

***Gebruiksaanwijzing***

***User manual***

***Gebrauchsanweisung***

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# Kabola B series

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## Preface

This user-manual is written to enable the safe operation of the B-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 Introduction.**

Congratulations with your purchase of this Kabola boiler. This user-manual covers the B-Series central heating boilers. The B-Series central heating boilers cover a wide range of boilers with a broad range of application. 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 application**

The B-Series boilers 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 B-Series boilers heat the central heating water by means of a pressure jet burner, which is installed on front of the boiler. The standard boilers operate from a 230 volt AC Supply. Boilers up to type B45 can also be supplied to operate on a 240 volt DC Supply. All B-Series boilers work in the same way, the only difference is the dimensions and the capacities of the boilers (see also the technical specifications in Appendix A).

As fuel, diesel oil or kerosene has to be used.

At special request there is also a model available which operates on petroleum.

## **1.4 Technical specifications**

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

## 2. Safety

In this chapter we emphasise 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 occur, 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 hazards 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

The safety instructions listed below must be complied with when operating the B-Series boilers.

#### 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 multiple-stranded wire for electrical connections.
- Don't change the + pole with the – pole of the battery (for the 24 Volt DC version)

#### Measures for a safe operation

- Never change the settings of the burner.
- Don't use any aggressive solvents which may affect the boiler (like gas or turpentine)
- Don't damage the fire bricks.
- 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
- Remove the burner (see 4.1.5, replacing the burner)

While transporting the boiler, take following precautions:

- Don't damage the boiler, use a blanket to cover the boiler.
- Transport the boiler lying down on its back
- For the boiler models B-25 onwards use the hoisting eye to move the boiler. This hoisting eye is located below the top of the boiler cover.

### 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.
- Dismount the burner
- 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:** Don't store any flammable and 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)

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

- To avoid movement secure the base of the boiler by means of spotwelds or with nuts and bolts.
- Keep a minimum distance of 250mm behind the boiler for the flue-gas outlet (see figure 1)

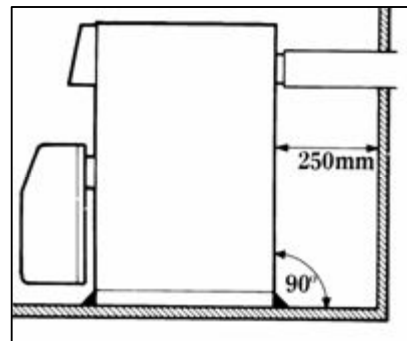


Figure 1

- Use a earthed plug socket for connecting the 230 V AC versions to the power supply.

#### 4.1.2 Connection of the Central heating system

##### Piping

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

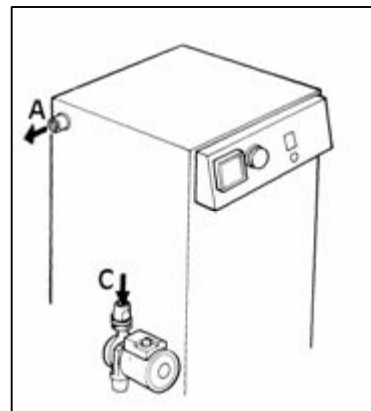
- Install the piping in such a way, that the boiler (cover and dashboard) remains accessible.
- Provide enough bleeding points in places where air might collect.

**Attention:** Install a automated bleeding valve near the boiler

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

1. Install the feeding to CH at point A
2. Install the return of the CH on point C

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



**Figure 2**

#### 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 180 - 240°C, it is advisable to insulate the flue with heat-resistant material in 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 length/diameter dimensions, use a diameter equal to the diameter of the flue gas outlet on the boiler (see also technical specifications)
- Use double-walled chimney pipe outside to prevent a rapid cooling of the flue gasses, which might result in condensation in the chimney.

**Hint:** When using a 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.

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 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:

- When a burner with an after purge cycle is used the maximum allowed length is 6 metres. A burner without an after purge cycle can be fitted with a maximum flue length of 2 metres plus the silencer.
- Make sure that the outlet is positioned at a sufficient height above the waterline. If this not possible use a swan neck bend in the pipe as in figure 3.

- Use hull flanges for installing the flue through a hullside.
- Don't use more than 5 elbows of 90°.
- Every elbow of 90° is comparable to 1 metre of straight pipe.

When a damper 80x60 is fitted, the length of the 60 mm pipe may not exceed 1 metre

### Vertical flue gas outlet.

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

- Install a proper storm cowl on top of the chimney (this must stop rain entering)(figure 3)
- Install a water trap for boilers bigger than B17, to trap possible water caused by condensation. (figure 4)
- Keep the chimney as vertical as possible.
- Don't use more than 5 elbows of 90°.
- The maximum allowed length is 10 metres.
- Every elbow of 90° counts as 1 metre.
- Outside use double walled chimney pipe.

