

User manual

Kabola KB series



Kabola Heating Systems BV
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Nederland



Preface

This user-manual is written to enable the safe operation of the KB-series central heating boilers. The user must read this manual before installation of the boiler and must follow the instructions within this manual.

Therefore, this manual must be kept with the boiler.

In chapter 2, the safety instructions are detailed, which have to be complied with, when installing and using the boiler. In other chapters you will find safety instructions, that can be identified in the following way.

Hint: This gives the user suggestions and advises to facilitate the execution of certain tasks.

Attention: Additional information is supplied to the user, and possible problems are indicated.

Warning: Watch out for possible (life-threatening) injuries.

For any remarks, wishes or omissions you can contact Kabola Heating Systems. We also welcome any remarks to improve this manual. We wish you a lot of pleasure from your purchase.

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1 Introduction

1.1 General

Congratulations with your purchase of this Kabola boiler. This user-manual covers the KB-series. The KB-boilers cover a wide range of boilers with a broad range of applications. By purchasing this boiler, you have acquired a product, which is of high quality through the application of the latest European standards and directives.

1.2 Range of application

The KB-boilers with are designed to generate heat for the heating of water for a central heating system.

The dimensions of the rooms to be heated, have to be taken into consideration. These boilers are not designed for direct heating of the rooms in which they are installed.

1.3 Product description

The boilers of the KB-series heats the boiler water by means of a pressure jet burner which is installed at the front of the boiler. The boilers are available in 230 VAC versions. For fuel, diesel oil has to be used.

1.4 Technical specifications

The most important technical specifications are listed on the plate at the back of the boiler. More technical details are listed in Appendix A.

2 Safety

In this chapter we emphasize the safety-related points for operating the boiler.

2.1 General safety

Warning: Although Kabola Heating Systems designs and produces its products according to the current safety standards, it is possible that dangers may present themselves, which could lead to injuries or damage to the boiler, if the safety instructions in this manual are not complied with.

The user must:

- Have read and understood the chapter "safety";
- Avoid any actions which may lead to dangers to his health or others;
- Avoid any actions which may lead to damage to the boiler;
- Ensure that the boiler is only used when the boiler is in sound technical condition;
- Ensure that the safety regulations are observed whilst operating the boiler.

Attention: No alterations to the boilers may be done, without the explicit written consent of Kabola Heating Systems!

2.2 Safety instructions

In this chapter we emphasize the safety-related points for operating the boiler.

MEASURES FOR A SAFE INSTALLATION

- Don't store any flammable and/or gaseous products in the room where the boiler is installed to avoid explosions and fires.
- Install the boiler in a non-humid environment on a firm horizontal base.
- Ensure that there is sufficient ventilation in the room where the boiler is installed (See also § 4.1.1).
- Make sure, before you start connecting the boiler, that the system is disconnected from the power supply.
- Only use multi-stranded wire for electrical connections.

MEASURES FOR A SAFE OPERATION

- Never change the settings of the burner.
- Don't use any aggressive solvents which may affect the boiler (like petrol or turpentine).
- Insulate the chimney, when it can be touched by body parts.
- Make sure that the boiler and burner are checked annually by a skilled expert.
- Make sure that before you start any work on the boiler that the system is disconnected from the power supply.
- Make sure that any surplus oil is collected in case of oil spillage.
- We advise you to have any maintenance or repairs carried out by skilled experts.

3 Transport and storage

3.1 Transport

Take following precautions before transporting the boiler:

- Drain the water from the boiler;
- Uncouple the fuel system;

While transporting the boiler take following precautions:

- Don't damage the boiler, use a blanket to cover the boiler;
- Transport the boiler standing up.

3.2 Storage

Take the following precautions when the boiler is stored for a longer period of time:

- Store the boiler and accompanying parts in a dry place;
- Store the boiler standing up;
- Store the boiler on a firm horizontal base.

4 Installing and preparing for first use

In this chapter you will find directions and hints for a correct placement and fitting of the boiler and accompanying parts.

Warning:

Do not store any flammable or gaseous substances in the room where the boiler is installed. This is to ensure that no explosions or fires can occur.

