

ROTEX A1: Save energy with oil condensing technology.



ROTEX A1 -

The oil condensing technology specialists.



The ROTEX logo, consisting of the word 'ROTEX' in a bold, sans-serif font, set against a bright yellow rectangular background.

Want to save heating oil? – Naturally, with the oil condensing specialists.

You will be investing in the future

Your new boiler must ensure many years of cosy warmth in your home. It must be economical, innovative, safe and durable, simple and therefore economical to service, and, of course, easy to operate.

A long-term decision!

The selection of a boiler for your heating is a decision for the next 15 to 25 years. The lifetime fuel costs for your heating system amount to many times the purchase cost of the boiler.

It is therefore very important to make this choice very carefully. These days, the difference in efficiency levels, i.e. in the consumption of heating oil, is considerable. For this reason you should not only be guided by the price of the boiler, but above all by subsequent consumption.



Oil condensing boilers – by the condensing technology specialists

“Aren't all new boilers economical”, you may ask yourself. The energy utilisation of a new heating boiler is, of course, much improved when compared to old-fashioned models.

However, differences still exist:

The ROTEX A1 has opened a new chapter in boiler technology. It defines the state-of-the-art technological development in oil heating boilers and represents outstanding technology in the field of modern oil heating.

Optimum combustion quality, minimum toxic material emission, extreme ease of operation and, above all, maximum energy utilisation are characterised by the ROTEX A1 oil condensing boiler.

10 years of experience - 10 year guarantee against corrosion failure

Modern boiler and burner technology, especially the condensing technology in the ROTEX A1, transforms the fuel into usable heat with virtually no losses. This protects both the environment and your wallet equally, since reduced energy consumption simultaneously means reduced heating

costs, the protection of energy reserves and reduction in CO₂ emission. Only the condensing technology can achieve this almost complete energy utilisation. This involves cooling the flue gases until the water vapour contained in the gases condenses out. The energy created in this operation is used as heat for heating.

Ready for BioOil

In the future more and more bio oil or bio oil constituents will be added to

conventional heating oil. ROTEX is already prepared for this. At current levels of knowledge, all the components of the ROTEXA1, with the exception of the burner, are compatible with bio oil. This applies also to the safety oil storage tank ROTEX variosafe and the oil feed pipe ROTEX VA-Oil. You can rest assured that, with the ROTEX oil condensing

technology, you are prepared for the future.

ROTEX A1 Oil condensing boiler

- Energy-saving condensing technology
- 10 year guarantee against corrosion failure
- 10 years of experience in oil condensing technology
- Completely enclosed unit
- Ideal for new construction and renovation
- Ideal for combination with solar energy
- Environmentally friendly lowest level of CO₂ emission
- Suitable for all types of heating oil
- Ready for BioOil





ROTEX A1 condensing boilers provide cosy heat.

Up to 18 % energy saving compared with other low temperature oil heating boilers

The Energy Saving Regulations (EnEV), which have been in force since 2002, limit the permissible energy demand in buildings. In addition to the structural conditions, the heating system is also taken into account. Various equipment technologies are evaluated differently.

The DIN standard (DIN 4701-T10) used as the basis for the EnEV makes it more than clear: Oil low temperature boilers in room air-dependent operation (without LAS) consume up to 18% more energy than oil condensing boilers in room air-independent operation (with LAS).

This large difference was found using new heating boilers. When replacing boilers, the energy savings can be as much as 40% or more.

The CO₂ and NO_x emissions are reduced correspondingly and thus reduce the environmental load.

The ROTEX A1 oil condensing boiler is far ahead of conventional low and extremely low temperature heating boilers, above all in the efficient utilisation of energy.

For this reason ROTEX stopped production of low temperature boilers in 1999 and concentrated all its efforts on the development and manufacture of condensing boilers.

You save on two fronts

The extra investment, which is normally only small, involved in the purchase of an oil condensing boiler is soon paid back within a short period in energy savings. After this you are saving hard cash.

The ROTEX A1 oil condensing boiler does not require an expensive chimney. A simple plastic pipe is sufficient. This means that you make double savings.