**Hint:** To reduce the noise resulting from flames, it is wise to install a silencer in the horizontal flue and the vertical flue.

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

- Cowls.
- Flexible piping.
- Single and double walled chimney pipes.
- Wall and deck flanges.
- Silencers.
- Water traps.

### 4.1.4 Electrical installation

**Warning:** Disconnect the power supply from the boiler before you start installing the boiler. Only use multiple stranded wire.

#### Electrical installation 230 Volts AC

When a room thermostat has been supplied with the boiler, take the following steps:

**Connecting the room thermostat** (see figure 5 and electrical scheme in appendix C)

1. Remove the cover of the main connector situated below the dashboard
2. .Remove, if present, the wire between point 1 and 2
3. Connect point 1 of the connector to point L of the room thermostat.

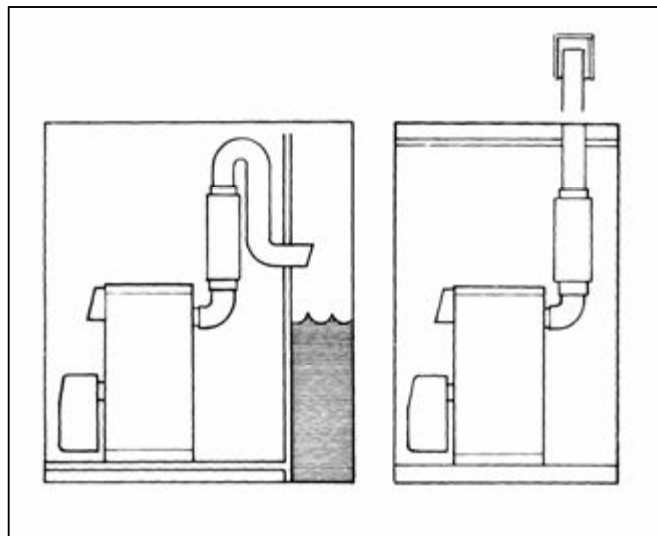


Figure 3

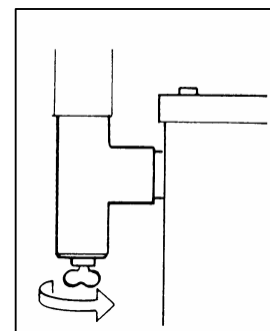


Figure 4

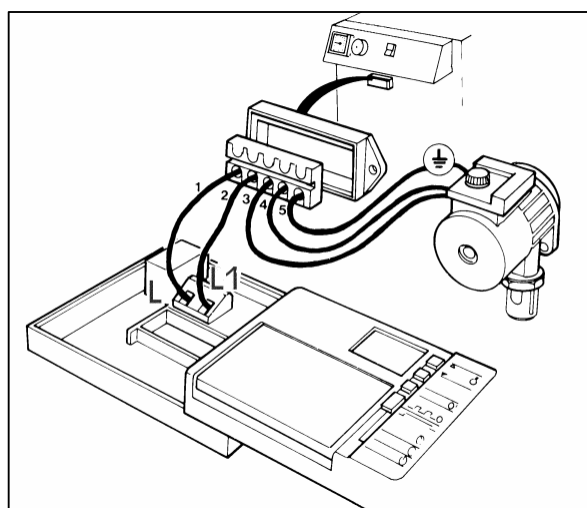


Figure 5



4. Connect point 2 of the connector to point L1 of the room thermostat.

**Attention:** The core diameter of the connections mentioned above must be between 1 and 1,5mm<sup>2</sup>. The wires should be suitable for the voltage used.

**Connecting the circulation pump** (see figure 5 and electrical scheme in appendix C)

1. Connect the pump to points 3 and 4 of the connector.
2. Connect point 5 to the ground connection on the pump
3. Replace the cover of the main connector.

#### Electrical installation 24 Volts DC

**Warning:** Never change the + pole with – pole on the battery (See figure 6).

1. The connection of the room thermostat is identical to the connection for the 230 Volts version. Use figure 6 instead of figure 5.
2. Connect the circulation pump to points 3 and 4 of the main connector.
3. The core diameter of the wires to points 5 and 6 of the connector should conform to the values in table 1.