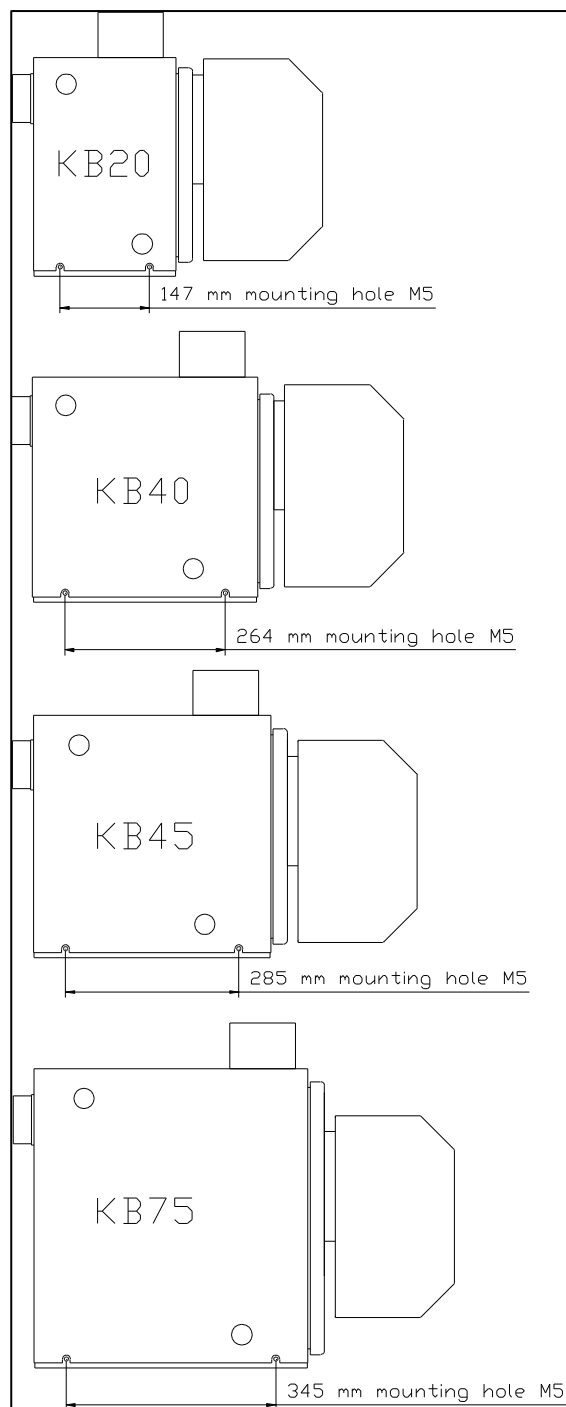
4.1 Installation

4.1.1 Fitting the boiler

- Install the boiler in a dry place.
- Install the boiler on a firm horizontal base.
- Make sure there is sufficient supply of fresh air in the room where the boiler is installed (see hint below).
- To avoid movement secure the base of the boiler by using the holes with M5 thread in the feet from the boiler.
- Keep a minimum distance of 250 mm behind the boiler for the flue-gas outlet
- Use an earthed plug socket for connecting the 230 Volt AC versions to the power supply.

Hint:

As a rule of thumb for the ventilation openings, take 2,5 times the diameter of the flue gas outlet.



4.1.2 Connection to the central heating system

PIPING

Take note of the following points, when installing the piping:

- Install the piping in such a way, that the boiler (cover and dashboard) remains accessible;
- Provide enough bleeding points in places where air may collect, especially near the boiler.

Attention: Install a bleeding point near the boiler, especially when the piping does not go up.

Connect the piping to the boiler as follows (see figure 2):

1. Install the feed from the CH at point 1;
2. Install the return of the CH at point 2



Figure 2

Hint: Install a shunt with pressure equalizer, when thermostatic radiator valves are applied.

4.1.3 Flue gas outlet

GENERAL

The flue gas outlet is an essential part of your heating installation. An incorrect flue gas outlet reduces the lifespan of your boiler considerably and has a negative impact on the efficiency. Remember when installing the flue, that even the best boiler won't work properly unless the flue is properly installed.

Warning: Because the flue gas temperature lies between 150-200°C, it is advisable to insulate the flue with heat-resistant material on those parts where contact with human body parts is possible.

For a correct flue gas outlet the following points need to be observed:

- Use the proper diameter, use a diameter equal to the diameter of the flue gas outlet on the boiler (see also technical specification).
- Use double-walled chimney pipe outside to prevent a rapid cooling of the exhaust gasses, which may result in condensation in the chimney.

Hint: When using an existing chimney of a larger diameter than the diameter on the boiler, you can install flexible piping of the correct diameter inside the existing chimney.

Warning It is necessary that condense water always can flow back to the drain or the boiler, avoid water bags!!

The flue can be installed in several different ways. You must carefully consider under which circumstances the boiler will be used. For sea going boats and sail boats we advise the installation of a vertical flue where the heel angles of the boat may be larger. The following installation examples are most common.

