

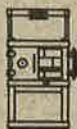
RAIS-manual



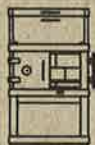
Rais 2



Rais 62



Rais 101



Rais 115



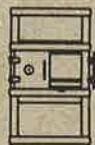
Rais 3



Rais 4



Rais 106



Rais 115/4



The first fire

Your new RAIS should be broken in gently, like a fine pipe or a new car. Start with a small fire to let the materials get accustomed to higher temperatures. Taking it easy now pays off later in top performance from your RAIS with no worries about paint damage, cracks in the refractory liner or excessive wear. There may be a distinctive smell during the first fire because the paint and the liner still have to be "heat-treated" — but this phase is over quickly.

Building the fire

Lay down 2 or 3 sheets of crumpled newspaper topped with kindling wood or twigs, all the way to the back wall (fireback). Open the baffle plate by pulling out the handle on the right, turning it so it points upward and pushing it back in. The open baffle helps your fire develop the necessary draft. Open the ash drop air inlet by pulling out the ash drop handle so that the fire has enough air to support combustion. Light the fire and close the firebox doors. The top hole in the front-door air inlet can be used as a peep-hole to watch the fire starting. Let your fire develop naturally. Not only does the stove itself have to warm up — so does the air in the chimney, to create the necessary "positive draft" for the fire. When the draft is strong enough you can add more wood without worrying about smoke coming into the room.

Warning

Never use petroleum products (gasoline, kerosene, lighter fluid), methylated spirits, etc., to start the fire or keep it going. Don't risk an explosion!

Your fire needs air

The flow air is a crucial factor for proper combustion in the firebox. Combustion air is divided into two categories:

Primary air: This flows around and trough the burning wood and fiery coals and supports wood combustion. Most of the fresh air consumed in the combustion process is primary air.

Secondary air: The most complete combustion is achieved when oxygen-rich "secondary" air is combined with the hot combustion gases in the firebox, which are then burned as well; secondary air supports flame combustion.

The adjustable ash drop is also used to regulate the inflow of primary air from directly beneath the firebox.

The secondary air supply comes in through the adjustable, 3-hole inlets in the firebox doors.

The adjustable air inlets have the same effect as thermostats — the greater the air flow, the bigger the fire, and the higher the temperature of your RAIS.

The handle to open and close the ash drop aperture is calibrated to show you the aperture setting.

1. Handle all the way in : ash drop closed.
2. Handle pulled out to the first notch: intake $\frac{1}{4}$ open.
3. Pulled out to second notch: intake half open.
4. Pulled out to third mark: fully open (maximum air flow).

Position 3 is necessary to achieve the rated heating performance.

If the ashes in your RAIS are white and the walls are free of soot, you know your fire has been properly regulated.

Using the fireplace

With the firebox doors and the baffle plate open you have a cheery fireplace. If the chimney draws well the baffle plate can be closed again (handle in horizontal position) after the fire has started. Closing the primary air inlet prevents the fire. Otherwise there's very little to learn about operating your RAIS fireplace, unless you plan to burn softwoods with high pitch content (and lots of sparks). In that case, we recommend a RAIS spark arrester. Just hang it over the fireplace opening.

Overnighters

The RAIS doors close tightly for excellent "long distance" burning. For wood fires, or with an overlay of brown coal briquettes, the primary air inlet can be shut completely. Close the baffle plate as well (handle horizontal). The combustion gases are then circulated around the firebox through the convection spaces to improve the heating efficiency. The entire air flow can then be regulated using the inlets in the firebox doors. With just a little practice you'll know the exact "settings" that work best for making the fire last. Three to four briquettes or two normal split hardwood logs, started in the evening, should leave enough glowing embers in the morning to get a new fire going.

Fuel

With proper operation and a bit of experience you can burn various solid fuels in your RAIS. The wide, spacious firebox and large doors, however, make the RAIS first and foremost a woodburner. Brown coal briquettes (6", 7") and smaller briquettes made from harder coals (25 g) can also be used. See the "Briquettes, coal" section for instructions.

Important: Never burn laminated woods which have been impregnated and/or coated with synthetic materials, or pieces of wood with thick coats of paint; no plywood or particleboards. Even worse are synthetics, plastics and plastic-like packaging materials. By avoiding these dubious fuels you protect your RAIS from possible damage, and you avoid problems for yourself — and for your neighbors.

Wood fires

If you follow a few simple rules, your RAIS will be remarkably efficient at getting the most energy out of your firewood with the least pollution. The chief combustion products are CO₂ and H₂O. Mineral substances are left behind in the ashes.

The heating value of the wood depends to a great extent on its moisture content: If the wood hasn't been thoroughly "seasoned" or dried, much of the energy of the fire goes

into evaporating the water before the wood can burn. Only "air dry" should be used (moisture content 15-20%). Freshly cut wood should be seasoned at least a year (in a well ventilated place) to reach this stage.