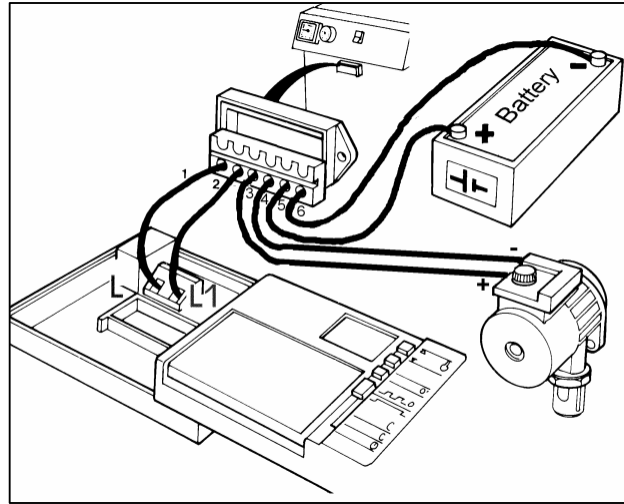


Figure 6

Table 1

Distance to the battery	Core diameter
± 6 metres	6 mm <sup>2</sup>
± 15 metres	10 mm <sup>2</sup>

#### 4.1.5 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 listed below for filling the CH-system (see figure 7)

1. Switch off the boiler
2. Turn the coupling nut below the pressure indicator to loosen it;
3. Pull the hose connection a little downwards;
4. Connect the hose with a hose clamp to the connection.
5. Fill the system slowly with water, until the pressure indicator indicates a pressure of 2 bar.
6. Fasten the coupling nut;
7. Bleed the CH-system
8. If necessary, fill with water again up to 2 bar of pressure.
9. Switch on the boiler and let the pump run for about 5 minutes.
10. Switch off the boiler.
11. Check the water pressure, if it is too low, repeat steps 5 through to 10;
12. Remove the hose.

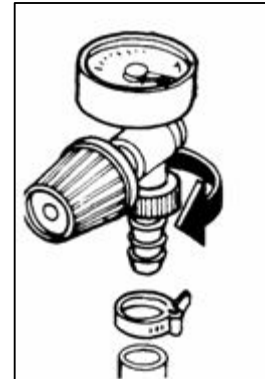


Figure 7

**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 has to be done with a running pump.

Follow the points listed below to bleed the pump (see figure 8):

1. Check if the rotor can rotate without problems by turning the pump by hand (see manual pump)
2. Loosen the screw on front of the pump ½ to 1 turn with a screw-driver.
3. Fasten the screw when water comes out of the opening.
4. The pump is bled.

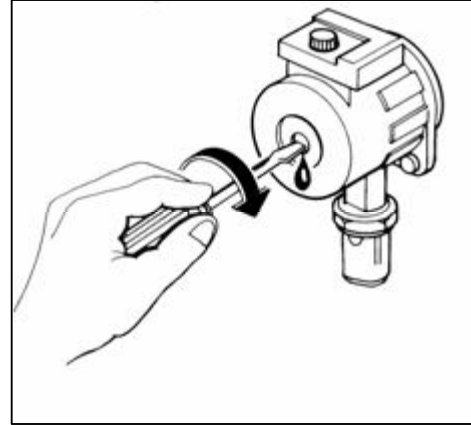


Figure 8

**Attention:** when locking pump couplings which are supplied with the boiler, the adjusting grooves must point towards the pump (see figure 9)

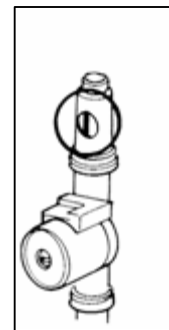


Figure 9

### 4.1.6 Mounting the burner

**Hint:** Check if the inspection opening on the mounting plate can be reached. If this is not the case the mounting plate can be turned 180° to reach the opening easier. For a B12 you need to saw an extra piece off the flange.

The mounting of the burner is done in the following way;

1. Place the nut for the flange bolt in the dedicated position and place the gasket.
2. Mount the flange with the 4 supplied M8-bolts hand tighten on the mounting plate. **The arrow on the flange should point upward.**

**Hint:** Smear some sealant in the crack in the flange to seal.

3.
  - 3.1 Measure and set the distance from the back of the gasket, mounted behind the mounting plate, to the front of the flange using the table below and figure 10.

Boiler type	Distance in mm
B12-B17	60
B25-B35-B45	155
B55-B70-B80-B100	160

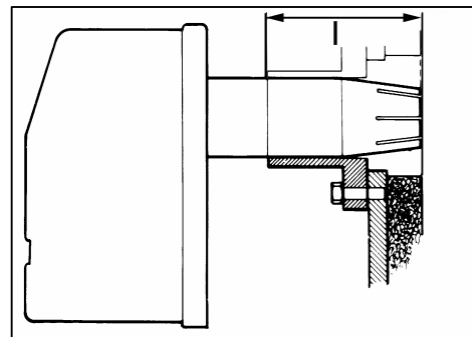


Figure 10

- 3.2 Scribe the distance on the pipe;
- 3.3 Push the burnerpipe gently in place up to the scribed position (see figure 10)
4. Lift the burner a little (figure 11) according to **7A**;
5. Fasten bolt **7** (figure 11) on the flange to clamp the burner;
6. Fasten the hand tightened bolts on the mounting plate.