In other words, ROTEX A1 oil condensing: Save energy, help the environment and save money at the same time!



ROTEX A1 BO 20i



ROTEX A1 BO 20i



ROTEX A1 – The condensing technology specialist with 10 years of experience in the field of oil condensing technology

ROTEX can call on more than 10 years of oil condensing technology. The ROTEX A1 has been developed and optimised in many ways consistently over this 10 year period.

These advantages can be attributed to the ROTEX A1 oil condensing technology:

- Large heating oil savings: Very high levels of efficiency
- Long working life: 10 years guarantee against corrosion failure
- 10 years of experience with oil condensing technology
- Electricity saving
- Extremely quiet running
- Simple operation
- EnEV values to dream of
- Can be operated with all commercially available types of heating oil (standard and low-sulphur)
- Installation possible just next to safety oil storage tank
- Complete unit with blue burner, digital electronic control, pump and safety group
- Electronically-controlled circulation pump
- Fitted with LAS for room air independent operation
- 3 different output ratings available
- **Ready for BioOil** - Prepared for the use of heating oil with biogenic constituents

It's time for ROTEX A1!

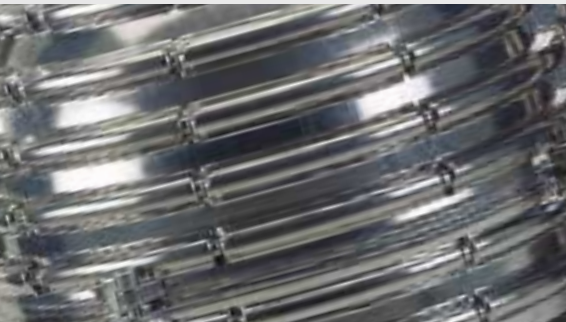


ROTEX A1 BO 27i

ROTEX A1 BO 35i

Patented TWINTEC® boiler body.

Patented, prize-winning, unique.



10 year guarantee against corrosion failure

An entirely new boiler technology was developed for the ROTEX A1 boiler body. This included the consistent use of modern high quality materials and the use of corrosive materials such as black steel or grey cast iron was avoided.

The boiler body itself is an aluminium die casting. This has directly cast-in corrosion-resistant stainless steel pipes through which the heating water flows.

ROTEX has been awarded a Europe-wide patent for this technology, referred to as TWINTEC®.

The spherical shape of the boiler body, which is also patented, ensures the compact layout, unrestricted condensing utilisation directly in the heating boiler without the need for additional heat exchangers, and simple cleaning. The spherical layout also permits good metallic contact between the stainless steel burner chamber and the cooling fins on the boiler body. This makes sure that the burner chamber is cooled in a controlled manner. This directly cooled burner chamber very effectively reduces the formation of nitrogen oxides (NOX).



Reduced water content saves energy

In summer, when you do not need heating, your heating boiler operates only when hot water is required. The lower the weight and the lower the water content in the boiler, the lesser the energy required for heating in the boiler and the lesser the energy lost when topping up the hot water cylinder later after the loading process has been completed.

The ROTEX A1 has very low water volumes, i.e.

- 3 l in A1 BO 20i,
- 4 l in A1 BO 27i and
- 5 l in A1 BO 35i

and thus the additional cooling losses are kept to a minimum.

Compare this with other heating boilers, you will be amazed.



European patent for ROTEX A1

ROTEX has been awarded an

Europe-wide patent for this technology, referred to as TWINTEC®. The spherical shape of the boiler body has also been patented.



Innovation prize for ROTEX A1

At the exhibition INTER-CLIMA '97

in Paris ROTEX GmbH was awarded the "Flamme de Bronze" for its innovative heating boiler A1.



Aluminium die casting competition 1998

The boiler heat

exchanger made from TWINTEC® stainless steel/aluminium die casting was awarded the 1st Prize for its casting technology and design as a convincing solution.

Variable and space-saving.