HORIZONTAL FLUE GAS OUTLET

It is possible to fit a horizontal flue gas outlet to the boiler. The following points need to be observed:

- Make sure that the outlet is positioned at a sufficient height above the waterline. If this is not possible use a swan neck bend in the pipe as in figure 3.
- Use the correct hull fittings for installing the flue through a hull side
- The maximum allowed length without curves and with a watertrap is 10 meters.
- When the exhaust is longer than 2 meters use always a water trap.
- Every elbow of 90° is equivalent to 1 meter straight pipe

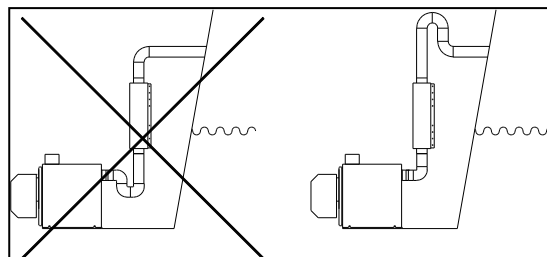


Figure 3

VERTICAL FLUE GAS OUTLET

This way of installation is preferable for seagoing boats and sailing boats, because these boats encounter large angles of heel through waves and under sail. For this kind of flue gas outlet, the following points are important:

- Install a proper storm cowl on top of the chimney (this must stop rain from entering) (figure 4).
- Install deck fittings for installing the flue through a deck.
- Install a water trap, to drain possible water caused by condensation
- Keep the chimney as vertical as possible.
- The maximum allowed length is 7 meters.
- Every elbow of 90° counts as 1 meter.
- Use outside double walled chimney pipe

Hint: To reduce the noise from flames, it is wise to install a silencer in the flue.

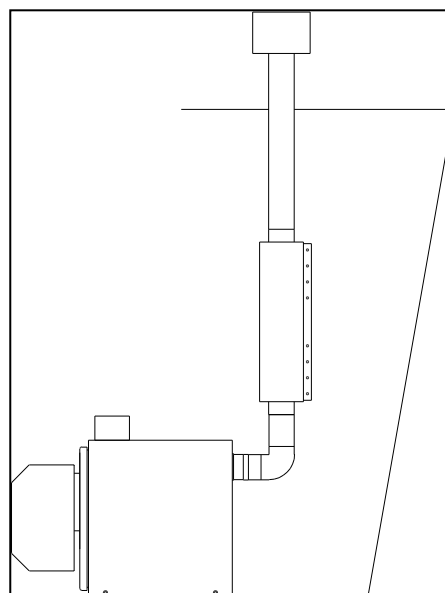


Figure 4

Your Kabola supplier can provide you with all components which may be required for installation such as:

- Cowls;
- Flexible piping;
- Single and double walled chimney pipes;
- Hull and deck fittings;
- Silencers;
- Water traps;
- Insulation.

4.1.5 Electrical connection

Warning:

Disconnect the power supply from the boiler before you start the installation. **The quality of 230 VAC power supply to the boiler should be as good as the power supply from a land line.**

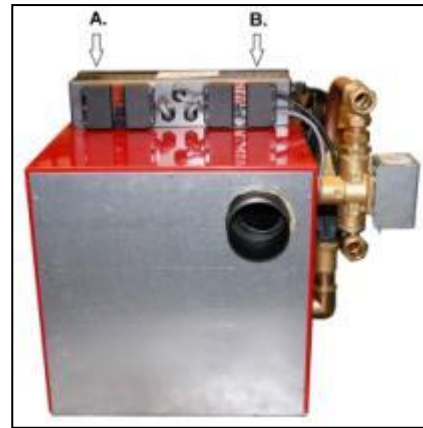


Figure 5

Connecting the room thermostat (Figure 6)

For connecting the room thermostat you must use a wire with 2 cores 0.75 mm² isolated hose. The room thermostat you need to connect at the following way:

- Remove the lid from the connector (A), what is mounted at the back of the dashboard;
- Connect the wires from the room thermostat at T1 & T2, as pointed at the sticker in the connector;



Figure 6

Connecting the circulation pump (figure 5 and appendix C)

1. Remove the lid from connector B and connect the wires as pointed at the sticker in the connector;
2. Don't forget the earthing;
3. Close the lid from the connector.

4.1.6 Filling the central heating system

The pressure in the system should:

- Never be lower than 0,5 bar cold;
- Never be higher than 2,5 bar hot.

Follow the procedure below for filling the CH-system (see figure 7):

- Switch off the boiler;
- Remove nob 4
- Screw the adaptor 3 at the thread,
- Connect the filling tube at 3 and open 5 by turning it;
- Fill the system slowly with water, until the pressure indicator indicates a pressure of 2 bar;
- Close the valve (2);
- Bleed the CH-system;
- If necessary, fill with water again up to 2 bar of pressure;
- Switch on the boiler and let the pump run for about 5 minutes;
- Switch off the boiler;
- Check the water pressure, if it is too low, repeat steps 5 through 10;
- Remove the hose.