**Attention:** Take care that the burner pipe is not damaged during installation. Repairs to the burner pipe are very expensive and don't fall under warranty.



## 4.2 Starting your system

When everything is connected follow procedure below:

1. Connect the boiler to the power supply, the earthed outlet for the 230V AC version and the battery for the 24 V DC version.
2. Switch the boiler on with the on/off switch on the dashboard. The lamp in the switch will indicate that the system is active. This lamp is not present in the 24 V DC version.
3. Set the required boiler temperature between 55 and 90°C using the boiler thermostat.
4. Set the room thermostat so that it is switched on. (See manual of the room thermostat)
5. Start the oil burner (figure 11)
  - 5.1 Open the valve of the fuel tank (5)
  - 5.2 Open the valve on the oil filter (5A)
  - 5.3 Install the bleeding hose (3C) on the bleeding opening of the filter
  - 5.4 Start the oil burner.
  - 5.5 The burner switches on, when the burner is fitted with a pre-heating element, this will take 1,5 minutes.
  - 5.6 Open the bleeding valve on the oil filter.
  - 5.7 Check if oil is coming out of the hose.
  - 5.8 Check all oil connections for leakage's.
    - 5.8.1 When the burner won't start, the control light (8) will light.
    - 5.8.2 close the bleeding valve (3B) on the filter.
    - 5.8.3 Wait approximately 3 minutes.
    - 5.8.4 reset the burner by pushing button (8) and return to 5.4 (repeat if necessary)
  - 5.9 Close the bleeding (3B) when only oil and no bubbles come out of the hose.

**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 Kabola Heating Systems or your importer to make an appointment.

**Never adjust the burner using your own initiative.**

A correctly adjusted burner shows a clear white flame, which is visible through the inspection opening (6)

## 5 Operating the boiler

When the boiler has been started and adjusted according to 4.2, operation of the boiler is very simple. The required temperature is set with the room thermostat, which regulates the boiler. The operation of the 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 D.

## 6 Cleaning and maintenance

### 6.1 Points of attention

Spare parts must be ordered through your importer dealer or from Kabola Heating Systems. For warranty purposes only original spare parts may be used. When ordering spare parts, mention the type of the boiler and its serial number. Kabola Heating Systems will then be able to deliver 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 might start unexpectedly. Take the plug from the wall socket. Disconnect the power supply for the 24 Volt version.

**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 mechanic from Kabola.

### Every week

- Drain the water from the water trap if installed

### Every year

1. Clean the boiler
  - 1.1 Remove the burner (see § 4.1.5);
  - 1.2 Remove the burner mounting plate from the boiler;
  - 1.3 Remove the top cover of the boiler, **be careful not to damage the earthing wire**;
  - 1.4 Remove the insulation.
  - 1.5 Remove the 4 bolts on the boiler top;
  - 1.6 Remove the boiler top;
  - 1.7 Clean the inside of the boiler, using a stiff brush;
  - 1.8 Clean the space between the pipes with a thin metal strip;  
**Attention:** Don't use any aggressive solvents like thinner or gasoline.
  - 1.9 Clean the boiler with a vacuum cleaner;
  - 1.10 Replace the boiler top, if necessary use a new gasket;
  - 1.11 Replace the 4 bolts and fasten these;
  - 1.12 Replace the insulation;
  - 1.13 Replace the top cover of the boiler, **make sure the earthing wire is fitted correctly**;
  - 1.14 Replace the burner mounting plate and remount the burner (see § 4.1.5);
2. Clean the chimney;
3. Clean the watertrap if installed;
4. Change the oil filter element;
5. Clean the burner (see manual of the burner)

**Hint:** Kabola Heating Systems has a standard set with replacement parts for the yearly maintenance (see Appendix B)

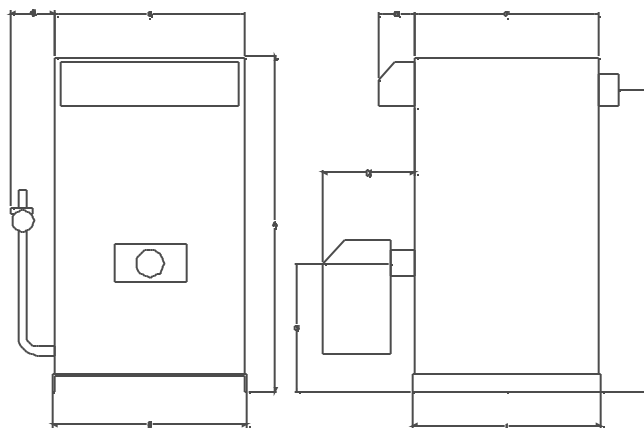
**Attention:** The old oil filter element has to be processed as chemical waste.