There is space enough for the ROTEX A1 in even the smallest house

Since all ROTEX A1 condensing boilers do not need a large flue, but can be operated simply with a thin plastic exhaust gas duct in room air independent mode, the mounting arrangements are virtually unlimited. Simply mount the ROTEX A1 condens-

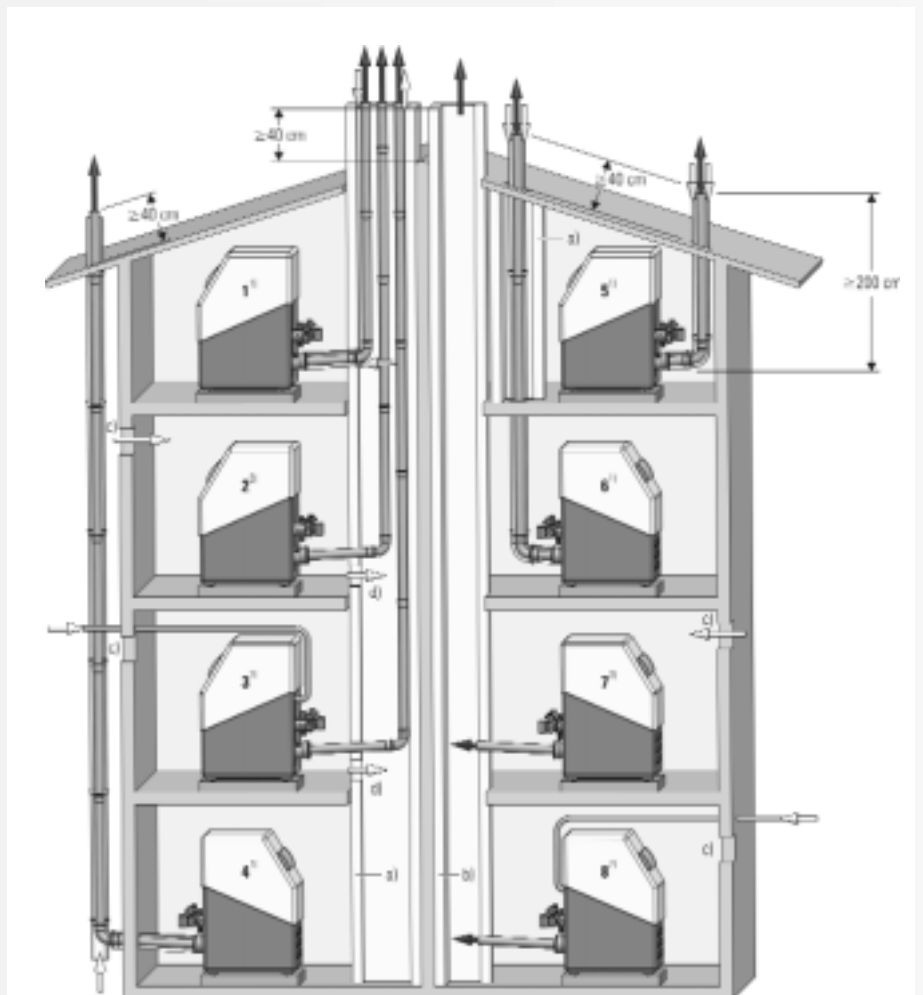


ing boiler in the roof space and have more room elsewhere in the house.

Oil condensing technology made easy

The ROTEX A1 oil condensing boilers are ready-assembled and pre-adjusted in the factory, including burners, control unit, and condensate treatment. The special design makes sure that installation and servicing are even easier than with the normal low temperature conventional boilers.

All ROTEX A1 oil condensing boilers are fitted with the most modern blue flame oil burners of the most modern generation. The internal flue gas circulation and the high-efficiency cooling by the boiler body cooled from all sides lead to the lowest possible values of toxic emissions.



- 1) Installation version for ambient air-independent mode
 - 2) Installation version for partial ambient air-independent mode
 - 3) Installation version for ambient air-dependent mode
- a) Longitudinally ventilated shaft with fire-resistance of 90 minutes (in residential areas of lower height 30 minutes). For fire resistance duration observe the country-specific regulations!
 - b) Dampness-proof exhaust gas pipe as per DIN 18160-1 (Temperature classification T120 or higher, pressure classification P1 or H1 condensate consistency classification W, corrosion resistance classification 1 or higher)
 - c) Ventilation opening 1 x 150 cm² or 2 x 75 cm²
 - d) Rear ventilation

⇨ Air supply
⇩ Flue gas

Innovative down to the last detail.