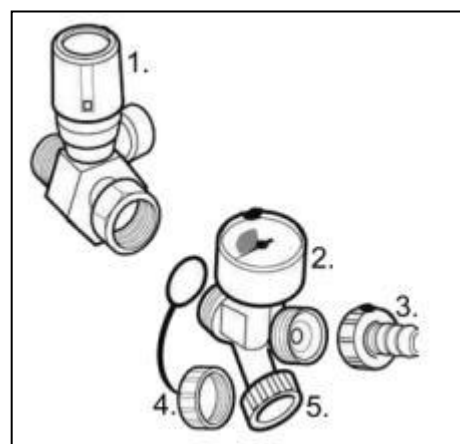


Figure 7

Hint: The CH-system can be filled with cooling fluid, suited for CH-systems (pH-value 8.5)

Bleeding the circulation pump

The circulation pump can only be bled when the electrical circuit is connected, because this bleeding has to be done with a running pump

Follow the points listed below to bleed the pump (see figure 7):

1. Check if the rotor can rotate without problems by turning the pump by hand;
2. Loosen the screw on front of the pump 1/2 to 1 turn with a screw-driver;
3. Fasten the screw when water comes out of the opening;
4. The pump is bled.

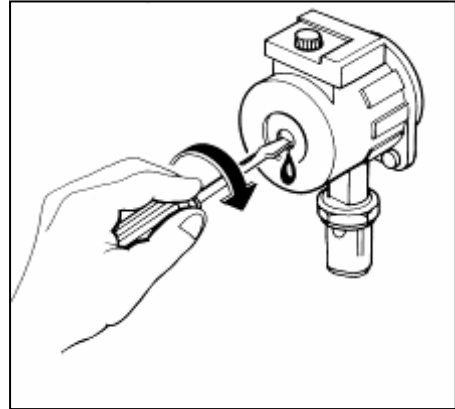


Figure 8

Attention: When locking pump couplings are supplied with the boiler, the adjusting grooves must point towards the pump.

4.1.7 Aansluiten van oliefilter en oliebrander

The KB-boiler will be standard supplied with a self bleeding oil filter, this oil filter should always be hung above the burner, if this filter is not above the level from the oil pump it will not work correctly!

The oil burner is already mounted on the boiler, the flexible oil hoses, what are fitted on the burner, needs to be connected to the oil filter, those two flexible oil tubes, an inlet, and a return line. Place these lines on the filter. On the filter are arrows!

Use the oil line from the fuel oil pipe stainless steel with an inner diameter of 6-8 mm.

For further instructions from the oil burner, refer to the instructions of the burner.

4.2 Starting your system

After the room thermostat is connected, the following steps:

- Insert the plug into the grounded socket for 230 volt version.
- Switch the boiler on, at the on / off switch on the control panel. The lamp in the switch indicate that the system is on.
- Set the room thermostat. (see manual of the room thermostat)
- Open the valve on the fuel tank;
- Open the valve on the oil filter;
- Remove plug from the motor to the oil burner,
- Assemble the pump pressure gauge at plug P from the oil pump
- Ensure that a pump pressure occurs, the system is bled
- Start the oil burner;
- After ± 1.5 minutes, the burner will start
- Check all oil connections for leaks;
- If the burner does not start and the light comes on;
- Wait about 3 minutes;
- Reset the burner and go to 5.4 (repeat if necessary).

Attention:

The oil burner is tested by the manufacturer, not adjusted. The adjustment of the burner has to be done by an experienced installer, because this requires expert knowledge. To be eligible for warranty, the boiler has to be adjusted by an approved installer. Contact your Kabola supplier to make an appointment.

Never adjust the burner using your own initiative.

5 Operating the boiler

When the boiler has been started and adjusted according to 4.2, operation for the boiler is very simple.

1. By pushing nob (D) from figure 11 you can set the boiler temperature.

The required temperature is set with the room thermostat, which controls the boiler. The boiler thermostat controls the 3-way valve on the boiler. The operation of the room thermostat is explained in the manual of the room thermostat.

If problems arise with the operation of the boiler, you will find a list of possible problems and solutions in Appendix C.

5.1 Explanation of the dashboard



Figure 11

Explanation from the number in the figure 11:

- A. Fuse holder with a glass fuse 10A 230V,
- B. On/ off switch,
- C. Display for boiler temperature and the state from the boiler ,
- D. Adjust nob for boiler temperature,
- E. Reset nob maximal thermostaat.

By pushing and turning the nob D you can change the boiler temperature.

The dashboard (figure 11) what is mounted at the KB-boilers can give the following codes:

HR-serie	
State	Discription
1	CH is demanding
3	Pumptimer active
4	Hold boiler at 70 degrees
A	Under voltage

6 Cleaning and maintenance

6.1 Points for attention

Spare parts must be ordered through your Kabola supplier. For warranty purposes only original spare parts must be used. When ordering spare parts, state the type of boiler and its serial number. Your Kabola supplier will then be able to supply the correct parts. In Appendix B, the main spare parts are listed.

6.2 Cleaning and maintenance

Warning: Maintenance and repairs should only take place when the boiler is switched off, this is because the boiler may start unexpectedly. Take the plug from the wall socket for the 230 VAC versions.

Warning: Maintenance and repairs may only be performed by personnel, who have read and understood the information in this manual, preferably an expert installer or a service engineer from Kabola Heating Systems.