## 7 End of life of the boiler

When the boiler will be scrapped, take note of the points listed below.

- Process the oil filter and the oil hoses as chemical waste.
- Separate the metal from the plastic parts and dispose 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

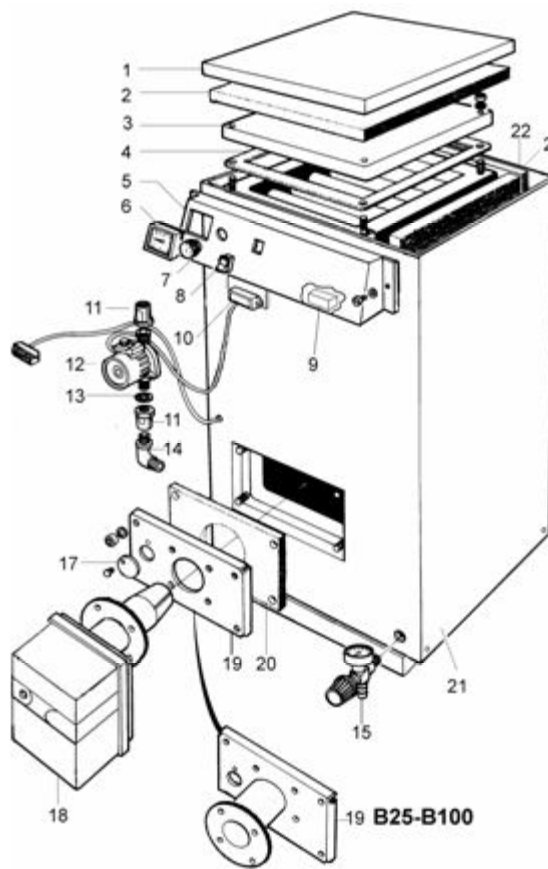


Type	B-8	B-12	B-17	B-25	B-35	B-45	B-55	B-70	B-80	B-100
A	505	600	670	970	970	970	970	1165	1165	1165
B	343	347	411	455	455	445	485	487	487	488
C	-	115	115	115	115	125	125	-	-	-
D	356	361	416	466	468	488	498	508	508	498
E	235	243	364	283	284	284	384	314	314	314
F	320	343	408	388	491	580	697	699	839	1050
G	70	70	70	70	70	70	70	70	70	70
H	310	325	325	385	385	385	385	385	385	460
I	336	361	416	396	503	593	708	708	858	1058
J	400	480	548	753	754	754	759	961	963	963
Flue gas ø	80	80	80	100	125	150	150	180	180	200
Fluegas temp °C	160-200	180-240	180-240	180-220	180-230	180-230	180-240	180-240	180-250	180-260
C.H.-connection	1"	1"	1"	5/4"	1½"	1½"	2"	2"	2"	2"
IP-value	50-11									
Burner 230 V	2-B009	2-B010	2-B011	2-B012	2-B013	2-B014	2-B014	2-B016	2-B017	
24 V	3-C012	3-C013	3-C014	3-C015	3-C016	3-C017				
Nozzle 60°	0.30	0.40	0.50	0.85	1.00	1.25	1.50	1.75	1.75	2.00
Nom. Capacity kW min	8	11.2	14	19.7	29	40.7	51.1	63.9	74.4	93
max	11	14	19.7	29	40.7	52.3	63.9	81.4	93	116.3
Max oil consumption kg/h	1.1	1.4	1.9	3.3	3.7	5.2	6.5	7.5	8.4	10.3
Testpressure in bar	5	5	5	5	5	5	5	5	5	5
Operating pressure in bar	3	3	3	3	3	3	3	3	3	3
Weight in kg	50	65	94	118	140	155	178	270	309	445
Water volume in l	9	12	16	18	23	26	36	55	68	82
Temperature control range	35-90	35-90	35-90	35-90	35-90	35-90	35-90	35-90	35-90	35-90
Isolation thickness in mm	30	30	30	50	50	50	50	50	50	50
Fuel	HBO 1, HBO 2, diesel of gasolie									
Burning efficiency in %	96	91	91	92	92	92	91	91	91	91
Waterside efficiency %	92	87	88	89	89	89	88	88	88	88
Standby loss	3 %									

## Appendix B Parts

Listed below you will find the most important parts of the boilers. These parts can be ordered from your importer or Kabola Heating Systems, stating type and serial number. The numbers refer to the image.

