lower temperatures are often released. These are the tar-like components (this by-product is also known as creosote, which is deposited in the chimney and cold parts of the fire in poor burning conditions).

Combustion of the products of decomposition

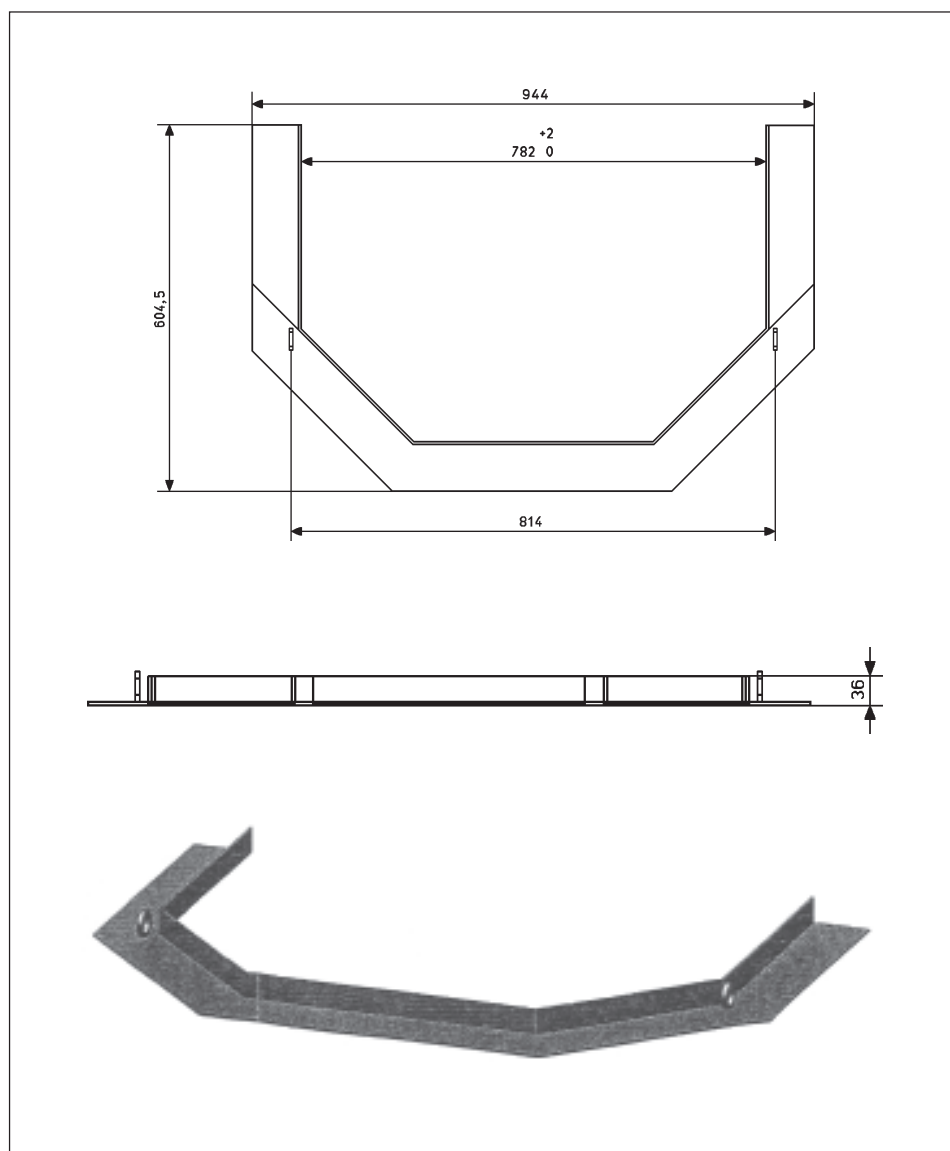
The volatile compounds burn in the gas phase if O₂ (air) is added. The ignition temperature of these volatile compounds is approx. 550°C.

Combustion of solid hydrocarbons

The solid component that remains consists of pure hydrocarbons, which will burn at approx. 800°C if O₂ (air) is added.

APPENDIX 1

Escamo 300 + 400 mantle iron



ENGLISH



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