Every year

1. Clean the boiler
 - 1.1. Remove the burner with the door from the boiler;
 - 1.2. Remove the insulation.
 - 1.3. Clean the inside of the boiler, using a stiff brush;

Attention: Don't use any aggressive solvents like thinner or gasoline.

- 1.4. Clean the boiler with a vacuum cleaner;
 - 1.5. Replace the isolation;
 - 1.6. Replace the door with burner;
2. Clean the chimney;
3. Change the oil filter element;
4. Clean the burner (see manual of the burner)

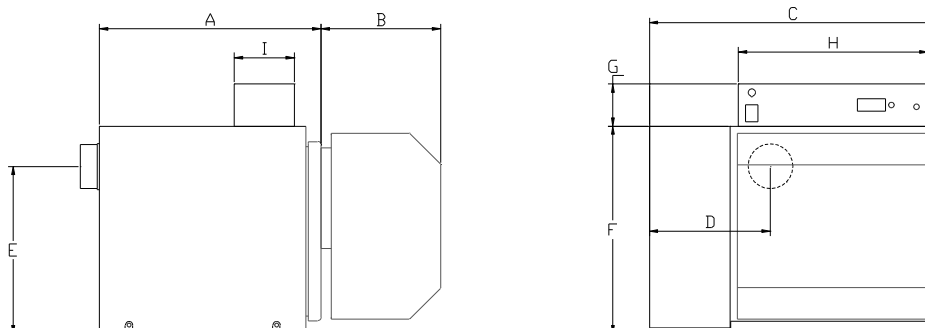
Attention: The old oil filter element has to be processed as chemical waste.

7 End of life of the boiler

When the boiler is scrapped, take note of the points listed below:

- Process the oil filter and the oil hose as chemical waste;
- Separate the metal from the plastic parts and dispose of them separately.
- Process any excess oil in an environmentally friendly way.
- Transport the boiler according to the instructions in chapter 3
- Recycle this manual.