- |    |   |   |
|----|---|---|
| 1  | Boiler top cover                                |   |
| 2  | Insulation                                      | Fibreglass- or rock wool thickness App. A |
| 3  | Cover of boiler                                 |   |
| 4  | Boiler gasket                                   |   |
| 5  | Dashboard                                       |   |
| 6  | Thermometer                                     |   |
| 7  | Boiler thermostat                               |   |
| 8  | On/off switch                                   | No lamp in 24 V DC version                |
| 9  | Maximum thermostat                              |   |
| 10 | Main connector                                  |   |
| 11 | Pump coupling                                   | 1" or bigger                              |
| 12 | Circulation pump                                |   |
| 13 | Seal  | Two 1¼" or bigger                         |
| 14 | Knee inner- x outer thread                      | Different per type (1x1, 1¼x1 or 1½x1)    |
| 15 | Pressure valve/ pressure gauge/ fill drain cock |   |
| 16 | T-connection                                    | Only for B-12 1"x½"x1"                    |
| 17 | Fire inspection opening                         |   |
| 18 | Oil burner                                      | Comes with flange and gasket              |
| 19 | Burner mounting plate                           |   |
| 20 | Gasket for mounting plate                       |   |
| 21 | Boiler cover side/front                         |   |
| 22 | Boiler cover back                               |   |
| 23 | Oil filter (not shown in picture)               |   |
| 24 | Room thermostat (not shown in picture)          |   |
- Following spare parts are available.
- |    |        |                |
|----|--------|----------------|
| 25 | Nozzle | See Appendix A |
|----|--------|----------------|



max. 25µm , P<sub>max</sub> 6 bar  
 max. capacity 200 l/hour, total ± 6000 l.  
 max. vacuum -0,5 bar  
 Imit TA3

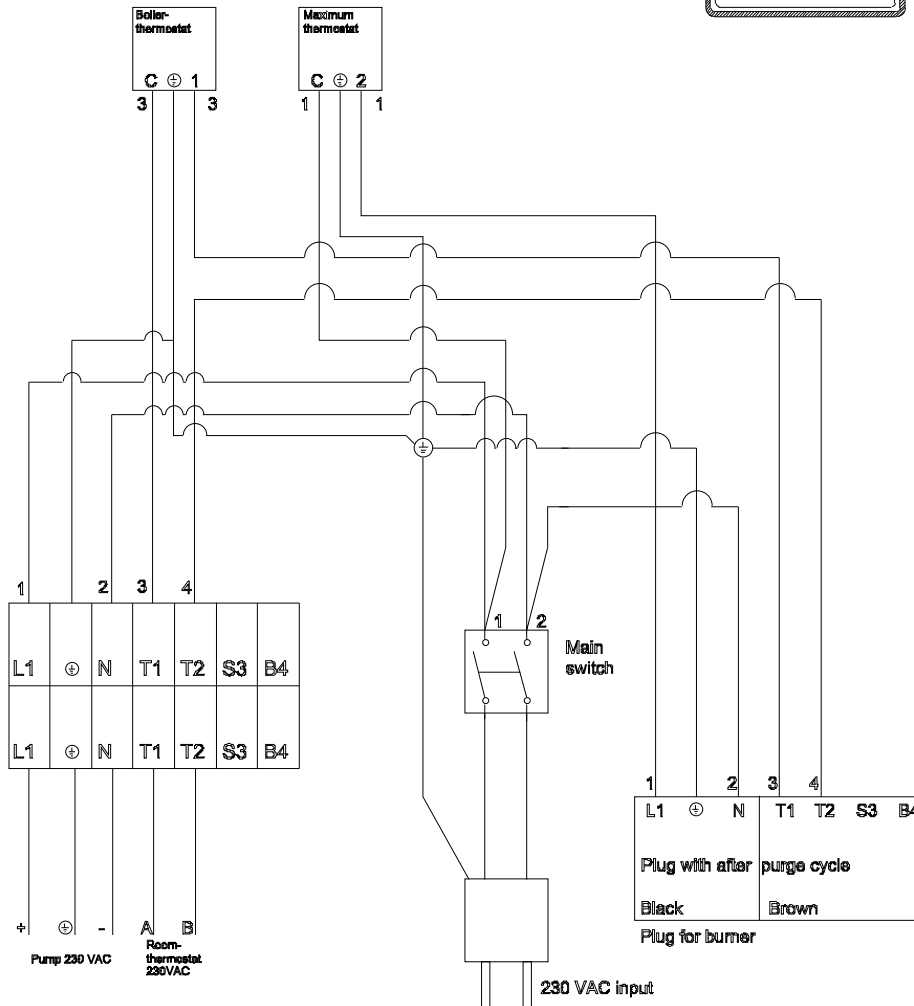
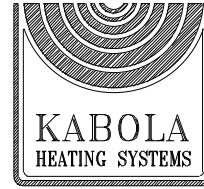
For the yearly maintenance Kabola Heating Systems has compiled a set of spare parts often used during maintenance.