It thinks for you - The electronic control system

The control management of the ROTEX A1 is performed by a fully-electronic digital control system. There are two different versions:

- Alpha 23R
- Theta 23R



ROTEX A1 with Alpha 23R

1. Alpha 23R

The digital control system Alpha 23R has a clear four digit display which is integrated in the upper section of the ROTEX A1.

All the fundamental functions are selected using two rotary switches. The values can be adjusted simply using push-buttons.

The Alpha 23R has three time programs for the control of the heating circuit and the hot water preparation. The time programs are pre-programmed; one of these can be adapted to the individual wishes of the user. In addition, the Alpha control system is prepared for controlling a mixed circuit.

The heating flow temperature is controlled depending on the outside temperature. The control system itself senses winter and summer and switches on or off the heating system on or off as required.

2. Theta 23R

The fully-electronic digital control system Theta 23R meets the highest of demands. The display shows values and parameters in clear text. The main operating element is a selector knob with which the operating modes, time-programs and operating parameters can be set and quickly and simply altered.

Fundamental system parameters can be viewed and adapted by the heating engineer.

The heating flow temperature is controlled depending on the outside temperature. The control system itself senses winter and summer and switches on or off the heating system on or off as required.

The Theta 23R has individually adaptable time programs for simple control of the heating circuit and hot water preparation. It can also be used to control an additional mixed heating circuit. This requires that only the mixer, pump and sensor are plugged into the control housing. It is also possible to connect a hot water secondary circulation pump.

The Theta 23R control system can be extended by room controllers and thermostats which conveniently control and monitor the heating system.





Oil blue burner - With responsibility for the environment

All ROTEX A1 oil condensing boilers are fitted with oil blue burners. This type of oil burner ensures optimum oil combustion with the lowest possible

levels of toxic emission. This can be seen with the naked eye by the transparent blue flame colour. The very low level of excess combustion air leads to a further increase in efficiency. The ROTEX oil blue burner also operates very quietly so that the ROTEX A1 can also be installed in an

occupied room without any reservations.



Suitable for all types of heating oil

The ROTEX A1 can be operated with all types of heating oil that are available commercially. The current trend is clearly towards low sulphur heating oils. From 1st January 2009 conventional high sulphur content heating oil will attract an additional taxes.

We would recommend the exclusive use of low-sulphur heating oil even today to protect the environment. In addition, your heating boiler is much easier to clean.

A plastic pipe suffices for the exhaust gas

An inexpensive exhaust gas pipe consisting of a plastic tube is sufficient since the condensing technology provides typically low exhaust gas temperatures. This can be incorporated in an existing installation shaft or an old chimney.

This takes away the dread of chimney replacement since all ROTEX A1 condensing boilers can operate with a very small nominal diameter of just 80 mm.

The air comes from above

All ROTEX A1 condensing boilers operate in room air independent mode (LAS). The burner sucks the necessary combustible air directly from the outside through an installation shaft or a double-walled flue gas duct.

This has many advantages:

- The boiler room does not need a ventilation opening to the outside and thus does not cool
- Lower energy consumption
- Additional energy saving is in flue pipe by preheating the combustion air
- Dust, solvents, detergents etc. are not drawn in by the burner. This means that the room can also be used as a laundry, workshop or similar application
- Also possible for in roof space mounting

To protect the environment

All A1 oil condensing boilers are below the emission values laid down by the authorities in accordance with RAL UZ 46 for the "Blue Angel".

The condensate produced in the boiler and the subsequent flue gas system on the ROTEX A1 is directed to the integrated condensate preparation system. The condensate is cleaned and neutralised there.

This ensures that it can then be poured directly into the waste water system.