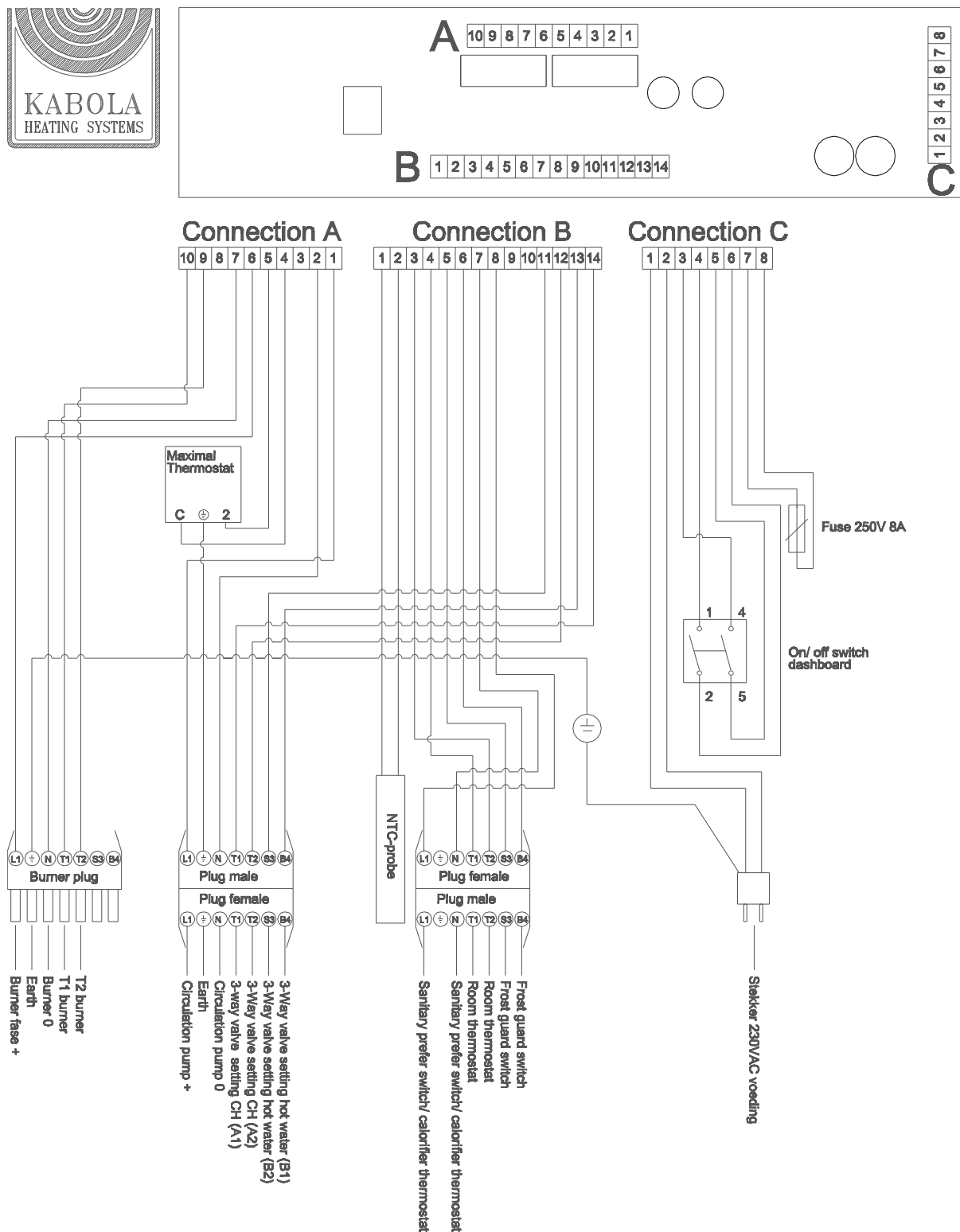
Appendix A Technical specifications



Boiler dimensions					
Letter		KB20	KB40	KB45	KB75
A		262	397	418	748
B		214	214	214	214
C		354	370	370	575
D		68	73	185	216
E		293	300	318	409
F		360	371	399	493
G		75	75	75	75
H		344	344	344	344
I		140	140	140	140

Technical information		KB20	KB40	KB45	KB75
Exhaust diameter Ø	mm	80	80	80	80
CH connections	mm	22	22	22	22
Capacity	kW	8-10	10-14	15.7-19.7	15.7-19.7
Service pressure	Bar	2	2	2	2
Work pressure	Bar	3	3	3	3
Weight	Kg	65	75	80	115
Exhaust temp. Max.	°C	230	230	230	230
Efficiency	%	90	90	90	90
Max. lenght of exhaust, above 2 mtr. use a water trap	mtr.	5	5	5	5
Power starting load 230V Operating load 230V	W	520	520	520	520
	W	165	165	165	165
Fuel		Diesel	Diesel	Diesel	Diesel