- 26 Service set comprising of 4+23+25

# Appendix C Electrical diagram B8-B70 230V

B8- B70 230 VAC

28-10-2004 White Elco casing

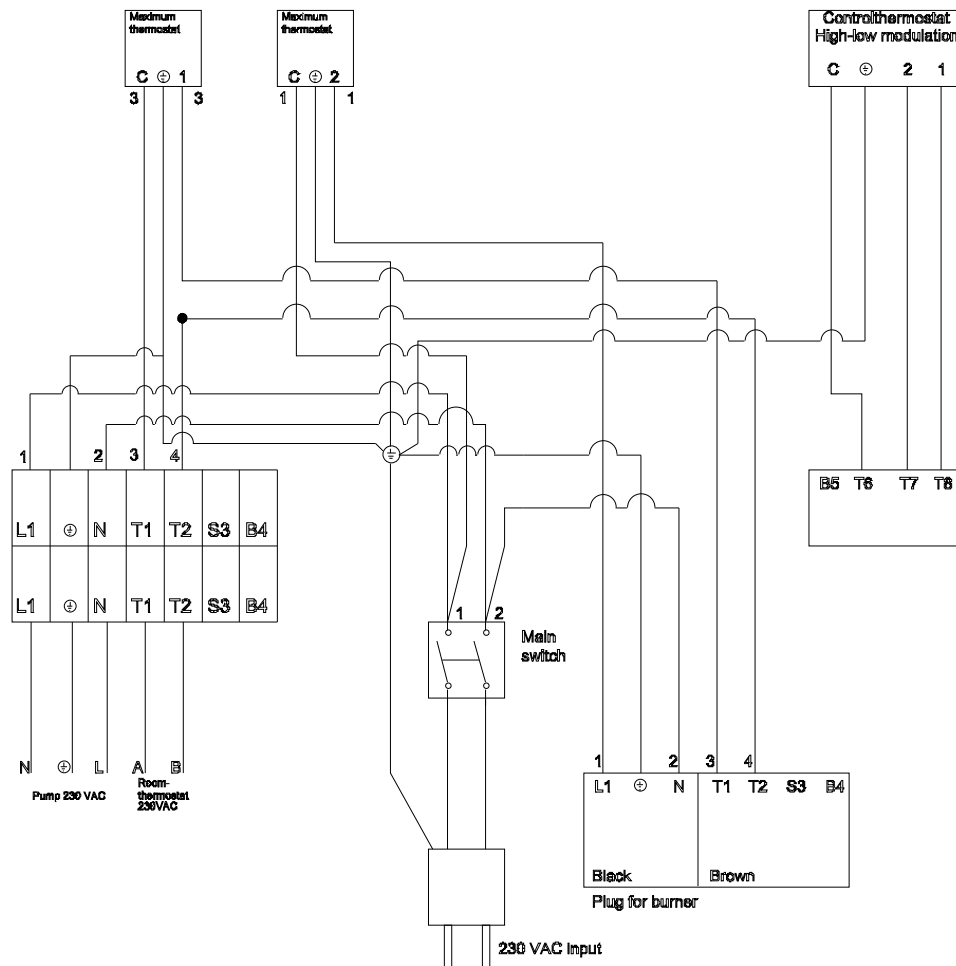


Dimensions wiring  
 Power supply 1-1,5 mm<sup>2</sup>  
 thermostat 1-1,5 mm<sup>2</sup>