ROTEX VA Oil – an important system component

Up to now copper pipe was often used for the connection between the oil tank and the heating boiler. This can lead to considerable problems, not least when using bio oil. For this reason ROTEX has developed a plastic oil supply pipe VA Oil.

VA Oil is the first oil supply pipe made of a combination of plastic and aluminium (PE/Al) to be approved by the DIBT. Irrespective of the type of heating oil being used, VA Oil remains totally neutral and thus guarantees safe and continuous operation of the oil boiler with no failures.



ROTEX A1 condensing boiler:

Suitable for all applications.

ROTEX A1 - Ideal for all floor heating systems

Low water temperatures are often required for hot water floor heating systems. Since the ROTEX A1 uses TWINTEC® to operate smoothly with feed temperatures down to room temperature without the use of mixers, it is particularly suitable for this type of installation. Even with old installations using oxygen permeable plastic pipes with possible corrosion and sludge formation problems the ROTEX A1 proves to be an excellent solution.



The ROTEX System 70 permits combination of floor heating and radiators without additional costs. The special construction of the DUO heating pipe

means that only one water distribution system and one common pump are required.

This saves on investment costs and introduces considerable energy savings in the operation of the system.



ROTEX A1 - Ideal as a replacement boiler in existing systems

The ROTEX A1 is an ideal replacement for older boilers. The increased flexibility when incorporating in existing systems, its low weight and small dimensions and the simple renovation of flue gas systems ensure that this is the specialist for this application.

With the ROTEX A1 you will save heating costs and you will benefit the environment - at the same time ensuring maximum heating and hot water comfort.

Now oil can be stored in the same room as the boiler:

Reclaim the existing heating oil storage room for other uses e.g. as a hobby room, for a sauna or similar application.

In combination with the double-walled safety tank ROTEX variosafe the oil can be simply stored next to the boiler. And this does not need any brickwork or oil collection trough underneath.



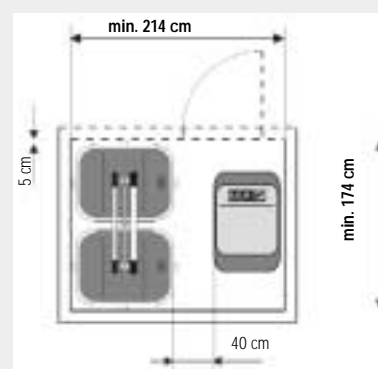
Building regulations permit the storage of heating oil in quantities up to 5.000 litres in the boiler room. A distance of 1 metre must be maintained between the heating boiler and the safety tank if no radiated heat protection is provided. The plastic cladding on the ROTEX A1 oil condensing boiler is an effective radiation protection and does not exceed a temperature of 40 °C at any point. This is certified by a TÜV report. This confirms that a minimum separation between the oil tank and the A1 boiler of 10 cm is sufficient.

For handling purposes we recommend a minimum distance of 40 cm.

Boiler room and storage room combined

ROTEX A1 and two ROTEX variosafe 1.000 litre tanks.

Space required:
3.7 m²



Oil condensing technology + solar: Best marks in EnEV and in the Energy Passport.

Solar energy utilisation is becoming more and more important.

For this reason a simple combination of ROTEX A1 and solar energy collection was taken into account at the development phase.