Kabola KB-series 230V



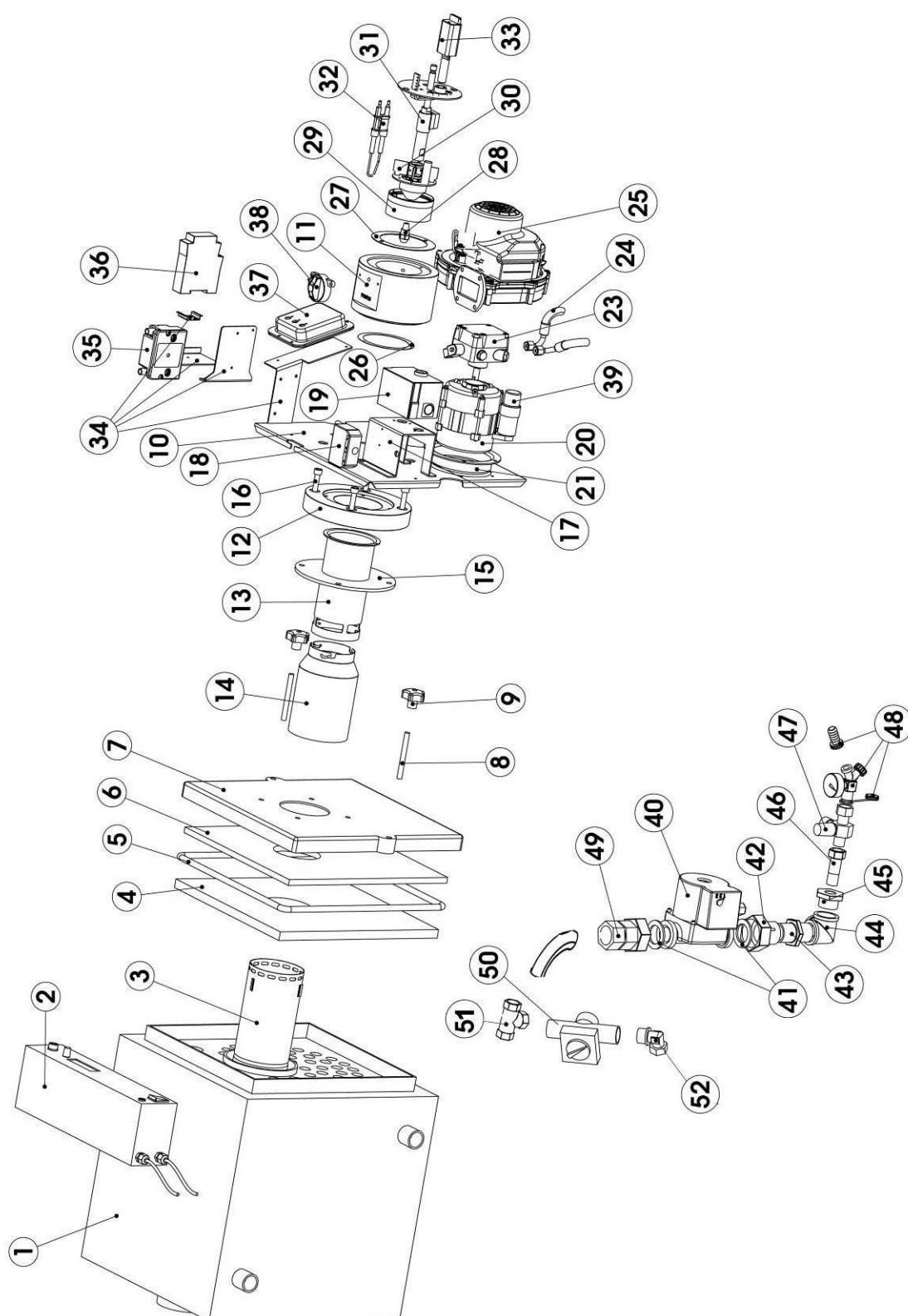
Appendix C Troubleshooting

Listed below you will find a list with possible problems, their reasons and solutions. When you encounter problems not listed, you should contact your dealer. **Never try to solve problems on your own.**

Problem	Possible reason	Possible solution
Burner will not start	Oil supply interrupted	Bleed the oil filter Change contaminated filter element Fill the oil tank
	Power supply interrupted	Check the fuses Check the power supply Shut down power supply, and disconnect the photo cel, switch power on and when burner starts connect the photo cel.
Burner stops		Reset burner (once)
	Flame protection dirty (photo cell)	Clean glass of flame protection
	Flame protection defect (photo cell)	Replace flame protection
Burner starts pulsing	Flue gas flow interrupted	Clear chimney opening
	Boiler dirty	Clean boiler
	Oil supply interrupted	See above
	Nozzle defective	Replace nozzle
Burner shows error		Reset burner (once)
	Low voltage	Check voltage level
	Oil supply interrupted	See above
Boiler does not react to thermostat	Wire in main connector has not been removed (room thermostat)	Remove wire from main connector between T1 and T2
	Boiler thermostat incorrectly adjusted	Adjust boiler thermostat
	Battery of room thermostat flat	Replace battery
Water is not circulating	Pump couplings are closed	Open pump couplings
	Pump not connected to electricity supply	Connect pump
	Rotor of pump is stuck	Turn pump with your hand (see pump manual)

When problems with the boiler will not disappear, call a engineer from Kabola.

Appendix D Boiler parts



Pos	Omschrijving	Artikelnummer
1	Boiler housing	
2	Dashboard KB-series 230V	51-001
3	Stainless steel efficiency tube KB20	44-005
3	Stainless steel efficiency tube KB40	46-006
3	Stainless steel efficiency tube KB45	47-006
4	Insulation boiler KB20 293 x 293 x 20 mm	44-004
4	Insulation boiler KB40 300 x 300 x 20 mm	46-005
4	Insulation boiler KB45 327 x 299 x 20 mm	47-005
4	Insulation boiler KB75 420 x 360 x 20 mm	49-005
5	Deurkoord	9-1083
6	Insulation door KB20 276 x 276 x 15 mm	44-003
6	Insulation door KB40 282 x 282 x 15 mm	46-004
6	Insulation door KB45 310 x 282 x 15 mm	47-004
6	Insulation door KB75 404 x 342 x 15 mm	49-004
7	Door	nvt
8	Bolt M10	nvt
9	nvt	nvt
10	Burner plate	nvt
11	Burner Block Modul	52-001
12	Ring adapter for burner modul	52-002
13	Adapter tube 80 x 1.5 x 109 mm	52-003
14	Burner tube KB-serie	52-004
15	Seal for KB-burner	52-005
16	Door bolt with shim	52-006
17	Feed burnerautomat LOA24	52-007
18	Burner connector 7 pole KB-series	52-008
19	Burnerautomat LOA24	52-009
20	Motor 70 watt	52-010
21	Bearing plate for oil pump motor	52-011
22	Oilpump coupling KB-series	52-012
23	Scheer oil pump KB-series	52-013
24	Oilhose KB-series	52-014
25	Blower fan RG148 KB-series	52-015
26	Seal adapter tule	52-016
27	Seal for nozzle stem retaining plate	52-017
28	Nozzle KB20	52-018
28	Nozzle KB40	52-019
28	Nozzle KB45	52-020
28	Nozzle KB75	52-021
29	Dosage ring KB-series	52-022
30	Mixing cartridge complete KB20	52-023
30	Mixing cartridge complete KB40	52-024
30	Mixing cartridge complete KB45	52-025
30	Mixing cartridge complete KB75	52-026
31	Nozzle holder complete KB20-KB40	52-027
31	Nozzle holder complete KB45	52-028
31	Nozzle holder complete KB75	52-029
32	Electrode KB20-KB40	52-030
32	Electrode KB75	52-031
33	Flame detector KLC2002	52-032
34	Mounting plates for number. 35, 36 en 37	n.v.t.
35	Ignition trafo	52-033