Freshly cut, still-moist logs are easiest to split. Split, firewood-size logs dry better, and faster, than whole round logs. So chop up your fuelwood at an early stage, and make sure your woodpile location has good air circulation but is also sheltered from the rain. If the wood you burn is too wet it burns less thoroughly and causes soot and "creosote" formation which — in extreme cases — can lead to a chimney fire.

A wood fire is regulated mainly by controlling the secondary air supply when it is serving as primary air as well. When the fire is burning well, close the primary air inlet (below) and use the apertures in the doors to regulate the flames. Ashes play an important role when wood is burned. Leave a bed of ashes 3 cm thick (about 1 1/4") covering the bottom of the firebox, including the ash drop area. The ashes not only provide additional insulation, they also let air reach the fire in just the right amounts, so that the wood burns cleanly and with maximum efficiency.

Briquettes, coal

You can also burn different forms of coal in your RAIS, provided you make allowances for the specific properties of these fuels.

Brown coal briquettes:

Brown coal briquettes don't require firebox adaption. If the briquettes are placed on the glowing embers of your wood fire in a bed of ashes at least 3 cm (about 1 1/2") thick, to extend the fire, and no more than 3-4 pieces are added in one stoking, no difficulties will arise. But if you want to heat with briquettes exclusively, or predominately, then you have to place a cast iron fire basket in the firebox.

Hard coal briquettes: Briquettes from harder coals are normally burned in narrow, relatively tall stacks, from bottom to top. A special cast iron fire basket fits easily inside your RAIS, keeps the coal together and assures proper combustion. The airflow is particularly important in burning coal. Open the primary air inlet completely by pulling out the ash drop handle to the third notch.

When the coal is burning properly, the handle can be pushed back in to the middle mark. The air supply shouldn't be reduced any further; this is to avoid air pollution and a smoldering fire. Don't "pour on the coal" either; just put loosely packed hard coals in the firebasket and make sure the air supply is right. Too much fuel and too much air could lead to overheating and too much heat could deform even the strong wrought iron plates of your RAIS.

Important: Coal should only be burned with the firebox doors closed!

Keeping the fire going

Your RAIS isn't a furnace with mechanical stoker or feeding chute that you can fill up and forget. Don't fill the firebox too full or build too big a fire with heaps of kindling wood or other easily combustible material, such as scrap lumber from sites (this could contain paint or other chemicals and should be avoided anyway). Before adding wood to the fire, open the air inlets and baffle plate so the smoke can burn off and the chimney has additional draft. If you then open the doors after a while, you don't have to worry about being hit by a wall of smoke. When the fresh fuel is burning properly with an adequate air supply, the airflow can be reduced again. This also prevents the fire from smoldering, which could have undesirable side-effects.

Heat output

The heat output of the RAIS models is given in kW and varies with the size of the stove. With a RAIS rated at 11 kW you can heat a room of around 90 m² (1000 sq.ft.). The room can also be larger if the insulation is good, but may be smaller if poorly insulated. Your RAIS heats best with the firebox doors closed; this is the most efficient operating mode.

Efficiency is the ratio between the energy put into the fire and the heat returned in the room. With the doors closed, the RAIS achieves an efficiency of better than 70%. The combustion air required is negligible.

With the open doors, the efficiency ranges from 30 to 40%, consuming 150-200 m³ (5000-7000 sq.ft.) of combustion air per hour.

The efficiency of a standard open face fireplace can range from 1 to 10 percent, consuming 300-400 m³ of combustion air per hour.

So even with the doors open, the RAIS fireplace/stove is many times more efficient than a conventional fireplace.

The highest efficiencies are obtained with a moderate but even burning rate. This gets the most heat out of a given amount of fuel. 2-4 kilograms (4 1/2-9 lbs.) of wood per hour is plenty. The chimney draft should measure at least 0,01 millibar (1 mm wg) for optimal efficiency.

Important: Too heavy use (which also means high fuel consumption) is uneconomical — hard on your RAIS and hard on your pocketbook!

Combustion air

An adequate supply of combustion air is important. In normally insulated rooms there should be enough air coming in through the doors, windows and other openings and cracks, as you can verify in any number of older buildings where stoves are used for heating. In tightly insulated surroundings, however, air supply could be a problem. In such cases air should be taken directly from outside; it should be as free of dust as possible and contain no noxious or flammable gases. Your RAIS can be fitted with an outside-air intake.

Surface temperature

All the RAIS models are convection heaters whose back wall and sides never get too hot. They can thus be installed with the minimum legal clearances. On the other hand, the oven compartments — for warming and baking — do get hot, to reach cooking temperatures. The stainless steel handles are air-cooled (hollow) and can be used without gloves or other aids.

Putting out the fire

Close the doors and all air inlets and open the baffle. Let the RAIS cool down naturally, and **never** try to put out the fire with water or other liquids.