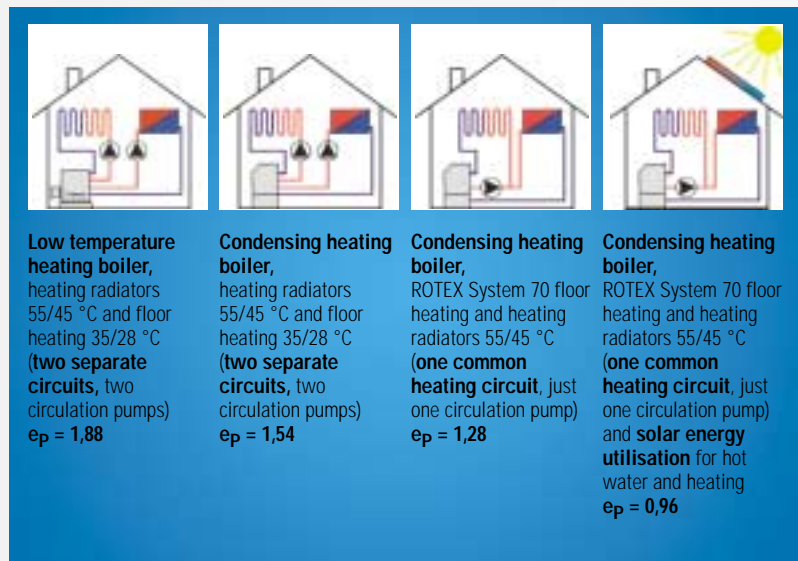
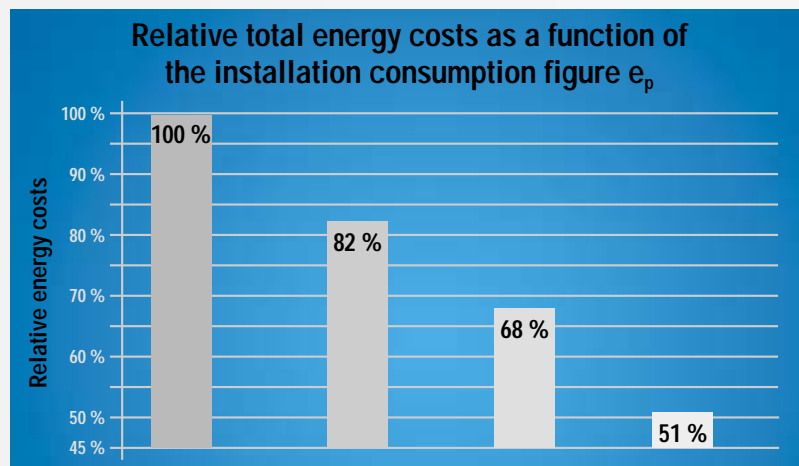
The ROTEX A1 condensing boiler can be directly combined with the ROTEX Solaris solar energy system. This ensures that solar energy is used both for hot water preparation and for support of the heating system.

This extensive use of solar thermal energy provides additional energy savings and thus ensures the best solution in regard to economic evaluation within the framework of the Energy Saving Regulations (EnEV).

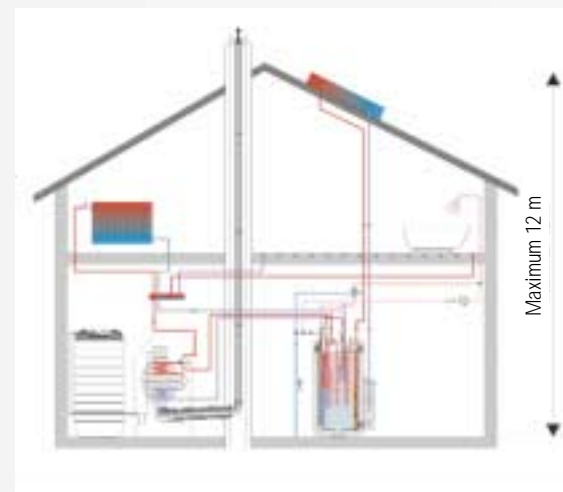
The solar storage cylinder ROTEX Sanicube is characterised by corrosion resistance and optimum water hygiene (tested by the University of Tübingen).

Energy cost savings

The energy consumption of a heating system is directly dependent upon the installation consumption figure e_p . This means that the energy costs of the installation are directly proportional to the installation consumption figure e_p . In the example, the scope of energy saving using the technology of the installation is clearly demonstrated. In this way the ongoing energy consumption costs of a heating system using a condensing boiler and solar incorporation will fall to 51 % of that required today by a normal standard heating system using a low temperature boiler.



The initial parameters for the four installations above are the same:
 Condensing boiler with room air independent operating mode,
 installation in a heated sleeve,
 internal distribution, process water utilisation without circulation.
 Effective building area $A_N = 150 \text{ m}^2$
 A/V ratio: $A/N = 0,75 \text{ m}^{-1}$
 specific heat demand: $59 \text{ kWh/m}^2\text{a}$



ROTEX A1:

Small boiler, big advantages.