Pos	Omschrijving	Artikelnummer
36	After purge relais Omron	52-034
37	Control board for fan speed KB20	52-035
37	Control board for fan speed KB40	52-036
37	Control board for fan speed KB45	52-037
37	Control board for fan speed KB75	52-038
38	Pressure sensor KB-series	52-039
39	Condensator KB-series	n.v.t.
40	Circulation pump 230V 130 high	9-I053
41/42/43/49	Locking pump coupling set Kabola	24-x063
44	Knee type221 1"	18-S482
45	Conversion ring 1" bui x ½" bin	18-S297
46	Pipe nipple ½" x 120 mm	18-S483
47-48	Fill and pressure gauge	9-I015
50	3-way valve 24 VAC (v8044c1065)	10-J004
51	T-coupling 22 x 22 x 22 mm	17-r080
52	Knee coupling 1" bui x 22 mm	17-R125

Appendix E EG-declaration

EG-declaration of conformity

We,

Kabola Heating Systems BV
Placotiweg 1 E
4131 NL Vianen
The Netherlands

declare under our own responsibility that the product:

Kabola KB20/ KB40/ KB45 230 V

to which this declaration relates complies with the following standards

EN 303-1, EN 303-2, EN 304, EN 50081-1, EN 50082-1, EN 61010

following the provisions of the following EC-directives

73/23/EEG,
89/336/EEG,
92/42/EEG,
amended by 93/68/EEG.

Nederland, Vianen, 28 february 2012



P. Al/es
President

Appendix F CE declaration

EG-Baumusterprüfbescheinigung
gemäß der Wirkungsgrad-Richtlinie von neuen
Warmwasserheizkesseln 92/42/EWG

EC Type Examination Certificate
according to the EC directive 92/42/EC
efficiencies of new hot water boilers

TÜV NORD
Systems

Produkt-ID-Nummer Product-ID-number
CE-0045CMKD 2350

Hersteller / Vertreiber : Kabola Heating Systems B.V.
manufacturer / distributor Placotiweg 1, NL - 4131 Vianen (Utr.)

Produktart : Heizkessel mit integriertem Ölgebläsebrenner in DUO-Bauweise (Unit)
product category

Handelsbezeichnung : Heizkessel für flüssige Brennstoffe
trade mark

Bauart : Niedertemperaturkessel
construction type

Typ, Ausführung : KB...
type, model (Typenliste s. Seite 2)

Prüfgrundlagen : Richtlinien 92/42/EWG, DIN EN 304:06/1998 und
basis of type examination DIN EN 267:09/1999

Prüflaboratorium : TÜV NORD Systems GmbH & Co. KG
laboratory Prüfstelle für Feuerungsanlagen

Überwachung : Prüfung der Konformität mit der zugelassenen Bauart
surveillance procedure nach Modul B, Anhang III der Richtlinie 92/42/EWG

Hannover, den 11. März 2011


(Der Leiter)

TÜV NORD

CE

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Große Bahnstraße 31, D-22525 Hamburg
Festnetz (LNA) 0501/41 - 7 881 (LNA) 0501/4200

TÜV NORD Systems GmbH & Co. KG
Benennung (Stufe für die Module B, C, D und E der Richtlinie 92/42/EWG)
qualifiziert bei der ELASCOM, unter Nr. 0640
PSM - Überwachungs- und Zertifikatsstellen nach den Leitlinienanforderungen

Produkt-ID-Nummer : CE-0045CMKD2350
Product-ID-number

11.03.2011

Technische Daten
technical data

Typ / Ausführung type	Nennwärmeleistung (kW)	Brennstoffe *	Energieeffizienz
KB 20	6,0 bis 8,5	P	**
KB 30	8,5 bis 11	P	**
KB 40	10,5 bis 13	P	***
KB 45	13,5 bis 22,5	P	***
KB 50	19 bis 26	P	***
KB 75	26 bis 41	P	***

*): P = Öl / G = Gas P¹) = Heizöl EL (schwefelarm)

Die Prüfergebnisse sind in den Berichten KD 2350 C1 – C6 vom 11.03.2011 zusammengefasst.

Die Kessel erfüllen die Wirkungsgradanforderungen für Niedertemperaturkessel für flüssige Brennstoffe im Sinne der Wirkungsgrad-Richtlinie 92/42/EWG.

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Besondere Güte für die Module B, C, D und E der Richtlinie 92/42/EWG
geprüft bei der ELABORS, unter Nr. 0402
PSE-Überwachungs- und Zertifizierungsstelle nach den Landesbestimmungen

TUV NORD