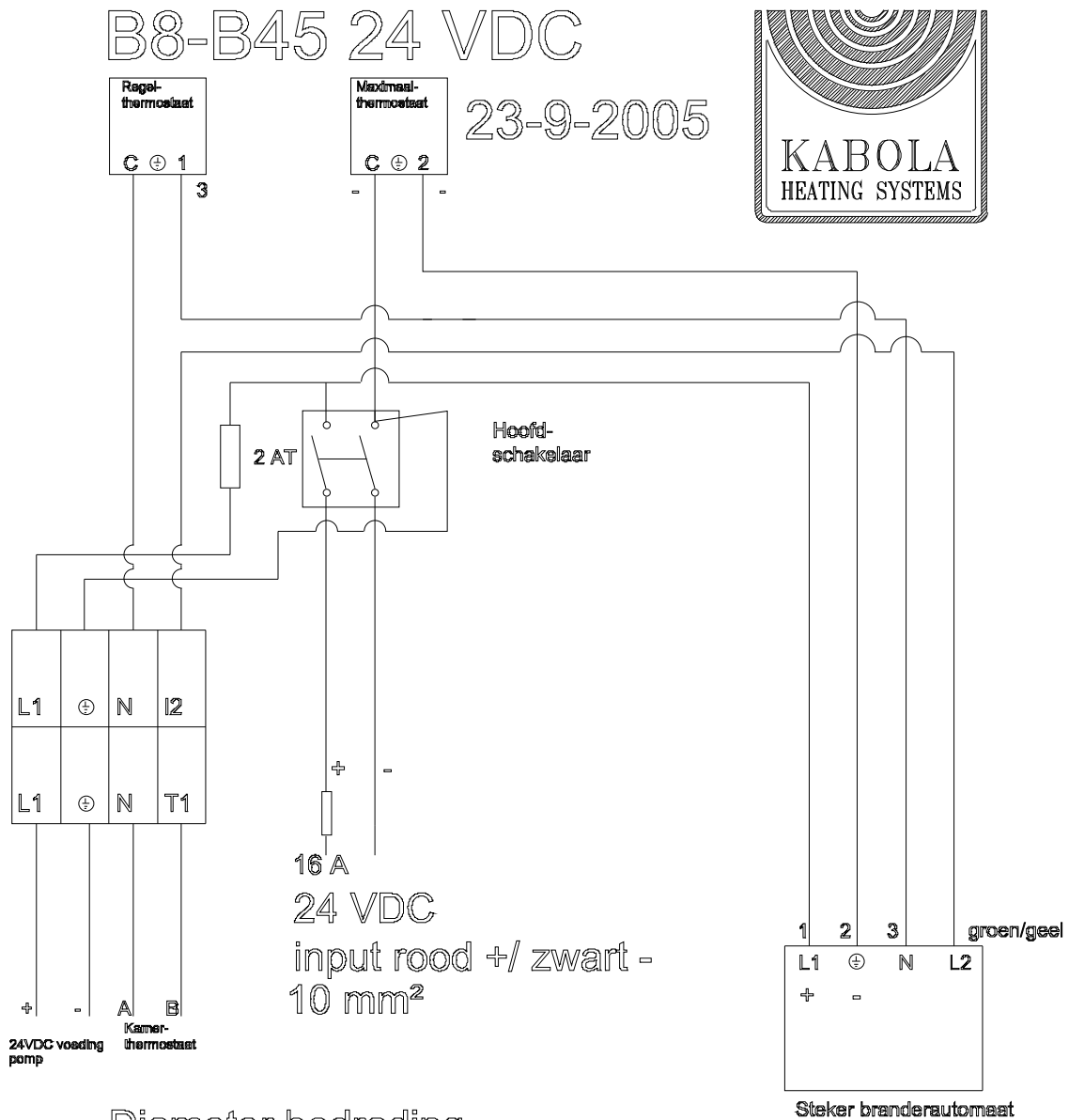
## Appendix D Electrical diagram B80-B100 230V

B80-B100 230 VAC  
28-10-2004 White Elco casing



Dimensions wiring  
Power supply 1-1,5 mm<sup>2</sup>  
thermostat 1-1,5 mm<sup>2</sup>

## Appendix E Electrical diagram B8-B45 24V



Diameter bedrading

Voeding lengte 0-6 m: minimaal 6 mm<sup>2</sup>

6-15 m: minimaal 10 mm<sup>2</sup>

Kamerthermostaat max. 2 x 0.75 mm<sup>2</sup>

## Appendix F 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 solve problems on your own.**

Problem	Possible reason	Possible solution
Burner won't 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
Burner stops	Flame protection dirty (photo cell)	Reset burner Clean glass of flame protection
	Flame protection defect (photo cell)	Replace flame protection
Burner starts pulsing	Flue glass flow interrupted	Clear chimney opening
	Boiler dirty	Clean boiler
	Oil supply interrupted	See above
	Nozzle defect	Replace nozzle
Burner shows error		Reset burner
	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
	Boiler thermostat incorrect adjusted	Adjust boiler thermostat
	Battery of room thermostat empty	Replace battery
Water is not pumped	Pump couplings are closed	Open pump couplings
	Pump not connected to power supply	Connect pump
	Rotor of pump is stuck	Turn pump with your hand (see manual pump)

## Appendix G CE-declaration.

Kabola Heating Systems  
Populierenweg 41  
3421 TX Oudewater  
Nederland



### EC-declaration of conformity

We,

Kabola Heating Systems  
Populierenweg 41  
3421 TX Oudewater  
Nederland

declare under our own responsibility that the product:

**Branderketel**  
**Kabola B8/12/17/25/35/45/55/70**

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, Oudewater, 1-4-2005

A handwritten signature in purple ink, appearing to be "P. Alles", written over a horizontal line.

P. Alles  
Directeur