Additional Benefits

- Plastic cladding corrosion-free, long-life and sound-deadening
- Economical domestic water preparation
- Simple to service
- Low weight

ROTEX A1 Gas condensing boiler.

Modern condensing technology

The ROTEX A1 is a ready-to-connect gas condensing boiler with integrated electronic control system (Theta 23R), modulating gas surface burners, circulation pump and safety group. The consistent condensing calorific value utilisation ensures efficiency values up to 110 % and extremely low toxic emissions.

The low weight, the high levels of corrosion resistance (10 years guarantee against corrosion failure) and the easy to install plastic flue pipe system make the ROTEX A1 ideal for new construction and renovation applications.

We recommend the hygienic ROTEX Sanicube hot water storage tank for hot water preparation.



ROTEX A1 BG 25i

The special features

- High levels of efficiency up to 110% by condensing calorific value utilisation
- TWINTEC® boiler body, corrosion resistant and long-life
- The modulating operation of the burner in the range between 5 and 25 kW and 8 and 40 kW continuously matches the output of the boiler to the demand. There are also large reserves of output available (for example for heating up and for hot water preparation).
- Low emission levels because of modern surface burners
- Low power consumption as a result of speed-controlled burner fan - the output of the burner automatically adapts to the demand. At lower burner output the power consumption of the burner is also reduced.
- Fitted with LAS as standard for room air independent operation
- Easily accessible for servicing and checking



ROTEX A1 BG 40i

Maximum energy utilisation

When gas is burnt water vapour is created, in addition to the other products of combustion. If this water vapour is dispersed along with the

flue gas in the chimney the energy contained is lost. In conventional gas combustion up to an additional 11 % of the combustion energy used is lost from the chimney in this way.

ROTEX A1 Gas condensing boiler

- Floor mounted gas condensing boiler
- Energy saving with efficiency levels up to 110 %
- Corrosion free and long-life
- Modulating operation

All ROTEX A1 gas boilers retain the energy contained in the water vapour by the use of condensing technology and thus increase the efficiency and utilisation levels considerably.

Always the correct burner output

Depending upon the weather conditions and the utilisation behaviour, the output demand of a building varies greatly. Similar to the pulse of a sportsman, the A1 adjusts its output to suit the demand. The internal computer electronics unobtrusively perform the management of the output for you without the need for any intervention. Comfort functions such as hot water preparation, weekday programmes and weather controlled regulation of the boiler flow temperature are integrated. High levels of energy utilisation and very environmentally friendly operation are the logical consequence of this new development. The correct balance between energy and environment is paramount.

Program overview.

Condensing boilers with low toxicity oil blue burners or modulating gas surface burners.

With integrated circulation pump, 3 way changeover valve, safety group and LAS connection for room air independent operation.

| Oil condensing boilers | | | Gas condensing boilers | |
|------------------------|-----------|-----------|------------------------|-----------|
| A1 BO 20i | A1 BO 27i | A1 BO 35i | A1 BG 25i | A1 BG 40i |



| | | | | | |
|--|-----------|-----------|-----------|-----------------------|-----------------------|
| Nominal outputs in accordance with DIN-EN 303 | 12-20 kW | 20-27 kW | 25-35 kW | 5-25 kW modulating | 8-40 kW modulating |
| Factory setting | 18 kW | 25 kW | 30 kW | 30-80 % | 30-80 % |
| Setting range with standard equipment ¹⁾ | 15-20 kW | 24-27 kW | 28-33 kW | 20-100 % | 20-100 % |
| Permissible operating pressure | 4 bar | 4 bar | 4 bar | 4 bar | 4 bar |
| Max. permissible flow temperature | 80 °C | 80 °C | 80 °C | 80 °C | 80 °C |
| Max. boiler efficiency | 105 % | 105 % | 105 % | 109 % | 109 % |
| Flue gas temperature | 35-85 °C | 38-89 °C | 40-98 °C | 32-60 °C | 34-82 °C |
| Weight of the boiler body | 49 kg | 58 kg | 67 kg | 49 kg | 67 kg |
| Total weight Unit ²⁾ | 81 kg | 96 kg | 113 kg | 77 kg | 107 kg |
| Length | 72 cm | 72 cm | 72 cm | 72 cm | 72 cm |
| Width | 62.5 cm | 62.5 cm | 62.5 cm | 62.5 cm | 62.5 cm |
| Height | 110 cm | 122 cm | 134 cm | 110 cm | 134 cm |
| Flue gas air inlet connection diameter | 80/125 mm | 80/125 mm | 80/125 mm | 80/125 mm | 80/125 mm |