Ashes

Reminder: A wood fire burns best in a bed of ashes. Nevertheless, The RAIS ash pan is built to hold a lot of ashes — but it still shouldn't be allowed to get too full. If a mound of ashes builds up in the ash pan and pushes so that the ash drop grating is embedded in fiery coals, the mechanism might be damaged by overheating. The ash pan — which close like a case — is easy to remove from under the firebox; the panel covering the ash pan compartment opens down, and the hinged lid of the ash pan should be closed so that nothing is spilled. The ashes should always be emptied into a metal ash bucket which can be tightly closed: even 24 hours after the last fire, there could still be some glowing coals!

Care and maintenance

Strictly speaking your RAIS doesn't need any maintenance as such. But it won't hurt to clean out the smoke path — baffle system and stovepipe — about once a year, or even more often if you use your RAIS fairly heavily.

Scratches and other surface damage can be repaired with a heat-resistance paint after cleaning away any dirty, tar deposits or rust.

Important: Cleaning and repairs only be carried out when the RAIS is cold (room temperature)!

Refractory liner

Your RAIS has a refractory, firebrick liner to protect the metal from direct contact with the flames and to provide additional heat storage. Cracks in the liner do not impair the RAIS's performance. Nevertheless, don't use the poker to break up burning logs or coals, because this could damage the liner as well. For the same reason, fresh firewood should be **placed** on the fire and not simply thrown in.

Baking and cooking

Every RAIS model with an oven that closes can be used for baking, and all models can be used for cooking. A liner of refractory "chamotte" tiles in the oven compartment is essential for baking, and an oven thermometer is recommended.

Close the oven and fire up with softwood (e.g. pine logs) as fuel — which develops an intense heat quickly — to bring the temperature to 200° Celsius. The items to be baked (or roasted) can now be placed directly on the refractory liner. If the temperature rises about 220° Celsius or so, it's advisable to open the oven slightly to let it cool down. Beechwood should be used from this point on.

If the dough is brushed with egg yolk, it's a good idea to put a sheet of baking foil (parchment, etc.) underneath. This keeps the runoff from burning into the liner. Bread takes 30-40 minutes to bake, depending on loaf size. Turn the bread around about halfway through, because the back wall gets hotter.

Deep-frozen foods, such as pizzas can be placed in the preheated oven while still frozen.

Don't remove the "baking tiles" from the oven until they've cooled down completely. Otherwise the sudden drop in temperature might cause the refractory material to crack. The tiles also help the RAIS store up heat in the oven compartment. If there's moisture in the oven, the disk covering the opening in the back wall should be removed. The water vapor then escapes through the small hole into the chimney.

Deep-dish casseroles, pot roasts, etc., can not only be cooked in the oven with the doors closed, but also with the doors open. Prepare the dish your normal way and put it in a still cold — or not yet too hot — oven; then let it simmer slowly.

Warranty

All RAIS products are guaranteed as to materials and workmanship, except the firebrick inserts (baking tiles) and liner, provided the stove has been used according to the instructions.

Points of remember

- Read the instructions. They tell you how to operate your RAIS safely and economically.
- Start the fire with air inlets open.
- When the fire is burning well reduce the air supply.
- For the best heating performance keep the firebox doors closed.
- Use split softwood or hardwood logs as fuel for heating, or brown coal briquettes (6" or 7") or smaller hard coal briquettes (25 g).
- Always follow the instructions regarding the use of different fuels.
- Make sure the air supply is adequate to support a proper fire, especially in rooms with tightly-sealed windows and doors.
- Keep the chimney draft at least 0.01 millibar (1 mm w.g.).
- Ask your local fire inspector or chimney sweep for information on safety codes and building or fire code requirements.

We hope these instructions contain some useful tips which will help you get even more enjoyment — and utility — out of your RAIS. We're sure that the quality and versatility of your RAIS will win a place in your hearts as well as in your home.

RAIS accessories

Glass dør



for RAIS 2/82/101/115

The RAIS glass door with ceramic glass can be fixed on newer models later.

Spark arrester metal



for all models

Spark arrester glass

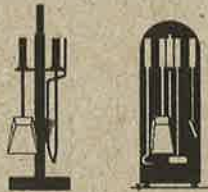


for RAIS
2/82/101
115/115/4

The spark arrester with metal screen or devitrified ceramic glass protect your floor, carpet and yourself against flying sparks.

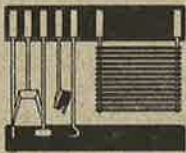
Fireplace accessories

Stand round or flat



RAIS accessories are the perfect accompaniment to all RAIS fireplace-stoves. Design, function quality – everything is right. Shovel, hearth broom, poker, tongs and blowpipe – all with handholds of natural cork.

Wall bracket long



Wall bracket small



Keep your fireplace accessories ready to hand.

Wall bracket grill



The barbecue grill with corked handholds, fits all RAIS stoves, and can also be used in other settings as well.