¹⁾ Modification kits are required for smaller or larger outputs - see accessories

²⁾ Transport weight with cladding and condensate treatment removed

Certification for ROTEX A1



The boiler in which you can definitely place your trust!

All boilers in the ROTEX A1 range naturally meet the threshold values laid down by the authorities in the 1st. BImSchV and the "Blue Angel" in accordance with RAL.

The EU efficiency guidelines are fulfilled by all ROTEX A1 heating boilers.



Hot water storage tank

**Sanicube
SCS 328/14/0**

**Sanicube
SC 538/16/0**

**Sanicube Solaris
SCS 538/16/0**

US 150



| | | | | |
|--|----------------------|------------------|------------------|------------------|
| Total storage capacity | 300 l | 500 l | 500 l | 148 l |
| Empty weight | 55 kg | 83 kg | 87 kg | 44 kg |
| Total filled weight | 335 kg | 583 kg | 587 kg | 192 kg |
| Dimensions (L x B x H) | 59.5 x 61.5 x 159 cm | 78 x 83 x 159 cm | 78 x 83 x 159 cm | 100 x 66 x 66 cm |
| Maximum permissible storage water temperature | 85 °C | 85 °C | 85 °C | 90 °C |
| Stand-by heating power | 2.3 kWh/24 h | 1.4 kWh/24 h | 1.4 kWh/24 h | 1.1 kWh/24 h |
| Maximum operating pressure | 10 bar | 10 bar | 10 bar | 10 bar |
| Output characteristic figure N_L in accordance with DIN 4708 | 2.1 | 4.1 | 2.3 | 2.2 |
| Short-term water quantity in 10 minutes | 200 l | 285 l | 210 l | 160 l |



**ROTEX Sanicube
SCS 328/14/0**
preassembled
corrosion free plastic
floor-mounted storage
cylinder with stainless
steel corrugated pipe
heat exchanger.
Special water-hygienic
properties. Suitable for
all ROTEX A1.
Especially compact
dimensions. Suitable
for solar consumption
water heating.

**ROTEX Sanicube
SC 538/16/0**
preassembled
corrosion free plastic
floor-mounted storage
cylinder with stainless
steel corrugated pipe
heat exchanger.
Special water-hygienic
properties. Suitable for
all ROTEX A1.

**ROTEX Sanicube
Solaris SCS 538/16/0**
preassembled
corrosion free plastic
floor-mounted storage
cylinder with stainless
steel corrugated pipe
heat exchanger.
Special water-hygienic
properties. Suitable for
all ROTEX A1.
Suitable for solar
consumption water
heating and heating
support.

ROTEX US 150
pre-assembled corrosi-
on free stainless steel
sub-worktop mounting
storage tank suitable
for all ROTEX A1.



Enjoy energy savings: ROTEX - The heating system with a future.

Cosy heating and hygienic hot water make a house a home.

Energy is becoming more and more precious and expensive. An energy saving heating system can increase personal comfort and save energy at the same time.

You are therefore investing in the future today. The potential for energy saving in heating systems is enormous and has an effect for decades.

ROTEX, the heating system of the future, incorporates energy components which are perfectly matched to each other.

- Condensing boilers for oil and gas
- Hygienic high-efficiency hot water storage tank
- Pressure-free and environmentally friendly solar installations
- Floor heating and radiators using just one water distribution system
- Odour-blocked safety storage tank
- An interconnecting plastic installation system for sanitary and heating applications

Further information can be obtained from www.rotex.de

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